

**FAO SPECIES IDENTIFICATION SHEETS
FOR FISHERY PURPOSES**

**EASTERN CENTRAL ATLANTIC
FISHING AREA 34 AND PART OF 47**



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FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS



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FAO SPECIES IDENTIFICATION SHEETS
FOR FISHERY PURPOSES

EASTERN CENTRAL ATLANTIC
Fishing Areas 34, 47 (in part)

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VOLUME V

CONTENTS:

Sharks

Families: Carcharhinidae
to Triakidae

Batoid Fishes

Lobsters

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Identification sheets. Taxonomy. Geographic
distribution. Fisheries. Vernacular names.
Bony fishes. Chimaeras. Sharks. Batoid fishes.
Lobsters. Shrimps. True crabs. Stomatopods.
Molluscs. Sea turtles. ASW

FAO SPECIES IDENTIFICATION SHEETS

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)

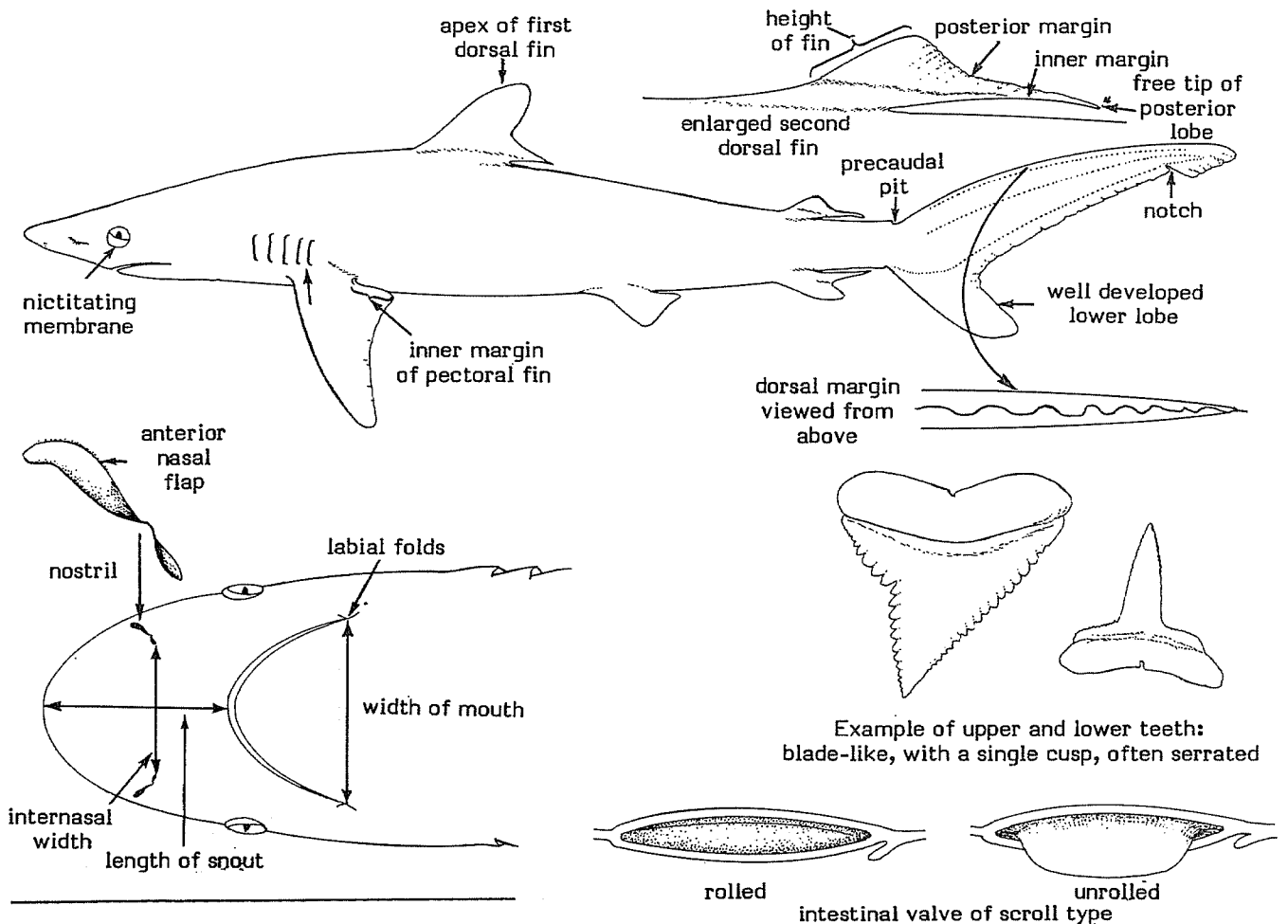
CARCHARHINIDAE *

Requiem sharks

(also, ground sharks, blue sharks, sharpnose sharks)

Small- to large-sized sharks. Head with 5 small- to medium-sized gill slits, the last over or behind pectoral fin origins; gill arches usually without rakers (short dermal rakers, unlike the dermal-denticle gillrakers of *Cetorhinus*, are present in *Prionace*); spiracles small or (usually) absent; eyes on sides of head, with a well developed nictitating membrane within eye openings; snout usually depressed dorso-ventrally; teeth small to large, blade-like, with a single cusp, the largest teeth at sides of jaws. Two dorsal fins, the first shorter than caudal fin, its base wholly anterior to origin of pelvic fins (but free tip of fin may reach to origin of pelvic fins in *Negaprion*); caudal fin much less than half of total length, strongly asymmetrical, with a rippled or undulating dorsal margin, a well marked subterminal notch, and a short, but well defined lower lobe. Caudal peduncle not strongly depressed dorso-ventrally or widely expanded laterally, without longitudinal ridges anterior to anal fin; precaudal pits well developed. Intestinal valve of scroll type.

Colour: variable, usually greyish or brown on back (but blue in *Prionace*), and white on belly.



* Diagnosis applies only to Eastern Central Atlantic representatives

The Carcharhinidae is one of the largest families of sharks. All of the Eastern Central Atlantic species are strong swimmers, but the habits of most are not well known. Small and medium-sized species often occur close inshore, while most large species are more abundant well offshore and may be oceanic, although often approaching the coast in search of food. Several large species, including bull, lemon and tiger sharks, are common close inshore. All are voracious predators, feeding mainly on sharks, rays, fishes, turtles, seabirds, and occasionally even on bottom-dwelling animals (crabs). Several species are dangerous to bathers. Many carcharhinids are of economic interest as food and for the preparation of various subproducts, especially oil and vitamin A from the liver, leather and sandpaper from the skin, fishmeal, gelatine, etc. Separate statistics by species are not available and several of the E.C. Atlantic carcharhinids are apparently often misidentified. This is probably one of the most important families in the area for fisheries.

SIMILAR FAMILIES OCCURRING IN THE AREA :

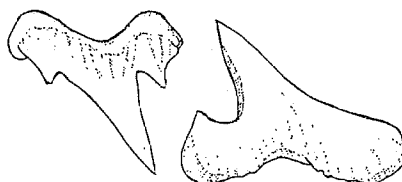
Hemigaleidae: species in the area with upper teeth lacking serrations but having cusplets (cusplets present along with serrations, or cusplets absent and serrations present or absent in Carcharhinidae); intestinal valve of spiral type.

Leptochariidae: anterior nasal flaps formed as slender barbels; teeth small, with cusps and cusplets in both jaws; caudal fin with a straight upper margin (rippled in Carcharhinidae) and with lower lobe hardly developed; no precaudal pits; intestinal valve of spiral type.

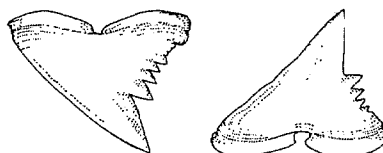
Triakidae: species in the area with either blunt teeth in a pavement (Mustelus), or blade-like, with cusps and cusplets, but no serrations; caudal fin with a straight upper margin; precaudal pits absent; intestinal valve of spiral type.



Paragaleus (Hemigaleidae)



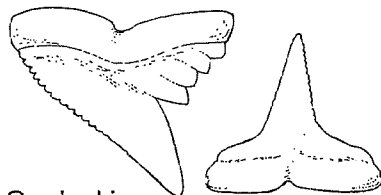
Leptocharias (Leptochariidae)



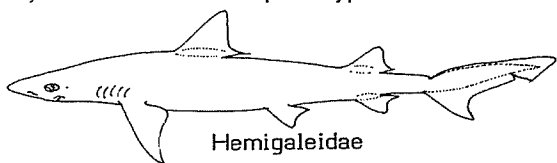
Galeorhinus (Triakidae)



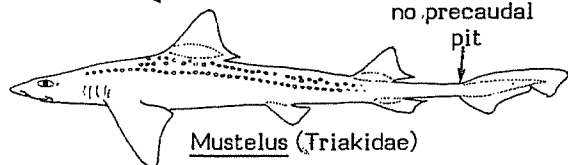
Mustelus (Triakidae)



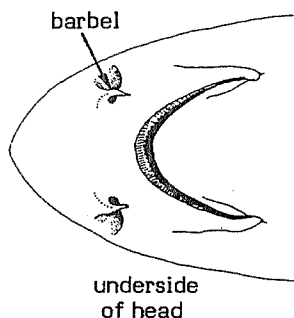
Carcharhinus signatus (Carcharhinidae)
representative teeth



Hemigaleidae

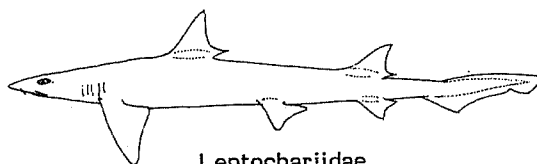


Mustelus (Triakidae)



barbel

underside of head



Leptochariidae



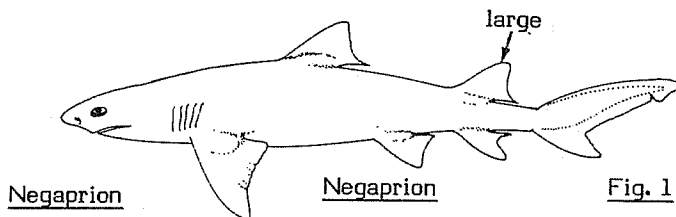
spiral valve of intestine (diagrammatic)

(Triakidae, Hemigaleidae, Leptochariidae)

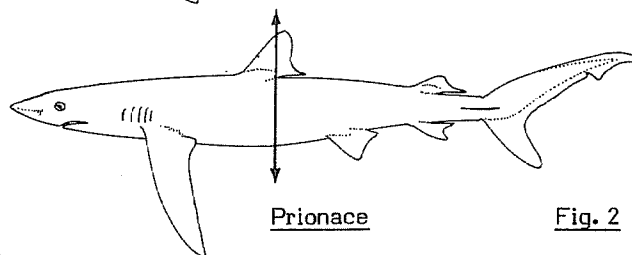
Other shark families: first dorsal fin base over or behind pelvic fin bases, lower caudal fin lobe not present, no precaudal pits (Scyliorhinidae); first dorsal fin low and keel-like and about as long as caudal fin (Pseudotriakidae); eyes without nictitating eyelids, gill slits entirely in front of pectoral fins (Odontaspidae, Mitsukurinidae and Pseudocarchariidae); oronasal grooves and nasal barbels present, eyes well behind mouth, second dorsal fin over pelvic fins (Ginglymostomatidae); caudal fin as long as rest of shark (Alopiidae); head with "hammer"-like lateral projections (Sphyrnidae); caudal fin lunate, caudal peduncle with a strong keel (Rhinochondontidae, Lamnidae, Cetorhinidae); a single dorsal fin and 6 or 7 gill slits (Hexanchidae, Chlamydoselachidae); or no anal fin (Squalidae, Echinorhinidae, Squatinidae).

KEY TO GENERA OCCURRING IN THE AREA :

1 a. Second dorsal fin almost as large as first (Fig. 1)



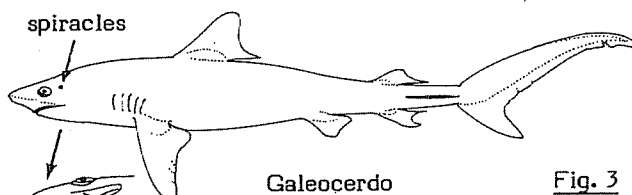
1 b. Second dorsal considerably smaller than first



2 a. First dorsal fin base considerably closer to pelvic fins than to pectoral fins (Fig. 2); inner gill slits with short gillrakers; back dark blue, fading to purple-black after death

Prionace

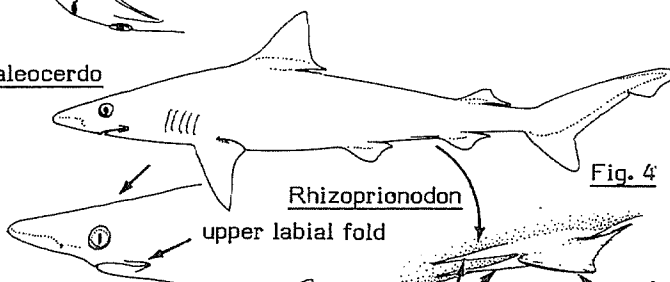
2 b. First dorsal fin base equidistant between pectoral and pelvic fins or (usually) closer to pectorals; no gillrakers; back grey, blue-grey, or brownish



3 a. Spiracles present; upper labial folds very long, reaching forward to beneath eyes; caudal peduncle with a low keel on each side (Fig. 3)

Galeocerdo

3 b. Spiracles absent; upper labial folds shorter, not reaching eyes; no keels on caudal peduncle

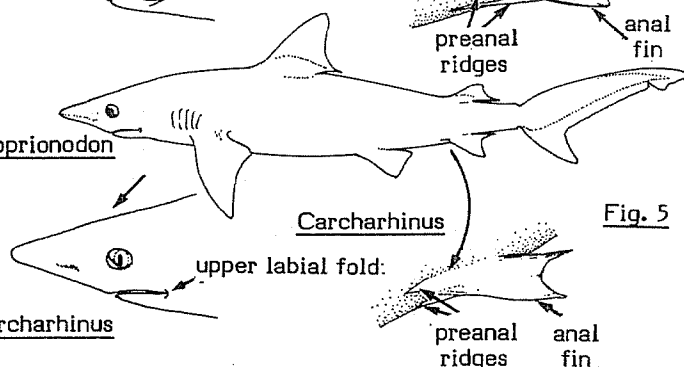


4 a. Upper labial folds long and prominent, horizontal on upper lip* (Fig. 4); anal fin base expanded anteriorly by a very long pair of preanal ridges

Rhizoprionodon

4 b. Upper labial folds short to rudimentary, almost vertical at mouth corners (Fig. 5); preanal ridges absent or very short

Carcharhinus



* Character only applying to the representative of the genus in the Eastern Central Atlantic

LIST OF SPECIES KNOWN FROM THE AREA :

Code numbers are given for those species for which Identification Sheets are included

<u>Carcharhinus altimus</u> (Springer, 1950)	CARCH Carch 2
<u>Carcharhinus amboinensis</u> (Müller & Henle, 1839)	CARCH Carch 14
* <u>Carcharhinus brachyurus</u> (Günther, 1870)	CARCH Carch 15
<u>Carcharhinus brevipinna</u> (Müller & Henle, 1839)	CARCH Carch 3
<u>Carcharhinus falciformis</u> (Bibron, in Müller & Henle, 1839)	CARCH Carch 4
<u>Carcharhinus galapagensis</u> (Snodgrass & Heller, 1905)	CARCH Carch 16
<u>Carcharhinus isodon</u> (Valenciennes, in Müller & Henle, 1839)*	CARCH Carch 5
<u>Carcharhinus leucas</u> (Valenciennes, in Müller & Henle, 1839)	CARCH Carch 6
<u>Carcharhinus limbatus</u> (Valenciennes, in Müller & Henle, 1839)	CARCH Carch 7
<u>Carcharhinus longimanus</u> (Poey, 1861)	CARCH Carch 8
<u>Carcharhinus obscurus</u> (LeSueur, 1818)	CARCH Carch 9
<u>Carcharhinus plumbeus</u> (Nardo, 1827)	CARCH Carch 11
<u>Carcharhinus signatus</u> (Poey, 1868)	CARCH Carch 13
<u>Galeocerdo cuvieri</u> (Peron & LeSueur, in LeSueur, 1822)	CARCH Gal 1
<u>Negaprion brevirostris</u> (Poey, 1868)**	CARCH Neg 1
<u>Prionace glauca</u> (Linnaeus, 1758)	CARCH Prion 1
<u>Rhizoprionodon acutus</u> (Rüppell, 1837)	CARCH Rhiz 3

KEY TO SPECIES OF THE GENUS Carcharhinus (GREY SHARKS) OCCURRING IN THE AREA :

This is a large genus with approximately 32 species, a good number of which are very difficult to identify. It occurs worldwide in warm-temperate and tropical marine waters and also in warm rivers and lakes with connections to the sea. It is the dominant shark genus in the tropics, both in terms of variety and abundance. Many are commercially important and make up a large percentage of the sharks taken in line and net fisheries in warmer waters. The distribution and general biology of most members of the genus in Fishing Area 34 is poorly known, and can be greatly elucidated by fisheries workers who become familiar with the species they encounter.

1 a. Upper anterior teeth with narrow cusps, well delimited from bases (Figs. 3,6,8,10)

2 a. Enlarged serrations or small cusplets on bases of upper teeth (Figs. 3,6); a dermal ridge present on back between dorsal fins (Fig. 1); free rear tip of second dorsal fin relatively elongated (Figs. 4,7)

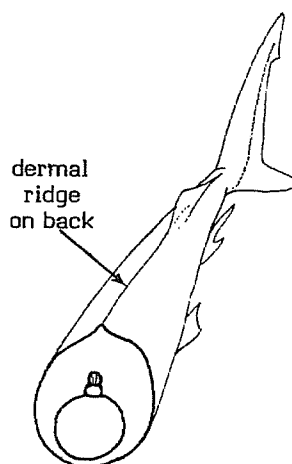
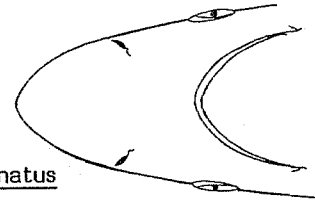


Fig. 1

* Both of these species require verification on their occurrence in the area

** The species of Negaprion in the area has always been assigned to the Western Atlantic and Eastern Pacific species N. brevirostris, but it needs to be verified that this is not the Indo-West Pacific N. acutidens (Rüppell, 1837). The two species differ in vertebral counts (N. acutidens has about 218 to 227 total centra, N. brevirostris about 200 to 206, presence of serrations on the tooth bases in adults (brevirostris serrated, acutidens not) and fin shape (acutidens with more falcate dorsal fins than brevirostris).

3 a. Snout very long and narrow (Fig. 2); cusps of upper teeth smooth or with weak serrations (Fig. 3); first dorsal fin origin about over inner margin or free rear tips of pectoral fins (Fig. 4) C. signatus

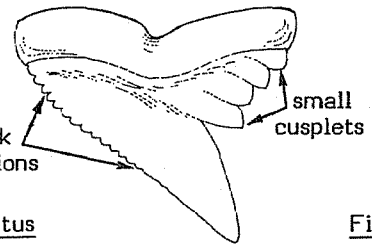


C. signatus

Fig. 2

ventral view

3 b. Snout shorter and relatively broad (Fig. 5); cusps of upper teeth strongly serrated (Fig. 6); first dorsal fin origin posterior to free rear tips of pectoral fins (Fig. 7) C. falciformis



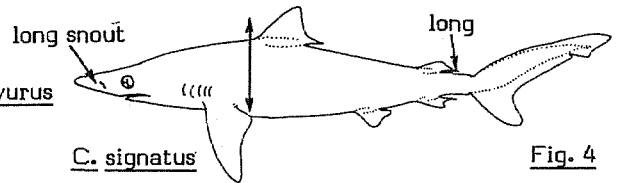
C. signatus

Fig. 3

upper tooth

2 b. No enlarged serrations or small cusplets on bases of upper teeth (Figs. 8,10); no dermal ridge on back (C. brachyurus occasionally has a weak ridge); free rear tip of second dorsal fin shorter, not greatly elongated (Figs. 9,11,12,13)

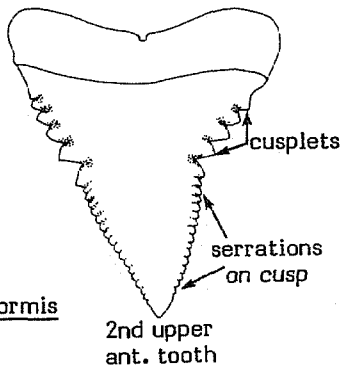
4 a. Upper teeth more asymmetrical, with flexed, oblique cusps (Fig. 8); snout more rounded; gill slits relatively short (Fig. 9) C. brachyurus



C. signatus

Fig. 4

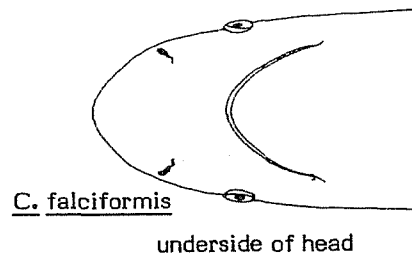
4 b. Upper teeth more symmetrical, with straight, more erect cusps (Fig. 10); snout more pointed; gill slits relatively longer (Figs. 11,12,13)



C. falciformis

Fig. 6

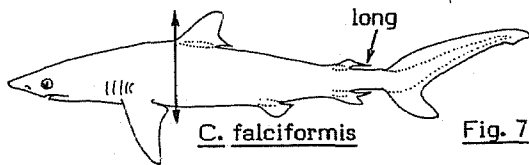
2nd upper ant. tooth



C. falciformis

Fig. 5

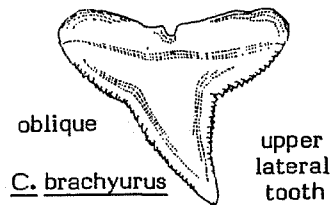
underside of head



C. falciformis

Fig. 7

long

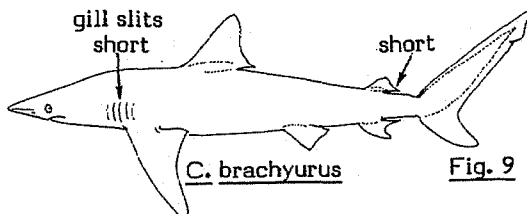


C. brachyurus

Fig. 8

oblique

upper lateral tooth

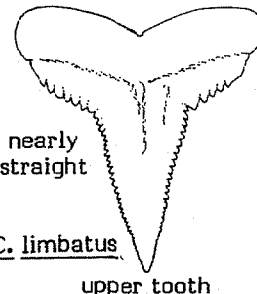


C. brachyurus

Fig. 9

gill slits short

short



C. limbatus

Fig. 10

nearly straight

upper tooth

5 a. First dorsal fin lower, its height over 2.2 times in the space between dorsal fin bases; first dorsal fin origin over or just behind free rear tips of pectoral fins (Fig. 11)

C. brevipinna

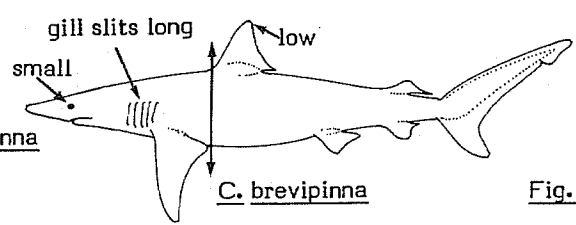


Fig. 11

5 b. First dorsal fin higher, its height less than 2.2 times in the space between dorsal fin bases; first dorsal fin origin over or just behind pectoral fin insertions (Figs. 12,13)

6 a. Teeth with smooth edges in both jaws, except for weakly and irregularly serrated upper teeth of adults; gill slits extremely long, longest about half of first dorsal fin base; no black tips on fins (Fig. 12)

C. isodon

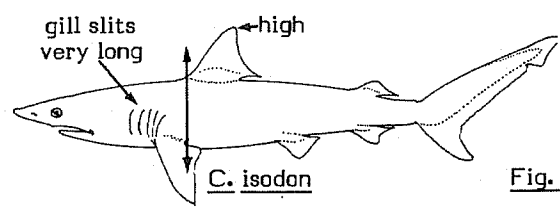


Fig. 12

6 b. Teeth serrated in both jaws; gill openings shorter, much less than half of first dorsal fin base; some fins with black tips (Fig. 13)

C. limbatus

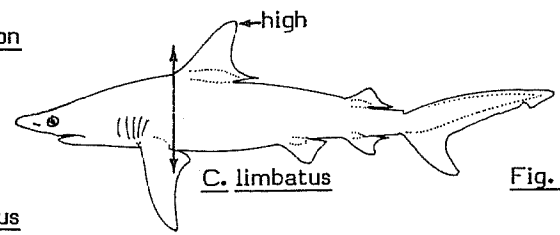
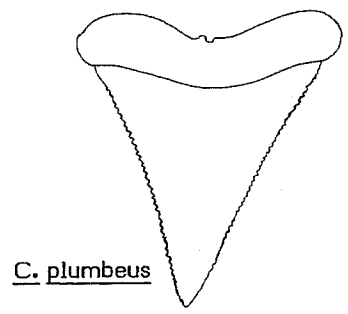


Fig. 13

1 b. Upper anterior teeth with broadly triangular cusps, not well delimited from bases (Fig. 14)

7 a. Pectoral and first dorsal fins very broad distally and broadly rounded apically; free rear tip of anal fin nearly reaches lower caudal fin origin (Fig. 15)

C. longimanus



C. plumbeus

Fig. 14

2nd upper ant. tooth

7 b. Pectoral and first dorsal fins narrower distally and narrowly rounded to pointed apically; free rear tip of anal fin falling well in front of lower caudal fin origin (Figs. 18,19,20,21,24, 25)

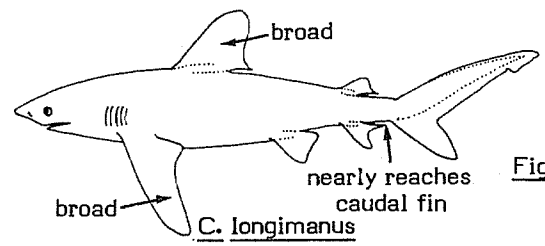
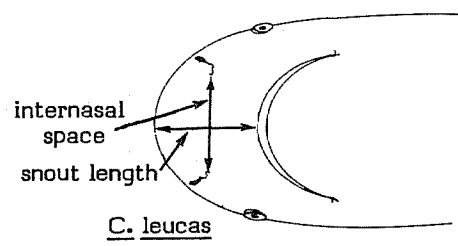


Fig. 15

8 a. Snout very short, its length about equal to, or less than the internasal space (Fig. 16); no interdorsal ridge; bases of lower anterior lateral teeth strongly arched (Fig. 17a)



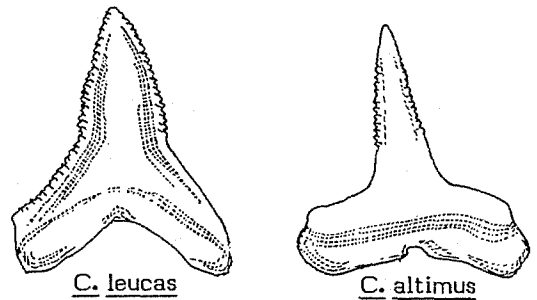
C. leucas

Fig. 16

ventral view of head

9 a. First dorsal fin relatively lower and second dorsal fin higher, first dorsal fin less than 3.2 times the height of second dorsal (Fig. 18) C. leucas

9 b. First dorsal fin relatively higher and second dorsal fin lower, first dorsal 3.2 times or more the height of second dorsal (Fig. 19) C. amboinensis



lower teeth Fig. 17

8 b. Snout relatively longer, its length greater than the internasal space (Fig. 23); interdorsal ridge present; bases of lower anterolateral teeth usually not strongly arched but nearly straight (Fig. 17b) (occasionally more strongly arched in large individuals of C. obscurus)

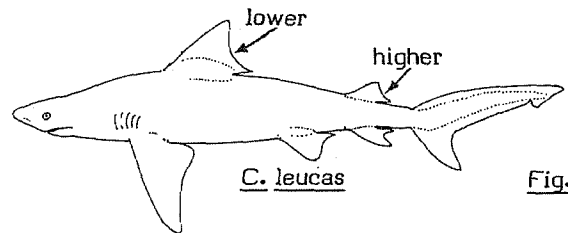


Fig. 18

10 a. Origin of first dorsal fin over or anterior to pectoral fin insertions; first dorsal fin very high, its height about half the distance from snout tip to its origin (Fig. 20) C. plumbeus

10 b. Origin of first dorsal fin posterior to pectoral fin insertions; height of first dorsal fin considerably less than half the distance from snout tip to its origin (Figs. 21,24,25)

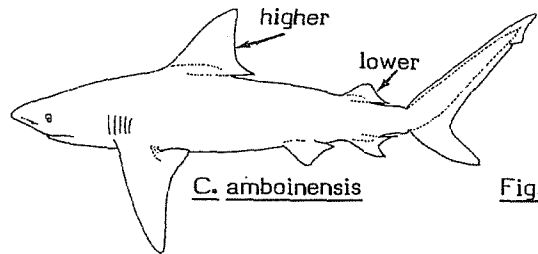


Fig. 19

11 a. First dorsal fin lower, with a more rounded anterior margin; pectoral fins more falcate; second dorsal fin relatively low, with a nearly straight posterior margin (Fig. 21); upper teeth relatively broader and lower (Fig. 22a) C. obscurus

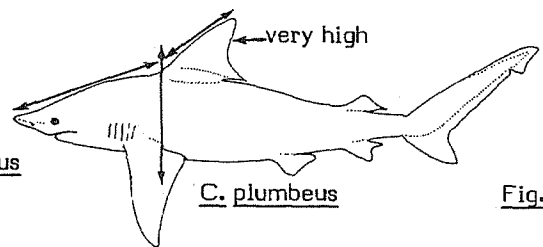


Fig. 20

11 b. First dorsal fin higher, with a nearly straight anterior margin; pectoral fins nearly straight, not very falcate; second dorsal fin relatively high, with a more concave posterior margin (Figs. 24,25); upper teeth relatively narrower and higher (Figs. 22b,c)

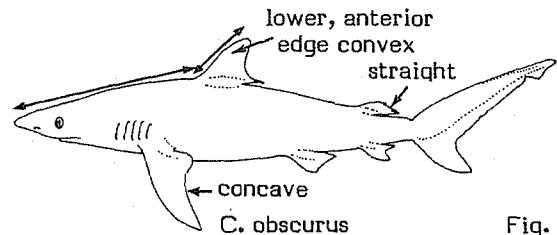


Fig. 21

12 a. Anterior nasal flaps usually very prominent; snout longer, distance from nostrils to mouth less than 2.4 times in mouth width (Fig. 23a); interdorsal ridge very prominent C. altimus (Fig. 24)

12 b. Anterior nasal flaps rudimentary; snout shorter, distance from nostrils to mouth more than 2.4 times in mouth width (Fig. 23b); interdorsal ridge less prominent C. galapagensis (Fig. 25)

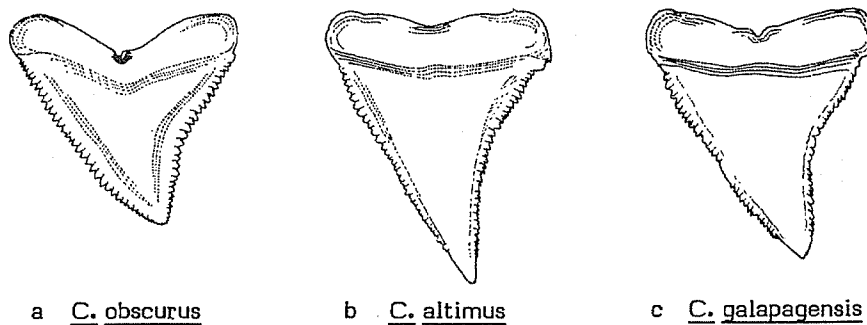


Fig. 22

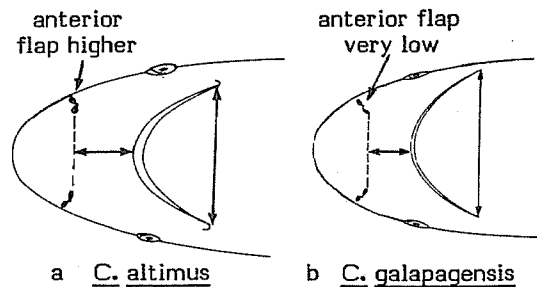


Fig. 23

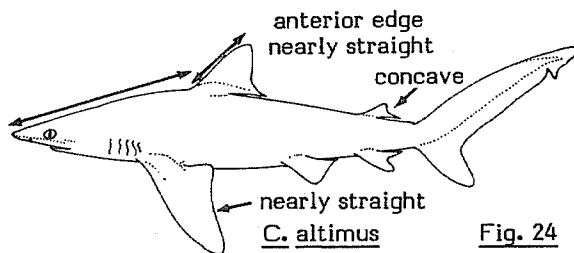


Fig. 24

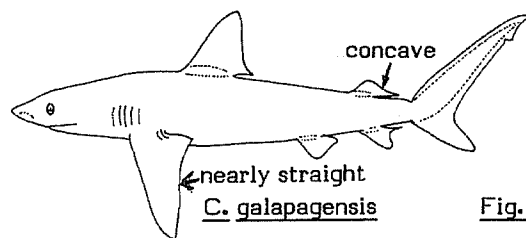


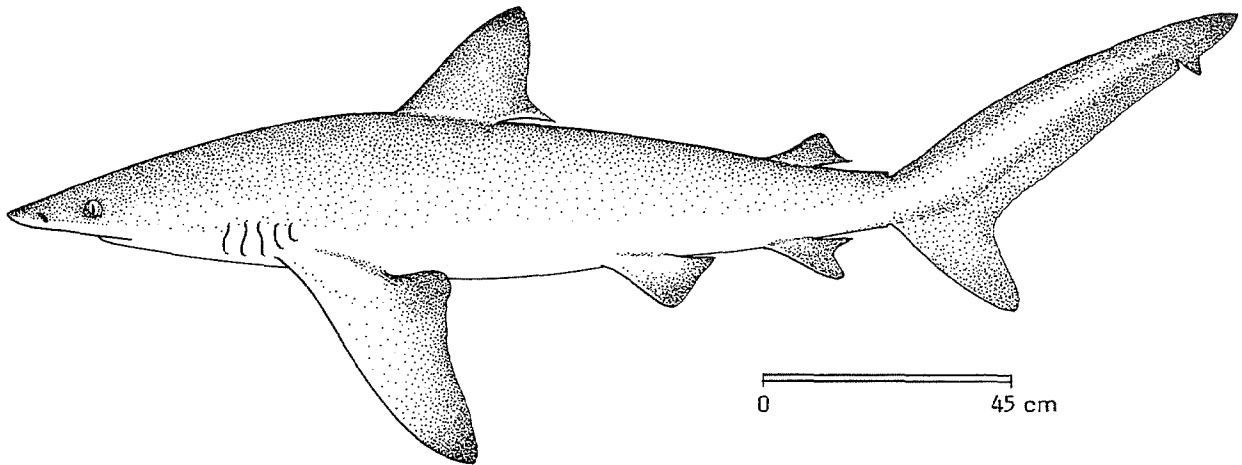
Fig. 25

FAO SPECIES IDENTIFICATION SHEETS

FAMILY : CARCHARHINIDAE

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)*Carcharhinus altimus* (Springer, 1950)

OTHER SCIENTIFIC NAMES STILL IN USE : None



VERNACULAR NAMES:

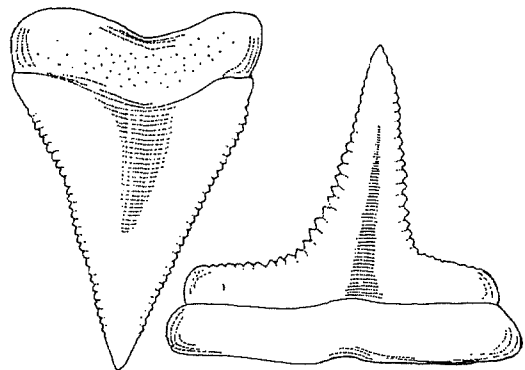
FAO : En - Bignose shark
 Fr - Requin babosse (= Réquiem babosse, Area 31)
 Sp - Tiburón baboso

NATIONAL :

DISTINCTIVE CHARACTERS :

Body slender. Snout rounded and rather long, its length about equal to, or greater than, mouth width, and greater than internasal space; labial folds very short; anterior nasal flaps expanded as low, broadly triangular lobes; spiracles absent; teeth with serrated edges, upper teeth broadly triangular and erect in front of mouth, progressively oblique posteriorly; teeth in lower jaw erect and narrow-cusped. First dorsal fin moderately high with a narrowly rounded apex, its origin over inner margins of pectoral fins; origin of second dorsal fin about opposite anal fin origin; second dorsal fin high, its inner margin less than 1.5 times the fin height; pectoral fins long and not strongly falcate. A high dermal ridge present between dorsal fins.

Colour: back greyish; belly whitish; inner corners of pectoral fins blackish.



upper tooth and lower tooth

near centre

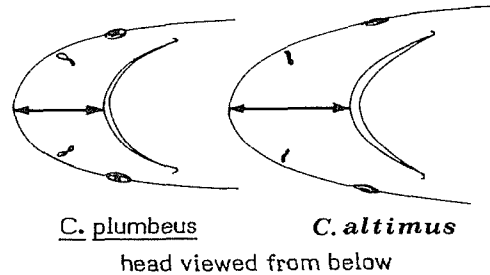
DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA :

Carcharhinus plumbeus: snout shorter; first dorsal fin higher.

C. galapagensis: snout shorter, interdorsal ridge lower, anterior nasal flaps rudimentary.

C. obscurus: snout shorter, interdorsal ridge lower, teeth lower, first dorsal fin more convex in front, second dorsal fin lower and with a nearly straight posterior edge, pectoral fins more falcate.

Other species of Carcharhinus: separated from C. altimus by one or more of the following characters: no interdorsal ridge, narrow-cusped upper teeth, broad, rounded tips to pectoral and first dorsal fins; origin of first dorsal fin over or behind free rear tips of pectoral fins; second dorsal fin low, its inner margin about twice the fin height; anterior nasal flaps rudimentary.



SIZE :

Maximum: 300 cm; common to 240 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR :

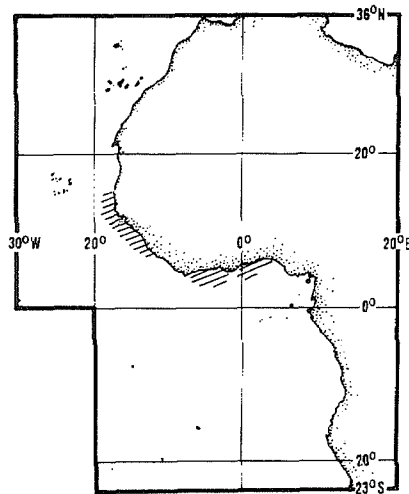
In the area, off Senegal, Gambia, Sierra Leone, Ivory Coast, and Ghana. Widespread in the Atlantic, Pacific, and Indian Oceans but sporadically recorded, probably because it has a deeper habitat than most other Carcharhinus species.

Usually found in the deeper areas of the continental shelf, near the slope, between 80 and 220 m; rare in shallow waters.

Feeds chiefly on fishes and cephalopods.

PRESENT FISHING GROUNDS :

Probably taken only occasionally as bycatch.



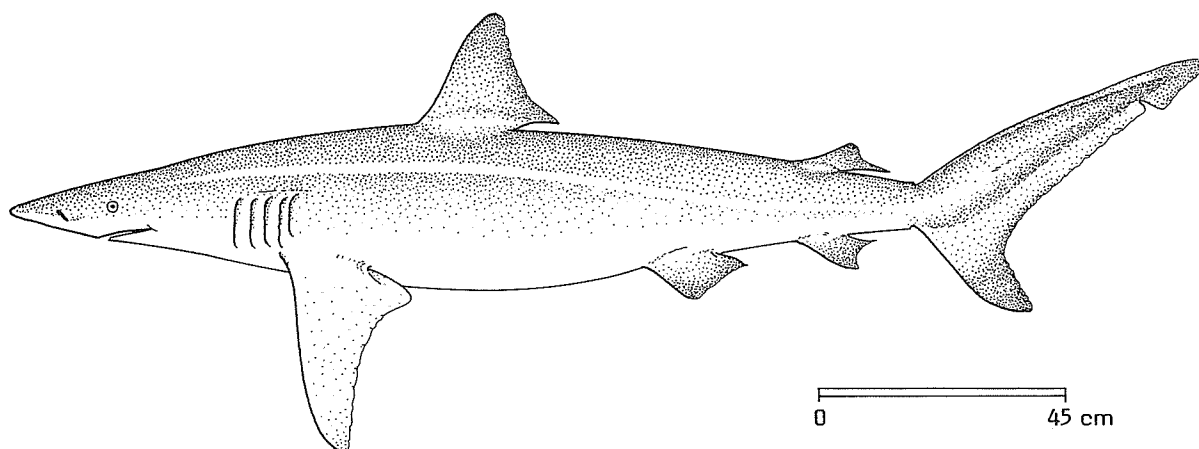
CATCHES, FISHING GEAR AND FORMS OF UTILIZATION :

Separate statistics are not reported for this species.

Methods of capture and utilization unrecorded.

FAO SPECIES IDENTIFICATION SHEETS

FAMILY : CARCHARHINIDAE

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)Carcharhinus brevipinna (Müller & Henle, 1839)OTHER SCIENTIFIC NAMES STILL IN USE : Carcharhinus maculipinnis (Poey, 1865)
Aprionodon caparti Poll, 1951

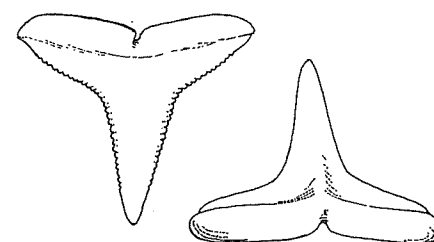
VERNACULAR NAMES:

FAO : En - Spinner shark
Fr - Requin tisserand (= Réquiem tisserand, Area 31)
Sp - Tiburón aleta negra

NATIONAL :

DISTINCTIVE CHARACTERS :

Body slender. Snout pointed and long, its length equal to or greater than mouth width and greater than internasal space; labial folds short, but usually the upper pair longer and more prominent than in other Carcharhinus species from the area; anterior nasal flaps rudimentary, very low; upper and lower teeth nearly symmetrical and very similar, with mostly erect, very narrow cusps; uppers with entirely or partly serrated edges, lowers smooth; gill slits relatively long. First dorsal fin with a narrowly rounded apex, its origin above or slightly behind free rear tips of pectoral fins; second dorsal fin high, its inner margin less than twice the height of fin, its origin about over that of anal fin; pectoral fins falcate and with pointed tips. No dermal ridge between dorsal fins.



upper tooth and lower tooth
near centre

Colour: grey on back, white below, with a conspicuous white band on sides. Second dorsal, anal, undersides of pectorals and lower caudal fin lobe black or dark grey-tipped in subadults and adults, but unmarked or nearly so in small individuals (below 1 m).

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA :

Carcharhinus limbatus: body stouter, eyes larger, first dorsal fin larger and more anterior, its origin over pectoral fin insertions or just behind them.

C. isodon: snout shorter, more wedge-shaped; upper teeth smooth-edged or weakly serrated; origin of first dorsal fin over or just behind pectoral fin insertions.

Other Carcharhinus species: either differently shaped teeth (more oblique or broadly triangular) or an interdorsal ridge present.

SIZE :

Maximum: 280 cm (mature adults); common to 250 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR :

Probably widespread in the area, but records are spotty due to lack of information from many coastal countries. Within the area, known from Senegal, the Cape Verde Islands, Guinea and Sierra Leone, possibly also Togo, Nigeria and Angola. A wide-ranging, nearly circumtropical species found in the Western and Eastern Atlantic and the Mediterranean, Indian Ocean, and Western Pacific, but apparently absent from the Eastern Pacific.

An active, fast-swimming shark, often making vertical spinning leaps out of the water, as a feeding technique in which the shark spins through a school of small fish with open mouth and then breaks the surface. Viviparous, number of embryos about 6 to 15. Size at birth about 60 to 75 cm.

Feeds mostly on small schooling fishes, also squid, small sharks and rays.

PRESENT FISHING GROUNDS :

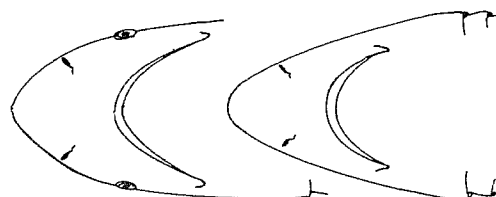
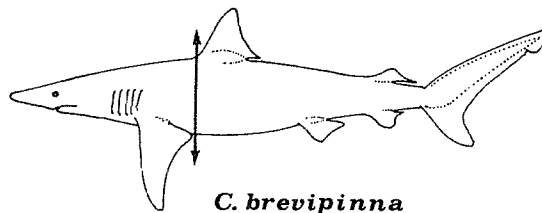
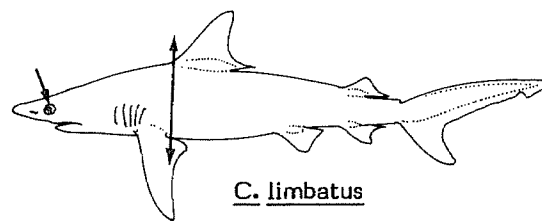
Offshore waters, probably also inshore.

CATCHES, FISHING GEAR AND FORMS OF UTILIZATION :

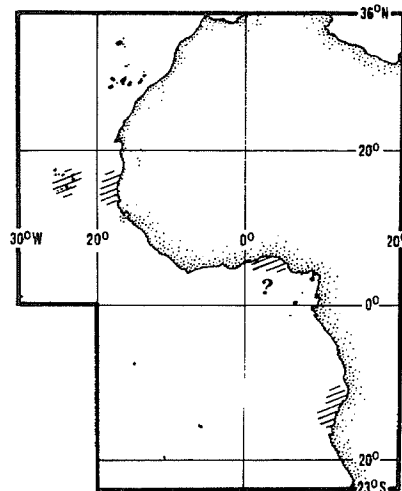
Separate statistics are not reported for this species.

Caught with pelagic trawls, probably also gillnets and longlines.

Utilized fresh.

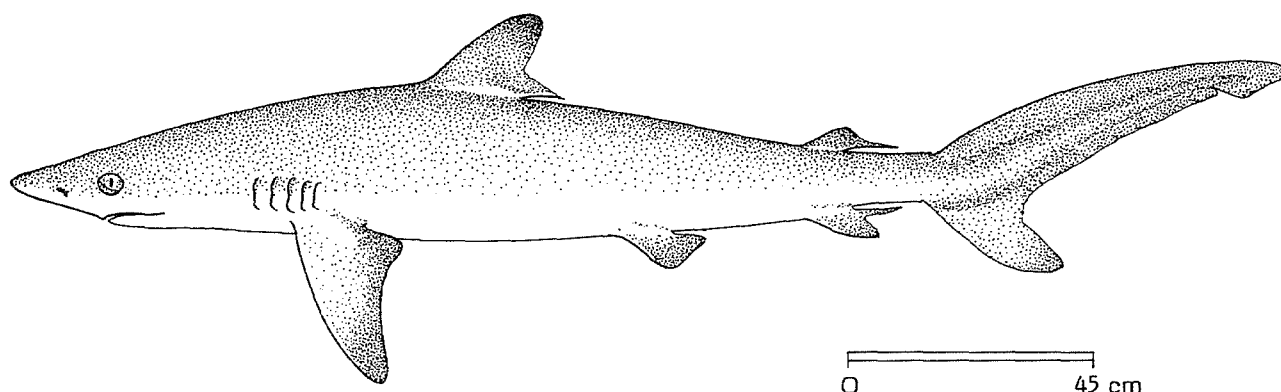


C. isodon C. brevipinna
underside of head



FAO SPECIES IDENTIFICATION SHEETS

FAMILY: CARCHARHINIDAE

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)Carcharhinus falciformis (Bibron, in Müller & Henle, 1839)OTHER SCIENTIFIC NAMES STILL IN USE: Carcharhinus floridanus (Bigelow, Schroeder & Springer, 1943)

VERNACULAR NAMES:

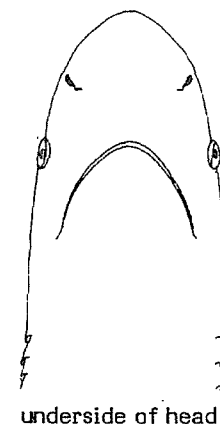
FAO: En - Silky shark
Fr - Requin soyeux (= Réquiem soie, Area 31)
Sp - Tiburón jaquetón

NATIONAL:

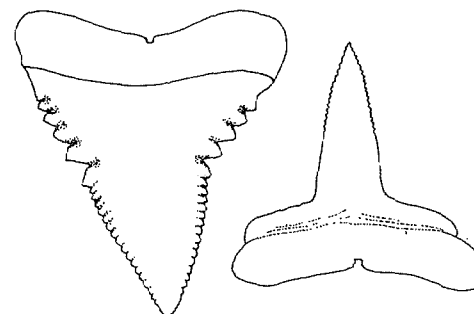
DISTINCTIVE CHARACTERS:

Body elongate and slender. Snout narrowly rounded, moderately long, equal to or slightly shorter than mouth width, but longer than internasal space; labial folds very short; anterior nasal flaps low, rudimentary; spiracles absent; upper teeth with relatively narrow cusps well delimited from the heavy, serrated bases, their outer edges notched; teeth in lower jaw erect, their edges only slightly serrated. First dorsal fin moderately high, its apex rounded, its origin behind the free rear tips of pectoral fins; second dorsal fin very low, its posterior lobe noticeably long and slender, its inner margin twice the height of fin; origin of second dorsal fin about over that of anal fin; pectoral fins long and falcate, more so in adults than in young; a dermal ridge present between the dorsal fins.

Colour: back dark grey, greyish brown or bluish black (in life); belly greyish or white.



underside of head



upper tooth and lower tooth

near centre

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA :

The combination of characters such as the long and slender body, the distinctive teeth, the long and falcate pectoral fins, the position of first dorsal fin origin behind the free rear tips of pectoral fins, the presence of a mid-dorsal ridge and the very low second dorsal fin with a conspicuously long posterior lobe, readily distinguish this species from other carcharhinid sharks occurring in the area.

SIZE :

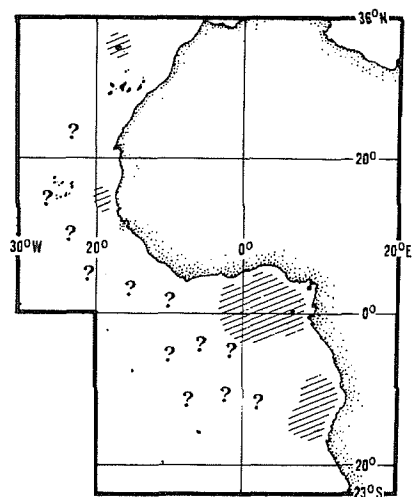
Maximum: 350 cm; common to 250 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR :

From Madeira and Senegal southward to Angola and northward to Spain. Abundant in the Gulf of Guinea, and one of the most common tropical pelagic sharks in Fishing Area 34. Elsewhere it occurs in the Western Atlantic from Delaware Bay and Bermuda (rare) to southern Brazil; also, in the tropical Indo-Pacific and Eastern Pacific.

Inhabits oceanic waters near and beyond the continental slope, but it is also found in coastal waters. Lives usually near the surface, but occurs sometimes at considerable depths (to 500 m). Viviparous, number of embryos from 2 to 11.

Feeds chiefly on fishes (including tunas) and on squids; also on crabs. Very quick in its movements, it often causes damage to the catch and gear in tuna fisheries.



PRESENT FISHING GROUNDS :

Caught mainly offshore near the continental slope and in coastal waters.

CATCHES, FISHING GEAR AND FORMS OF UTILIZATION :

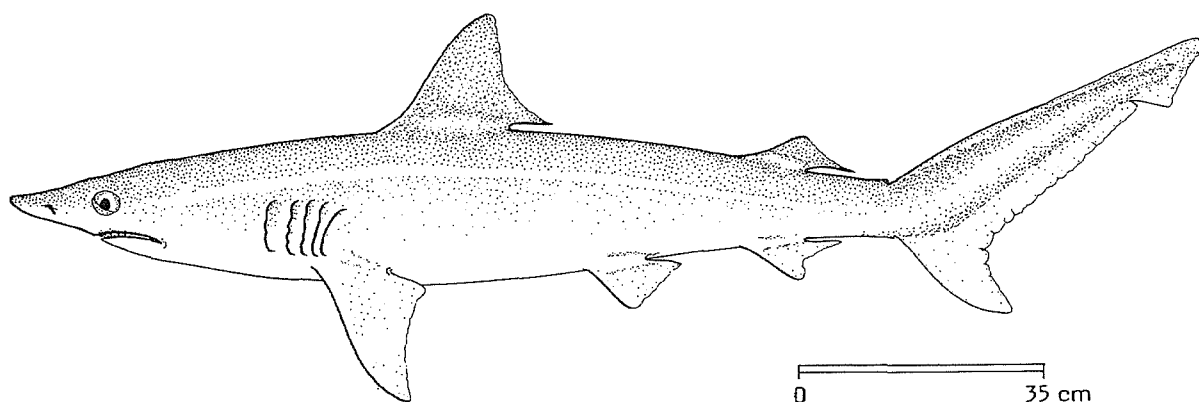
Separate statistics are not reported for this species.

Caught mainly with floating longlines; also with bottom nets.

The skin is used in the preparation of various subproducts; the liver oil is rich in Vitamin A. The meat is utilized fresh and dried salted. Reported to be dangerous to man.

FAO SPECIES IDENTIFICATION SHEETS

FAMILY : CARCHARHINIDAE

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)Carcharhinus isodon (Valenciennes, in Müller & Henle, 1839)OTHER SCIENTIFIC NAMES STILL IN USE : Aprionodon isodon (Valenciennes, in Müller & Henle, 1839)

VERNACULAR NAMES:

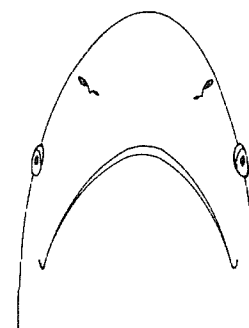
FAO : En - Finetooth shark
 Fr - Requin à petits dents (= Réquiem dent lisse, Area 31)
 Sp - Tiburón dentiliso

NATIONAL :

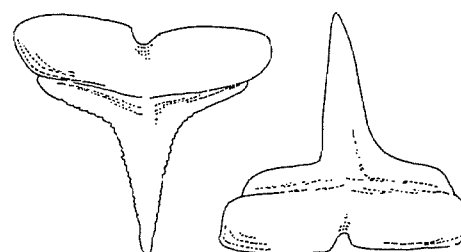
DISTINCTIVE CHARACTERS :

Body relatively slender. Snout pointed and moderately long, its length less than mouth width and greater than internasal space; labial folds short; anterior nasal flaps rudimentary; upper and lower teeth nearly symmetrical and very similar, with mostly erect, very narrow cusps; uppers either smooth-edged or weakly and irregularly serrated (in adults), lowers smooth; gill slits long. First dorsal fin with a narrowly rounded or pointed apex, its origin over or just behind pectoral fin insertions; origin of second dorsal fin about opposite that of anal fin; second dorsal fin high, its inner margin much less than twice the fin height; pectoral fins falcate. No dermal ridge between dorsal fins.

Colour: blue-grey on back, greyish on sides, white below, with a white band on sides; fins not black-tipped.



underside of head



upper tooth and lower tooth

near centre

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA :

Carcharhinus limbatus: body stouter, gill slits shorter, upper teeth strongly serrated, lowers finely serrated, fins black-tipped.

C. brevipinna: body more slender, snout longer, eyes much smaller, gill slits somewhat shorter, first dorsal fin origin more posterior, over or behind free rear tips of pectorals; black tips on fins of larger individuals.

Other species of Carcharhinus: upper teeth with strong serrations or basal cusplets, gill slits shorter.

SIZE :

Maximum: about 189 cm, possibly to 2 m, maturing at about 137 to 150 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR :

In the area, reported from off Senegal and Guinea-Bissau, but its occurrence needs confirmation. Elsewhere, off the Atlantic coast of North America from New York to southern Brazil.

An uncommon, little-known, coastal schooling species. Viviparous, 1 to 6 embryos, size at birth about 48 cm.

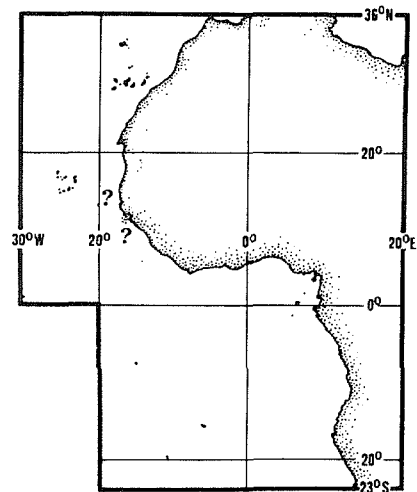
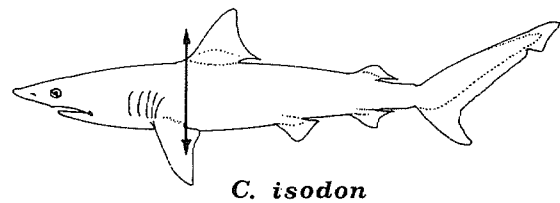
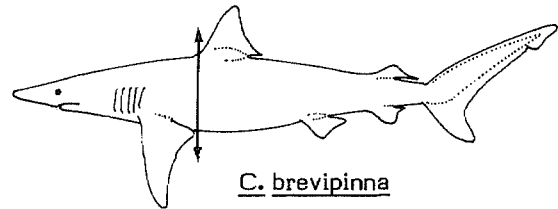
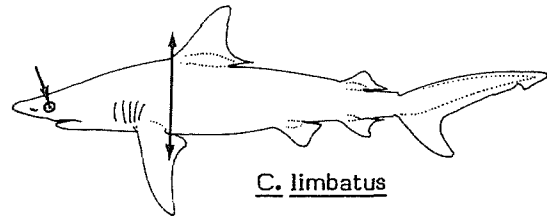
PRESENT FISHING GROUNDS :

Probably taken only occasionally as bycatch.

CATCHES, FISHING GEAR AND FORMS OF UTILIZATION :

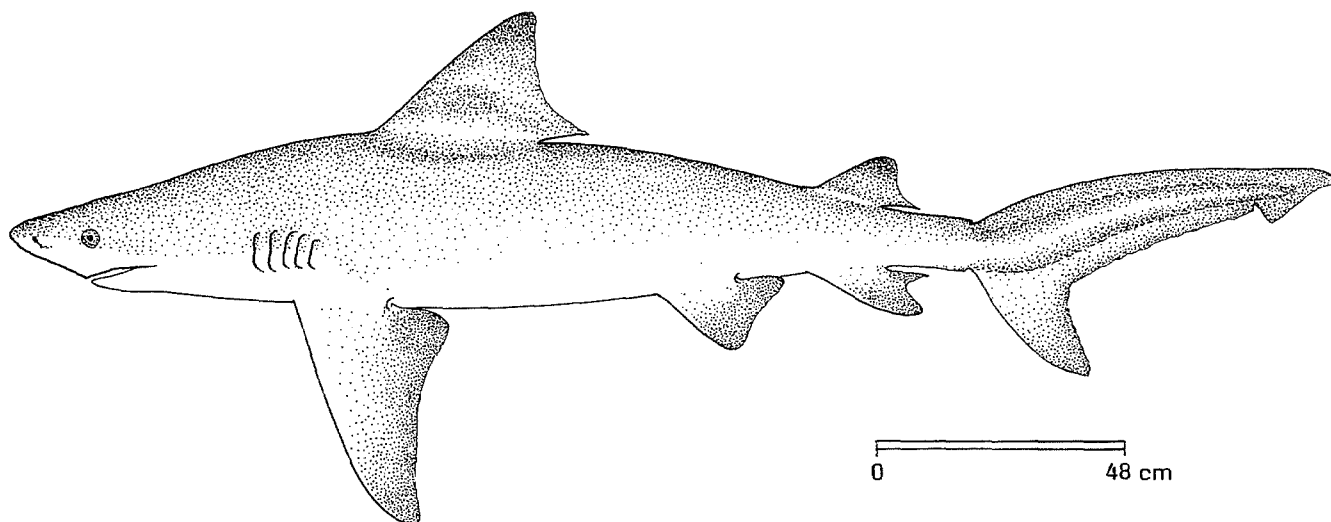
Separate statistics are not reported for this species.

No information available on fishing gear or utilization.



FAO SPECIES IDENTIFICATION SHEETS

FAMILY: CARCHARHINIDAE

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)Carcharhinus leucas (Valenciennes, in Müller & Henle, 1839)OTHER SCIENTIFIC NAMES STILL IN USE: Carcharhinus nicaraguensis (Gill & Bransford, 1877)

VERNACULAR NAMES:

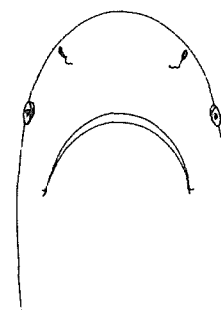
FAO: En - Bull shark
Fr - Requin bouledogue (= Réquiem taureau, Area 31)
Sp - Tiburón sarda (= Lamia)

NATIONAL:

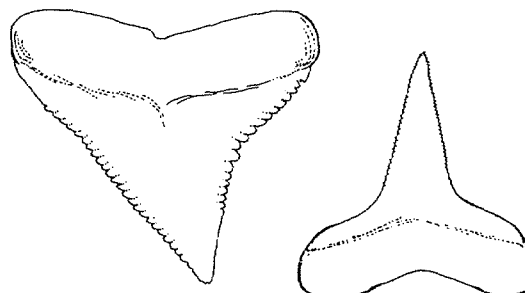
DISTINCTIVE CHARACTERS:

Body moderately stout. Snout very broadly rounded and extremely short, its length less than distance between nostrils, and much less than mouth width; labial folds very short; spiracles absent; nostrils with a low, broadly triangular anterior nasal flap; teeth in upper jaw triangular, with broad, heavy, serrated cusps, their outer edges nearly straight in anterior teeth, but becoming increasingly concave to the sides; lower teeth with erect to slightly oblique, heavy cusps with serrated edges and strongly arched bases. First dorsal fin high and broad with a pointed or slightly rounded apex, its origin a little in advance of insertion of pectoral fins; second dorsal fin high with a short posterior lobe, its inner margin less than the fin height, and its origin slightly in front of that of anal fin; pectoral fins broad, with narrow pointed tips. No dermal ridge between dorsal fins.

Colour: back greyish, belly white; tips of fins dark, especially in young individuals.



underside of head



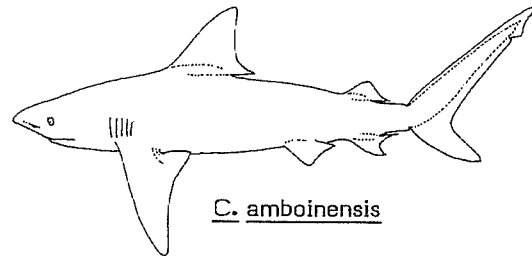
upper tooth and lower tooth

near centre

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA :

Carcharhinus amboinensis: very similar to C. leucas, but differs in having a higher first dorsal fin and a lower second dorsal (first dorsal at least 3.2 times higher than second dorsal) and fewer vertebral centra (89 to 95 against 109 to 120 in C. leucas).

Other species of Carcharhinus in the area with broad, triangular upper teeth: first dorsal fin and pectoral fins with broadly rounded tips (C. maou); snout longer, bases of lower teeth usually not arched, and interdorsal ridge present (C. plumbeus, C. obscurus, C. altimus, C. galapagensis).



SIZE :

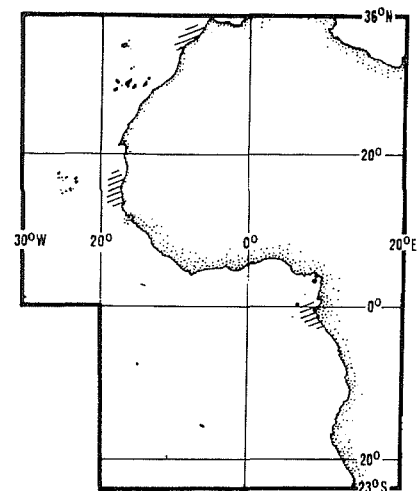
Maximum: 350 cm; common to 260 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR :

For Fishing Area 34 spotty reports of the species from Morocco, Senegal, Gambia, Ivory Coast and Gabon, but it is probably widespread. Being apparently circum-tropical, it is also found in the Atlantic, Indo-Pacific and Eastern Pacific.

Predominantly a coastal species inhabiting shallow waters, especially in bays and river estuaries. It tolerates a wide range of salinities, penetrating far up rivers and also into hypersaline bays. Usually sluggish in its movements, this bottom-living shark may however develop great speed when chasing its prey. Viviparous, number of embryos up to 12, size at birth to 60 cm. The young are more abundant in brackish waters.

Feeds on fishes, including mackerels and tunas, smaller sharks, rays, invertebrates (crabs, shrimps, sea urchins, etc.) and carrion.



PRESENT FISHING GROUNDS :

Coastal waters (estuaries, bays, straits between islands) throughout its range. More rarely offshore.

CATCHES, FISHING GEAR AND FORMS OF UTILIZATION :

Separate statistics are not reported for this species.

Caught mainly with longlines (? hook and line).

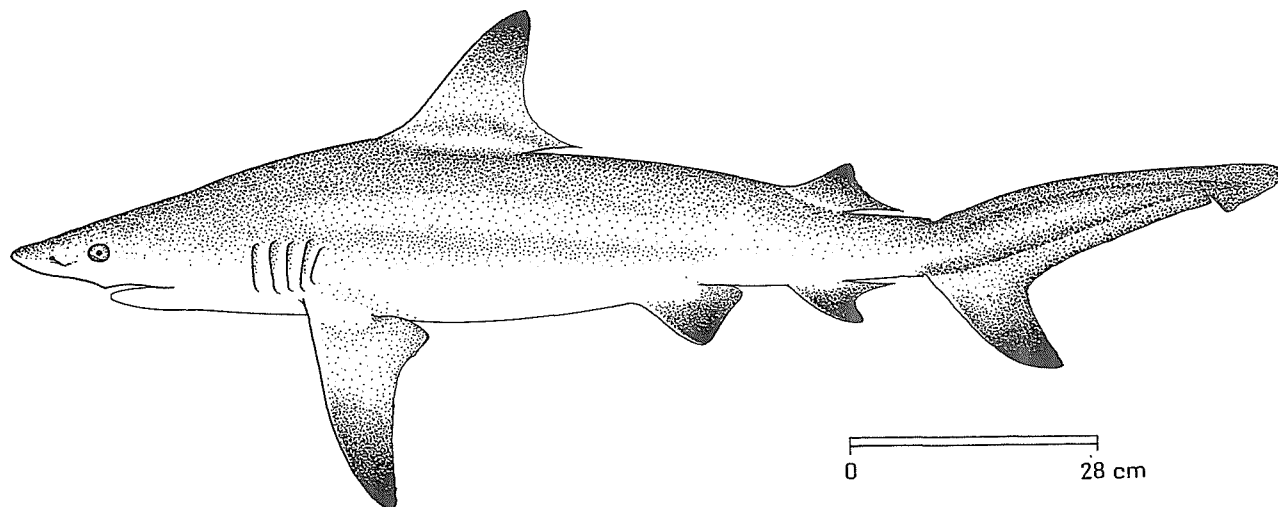
This species is utilized, at least in part, smoked. Reported to be dangerous to man.

FAO SPECIES IDENTIFICATION SHEETS

FAMILY : CARCHARHINIDAE

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)Carcharhinus limbatus (Valenciennes, in Müller & Henle, 1839)

OTHER SCIENTIFIC NAMES STILL IN USE : None



VERNACULAR NAMES:

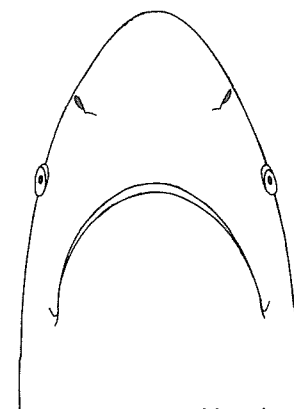
FAO : En - Blacktip shark
 Fr - Requin bordé (= Réquiem macuire, Area 31)
 Sp - Tiburón macuira

NATIONAL :

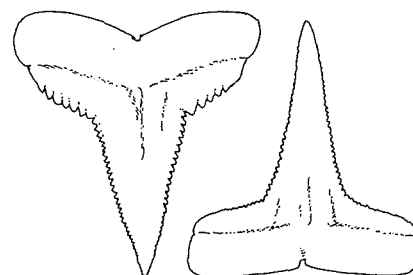
DISTINCTIVE CHARACTERS :

Body fusiform, moderately slender. Snout long, about equal to, or slightly less than mouth width, greater than distance between nostrils, its tip narrowly rounded to pointed; labial folds short; spiracles absent; upper and lower teeth nearly symmetrical and similar, with erect, narrow cusps and serrated edges; gill slits moderately long. First dorsal fin with a pointed or very narrowly rounded apex, its origin above, or slightly posterior to insertion of pectoral fins; second dorsal fin high, its inner margin less than twice the height of fin, and its origin over or slightly in front of that of anal fin; pectoral fins falcate. No dermal ridge between dorsal fins.

Colour: back dark grey, ashy blue or dusky bronze; belly white or yellowish white. A dark band extending rearward along each side to about over origin of pelvic fin; tips of pelvic fins with a persistent black spot; tips of dorsals, anal, pectorals and the lower lobe of caudal fin usually black or dusky in young individuals, but these markings fade with growth.



underside of head



upper tooth and lower tooth

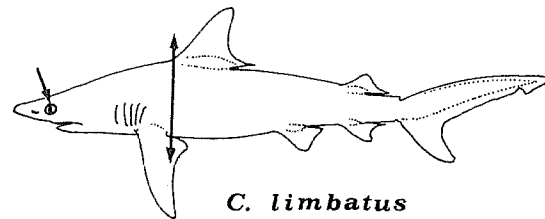
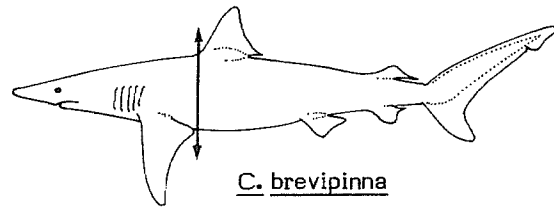
near centre

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA :

Carcharhinus brevipinna: body shorter, origin of first dorsal fin usually a little posterior to free rear tips of pectoral fins; teeth in lower jaw with smooth edges; upper labial folds longer than in other Carcharhinus species; eyes smaller, snout larger.

C. isodon: teeth smooth-edged or uppers weakly serrated; no black spots on fins; snout shorter; gill slits longer.

The combination of characters such as the moderately long snout, the narrow and erect-cusped, serrated teeth, the absence of a mid-dorsal ridge, the presence of a persistent black spot on tips of pelvic fins and a dark band on sides readily distinguishes C. limbatus from other carcharhinid sharks occurring in the area.



SIZE :

Maximum: 247 cm; common to 150 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR :

In the area, reported from the Canary Islands, Madeira and from Senegal to Zaire. A wide-ranging circumtropical and subtropical species found also in the Mediterranean, the Western Atlantic, the Indian Ocean, and the Western Central and Eastern Pacific.

Inhabits coastal as well as offshore surface waters. A fast-moving shark sometimes leaping out of the water. Occasionally enters brackish waters. Viviparous, number of embryos ranging from 1 to 10, size at birth about 60 cm.

Feeds mainly on small schooling fishes; also on rays and squids.

PRESENT FISHING GROUNDS :

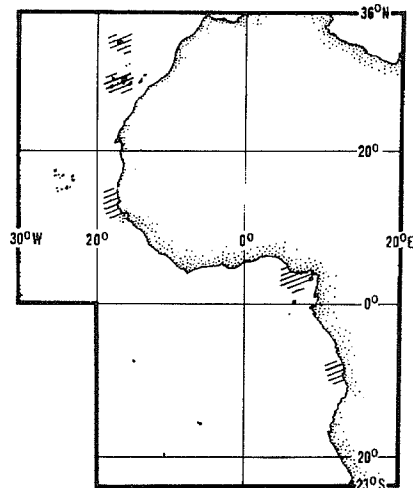
Inshore, as well as offshore waters.

CATCHES, FISHING GEAR AND FORMS OF UTILIZATION :

Separate statistics are not reported for this species.

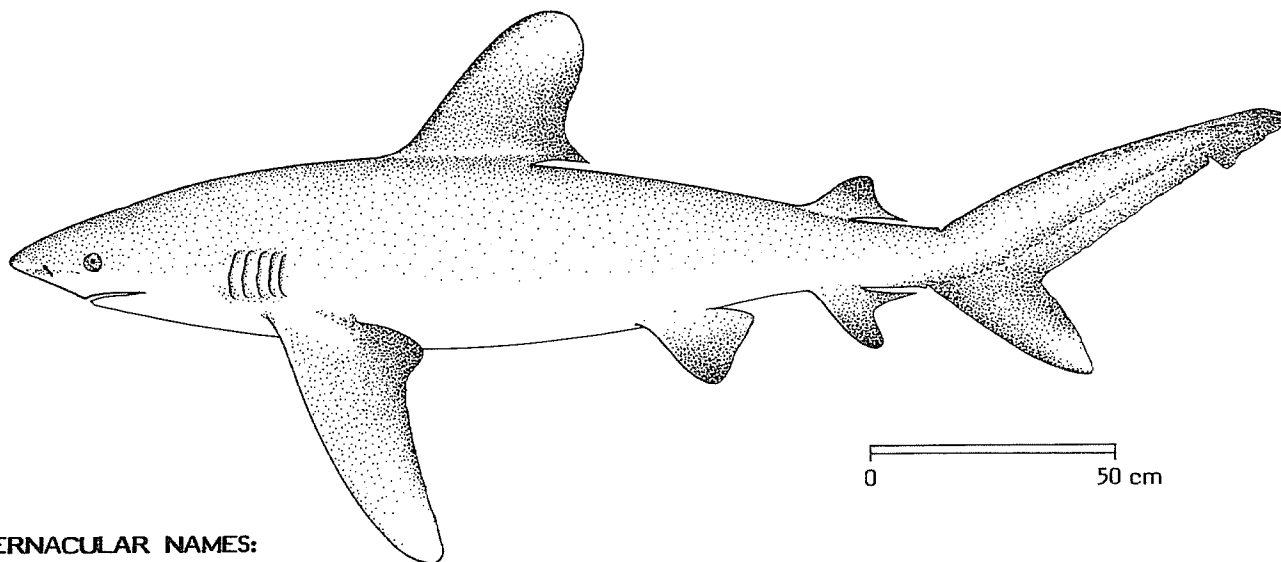
Caught with floating longlines, fixed bottom nets, and on hook and line.

Marketed fresh and dried salted.



FAO SPECIES IDENTIFICATION SHEETS

FAMILY : CARCHARHINIDAE

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)Carcharhinus longimanus (Poey, 1861)OTHER SCIENTIFIC NAMES STILL IN USE : Carcharhinus maou (Lesson, 1830)*

VERNACULAR NAMES:

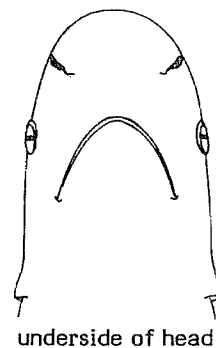
FAO : En - Oceanic whitetip shark
Fr - Requin océanique (= Réquiem océanique, Area 31)
Sp - Tiburón oceánico (= Lamia)

NATIONAL :

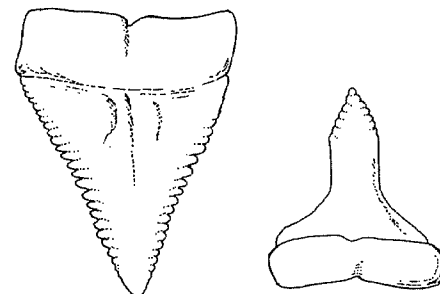
DISTINCTIVE CHARACTERS :

Body moderately stout. Snout short and broadly rounded, its length equal to, or somewhat less than, mouth width, and greater than distance between nostrils; labial folds very short; anterior nasal flaps very low, rudimentary; spiracles absent; teeth with serrated edges, those in upper jaw triangular with broad, heavy, mostly erect, cusps nearly symmetrical anteriorly, but becoming increasingly oblique at sides; teeth in lower jaw with erect, heavy cusps and serrated edges. First dorsal fin noticeably large, with a very broadly rounded apex, its origin slightly behind insertion of pectoral fins; second dorsal fin high, its inner margin less than twice the fin height, its origin over, or slightly in front of that of anal; pectoral fins very long (as long as, or even longer than, head) with broadly rounded, wide tips; rear tip of anal fin extending nearly to origin of caudal fin. A dermal ridge present between dorsal fins.

Colour: back usually dark grey with a bronze tinge, but sometimes brown or bluish; belly whitish, sometimes with a yellow tinge. Tips of first dorsal fin, pectoral fins and lower lobe of caudal fin often white or with white spots (sometimes absent); ventral surface of pelvic fins, apices of anal and second dorsal fins, and ventral lobe of caudal fin often with black spots; also black or dusky saddle - marks in front of second dorsal fin, upper margin of caudal fin and between dorsal fins (especially in young).



underside of head



upper tooth and lower tooth

near centre

* Incorrect name used in W.C. Atlantic set of Species Identification Sheets

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA :

The combination of characters such as the characteristic shape of the dorsal and pectoral fins, the remarkable length of the latter, the short, broadly rounded snout, the long rear tip of the anal fin and the white spots on tips of fins readily distinguishes this species from other carcharhinids occurring in the area.

SIZE :

Maximum: 350 cm; most adults reach 270 cm or less.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR :

Northern part of the area down to the Gulf of Guinea, northward to Portugal; possibly also in the Mediterranean. Cosmopolitan in all warm oceans.

This is one of the most abundant sharks in warm oceanic waters. It occasionally enters coastal waters; a sluggish species, accompanied by pilot fishes (*Naucrates ductor*), remoras (*Remora remora*) and sometimes dolphinfishes (*Coryphaena* species). Viviparous, number of embryos ranging from 6 to 9, size at birth to 75 cm.

Feeds mainly on fishes (especially scombrids and carangids) and squids; also, on crustaceans (especially portunid crabs), turtles and carrion. This species causes much damage to the catch in tuna fisheries.

PRESENT FISHING GROUNDS :

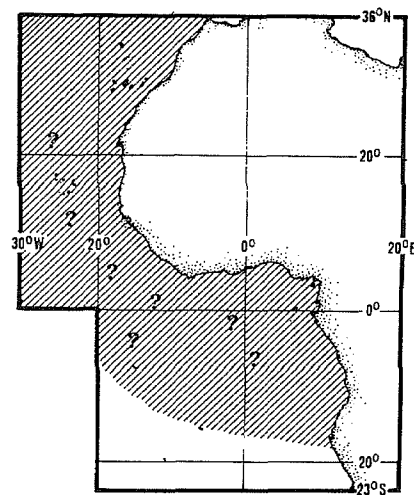
Oceanic waters throughout its range.

CATCHES, FISHING GEAR AND FORMS OF UTILIZATION :

Separate statistics are not reported for this species.

Caught with floating longlines, also handlines and accidentally in pelagic and bottom trawls.

Marketed fresh and smoked, also processed for fishmeal and oil. In view of its abundance it is considered to be a potential resource, especially for the production of liver oil. Reported to be dangerous to man.

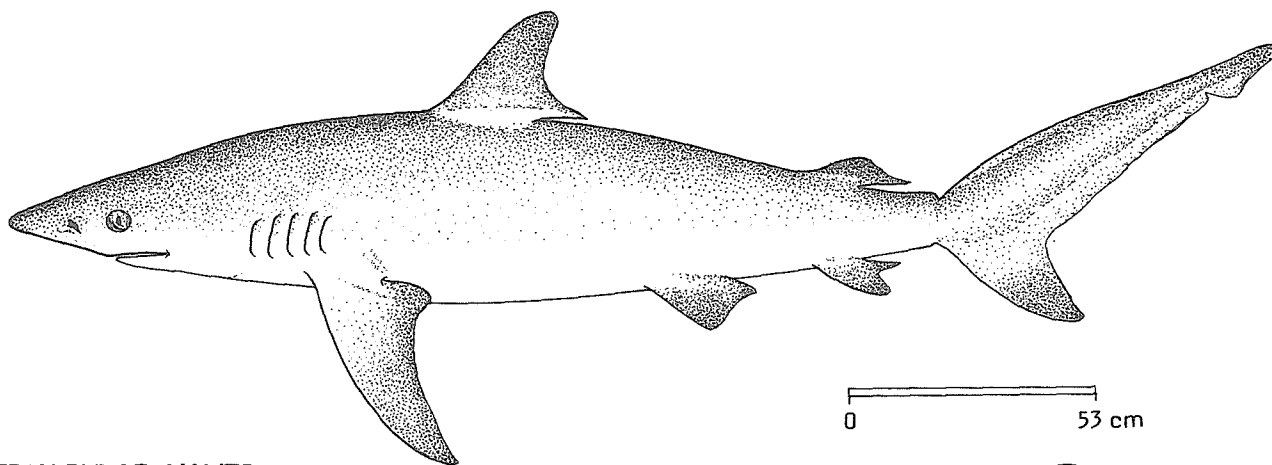


FAO SPECIES IDENTIFICATION SHEETS

FAMILY: CARCHARHINIDAE

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)Carcharhinus obscurus (LeSueur, 1818)

OTHER SCIENTIFIC NAMES STILL IN USE: None



VERNACULAR NAMES:

FAO: En - Dusky shark
Fr - Requin sombre (= Réquiem de sable, Area 31)
Sp - Tiburón arenero

NATIONAL:

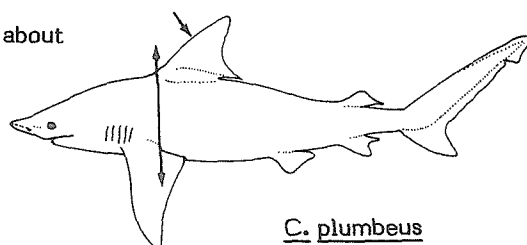
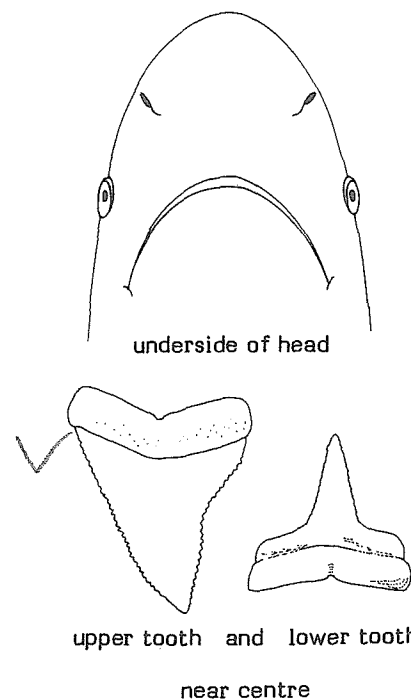
DISTINCTIVE CHARACTERS:

Body slender to moderately stout. Snout rounded and short, its length equal to or less than mouth width and greater than or about equal to internasal space; labial folds short; anterior nasal flaps rudimentary; upper teeth broadly triangular, erect to moderately oblique, anterior teeth with strongly serrated broad cusps not delimited from the bases; lower teeth with low, narrow, serrated cusps; gill slits relatively short. First dorsal fin relatively low, with a broadly arched anterior margin and a narrowly rounded or pointed apex, its origin about over free rear tips of pectorals; second dorsal fin also rather low, with a nearly straight posterior margin, an inner margin nearly or quite twice the fin height, and its origin about over that of anal fin; pectoral fins falcate and apically pointed. A low dermal ridge between dorsal fins.

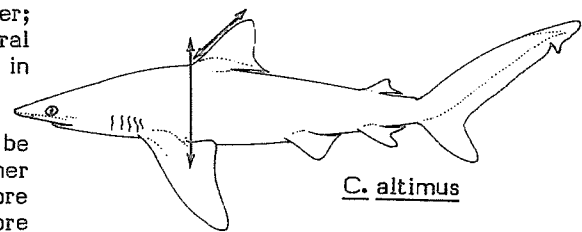
Colour: blue-grey, lead-grey above, white below. Tips of pectorals, pelvics, lower lobe of caudal and dorsal fins often dusky in young, plain in adults.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

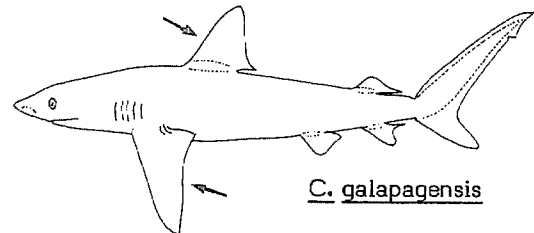
Carcharhinus plumbeus: first dorsal fin very high, its origin about over pectoral-fin insertions; upper front teeth narrower and more acutely pointed in adults; dermal denticles of back wide-spaced and without cusps (close-set and cuspidate in other Carcharhinus species in the area).

C. plumbeus

C. altimus: anterior nasal flaps prominent, snout longer; first dorsal fin higher, its origin over inner margins of pectoral fins; upper front teeth narrower and with more acute cusps in adults; pectoral fins broader, less falcate.

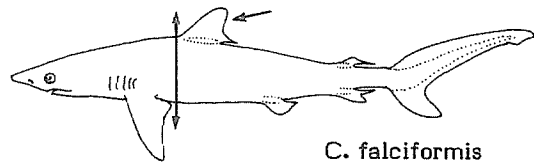


C. galapagensis: closely resembles C. obscurus and may be confused with that species. It differs in having somewhat higher dorsal fins, the first less convex anteriorly, the second with a more concave posterior margin and less falcate pectoral fins; also more vertebral centra (103 to 109 precaudal centra, against 86 to 97 in C. obscurus).

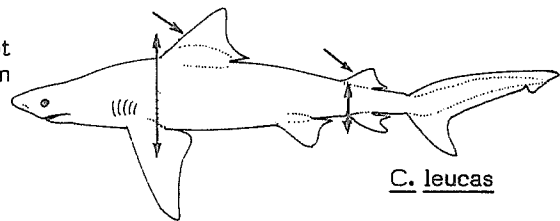


C. longimanus: pectoral fins very broad distally, not falcate; first dorsal fin higher, with a broadly rounded apex; free rear tip of anal fin nearly reaching lower caudal fin origin.

C. falciformis: cusps of upper teeth delimited from bases, which have coarse serrations or small cusplets; first dorsal fin more posterior, its origin behind free rear tips of pectoral fins, and with a more broadly rounded apex.



C. leucas and C. amboinensis: snout shorter, upper teeth lower and broader; first dorsal fin very broad and triangular, its origin far anterior, over or anterior to pectoral fin insertions; second dorsal fin origin anterior to that of anal fin; no interdorsal ridge.



Other species of Carcharhinus: no interdorsal ridge (except C. signatus); upper teeth with narrow cusps, well defined from bases.

SIZE :

Maximum: about 364 cm, maturing at about 277 to 284 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR :

In the area it occurs off Morocco, possibly Madeira, the Canary Islands, Cape Verde Islands, Senegal and Sierra Leone, but probably is more widespread. Northward it extends to Spain and Portugal and into the western Mediterranean. Also known from the Western Atlantic, Western Indian Ocean, and Western and Eastern Pacific. Some southern records of this species from off islands may in part refer to C. galapagensis.

A semi-pelagic shark occurring from inshore waters to the outer continental shelf. Viviparous, number of embryos 6 to 14, size at birth about 102 cm.

Feeds chiefly on fishes, especially bottom forms, including other sharks.

PRESENT FISHING GROUNDS :

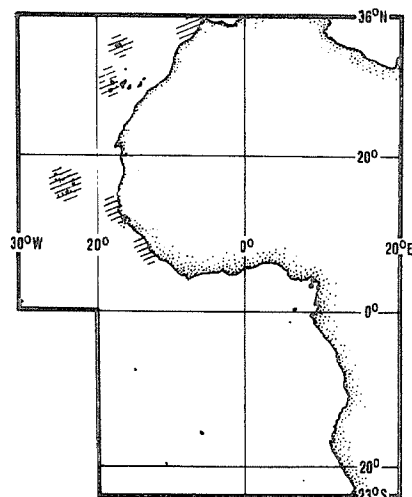
Both inshore and offshore waters.

CATCHES, FISHING GEAR AND FORMS OF UTILIZATION :

Separate statistics are not reported for this species.

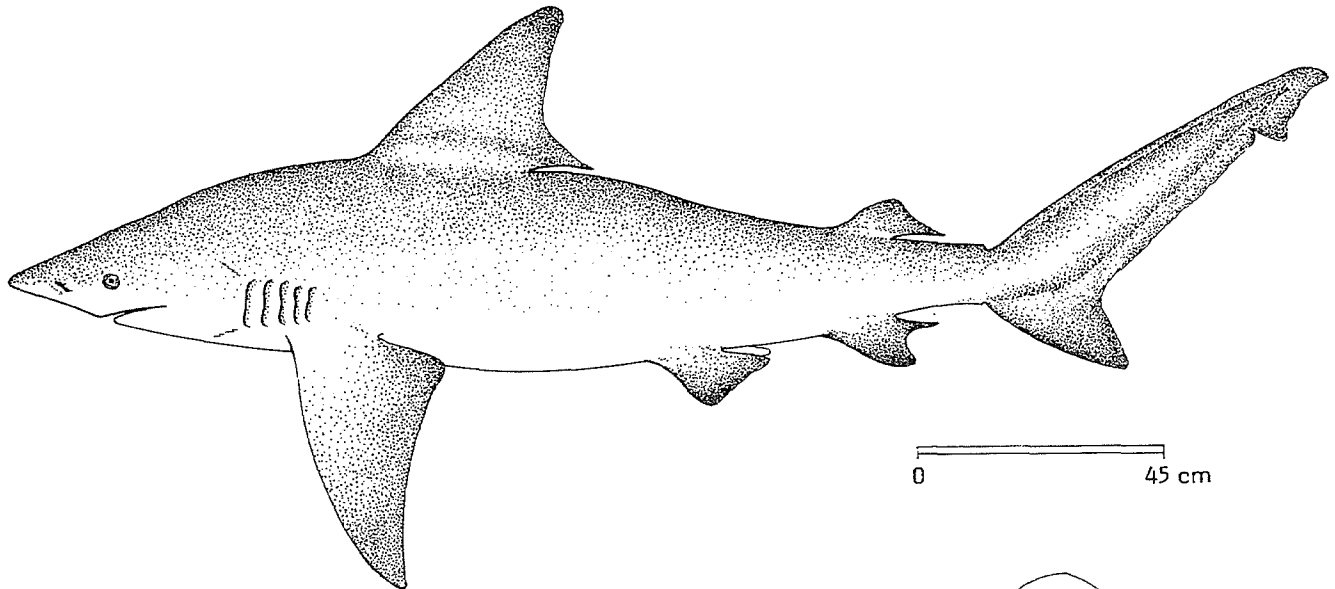
Taken with longlines, on hook and line, in set nets, and in pelagic and bottom trawls.

Marketed fresh and smoked and dried salted; also processed for oil and fishmeal. Reported to be dangerous to people.



FAO SPECIES IDENTIFICATION SHEETS

FAMILY : CARCHARHINIDAE

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)Carcharhinus plumbeus (Nardo, 1827)OTHER SCIENTIFIC NAMES STILL IN USE : Carcharhinus milberti Müller & Henle, 1841

VERNACULAR NAMES :

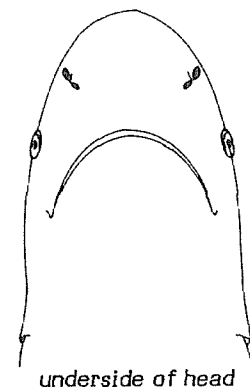
FAO: En - Sandbar shark
Fr - Requin gris (= Réquiem plombe, Area 31)
Sp - Tiburón trozo (= Tiburón de Milberto)

NATIONAL:

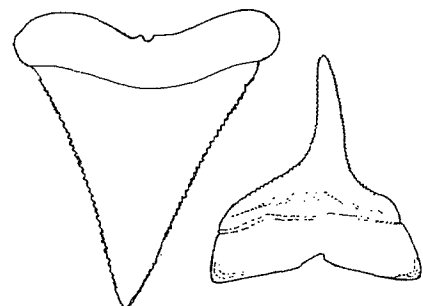
DISTINCTIVE CHARACTERS :

Body comparatively stout. Snout broadly rounded and short, its length less than width of mouth but greater than distance between nostrils; spiracles absent; teeth finely serrate, those in upper jaw broadly triangular and erect to slightly oblique, with broad, heavy cusps; lower teeth with narrow, erect cusps. First dorsal fin triangular, very high (height of fin twice the length of snout in adults), with a pointed or narrowly rounded apex, its origin over insertions of pectoral fins; origin of second dorsal fin about opposite that of anal fin, its inner margin less than twice the fin height; pectoral fins long and broad, their corners narrowly rounded or pointed. A dermal ridge present between dorsal fins. Dermal denticles widely spaced, their free edges without definite teeth.

Colour: back grey, or rarely brown; belly whitish.



underside of head



upper tooth and lower tooth

near centre

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA :

The combination of characters such as the large size and forward-position of first dorsal fin, the short posterior lobe of second dorsal fin, the broadly triangular upper teeth, the presence of a mid-dorsal ridge and the widely spaced dermal denticles readily distinguishes this species from other carcharhinid sharks occurring in the area.

SIZE :

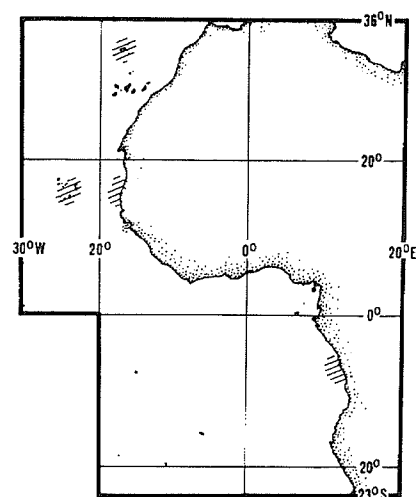
Maximum: 300 cm; common to 240 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR :

In the area it is recorded from the Canary and Cape Verde Islands, southward to Senegal, the Gulf of Guinea and Zaïre. Northward it extends to Portugal and possibly Spain and into the Mediterranean Sea. Also present in the Western Atlantic from southern New England to southern Brazil, off East and South Africa, in the Western Pacific and the East China Sea, around the Hawaiian Islands, and possibly the Galapagos Islands.

A coastal species usually found over sandy or muddy bottom; often coming near estuaries but sometimes occurring in oceanic waters to depths of 200 m. Viviparous.

Feeds mainly on bottom-dwelling animals, such as flatfishes, rays, crabs and snails; also on schooling fishes and squids.



PRESENT FISHING GROUNDS :

No information available.

CATCHES, FISHING GEAR AND FORMS OF UTILIZATION :

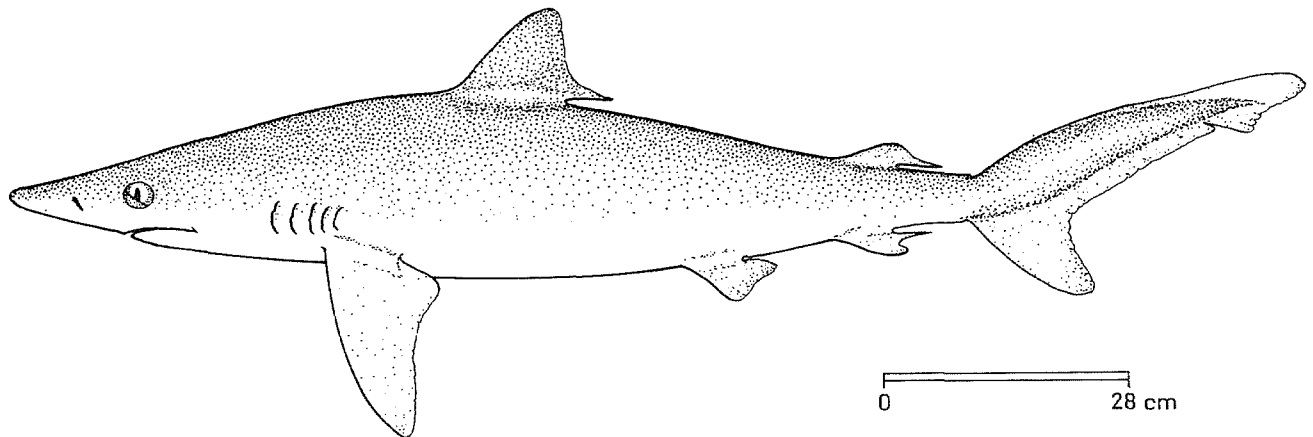
Separate statistics are not reported for this species.

Caught on longlines, hook and line and in set bottom nets.

Marketed smoked, dried salted and possibly fresh.

FAO SPECIES IDENTIFICATION SHEETS

FAMILY: CARCHARHINIDAE

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)Carcharhinus signatus (Poey, 1868)OTHER SCIENTIFIC NAMES STILL IN USE: Hypoprion signatus (Poey, 1868)
Hypoprion bigelowi Cadenat, 1956

VERNACULAR NAMES:

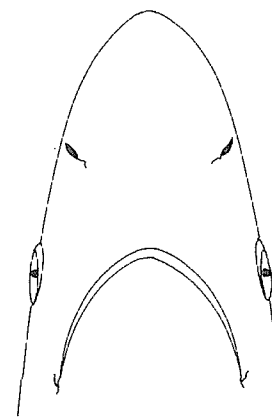
FAO: En - Night shark
Fr - Requin de nuit (= Réquiem de nuit, Area 31)
Sp - Tiburón de noche

NATIONAL:

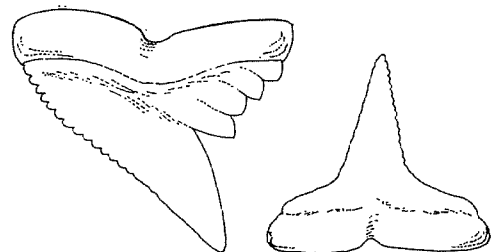
DISTINCTIVE CHARACTERS:

Body fusiform and rather stout. Snout narrow and pointed, noticeably elongated, (greater than width of mouth and distance between nostrils); labial folds very short; nostrils with a short, narrow-based anterior nasal flaps; spiracles absent; eyes relatively large; teeth with smooth-edged or weakly serrated cusps, those in upper jaw increasingly oblique toward sides, their bases with 2 to several very prominent cusplets or strong serrations; teeth in lower jaw narrow, nearly erect and without denticulations at their bases. First dorsal fin relatively small, with a narrowly rounded apex, its origin over or slightly behind free rear tips of pectoral fins; origin of second dorsal fin about over that of anal fin, its posterior lobe elongated, about equal to twice the height of fin; pectoral fins narrow, slightly falcate and with pointed to narrowly rounded tips. A low dermal ridge present between dorsal fins.

Colour: back greyish blue with some scattered black spots; belly greyish white; eyes green; lining of mouth white.



underside of head



upper tooth and lower tooth

near centre

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA :

The combination of characters such as the long and pointed snout, the large green eyes (unusual in carcharhinids), the characteristic upper teeth and the mid-dorsal ridge, readily distinguishes this species from other carcharhinid sharks occurring in the area.

SIZE :

Maximum: 280 cm; common to 150 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR :

In the area, from Senegal to Angola; probably more wide-ranging but not often reported because of its deep-water habitat. Elsewhere, in the Western Atlantic from Delaware (U.S.A.) to Argentina.

A deep-water species, usually found between 200 and 310 m depth, rarely occurring above 160 m. Viviparous, number of embryos to 12.

Feeds on fishes and shrimps.

PRESENT FISHING GROUNDS :

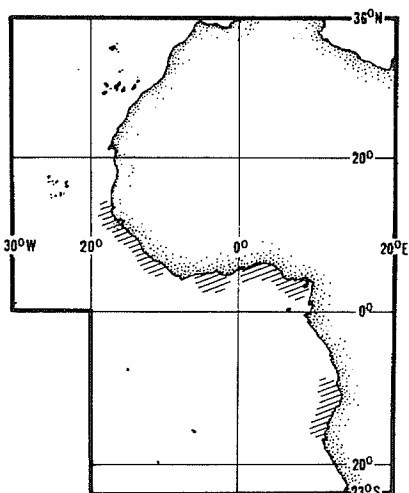
Coastal and offshore waters.

CATCHES, FISHING GEAR AND FORMS OF UTILIZATION :

Separate statistics are not reported for this species.

Caught with pelagic trawls.

The flesh is made into fishmeal.

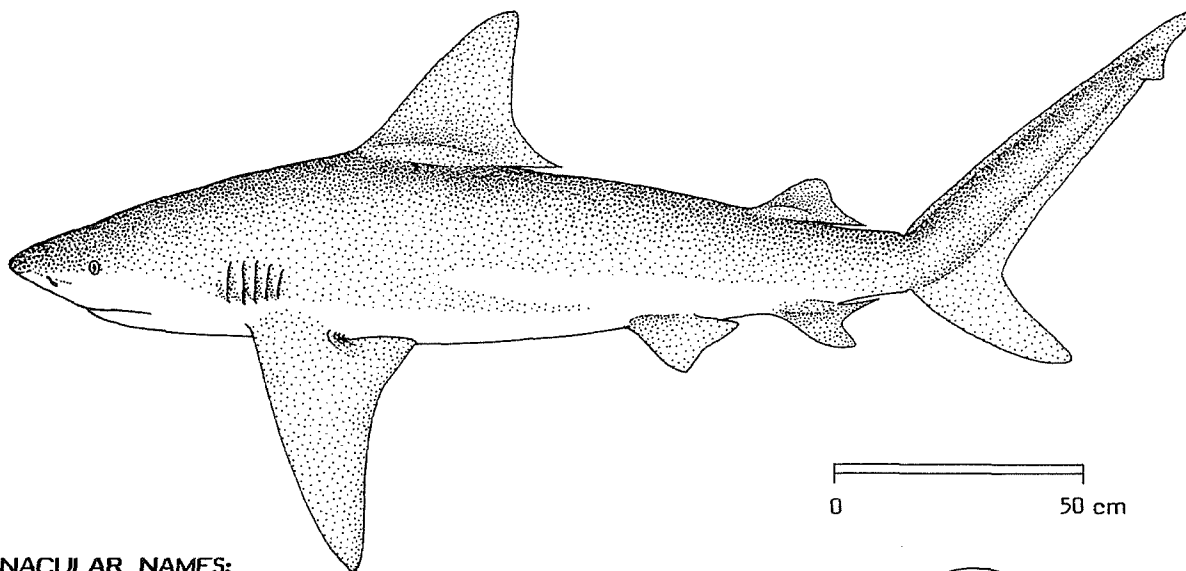


FAO SPECIES IDENTIFICATION SHEETS

FAMILY: CARCHARHINIDAE

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)Carcharhinus amboinensis (Müller & Henle, 1839)

OTHER SCIENTIFIC NAMES STILL IN USE: None



VERNACULAR NAMES:

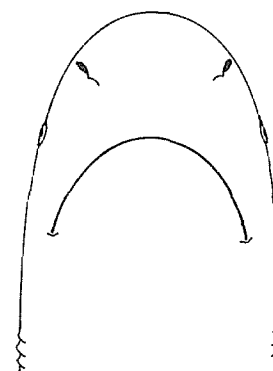
FAO : En - Pigeye shark
 Fr - Requin balestrine
 Sp - Tiburón baleta

NATIONAL :

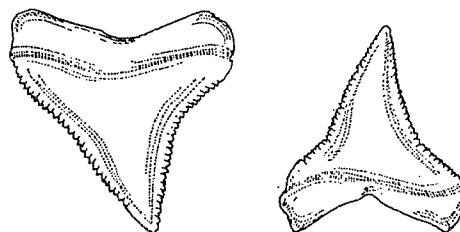
DISTINCTIVE CHARACTERS :

Body moderately stout. Snout extremely short (usually shorter than distance between nostrils, and much shorter than mouth width), very broadly rounded; labial furrows very short; spiracles absent; nostrils with a low, broadly triangular anterior nasal flap; teeth in upper jaw triangular, with broad, heavy, serrated cusps, their outer edges nearly straight in anterior teeth but becoming increasingly concave in lateral teeth; cusps of lower teeth heavy, erect to slightly oblique with serrated edges, their bases strongly arched. First dorsal fin very high (its height 3.2 or more times that of second dorsal fin) with a pointed or slightly rounded apex, its origin a little in advance of insertions of pectoral fins; second dorsal fin low, with its inner margin about equal to fin height, and its origin slightly in front of anal fin; pectoral fins large, broad, with narrow, pointed tips. No dermal ridge between dorsal fins.

Colour: grey above, light below, tips of fins darker in young, fading in adults.



underside of head



upper and lower lateral teeth

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA :

Carcharhinus leucas: closely resembles this species, but differs in having a lower first dorsal fin and a higher second dorsal (height of latter less than 3.2 times that of first dorsal) and also more vertebrae (109 to 120 precaudal vertebrae in C. leucas but only 89 to 95 in C. amboinensis)

Other species of Carcharhinus in the area with broad, triangular upper teeth: first dorsal fin and pectoral fins with broadly rounded tips (C. maou), snout longer, bases of lower teeth usually not arched, interdorsal ridge present (C. plumbeus, C. obscurus, C. altimus, C. galapagensis).

SIZE :

Maximum: about 280 cm, maturing at about 200 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR :

Within the area, known from off Nigeria, but probably more widespread. Elsewhere from the Western Indian Ocean and Western South Pacific.

An inshore as well as offshore continental species occurring from the surfline to 60 m depth. Apparently not ascending rivers like its close relative, C. leucas. Viviparous, size at birth about 75 cm length.

A bottom-feeding shark preying on croakers, flat-fish, small sharks and skates, and shrimp. Potentially dangerous to people.

PRESENT FISHING GROUNDS :

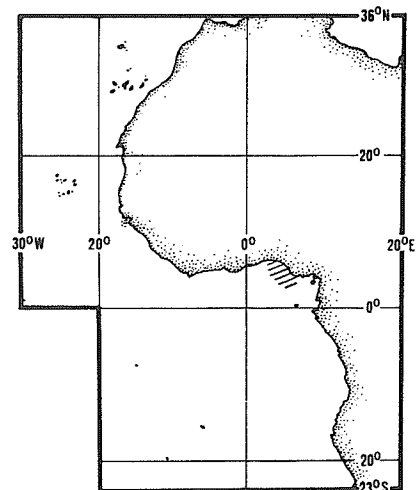
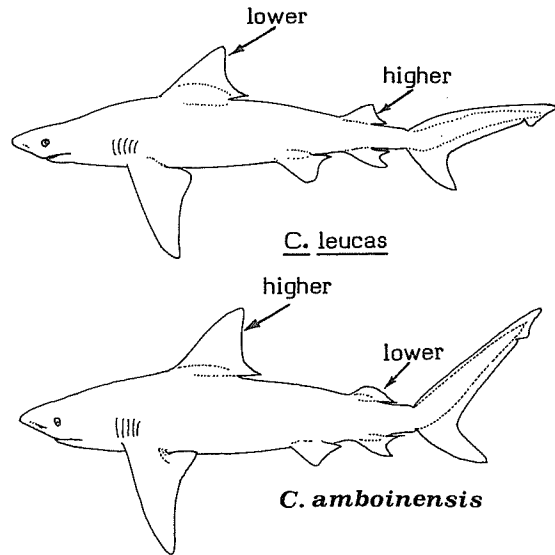
In the area, both inshore and offshore, but localities not specified.

CATCHES, FISHING GEAR AND FORMS OF UTILIZATION :

Separate statistics are not reported for this species.

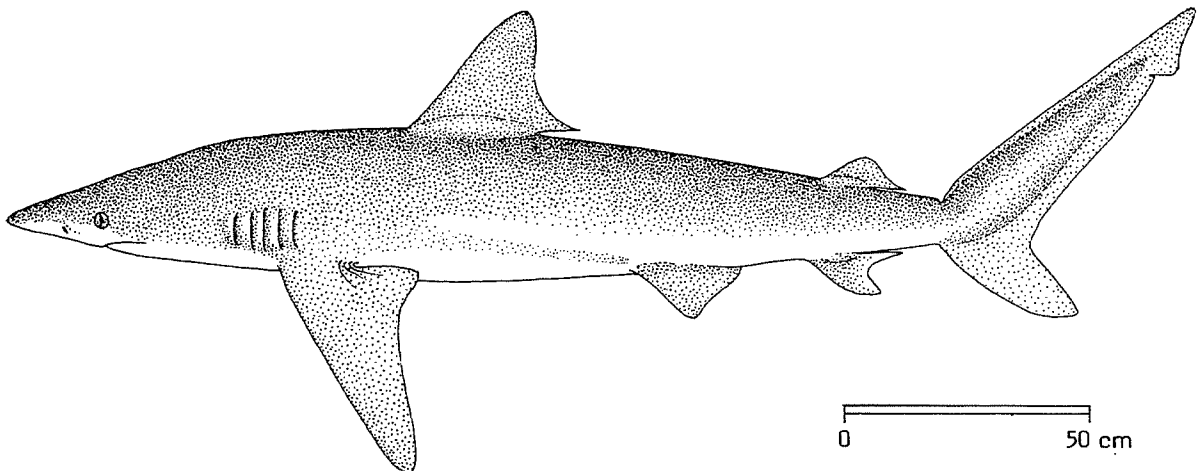
Caught on longlines.

Utilized fresh.



FAO SPECIES IDENTIFICATION SHEETS

FAMILY : CARCHARHINIDAE

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)*Carcharhinus brachyurus* (Günther, 1870)OTHER SCIENTIFIC NAMES STILL IN USE : *Carcharhinus remotus* (Dumeril, 1865)

VERNACULAR NAMES:

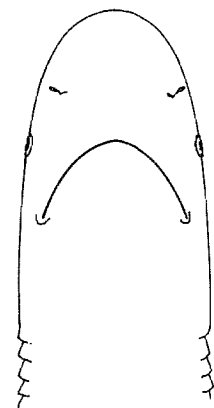
FAO : En - Copper shark
 Fr - Requin cuivre
 Sp - Tiburón cobrizo

NATIONAL :

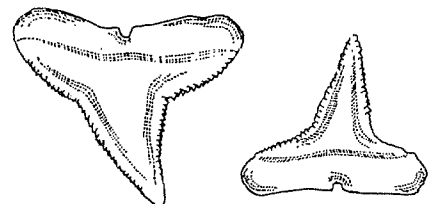
DISTINCTIVE CHARACTERS :

Body slender to moderately stout. Snout rounded, its length about equal to, or somewhat smaller than width of mouth, but greater than internasal space; labial folds short; anterior nasal flaps very short to rudimentary; upper teeth with narrow, mostly oblique, somewhat flexed cusps, well-delimited from the tooth bases and finely serrated; lower teeth with moderately high, narrow, erect to semioblique, weakly serrated, cusps; gill slits relatively short. First dorsal fin moderately high, with a nearly straight anterior margin and a narrowly rounded or pointed apex, its origin over inner margins of pectoral fins; second dorsal fin moderately high, with a slightly concave posterior margin and an inner margin much shorter than half the height of fin; its origin over that of anal fin; pectoral fins not strongly falcate, apically pointed. Usually no dermal ridge between dorsal fins (occasionally a weak ridge present)

Colour: dark brownish grey above, white below; fins mostly plain, except for dusky tips on pelvics, as well as dusky to black tips and rear edges on pectoral fins.



underside of head



upper and lower lateral teeth

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA :

Carcharhinus falciformis and C. signatus: bases of upper teeth with heavy serrations or cusplets; free rear tip of second dorsal fin more elongate; a dermal ridge present between dorsal fins.

C. obscurus, C. galapagensis, C. altimus and C. plumbeus: upper anterior teeth broadly triangular; a dermal ridge present between dorsal fins.

C. limbatus, C. brevipinna and C. isodon: upper teeth with narrower, more erect cusps, snout more pointed, gill slits longer.

Other species of Carcharhinus in the area differ in having broadly triangular upper teeth, a larger first dorsal fin, larger pectoral fins and, in the case of C. maou, broadly rounded tips on first dorsal and pectoral fins.

SIZE :

Maximum: about 290 cm, maturing at between 200 to 250 cm, with females somewhat larger than males.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR :

The occurrence of this species within the area is possibly marginal, probably off Guinea, also southward to Namibia and South Africa. Elsewhere in the Western South Atlantic from southern Brazil to Argentina, as well as in the Western and Eastern Pacific.

A coastal and offshore shark, preferring temperate to tropical waters. Viviparous, number of fetuses 13 to 20, size at birth about 60 to 70 cm.

Feeds on bottom-dwelling bony fishes, including gurnards, flatfishes, hakes, puffers, sea catfishes, jacks and mullets; also on rays, small sharks, squids and cuttlefishes. Dangerous or potentially dangerous to man, known to have been implicated in shark attacks on people in other areas.

PRESENT FISHING GROUNDS :

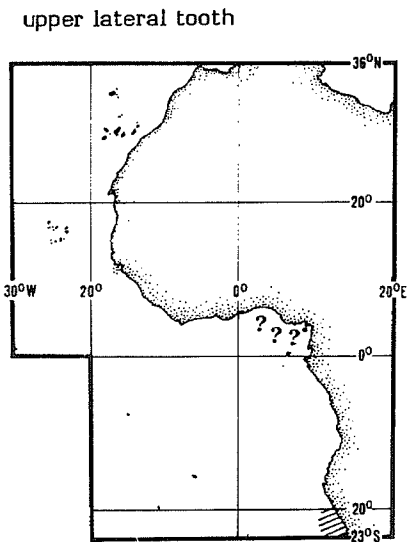
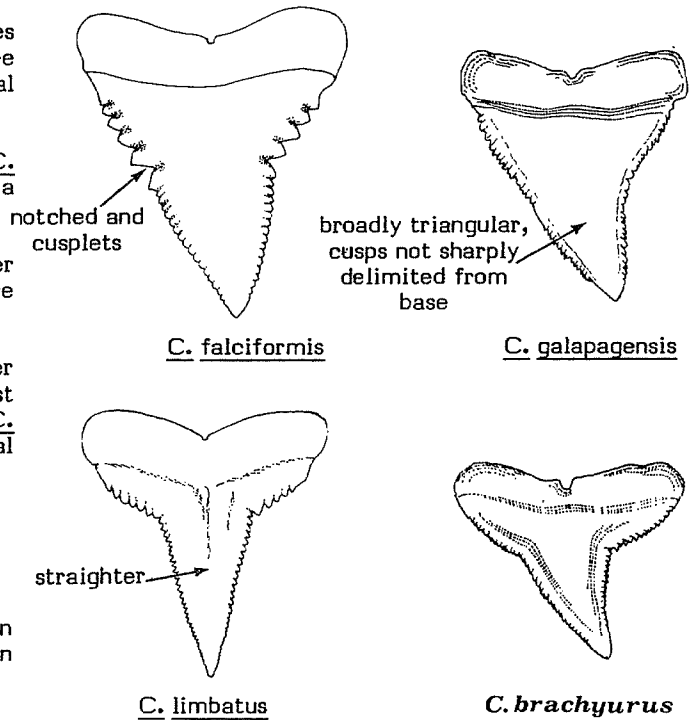
Not well defined (probably confused with other Carcharhinus species).

CATCHES, FISHING GEAR AND FORMS OF UTILIZATION :

Separate statistics are not reported for this species.

Method of capture unrecorded.

Probably utilized fresh.

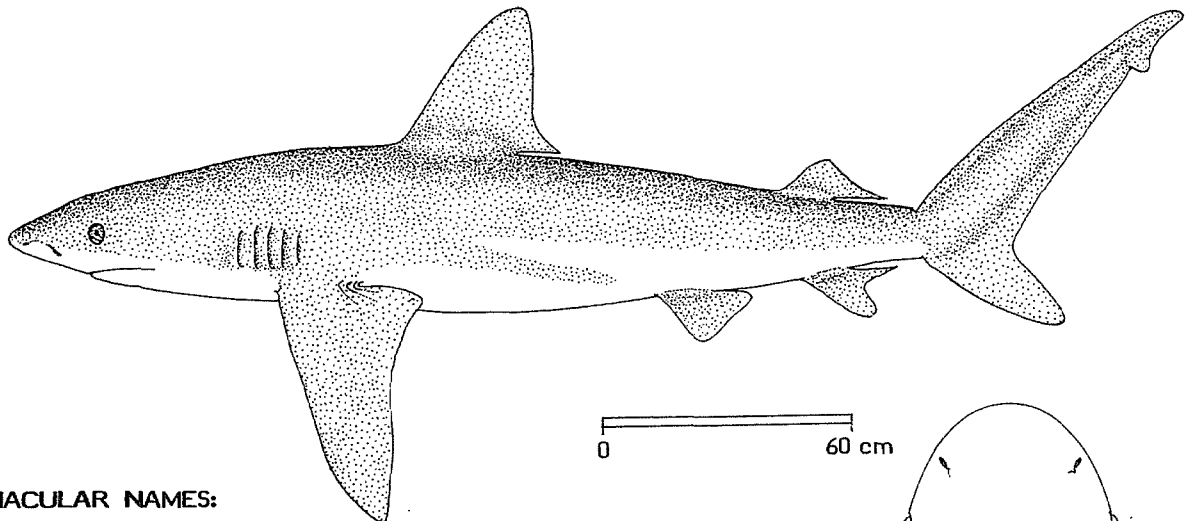


FAO SPECIES IDENTIFICATION SHEETS

FAMILY: CARCHARHINIDAE

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)*Carcharhinus galapagensis* (Snodgrass & Heller, 1905)

OTHER SCIENTIFIC NAMES STILL IN USE: None



VERNACULAR NAMES:

FAO: En - Galapagos shark
Fr - Requin de Galapagos
Sp - Tiburón de Galápagos

NATIONAL:

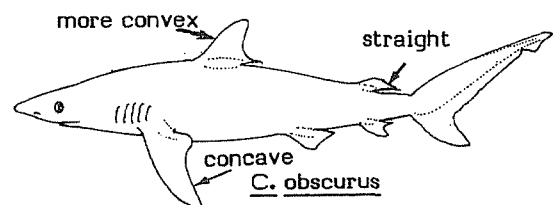
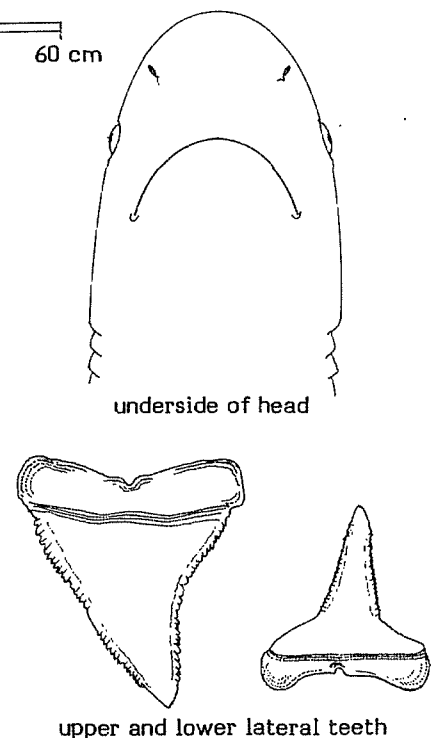
DISTINCTIVE CHARACTERS:

Body slender to moderately stout. Snout rounded and short, its length equal to or less than mouth width and about equal to or greater than internasal space; labial folds short; anterior nasal flaps rudimentary; upper teeth broadly triangular, erect to moderately oblique, the anterior ones strongly serrated and with higher, broad cusps not delimited from the bases; lower teeth with high, narrow cusps and serrations; gill slits relatively short. First dorsal fin rather high, nearly straight anteriorly, with a narrowly rounded or pointed apex, its origin over inner margins of pectoral fins; second dorsal moderately high, with a concave posterior margin, its inner margin less than twice the fin height and its origin over or slightly anterior to that of anal fin; pectoral fins nearly straight and apically pointed. A low dermal ridge between dorsal fins.

Colour: dark grey above, light below, fins plain except for slightly dusky tips in some individuals.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Carcharhinus obscurus: closely resembles *C. galapagensis* and is sometimes mistaken for it, but differs in the shape of its first dorsal fin (lower and anteriorly more convex, apically more broadly rounded), the lower-cusped teeth, the lower second dorsal fin with a nearly straight posterior margin, and the more falcate pectoral fins; it also has fewer vertebral centra (86 to 97 precaudal centra, against 103 to 109 in *C. galapagensis*).



C. plumbeus: first dorsal higher, its origin about over pectoral fin insertions; dermal denticles of back wide-spaced and without cusps (close-set and cuspidate in other Carcharhinus species in the area).

C. altimus: snout longer, anterior nasal flaps high and prominent, interdorsal ridge higher, pectoral fins laterally broader.

C. brachyurus: Cusps of upper teeth narrow, oblique and flexed, well-delimited from bases, usually no interdorsal ridge, colour of back more coppery in life.

C. falciformis: cusps of upper teeth delimited from bases, which have coarse serrations or small cusplets; first dorsal fin more posterior, its origin behind free rear tips of pectoral fins, and with a more broadly rounded apex.

Other species of Carcharhinus: no interdorsal ridge (except C. signatus), upper teeth with narrow cusps, well-defined from bases (except C. leucas and C. amboinensis).

SIZE :

Maximum: about 370 cm; common to 300 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR :

A wide-ranging, inshore and offshore shark often preferring the waters around islands to those of the continental shelf. In the Eastern Atlantic, it is reported from the Cape Verde, Ascension, St. Helena and Sao Tomé Islands. Elsewhere, in the Western North Atlantic, the Southwestern Indian Ocean and the Southwestern, Central and Eastern Pacific.

Viviparous, number of foetuses 6 to 16; size at birth about 57 to 78 cm.

Feeds on bottom fishes, including basses, flat-heads, eels and flatfishes; also on cephalopods and bivalves. An aggressive species, dangerous to people.

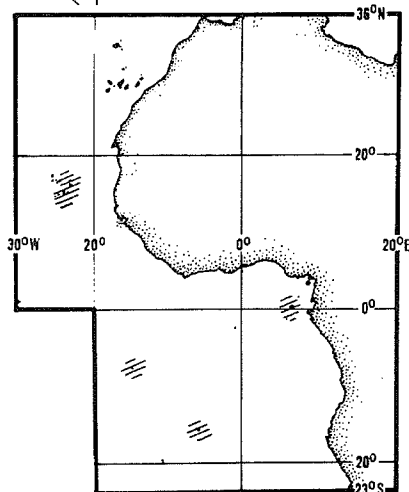
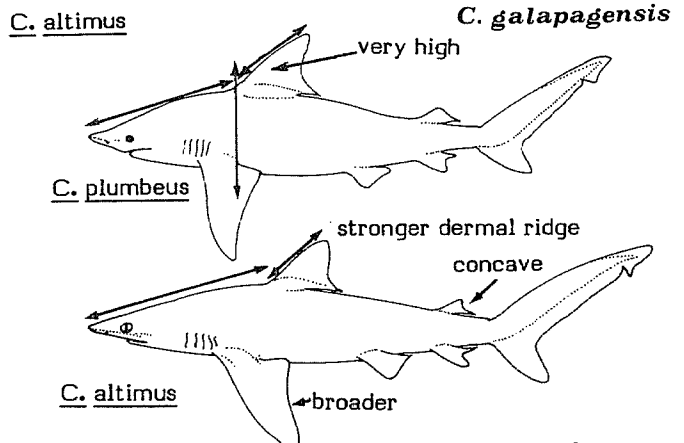
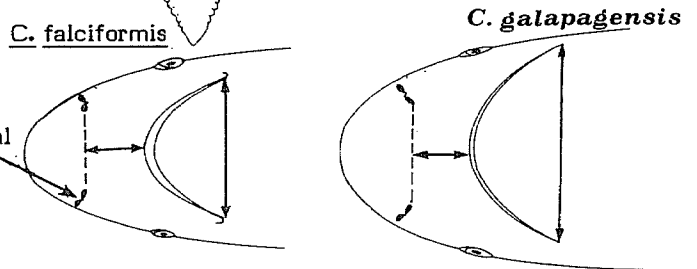
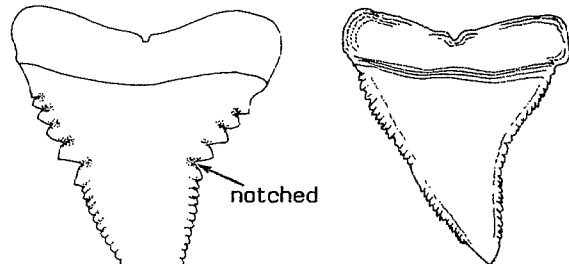
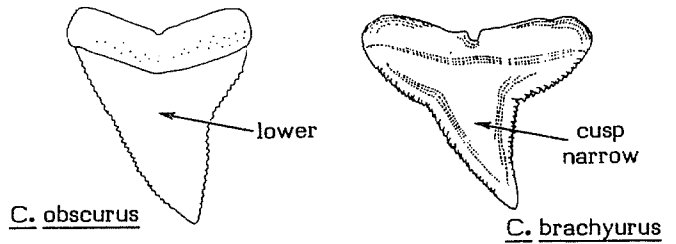
PRESENT FISHING GROUNDS :

Not well known, since the species is most probably often confused with other carcharhinid sharks.

CATCHES, FISHING GEAR AND FORMS OF UTILIZATION :

Separate statistics are not collected for this species.

No information is available on fishing gear or utilization.

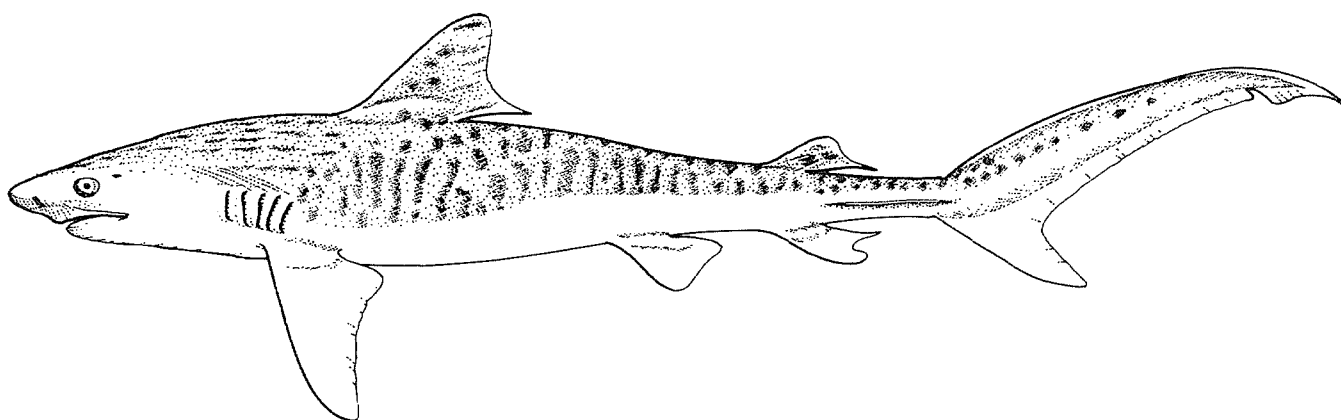


FAO SPECIES IDENTIFICATION SHEETS

FAMILY: CARCHARHINIDAE

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)Galeocerdo cuvieri (Peron & LeSueur, in LeSueur, 1822)

OTHER SCIENTIFIC NAMES STILL IN USE: None

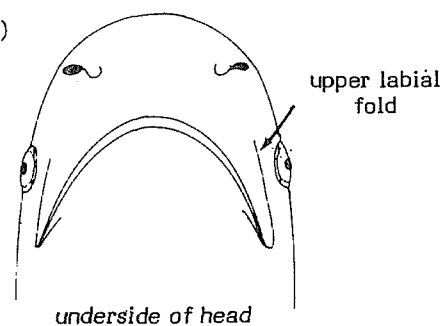


0 76 cm

VERNACULAR NAMES:

FAO: En - Tiger shark
Fr - Requin tigre commun (= Requin tigre, Area 31)
Sp - Tintorera

NATIONAL:

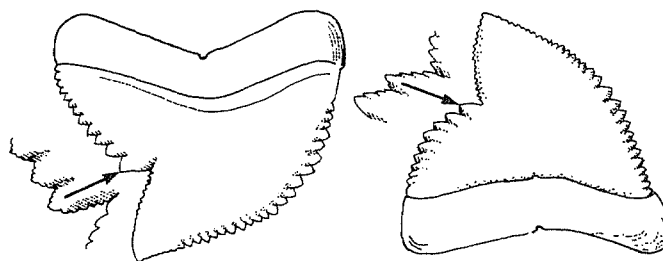


underside of head

DISTINCTIVE CHARACTERS:

A large fusiform shark. Snout very short and bluntly rounded, its length much less than width of mouth; spiracles small, slitlike, but easily visible; upper labial folds about as long as snout, reaching to front of eyes; teeth coarsely serrated, their outer edges deeply notched and the tips directed obliquely outward, their inner edges broadly convex; second dorsal fin much smaller than first. A low rounded keel on each side of caudal peduncle.

Colour: back dark grey or greyish brown with dark brown or black rectangular spots often forming bars on sides and fins, but fading with growth.

upper tooth and lower tooth
near centre

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA :

The combination of characters such as the very short snout, the small spiracles, the long upper labial folds and the peculiar shape of the teeth readily distinguishes this species from other carcharhinid sharks occurring in the area.

SIZE :

Maximum: at least 650 cm, possibly 740 cm;
common to 400 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR :

In the area, its distribution is spotty, the species being reported from the Canary Islands, Senegal, Gambia, Guinea, Ivory Coast, and Ghana, but probably is more widespread. Elsewhere it occurs in all tropical waters and possibly off Iceland and Great Britain.

Inhabits coastal as well as offshore waters, near the surface; often found in river estuaries. Ovoviviparous and very prolific (a female may produce 10 to 82 young).

A voracious predator feeding on all kinds of fish (including other sharks and rays) turtles, seabirds, squids, conchs and crabs; also on carrion.

PRESENT FISHING GROUNDS :

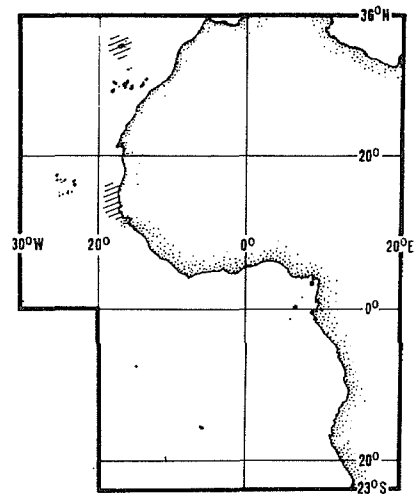
Probably throughout the area, but definitely off Senegal, Guinea, Ivory Coast and Ghana, and well offshore.

CATCHES, FISHING GEAR AND FORMS OF UTILIZATION :

Separate statistics are not reported for this species.

Caught with longlines, on hook and line, and in fixed bottom nets.

The flesh is marketed dried salted and smoked. The species is also reduced to fishmeal. The skin is used in the manufacture of various subproducts and the liver oil is appreciated for its high content in Vitamin A. Dangerous for fishermen and bathers.



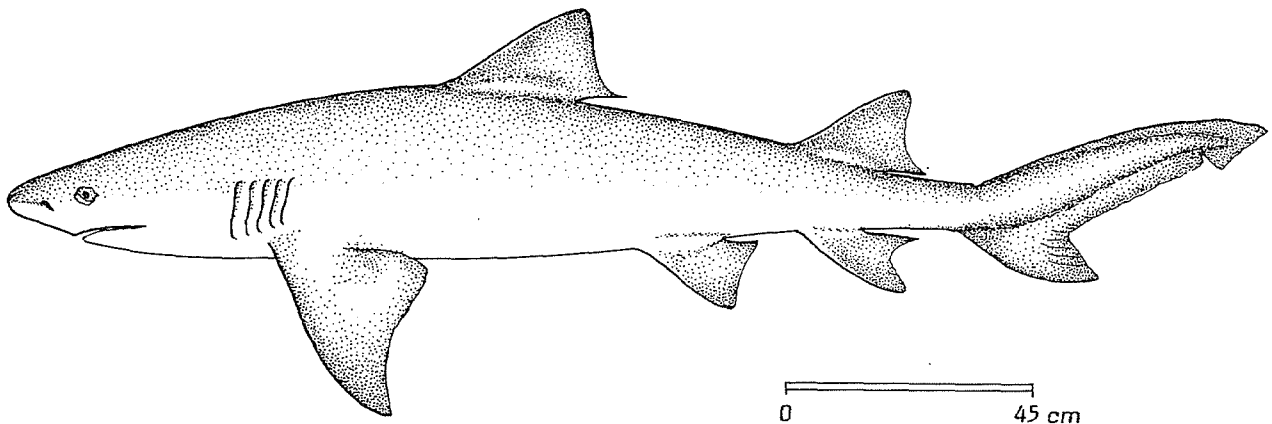
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: CARCHARHINIDAE

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)

Negaprion brevirostris (Poey, 1868)

OTHER SCIENTIFIC NAMES STILL IN USE: None



VERNACULAR NAMES:

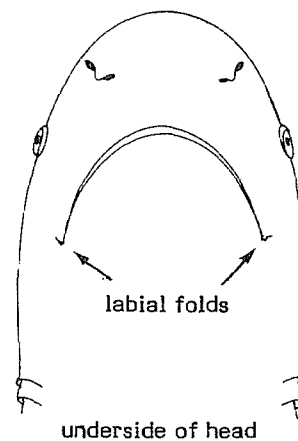
FAO: En - Lemon shark
Fr - Requin citron (= Requin limon, Area 31)
Sp - Tiburón galano

NATIONAL:

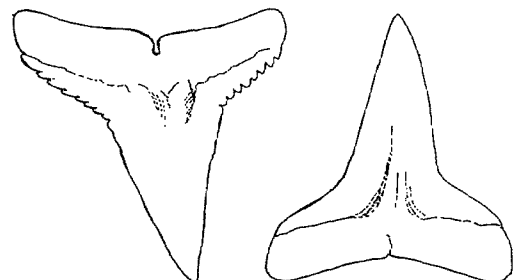
DISTINCTIVE CHARACTERS:

Body stout. Snout short (shorter than width of mouth) and broad, rounded or obtusely wedge-shaped; labial folds short; spiracles usually absent; teeth narrow, their cusps smooth-edged, erect in anterior part of jaws, but becoming progressively oblique toward the sides; serrations present on bases of upper teeth. Origin of first dorsal fin behind free rear tips of pectoral fins, closer to these fins than to the pelvics; second dorsal fin nearly as large as the first (its base more than 3/4 of first dorsal fin base); pectoral fins broad and slightly falcate. No dermal ridge between dorsal fins.

Colour: olive grey or yellowish brown, but often darker; belly yellowish or whitish.



underside of head



upper tooth and lower tooth

near centre

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA :

The combination of characters such as the very large second dorsal fin, the short and broadly rounded snout and the characteristic teeth, readily distinguishes this species from other carcharhinid sharks occurring in the area.

SIZE :

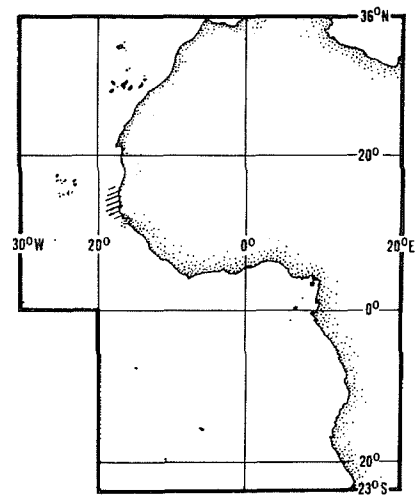
Maximum: 320 cm; common to 240 cm, most individuals under 300 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR :

Within the area, it has been reported from Senegal, but probably is more widespread.* Elsewhere, in the Western Atlantic from New Jersey to Brazil and in the Eastern Pacific.

A sluggish demersal species found in coastal waters; occasionally enters river mouths, but apparently not as commonly as the bull shark and it never penetrates far inland.

Feeds mainly on fishes (catfishes, mullets, mojarra) and rays; also on crabs, shrimps and carrion. Viviparous, embryos 5 to 17, size at birth about 60 cm.



PRESENT FISHING GROUNDS :

Off Senegal.

CATCHES, FISHING GEAR AND FORMS OF UTILIZATION :

Separate statistics are not reported for this species.

Reduced to fishmeal; flesh probably eaten. Reported to be dangerous to man.

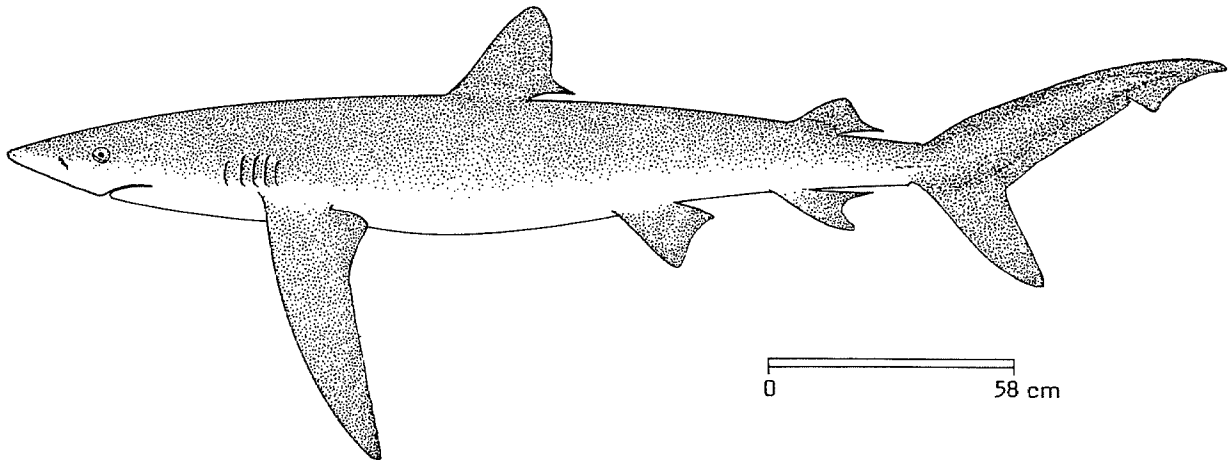
*Identification of the Eastern Central Atlantic lemon shark as N. brevirostris is provisional, and specimens need to be examined to determine if the species is indeed brevirostris and not N. acutidens (Rüppell, 1837), the Indo-West Pacific lemon shark

FAO SPECIES IDENTIFICATION SHEETS

FAMILY : CARCHARHINIDAE

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)*Prionace glauca* (Linnaeus, 1758)

OTHER SCIENTIFIC NAMES STILL IN USE : None



VERNACULAR NAMES :

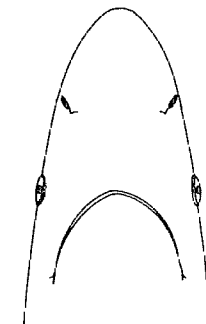
FAO: En - Blue shark
Fr - Peau bleue
Sp - Tiburón azul

NATIONAL:

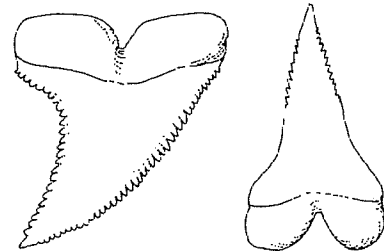
DISTINCTIVE CHARACTERS :

Body very slender and fusiform. Snout long, (its length greater than mouth width) and narrowly rounded; upper labial folds very short; spiracles absent; nictitating eyelids present; teeth serrated, broadly triangular and curved in upper jaw, narrower in lower jaw; upper medial tooth very large, nearly the size of teeth on either side of it (but sometimes absent); inner gill arches with gillraker papillae (visible through open mouth). First dorsal origin well posterior to free rear tips of pectoral fins, its base closer to pelvic than to pectoral fin origins; second dorsal fin much smaller than first; pectoral fins very long, narrow and somewhat falcate. A weak keel present on sides of caudal peduncle. No dermal ridge between dorsal fins.

Colour: dark blue above, bright blue on sides, white below, fading to purple-blackish after death; tips of pectorals and anal dusky.



underside of head



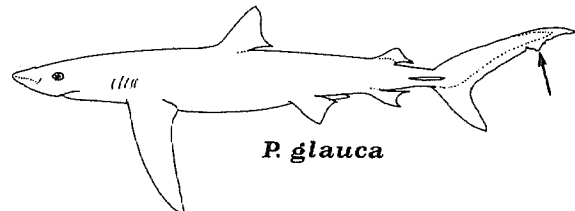
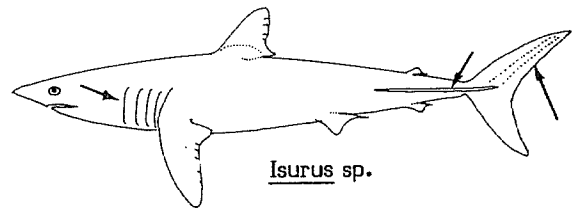
upper tooth and lower tooth

near centre

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA :

The combination of characters such as the unique colouration, the long snout and pectoral fins, the characteristic teeth, the posterior position of first dorsal fin, the gillrakers, and the weak precaudal keels, readily distinguishes this species from other carcharhinids in the area.

Isurus species (Lamnidae): also blue above but with characteristic unserrated teeth, a conical snout, no nictitating eyelids, longer gill slits, strong caudal keels, and a lunate caudal fin.



SIZE :

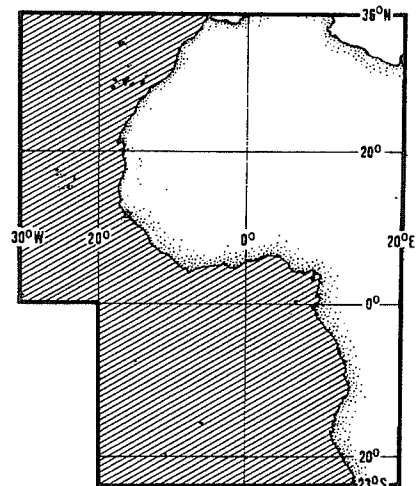
Maximum recorded: 383 cm, though larger specimens (up to 4.8 to 6.5 m) are mentioned on poor evidence in the literature. Most specimens below 335 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR :

Throughout the area. Northward to Norway and southward to South Africa. The most wide-ranging of cartilaginous fishes, apparently present in all tropical to cool-temperate seas, with only a few exceptions.

A slow-cruising, very common pelagic species, capable of bursts of speed when excited. Usually well offshore and in the open sea near the surface, but penetrating coastal waters. Viviparous, litters usually large, ranging from 4 to 58 young.

Feeds on a wide variety of bony fishes, small sharks, squids, occasionally also on sea birds and carrion.



PRESENT FISHING GROUNDS :

Probably taken in offshore waters, throughout the area; specifically reported from off the Canary Islands and Ivory Coast.

CATCHES, FISHING GEAR AND FORMS OF UTILIZATION :

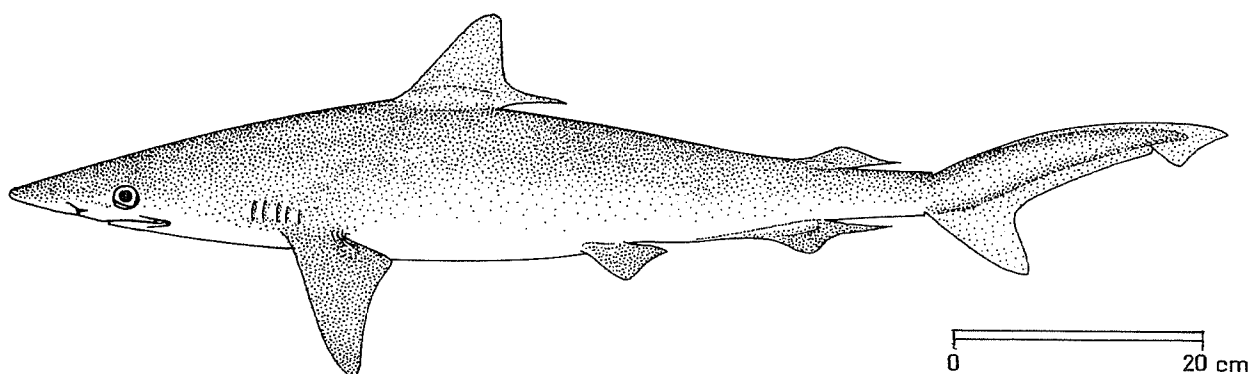
Separate statistics are not reported for this species.

Caught mainly with longlines, also on hook and line and with pelagic trawls, and occasionally bottom trawls.

Marketed fresh, smoked, dried salted, also processed for meal and oil. Reported to be dangerous to people.

FAO SPECIES IDENTIFICATION SHEETS

FAMILY : CARCHARHINIDAE

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)Rhizoprionodon acutus (Rüppell, 1837)OTHER SCIENTIFIC NAMES STILL IN USE : Scoliodon terraenovae (Richardson, 1836)

VERNACULAR NAMES :

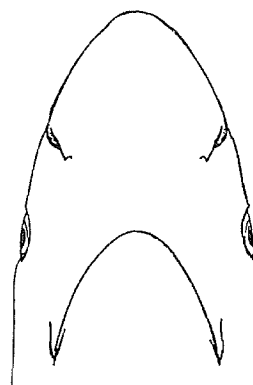
FAO: En - Milk shark
Fr - Requin à museau pointu
Sp - Cazón picudo

NATIONAL:

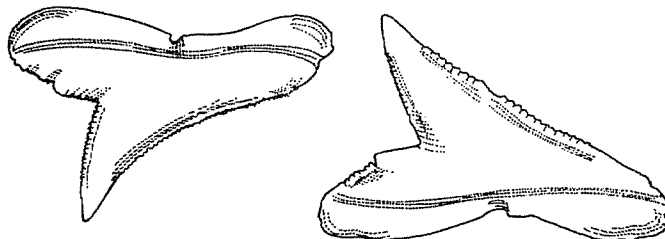
DISTINCTIVE CHARACTERS :

Body slender and fusiform. Snout long and depressed, its length usually greater than width of mouth, its tip narrowly rounded; no spiracles; labial furrows well-developed and moderately long, the upper ones about equal in length to eye diameter and ending well behind eyes; teeth similar in both jaws, low-crowned, oblique and narrow-cusped, with the outer edges deeply notched and without cusplets, smooth-edged in young but often finely serrated in adults. Origin of first dorsal fin over or posterior to inner corners of pectoral fins; second dorsal fin smaller than anal fin, its origin far posterior to midlength of anal fin base; anal fin with a pair of long preanal ridges.

Colour: grey or grey-brown above, white below, dorsal and anal fins with dusky or blackish edges, fins slightly darker than back.



underside of head

upper and lower
lateral teeth

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA :

The smooth or finely serrated, narrow, oblique-cusped teeth in both jaws, the smaller size and rearward position of the second dorsal fin relative to the anal fin, and the long preanal ridges of the anal fin base separate this species from all other members of the family in the area.

SIZE :

Maximum: to 102 cm; elsewhere in the area to at least 87 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR :

In the area found from Madeira and Mauritania southward to Angola. Elsewhere in the Indo-West Pacific from South Africa and the Red Sea to Japan and Australia.

A very abundant, small, inshore shark of coastal tropical waters, ranging from the surfline down to at least 50 m. Viviparous, with 2 to 8 fetuses in a litter, gestation period about one year.

Feeds on small bony fishes, also small crustaceans. Probably the most common or one of the most common small inshore sharks, where it occurs.

PRESENT FISHING GROUNDS :

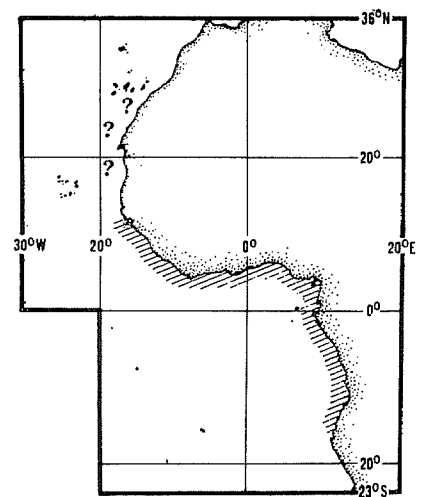
Probably taken in the region close inshore, also offshore.

CATCHES, FISHING GEAR AND FORMS OF UTILIZATION :

Separate statistics are not reported for this species.

Caught on hook and line and in bottom trawls.

Utilized for food (fresh, dried salted?); also for fishmeal.



CETOR

1981

FAO SPECIES IDENTIFICATION SHEETS

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)

CETORHINIDAE

Basking sharks

A single species in the area - see species sheet for:

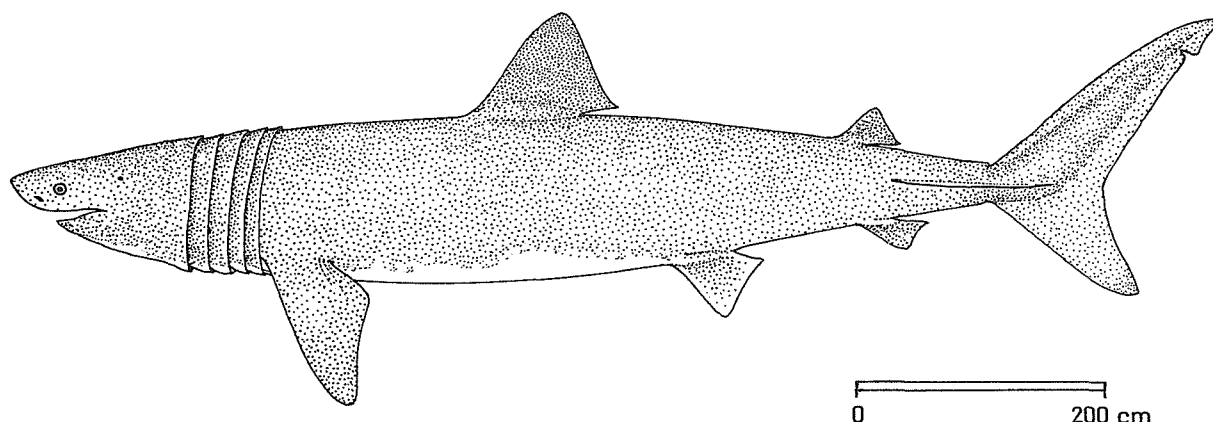
Cetorhinus maximus (Gunnerus, 1765) CETOR Cetor 1

FAO SPECIES IDENTIFICATION SHEETS

FAMILY : CETORHINIDAE

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)Cetorhinus maximus (Gunnerus, 1765)

OTHER SCIENTIFIC NAMES STILL IN USE : None



VERNACULAR NAMES :

FAO: En - Basking shark
Fr - Pélérin
Sp - Peregrino

NATIONAL:

DISTINCTIVE CHARACTERS :

A very large shark. Head with 5 extremely long gill slits, almost meeting at the midline above and below, the last in front of pectoral fins; unique, long, bristle-like gillrakers, formed from modified dermal denticles, in rows along the internal gill slits and serving as plankton strainers (occasionally absent in individuals in which they have been shed and new rakers have not yet erupted); nostrils without barbels or oronasal grooves; no nictitating lower eyelids; snout long, conical or hooked (in young); teeth very small, extremely numerous, not bladelike, and with a single cusp. Two dorsal fins, the first above the space between pectoral and pelvic fins, the second less than a third the size of first; anal fin present; caudal fin much less than half the total length, nearly symmetrical and crescentic, with a strong lower lobe. Caudal peduncle much depressed, with strong keels on sides; precaudal pits present. Intestinal valve of ring type.

Colour: blackish, slate-grey, blue-grey or greyish brown above, similar below or slightly lighter, often with white patches and bands on snout and belly.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA :

The combination of the characters described above readily distinguishes this species from all other sharks occurring in the area.

SIZE :

Maximum: at least 9.8 m, but reported to reach exceptionally 13.7 m.

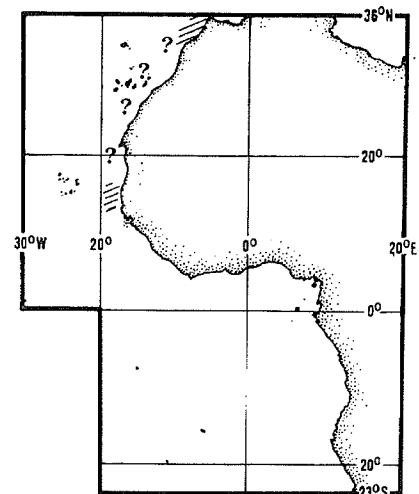
GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR :

A temperate-boreal, harmless species that enters Fishing Area 34 from the north, and ranges southward to the Canary Islands and Senegal. Found in the North Atlantic and Mediterranean, the South Atlantic coasts of America and Africa, the Eastern Pacific, and the Western Pacific.

A plankton-feeding, slow but strong-swimming shark that may occur in offshore waters as well as close inshore, sometimes in large bays and right off beaches.

PRESENT FISHING GROUNDS :

So far, caught only incidentally in Fishing Area 34, but this species has been subject to small and irregular fisheries in the North Atlantic and the Eastern North Pacific.

**CATCHES, FISHING GEAR AND FORMS OF UTILIZATION :**

Separate statistics are not reported for this species.

Occasionally captured in nets, including bottom gillnets and even bottom and pelagic trawls.

Utilized fresh, dried salted, as fishmeal and for liver oil.

CHLAM

1981

FAO SPECIES IDENTIFICATION SHEETS

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)

CHLAMYDOSELACHIDAE

Frilled sharks

A single species in the area - see species sheet for:

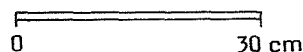
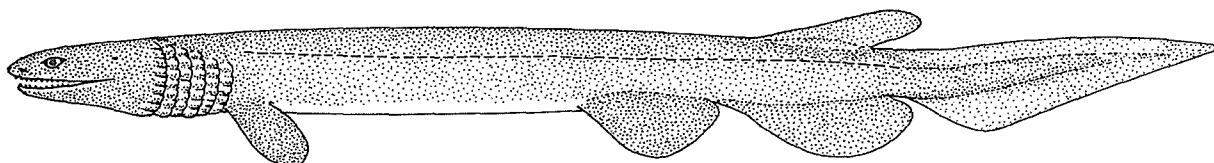
Chlamydoselachus anguineus Garman, 1884 CHLAM Chlam 1

FAO SPECIES IDENTIFICATION SHEETS

FAMILY: CHLAMYDOSELACHIDAE

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)Chlamydoselachus anguineus Garman, 1884

OTHER SCIENTIFIC NAMES STILL IN USE: None



VERNACULAR NAMES:

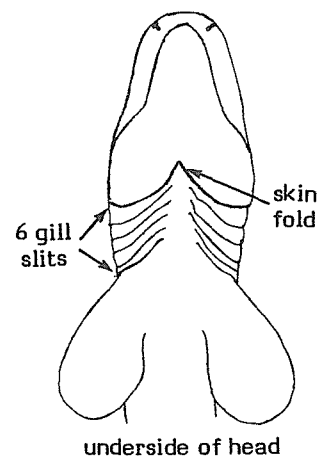
FAO: En - Frilled shark
Fr - Requin lézard
Sp - Tiburón anguila

NATIONAL:

DISTINCTIVE CHARACTERS:

A medium-sized shark with a long, eel-like body. Head with 6 long and frilly gill slits, the last in front of pectoral fin origins, the first connected to each other across the throat by a flap of skin; no gill rakers on inner gill slits; nostrils without barbels or oronasal grooves; no nictitating lower eyelids; snout very short, bluntly rounded; mouth extremely long, extending far behind the eyes, and nearly terminal; teeth of upper and lower jaws alike, with 3 strong cusps and a pair of minute cusplets between them, not compressed or bladelike. A single dorsal fin, posterior to pelvics; anal fin present; caudal fin strongly asymmetrical, without a subterminal notch or a lower lobe. Caudal peduncle not depressed, without keels or pre-caudal pits. Intestinal valve of spiral type.

Colour: grey-brown above, sometimes lighter below, fins dusky.



underside of head



upper and lower lateral teeth

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

The combination of the characters described above readily distinguishes this species from all other sharks occurring in the area.

SIZE :

Maximum: about 196 cm; common to 150 cm.

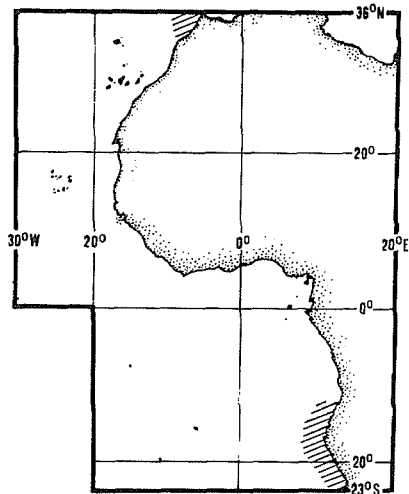
GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR :

A relatively rare, wide-ranging, deepwater bottom-dwelling shark, sporadic in its occurrence in the area and elsewhere. It is known from off Morocco, Madeira, Angola, extending southward to Namibia and possibly to South Africa, and northward to North Scotland, West Ireland, and Norway. It also occurs in the Western and Eastern Pacific.

Usually it is found on the outer continental shelves and upper slopes, at depths between 120 and 1 100 m, but sometimes comes into shallow waters. Oviviparous, number of young 8 to 12.

PRESENT FISHING GROUNDS :

Incidentally caught offshore in deepwater.

**CATCHES, FISHING GEAR AND FORMS OF UTILIZATION :**

Separate statistics are not reported for this species.

Rarely taken in bottom trawls.

Used for fishmeal.

ECHIN

1981

FAO SPECIES IDENTIFICATION SHEETS

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)

ECHINORHINIDAE

Bramble sharks

A single species in the area - see species sheet for:

Echinorhinus brucus (Bonnaterre, 1788) ECHIN Echin 1

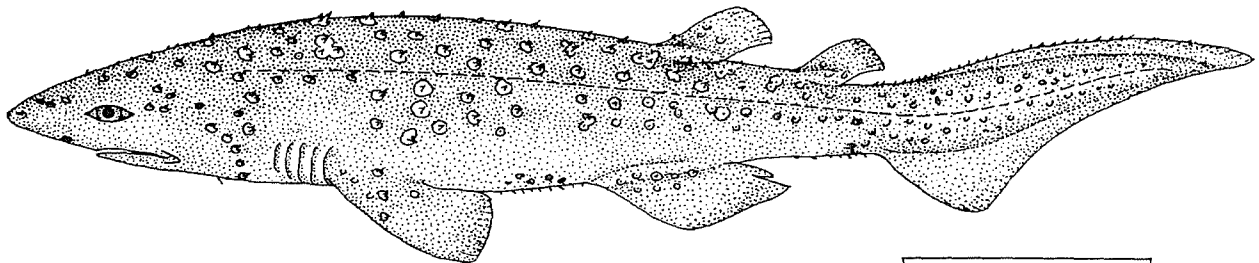
FAO SPECIES IDENTIFICATION SHEETS

FAMILY : ECHINORHINIDAE

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)

Echinorhinus brucus (Bonnaterre, 1788)

OTHER SCIENTIFIC NAMES STILL IN USE : None



0 40 cm

VERNACULAR NAMES :

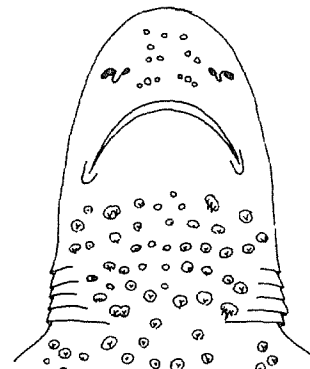
FAO: En - Bramble shark
Fr - Squale bouclé
Sp - Tiburón de clavos

NATIONAL:

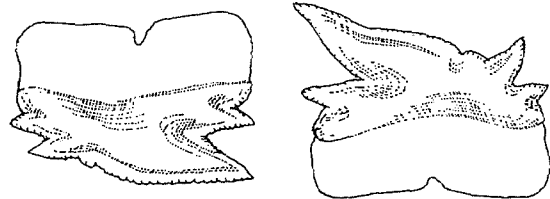
DISTINCTIVE CHARACTERS :

A medium-sized, heavy-bodied shark with very large, platelike denticles scattered sparsely over the body and armed with one or more thornlike cusps. Head with 5 gill slits, all anterior to pectoral fins, the fifth abruptly elongated at lower end; snout broadly rounded; mouth extending to behind eyes; spiracles always present, small-sized; eyes on sides of head, without nictitating eyelids; teeth small, strongly compressed, bladelike, and alike in both jaws, with a strong primary cusp and one or more cusplets on either side; the cusplets increase with tooth replacement during growth. Dorsal fins spineless, the first originating over or posterior to pelvic fin origins; second dorsal fin about as large as first; inner corners of pectorals rounded; pelvics much larger than second dorsal; anal fin absent; caudal fin strongly asymmetrical, without a well-developed lower lobe. Caudal peduncle not depressed, without keels or precaudal pits. Intestinal valve of spiral type.

Colour: dark grey or purplish grey to dull brown or olive above, lighter to white below with or without darker blackish or reddish blotches on sides.



underside of head

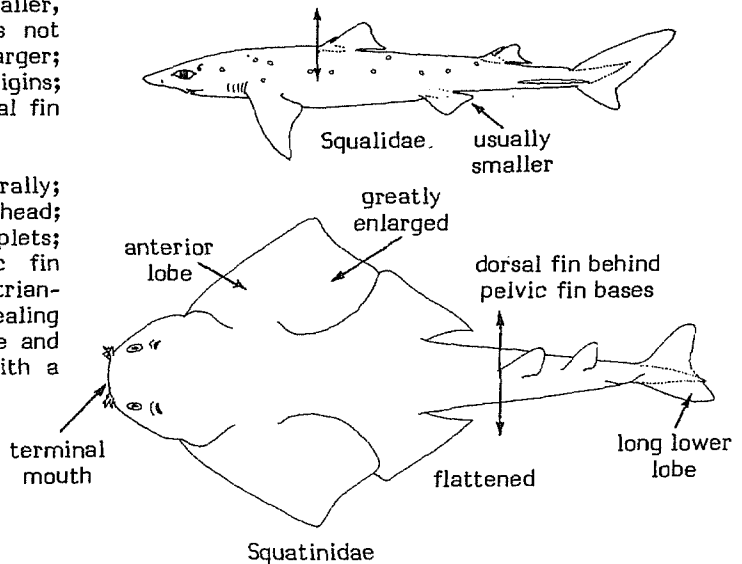
upper and lower
lateral teeth

DISTINGUISHING CHARACTERS OF SIMILAR FAMILIES OCCURRING IN THE AREA :

Squalidae and Oxynotidae: denticles smaller, more closely set, not platelike; fifth gill slits not abruptly larger than first to fourth; spiracles larger; first dorsal fin origin well anterior to pelvic origins; pelvic fins usually about as large as second dorsal fin or smaller.

Squatinae: trunk much flattened dorsoventrally; mouth terminal; eyes on upper surface of head; teeth not bladelike, with a single cusp and no cusplets; origin of first dorsal fin posterior to pelvic fin bases; anterior margins of pectorals expanded as triangular lobes past the gill slits and partly concealing them; both the pectorals and pelvics very large and winglike; caudal fin nearly symmetrical, but with a lower lobe longer than the upper.

All other shark families: anal fin present.



SIZE :

Maximum: to about 274 cm; common from 150 to 260 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR :

A wide ranging, temperate to tropical shark found off Morocco, the Canary Islands, Senegal, Ivory Coast and southward to Namibia. Elsewhere, in the Mediterranean, northward to off Scotland and Ireland, in the Western Atlantic, Indian Ocean, and Western Pacific.

An inhabitant of the outer continental shelves and upper continental slopes commonly found at depths between 400 and 900 m, but also occurring in shallow waters. A bottom-dwelling species, probably slow-swimming. Ovoviviparous, with up to 24 young.

Feeds on small bony fishes, other sharks, and crabs.

PRESENT FISHING GROUNDS :

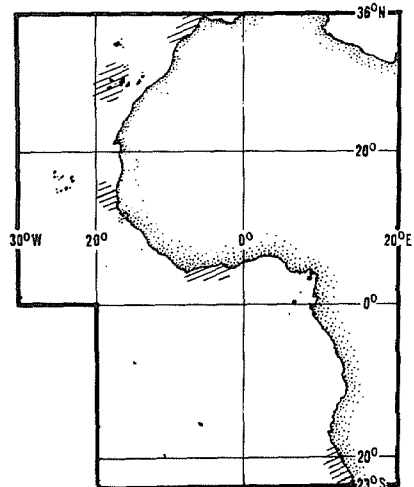
Offshore, rarely caught.

CATCHES, FISHING GEAR AND FORMS OF UTILIZATION :

Separate statistics are not reported for this species.

Caught in bottom trawls.

Used for fishmeal.



GINGL

1981

FAO SPECIES IDENTIFICATION SHEETS

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)

GINGLYMOSTOMATIDAE

Nurse sharks

A single species in the area - see species sheet for:

Ginglymostoma cirratum (Bonnaterre, 1788) GINGL GINGL 1

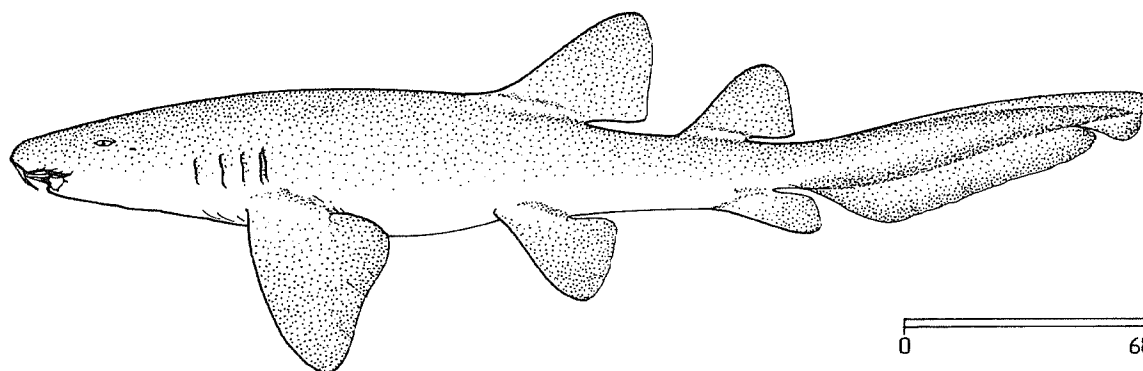
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: GINGLYMOSTOMATIDAE

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)

Ginglymostoma cirratum (Bonnaterre, 1788)

OTHER SCIENTIFIC NAMES STILL IN USE: None



VERNACULAR NAMES:

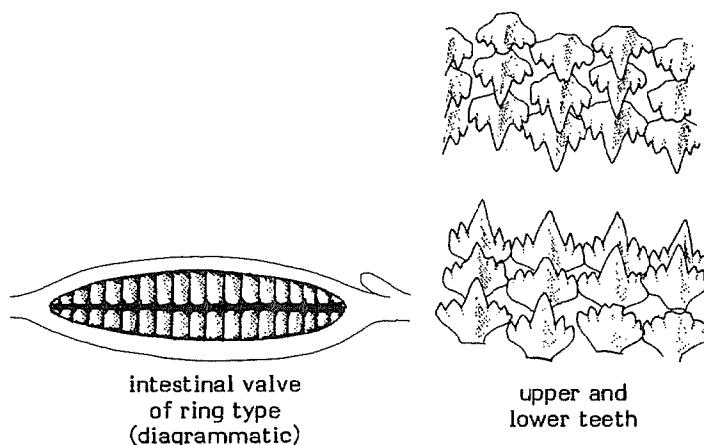
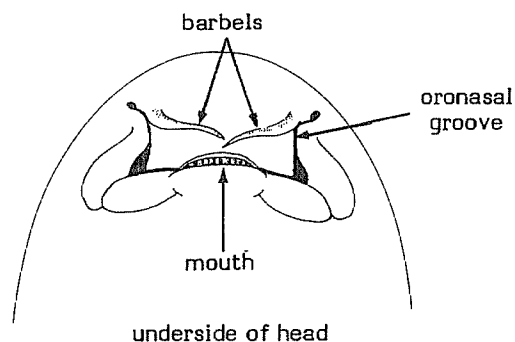
FAO: En - Nurse shark
Fr - Requin nourrice
Sp - Gata nodriza (= Gata atlántica, Area 31)

NATIONAL:

DISTINCTIVE CHARACTERS:

A large shark. Head with 5 small gill slits, the last 2 behind pectoral fin origins and very close to each other; no gillrakers; nostrils close to front of snout, with long barbels and oronasal grooves connecting them with the mouth; no nictitating lower eyelids; snout very short, broad and bluntly rounded; mouth short, nearly transverse, and far forward on head, well in front of eyes; teeth small, poorly differentiated in different regions of the mouth, with short medial cusps and large cusplets on sides. Two dorsal fins, the base of the first over pelvic fin bases, the second about half the two thirds the size of first; anal fin present; caudal fin much less than half the total length, strongly asymmetrical, with a pronounced subterminal notch but with lower lobe hardly developed. Caudal peduncle not strongly depressed, without keels; no pre-caudal pits. Intestinal valve of ring type.

Colour: back yellow, yellow-green, or reddish brown, underside yellowish, dark spots and dorsal saddles in young.



DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA :

The combination of characters such as the oronasal grooves, the presence of barbels, the anterior mouth, the posterior position of the first dorsal fin, the absence of caudal keels and precaudal pits, and the asymmetrical caudal fin readily distinguishes this shark from all others in Fishing Area 34.

SIZE :

Maximum: reported to reach about 430 cm;
common to 340 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR :

In the area, from Cape Verde Islands, Senegal, and Cameroon to Gabon, but probably more wide-spread; also exceptionally extending northward to the Bay of Biscay. Elsewhere, in the Western Atlantic from Rhode Island to southern Brazil, and in the Eastern Pacific from the Gulf of California to Peru.

Very common inshore, around mangrove keys, rocky reefs, and on sand flats. A sluggish bottom dweller, sometimes seen mating in shallow water. Ovoviviparous, with litters of up to 26 young; size at birth about 27 to 29 cm.

Feeds mostly on invertebrates, including shrimps, crabs, lobsters, squid, sea urchins and molluscs; also on small fish.

PRESENT FISHING GROUNDS :

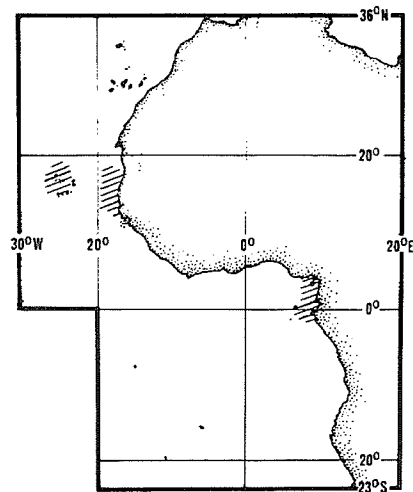
Inshore waters.

CATCHES, FISHING GEAR AND FORMS OF UTILIZATION :

Separate statistics are not reported for this species.

Caught on line gear, in fixed bottom nets, and in bottom trawls.

Marketed fresh or salted. The extremely thick and tough hides are used for leather. Normally inoffensive, but dangerous if provoked and occasionally attacking unprovoked.



HEMIG

1981

FAO SPECIES IDENTIFICATION SHEETS

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)

HEMIGALEIDAE

Weasel sharks

A single species in the area - see species sheet for:

Paragaleus pectoralis (Garman, 1913) HEMIG Para 1

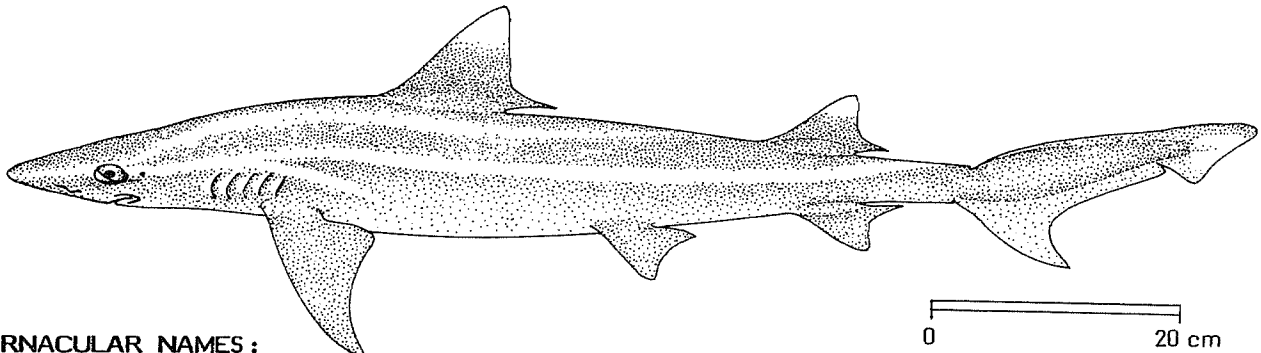
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: HEMIGALEIDAE

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)

Paragaleus pectoralis (Garman, 1913)

OTHER SCIENTIFIC NAMES STILL IN USE: *Paragaleus gruveli* Budker, 1935



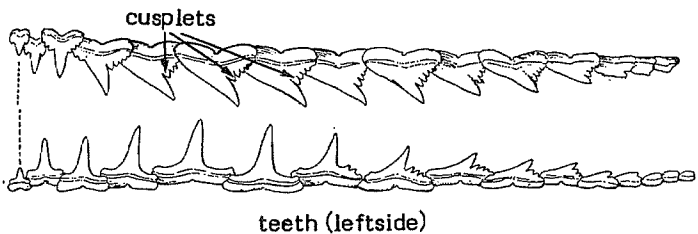
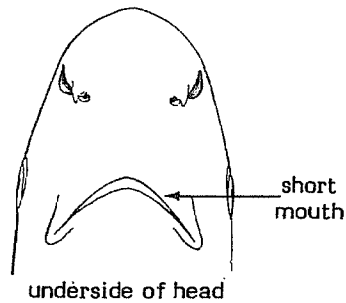
VERNACULAR NAMES:

FAO: En - Atlantic weasel shark
Fr - Milandre jaune
Sp - Tiburón comadreja

NATIONAL:

DISTINCTIVE CHARACTERS:

A small, moderately slender shark. Head with 5 small gill slits, the last two over the pectoral fin bases; spiracles minute, porelike, much smaller than eyes; no gill rakers; nostrils with anterior nasal flaps formed as short pointed lobes, not as slender barbels; no oronasal grooves; eyes horizontally oval, on sides of head, with strongly developed nictitating eyelids; snout long and narrowly rounded; mouth moderately wide and short, but extending backward beyond the eyes; labial furrows moderately long reaching a transverse line through front of mouth; teeth small, not forming a pavement, different in upper and lower jaws; upper lateral teeth broader, bladelike, smooth-edged, with oblique cusps and several small cusplets on their outer edges; lower lateral teeth with narrow, erect to oblique cusps and a few or no cusplets; no small intermediate teeth between upper anterior and lateral teeth. Two dorsal fins, the first high, triangular, much shorter than caudal fin, its base well in front of pelvics and its origin over rear corners of pectorals; second dorsal fin about half the size of first and slightly larger than anal fin; origin of anal fin posterior to that of second dorsal; caudal fin with a strong lower lobe, a rippled upper edge, and a subterminal notch. Caudal peduncle not compressed, without keels; precaudal pits present. Intestinal valve of spiral type, with 4 to 6 turns to the auger or corkscrew-like valve.



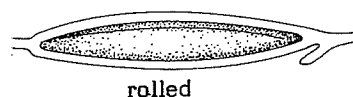
Colour: grey-brown above, white below, with horizontal stripes of yellow on flanks (fading and disappearing after death); underside of snout tip with a short longitudinal black stripe on either side of midline.

DISTINGUISHING CHARACTERS OF SIMILAR FAMILIES OCCURRING IN THE AREA :

Carcharhinidae: intestine with a biblike scroll valve; teeth usually serrated; no black stripes on underside of snout or yellow stripes on flanks; eyes usually round or vertically oval (except in *Negaprion brevirostris*, which also has horizontally oval eyes).

Triakidae: teeth alike in both jaws; mouth larger and longer, labial furrows not reaching a transverse line through front of mouth; no precaudal pits or rippled upper edge to caudal fin; no black stripes on underside of snout or yellow stripes on flanks.

Leptochariidae: body slimmer, nostrils with barbels; mouth longer; teeth not bladelike, alike in upper and lower jaws; lower lobe of caudal fin weak or absent, its upper edge not rippled; no precaudal pits; intestinal valve with 14 to 16 turns; no black stripes on underside of snout or yellow stripes on sides.



rolled



unrolled scroll valve (diagrammatic)

Carcharhinidae



spiral valve (diagrammatic)

Hemigaleidae and many other families

SIZE :

Maximum reported about 138 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR :

A tropical species essentially confined to Fishing Area 34, ranging from Mauritania and the Cape Verde Islands southward to Angola; it possibly also occurs further north; but a Western North Atlantic record from New England may be incorrect.

Common in inshore waters to depths slightly below 100 m. Viviparous.

Feeds on small fishes.

PRESENT FISHING GROUNDS :

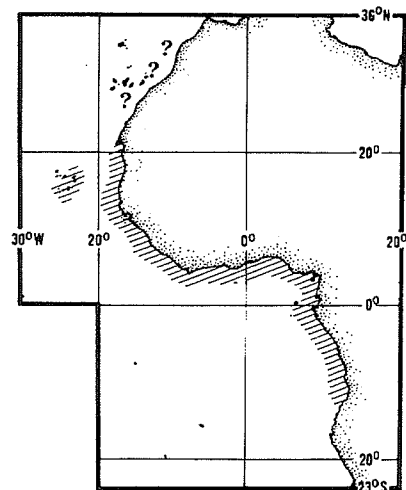
Primarily inshore, some offshore.

CATCHES, FISHING GEAR AND FORMS OF UTILIZATION :

Separate statistics are not available for the species.

Caught on longlines, probably also on hook and line, in gillnets, and bottom trawls.

Used for fishmeal, also probably fresh and dried salted.



FAO SPECIES IDENTIFICATION SHEETS

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)

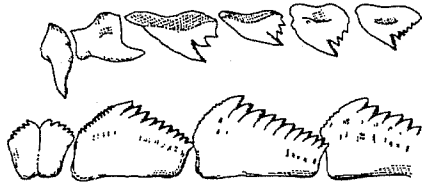
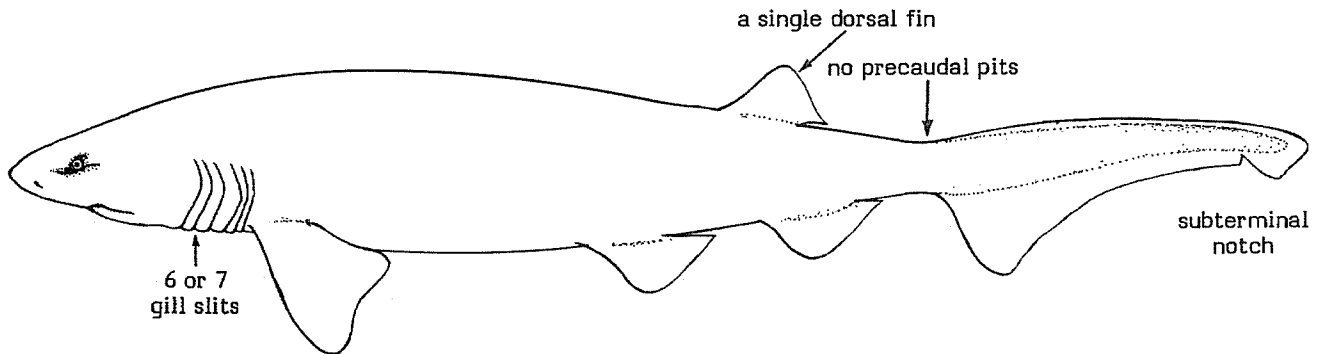
HEXANCHIDAE

Sixgill and sevengill sharks (also, cow sharks)

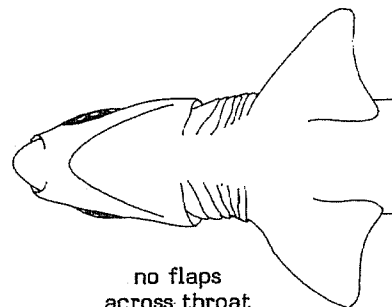
Small to large sharks with slender to stout bodies, not eel-shaped. Head with 6 or 7 long gill slits, the last in front of pectoral fin origins, the first pair not connected across throat; short dermal gillrakers present on inner gill slits; spiracles present, small; nostrils without barbels or oronasal grooves; no nictitating lower eyelids; snout short, acutely to bluntly pointed; mouth very long and extending far behind the eyes; teeth of upper and lower jaws unlike at sides of mouth, uppers small, narrow, with a main cusp and often smaller cusplets, lowers very large, broad, compressed and sawlike, with a series of cusps or large cusplets. A single dorsal fin, posterior to pelvic fins; anal fin present; caudal fin much less than half the total length, strongly asymmetrical, with a pronounced subterminal notch but the lower lobe very short. Caudal peduncle not depressed, without keels; no precaudal pits. Intestinal valve of spiral type.

Colour: grey, blackish or brown above, lighter below, one species with dark and sometimes light small spots.

These are moderately abundant, inshore to deepwater sharks, found in shallow bays down to the continental slopes and submarine canyons. They eat a wide variety of bony fishes, other sharks, and crustaceans. They are taken in deepwater line fisheries for sharks in the area and elsewhere, and are incidentally caught in trawls. Harmless unless provoked.



example of upper and lower teeth
(*H. vitulus*)



intestinal valve of spiral type

SIMILAR FAMILIES OCCURRING IN THE AREA :

Chlamydoselachidae: also with a single dorsal fin and 6 gill slits, but distinguished by having a nearly terminal mouth, the first pair of gill slits connected across throat by a flap of skin, three-cusped teeth in both jaws, no subterminal notch on caudal fin, and a long, almost eel-like body.



Chlamydoselachus anguineus

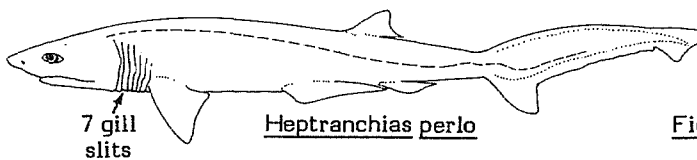
No other sharks in the area have a single dorsal fin and 6 or 7 gill slits.

KEY TO SPECIES OCCURRING IN THE AREA :

1 a. Seven gill slits (Fig. 1) Heptranchias perlo

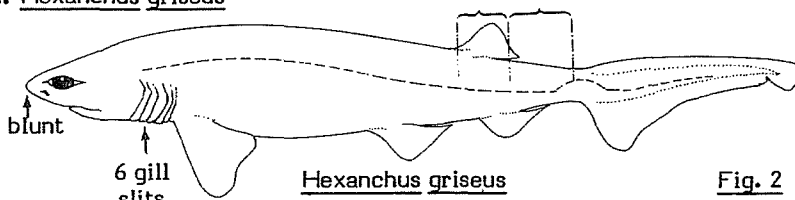
1 b. Six gill slits (Figs. 2,3)

2 a. Snout very short and blunt; lower jaw with 6 rows of large comb-like teeth on each side; dorsal fin base separated from upper caudal fin origin by a distance about equal to, or slightly greater than its length (Fig. 2); size very large, up to 4.7 m

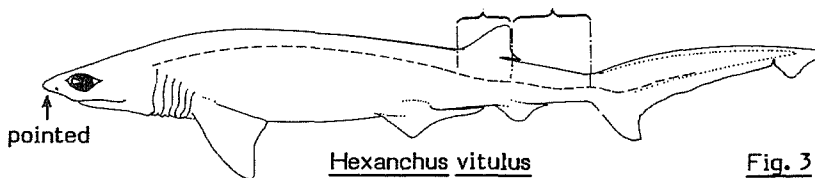


Hexanchus griseus

2 b. Snout longer and more pointed; lower jaw with 5 rows of large comblike teeth on each side; dorsal fin base separated from upper caudal fin origin by a distance much greater than its length (Fig. 3); size smaller, up to 1.8 m ..



Hexanchus vitulus



LIST OF SPECIES OCCURRING IN THE AREA :

Code numbers are given for those species for which Identification Sheets are included

* Heptranchias perlo (Bonnaterre, 1788) HEX Hept 1

Hexanchus griseus (Bonnaterre, 1788) HEX Hex 1

* * Hexanchus vitulus Springer & Waller, 1969

Prepared by L.J.V. Compagno, Tiburon Center of Environmental Studies, San Francisco State University, Tiburon, California, U.S.A.

* Sometimes placed in its own family, Heptranchidae

* * An older name for this species may be H. nakamurai Teng, 1962

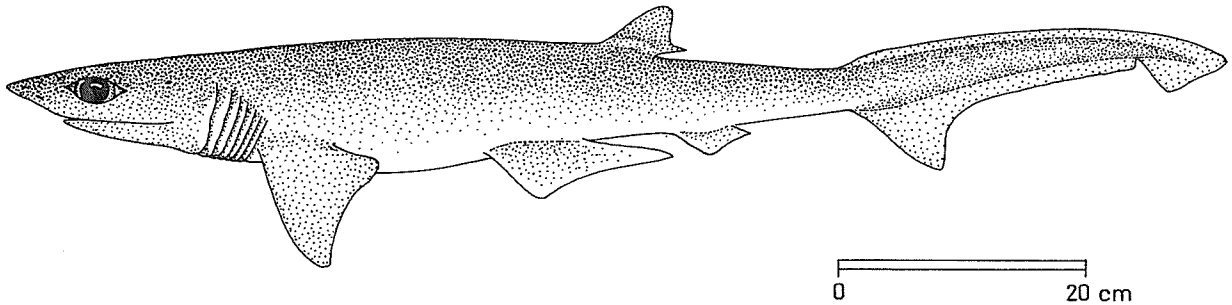
FAO SPECIES IDENTIFICATION SHEETS

FAMILY : HEXANCHIDAE

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)

Heptranchias perlo (Bonnaterre, 1788)

OTHER SCIENTIFIC NAMES STILL IN USE : None



VERNACULAR NAMES :

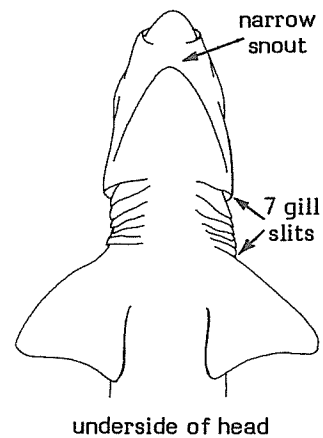
FAO: En - Sharpnose sevengill shark
Fr - Requin ~~gris~~ *perlon*
Sp - Cañabota ~~gris~~ (= Cañabota) boca dulce

NATIONAL:

DISTINCTIVE CHARACTERS :

A small, slender shark. Head with 7 gill slits; head and snout very narrow; eyes very large; teeth of upper and lower jaws unlike at sides of mouth, uppers smaller, narrower, with a main cusp and a few small cusplets, lowers larger, compressed and comblike, with a long main cusp and several cusplets, their inner edges with a few short cusplets but no serrations. A single dorsal fin, separated from origin of caudal fin by over twice its base length; a short lower caudal fin lobe in adults.

Colour: grey-brown above, pale below, the young with dark tips on dorsal fin and terminal lobe of caudal fin, lost in adults.



teeth of left side

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA :

Hexanchus species: 6 gill slits; inner edges of comblike lower lateral teeth with serrations.

SIZE :

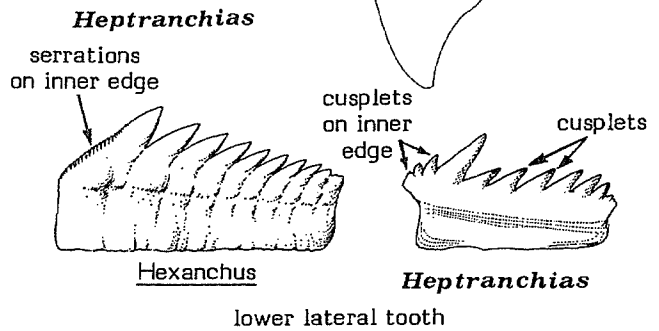
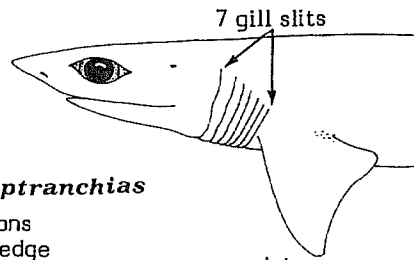
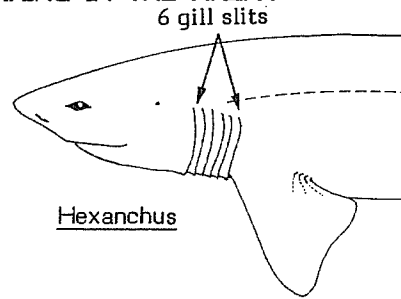
Maximum: probably to 137 cm, most adults below 110 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR :

In the area it is found from off Morocco to Angola. Elsewhere it occurs in the Mediterranean, Western Atlantic, S.W. Indian Ocean, Western Pacific, and possibly S.E. Pacific.

A tropical to warm temperate, primarily deep-water species, found on the outer continental shelves and upper slopes down to at least 1 000 m, but also sometimes occurring in shallow waters. Apparently an active swimmer near the bottom. Ovoviviparous, number of young from 9 to 20. Size at birth near 27 cm.

Feeds on bony fishes, including hake, and squid. Aggressive when captured, but too small to be dangerous.



PRESENT FISHING GROUNDS :

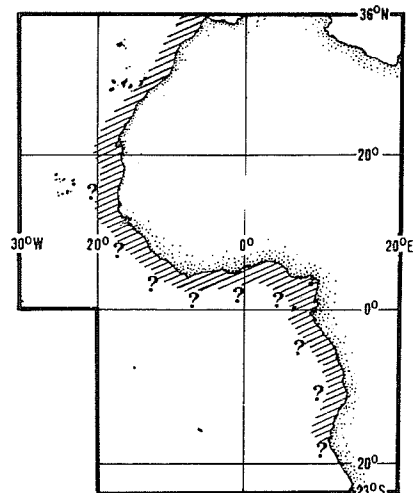
Offshore waters in the area.

CATCHES, FISHING GEAR AND FORMS OF UTILIZATION :

Separate statistics are not reported for this species.

Caught in bottom trawls; also in pelagic trawls.

Utilized for fishmeal.



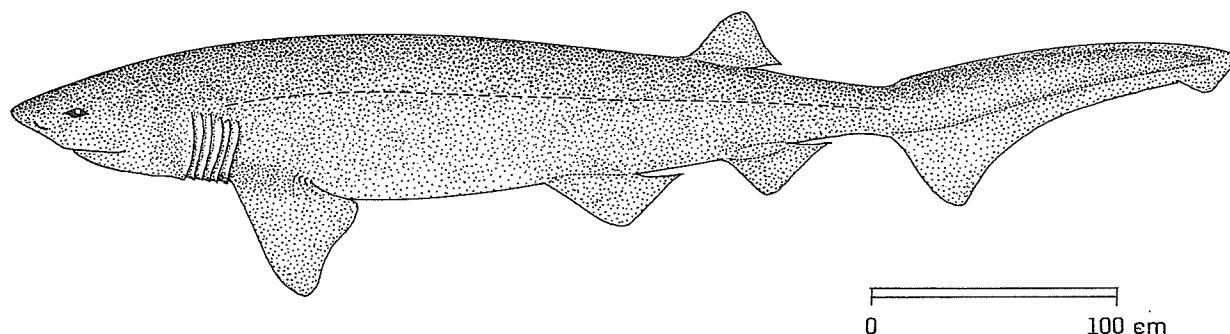
FAO SPECIES IDENTIFICATION SHEETS

FAMILY : HEXANCHIDAE

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)

Hexanchus griseus (Bonnaterre, 1788)

OTHER SCIENTIFIC NAMES STILL IN USE : None



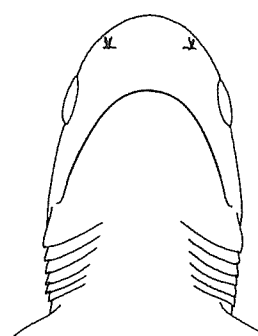
VERNACULAR NAMES :

- FAO: En - Bluntnose sixgill shark
 Fr - Requin ~~perlon~~ griset
 Sp - Cañabota ~~boquidulee~~ gris

NATIONAL:

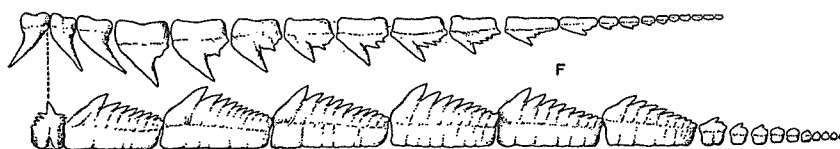
DISTINCTIVE CHARACTERS :

A very large, heavy-bodied shark with 6 gill slits. Head and snout broad, eyes relatively small; teeth of upper and lower jaws unlike at sides of mouth, uppers smaller, narrower, with a long main cusp and a few cusplets, lowers large, compressed and comblike, with a short main cusp and short cusplets, their inner edges serrated. A single dorsal fin separated from origin of caudal fin by about its base length; lower caudal lobe weak in adults, hardly indicated in immature individuals.



underside of head

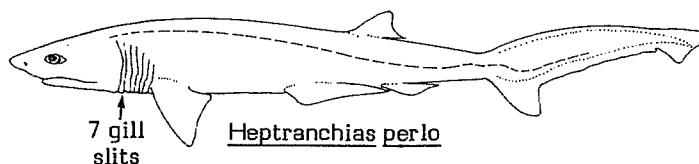
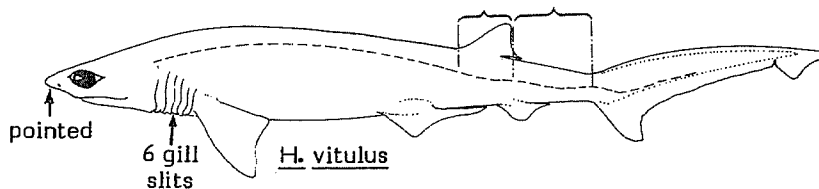
Colour: pale grey, dark grey, dark brown, or blackish above, often lighter below or even whitish.



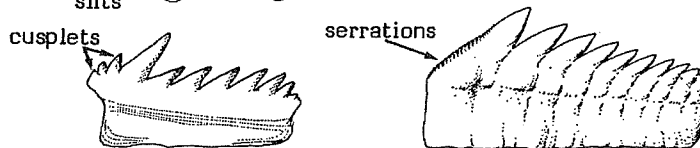
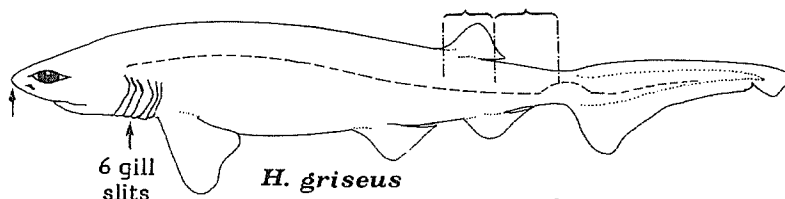
teeth of left side

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA :

Hexanchus vitulus: apparently occurring only in the extreme north of the area off the Gibraltar region and possibly off Ivory Coast and Nigeria. Similar to H. griseus in having 6 gill slits and serrations on the inner edges of its comblike lower teeth, but differs in being much slimmer and smaller (170 cm maximum), with a narrower head and snout, larger eyes, only 5 large comblike lower teeth on either side of symphysis (6 in H. griseus), and the dorsal fin base separated from caudal fin origin by a distance much greater than its base length.



Heptranchias perlo: 7 gill slits, lower comblike teeth with longer cusps and cusplets but without inner serrations, head and snout narrower, eyes larger, dorsal fin separated from caudal fin by a distance much greater than its base length, size much smaller (less than 1.4 m maximum), and body much slimmer.



SIZE :

Adults to at least 482 cm, maturing at about 450 cm.

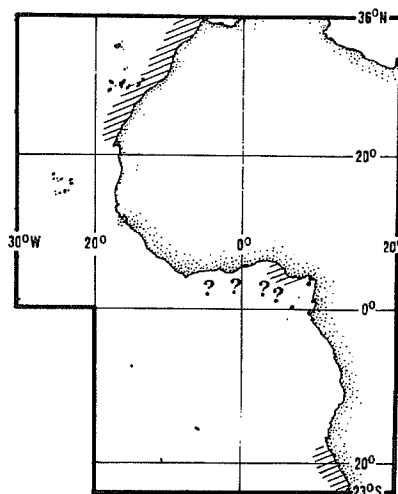
GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR : Heptranchias

Hexanchus
lower lateral tooth

Within the area, known to occur from Morocco to Senegal and off Namibia, but nominally also recorded off Ivory Coast and Nigeria (= H. vitulus?). Elsewhere wideranging in the Mediterranean and Northeastern Atlantic to Norway, and in the Western Atlantic, S.W. Indian Ocean, and Western and Eastern Pacific.

A large temperate to subtropical, mostly deep-water shark, perhaps occurring at greater depths closer to the equator, but recorded from the surface down to 1 875 m. The young occur in bays and at the heads of submarine canyons. Sluggish and bottom-dwelling. Ovoviviparous, with litters of 22 to 108 fetuses.

Feeds on small to moderately large bony fishes and other sharks, including dolphinfishes, small marlin and swordfish, gurnards, hake, ling and grenadiers, as well as crabs and shrimps. Not known to be dangerous to people, although the young will snap when captured.



PRESENT FISHING GROUNDS :

Offshore.

CATCHES, FISHING GEAR AND FORMS OF UTILIZATION :

Separate statistics are not reported for this species.

Caught in bottom trawls, and occasionally in pelagic trawls.

Utilized for fishmeal and oil.

FAO SPECIES IDENTIFICATION SHEETS

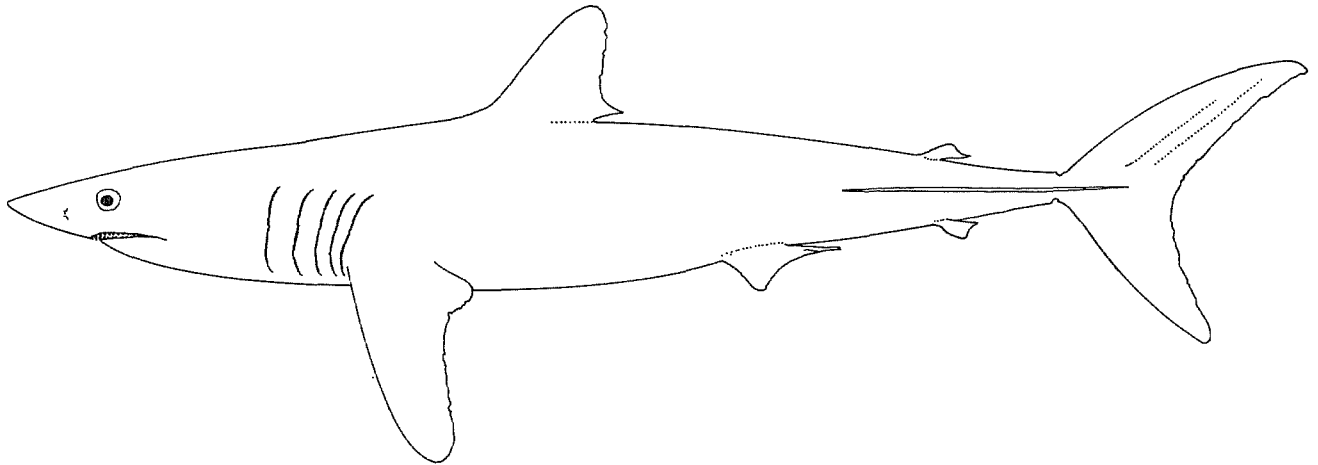
FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)

LAMNIDAE

Mackerel sharks, makos, white sharks, porbeagles

Large-sized sharks of fusiform body. Head with 5 gill slits, all in front of pectoral fin origins; gill arches without rakers; no nictitating eyelids; teeth long and few in number, awl- or blade-like, with a single cusp. Two dorsal fins, the first much shorter at base than caudal fin and far in advance of pelvic fins; second dorsal fin and anal fin much smaller than first dorsal; caudal fin lunate, less than one third the total length. Caudal peduncle strongly depressed dorso-ventrally and expanded laterally, with a prominent keel on each side, extending well out on caudal fin. Intestinal valve of ring type.

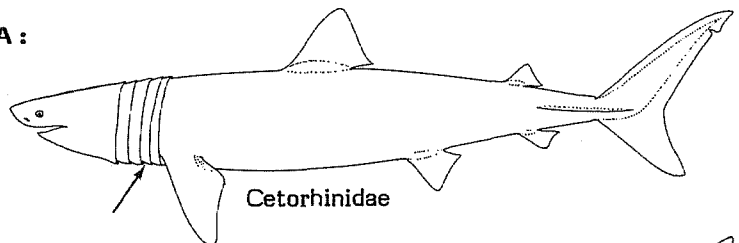
Colour: back greyish blue to black, or brownish; belly white.



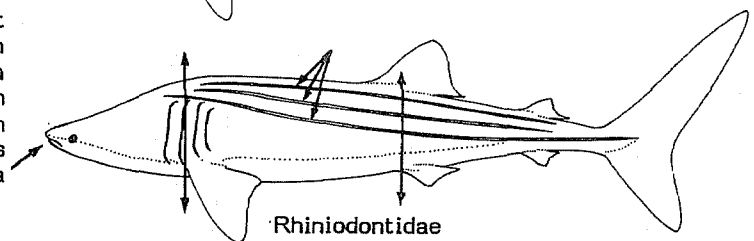
Mackerel sharks inhabit temperate and tropical waters (oceanic as well as coastal) throughout the world. They are very fast swimmers and voracious predators, feeding mainly on fish and squid; some species are known to be dangerous to man. Mackerel sharks are often used for food or for production of liver oil.

SIMILAR FAMILIES OCCURRING IN THE AREA :

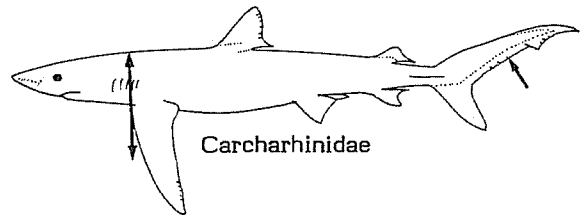
Cetorhinidae: caudal fin also lunate, but gill slits very long, extending from upper sides down to lower surface of throat; gill rakers well developed and teeth minute; size of adults larger (up to 9 m total length).



Rhiodontidae: caudal fin also lunate, but body with several prominent dermal ridges on either side; last gill slit well behind pectoral fin origin; snout squared off anteriorly; mouth nearly terminal; at least half of first dorsal fin base posterior to pelvic fin origins; gill arches connected by masses of spongy tissue; and a spotted and striped colour pattern.

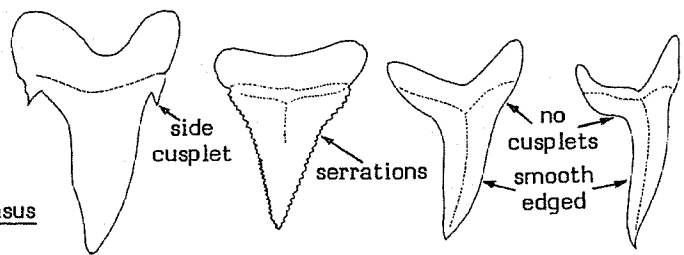


All other shark families: caudal fin strongly asymmetrical and not lunate, the upper lobe extending far beyond lower lobe; caudal peduncle not greatly flattened dorso-ventrally; also, 5th gill slits over or behind pectoral fin origins in Triakidae, Carcharhinidae, Scyliorhinidae and Ginglymostomatidae (in front of pectoral fin origins in Lamnidae).



KEY TO GENERA AND SPECIES OCCURRING IN THE AREA :

1 a. Teeth with small side cusplets (Fig. 1a) (except in specimens less than 1 m long); origin of second dorsal fin above that of anal fin; caudal fin with a small, but strong, secondary keel below the rear end of primary keel (Fig. 2) Lamna nasus



a. Lamna sp. b. Carcharodon sp. c. I. paucus d. I. oxyrinchus

upper tooth

Fig. 1

1 b. Teeth without side cusplets (Fig. 1b,c,d) (except in Carcharodon less than 2 m long); origin of second dorsal fin in advance of anal fin origin; caudal fin without a secondary keel

2 a. Upper teeth triangular with serrate edges (Fig. 1b); origin of first dorsal fin opposite or slightly anterior to inner corner of pectoral fins when latter are laid back; anal fin origin posterior to second dorsal fin base (Fig. 3) Carcharodon carcharias

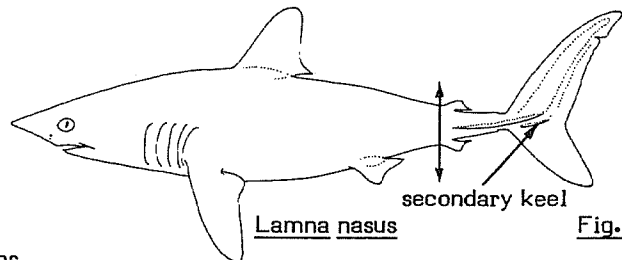


Fig. 2

2 b. Upper teeth with smooth-edged cusps (Fig. 1c,d); origin of first dorsal fin posterior to inner corner of pectoral fins when latter are laid back; anal fin origin below about middle of second dorsal fin base (Figs. 4,5) Isurus

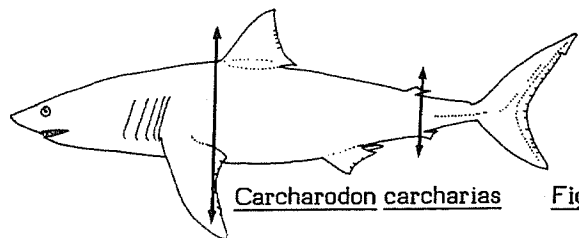


Fig. 3

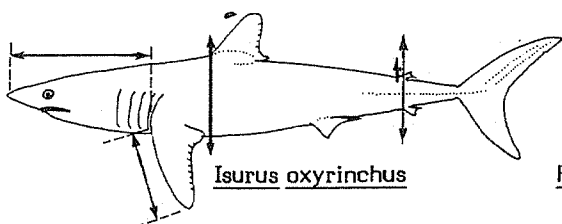


Fig. 4

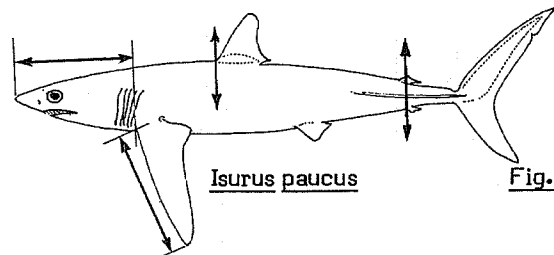
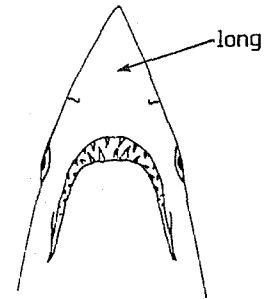


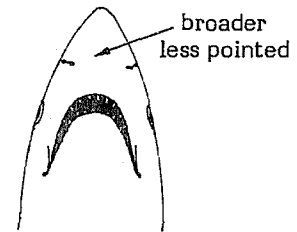
Fig. 5

3 a. Snout usually acutely pointed (Fig. 6a); cusps of upper and lower anterior teeth recurved at bases but with tips reversed and curving outward; pectoral fins considerably shorter than head, relatively narrow-tipped in young, acutely pointed in adults; origin of anal fin about under midbase of second dorsal fin (Fig. 4); underside of snout and mouth white ... Isurus oxyrinchus

3 b. Snout narrowly to bluntly (usually not acutely) pointed (Fig. 6b); cusps of upper and lower anterior teeth straighter, with tips not reversed; pectoral fins about as long as head, relatively broad-tipped in young and adults; origin of anal fin about under insertion of second dorsal fin (Fig. 5); underside of snout and mouth dusky Isurus paucus



a. I. oxyrinchus



b. I. paucus

head viewed from below

Fig. 6

LIST OF SPECIES OCCURRING IN THE AREA :

Code numbers are given for those species for which Identification Sheets are included

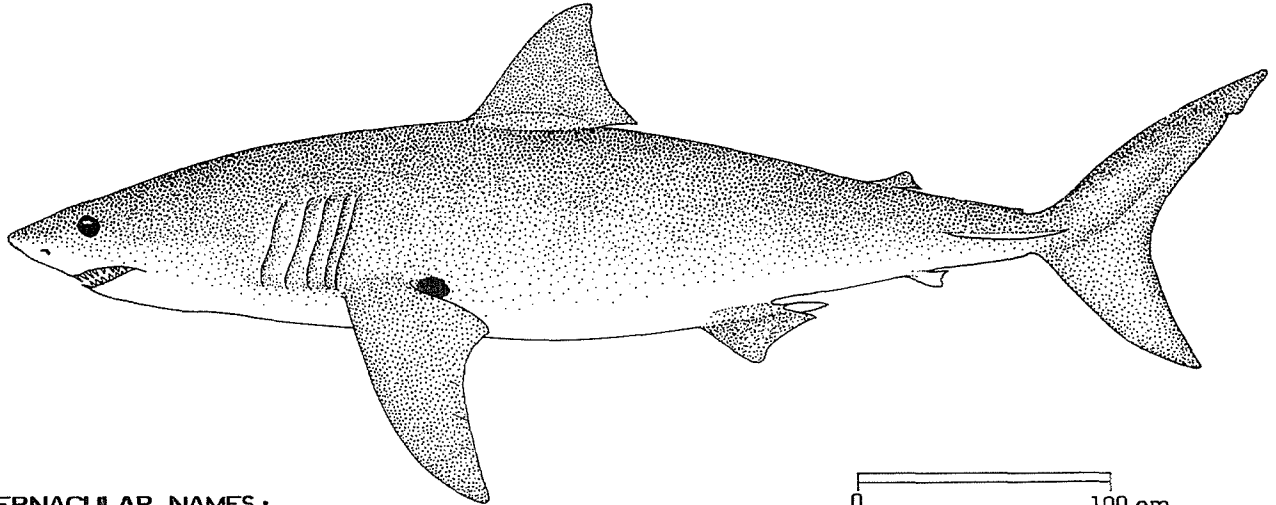
<u>Carcharodon carcharias</u> (Linnaeus, 1758)	LAMN Car 1
<u>Isurus oxyrinchus</u> Rafinesque, 1810	LAMN Isur 1
<u>Isurus paucus</u> Guitart, 1965	LAMN Isur 2
<u>Lamna nasus</u> (Bonnaterre, 1788)	LAMN Lamn 1

FAO SPECIES IDENTIFICATION SHEETS

FAMILY: LAMNIDAE

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)Carcharodon carcharias (Linnaeus, 1758)

OTHER SCIENTIFIC NAMES STILL IN USE: None



VERNACULAR NAMES:

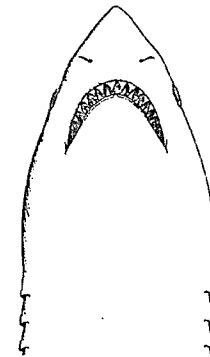
FAO: En - Great white shark
Fr - Grand requin blanc
Sp - Jaquetón blanco (= Jaquetón)

NATIONAL:

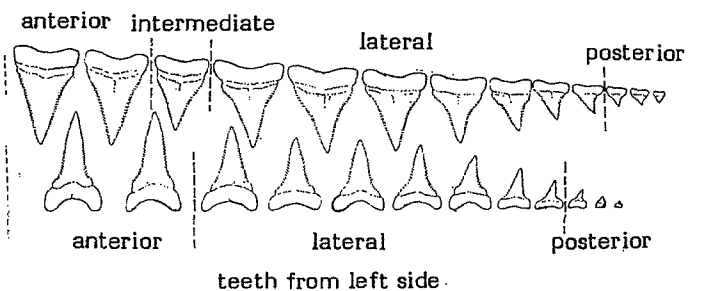
DISTINCTIVE CHARACTERS:

A very large shark with a fusiform, usually heavy body and a moderately long, bluntly pointed snout. Head with 5 long gill slits, all in front of pectoral fin origins; gill arches without rakers; spiracles very small; mouth long and broadly rounded; teeth very large and relatively few, narrower in the lower than in the upper jaw, pointed backwards, with a single broad cusp and strong serrations at most sizes (irregular in individuals below 1.5 m length, and with cusplets present at about 2 m length or less, but lost in larger individuals); anterior teeth greatly enlarged in both jaws, in two rows on either side of symphysis, broadly triangular and compressed, not recurved; intermediate and first few lateral teeth a little smaller, the intermediate ones less differentiated from the anterior and lateral teeth than in other members of the family; two dorsal fins, the first large, originating over inner margins of pectorals, the second very small; pectoral fins shorter than head and falcate; anal fin origin posterior to rear end of second dorsal fin base; caudal fin lunate, its lower lobe strongly developed. Caudal peduncle very much flattened dorso-ventrally, expanded laterally, with a prominent keel on either side extending well out on caudal fin but with no secondary keel on the fin.

0 100 cm



underside of head



teeth from left side.

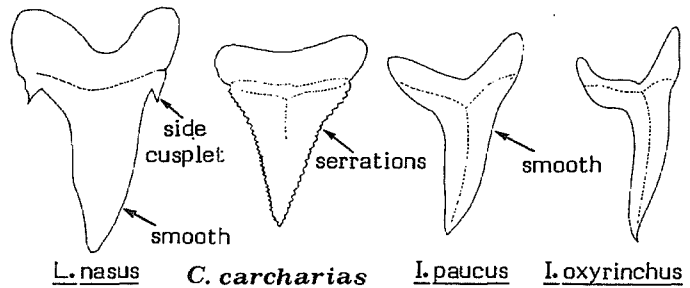
Colour: grey-brown, dark grey, blue-grey, blackish, light grey or grey-white above, white below, fins with dusky margins below, black tips on underside of pectoral fins, a black spot present or lacking on pectoral fin axils.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA :

Isurus and Lamna species: head narrower, teeth narrow-cusped, not serrated, anal fin origin under second dorsal base (Isurus) or under second dorsal origin (Lamna).

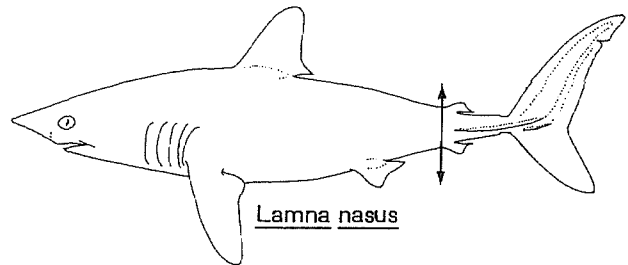
Cetorhinus maximus (Cetorhinidae): gill slits much longer, gill rakers present, teeth minute and hooked, second dorsal fin relatively larger.

No other sharks in the area have the combination of characters underlined above.



SIZE :

Maximum: to at least 640 cm and possibly 800 cm (a record for 1098 cm later proved incorrect); common to 400-600 cm.

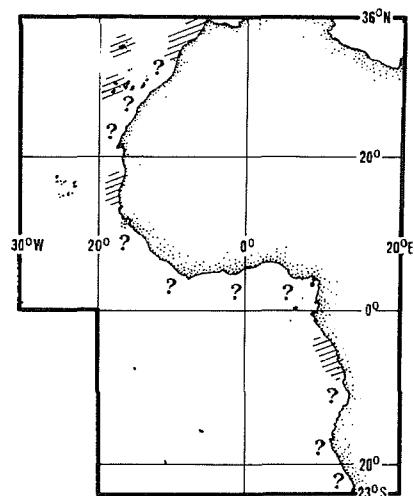
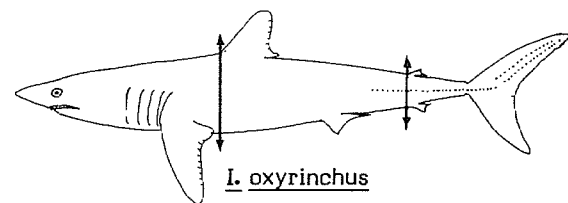
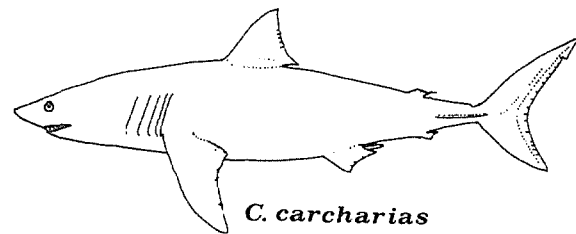


GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR :

In the area it is known to occur from Morocco to Senegal (including the Madeira and Canary Islands) and off Ghana and Zaire. Also present in the Mediterranean and northward to France. Elsewhere widespread in cold-temperate to tropical seas, but primarily in cool to warm temperate waters.

A coastal offshore species, not oceanic, often occurring close inshore and entering shallow bays. A powerful, strong swimmer but not leaping out of the water like Isurus oxyrinchus. Ovoviviparous, possibly up to 9 fetuses in a litter, size at birth between 60 and 140 cm.

A voracious and extremely powerful predator, feeding on a wide variety of small to large marine organisms, including other sharks, chimaeras, bony fishes, seals and sea lions, sea birds, squids as well as carrion. A dangerous species, responsible for a number of unprovoked attacks on swimmers and boats.



PRESENT FISHING GROUNDS :

Primarily offshore.

CATCHES, FISHING GEAR AND FORMS OF UTILIZATION :

Separate statistics are not reported for this species.

Caught on longlines, with hook and line, in fixed bottom gillnets, and even pelagic and bottom trawls and purse seines.

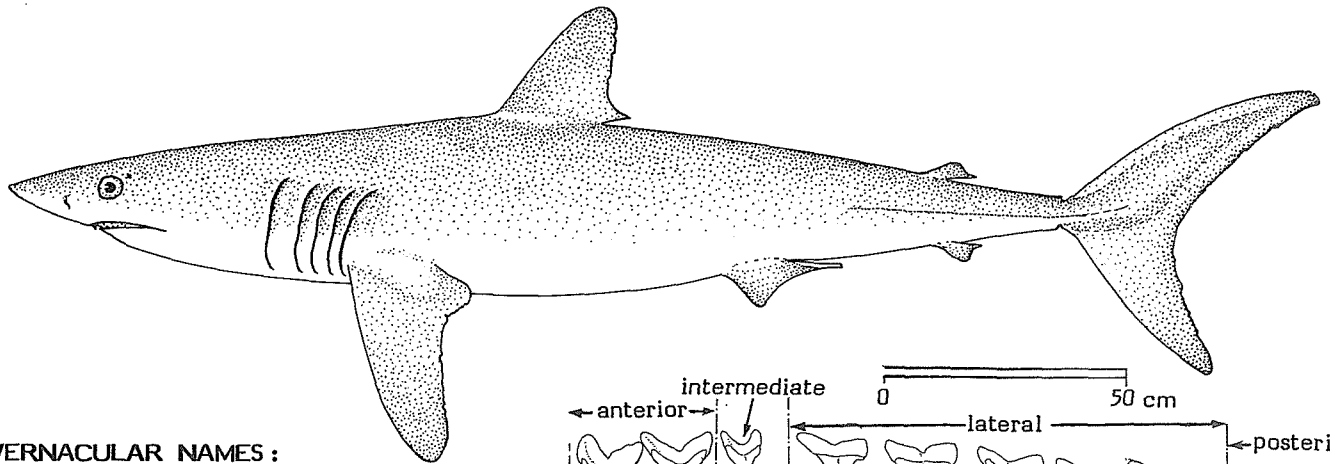
Utilized dried salted, smoked and probably fresh; also used for oil and fishmeal.

FAO SPECIES IDENTIFICATION SHEETS

FAMILY: LAMNIDAE

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)Isurus oxyrinchus Rafinesque, 1810

OTHER SCIENTIFIC NAMES STILL IN USE: None



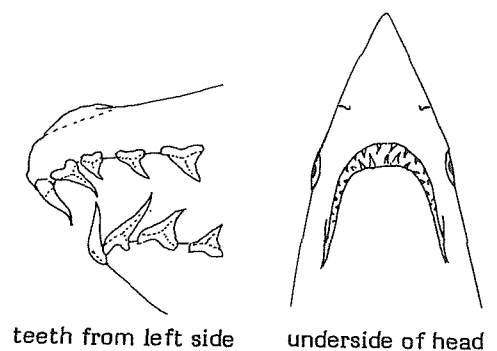
VERNACULAR NAMES:

FAO: En - Short fin mako
Fr - Taupe bleu
Sp - Marrajo dientuso (= Marrajo)

NATIONAL:

DISTINCTIVE CHARACTERS:

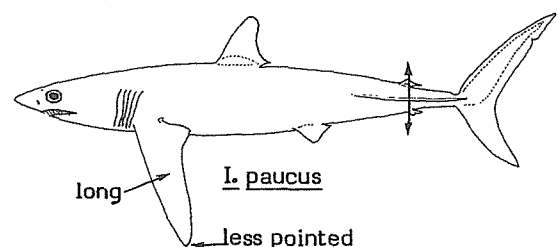
A large shark of fusiform and rather slender body and a long and acutely pointed snout. Head with 5 long gill slits, all in front of pectoral fin origins; gill arches without rakers; spiracles very small; mouth broadly rounded and notably long. Teeth strong and relatively few, alike in both jaws, backward-pointing, somewhat flexuous in outline, smooth-edged, with a single cusp; the first 2 in each jaw much the largest, recurved at base but curve reversed at tips. Two very unequal dorsal fins, the first comparatively large, its origin posterior to inner corners of pectoral fins when latter are laid back, its apex bluntly rounded (young) to acutely pointed (adults); pectoral fins moderately long (shorter than head) and falcate; anal fin origin below about middle of second dorsal fin base; caudal fin lunate, its lower lobe strongly developed. Caudal peduncle very much flattened dorso-ventrally, but expanded laterally, with a prominent keel on each side extending well out on caudal fin.



Colour: back grey-blue, occasionally deep blue; belly white.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Isurus paucus: snout blunter; cusps of teeth broader, less curved; pectoral fins about as long as head (shorter than head in I. oxyrinchus); snout and area around mouth dark.



Carcharodon carcharias: snout blunter; teeth broad, with serrated edges; origin of first dorsal fin opposite or slightly anterior to inner corners of pectoral fins when latter are laid back; anal fin origin posterior to second dorsal fin base.

Lamna nasus: teeth smaller, with shorter, straight cusps and side cusplets; origin of first dorsal fin in front of inner corners of pectoral fins; second dorsal fin origin about over anal fin origin; caudal fin with a small secondary keel below large, primary peduncle keel.

Other large-sized sharks with a lunate caudal fin and strong caudal keels:

Cetorhinus maximus: gill slits very long, gill rakers well developed and teeth minute; also, size of adults larger (up to 9 m or more).

Rhiniodon typus: 3 prominent dermal crests on each side; snout squared off anteriorly; mouth nearly terminal; last gill slit well behind pectoral fin origin; internal gill slits with filter grids; at least half of first dorsal fin base posterior to pelvic fin origins; a colour pattern of light spots and stripes.

SIZE :

Maximum: 400 cm; common to 270 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR :

Probably widespread in the area, from Morocco to Ivory Coast and Ghana south; also, northward to Norway and the British Isles and southward to South Africa. Elsewhere found in all warm temperate and tropical seas.

Primarily an oceanic species, usually in surface waters (in deeper waters during summer) approaching the coast in search of food. One of the most active and strong-swimming sharks, renowned for leaping out of the water, especially when hooked. Ovoviviparous, the number of young in a brood is relatively small (1 to 6, rarely 10).

Feeds mainly on schooling fishes (mackerels, jacks, herring, etc.); also attacks larger species such as tunas and swordfish. Potentially dangerous, especially when hooked.

PRESENT FISHING GROUNDS :

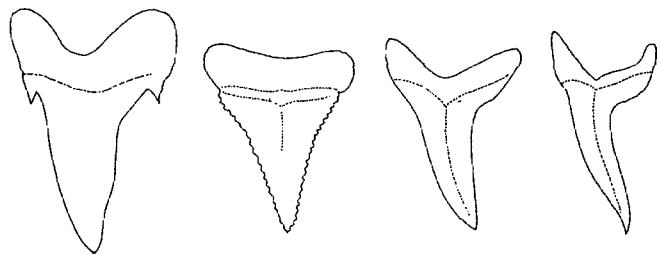
Oceanic waters.

CATCHES, FISHING GEAR AND FORMS OF UTILIZATION :

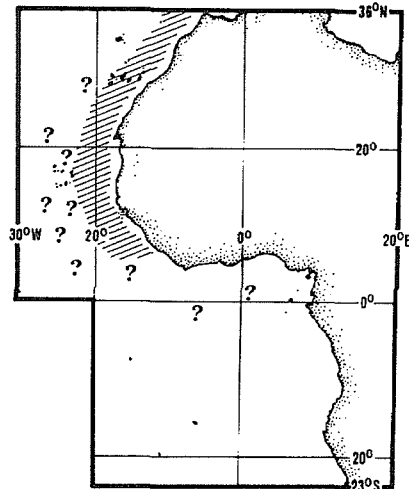
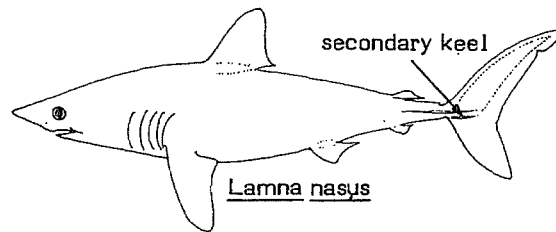
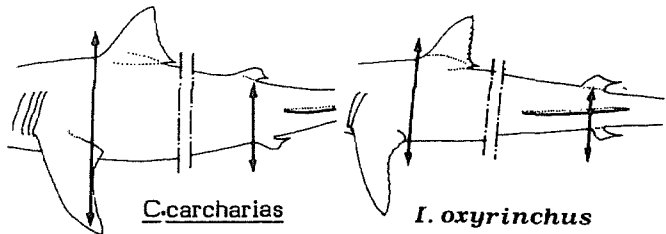
Separate statistics are not reported for this species.

Caught on drifting longlines; also, with hook and line, and in gillnets.

Marketed mostly fresh, smoked and dried salted. The flesh is good eating and well esteemed in some localities.



L. nasus. C. carcharias I. paucus I. oxyrinchus
upper tooth



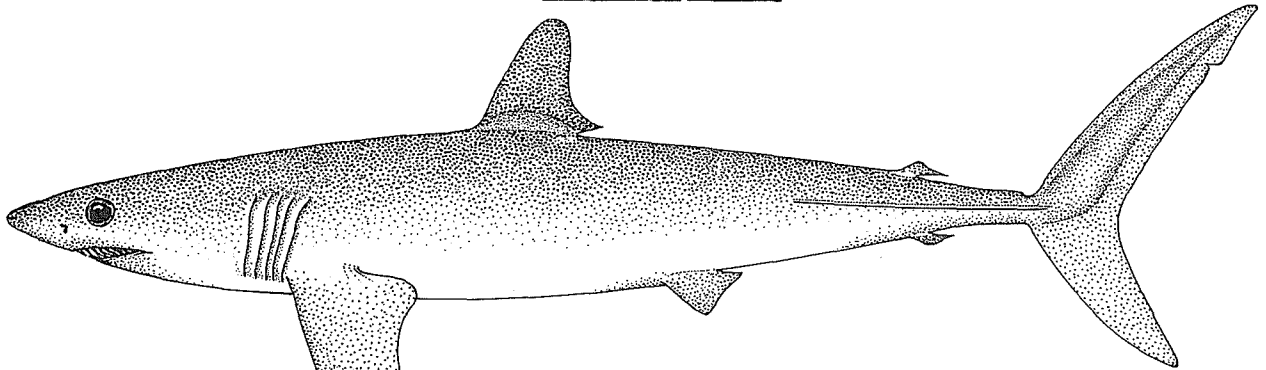
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: LAMNIDAE

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)

Isurus paucus Guitart, 1965

OTHER SCIENTIFIC NAMES STILL IN USE: *Isurus alatus* Garrick, 1966
Lamiostoma belyaevi Glikman, 1964



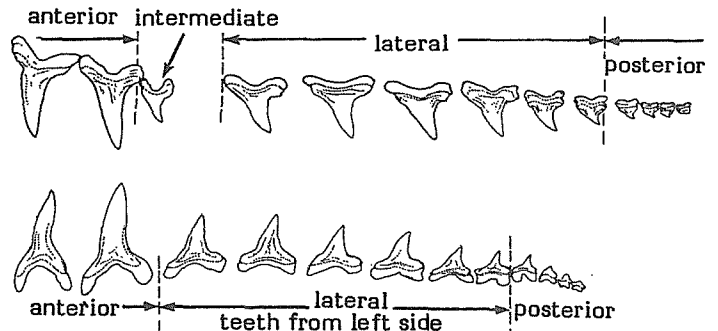
0 50 cm

VERNACULAR NAMES:

FAO: En - Longfin mako
Fr - Petit taupe
Sp - Marrajo carite

NATIONAL:

DISTINCTIVE CHARACTERS:

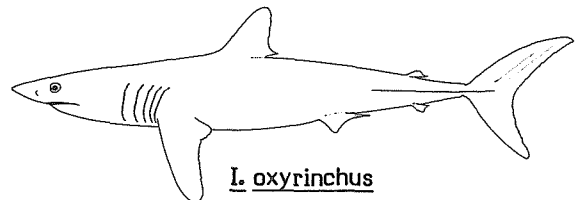


A large shark with a fusiform and rather slender body and a long, pointed snout. Head with 5 long gill slits, all in front of pectoral fin origins; gill arches without rakers; spiracles very small; mouth long and broadly rounded; teeth large and relatively few, alike in both jaws, pointed backward, with a single cusp but without cusplets or serrations; anterior teeth greatly enlarged in both jaws, in 2 rows on each side, cusps recurved at bases but not reversed at tips. Two dorsal fins, the first large, originating posterior to free rear tips of pectorals, with a bluntly rounded apex, the second very small; pectoral fins about as long as head, straight to falcate, and broad-tipped; anal fin very small, originating about under rear end of second dorsal fin base; caudal fin lunate with a very long lower lobe. Caudal peduncle strongly flattened dorso-ventrally and expanded laterally, with a prominent keel on each side extending well onto caudal fin.

Colour: back and sides intense blue in life, fading to blackish after death, abdomen white; underside of snout and mouth partly to entirely dusky; undersides of pectoral fins with dark blotches in larger individuals, pelvic fins dark with white posterior ends above, white- or dark-blotched below; anal fin with dark blotches, or white with an anterior dark blotch.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Isurus oxyrinchus: snout usually more acutely pointed; anterior teeth with more flexed cusps; pectoral fins considerably shorter than head, less broad-tipped in young, acutely pointed in adults; origin of anal fin about under midbase of second dorsal fin; underside of snout and mouth not dusky.



I. oxyrinchus

Carcharodon carcharias: body usually much stouter; teeth broad and flattened, with serrated edges; first dorsal fin origin anterior to inner corners of pectorals; pectoral fins much shorter than head, with narrowly rounded or pointed apices; back lead-grey to blackish.

Lamna nasus: body much stouter; anterior teeth small and short-cusped, with small side cusplets; origin of first dorsal fin well anterior to inner corners of pectoral fins, its free rear tip and lobe white (dark in I. paucus); caudal fin with a secondary keel; back bluish-grey.

Prionace glauca: nictitating eyelids present; snout blunter and more flattened; gill slits smaller, the last two over pectoral fin bases; dermal gill rakers present; anterior teeth not greatly enlarged; upper teeth flattened, triangular and serrated; no upper intermediate teeth; caudal keel very weak; lower caudal lobe shorter.

Cetorhinus maximus: gill slits much longer; gill rakers present; teeth minute; pectoral fins shorter than head, broad and not falcate; size of adults larger, to 9 m or more.

Rhiniodon typus: 3 strong dermal ridges on each side; snout anteriorly truncated; mouth nearly terminal, in front of eyes; last 2 gill slits over pectoral fin bases; internal gill slits with a filter grid; pelvic fin origins under first dorsal fin base; a colour pattern of light spots and stripes; adult size much larger, up to at least 12 m.

SIZE :

Maximum: at least 280 to 300 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR :

In the area it is known from off Guinea, Ghana and possibly the Cape Verde Islands, but may be more widely distributed in the tropical Atlantic away from land. A warm-water species also found in the Western North Atlantic, the Indian Ocean and the Central Pacific.

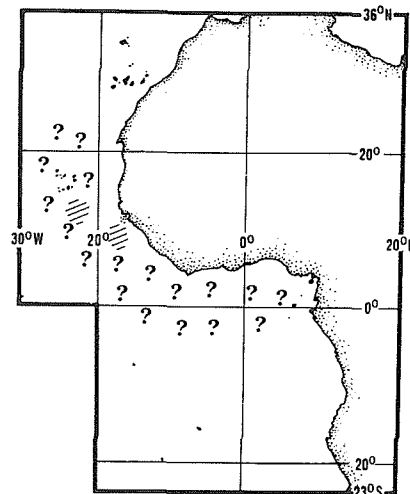
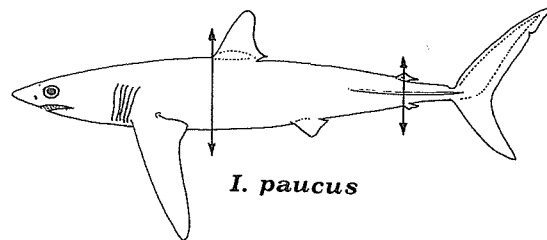
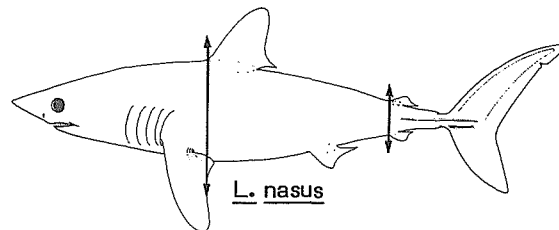
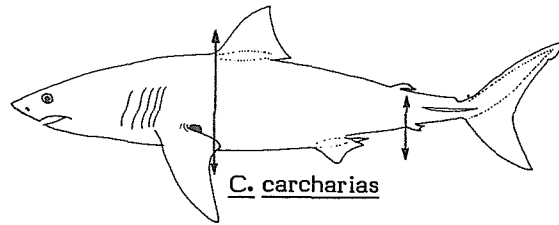
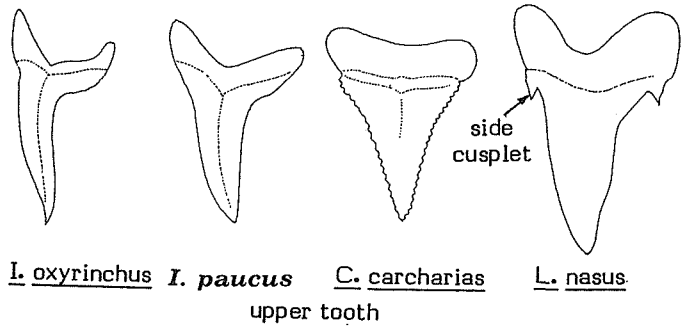
A little-known oceanic shark, possibly approaching land to give birth. Ovoviviparous, number of young 2; size at birth at least 92 cm. Probably feeds on oceanic schooling fishes as does I. oxyrinchus.

PRESENT FISHING GROUNDS :

Separate statistics are not reported for this species.

Caught on hook and line, and in anchored nets offshore, probably also on floating longlines.

Utilized smoked and dried salted, probably also fresh.



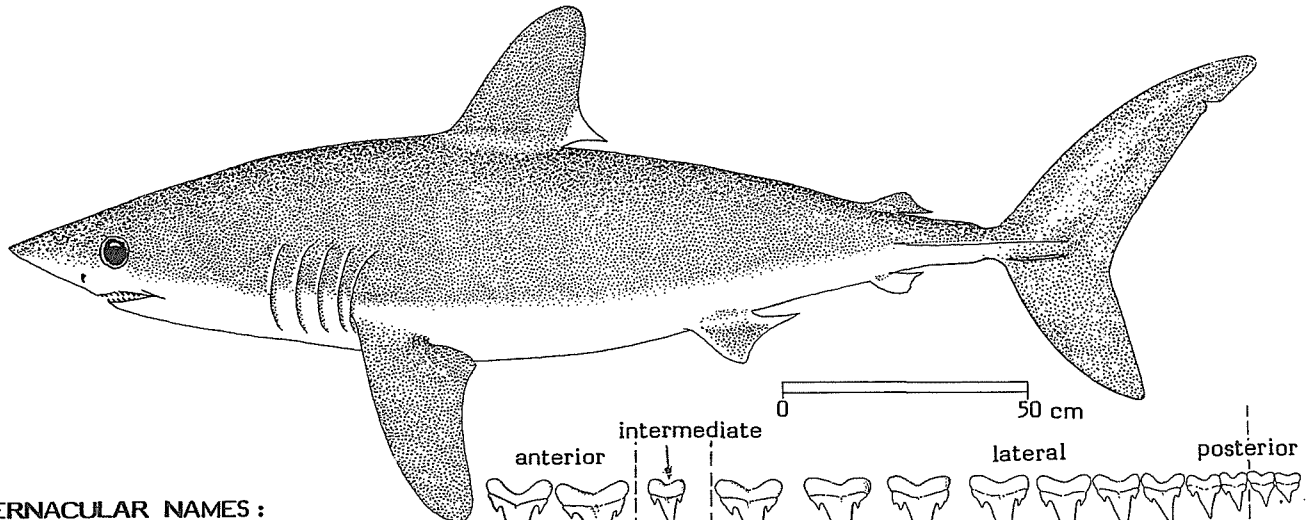
FAO SPECIES IDENTIFICATION SHEETS

FAMILY : LAMNIDAE

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)

Lamna nasus (Bonnaterre, 1788)

OTHER SCIENTIFIC NAMES STILL IN USE : None



VERNACULAR NAMES :

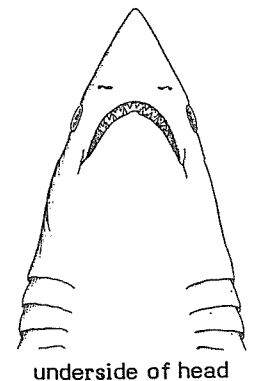
FAO : En - Porbeagle
Fr - Taube commun
Sp - Marrajo sardinero

NATIONAL :

DISTINCTIVE CHARACTERS :

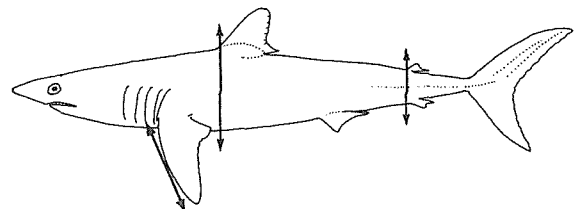
A moderately large shark with a heavy, spindle-shaped body and a sharply pointed snout. Head with 5 long gill slits, all in front of pectoral fin origins; gill arches without rakers; spiracles very small; mouth long and broadly rounded; teeth moderately large and relatively few, nearly alike in both jaws, with a single, narrow, sharp-edged and backward-pointing cusp, without serrations and usually with basal cusplets (absent in young below 1 m length); anterior teeth in 2 rows on each side of symphysis in both jaws, not compressed and triangular, with cusps nearly straight; intermediate teeth much smaller than anteriors, but first few lateral teeth only slightly smaller; 2 dorsal fins, the first very large, originating over inner margins of pectoral fins, the second very small; anal fin origin about under second dorsal origin; pectoral fins shorter than head and slightly falcate; caudal fin lunate, with lower lobe very strong. Caudal peduncle very much flattened dorso-ventrally, but expanded as a strong lateral keel that extends well out onto the caudal fin, and is flanked below by a secondary keel on the caudal base.

Colour: blue-grey above, abruptly white on sides and lower surface, pectoral fins dusky, rear tip of first dorsal white, no black spot on pectoral axils.



DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA :

Isurus species: body usually slimmer; teeth without cusplets, the anteriors larger and flexed, more differentiated from the laterals; origin of first dorsal fin posterior to inner corners of pectoral fins, anal fin origin posterior to that of second dorsal; no secondary keels on caudal fin.



Carcharodon carcharias: adult size much larger; jaws and mouth bigger, snout blunter and broader; teeth serrated the anteriors broadly triangular and compressed; anal fin origin posterior to base of second dorsal; no secondary keel on caudal fin.

Cetorhinus maximus: adult size very much larger, much longer gill slits, gill rakers present, teeth minute, second dorsal fin larger, no secondary keels on caudal fin base.

No other sharks in the area have the combination of characters underlined above.

SIZE :

Maximum: to about 370 cm, but most adults below 260 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR :

Just entering the area from the north, off Morocco and Madeira, rarely southward to Senegal. Northward extending into the Mediterranean and to Iceland and the western Barents Sea. Elsewhere in the Western Atlantic, South-Central Indian Ocean and Western and Eastern South Pacific.

A coastal and oceanic species inhabiting cold to warm-temperate waters that visits the area but is far more abundant in the North Atlantic. Ovoviviparous, number of young 1 to 5, size at birth about 61 cm. A strong-swimming, active species when feeding, but otherwise sluggish and not leaping out of the water like Isurus oxyrinchus. Often found near the surface, but may reach at least to 150 m depth.

Feeds on small pelagic schooling fishes, including mackerel and clupeoids; also on gadoids, flatfish, dories, small sharks, and squids.

PRESENT FISHING GROUNDS :

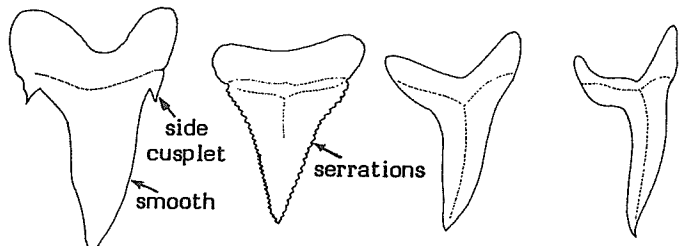
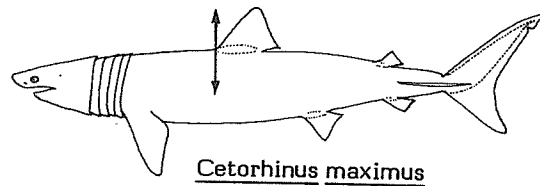
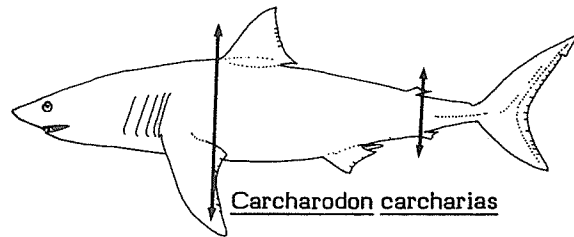
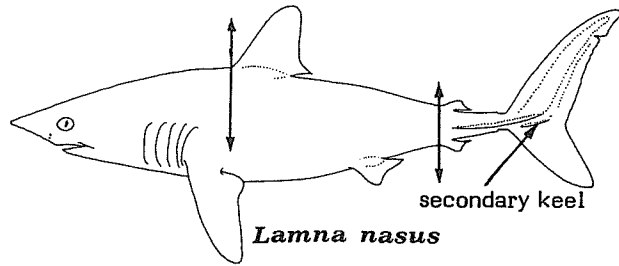
Offshore only in the north of the area, where it is rare or accidental.

CATCHES, FISHING GEAR AND FORMS OF UTILIZATION :

Separate statistics are not reported for this species.

Caught on longlines, and in pelagic and bottom trawls.

Utilized fresh and dried salted, and for oil and fishmeal.

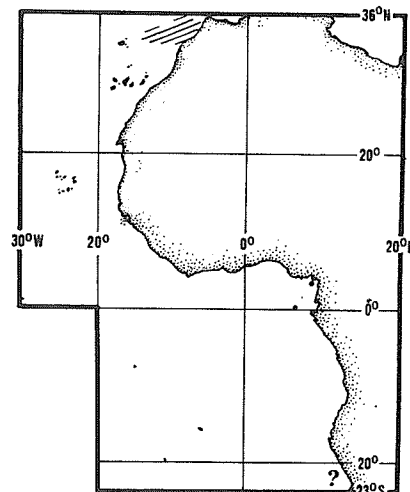


L. nasus

C. carcharias

I. paucus

I. oxyrinchus



LEPTOC

1981

FAO SPECIES IDENTIFICATION SHEETS

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)

LEPTOCHARIIDAE

Barbeled houndsharks

A single species in the area - see species sheet for:

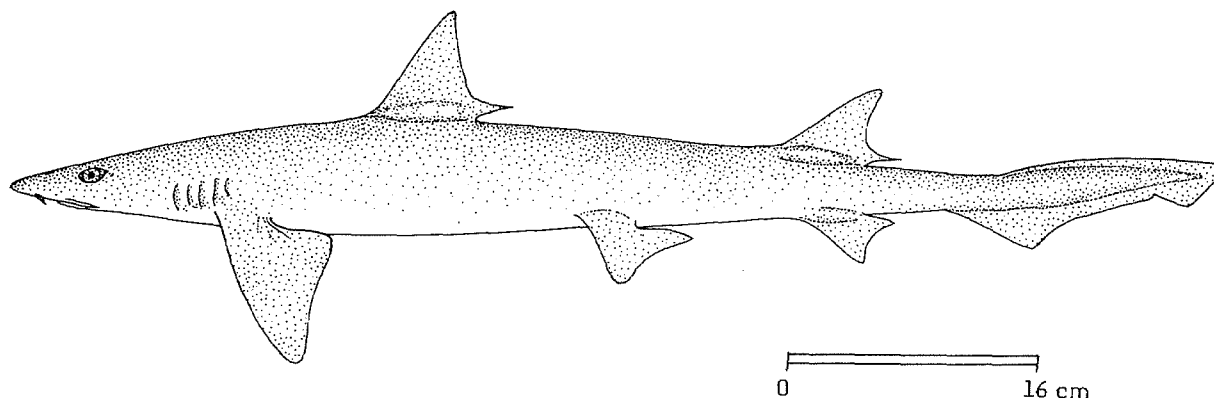
Leptocharias smithii (Müller & Henle, 1839) LEPTOC Lep 1

FAO SPECIES IDENTIFICATION SHEETS

FAMILY: LEPTOCHARIIDAE

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)Leptocharias smithii (Müller & Henle, 1839)

OTHER SCIENTIFIC NAMES STILL IN USE: None



VERNACULAR NAMES:

FAO: En - Barbeled houndshark
Fr - Emissole à grandes lèvres
Sp - Tiburón barbudo

NATIONAL:

DISTINCTIVE CHARACTERS:

A small, slender shark. Head with 5 small gill slits, the last two over pectoral fin bases; spiracles minute, porelike, much smaller than eyes; no gill rakers; nostrils with anterior nasal flaps formed as slender, prominent barbels, but without oronasal grooves; eyes horizontally oval, on sides of head, with strongly differentiated nictitating lower eyelids that are entirely within the eye openings; snout moderately long and narrowly rounded; mouth moderately wide and long, extending behind front of eyes; labial furrows very long; teeth very small and numerous, not in form of pavement, most with a slender primary cusp and side cusplets, except for moderately enlarged hooklike anterior teeth in adult males; no small intermediate teeth separating the anteriors from the laterals. Two dorsal fins, the first angular, not keel-like, high and short, its base well in front of pelvics, but posterior to pectorals and much shorter than caudal fin; second dorsal fin slightly smaller than the first but larger than anal fin; anal fin origin slightly posterior to that of second dorsal, its base almost entirely below second dorsal base; caudal fin much less than half the total length, strongly asymmetrical, with lower lobe weakly developed (at most, subterminal notch present) and upper edge not rippled. Caudal peduncle not depressed, without keels or precaudal pits. Intestine with an auger or corckscrew like spiral valve of 14 to 16 turns.

upper and lower
lateral tooth

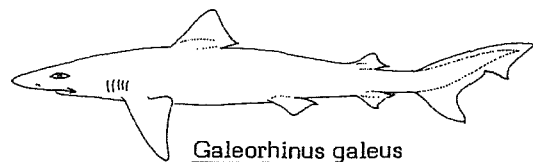
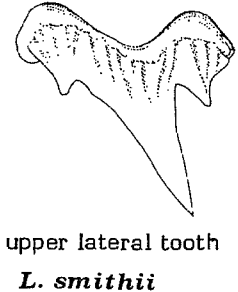
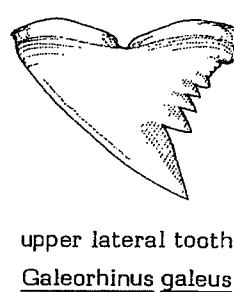
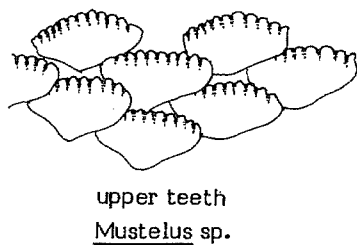
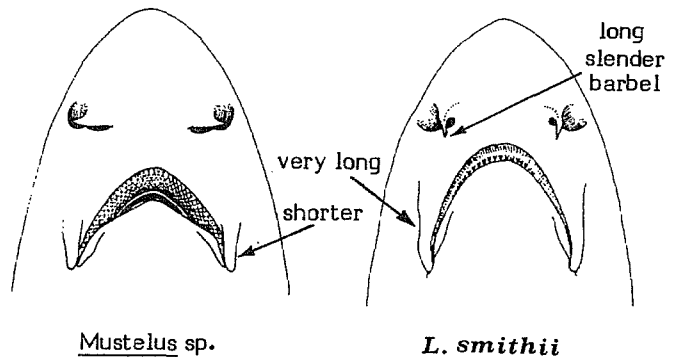
Colour: Grey or grey-brown above, white below.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA :

Mustelus species (Triakidae): anterior nasal flaps broad, not formed as slender barbels, eyes above sides of head, labial furrows shorter; teeth in form of pavement, without slender cusps; intestinal spiral valve of 5 to 10 turns (14 to 16 in L. smithii).

Galeorhinus galeus (Triakidae): larger and stouter-bodied, anterior nasal flaps greatly reduced, not in form of barbels, labial furrows shorter, teeth larger and bladelike at sides of mouth, second dorsal much smaller than the first and about as large as anal fin; caudal fin with a strong lower lobe and a terminal lobe about half the length of caudal fin (much shorter in L. smithii).

Species of Hemigaleidae and Carcharhinidae: usually stouter-bodied, anterior nasal flaps not in form of barbels, teeth larger and bladelike at least in upper jaw, caudal fin with a strong lower lobe and a rippled upper edge, precaudal pits present, intestinal valve of scroll type (Carcharhinidae) or of spiral type, with 4 to 6 turns (Hemigaleidae).



SIZE :

Maximum: to about 80 cm, adults commonly between 55 to 80 cm, females slightly larger than males.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR :

Virtually confined to the area, ranging from Mauritania to Angola and possibly northward to Morocco; it is possibly also found in the Mediterranean.

A common, inshore, tropical shark, especially abundant around river mouths, ranging down to about 75 m depth. Viviparous, with yolk-sac placenta, litters of up to 7 fetuses.

Feeds especially on crustaceans, but also on small cephalopods and fishes.

PRESENT FISHING GROUNDS :

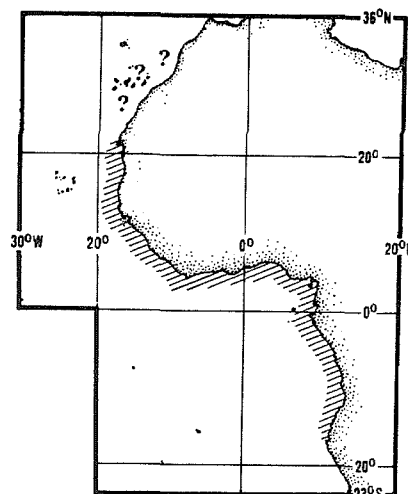
Primarily inshore.

CATCHES, FISHING GEAR AND FORMS OF UTILIZATION :

Separate statistics are not reported for this species.

Caught in bottom trawls, on hooks, and in fixed bottom nets.

Utilized fresh, smoked, and dried salted; skins also used for leather.



MITSU

1981

FAO SPECIES IDENTIFICATION SHEETS

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)

MITSUKURINIDAE

Goblin sharks

A single species in the area - see species sheets for:

Mitsukurina owstoni Jordan, 1898 MITSU Mitsu 1

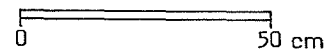
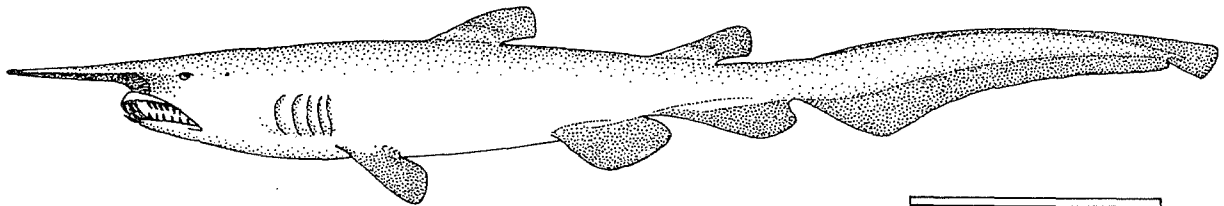
FAO SPECIES IDENTIFICATION SHEETS

FAMILY : MITSUKURINIDAE

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)

Mitsukurina owstoni Jordan, 1898

OTHER SCIENTIFIC NAMES STILL IN USE : *Scapanorhynchus owstoni* (Jordan, 1898)
Mitsukurina or *Scapanorhynchus nasutus* (de Braganza, 1904)



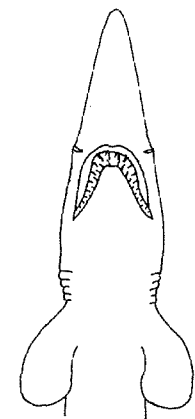
VERNACULAR NAMES :

FAO : En - Goblin shark
Fr - Requin lutin
Sp - Tiburón duende

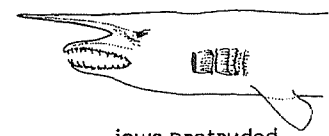
NATIONAL :

DISTINCTIVE CHARACTERS :

A moderately large, very soft-bodied, flabby shark. Head with 5 medium-sized gill slits, all in front of pectoral fin bases, their upper ends not extending onto dorsal sides of head; no gill rakers; spiracles present but very small; no nasal barbels or oronasal grooves; eyes very small on sides of head, without nictitating eyelids; snout very long and flat, formed as a narrow, pointed blade; mouth long and angular, extending well behind eyes (when jaws are not protruded), but capable of moving in front of eyes when jaws are thrust forward to level of snout tip; lower labial furrows present; anterior teeth large, with long, extremely narrow, hooked, sharp-edged but unserrated cusps and no cusplets, set in 3 rows on either side of symphysis in both jaws; upper anteriors separated from the smaller laterals by a gap (no small intermediate teeth). Two low, equally large dorsal fins, the first closer to the pectorals than to the pelvics, its base well in front of the latter and much shorter than caudal fin; anal fin low, rounded, and larger than dorsal fins; caudal fin long but much less than half the total length, strongly asymmetrical, without a well-developed lower lobe. Caudal peduncle without keels or precaudal pits. Intestinal valve of ring type, with the turns closely packed like a stack of washers.

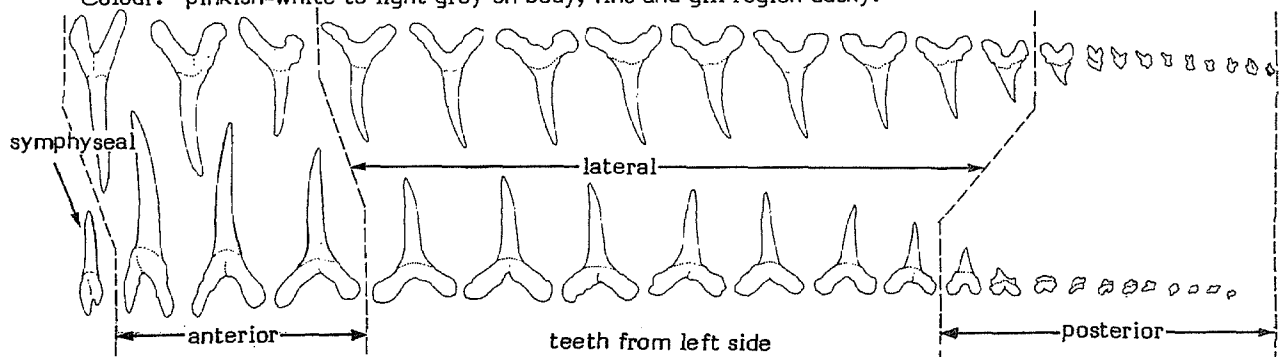


underside of snout



jaws protruded

Colour: pinkish-white to light grey on body, fins and gill region dusky.



DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA :

The combination of characters described above, readily distinguishes this species from all others occurring in the area

SIZE :

Maximum: about 264 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR :

An uncommon, deep-water, bottom-dwelling shark with a spotty but wide distribution in continental waters. In the area, it is found off Senegal and the Gulf of Guinea. Elsewhere, off France, Portugal, the Cape of Good Hope, in the Western North Atlantic (off French Guiana), and in the Western Pacific (off Japan and Australia).

Apparently inhabiting the outer continental shelves and upper slopes down to at least 550 m, but occasionally taken in shallow waters. Habits poorly known, probably ovoviviparous.

Probably preys on small fishes, squids, and crustaceans.

PRESENT FISHING GROUNDS :

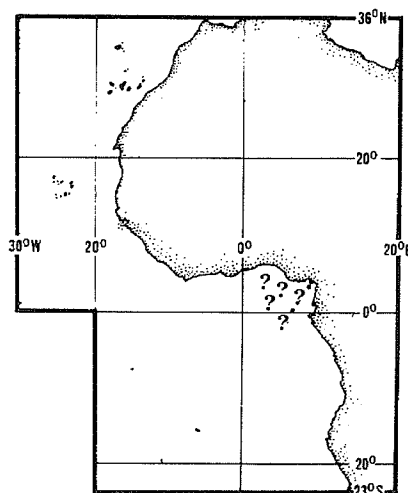
Accidental or rare offshore.

CATCHES, FISHING GEAR AND FORMS OF UTILIZATION :

Separate statistics are not reported for this species.

Caught in fixed bottom nets, with hook and line, and in purse seines (?).

Utilized dried salted.



FAO SPECIES IDENTIFICATION SHEETS

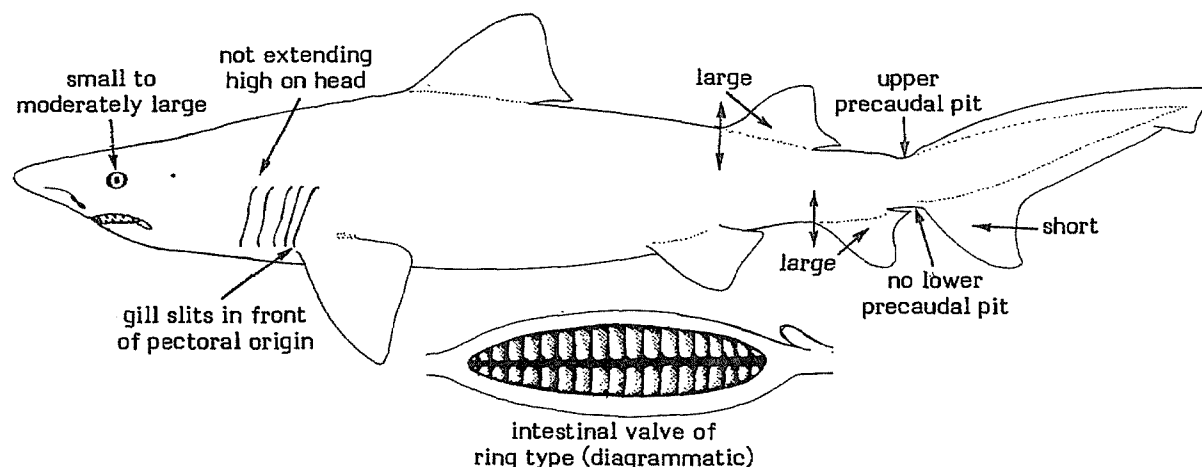
FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)

ODONTASPIDIDAE

Sand tiger sharks, ragged-tooth sharks

Large sharks. Head with 5 medium-sized gill slits, all in front of pectoral fin bases, their upper ends not extending onto dorsal surface of head; gill arches without rakers; spiracles present but very small; no nasal barbels or oronasal grooves; eyes small or moderately large, without nictitating eyelids; snout conical or moderately depressed, not bladelike; mouth very long and angular, extending well behind eyes when jaws are not protruded; lower labial furrows present at mouth corners*; anterior teeth enlarged, with long, narrow, sharp-edged but unserrated cusps and small basal cusplets (absent in young of at least one species), the upper anteriors separated from the laterals by a gap and tiny intermediate teeth. Two moderately large, high dorsal fins, the first originating well in advance of the pelvics, the second as large as or somewhat smaller than the first; anal fin as large as second dorsal or slightly smaller; caudal fin short, asymmetrical, with a strong subterminal notch and a short but well marked ventral lobe. Caudal peduncle not depressed, without keels; a deep upper precaudal pit present but no lower pit. Intestinal valve of ring type, with turns closely packed like a stack of washers.

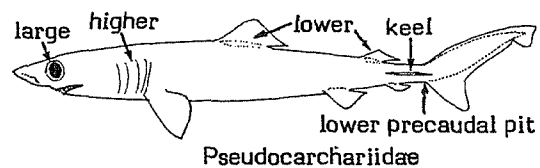
Colour: grey or grey-brown above, white or lighter below, with round or oval spots on at least one species.



These are wide-ranging, tropical to cool-temperate sharks, found inshore and down to moderate depths on the edge of the continental shelves and around some oceanic islands, but not oceanic. They feed on small bony fishes, other sharks, squids and occasionally bottom crustaceans. Normally inoffensive, but potentially dangerous if provoked.

SIMILAR FAMILIES OCCURRING IN THE AREA :

Pseudocarchariidae: body slimmer, gill slits higher and reaching onto dorsal sides of head, eyes larger, no true labial furrows, dorsal and anal fins lower, a weak lateral keel on caudal peduncle and both upper and lower precaudal pits present.



Mitsukurinidae: body very soft and flabby (Odontaspidae with firmer muscles and tougher skin), snout extremely elongated, flattened and bladelike, anal fin broadly rounded (angular in Odontaspidae), no lower lobe on caudal fin, and no precaudal pits.



*Character applying only to species occurring in the area

Leptochariidae, Triakidae, Hemigaleidae and Carcharhinidae: nictitating eyelids present, anterior teeth not greatly enlarged, no intermediate teeth between anteriors and laterals, intestinal valve of spiral or scroll type.

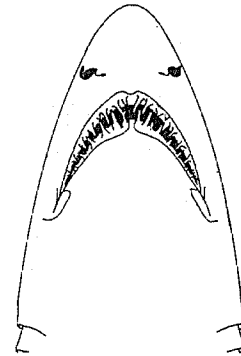
KEY TO GENERA AND SPECIES OCCURRING IN THE AREA :

1 a. Snout short and somewhat flattened (Fig. 1a); eyes very small; 3 rows of anterior teeth on either side of upper symphysis (Fig. 2a); dorsal and anal fins about equal in size; first dorsal fin closer to pelvic than to pectoral bases (Fig. 3) Eugomphodus taurus

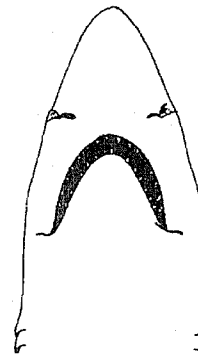
1 b. Snout longer, bulbous and conical (Fig. 1b); eyes relatively large; 2 rows of large anterior teeth on either side of upper symphysis (Fig. 1b,c); first dorsal fin markedly larger than the second, closer to pectoral than to pelvic bases; second dorsal fin considerably larger than anal fin (Figs. 4,5) Odontaspis

2 a. Teeth mostly with 2 or 3 cusplets on each side; 3 or 4 rows of small intermediate teeth between upper anteriors and laterals (Fig. 1b); second dorsal fin origin over or slightly posterior to insertion of pelvic fins (Fig. 4) Odontaspis ferox

2 b. Teeth with only one cusplet on each side; one row of small intermediate teeth between upper anteriors and laterals (Fig. 2c); origin of second dorsal fin over midbase of pelvics (Fig. 5) Odontaspis noronhai

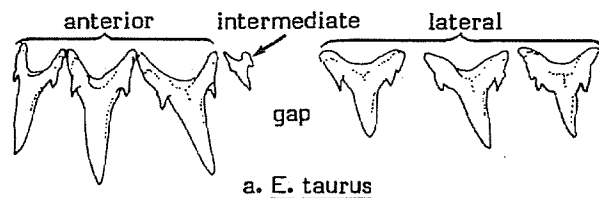


a. E. taurus

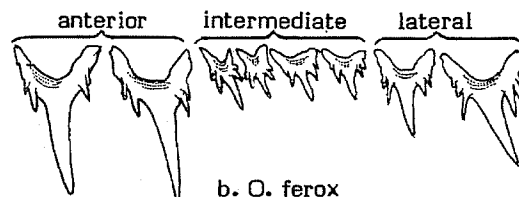


b. O. ferox

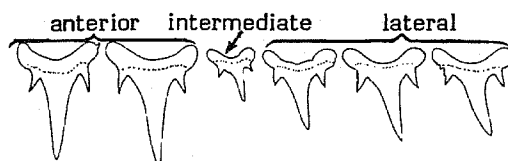
underside of head Fig. 1



a. E. taurus



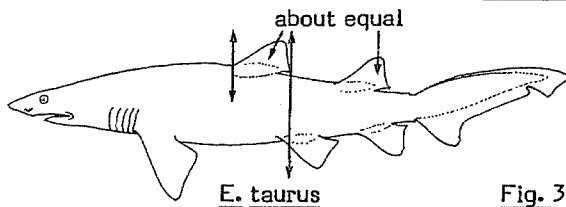
b. O. ferox



c. O. noronhai

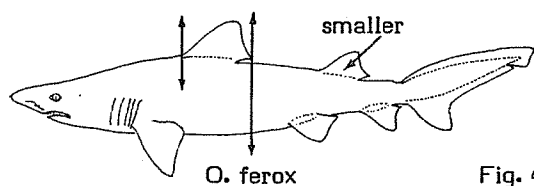
upper front teeth

Fig. 2



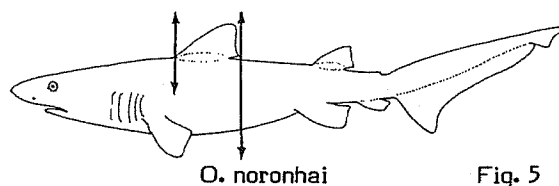
E. taurus

Fig. 3



O. ferox

Fig. 4



O. noronhai

Fig. 5

LIST OF SPECIES OCCURRING IN THE AREA :

Code numbers are given for those species for which Identification Sheets are included

<u>Eugomphodus taurus</u> (Rafinesque, 1809)*	ODONT Eug 1
<u>Odontaspis ferox</u> (Risso, 1810)**	ODONT Odont 1
<u>Odontaspis noronhai</u> Maul, 1955***	

Prepared by L.J.V. Compagno, Tiburon Center for Environmental Studies, San Francisco State University, Tiburon, California, U.S.A.

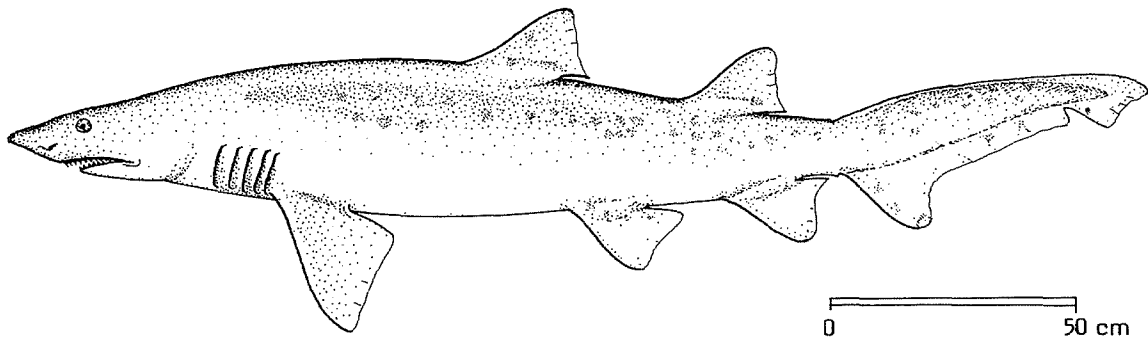
*This species is often placed in Odontaspis, but external and anatomical studies show that it is very distinct and rates generic separation

**Sometimes considered as 2 species, O. herbsti Whitley, 1950, and O. ferox

***It is possible that O. noronhai is a morphological extreme of O. ferox and not a valid species, in view of considerable variation in Eugomphodus taurus in the characters separating noronhai and ferox

FAO SPECIES IDENTIFICATION SHEETS

FAMILY : ODONTASPIDIDAE

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)Eugomphodus taurus (Rafinesque, 1809)OTHER SCIENTIFIC NAMES STILL IN USE : Carcharias taurus Rafinesque, 1809
Odontaspis platensis Labille, 1928
Odontaspis taurus (Rafinesque, 1809)

VERNACULAR NAMES:

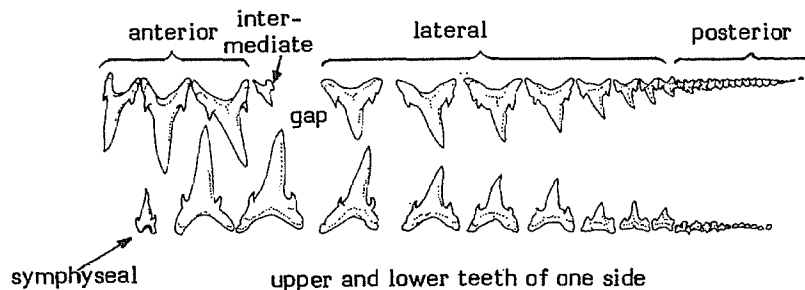
FAO : En - Sand tiger shark
Fr - Requin tigre (= Requin sable tacheté, Area 31)
Sp - Toro bacota (= Pez toro)

NATIONAL :

DISTINCTIVE CHARACTERS :

A large shark. Head with 5 medium to large gill slits, all in front of pectoral fin bases; no gill rakers; snout very short, moderately flattened; no nasal barbels or oronasal grooves; eyes small, without nictitating eyelids; mouth very long and angular, extending well behind eyes; anterior teeth in 3 rows on either side of symphysis, large, with long, narrow, hooked, sharp-edged but non-serrated cusps and usually one short cusplet on each side; upper anteriors separated from the smaller laterals by a single row of tiny intermediate teeth (lacking in lower jaw); lower anteriors separated at front by 2 rows of small symphyseal teeth (generally lacking in upper jaw). Two dorsal fins, the base of first just in front of pelvic fin bases and well posterior to pectoral fins; second dorsal about as large as first dorsal and as anal fin; caudal fin short, strongly asymmetrical, with a pronounced subterminal notch and a short ventral lobe. No keels on caudal peduncle, but with a strong upper precaudal pit. Intestinal valve of ring type.

Colour: light grey-brown above, white below, often with round or oval, yellow or yellow-brown spots.



DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA :

Odontaspis ferox and *O. noronhai*: snout more elongated and conical, eyes larger, 2 rows of large anterior teeth in upper jaw on either side of symphysis, small symphyseal teeth present in both upper and lower jaws, first dorsal fin well in front of pelvic fins, closer to pectorals, larger than second dorsal, the latter larger than anal fin.

SIZE :

Maximum: about 318 cm, most adults between 220 to 280 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR :

In the area, known from off Morocco to Senegal, including the Canary and Cape Verde Islands, and from Ghana to Cameroon. Elsewhere in the Mediterranean, Western Atlantic, Indian Ocean and Western Pacific.

A common coastal species in and outside bays, slow but strong swimming, usually near the bottom. In the northern part of its range it migrates south during winter. Ovoviviparous, usually with 2 young, one to each uterus, but occasionally only one; size at birth between 95 and 120 cm, varying in different areas. Normally inoffensive, though potentially dangerous if provoked.

Feeds on a wide variety of small bony fishes, also small sharks, squid and occasionally crabs and lobsters.

PRESENT FISHING GROUNDS :

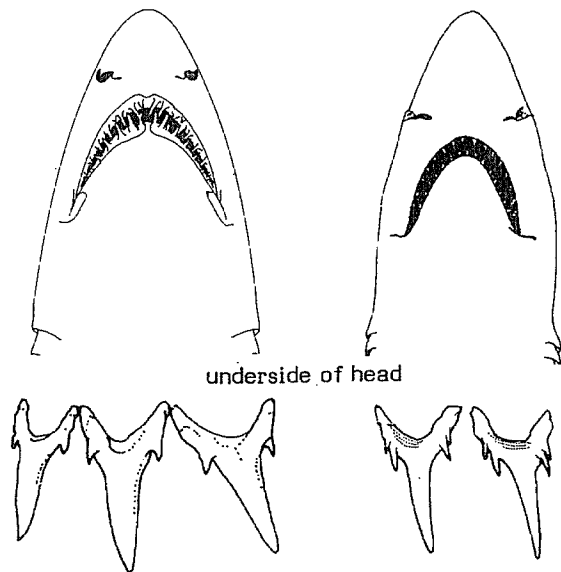
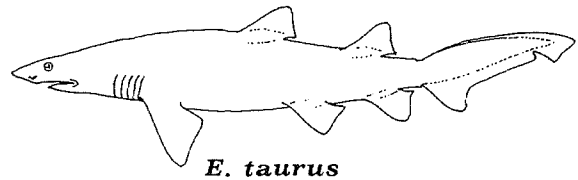
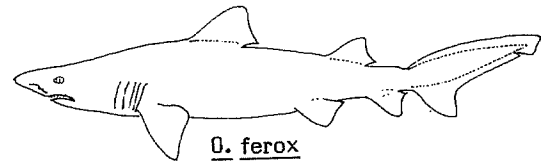
Coastal and offshore.

CATCHES, FISHING GEAR AND FORMS OF UTILIZATION :

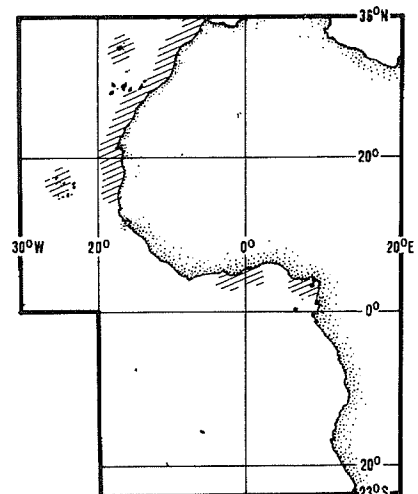
Separate statistics are not reported for this species.

Caught on handlines and longlines, in set nets, pelagic and bottom trawls.

Regularly found in some local markets, utilized smoked and dried salted, and for oil and fishmeal.

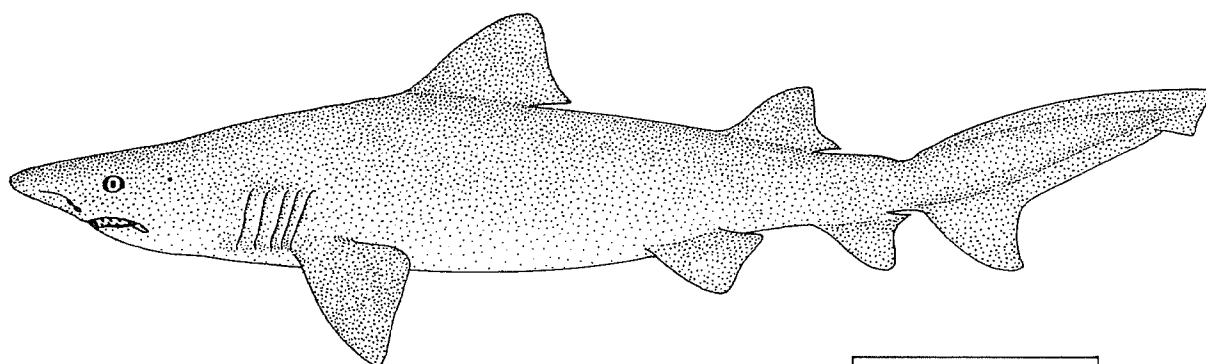


E. taurus *O. ferox*
underside of head
upper anterior teeth



FAO SPECIES IDENTIFICATION SHEETS

FAMILY: ODONTASPIDIDAE

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)*Odontaspis ferox* (Risso, 1810)OTHER SCIENTIFIC NAMES STILL IN USE: *Odontaspis herbsti* Whitley, 1950

VERNACULAR NAMES:

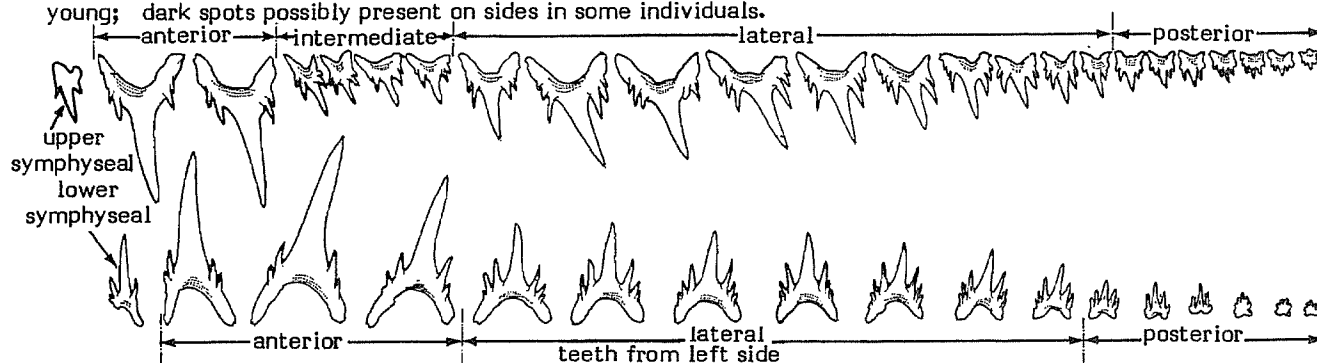
FAO : En - Smalltooth sand tiger
Fr - Requin féroce
Sp - Solrayo

NATIONAL :

DISTINCTIVE CHARACTERS :

A large shark. Head with 5 medium to large gill slits, all in front of pectoral fin bases; no gill rakers; snout moderately elongated, bulbously conical; no nasal barbels or oronasal grooves; eyes moderately large, without nictitating eyelids; mouth very long and angular, extending well behind eyes; anterior teeth moderately large, with long, narrow, hooked, sharp-edged but non serrated cusps and 2 or 3 moderately long cusplets on each side, separated in front by 2 rows of small symphyseal teeth in both jaws; upper anteriors set in 2 rows on either side of symphysis and separated from the smaller laterals by 3 or 4 rows of tiny intermediate teeth; lower anteriors set in 3 rows on either side of symphysis and not followed by small intermediate teeth. Two dorsal fins, the first large and situated closer to the pectorals than to the pelvics, its free rear tip well ahead of pelvic fin origins, the second dorsal fin smaller than the first and usually slightly larger than anal fin; caudal fin short, strongly asymmetrical, with a pronounced subterminal notch and a short ventral lobe. No keels on caudal peduncle, but a strong upper precaudal pit. Intestinal valve of ring type.

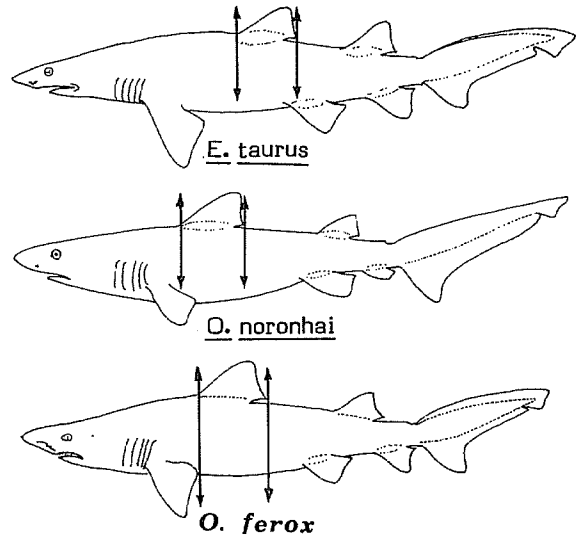
Colour: grey above, paler below, tips of dorsal, anal, pectoral and pelvic fins may be dark-tipped in young; dark spots possibly present on sides in some individuals.



DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA :

Odontaspis noronhai: a little-known, deepwater species only recorded from off Madeira, similar to, and possibly only an extreme variant of O. ferox. Teeth with only one cusplet on each side; upper anteriors separated from the laterals by a single row of small intermediate teeth; second dorsal origin over midbase of pelvic fins (over or posterior to the insertions of the pelvic fins in O. ferox).

Eugomphodus taurus: snout short and flattened; eyes smaller; teeth relatively larger, with a single, very low cusplet on each side; upper anteriors set in 3 rows on either side of symphysis, not separated in front by small symphyseal teeth, but separated from the laterals by a single row of intermediate teeth; dorsal and anal fins about equal in size; first dorsal much closer to the pelvic than to the pectoral fin bases, with its free rear tip about over the pelvic origins.



SIZE :

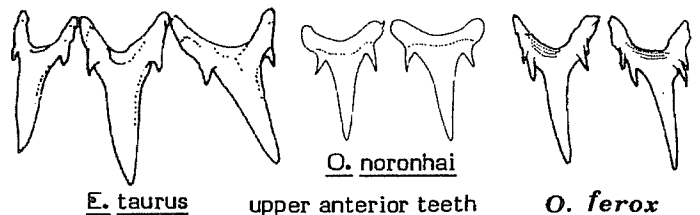
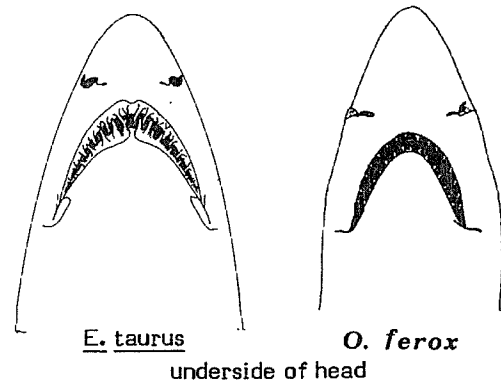
Maximum: about 360 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR :

A wide-ranging bottom-dwelling shark found in the area off Morocco and Madeira; also in the Bay of Biscay and the Mediterranean. Elsewhere spottily distributed in the Southwestern Indian ocean and the Western, Central, and Eastern North Pacific.

A little-known species found at depths between 15 and 420 m from inshore waters to over the edge of the continental shelf. Probably ovoviviparous.

Feeds on small bony fishes, squids and crustaceans.



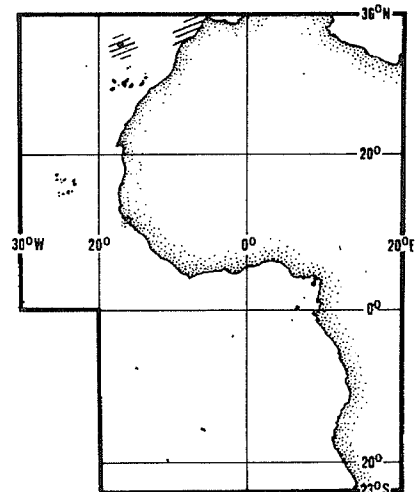
PRESENT FISHING GROUNDS :

Continental shelf area.

CATCHES, FISHING GEAR AND FORMS OF UTILIZATION :

Separate statistics are not reported for this species.

Caught incidentally in trawls and with line gear.



FAO SPECIES IDENTIFICATION SHEETS

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)

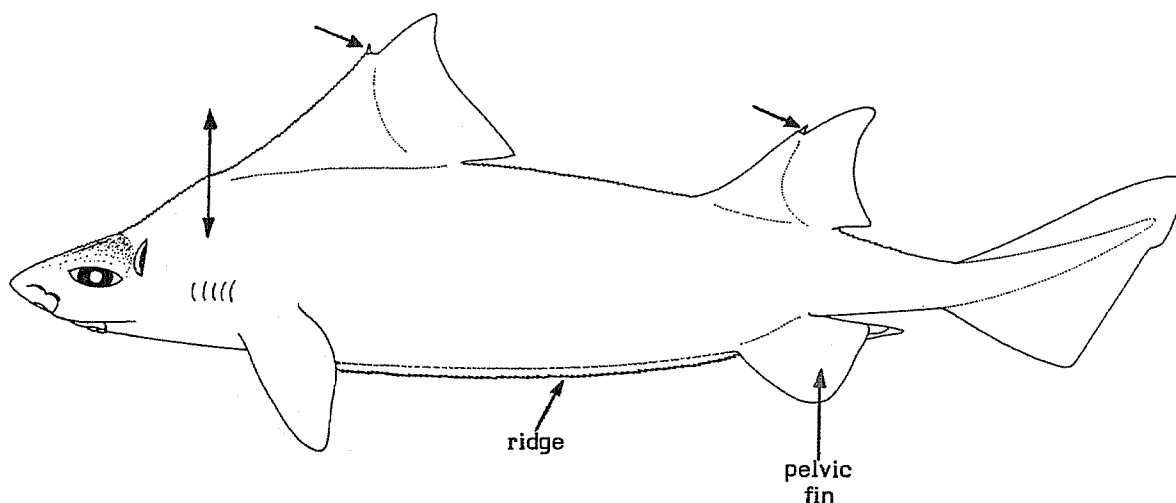
OXYNOTIDAE

Rough sharks

Small sharks with strongly compressed, very deep bodies, triangular in cross section, with a horizontal ridge between pectoral and pelvic fins on each side. Head with 5 gill slits, all anterior to the pectoral fins, the fifth not abruptly larger than the others; spiracles present, moderately large; eyes on sides of head, above mouth, without nictitating eyelids; teeth unlike in upper and lower jaws, the uppers small, narrow, needlelike, with a single cusp, the lowers broader, bladelike, with a single triangular cusp and serrated edges. Two broad-based, very large, triangular dorsal fins, each with a large spine mostly concealed, except for the very tip; origin of first dorsal fin extending forward to over gill slits; pelvic fins smaller than the second dorsal; anal fin absent; pectoral fins very narrow; caudal fin strongly asymmetrical, with a poorly developed lower lobe and a distinct subterminal notch. Dermal denticles moderately large and close-set giving the body a prickly, extremely rough texture.

Colour: blackish or dark grey to light brown above, sometimes lighter below in species occurring in the area; a pattern of blotches present in one species (*O. centrina*).

These are moderately common deepwater sharks occurring on the bottom along the edges of the continental shelf and on the upper slope, in depths between 60 and 600 m. Harmless, incidentally caught in trawls.



SIMILAR FAMILIES OCCURRING IN THE AREA :

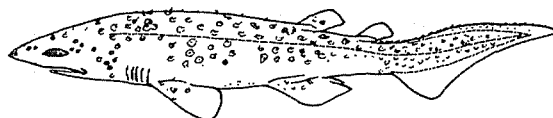
Squalidae and Echinorhinidae: body lower, less compressed and cylindrical, rather than triangular in cross-section; no ridge on sides between pectoral and pelvic fins.

Squatinae: body greatly depressed and raylike; eyes on dorsal surface of head; dorsal fins very small, without spines, both posterior to pelvic fin bases; pectoral and pelvic fins greatly expanded.

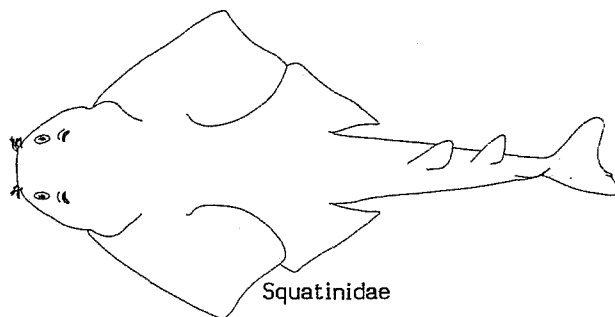
Other sharks in the area: anal fin always present; dorsal fin spines absent.



Squalidae



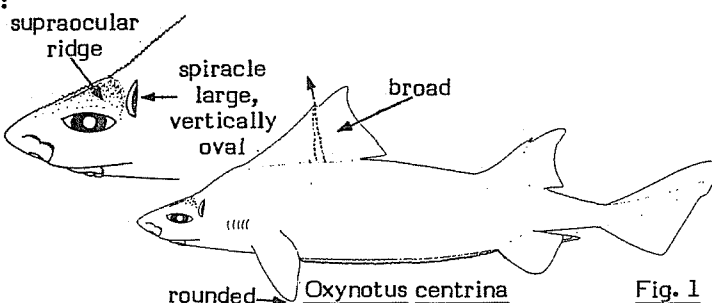
Echinorhinidae



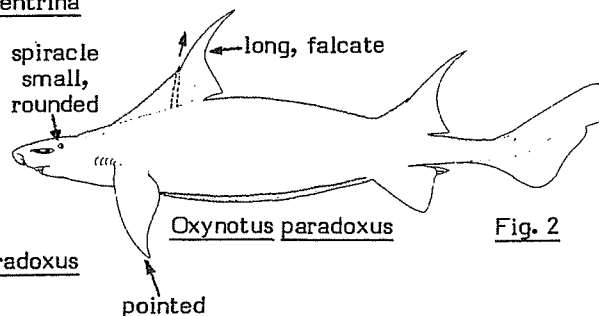
Squatinae

KEY TO SPECIES OCCURRING IN THE AREA :

1 a. Supraocular ridge strongly developed, with a knoblike posterior end studded with large denticles, extending over the eyes to just in front of spiracles; spiracles very large, vertically oval or crescentic; pectoral fins not falcate, with narrowly rounded apices; first dorsal fin spine slanted forward from base to tip; apical part of fin low, broad, and not strongly falcate, its height (from spine tip to fin apex) about equal to, or shorter than basal height (from spine tip to fin base); a colour pattern of dark blotches (Fig. 1) Oxynotus centrina



1 b. Supraocular ridge low, not formed as a heavy denticle-studded knob in front of spiracles; spiracles smaller, circular; pectoral fins falcate, with pointed apices; first dorsal fin spine slanted backward from base to tip; apical part of first dorsal fin high, narrow, and strongly falcate, its height greater than basal height; colour uniform, lighter below (Fig. 2) Oxynotus paradoxus



LIST OF SPECIES OCCURRING IN THE AREA :

Code numbers are given for those species for which Identification Sheets are included

Oxynotus centrina (Linnaeus, 1758)*
Oxynotus paradoxus Frade, 1929

OXYN Oxyn 2

Prepared by L.J.V. Compagno, Tiburón Center of Environmental Studies, San Francisco State University, Tiburon, California, U.S.A.

*The species of Oxynotus from off Angola, Namibia and South Africa, usually considered as O. centrina, may be a separate species

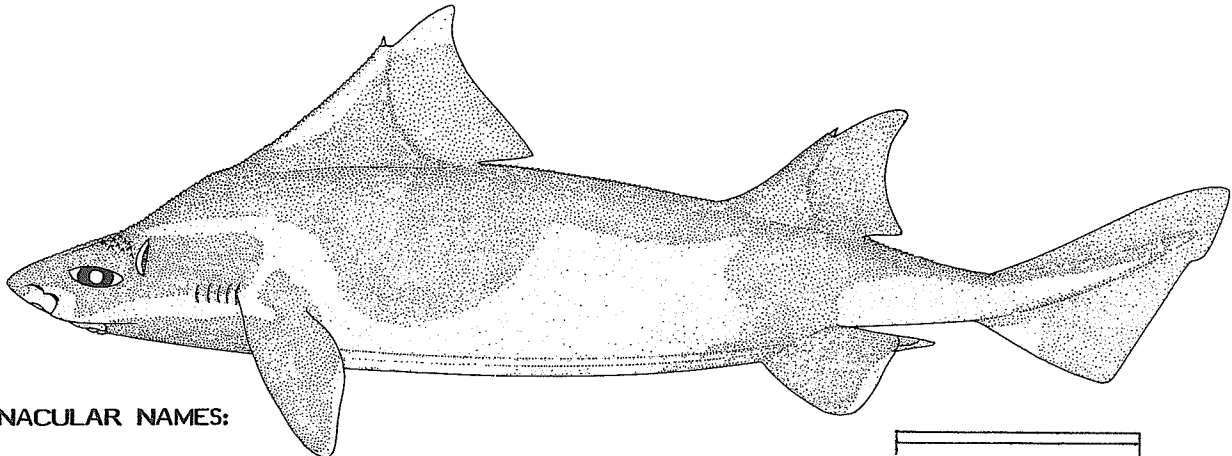
FAO SPECIES IDENTIFICATION SHEETS

FAMILY : OXYNOTIDAE

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)

Oxynotus centrina (Linnaeus, 1758)

OTHER SCIENTIFIC NAMES STILL IN USE : None



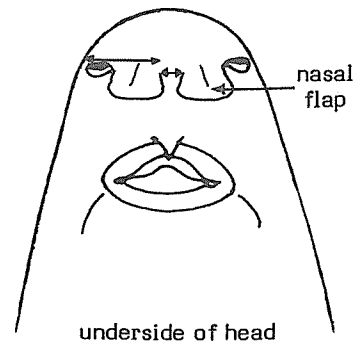
VERNACULAR NAMES:

FAO : En - Angular rough shark
Fr - Centrine commune
Sp - Cerdo marino

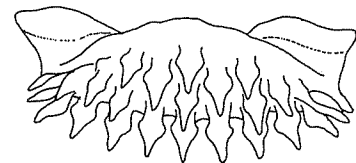
NATIONAL :

DISTINCTIVE CHARACTERS :

A small to medium-sized shark. Body stout, very deep, triangular in section; a strong longitudinal ridge on each side of abdomen between pectoral and pelvic fin bases. Head with 5 small gill slits, all in front of pectoral fin bases; nostrils very large, separated medially by a narrow gap much shorter than their width, anterior nasal flaps large, but not reaching mouth; no oronasal grooves; mouth small, situated below eyes; labial furrows formed as deep grooves around the thick, finely fringed (not suctorial) lips; eyes horizontally elongated, without nictitating lower lids; a heavy supraocular ridge, with a knoblike posterior end studded with large denticles, extending over the eyes on each side and ending just in front of spiracles; spiracles very large, vertically elongated, crescentic to oval; snout short, evenly rounded or subangular; teeth unlike in upper and lower jaws, uppers very small and needlelike, with a single slender cusp and no cusplets; lowers broad, bladelike, with an erect, triangular, serrated cusp and no cusplets. Two dorsal fins both with long spines mostly buried leaving only the spine tips exposed; first dorsal fin very large, originating over the gill slits, its apical part (from spine tip to fin apex) relatively low, not strongly falcate, broad, and about as high as, or lower than basal height (from spine tip to fin base); first dorsal fin spine slanted obliquely forward from base to tip; second dorsal fin somewhat smaller than first; anal fin absent; pectoral fins not falcate, with narrowly rounded apices; caudal fin short, broad, asymmetrical, with a subterminal notch and a hardly developed lower lobe; no keels or precaudal pits on caudal peduncle. Dermal denticles moderately large and close-set, giving the body a prickly, extremely rough, texture.



underside of head



upper jaw and teeth



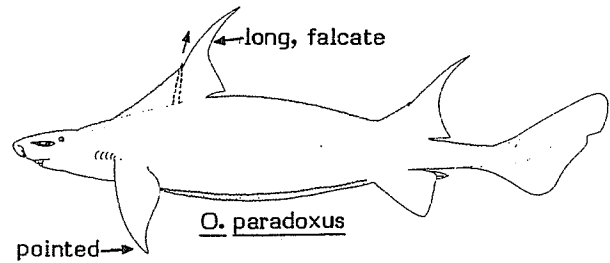
lower teeth

(front view)

Colour: grey or grey brown above and below, with darker blotches on head and sides; a light horizontal line separates dark areas on head and another crosses cheeks below eyes.

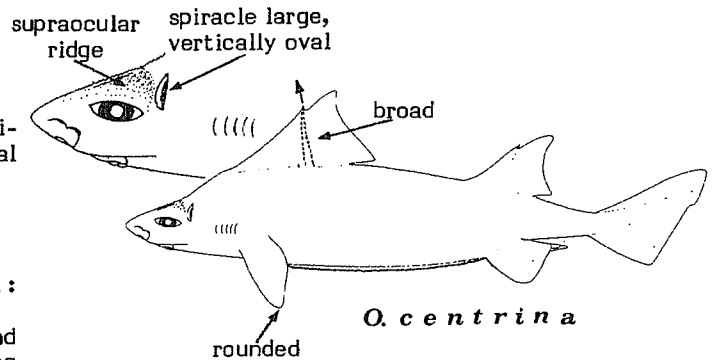
DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA :

Oxynotus paradoxus: supraocular ridge low, not formed as a heavy knob in front of spiracles; spiracles smaller, circular; pectoral fins falcate; first dorsal fin spine slanted backward from base to tip; apical part of first dorsal fin high, narrow, and strongly falcate, its apical height (from spine tip to fin apex) greater than its basal height (from spine tip to fin base); colour uniformly dark brown on the back, sometimes lighter below, but with no blotches.



SIZE :

Maximum: it may reach 150 cm, but most individuals are smaller; becomes adult at above 50 cm total length.



GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR :

In the area, found from Morocco to Senegal, and possibly from Liberia to Namibia* Northward extending to the Bay of Biscay and the British Isles, as well as into the Mediterranean; it may also occur off South Africa.

An uncommon, bottom-dwelling shark, ranging in depth from 40 to 500 m.

Probably feeds on small fishes and invertebrates.

PRESENT FISHING GROUNDS :

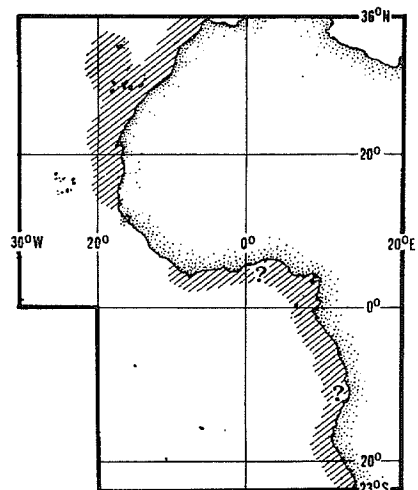
Offshore waters, as bycatch of industrial trawling fleets.

CATCHES, FISHING GEAR AND FORMS OF UTILIZATION :

Separate statistics are not reported for this species.

Caught in bottom and pelagic trawls.

Utilized dried salted, smoked, and for fishmeal and oil.



*Specimens of *Oxynotus* from Angola to Namibia and South Africa agree in general shape with *O. centrina* but may not be conspecific; they differ in having an interdorsal space much shorter than the first dorsal fin base (about equal to first dorsal fin base in *O. centrina*), and a uniform pale coloration.

PSEUD

1981

FAO SPECIES IDENTIFICATION SHEETS

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)

PSEUDOCARCHARIIDAE

Crocodile sharks

A single species in the area - see species sheet for:

Pseudocarcharias kamoharai (Matsubara, 1936) PSEUD Pseud 1

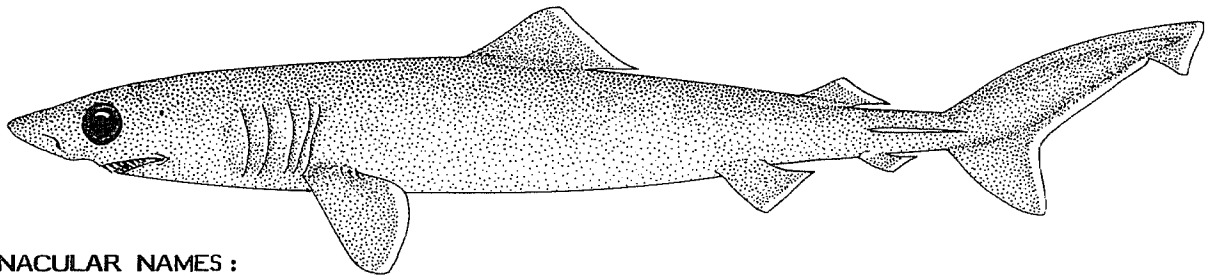
FAO SPECIES IDENTIFICATION SHEETS

FAMILY : PSEUDOCARCHARIIDAE

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)

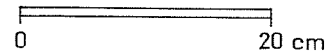
Pseudocarcharias kamoharai (Matsubara, 1936)

OTHER SCIENTIFIC NAMES STILL IN USE : *Odontaspis kamoharai* (Matsubara, 1936)



VERNACULAR NAMES :

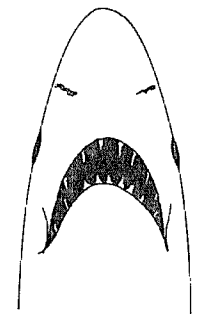
FAO : En - Crocodile shark
Fr - Requin crocodile
Sp - Tiburón cocodrilo



NATIONAL :

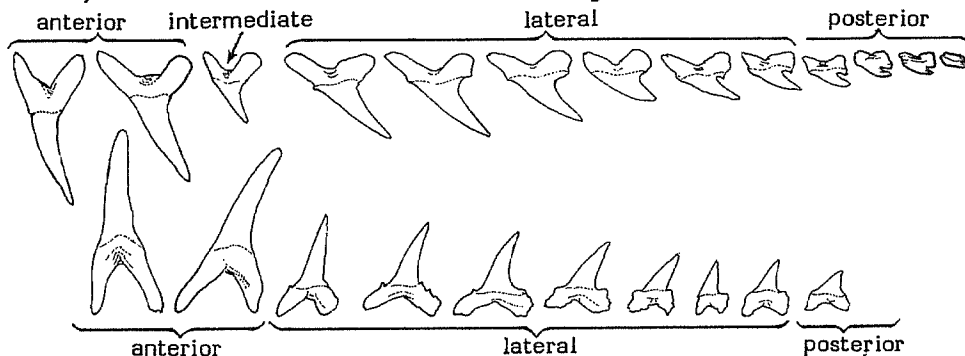
DISTINCTIVE CHARACTERS :

A small relatively slender shark. Head with 5 large gill slits, all in front of pectoral fin bases, their upper ends extending onto dorsal surface of head; no gill rakers; spiracles usually present but very small; no nasal barbels or oronasal grooves; eyes very large, without nictitating eyelids; snout conical (not greatly elongated or flattened and blade-like); mouth very long and angular, extending well behind eyes; no true labial furrows; anterior teeth very large, with long, narrow, hooked, sharp-edged but unserrated cusps and no cusplets, set in 2 rows on either side of symphysis in both jaws, and not separated in front by small symphyseal teeth; upper anteriors separated from the smaller laterals by a gap and tiny intermediate teeth. Two low dorsal fins, the first about midway between the pectorals and the pelvics, and well in front of pelvic fin bases, the second somewhat smaller than the first, but larger than anal fin; caudal fin short, strongly asymmetrical, with a pronounced subterminal notch and a short ventral lobe. Caudal peduncle slightly depressed, with a low keel on each side and upper as well as lower precaudal pits. Intestinal valve of ring type, with close-set turns resembling a stack of washers.



underside of head

Colour: light or dark grey above, lighter below, fins white-edged, sometimes small white spots on body and a white blotch between the mouth and gill slits.



teeth from left side

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA :

The combination of the characters described above separates this species from all other sharks in Fishing Area 34.

SIZE :

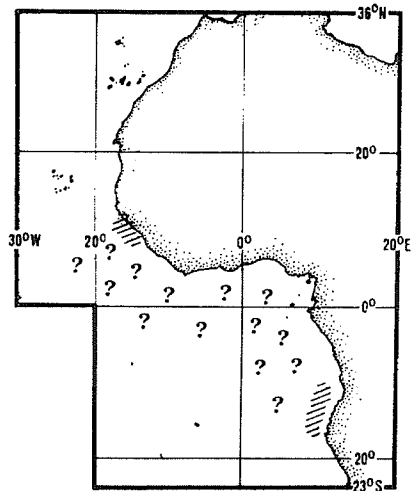
Maximum: about 110 cm, most adults between 75 to 100 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR :

An uncommon oceanic shark, possibly circum-tropical in distribution. In the area, taken off Guinea and Angola, but probably more wide-ranging. Also in the South Western Indian Ocean, North Western, Central, and Eastern Pacific.

Habits little known. Ovoviviparous, with litters of 4 young recorded, size at birth between 41 and 59 cm.

Probably feeds on small oceanic fishes and squid. Jaws can be protruded to a considerable distance forward from mouth.



PRESENT FISHING GROUNDS :

Primarily offshore.

CATCHES, FISHING GEAR AND FORMS OF UTILIZATION :

Separate statistics are not reported for this species.

Caught mainly on longlines.

PSEUDOT

1981

FAO SPECIES IDENTIFICATION SHEETS

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)

PSEUDOTRIAKIDAE

False catsharks

A single species in the area - see species sheet for:

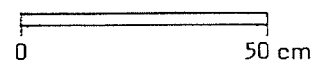
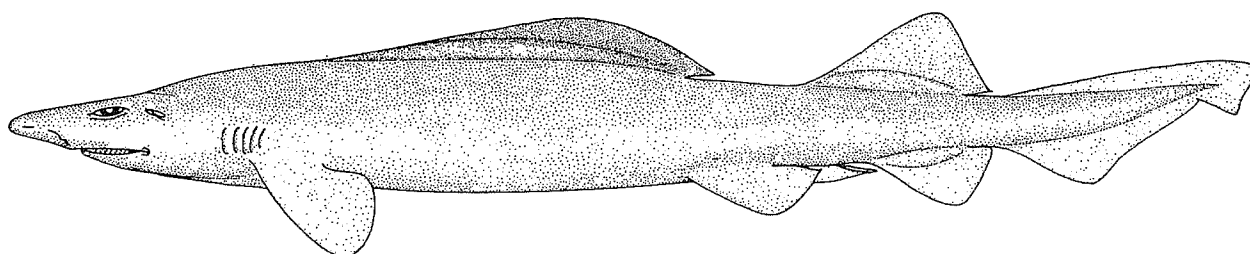
Pseudotriakis microdon Capello, 1868 PSEUDOT Pseu I

FAO SPECIES IDENTIFICATION SHEETS

FAMILY : PSEUDOTRIAKIDAE

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)*Pseudotriakis microdon* Capello, 1868

OTHER SCIENTIFIC NAMES STILL IN USE : None



VERNACULAR NAMES :

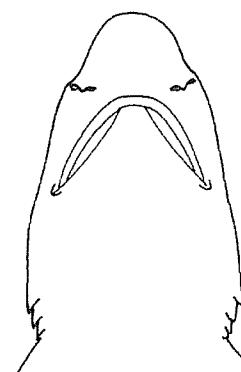
FAO : En - False catshark
 Fr - Requin à longue dorsale
 Sp - Musolón aleta larga

NATIONAL :

DISTINCTIVE CHARACTERS :

A large, soft-bodied shark. Head with 5 small gill slits, the last two over the pectoral fin bases; no dermal gill rakers; spiracles very large, about as long as eyes; nostrils without barbels or oronasal grooves; eyes above sides of head, horizontally elongated, with weakly differentiated nictitating lower eyelids that are delimited below the eyes by shallow pouches; snout moderately long, narrowly rounded; mouth very wide and long, extending behind front of eyes, angular in shape; labial furrows present but short, not extending forward to front of mouth; teeth extremely small and numerous, similar in both jaws and not bladelike, with a small primary cusp and one or more cusplets, becoming comblike in the rear of mouth; upper anterior teeth small and grading into the laterals, not separated from these by small intermediate teeth. Two dorsal fins, the first greatly elongated, low, keel-like, and broadly rounded above, its base just ahead of pelvic fin origins and as long as caudal fin; second dorsal fin short but higher than the first and larger than the anal fin; anal fin base under second dorsal base; caudal fin greatly asymmetrical, its lower lobe hardly developed, its upper edge not rippled and a subterminal notch present. Caudal peduncle not depressed, without lateral keels or precaudal pits. Intestinal valve presumably of spiral type.

Colour: dark brownish grey above and below, darker on posterior edges of pelvic, dorsal, anal and caudal fins.



underside of head

upper anterior
tooth

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA :

No other sharks in the area combine the presence of a low, keel-like first dorsal fin equal in length to the caudal fin and of an anal fin with the absence of fin spines.

SIZE :

Maximum: 295 cm; females mature at about 210 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR :

In the area known to occur off the Cape Verde Islands, Madeira, and Senegal; also found off Portugal, the Azores, France and Iceland. Elsewhere in the Western North Atlantic, Western Indian Ocean and possibly the Western North and Central Pacific (provided that *P. acrales* proves to be a synonym of this species).

A deepwater shark, normally occurring on the upper continental slopes at depths between 300 and 500 m, rarely occurring in shallower water. Ovoviviparous, with litters of two young. Size at birth about 90 cm. Little known in habits, once photographed in deep water eating a bony fish.

PRESENT FISHING GROUNDS :

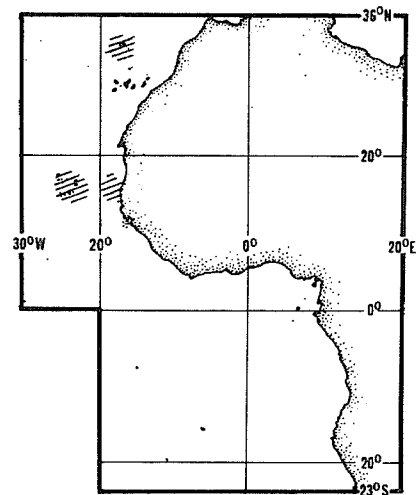
Taken incidentally offshore.

CATCHES, FISHING GEAR AND FORMS OF UTILIZATION :

No separate statistics are reported for this species.

Taken on deep-set longlines, more rarely in bottom trawls.

Utilization not recorded.



RHIN

1981

FAO SPECIES IDENTIFICATION SHEETS

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)

RHINIODONTIDAE

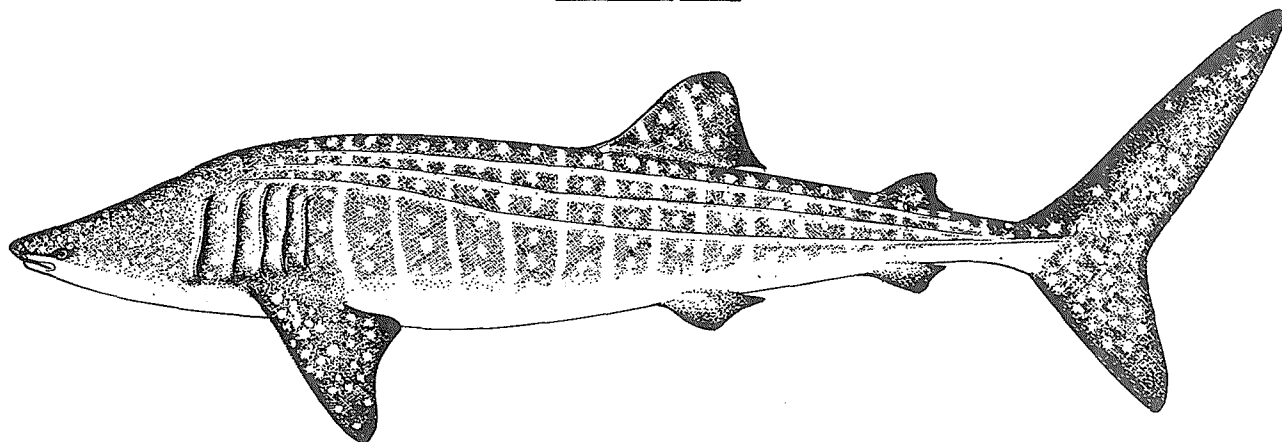
Whale sharks

A single species in the area - see species sheet for:

Rhiodon typus Smith, 1828 RHIN Rhin 1

FAO SPECIES IDENTIFICATION SHEETS

FAMILY : RHINIODONTIDAE

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)Rhiodon typus Smith, 1828OTHER SCIENTIFIC NAMES STILL IN USE : Rhincodon typus (Smith, 1828)
Rhincodon typus (Smith, 1829)

VERNACULAR NAMES :

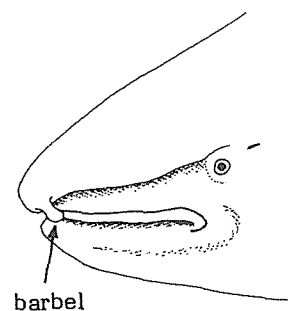
FAO : En - Whale shark
Fr - Requin baleine
Sp - Tiburón ballena

NATIONAL :

DISTINCTIVE CHARACTERS :

A very large shark. Head with 5 large gill slits, the posterior 3 over the pectoral fin bases; no gillrakers but filter grids of transverse bars and lobes across the internal gill slits; snout extremely short, truncated; nostrils with short, quadrate barbels and shallow oronasal grooves; no nictitating eyelids; mouth nearly subterminal, very wide, transverse and short, not reaching backward to eyes; teeth very small and extremely numerous, similar in both jaws, not bladelike and with hooked cusps. Two dorsal fins, the first with rear third of base over pelvic fin bases, the second less than half the size of first; anal fin present; caudal fin asymmetrical, crescentic, with a strong lower lobe but no subterminal notch. Caudal peduncle depressed, with a strong keel on each side continuing forward onto the back and over the gill slits as a small ridge and flanked by 2 additional ridges above; upper precaudal pit present.

Colour: dark grey, reddish, or greenish grey above, with white or yellow spots and transverse stripes; white or yellowish below.



head

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA :

The combination of characters such as the truncated snout, the transverse mouth in front of eyes, the numerous small teeth, the lateral ridges, the precaudal keels and the colour pattern distinguishes the whale shark from all other sharks in the area.

SIZE :

Maximum: to at least 12 m, and possibly to 21.4 m.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR :

In the area, known from Senegal and the Cape Verde Islands southward to the Gulf of Guinea, but probably more widespread. Circumtropical in all warm oceans

This huge pelagic filter feeder occurs singly or in schools, nearshore or on the open sea.

Feeds on crustaceans, schooling fish and squids. Eggs are deposited in large, football-sized cases.

PRESENT FISHING GROUNDS :

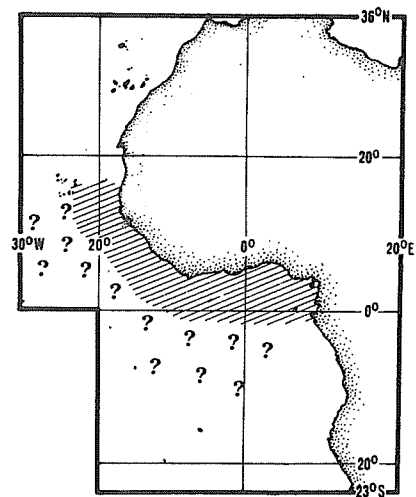
Taken only incidentally in Fishing Area 34, but fished commercially elsewhere (India).

CATCHES, FISHING GEAR AND FORMS OF UTILIZATION :

Separate statistics are not reported for this species.

Utilized fresh or dried salted (Senegal).

Usually harmless, but rarely ramming small boats; more often struck by ships while basking.



FAO SPECIES IDENTIFICATION SHEETS

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)

SCYLORHINIDAE

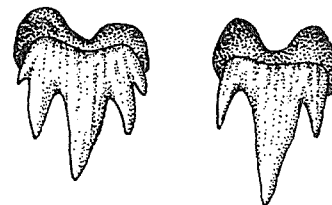
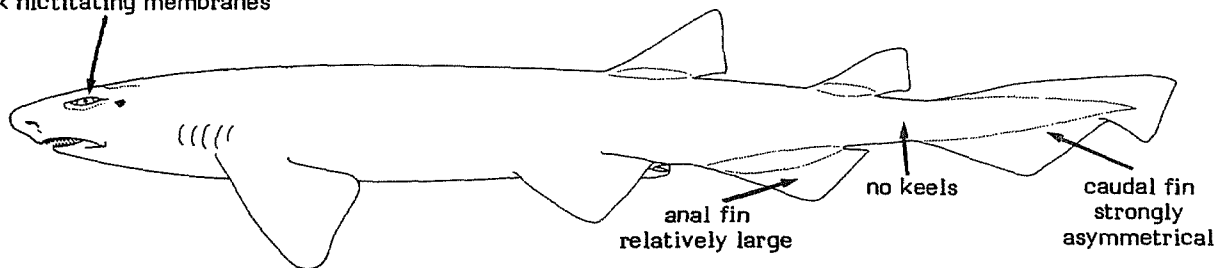
Catsharks, nursehounds

Small sharks with slender and elongated to moderately stout bodies. Head with 5 gill slits, the last two posterior to pectoral fin origins; gill arches with or without small papillose gill rakers; nostrils without barbels and lacking deep oronasal grooves in species found in the area; eyes horizontally oval, elongated, with weakly differentiated nictitating lower eyelids delimited below by a variably developed subocular pouch; mouth moderately large, with rear corners behind front margins of eyes; labial furrows present in species from the area; teeth very small, numerous, with a single medial cusp and usually one or more cusplets on each side near the center of mouth, the rear teeth often comblike. Two dorsal fins, the first originating over or posterior to rear halves of pelvic fin bases, the second dorsal smaller, as large, or larger than the first dorsal, but never greatly reduced; anal fin considerably longer than, and originating in advance of, second dorsal fin; caudal fin strongly asymmetrical, its lower lobe absent or only weakly indicated, upper edge unrippled, and subterminal notch present. Caudal peduncle not flattened dorso-ventrally, without lateral keels or precaudal pits. Intestine with a corkscrew or auger-like spiral valve, with 5 to 22 turns.

Colour: grey, brown, yellowish or black, often with light or dark spots and dark blotches, bars and saddles.

This family includes numerous small to moderate-sized species (rarely reaching to 1.5 m total length) from tropical and temperate latitudes ranging from shallow coastal waters to depths greater than 500 m. They are generally poor swimmers and do not migrate over great distances. Most species live on or near the bottom, feeding chiefly on invertebrates and small fishes. Some are rather common and regularly taken as bycatch in the trawl fisheries. Species from shallower waters are also taken in fixed bottom nets, on hook and line and in gillnets. Most of the bycatch from trawl fisheries is reduced to fishmeal, while the catch from artisanal fisheries is marketed chiefly dried salted. Separate statistics are not reported for this family.

eyes horizontally oval,
weak nictitating membranes



examples of teeth

(with a central cusp and one
or more pairs of lateral cusplets)

SIMILAR FAMILIES OCCURRING IN THE AREA :

The catsharks are easily distinguished from superficially similar families by the combination of characters such as their small size, the location of the last two gill slits behind the pectoral fin origins, the posterior position of the first dorsal fin, the comparatively large anal fin, the strongly asymmetrical caudal fin, the absence of keels or precaudal pits on the caudal peduncle and the presence of a spiral intestinal valve.

KEY TO GENERA AND SPECIES OCCURRING IN THE AREA :

1 a. Snout short and broad (Fig. 6a); labial furrows on lower jaw only (Fig. 1); second dorsal fin considerably smaller than first dorsal (Figs. 2 to 4) Scyliorhinus

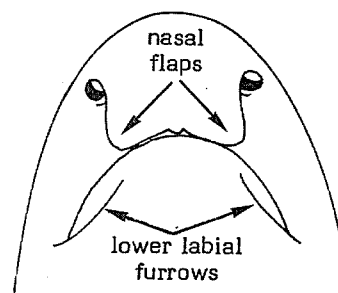
2 a. Anterior nasal flaps greatly enlarged, meeting each other at mid-line of and overlapping mouth posteriorly; shallow oronasal grooves present between nostrils and mouth (Fig. 1a); first dorsal fin origin behind pelvic fin insertions; second dorsal fin origin over anal fin insertion (Fig. 2) Scyliorhinus canicula

2 b. Anterior nasal flaps smaller, well-separated from each other medially and ending anteriorly to mouth or just reaching it (Fig. 1b); first dorsal fin origin over pelvic fin insertions; second dorsal fin origin over rear half of anal fin base (Figs. 3,4)

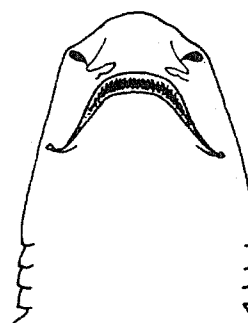
3 a. Body relatively stout and tapering strongly to tail; anterior nasal flaps reaching mouth; saddle blotches present on back, dark spots large and few, no white spots (Fig. 3) Scyliorhinus cervigoni

3 b. Body slenderer and tapering less toward tail; anterior nasal flaps ending just anterior to mouth; no saddle blotches, dark spots more numerous, large and small, often white spots on sides (Fig. 4) Scyliorhinus stellaris

1 b. Snout long and broad or narrow; labial furrows on both upper and lower jaws (Fig. 5); second dorsal fin as large as first.

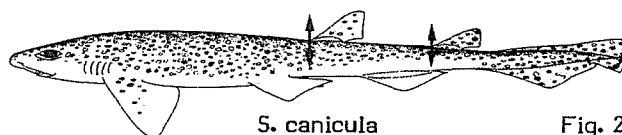


Scyliorhinus canicula
a



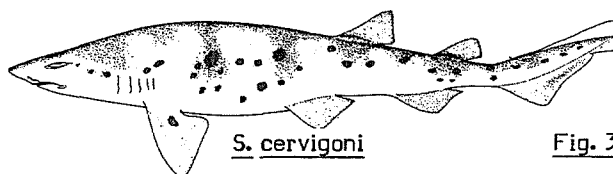
Scyliorhinus stellaris
b

Fig. 1



S. canicula

Fig. 2



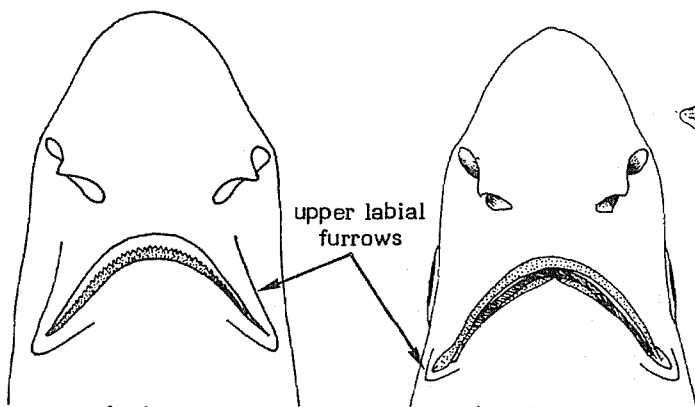
S. cervigoni

Fig. 3



S. stellaris

Fig. 4



a. Apristurus sp.

b. Galeus sp.

Fig. 5

4 a. Labial furrows long, upper ones reaching front of mouth (Fig. 5a); head broader, eyes dorsolateral in position, well medial to head rim in dorsal view (Fig. 6b); dorsal margin of caudal fin usually without a crest of enlarged denticles; colour uniform, without prominent markings, usually black or brown on upper and lower surfaces (Fig. 7) Apristurus spp.*

4 b. Labial furrows short, upper ones ending well behind front of mouth (Fig. 5b); head narrower; eyes nearly lateral in position, extending laterally to head rim in dorsal view (Fig. 6c); dorsal margin of caudal fin with a well-developed crest of enlarged denticles (Fig. 8); colour pattern of dark spots and blotches on a light background, dorsal surface dark, underside light (Figs. 10,11) Galeus

5 a. Snout narrower; space between nostrils less than half the distance between pectoral fin insertions (Fig. 9a); free rear tip of anal fin barely reaching lower caudal fin origin; sides with 9 to 11 greyish brown blotches and spots (Fig. 10) Galeus polli

5 b. Snout broader; space between nostrils about equal to distance between pectoral fin insertions (Fig. 9b); free rear tip of anal fin extending further back than lower caudal fin origin; sides with 15 to 18 large dark brown blotches and spots (Fig. 11) Galeus melastomus

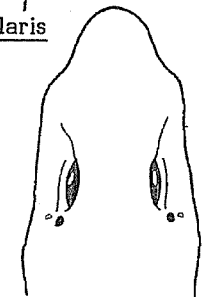
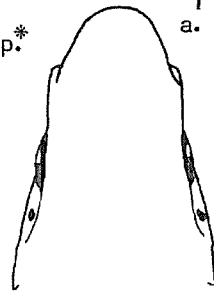
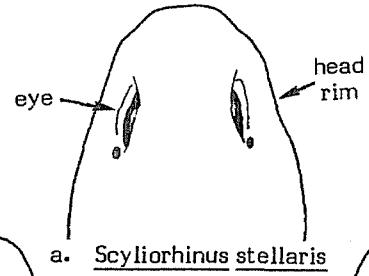
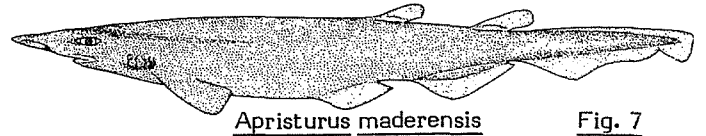


Fig. 6

c. Galeus polli

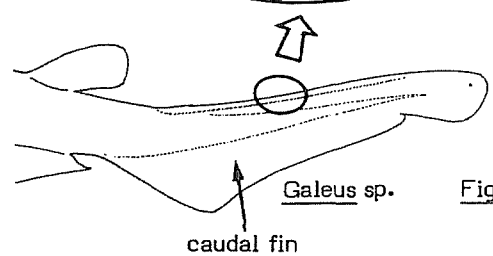
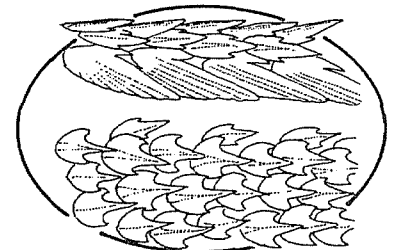
b. Apristurus sp. (E. Atlantic)

upper view of head



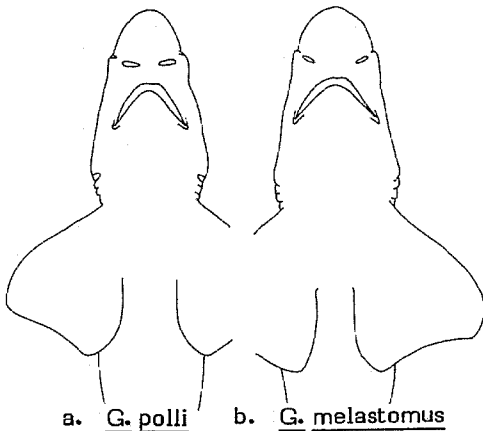
Apristurus maderensis

Fig. 7



Galeus sp.

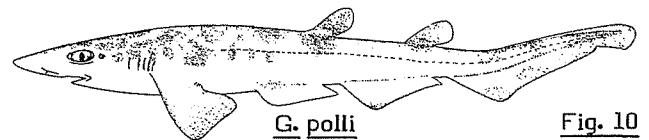
Fig. 8



a. G. polli

b. G. melastomus

Fig. 9



G. polli

Fig. 10



G. melastomus

Fig. 11

*Five nominal species of Apristurus are reported from the Area. All are poorly known and need further study. It is impossible at present to make a valid key to these species without a review of the genus from the Eastern Atlantic

LIST OF SPECIES OCCURRING IN THE AREA :

Code numbers are given for those species for which Identification Sheets are included

<u>Apristurus atlanticus</u> Koefoed, 1932 *	
<u>Apristurus laurussoni</u> (Saemundsson, 1922)*	
<u>Apristurus maderensis</u> Cadenat & Maul, 1966 *	
<u>Apristurus nasutus</u> de Buen, 1959*	
<u>Apristurus profundorum</u> (Goode & Bean, 1896)*	
<u>Galeus melastomus</u> Rafinesque, 1809**	SCYL Gal 1
<u>Galeus polli</u> Cadenat, 1959	
<u>Scyliorhinus canicula</u> (Linnaeus, 1758)	SCYL Scyl 1
<u>Scyliorhinus cervigoni</u> Maurin & Bonnet, 1970	
<u>Scyliorhinus stellaris</u> (Linnaeus, 1758)	SCYL Scyl 2

Prepared by L.J.V. Compagno, Tiburon Center of Environmental Studies, San Francisco State University, Tiburon, California, U.S.A.

* Apristurus is a large (24 species) poorly known deepwater genus, with almost half the species known from single specimens only. Those in the area are, with the possible exception of A. laurussoni, poorly known also.

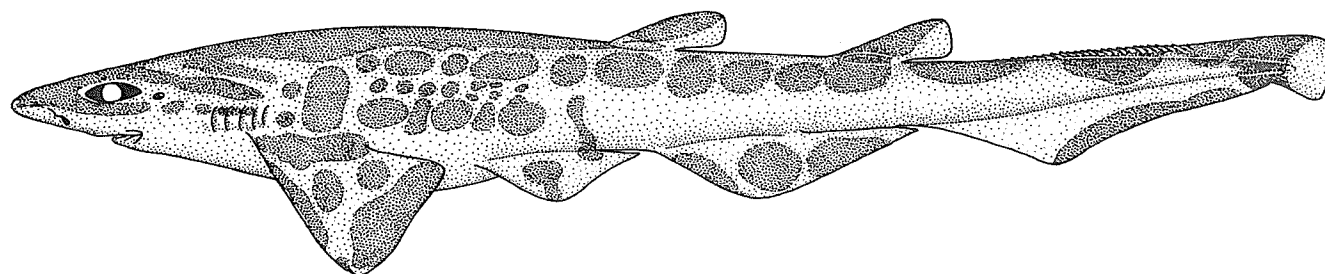
**Placed in the genus Pristiurus Bonaparte, 1834 by some writers, who consider Galeus Rafinesque, 1809 invalid

FAO SPECIES IDENTIFICATION SHEETS

FAMILY: SCYLIORHINIDAE

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)Galeus melastomus Rafinesque, 1809

OTHER SCIENTIFIC NAMES STILL IN USE: None



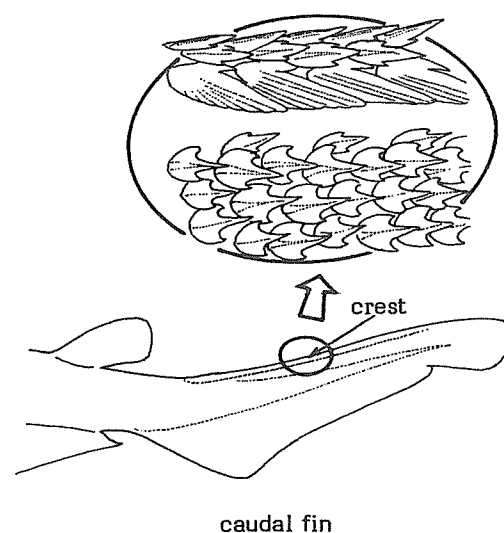
VERNACULAR NAMES:

FAO: En - Blackmouth catshark
Fr - Chien espagnol
Sp - Pintarroja bocanegra

NATIONAL:

DISTINCTIVE CHARACTERS:

A small shark; head with 5 small gill slits, the last two above the pectoral fin bases; nostrils without barbels and with the anterior nasal flaps very short, not meeting each other at midline and ending well anterior to mouth; distance between nostrils about equal to space between pectoral fin insertions; no oronasal grooves; labial furrows present on both jaws, short, not extending to front of mouth; eyes horizontally elongated, nearly lateral in position reaching rim of head when viewed from above; nictitating eyelids present, weakly differentiated externally and delimited below the eye by shallow subocular pouches; snout long, narrowly parabolic; teeth very small and numerous, similar in both jaws and not bladelike, with a slender primary cusp and side cusplets, comblike towards rear of mouth; anterior teeth of upper jaw not greatly enlarged and not separated from the laterals by minute intermediate teeth. First dorsal fin about as large as second dorsal, its origin about over or slightly behind pelvic fin insertions; second dorsal fin originating over rear half of anal fin base; anal fin larger than second dorsal its rear tip reaching beyond lower caudal fin origin; caudal fin moderately long, asymmetrical, with a subterminal notch but with a hardly developed lower lobe, its lower origin just behind anal fin insertion; a crest of enlarged, pointed denticles along dorsal margin of caudal fin; caudal peduncle without keels or precaudal pits.



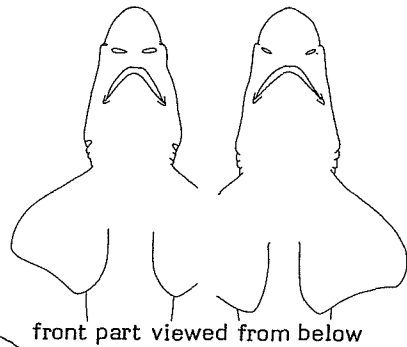
Colour: brown above, cream-brownish below, with 15 to 18 large, dark brown blotches and spots on sides; mouth black inside.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA :

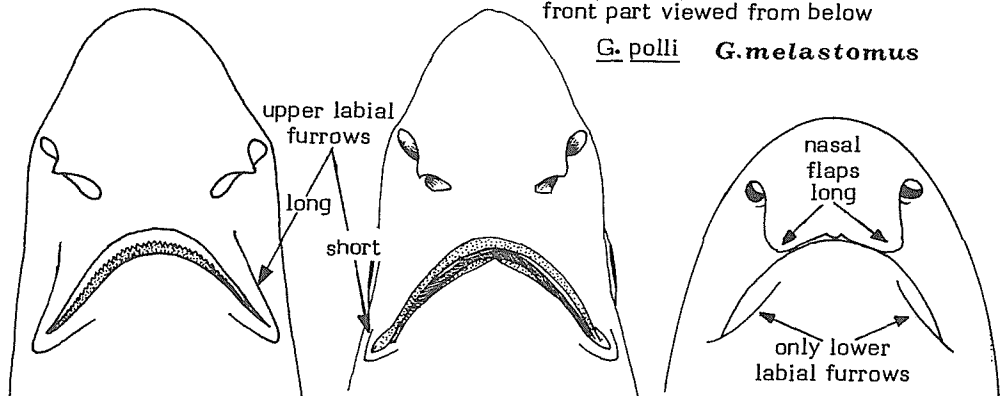
Galeus polli: snout narrower; space between nostrils less than half the distance between pectoral fin insertions; free rear tip of anal fin barely reaching lower caudal fin origin; 9 to 11 dark greyish-brown spots and blotches on sides; development ovoviviparous.

Apristurus species: head broader; labial furrows long, those on upper jaw reaching front of mouth; eyes dorsolateral in position, well medial to head rim in dorsal view; upper margin of caudal fin usually without a crest of enlarged denticles; colour uniform, without prominent markings, usually black or brown.

Scyliorhinus species: snout shorter and broader; anterior nasal flaps larger nearly or quite reaching mouth; labial furrows only on lower jaw; eyes dorsolateral in position; teeth not comblike in rear of mouth; first dorsal fin noticeably larger than second; caudal fin without a crest of denticles; colour pattern with smaller spots and blotches, mouth white inside.



front part viewed from below
G. polli G. melastomus



SIZE : Apristurus sp. G. melastomus Scyliorhinus sp.
underside of head

Maximum: 90 cm., most adults below 70 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR :

In the area, from Morocco to Senegal and the Canary Islands. Northward extending to Norway and into the Mediterranean.

A common, deepwater, bottom dwelling shark found on the upper continental slope, mainly between 200 to 500 m depth but occasionally up to 55 m. Oviparous, depositing eggs in small rounded-elongated capsules with a pair of tendrils on each end that anchor the capsule to the bottom.

Feeds mainly on bottom invertebrates, especially shrimp, but also on small mid-water fishes.

PRESENT FISHING GROUNDS :

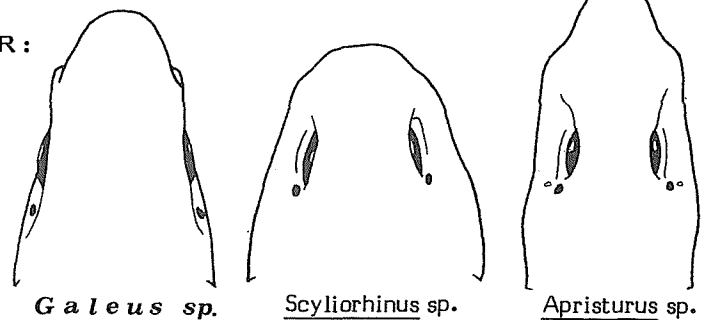
Mainly the Canary Islands.

CATCHES, FISHING GEAR AND FORMS OF UTILIZATION :

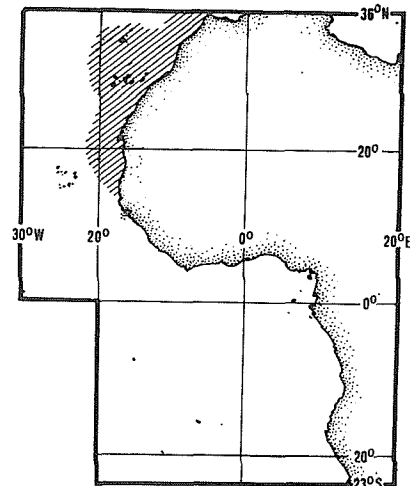
Separate statistics are not reported for this species.

Caught in bottom trawls.

Utilized fresh and dried salted for food, and the hides for leather.



upper view of head

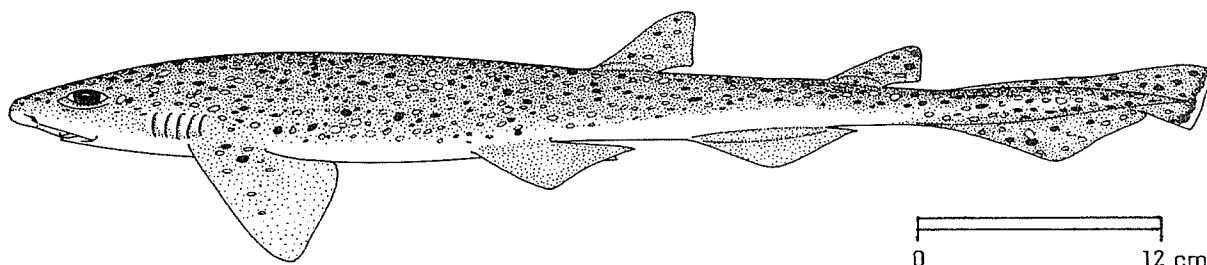


FAO SPECIES IDENTIFICATION SHEETS

FAMILY: SCYLIIORHINIDAE

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)Scyliorhinus canicula (Linnaeus, 1758)

OTHER SCIENTIFIC NAMES STILL IN USE: None



VERNACULAR NAMES:

FAO: En - Smallspotted catshark
Fr - Petite roussette
Sp - Pintarroja

NATIONAL:

DISTINCTIVE CHARACTERS:

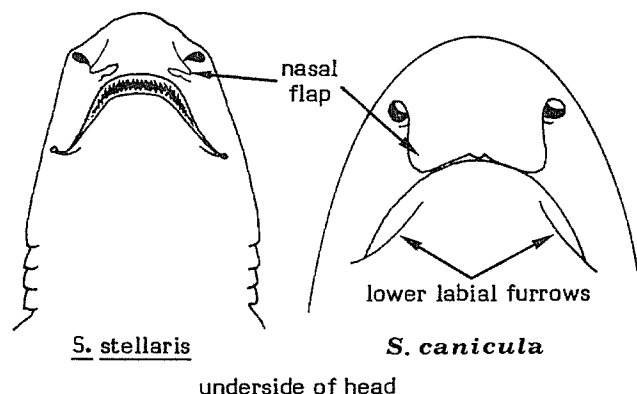
A small, slender shark. Head with 5 small gill slits, the last two above the pectoral fin bases; nostrils without barbels but with the anterior nasal flaps greatly enlarged, meeting each other at the midline, and posteriorly overlapping the mouth; broad and shallow oronasal grooves between mouth and nostrils; mouth extending behind front margins of eyes; labial furrows present only on lower jaw; eyes horizontally elongated, in dorsolateral position, with nictitating lower eyelids that are weakly differentiated externally and delimited below the eye by shallow subocular pouches; snout short and narrowly rounded; teeth very small and numerous, similar in both jaws, not bladelike, with a slender primary cusp and usually a cusplet on each side, not comblike at rear of mouth; anterior teeth of upper jaw smaller than lateral teeth and not gradually increasing toward the sides, not separated from the laterals by minute intermediate teeth. First dorsal fin somewhat larger than second and originating behind the pelvic fin insertions; second dorsal fin originating over anal fin insertion; anal fin longer than second dorsal; caudal fin short, asymmetrical, with a subterminal notch but with a hardly developed lower lobe and its lower origin well separated from anal fin. Caudal peduncle without keels or precaudal pits.

Colour: light brown above, cream below, with numerous small to large dark brown and often white spots on back, sides and upper surfaces of fins

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA :

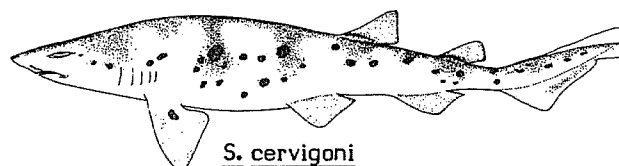
Scyliorhinus stellaris and *S. cervigoni*: anterior nasal flaps smaller, separated from each other at the midline by a space; no oronasal grooves; origin of first dorsal over insertions of pelvic fin bases; origin of second dorsal fin anterior to insertion of anal base; also, saddle-shaped blotches on back and spots larger and fewer.

Galeus melastomus and *G. polli*: snout more elongated; eyes more lateral, reaching head rim in dorsal view; nostrils much smaller and anterior nasal flaps well separated from each other and far ahead of mouth; no oronasal grooves; both upper and lower labial furrows present; second dorsal fin about as large as first dorsal; upper edge of caudal fin with enlarged denticles forming a crest; colour pattern of large, dark blotches.



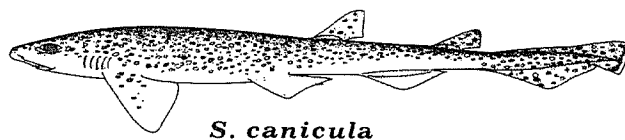
SIZE :

Maximum: to about 100 cm, but most adults between 60 and 70 cm total length.



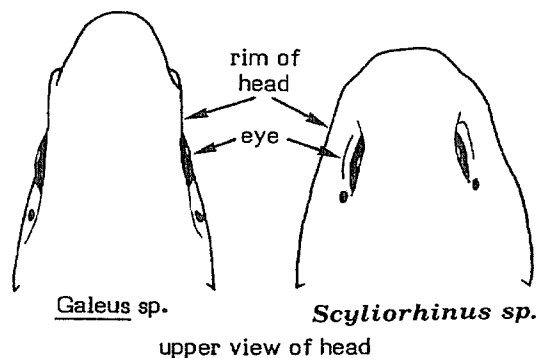
GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR :

In the area, found from Morocco to Senegal, and possibly Ivory Coast; northward extending to Norway and the British Isles, and into the Mediterranean.



Found mostly in waters of the continental shelf, close inshore, on sand, fine gravel, or mud bottoms to about 400 m depth. Oviparous, depositing eggs in small, rounded capsules with a pair of tendrils on each end that anchor the capsule to the bottom; the eggs hatch in 5 to 11 months and yield young of 10 cm length.

Feeds mainly on bottom invertebrates, including crabs shrimps, worms, and molluscs, but also small fishes.



PRESENT FISHING GROUNDS :

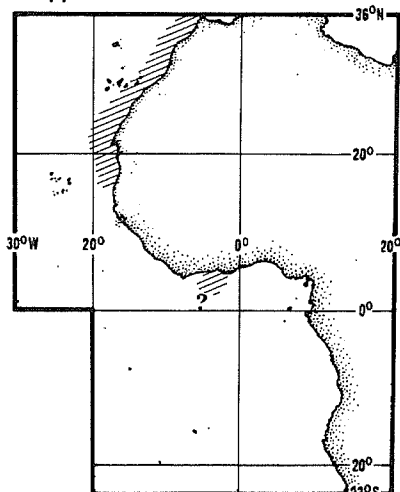
Mainly from Senegal northward.

CATCHES, FISHING GEAR AND FORMS OF UTILIZATION :

Separate statistics are not reported for this species.

Caught mostly in bottom trawls, but also fixed bottom nets and pelagic trawls.

Utilized fresh, dried salted, or processed for oil or fishmeal.

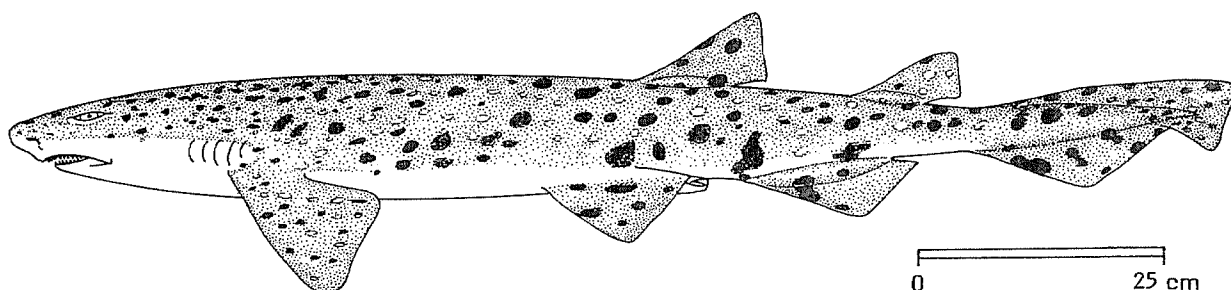


FAO SPECIES IDENTIFICATION SHEETS

FAMILY : SCYLORHINIDAE

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)Scyliorhinus stellaris (Linnaeus, 1758)

OTHER SCIENTIFIC NAMES STILL IN USE : None



VERNACULAR NAMES :

FAO: En - Nursehound
 Fr - Grande roussette
 Sp - Alitán

NATIONAL:

DISTINCTIVE CHARACTERS :

A moderately large, relatively slender shark. Head with 5 small gill slits, the last two above the pectoral fin bases; nostrils without barbels, with moderately large anterior nasal flaps, separated from each other at the midline by a short space and not overlapping the mouth posteriorly; no oronasal grooves between mouth and nostrils; mouth extending posteriorly behind front margins of eyes; labial furrows present only on lower jaw; eyes horizontally elongated, in dorsolateral position, with nictitating lower eyelids that are weakly differentiated externally and delimited below the eye by shallow subocular pouches; snout short and narrowly rounded; teeth very small and numerous, similar in both jaws and not bladelike, with a slender primary cusp and usually a cusplet on each side, not comblike at rear of mouth; anterior teeth of upper jaw smaller than lateral teeth and gradually increasing in size toward the sides, not separated from the laterals by minute intermediate teeth. First dorsal fin somewhat larger than the second, originating about over pectoral fin insertions; second dorsal fin originating about over middle of anal fin base; anal fin longer than second dorsal; caudal fin short, asymmetrical, with a subterminal notch but a hardly developed lower lobe, and its lower origin well separated from anal fin. Caudal peduncle without keels or precaudal pits.

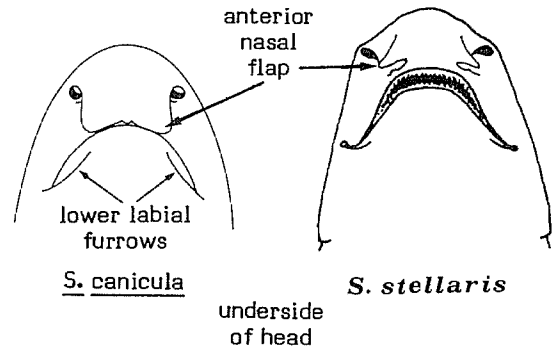
Colour: light brown or grey-brown above, creamy white below; back and upper surfaces of fins with numerous small to large rounded dark brown and often white spots; caudal and anal fins with dusky edges.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA :

Scyliorhinus cervigoni (only known from scattered records off Mauritania, Senegal and Angola, but may be wider ranging in the area): similar to S. stellaris in size and shape of nasal flaps, absence of oronasal grooves and relative position of vertical fins (and hence probably often confused with that species) but differing from it by the heavier body and different colour pattern (usually fewer spots and dark saddles on back).

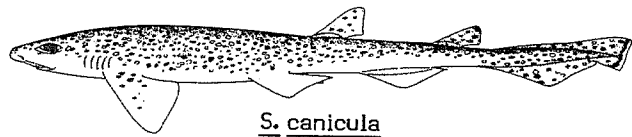
S. canicula: anterior nasal flaps enlarged, meeting each other at midline of snout and overlapping the mouth posteriorly; nostrils and mouth connected by shallow oronasal grooves; origin of first dorsal fin behind pelvic fin insertions; origin of second dorsal over anal fin insertion; dark spots often smaller and more numerous.

Galeus melastomus and G. polli: snout more elongated; nostrils smaller and more anterior to mouth; both upper and lower labial furrows present; eyes extending laterally to head rim in dorsal view; second dorsal fin about as large as first dorsal; upper edge of caudal fin with enlarged denticles forming a crest.



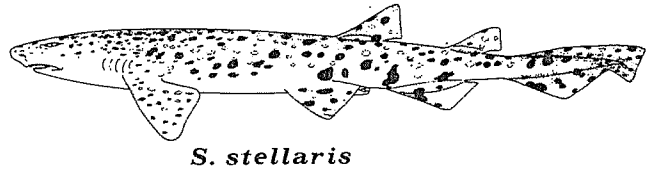
SIZE :

Maximum: about 162 cm; common to about 125 cm.



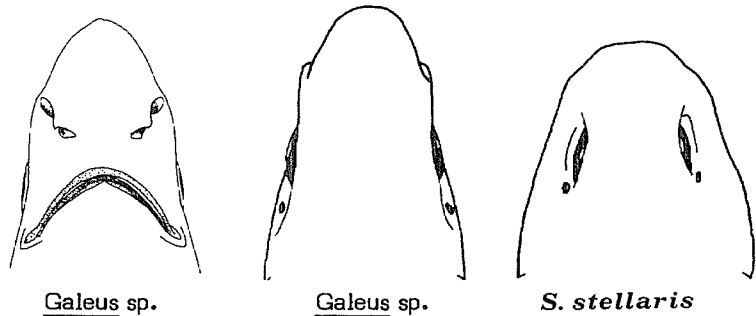
GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR :

In the area, found from Morocco to Senegal (nominal records from Gambia to Guinea, Liberia and from Ivory Coast to Zaire may be based in whole or part on S. cervigoni). Northward extending to the British Isles and the North Sea.



A common shark on rough bottom, in inshore waters of the continental shelf to at least 63 m depth. Oviparous, depositing eggs in small, rounded capsules with a pair of tendrils on each end which anchor them to the substrate, hatching in about 9 months and yielding young of 16 cm length.

Feeds mainly on benthic crustaceans and molluscs, also other invertebrates and bottom fishes.



underside of head

upper side of head

PRESENT FISHING GROUNDS :

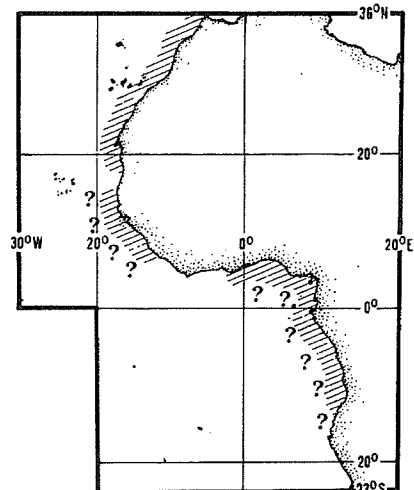
Primarily to the north of Senegal.

CATCHES, FISHING GEAR AND FORMS OF UTILIZATION :

Separate statistics are not reported for this species.

Caught primarily in bottom trawls, but also fixed bottom nets and pelagic trawls.

Utilized dried salted or processed for fishmeal and oil.



FAO SPECIES IDENTIFICATION SHEETS

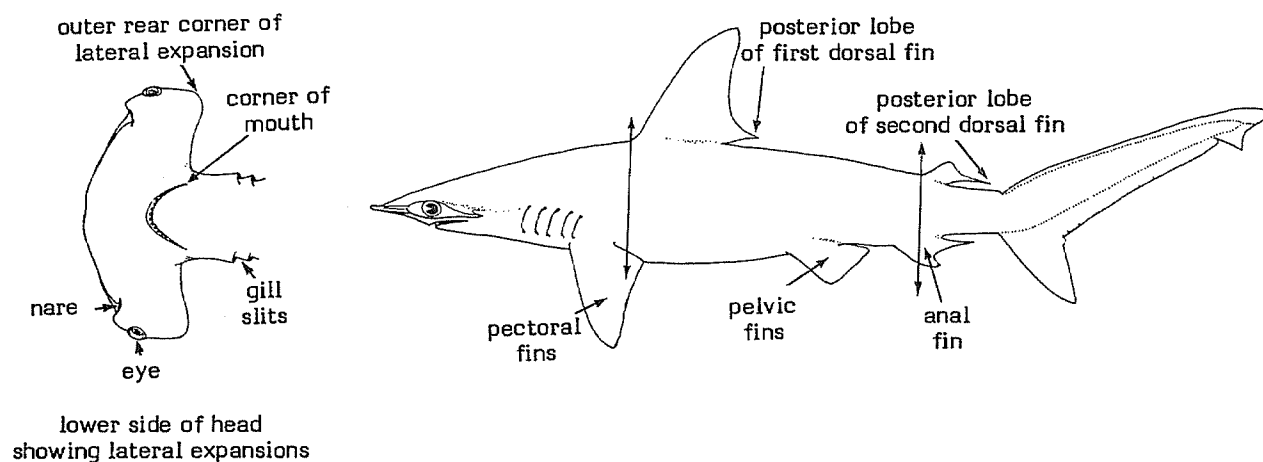
FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)

SPHYRNIDAE

Hammerhead and bonnethead sharks

Medium- to large-sized sharks. Body elongate and moderately slender, anterior portion of head much flattened dorso-ventrally and widely expanded laterally in "hammer" form, with the eyes at its outer edges. Well developed nictitating lower eyelids; teeth blade-like, with a single cusp. Two dorsal fins, the first high and pointed, its base much shorter than caudal fin and wholly anterior to origin of pelvics; caudal fin strongly asymmetrical, with a well marked subterminal notch and a small, but well defined lower lobe. Caudal peduncle not strongly flattened dorso-ventrally or widely expanded laterally, without longitudinal ridges but with precaudal pits.

Colour: back predominantly grey or brassy; belly white.



Hammerhead sharks inhabit surface waters in tropical and warm-temperate areas. Medium-sized individuals as well as juveniles are confined to coastal waters, while the larger species are primarily oceanic, although they often approach the coast in search of food. They are voracious predators, feeding mainly on fishes, sharks, rays and bottom-dwelling animals (some crustaceans and molluscs). A few species are reported dangerous to bathers. Hammerhead sharks are used as food and also for the preparation of various subproducts, especially vitamin A from the liver.

SIMILAR FAMILIES OCCURRING IN THE AREA :

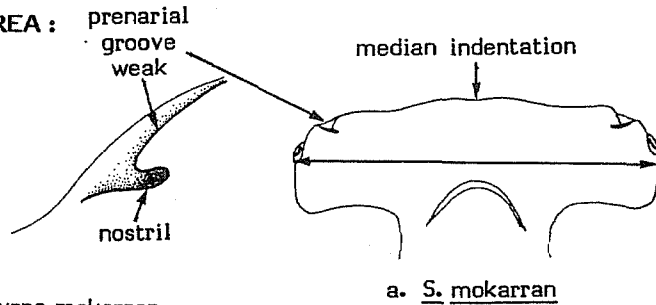
No other shark family has the characteristic hammer-shaped head of the Sphyrnidae.

KEY TO GENERA OCCURRING IN THE AREA :

Sphyrna only.

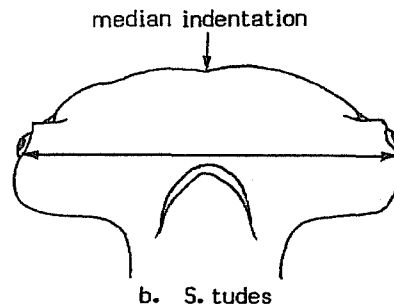
KEY TO SPECIES OCCURRING IN THE AREA :

1 a. Anterior margin of head nearly straight in adults, moderately convex in young; prenarial grooves hardly developed (Fig. 1a); teeth strongly serrated at all sizes; first dorsal fin markedly falcate; second dorsal about a third the height of first, with a short inner margin; posterior margins of second dorsal and pelvic fins deeply concave (Fig. 2) Sphyrna mokarran



a. S. mokarran

1 b. Anterior margin of head moderately convex in adults, strongly so in young; prenarial grooves well developed; teeth generally smooth, but possibly serrated in adults; first dorsal fin erect or slightly falcate*; second dorsal less than a third the height of first, its inner margin moderately to greatly elongated* and its posterior margin moderately concave to nearly straight; posterior margins of pelvic fins straight or nearly so*

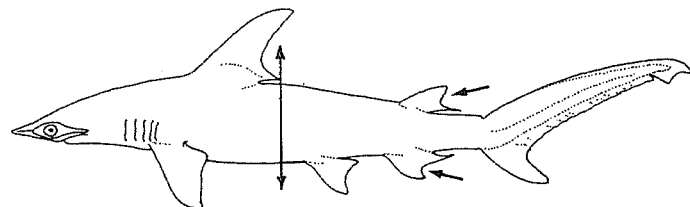


b. S. tudes

underside of head of adult

Fig. 1

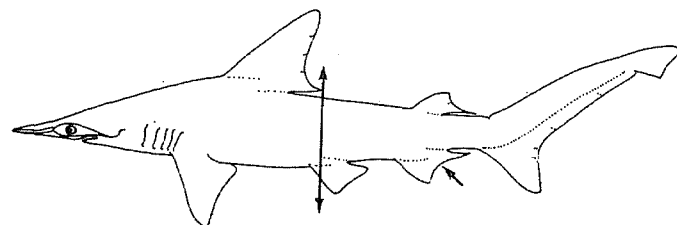
2 a. Posterior edges of lateral lobes of head nearly transverse in all except small young (Fig. 1b); posterior corners of eyes well anterior to the mouth which is very narrow; free rear tips of first dorsal fin over, or posterior to pelvic fin origins; posterior margins of second dorsal moderately elongated, that of anal fin straight or weakly concave (Fig. 3); size smaller, adults less than 2 m Sphyrna tudes



S. mokarran

Fig. 2

2 b. Posterior edges of lateral lobes of head angled; posterior corners of eyes opposite or slightly posterior to anterior margin of mouth which is relatively broad (Figs. 4,7); free rear tip of first dorsal fin well ahead of pelvic fin origins; second dorsal fin with a greatly elongated posterior margin; posterior margin of anal fin deeply concave; size larger, adults to at least 3 m



S. tudes

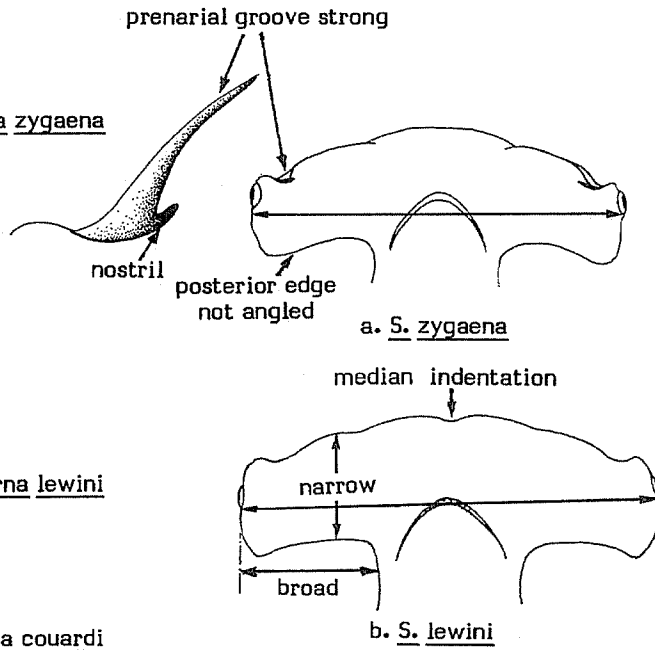
Fig. 3

3 a. Median indentation lacking on anterior margin of head (Fig. 4a); free rear tip of second dorsal fin well ahead of upper caudal fin origin; anal fin base about as large as second dorsal base (Fig. 5) ... Sphyrna zygaena

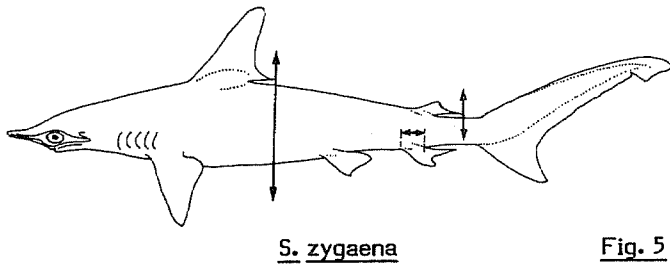
3 b. Median indentation present on anterior margin of head (Fig. 4b,7); free rear tip of second dorsal fin nearly reaching upper caudal origin; anal fin base noticeably larger than that of second dorsal* (Fig. 6)

4 a. Lateral lobes of head broader transversely and narrower from front to back in adults (Fig. 4b); fins dark-edged and tippedSphyrna lewini

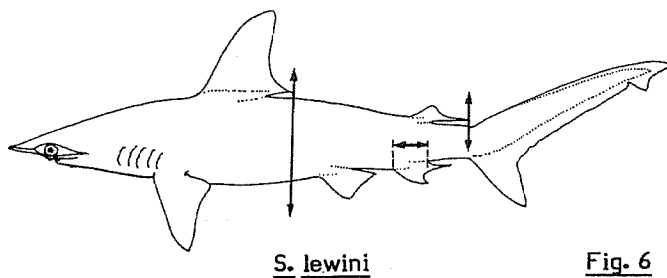
4 b. Lateral lobes of head narrower transversely and broader from front to back in adults (Fig. 7); fins light-edged Sphyrna couardi



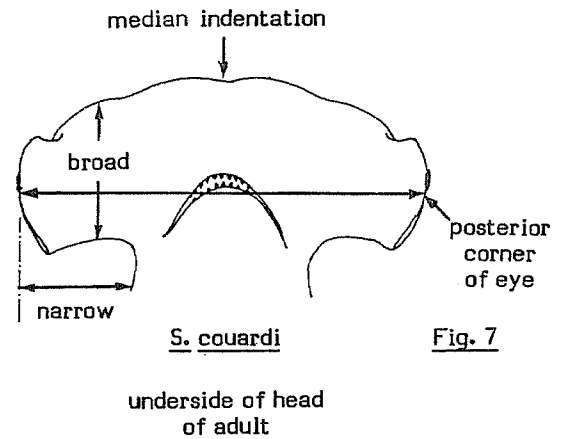
underside of head of adult **Fig. 4**



S. zygaena **Fig. 5**



S. lewini **Fig. 6**



S. couardi **Fig. 7**

*Condition of these characters not known in S. couardi, which lessens the effectiveness of this key

LIST OF SPECIES OCCURRING IN THE AREA :

Code numbers are given for those species for which Identification Sheets are included :

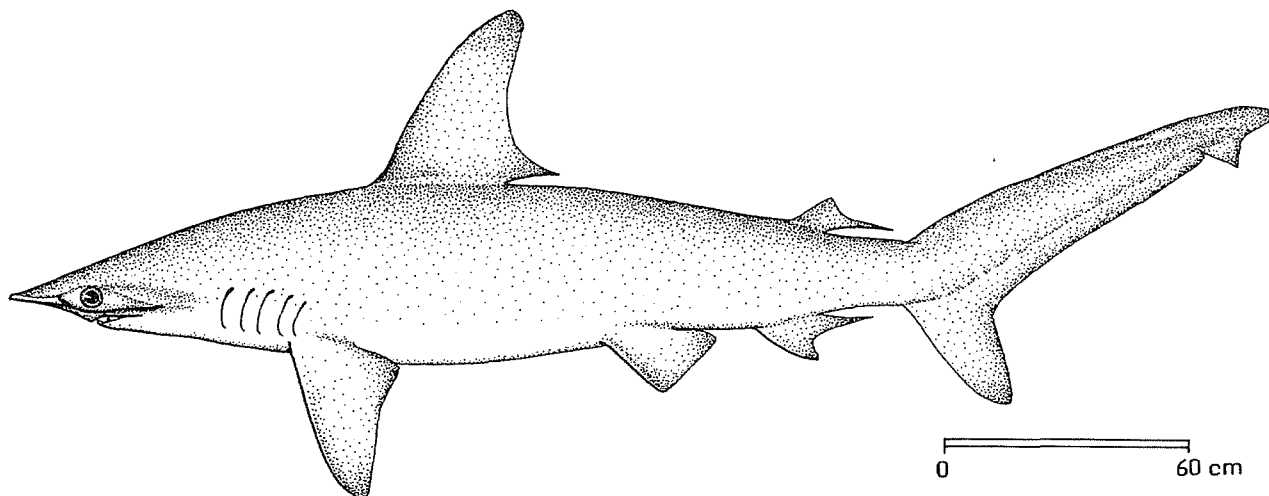
<u>Sphyrna couardi</u> Cadenat, 1950	
<u>Sphyrna lewini</u> (Cuvier, Griffith & Smith, 1834)	SPHYRN Sphyrn 1
<u>Sphyrna mokarran</u> (Rüppell, 1837)	SPHYRN Sphyrn 3
<u>Sphyrna tudes</u> (Valenciennes, 1822) (= <u>S. bigelowi</u> Springer)*	
<u>Sphyrna zygaena</u> (Linnaeus, 1758)	SPHYRN Sphyrn 4

Prepared by L.J.V. Compagno, Tiburon Center for Environmental Studies, San Francisco State University, Tiburon, California, U.S.A.

*Sphyrna tudes (Valenciennes, 1822) is a species that is known from only the Western Mediterranean in the eastern hemisphere, but may occur in Fishing Area 34 and should be watched for. It has a wide range in the tropical Western Atlantic from the Northern Gulf of Mexico to Uruguay. It has a median indentation of the head like other sphyrnids in the area except S. zygaena, and has often been confused in the past with S. mokarran.

FAO SPECIES IDENTIFICATION SHEETS

FAMILY : SPHYRNIDAE

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)*Sphyrna lewini* (Cuvier, Griffith & Smith, 1834)OTHER SCIENTIFIC NAMES STILL IN USE : *Sphyrna diplana* Springer, 1941

VERNACULAR NAMES:

FAO : En - Scalloped hammerhead
 Fr - Requin marteau halicorne
 Sp - Cornuda común

NATIONAL :

DISTINCTIVE CHARACTERS :

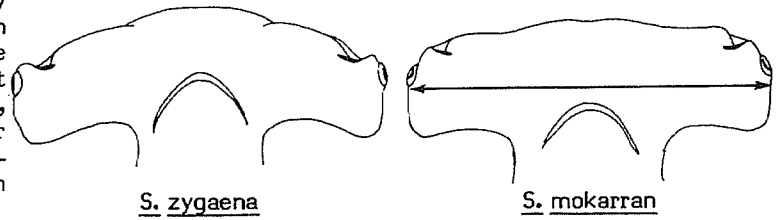
Body elongate and laterally compressed. Head "hammer"-shaped, its anterior contour broadly arched in young, but moderately so in adults, with a shallow but distinct indentation at the midline and a deep rounded depression opposite each nostril; lateral expansions of head very prominent, broad transversely and narrow from front to back; nostrils with strong prenarial grooves anteromedial to their incurrent apertures; posterior margins of eyes slightly posterior to or nearly opposite front of mouth; mouth broadly arched; teeth triangular, deeply notched posteriorly, with smooth or finely serrated edges. First dorsal fin high, moderately falcate; second dorsal small, less than one fourth the height of first, with a greatly elongated free rear tip extending backward nearly to upper caudal fin origin, an inner margin about twice as long as the anterior fin margin and a shallowly concave posterior margin; pectoral fins short and broad; pelvics with a nearly straight posterior margin; second dorsal fin base about three to four fifths the length of anal base.

Colour: uniform grey, greyish brown or olivaceous above, shading to white below; pectoral fins tipped grey or black ventrally.

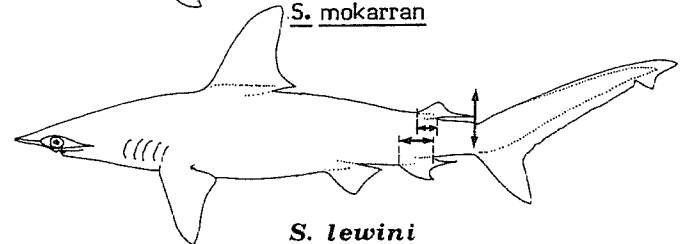
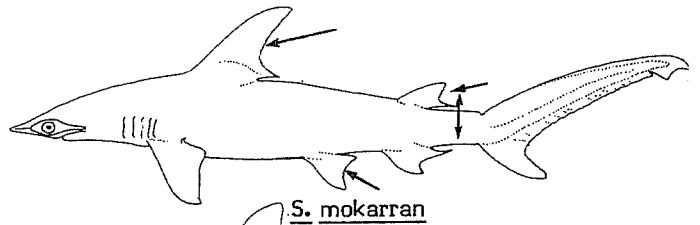
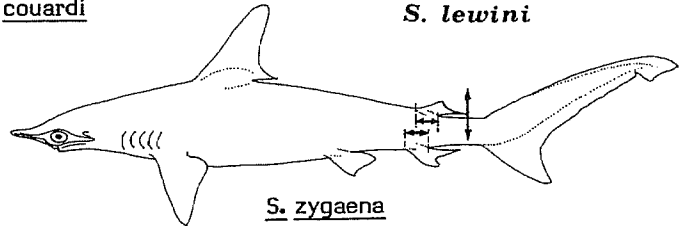
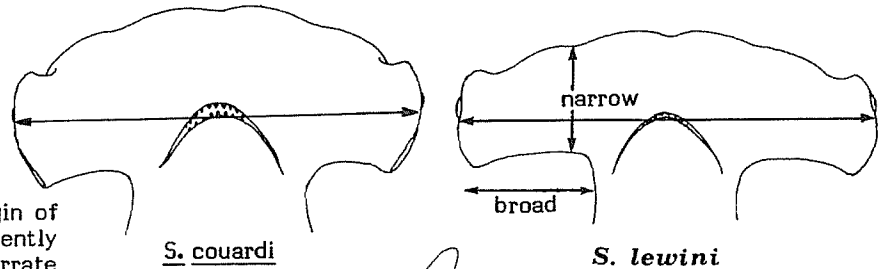
DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA :

Sphyrna zygaena: anterior contour of head not indented at midline; free rear tip of second dorsal fin shorter, not extending backward as near to precaudal pit as in *S. lewini*.

S. mokarran: anterior contour of head nearly straight in adults, prenarial grooves poorly developed, eyes well in front of mouth, teeth with strongly serrated edges; first dorsal fin more falcate; second dorsal about one third the height of first, with a strongly concave posterior edge, an inner margin about equal in length to anterior fin margin, and a free rear tip ending well anterior to upper caudal fin origin; pelvic fins with strongly concave posterior margins.



S. couardi: A poorly-known large species (to 3 m) confined to the area and reported from Senegal, Guinea and Gabon, which resembles S. lewini in having a median indentation and well-developed prenarial grooves on head, a moderately arched anterior head contour in adults, posterior margin of eyes just posterior to mouth, apparently smooth-edged teeth in adults (finely serrate in at least some adult of S. lewini) and a very low second dorsal fin (less than one fifth the height as the first). Details on many aspects of its appearance are lacking, but it apparently differs from S. lewini in having the fins light-edged and the lateral lobes of head (in adults), narrower transversely and wider from front to back. Specimens of this species should be forwarded to museums if possible.



SIZE :

Maximum: 420 cm; common to 360 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR :

A pantropical species occurring in the area from Morocco to Senegal and Zaire; also in the Mediterranean. May be the most abundant species of Sphyrna in the Eastern Central Atlantic.

Estuarine and inshore to well offshore and semi-oceanic, with young mostly in coastal waters. Adults in pairs or solitary, young in large schools. Viviparous, number of young up to 30; size at birth about 50 cm.

Feeds on pelagic fishes (including smaller sharks and rays) and squids; also on bottom-dwelling animals such as crabs and sting rays.

PRESENT FISHING GROUNDS :

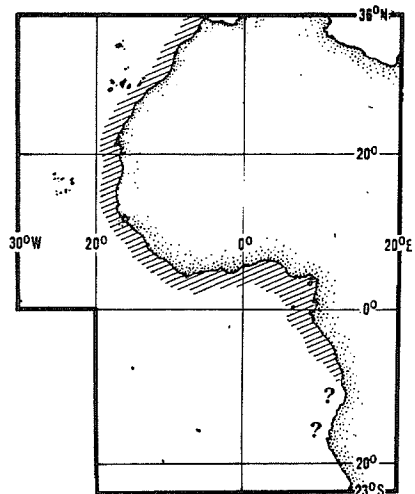
Both inshore and offshore in the area.

CATCHES, FISHING GEAR AND FORMS OF UTILIZATION :

Separate statistics are not reported for this species.

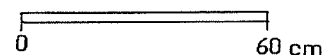
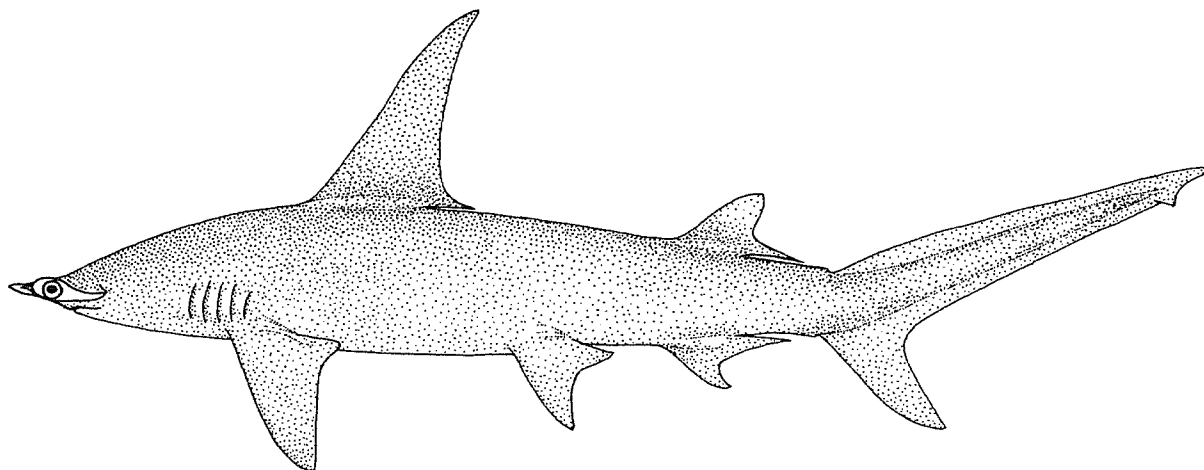
Caught with drifting longlines in fixed bottom nets and pelagic and bottom trawls.

Marketed fresh, smoked, dried salted. Also processed for fishmeal and oil.



FAO SPECIES IDENTIFICATION SHEETS

FAMILY: SPHYRNIDAE

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)Sphyrna mokarran (Rüppell, 1837)OTHER SCIENTIFIC NAMES STILL IN USE : Sphyrna tudes (Valenciennes, 1822)

VERNACULAR NAMES:

FAO : En - Great hammerhead
 Fr - Grand requin marteau
 Sp - Cornuda gigante

NATIONAL :

DISTINCTIVE CHARACTERS :

Body elongate and laterally compressed. Head "hammer"-shaped, its anterior contour moderately arched in young but nearly straight in adults, with a shallow but distinct indentation at the midline and a shallow rounded depression opposite each nostril; lateral expansions of head very prominent, broad transversely and narrow from front to back; nostrils with weak prenarial grooves anteromedial to their incurrent apertures; posterior margins of eyes well anterior to mouth; mouth broadly arched; teeth triangular, deeply notched posteriorly, with strongly serrated edges. First dorsal fin very high, strongly falcate; second dorsal very large, with a rather short inner margin (about equal to anterior fin margin), a free rear tip ending well anterior to upper caudal fin origin, and a deeply concave posterior margin; pectoral fins short and broad; pelvics with a deeply concave posterior margin; anal fin base about as long as second dorsal base.

Colour: grey or grey-brown above, paler below; fins with dusky tips in young.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA :

Sphyrna zygaena: no median indentation in frontal contour of head.

Other species of Sphyrnidae: anterior contour of head more convex, prenarial grooves deeper, teeth smooth-edged or finely serrated, first dorsal fin lower and less falcate, second dorsal smaller and with a less deeply concave posterior margin, pelvic fins with a nearly straight posterior margin, anal fin base usually longer than second dorsal base.

SIZE :

Maximum: to 550 or 600 cm, and possibly more, but most adults between 240 and 365 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR :

A wide-ranging tropical species. In the area it occurs off Morocco, Senegal, possibly the Canary Islands, Gambia, Guinea and Ghana, but is probably more wide-spread; northward extending into the Mediterranean. Elsewhere, in the Western Atlantic, Indo-West Pacific and Eastern Pacific.

A powerful coastal and semi-oceanic species coming close inshore, but also occurring near the surface in deep water not far off from land. Viviparous, litters from 18 to 38 fetuses; size at birth between 60 and 70 cm.

Feeds on bony fishes, other sharks, rays, squids, and crustaceans. Potentially dangerous to people.

PRESENT FISHING GROUNDS :

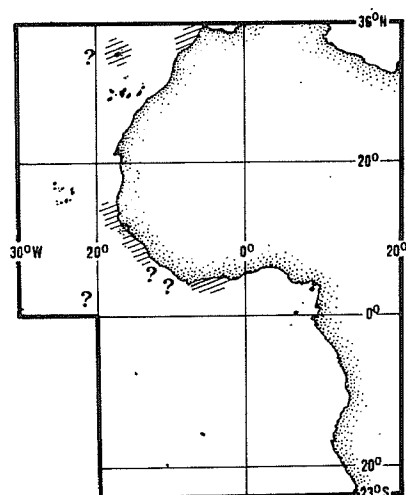
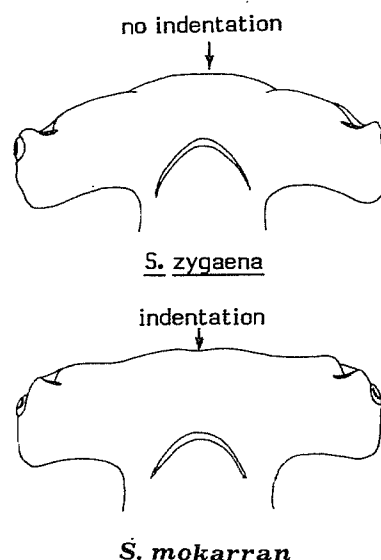
Both inshore and offshore.

CATCHES, FISHING GEAR AND FORMS OF UTILIZATION :

Separate statistics are not reported for this species.

Caught with fixed bottom nets, on hook and line and with pelagic and bottom trawls(?).

Utilized fresh, dried salted, smoked and processed for oil and fishmeal.

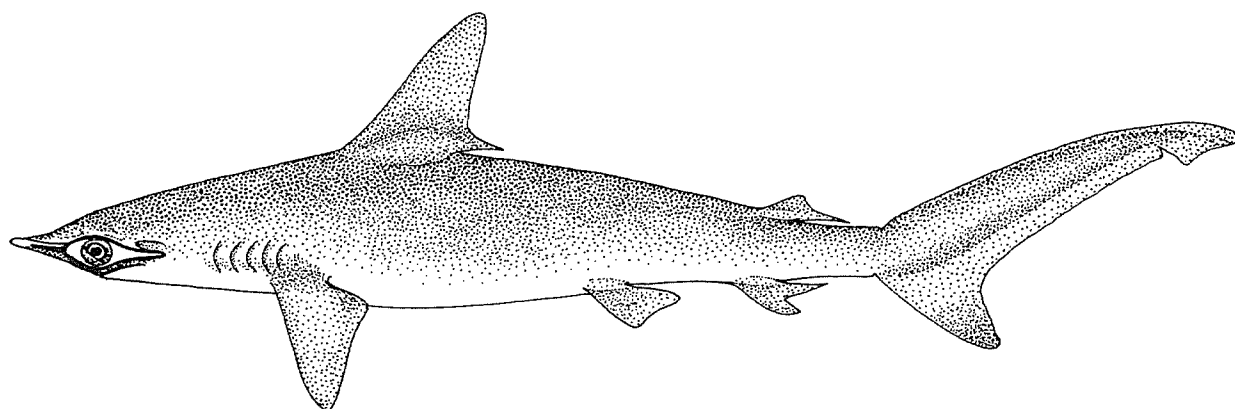


FAO SPECIES IDENTIFICATION SHEETS

FAMILY : SPHYRNIDAE

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)*Sphyrna zygaena* (Linnaeus, 1758)

OTHER SCIENTIFIC NAMES STILL IN USE : None



0 60 cm

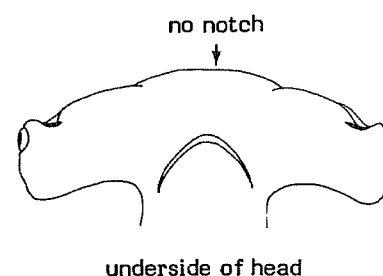
VERNACULAR NAMES:

FAO : En - Smooth hammerhead
 Fr - Requin marteau commun
 Sp - Cornuda cruz (= Pez martillo)

NATIONAL :

DISTINCTIVE CHARACTERS :

Body elongated and laterally compressed. Head "hammer" shaped, its anterior contour strongly arched in young but moderately rounded in adults, without a median indentation but with a deep rounded depression opposite each nostril; lateral expansions of head very prominent, broad transversely and narrow from front to back; nostrils with strong pre-narial grooves anteromedial to their incurrent apertures; eyes large, their horizontal diameter greater than length of shortest (fifth) gill slit, their posterior margins about opposite mouth or just anterior to it; mouth broadly arched; teeth triangular, deeply notched posteriorly, with smooth or finely serrated edges. First dorsal fin high, moderately falcate; second dorsal small, with a very long inner margin (almost twice the anterior fin margin), a free rear tip ending well anterior to upper caudal fin origin, and a nearly straight to shallowly concave posterior margin; pectoral fins short and broad; pelvic fins with posterior margins straight to shallowly concave; anal fin base slightly longer than second dorsal fin base.



underside of head

Colour: brownish-olive, or plain grey above, white or grey-white below; fins nearly plain, dusky or blackish-tipped.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA :

Other species of Sphyrnidae: a median indentation in the anterior contour of head.

SIZE :

Maximum: probably between 370 to 400 cm,
adults often between 275 to 335 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR :

A warm temperate species. In the area it occurs from Morocco to Senegal, including the Canary Islands (reports from Ivory Coast and Ghana possibly refer to some other sphyrid species); also northward in the Mediterranean and to the British Isles. Elsewhere, in the Western Atlantic, Western Indian Ocean and Western Central and Eastern Pacific.

Coastal and partly oceanic, living close inshore (especially the young) and near the surface in deep water not far offshore. A very strong swimmer, migrating northward in summer. Viviparous, litters from 29 to 37 foetuses; size at birth about 50 to 60 cm.

Feeds on bony fishes, other sharks, rays, crustaceans and squids. Potentially dangerous to people.

PRESENT FISHING GROUNDS :

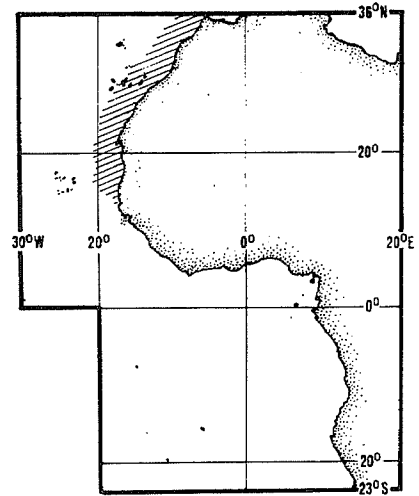
Both inshore and offshore, probably primarily north of Senegal (?).

CATCHES, FISHING GEAR AND FORMS OF UTILIZATION :

Separate statistics are not reported for this species.

Caught with drifting longlines, handlines, pelagic and bottom trawls.

Utilized fresh, dried salted, smoked (?), and for oil and fishmeal.



FAO SPECIES IDENTIFICATION SHEETS

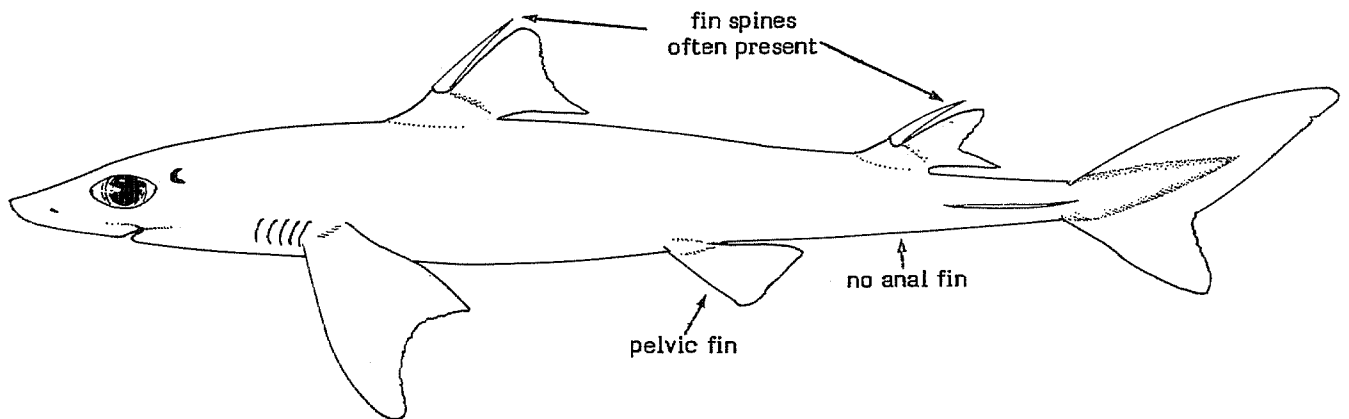
FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)

SQUALIDAE

Dogfish sharks

Small to moderately large sharks, with cylindrical or slightly compressed bodies, without ridges between pectoral and pelvic fins or with inconspicuous ridges (*Centroscymnus*, *Scymnodon*). Head with 5 gill slits, all anterior to pectoral fins, the fifth not abruptly longer than the others; spiracles always present, moderately large; eyes on sides of head, without nictitating eyelids. Teeth strong-cusped, alike or dissimilar in both jaws, with or without cusplets. Two dorsal fins with a long to very short spine sometimes present (tip of latter may be concealed by skin), on their anterior margins; origin of first dorsal varying in position from a little (*Isistius*) to in front of pelvic fin origins; pelvic fins equal to or smaller than second dorsal; no anal fin; caudal fin strongly asymmetrical to nearly symmetrical, with a lower lobe varying from virtually absent to very strong. Dermal denticles usually close-set, not greatly enlarged and platelike.

Colour: back greyish in shallow-water species, dark to black in those from deep water; several species have light organs (in the area, members of the genera *Etmopterus*, *Centroscyllium*, *Euprotomicrus*, *Squaliolus*, *Isistius* and *Somniosus*).

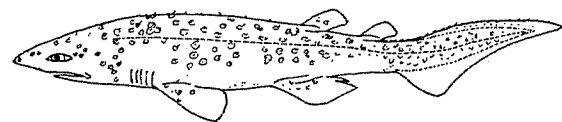


Dogfish sharks occurring in warm-temperate and tropical areas are mostly confined to deeper water (50 m and more); those occurring in cold-temperate water (to the north of Fishing Area 34) are usually shallow-water forms. Dogfish sharks often form schools; they feed mainly on fishes, and may cause damage to fishing gear when preying on the catch. Some species are highly appreciated as food. The family has mainly potential importance as a fishery resource for food and for liver oil.

SIMILAR FAMILIES OCCURRING IN THE AREA :

Echinorhinidae: body set with sparse, large, platelike denticles; spiracles small; fifth pair of gill slits abruptly longer than others; first dorsal fin origin over or posterior to pelvic fin origins; pelvic fins much larger than second dorsal fin.

Oxynotidae: body deeper and compressed; dorsal fins higher; a conspicuous ridge between pectoral and pelvic fin bases.

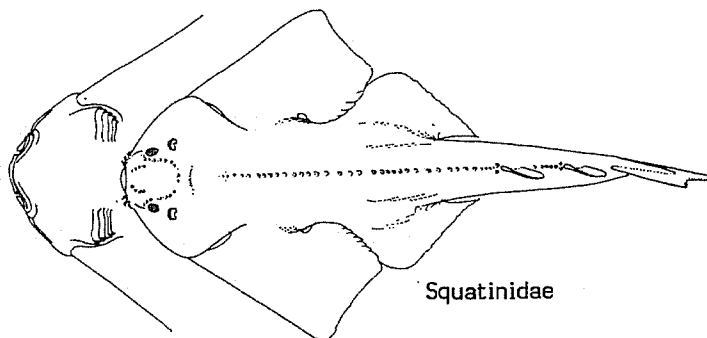


Echinorhinidae

*Character applying to species occurring in the area

Squatinidae: trunk much flattened dorso-ventrally, eyes on upper side of head; anterior margins of pectoral fins extending forward past gill openings and partly concealing them; pelvic fins also very broad, wing-like.

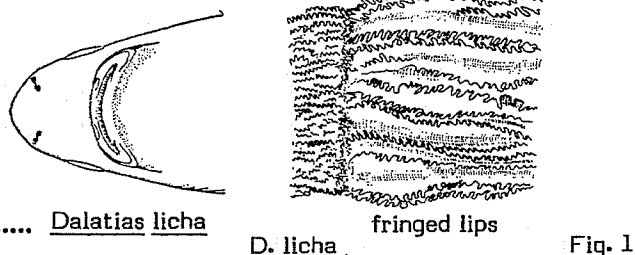
All other shark families: anal fin present.



KEY TO GENERA AND SPECIES OF SQUALIDAE CURRENTLY RECORDED FROM THE AREA :

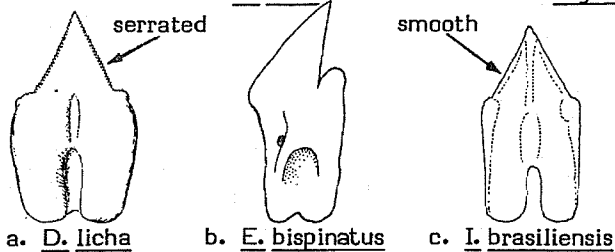
1 a. Dorsal fins without spines

2 a. Lips fringed (Fig. 1); edges of lower teeth serrated (Fig. 2a); caudal fin strongly asymmetrical, without a well-developed lower lobe (Fig. 3)



Dalatias licha

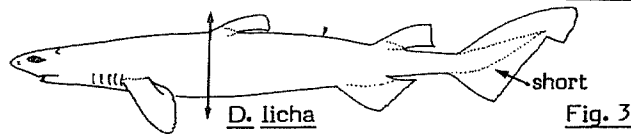
2 b. Lips not fringed; edges of lower teeth smooth (Fig. 2b,c); caudal fin slightly asymmetrical, with a strong lower lobe (Figs. 4,5,6)



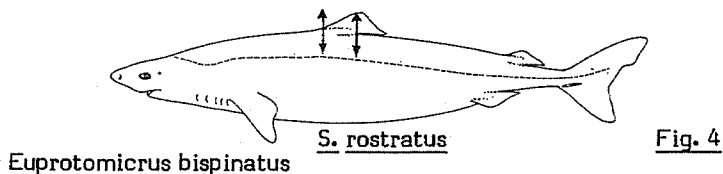
3 a. Head flattened, eyes small; first dorsal fin base closer to pectorals than to pelvics (Fig. 4); size up to about 140 cm

Somniosus rostratus lower teeth Fig. 2

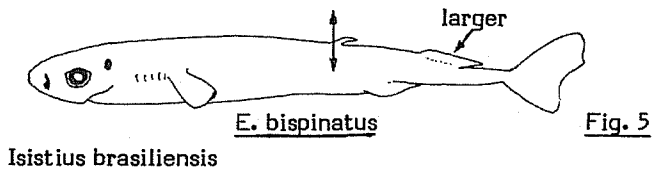
3 b. Head conical, eyes large; first dorsal fin base much closer to pelvics than to pectorals (Figs. 5,6); size about 50 cm or less



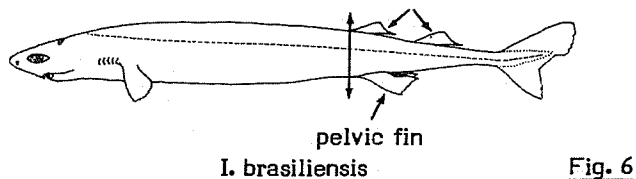
4 a. Cusps of lower teeth oblique, edges notched; first dorsal fin much smaller than second, its base well in front of pelvic fin origins (Fig. 5)



4 b. Cusps of lower teeth erect, edges not notched; first dorsal fin about as large as second, the rear end of its base about over pelvic fin origins (Fig. 6)



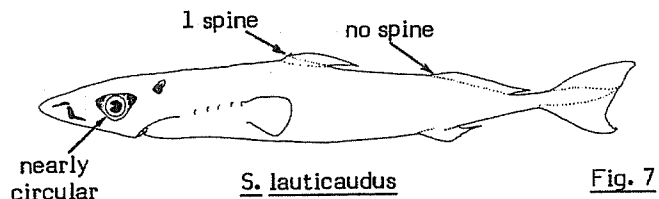
1 b. First dorsal fin, and usually second (except for Squaliolus) with a spine



I. brasiliensis

5 a. Second dorsal fin without a spine; eyes almost circular; caudal fin nearly symmetrical, with a long lower lobe (Fig. 7) Squaliolus laticaudus

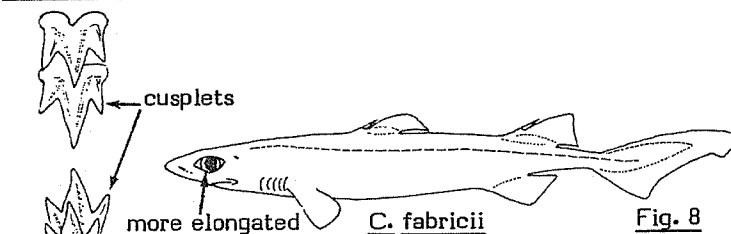
5 b. Second dorsal fin with a spine; eyes more horizontally elongated; caudal fin more asymmetrical, with or without a short lower lobe



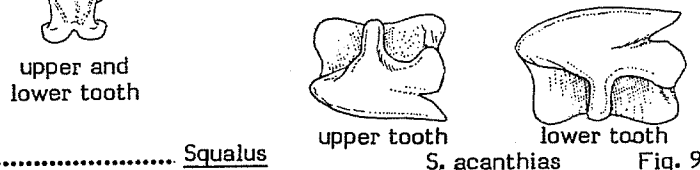
6 a. Upper and lower teeth with slender primary cusps and one or more cusplets on each side, teeth in either jaw not blade-like (Fig. 8)

Centroscyllium fabricii

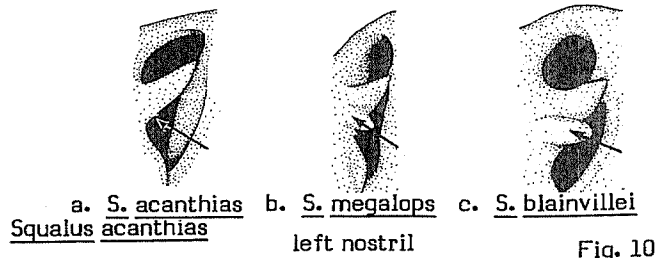
6 b. Upper teeth with slender to stout primary cusps, with or without cusplets, blade-like or not; lower teeth compressed, blade-like, and without cusplets



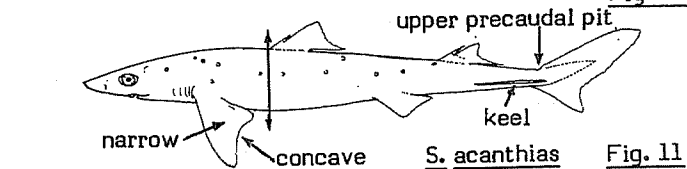
7 a. Teeth nearly alike in both jaws, the lowers not greatly enlarged; both with strongly oblique, nearly horizontal cusps (Fig. 9); fin spines without grooves on sides; no subterminal notch on caudal fin; an upper precaudal pit and a strong keel on caudal peduncle



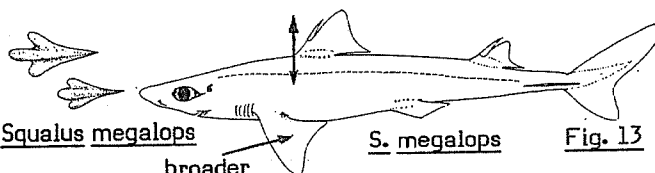
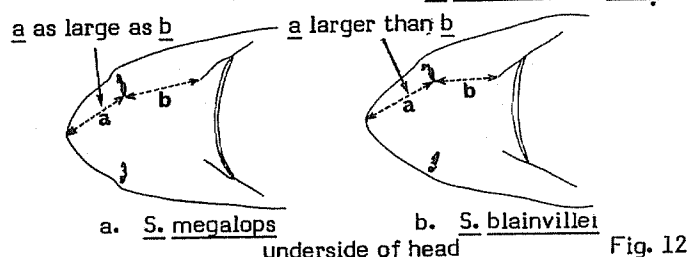
8 a. Nostrils with a single anterior flap and no accessory lobe (Fig. 10a); first dorsal fin more posterior, its spine behind level of inner corners of pectoral fins; pectoral fins narrower; white spots present on sides (Fig. 11) (occasionally absent in adults)



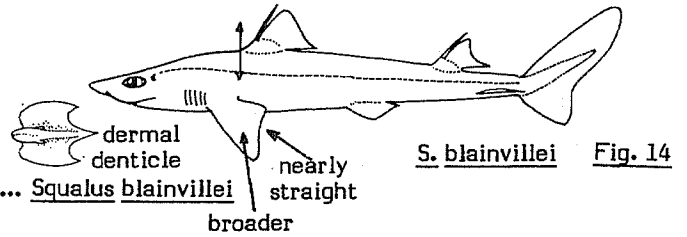
8 b. Nostrils with a well-developed accessory lobe in addition to the anterior nasal flap (Fig. 10b, c); first dorsal fin further forward, its spine anterior to, or over, inner corners of pectorals; pectoral fins broader; no white spots (Figs. 13,14)



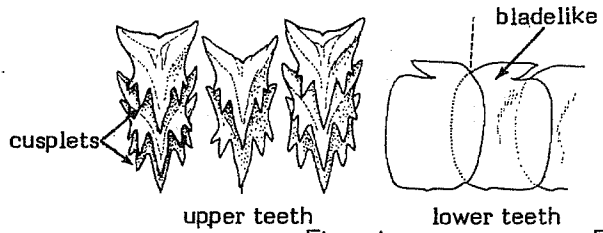
9 a. Distance from tip of snout to inner corner of nostril less than that from inner corner of nostril to upper labial furrow (Fig. 12a); posterior margins of pectoral fins usually deeply concave and inner corners acutely pointed; denticles on sides of body narrow and unicuspidate (Fig. 13)



9 b. Distance from tip of snout to inner corner of nostril greater than that from inner corner of nostril to upper labial furrow (Fig. 12b); posterior margin of pectoral fins weakly concave, their inner corners rounded; denticles broad and tricuspidate on sides of body (Fig. 14)



7 b. Teeth more or less unlike in both jaws, lowers much larger than uppers, the latter with erect to oblique cusps; a groove present on sides of fin spines; subterminal notch present on caudal fin (weak in *Scymnodon ringens*); no precaudal pits or lateral keels on caudal peduncle

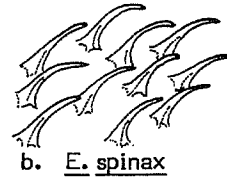


10 a. Upper teeth with a slender primary cusp and one or more cusplets on each side (Fig. 15)

Etmopterus

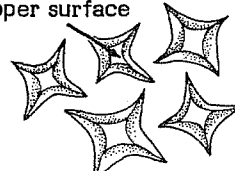
11 a. Dermal denticles on sides of body truncated, without cusps (Figs. 16a,17)

Etmopterus pusillus

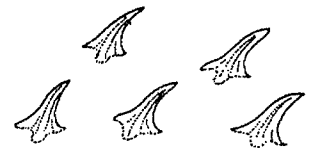


b. *E. spinax*

11 b. Dermal denticles on sides of body cuspidate (Fig. 16b,c)



a. *E. pusillus*

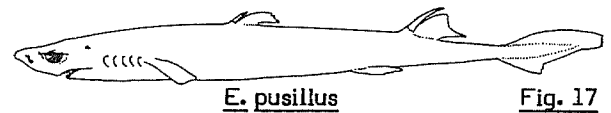


c. *E. princeps*

dermal denticles

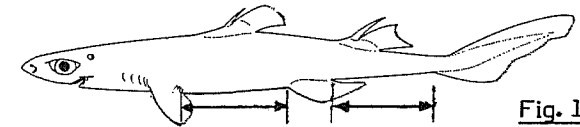
Fig. 16

12 b. Distance from rear ends of pelvic fin bases to lower caudal fin origin much less than that from pectoral fin bases to pelvic fin origins (Figs. 19, 20)



E. pusillus

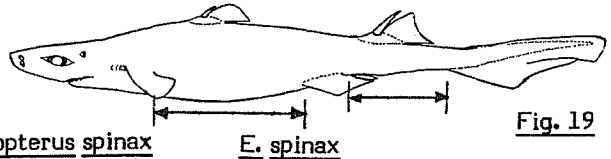
Fig. 17



E. polli

Fig. 18

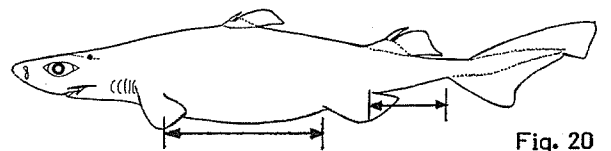
13 a. Dermal denticles on sides slender, bristle-like, and closely spaced (Fig. 16b); width of head about as great as snout length from its tip to mouth (Fig. 19); conspicuous black markings present on sides ...



E. spinax

Fig. 19

13 b. Dermal denticles on sides low, conical to thornlike, and more wide-spaced (Fig. 16c); width of head about 1.2 to 1.4 times the snout length (Fig. 20); conspicuous dark markings not present on sides ...

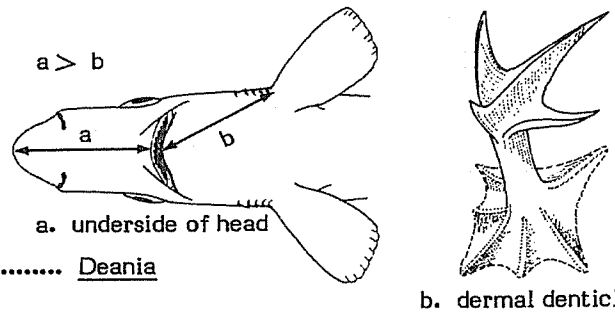


Etmopterus princeps

Fig. 20

10 b. Upper teeth with a slender to stout primary cusp but no cusplets

14 a. Snout length greater than distance from center of mouth to pectoral fin origins (Fig. 21a); dermal denticles pitchfork-shaped, crowns on tall, slender pedicels (Fig. 21b)

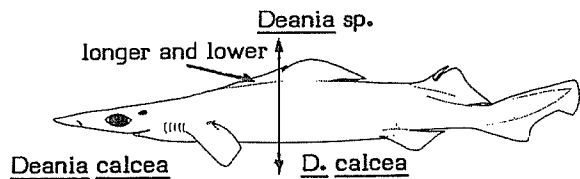


a. underside of head

b. dermal denticle

Fig. 21

15 a. First dorsal fin very low and more posteriorly situated, its spine well posterior to inner corners of pectoral fins; no keel on underside of caudal peduncle (Fig. 22)

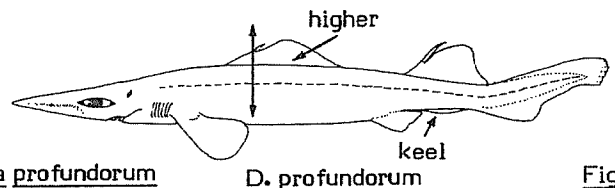


Deania calcea

D. calcea

Fig. 22

15 b. First dorsal fin higher and more anteriorly situated, its spine about over inner corners of pectoral fins; a low keel present on the underside of the caudal peduncle (Fig. 23)

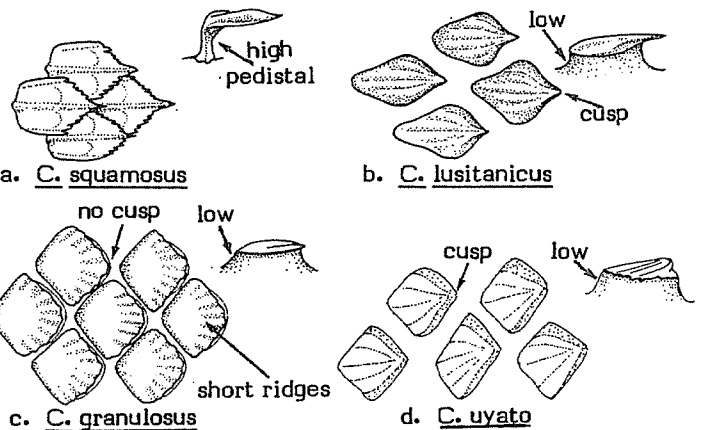


Deania profundorum

D. profundorum

Fig. 23

14 b. Snout length about equal to (Centroscymnus crepidater) or much shorter than distance from centre of mouth to pectoral fin origins; dermal denticles with crowns on low pedicels or with sessile crowns, denticles not pitchfork-shaped (Fig. 24)



a. C. squamosus

b. C. lusitanicus

c. C. granulatus

d. C. uyato

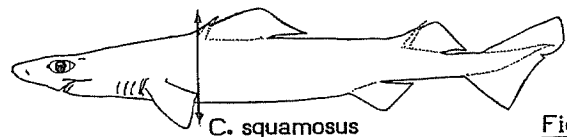
Fig. 24

16 a. Upper teeth relatively broad, the lowers low and wide; dorsal fins prominent and strong, the first dorsal spine over or just posterior to pectoral inner margins; inner corners of pectoral fins angular or greatly elongated

Centrophorus

17 a. Dermal denticles on sides of body with leaf-shaped, overlapping crowns placed on low pedicels and armed with 3 or more cusps (Fig. 24a); inner corners of pectoral fins not greatly elongated (Fig. 25)..

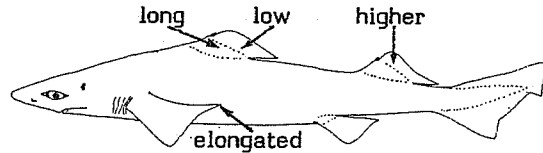
Centrophorus squamosus



C. squamosus

Fig. 25

17 b. Dermal denticles on sides of body with low, sessile crowns, thornlike in young but with or without short cusps in adults, not overlapping (Fig. 24b,c,d); inner corners of pectoral fins markedly elongated



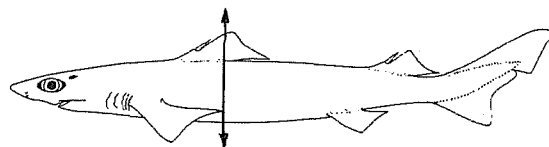
C. lusitanicus

Fig. 26

18 a. First dorsal fin long and low, second dorsal higher than first, but its base only about half the length of first dorsal base (Fig. 26)

Centrophorus lusitanicus

18 b. First dorsal fin higher and shorter, second dorsal lower than first dorsal, but its base about 2/3 to 3/4 the length of first dorsal fin base (Figs. 27,28)

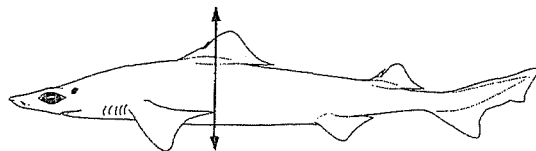


C. granulosis

Fig. 27

19 a. Upper teeth with erect cusps extending well lateral to symphysis (Fig. 29a); denticles on sides of body without cusps in adults, broadly rounded, and with ridges confined to rear edges of the crowns (Fig. 24c)

Centrophorus granulosis

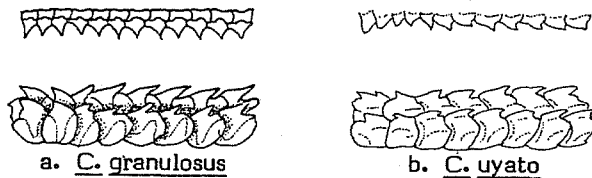


C. uyato

Fig. 28

19 b. Upper teeth with oblique cusps except for a few rows with erect cusps at the symphysis (Fig. 29b); denticles on sides with cusps in adults and with ridges running the length of the crowns (Fig. 24d)

Centrophorus uyato



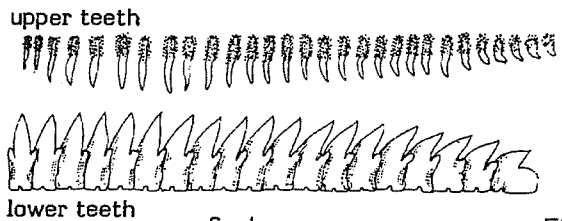
a. C. granulosis

b. C. uyato

teeth

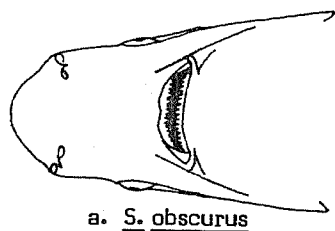
Fig. 29

16 b. Upper teeth very slender (except for lateral and posterior teeth of Centroscyrnus crepidater, but slender near the symphysis in this species also); dorsal fin spines very small, the first dorsal spine well posterior to pectoral fin tips; inner corners of pectorals short and broadly rounded

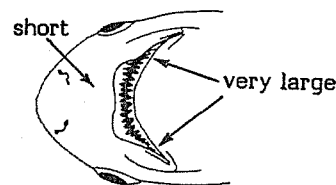


S. obscurus

Fig. 30



a. S. obscurus



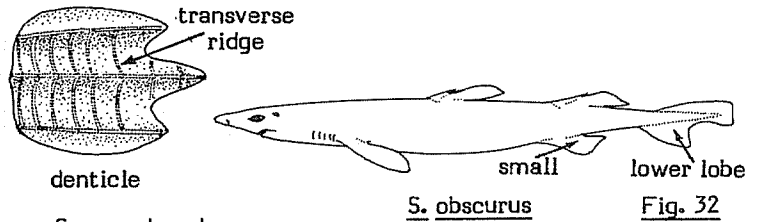
b. S. ringens

underside of head

Fig. 31

20 a. Lower teeth with high cusps (Fig. 30); denticles on sides of body with a median ridge extending the length of the crown in adults Scymnodon

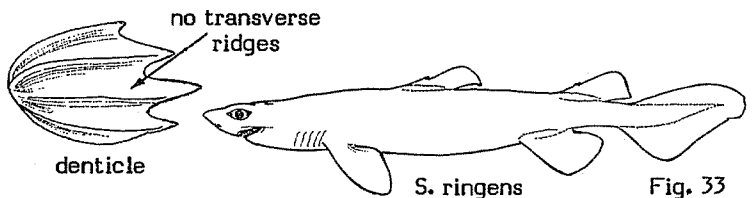
21 a. Snout moderately elongated, length in front of mouth much greater than mouth width; mouth smaller and less strongly arched (Fig. 31a); caudal fin with a well-developed subterminal notch; denticles on sides with distinct transverse ridges, in addition to the longitudinal ridges (Fig. 32)



Scymnodon obscurus

Fig. 32

21 b. Snout short, length in front of mouth less than mouth width; mouth very large and strongly arched (Fig. 31b); caudal fin with a faint subterminal notch; denticles on sides without transverse ridges, but only longitudinal ridges (Fig. 33)



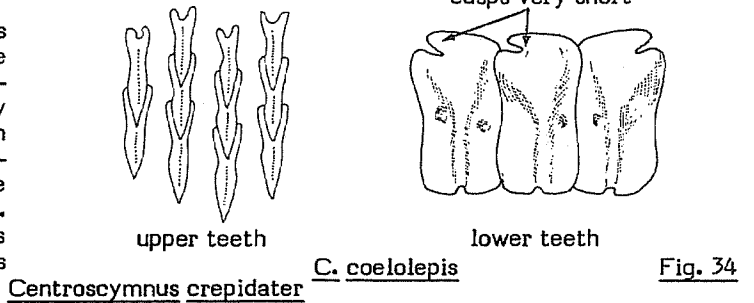
Scymnodon ringens

Fig. 33

20 b. Lower teeth with low to moderate cusps; denticles on sides of body without ridges or with a median ridge not extending the entire length of the crown, in adults (Centroscymnus)

Centroscymnus

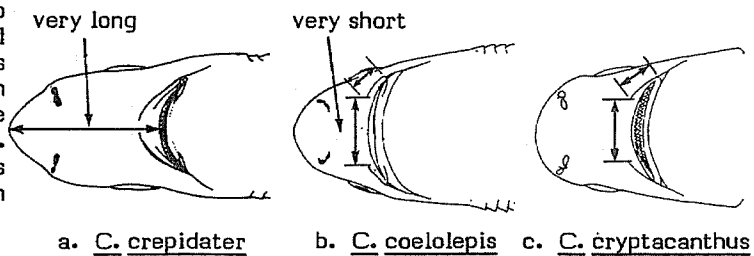
22 a. Snout greatly elongated, its length about equal to distance from mouth to pectoral fin origins; upper labial grooves greatly elongated, their lengths (taken from front ends to mouth corners) greater than distance between their front ends (Fig. 35a); dermal denticles of adults with ridged, cuspidate crowns (Fig. 36)



Centroscymnus crepidater

Fig. 34

22 b. Snout shorter, its length much less than distance from mouth to pectoral fin origins; upper labial grooves shorter, their lengths (taken from front ends to mouth corners) less than distance between their front ends (Fig. 35b,c); dermal denticles of adults with smooth, round crowns with or without cusps (Figs. 37,38)



a. C. crepidater

b. C. coelolepis

c. C. cryptacanthus

Fig. 35

23 a. Snout shorter, its length less than distance from mouth to first gill slit; dorsal fins about equal in size (Fig. 37)

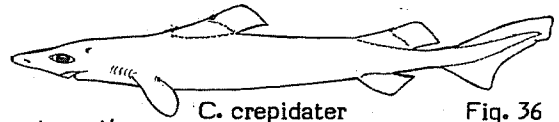
Centroscyrnus coelolepis

23 b. Snout longer, its length about equal to distance from mouth to first gill slit; second dorsal fin noticeably larger than first (Fig. 38)

Centroscyrnus cryptacanthus

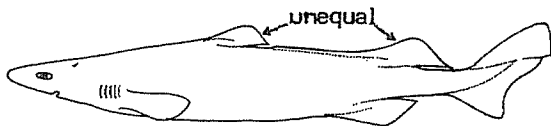


dermal denticle



C. crepidater

Fig. 36

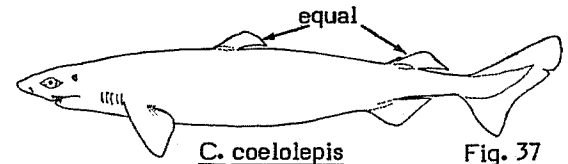


C. cryptacanthus

Fig. 38



dermal denticle



C. coelolepis

Fig. 37

LIST OF SPECIES OCCURRING IN THE AREA :

Code numbers are given for those species for which Identification Sheets are included

<u>Centrophorus granulosus</u> (Bloch & Schneider, 1801)*	SQUAL Centrop 1
<u>Centrophorus lusitanicus</u> Bocage & Capello, 1864	SQUAL Centrop 2
<u>Centrophorus machiquensis</u> Maul, 1955**	
<u>Centrophorus squamosus</u> (Bonnaterre, 1788)***	SQUAL Centrop 3
<u>Centrophorus uyato</u> (Rafinesque, 1809)	SQUAL Centrop 4
<u>Centroscyllium fabricii</u> (Reinhardt, 1825)	
<u>Centroscyrnus coelolepis</u> Bocage & Capello, 1864	SQUAL Centros 1
<u>Centroscyrnus crepidater</u> (Bocage & Capello, 1864)****	SQUAL Centros 2
<u>Centroscyrnus cryptacanthus</u> Regan, 1906	
<u>Dalatias licha</u> (Bonnaterre, 1788)*****	SQUAL Dal 1
<u>Deania calcea</u> (Lowe, 1839)	
<u>Deania profundorum</u> (Smith & Radcliffe, 1912)*****	SQUAL Dean 1
<u>Etmopterus polli</u> Bigelow, Schroeder & Springer, 1953	
<u>Etmopterus princeps</u> Collett, 1904	
<u>Etmopterus pusillus</u> (Lowe, 1839)	
<u>Etmopterus spinax</u> (Linnaeus, 1758)	SQUAL Etmo 2
<u>Euprotomicrus bispinatus</u> (Quoy & Gaimard, 1824)	

*The genus Centrophorus is not well-known and is in need of a worldwide revision. It is not certain if the four species currently known from the area (excluding C. machiquensis) are the only ones that occur there. Care should be taken when examining Centrophorus specimens to make sure that other species are not being misidentified under the names of the four known species. Species to watch out for include C. scalpratus McCulloch, 1915, which occurs off South Africa and Mozambique (as well as Australia), C. acus Garman, 1906 from the Western Atlantic as well as Japan, and a new small species from the Western Atlantic, to be described by S. Springer

**Possibly a synonym of C. granulosus. Known only from the Area, off Madeira

***Sometimes placed in a separate genus, Lepidorhinus Bonaparte, 1838, but this is regarded here as a synonym of Centrophorus

****Sometimes placed in a separate genus, Centroselachus Garman, 1913, but this is provisionally regarded here as a synonym of Centroscyrnus

*****Dalatias is regarded by some writers as an invalid genus, to be replaced by Schymnorhinus Bonaparte, 1846

*****Including Deania cremouxi Cadenat, 1960

FAO Sheets

SQUALIDAE

Fishing Areas 34, 47 (in part)

Isistius brasiliensis (Quoy & Gaimard, 1824)

Scymnodon obscurus (Vaillant, 1888)

Scymnodon ringens Bocage & Capello, 1864

SQUAL Scymn 1

Somniosus rostratus (Risso, 1826)

SQUAL Somn 1

Squaliolus laticaudatus Smith & Radcliffe, 1912

Squalus acanthias Linnaeus, 1758

SQUAL Squal 1

Squalus blainvillei (Risso, 1826)*

SQUAL Squal 3

Squalus megalops (Macleay, 1881)

SQUAL Squal 4

Prepared by L.J.V. Compagno, Tiburon Center for Environmental Studies, San Francisco State University, Tiburon, California, U.S.A.

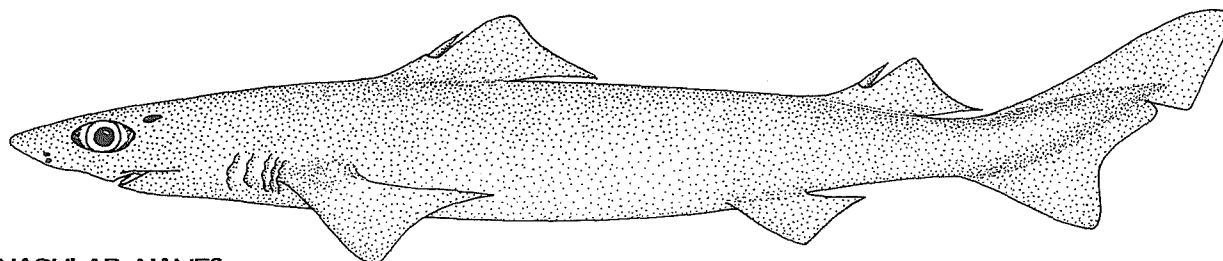
*Some writers regard the S. blainvillei groups in Squalus to be represented in the area by two species, S. blainvillei (Risso, 1826), and S. "fernandinus" (not fernandinus Molina, 1782 = S. acanthias), but the systematics and nomenclature of the group in the area and elsewhere is in much need of clarification

FAO SPECIES IDENTIFICATION SHEETS

FAMILY : SQUALIDAE

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)Centrophorus granulosus (Bloch & Schneider, 1801)

OTHER SCIENTIFIC NAMES STILL IN USE : None



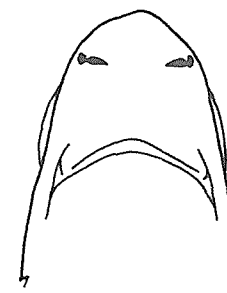
VERNACULAR NAMES:

FAO : En - Gulper shark
 Fr - Squale-chagrin commun
 Sp - Quelvacho

NATIONAL :

DISTINCTIVE CHARACTERS :

Body elongate and slightly compressed; dermal denticles of back widely separated and not overlapping, low crowned, thornlike in young but broad and rounded in adults, without cusps and with low ridges confined to their posterior edges. Snout pointed and longer than mouth width but shorter than distance from mouth to pectoral fin origins. Teeth differing in upper and lower jaws; uppers much smaller, relatively broad and bladelike, with high, mostly erect cusps and no cusplets; lowers large, compressed, bladelike, with a single oblique cusp, no cusplets, a deeply notched outer edge, and serrations in adults. A short, strong spine with lateral grooves on anterior edges of both dorsal fins; first dorsal relatively high and short, second dorsal lower than first, its base about $\frac{3}{4}$ the length of first dorsal base; inner corners of pectoral fins greatly elongated, produced as narrow, pointed lobes that extend to behind the level of first dorsal spine, and with inner margins longer than distance from second dorsal spine to caudal origin; caudal fin with a strong subterminal notch. Caudal peduncle without dermal keels or pre-caudal pits.

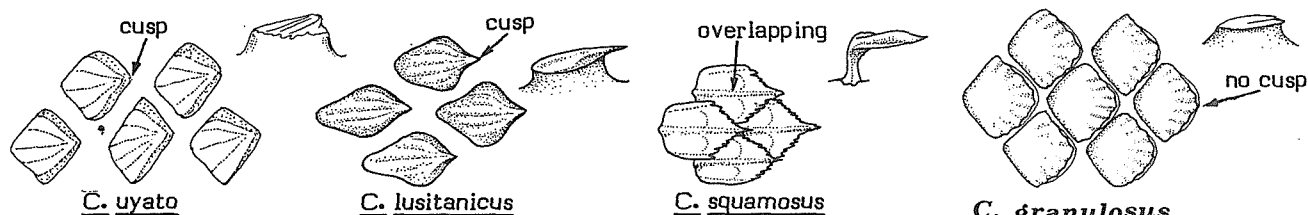


underside of head

Colour: grey above, lighter below.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA :

Centrophorus uyato: dermal denticles of back with one cusp and ridges running the entire length of the crown in adults; upper teeth with mostly oblique cusps, except for a few rows at the symphysis; pectoral inner margins about as long as distance from second dorsal spine to caudal origin.



dermal denticles

Centrophorus lusitanicus: dermal denticles of back with a cusp and ridges running the entire length of crown in adults; snout somewhat shorter, about equal to or shorter than mouth length; upper teeth with oblique cusps; first dorsal fin relatively low and long, second dorsal higher than first but its base only $\frac{1}{2}$ the length of first dorsal base; pectoral inner margins slightly shorter than, or about equal to distance from second dorsal spine to caudal origin.

Centrophorus squamosus: dermal denticles of back with stalked, leaflike crowns overlapping each other, with a strong main cusp and 3 or more side cusps on their posterior edges, and ridges running the length of crown; first dorsal fin relatively low and long, second dorsal higher than first; inner corners of pectoral fins hardly elongated, not reaching level of first dorsal spine, inner margins of pectoral fins shorter than distance from second dorsal spine to caudal origin.

The little known Centrophorus machiquensis Maul, 1955, from Madeira, may be identical to C. granulatus.

Other species of Squalidae: snout greatly elongated, denticles pitchfork-shaped (Deania spp.); upper teeth needle-like, fin spines very small, inner corners of pectoral fins rounded, and colour blackish (Centroscymnus and Scymnodon); upper or both upper and lower teeth with cusplets, inner corners of pectoral fins rounded (Etmopterus and Centroscyllium); upper and lower teeth about equal-sized, fin spines without grooves, caudal peduncle with lateral keels and an upper precaudal pit (Squalus); or spines missing from the second or both dorsal fins (Squaliolus, Euprotomicrus, Somniosus, Isistius, Dalatias).

SIZE :

Adults to at least 150 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR :

In the area known from off Morocco to Senegal, including Madeira and the Canary Islands, off Ivory Coast, Nigeria, Cameroon to Zaire; also in the Mediterranean, northward to Portugal and France. Elsewhere in the Northern Gulf of Mexico, the Western North Atlantic, and possibly the Western Indian Ocean and the Western North Pacific.

A little known, relatively common deepwater shark taken near the bottom along the outer continental shelves and upper slopes, usually below 200 m and down to 1 200 m depth. Ovoviviparous, size at birth about 30 cm.

PRESENT FISHING GROUNDS :

Offshore in the area.

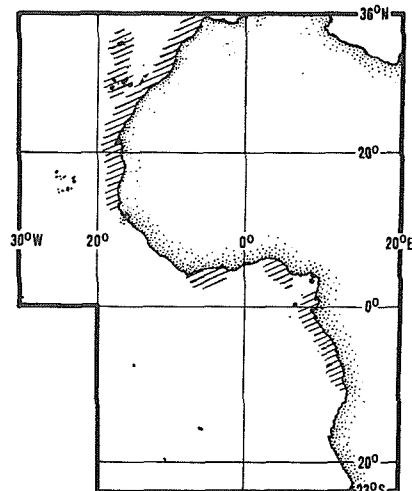
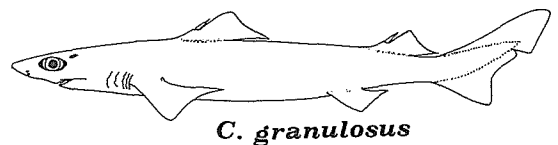
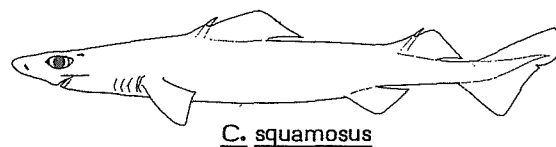
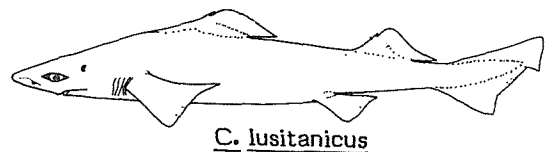
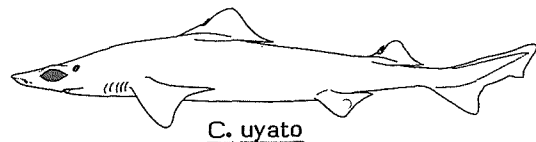
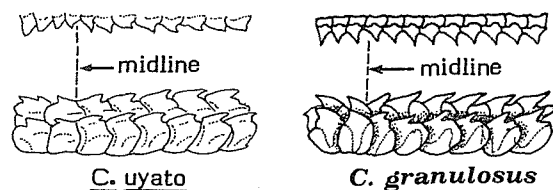
CATCHES, FISHING GEAR AND FORMS OF UTILIZATION :

Separate statistics are not reported for this species.

Caught mainly in bottom trawls, but also on hook and line and in pelagic trawls.

Utilized smoked, dried salted, and processed for oil and fishmeal.

Potentially valuable for the large liver with high concentrations of squalene (over 80%) in the liver oil.

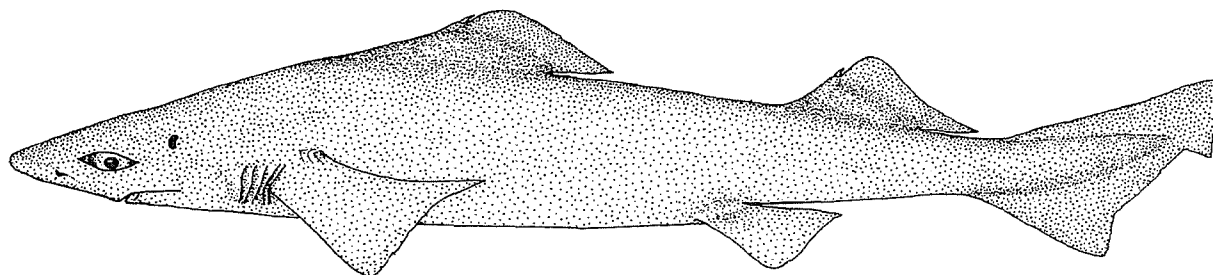


FAO SPECIES IDENTIFICATION SHEETS

FAMILY: SQUALIDAE

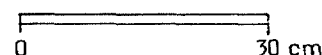
FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)*Centrophorus lusitanicus* Bocage & Capello, 1864

OTHER SCIENTIFIC NAMES STILL IN USE: None



VERNACULAR NAMES:

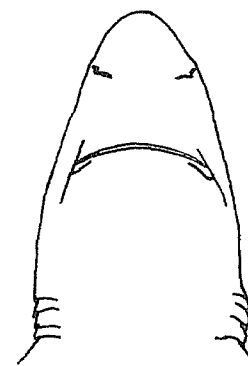
FAO : En - Lowfin gulper shark
Fr - Squale-chagrin à longue dorsale
Sp - Quelvacho lusitánico



NATIONAL :

DISTINCTIVE CHARACTERS :

Body elongate and slightly compressed; dermal denticles of back widely separated and not overlapping, low-crowned, thornlike in young but broader in adults, with low ridges running the length of the crown and a very short cusp on their posterior edges. Snout pointed and moderately long, about equal to, or shorter than, mouth length, and not as long as the distance from mouth to pectoral fin origins. Teeth differing in upper and lower jaws, uppers much smaller, relatively broad and bladelike, with low, oblique cusps and no cusplets; lowers large, compressed, bladelike, with a single oblique cusp, no cusplets, a deeply notched outer edge, and serrations in adults. A short, strong spine with lateral grooves on anterior edges of both dorsal fins; first dorsal relatively low and long, second dorsal higher than first, its base about $\frac{1}{2}$ the length of first dorsal base; inner corners of pectoral fins greatly elongated, produced as narrow, pointed lobes reaching past the first dorsal spine, their inner margins about equal to or somewhat shorter than distance from second dorsal spine to upper caudal origin; caudal fin with a strong subterminal notch. Caudal peduncle without dermal keels or precaudal pits.

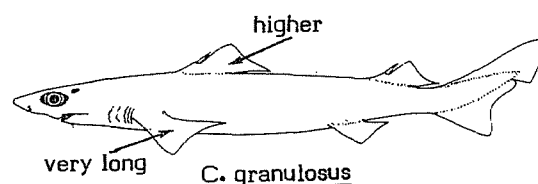


underside of head

Colour: dark grey-brown above, lighter below.

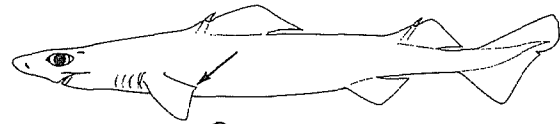
DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA :

Centrophorus granulosus and *C. uyato*: first dorsal fin higher and shorter, second dorsal lower than first but its base about $\frac{3}{4}$ the length of first dorsal base.

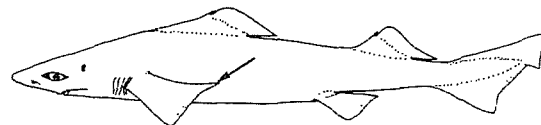
*C. granulosus*

Centrophorus squamosus: dermal denticles of back with stalked, leaflike crowns overlapping each other; inner corners of pectoral fins hardly elongated and not reaching the level of first dorsal spine, inner margins of pectoral fins shorter than distance from second dorsal spine to caudal origin.

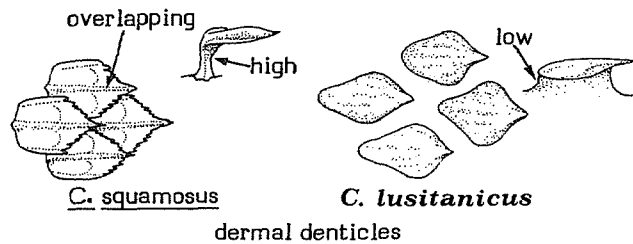
Other species of Squalidae: snout greatly elongated, denticles pitchfork-shaped (Deania spp.); upper teeth needle-like, fin spines very small, free rear tips of pectoral fins rounded, and colour blackish (Centroscyrnus and Scymnodon); upper or both upper and lower teeth with cusplets (Etmopterus and Centrosyllium); upper and lower teeth about equal-sized, fin spines without grooves, and caudal peduncle with lateral keels and an upper precaudal pit (Squalus); or spines missing from the second or both dorsal fins (Squaliolus, Euprotomicrus, Somniosus, Isistius, Dalatias).



C. squamosus



C. lusitanicus



dermal denticles

SIZE :

Adults to at least 160 cm, maturing between 110 and 145 cm; females considerably larger than males.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR :

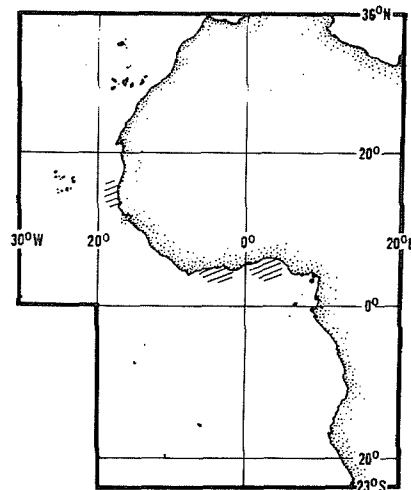
In the area it is found off Senegal, Ivory Coast, and from Ghana to Nigeria. Elsewhere, off Portugal and in the South Western Indian Ocean.

A little known deepwater shark living along the edge of the continental shelves and upper slopes at depths between 300 and 1 000 m. Ovoviviparous, number of fetuses in a litter 1 to 7; size at birth between 30 and 40 cm.

Feeds on bony fishes, other squalids, squids and crustaceans.

PRESENT FISHING GROUNDS :

Offshore.



CATCHES, FISHING GEAR AND FORMS OF UTILIZATION :

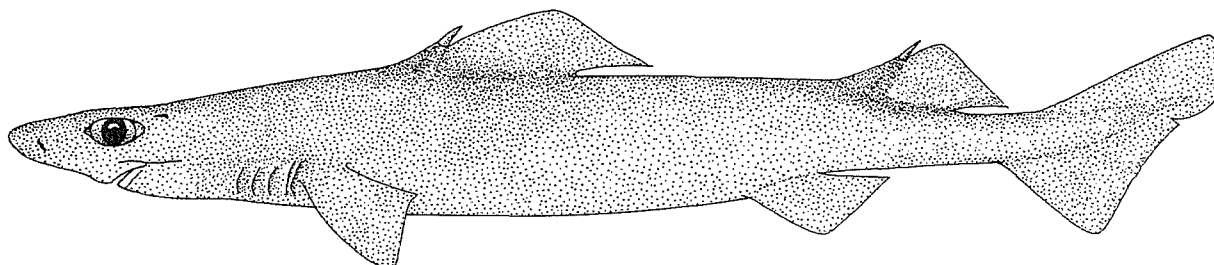
Separate statistics are not reported for this species.

Caught in bottom trawls; also in fixed bottom nets and with line gear.

Utilized dried salted, and processed for fishmeal.

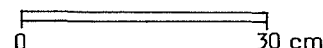
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: SQUALIDAE

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)Centrophorus squamosus (Bonnaterre, 1788)OTHER SCIENTIFIC NAMES STILL IN USE : Lepidorhinus squamosus (Bonnaterre, 1788)

VERNACULAR NAMES:

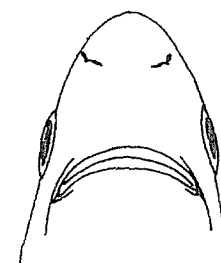
FAO : En - Leafscales gulper shark
 Fr - Squale-chagrin de l'Atlantique
 Sp - Quelvacho negro



NATIONAL :

DISTINCTIVE CHARACTERS :

Body elongate and slightly compressed; dermal denticles of back overlapping each other, with stalked, leaflike crowns, a strong main cusp and 3 or more side cusps on their posterior edges (number increasing with denticle replacement during growth), and ridges running the length of the crown. Snout pointed and moderately long, almost equal to mouth width but shorter than distance from mouth to pectoral fin origins. Teeth differing in upper and lower jaws; uppers much smaller, relatively broad and bladefike, with cusps varying from erect to semi-oblique (more erect in adult males than in adult females and in immatures of both sexes) and without cusplets; lowers large, compressed, bladefike, with a single oblique cusp, no cusplets, a deeply notched outer edge, and serrations in adults. A short, strong spine with lateral grooves on anterior edges of both dorsal fins; first dorsal relatively low and long, second dorsal higher than first, its base about $\frac{2}{3}$ the length of first dorsal base; inner corners of pectoral fins hardly elongated and not reaching the level of first dorsal spine, inner margins of pectoral fins shorter than distance from second dorsal spine to caudal origin; caudal fin with a strong subterminal notch. Caudal peduncle without dermal keels or precaudal pits.

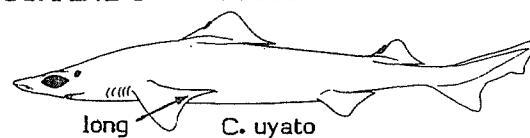
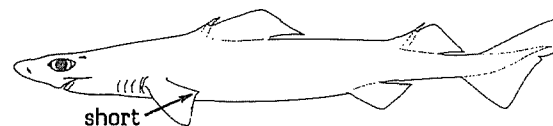


underside of head

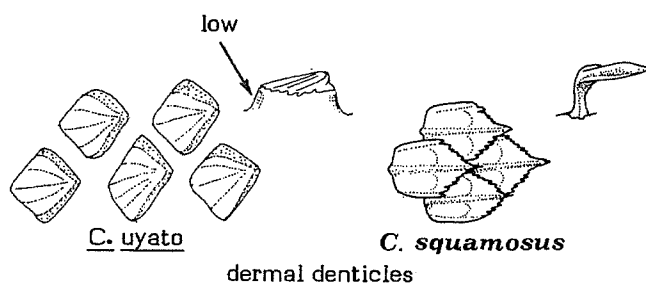
Colour: uniform dark grey.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA :

Centrophorus granulosus, C. lusitanicus and C. uyato: dermal denticles of back low-crowned, widely separated, not leaf-shaped; inner corners of pectoral fins greatly elongated, reaching first dorsal spine.

C. uyatoS. squamosus

Other species of Squalidae: snout greatly elongated, denticles pitchfork-shaped (*Deania* spp.); upper teeth needle-like, narrow-based, fin spines very small, inner corners of pectoral fins rounded and colour blackish (*Centroscymnus* and *Scymnodon*); upper or both upper and lower teeth with cusplets (*Etmopterus* and *Centroscyllium*); upper and lower teeth about equal-sized, uppers not erect-cusped, fin spines without grooves, and caudal peduncle with lateral keels and an upper precaudal pit (*Squalus*); spines missing from the second or both dorsal fins (*Squaliolus*, *Euprotomicrus*, *Somniosus*, *Isistius*, *Dalatias*).



SIZE :

Maximum: at least to 158 cm, males adult at about 100 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR :

In the area, from Morocco to Senegal, including Madeira and from Gabon to Zaire; also from off Namibia to the western Cape of Good Hope, off the Azores and northward along the Atlantic slope to the Faeroes and Iceland. Elsewhere in the South Western Indian Ocean and Western Pacific.

A deepwater shark found above the edges of the continental shelves and upper slopes ranging most commonly from 400 to 1 500 m and down to at least 1 875 m. Ovoviviparous, litters of 5 fetuses reported.

PRESENT FISHING GROUNDS :

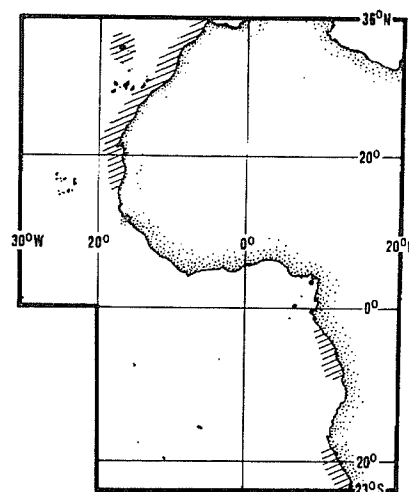
Offshore.

CATCHES, FISHING GEAR AND FORMS OF UTILIZATION :

Separate statistics are not reported for this species.

Caught in bottom trawls, also in fixed bottom nets and with line gear.

Utilized dried salted, and for fishmeal.

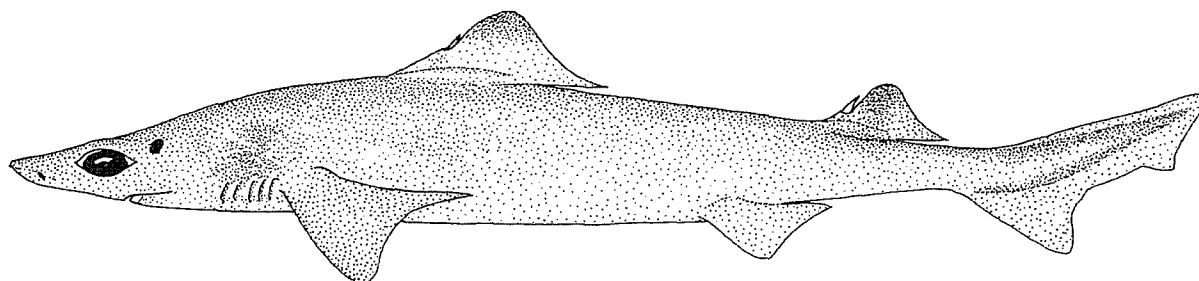


FAO SPECIES IDENTIFICATION SHEETS

FAMILY: SQUALIDAE

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)*Centrophorus uyato* (Rafinesque, 1809)

OTHER SCIENTIFIC NAMES STILL IN USE: None



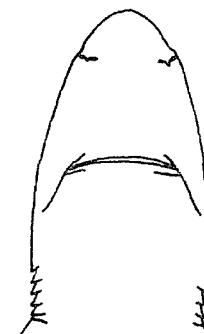
VERNACULAR NAMES:

FAO : En - Little gulper shark
 Fr - Petit squalé-chagrin
 Sp - Galludito

NATIONAL :

DISTINCTIVE CHARACTERS :

Body elongate and slightly compressed; dermal denticles of back widely separated, low-crowned, thornlike in young but broader in adults, with low ridges running the length of the crown and a very short cusp on their posterior edges. Snout pointed and slightly longer than mouth width but shorter than distance from mouth to pectoral fin origins. Teeth differing in upper and lower jaws, uppers much smaller, relatively broad and bladelike, with low, mostly oblique cusps (except for a few rows with erect cusps in the area of the symphysis) and no cusplets; lowers large, compressed, bladelike, with a single oblique cusp, no cusplets, a deeply notched outer edge, and no serrations in adults. A short, strong spine with lateral grooves on anterior edges of both dorsal fins; first dorsal relatively high and short, second dorsal lower than first, its base about 3/4 the length of first dorsal base; inner corners of pectoral fins greatly elongated, produced as narrow, pointed lobes reaching past the first dorsal spine, their inner margins about as long as distance from second dorsal spine to upper caudal origin; caudal fin with a strong subterminal notch. Caudal peduncle without dermal keels or precaudal pits.

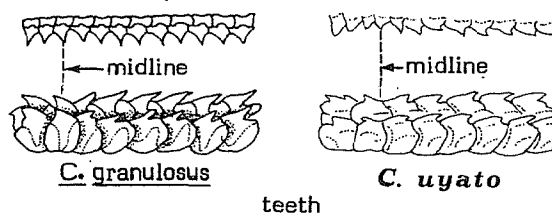


underside of head

Colour: dark grey-brown above, lighter below, fins somewhat darker than back, rear edges white or transparent; a darker spot often above gill slits and eyes.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA :

Centrophorus granulosus: a larger species with broadly rounded, cusplless denticles on the back of adults, with ridges not extending the length of crowns; upper teeth mostly erect-cusped; inner margins of pectoral fins somewhat longer than distance from second dorsal spine to upper caudal origin (but this may be variable in this species as well as in *C. uyato*, with some overlap).



teeth

Centrophorus lusitanicus: a larger species with snout somewhat shorter, equal to or shorter than mouth length; first dorsal fin relatively long and low, second dorsal higher than first but its base only about $\frac{1}{2}$ the length of first dorsal base.

Centrophorus squamosus: dermal denticles of back with stalked, leaflike crowns overlapping each other; first dorsal fin relatively long and low, second dorsal higher than first; inner corners of pectoral fins hardly elongated and not reaching the level of first dorsal spine, inner margins of pectoral fins shorter than distance from second dorsal spine to caudal origin.

Other species of Squalidae: snout greatly elongated, denticles pitchfork-shaped (Deania sp.); upper teeth needle-like, fin spines very small, inner corners of pectoral fins rounded, and colour blackish (Centroscyrnus and Scymnodon); upper or both, upper and lower teeth with cusplets (Etmopterus and Centrosyllium); upper and lower teeth equal-sized, fin spines without grooves, caudal peduncle with lateral keels and an upper precaudal pit (Squalus); or spines missing from the second or both dorsal fins (Squaliolus, Euprotomicrus, Somniosus, Isistius, Dalatias).

SIZE :

Maximum: to about 100 cm total length, males mature at 85 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR :

In the area it occurs from off Morocco to Senegal, Ivory Coast to Nigeria and Cameroon to Northern Namibia; also present in Mediterranean. Elsewhere, in the South Western Indian Ocean, the Western North Atlantic, and possibly the Western Pacific.

A little-known, relatively common deepwater shark taken near the bottom along the outer continental shelves and upper slopes usually below 200 m depth, but ranging from 50 to at least 600 m. Oviviparous, number of young usually only one; size at birth between 40 and 50 cm.

Feeds on bony fishes and squids.

PRESENT FISHING GROUNDS :

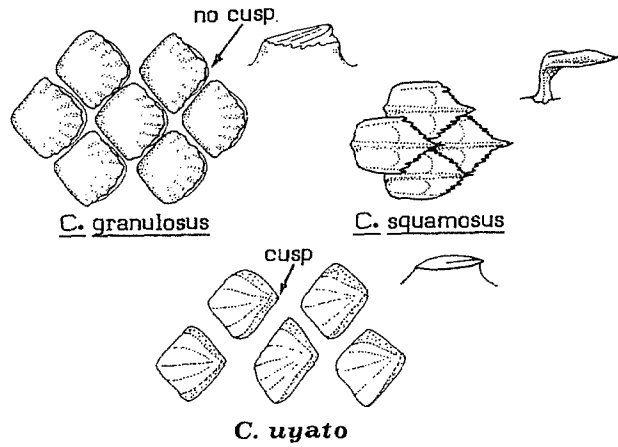
Offshore in the area.

CATCHES, FISHING GEAR AND FORMS OF UTILIZATION :

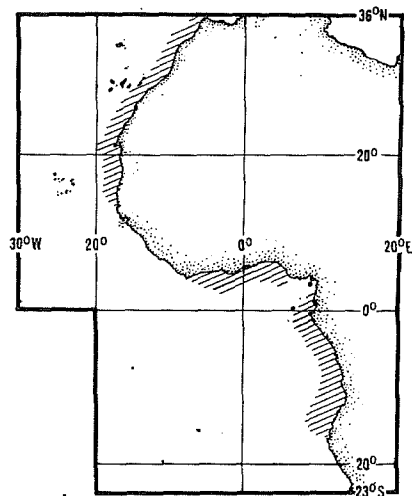
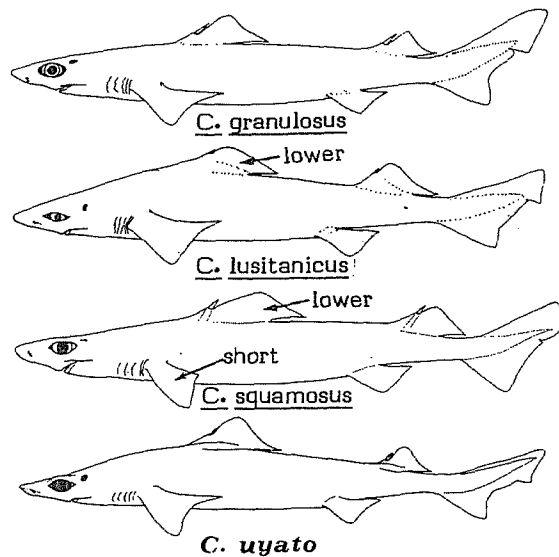
Separate statistics are not reported for this species.

Caught with bottom trawls, line gear, in fixed bottom nets and pelagic trawls.

Utilized dried salted, probably for fishmeal and liver oil. Potentially valuable for the large liver with high concentrations of squalene (over 80%).



dermal denticles

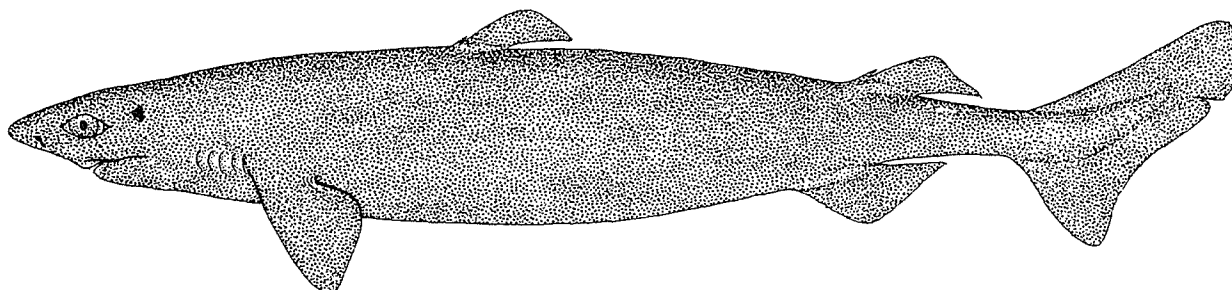


FAO SPECIES IDENTIFICATION SHEETS

FAMILY: SQUALIDAE

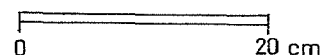
FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)Centroscymnus coelolepis Bocage & Capello, 1864

OTHER SCIENTIFIC NAMES STILL IN USE: None



VERNACULAR NAMES:

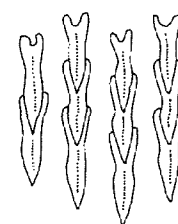
FAO: En - Portuguese dogfish
Fr - Pailona commun
Sp - Pailona



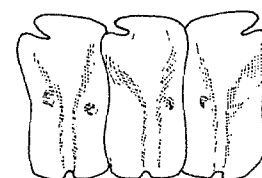
NATIONAL:

DISTINCTIVE CHARACTERS:

Body moderately stout and slightly compressed; dermal denticles of back tricuspidate and ridged in young, but circular, smooth, and without cusps in adults. Snouth broadly rounded, shorter than distance from mouth to first gill slit; upper labial grooves very short, the distance between their anterior ends greater than their lengths (taken from their anterior ends to mouth angles). Teeth differing in upper and lower jaws, uppers much smaller, not bladelike, with slender erect cusps and no cusplets; lowers large, compressed, bladelike, with a single oblique cusp, no cusplets, a deeply notched outer edge and no serrations. A very small spine with lateral grooves on anterior edges of both dorsal fins; first dorsal fin short and low, about as large as second dorsal, its origin well posterior to pectorals, the latter much shorter than upper caudal margin, their inner corners broadly rounded; caudal fin with a well-developed subterminal notch and short lower lobe. Caudal peduncle without dermal keels or precaudal pits.



upper teeth

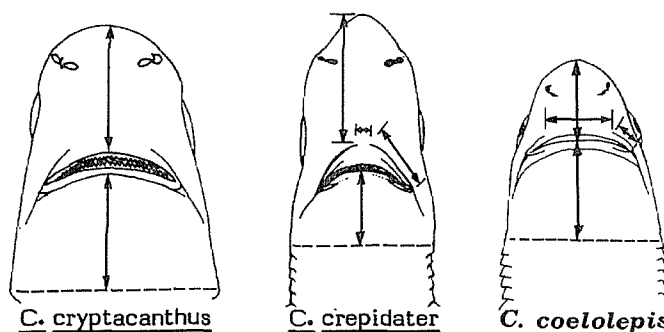


lower teeth

Colour: uniformly brownish-black.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Centroscymnus cryptacanthus: this is a little-known species found off Madeira, Senegal, and also in the Western South Atlantic, off Uruguay. It is closer to C. coelolepis than any other member of the family, in denticles, teeth and snout shape, but differs in having a longer snout (about as long as distance from mouth to level of first gill slit), first dorsal fin with a greatly elongated base, its origin about over the rear ends of pectoral fin bases, and second dorsal fin noticeably larger than the first.

C. cryptacanthusC. crepidaterC. coelolepis

underside of head

Centroscymnus crepidater: body more slender; dermal denticles of adults with posterior ridges; snout much longer, about equal to distance from mouth to pectoral fin origin; first dorsal fin with a greatly elongated base, its origin about over the rear ends of pectoral fin bases; upper labial grooves very long, the distance between their anterior ends less than their lengths.

Scymnodon species: dermal denticles of adults with longitudinal ridges running the length of the crowns; lower teeth with more erect, greatly elongated cusps (cusps very short and oblique in C. coelolepis).

Somniosus rostratus: dermal denticles of adults thornlike, with narrow, ridged, cuspidate crowns; no dorsal fin spines; lower lobe of caudal fin more elongated, well-developed.

Other species of Squalidae: both upper and lower teeth compressed and bladelike (Centrophorus, Deania, Squalus); upper, or both upper and lower teeth with cusplets (Etmopterus and Centroscyllium); or spines missing from the second or both dorsal fins (Squaliolus, Euprotomicrus, Isistius, Dalatias).

SIZE :

Maximum: adults to 114 cm, most adults about 90 to 95 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR :

In the area, found from off Morocco to Senegal and off Madeira. Elsewhere, northward along the Atlantic slope to Iceland, in the western Mediterranean and the Western North Atlantic.

A relatively common shark of the upper continental slopes, ranging from 330 to 2 700 m depth but most common between 400 and 2 000 m. Ovoviviparous, number of fetuses in a litter 13 to 16. Feeds on small bony fishes.

PRESENT FISHING GROUNDS :

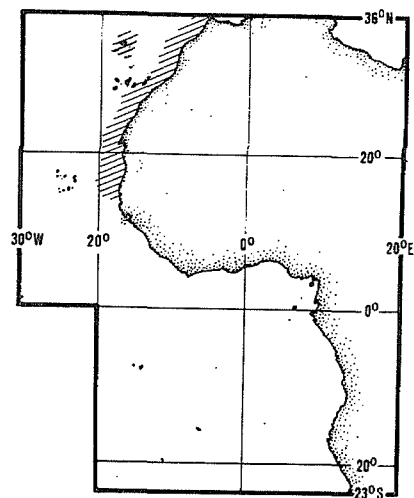
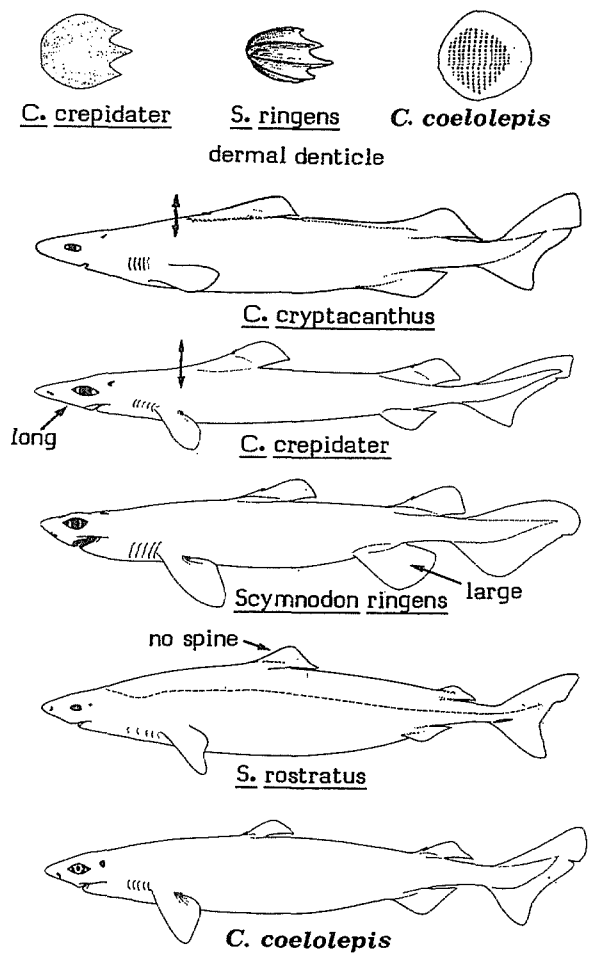
Offshore.

CATCHES, FISHING GEAR AND FORMS OF UTILIZATION :

Separate statistics are not reported for this species.

Caught in bottom trawls, fixed bottom nets and with line gear.

Utilized dried salted and for fishmeal.

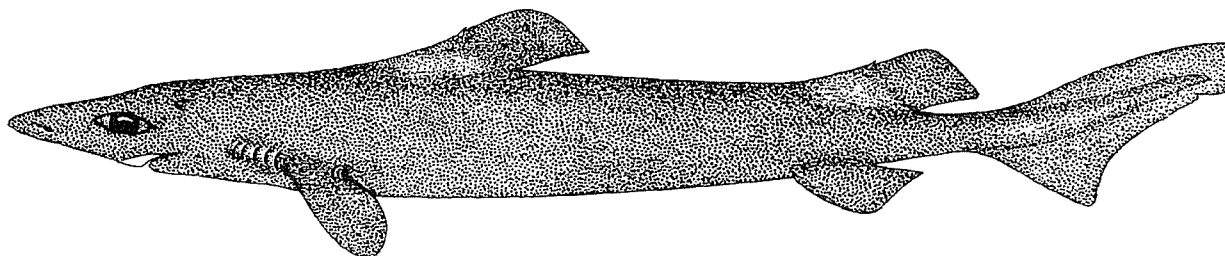


FAO SPECIES IDENTIFICATION SHEETS

FAMILY: SQUALIDAE

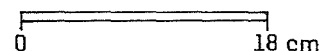
FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)Centroscymnus crepidater (Bocage & Capello, 1864)

OTHER SCIENTIFIC NAMES STILL IN USE: None



VERNACULAR NAMES:

FAO: En - Longnose velvet dogfish
Fr - Pailona à long nez
Sp - Sapata negra



NATIONAL:

DISTINCTIVE CHARACTERS:

Body moderately slender and compressed; dermal denticles of back with cusps and ridges in young and adults, the medial ridge not extending the full length of the crown. Snout narrowly rounded, very long, about equal to distance from mouth to origins of pectoral fins; upper labial grooves extremely long, the distance between their anterior ends less than their lengths (taken from their anterior ends to mouth angles); teeth differing in upper and lower jaws, uppers much smaller, with slender, erect cusps and no cusplets in the region of the symphysis, but broadening out near the mouth angles; lowers larger, compressed, bladelike, un serrated, with a single erect to oblique cusp, no cusplets and a deeply notched outer edge. A very small spine with lateral grooves on anterior edges of both dorsal fins; first dorsal fin very long and low, its base longer, but its height less than second dorsal, its origin about over the posterior ends of pectoral fin bases; pectoral fins shorter than upper margin of caudal fin, their inner corners broadly rounded; caudal fin with a well-developed subterminal notch and a weak lower lobe. Caudal peduncle without dermal keels or precaudal pits.

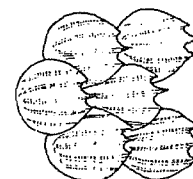
Colour: uniform brownish-black.



underside of head



teeth



dermal denticles

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA :

No other squalid sharks in the area have the combination of characters underlined above.

SIZE :

Maximum: adults to about 90 cm, females mature at 82 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR :

In the area, it occurs from off Morocco and Madeira, to Senegal and off Gabon, Zaire and Namibia, also northward along the Atlantic slope from Portugal to the Faeroe Islands and Iceland, possibly also in the Indian Ocean, and off New Zealand.

A little-known deepwater shark, found on the upper continental slopes from 270 to 1 070 m of depth. Ovoviviparous, number of fetuses reported about 4.

PRESENT FISHING GROUNDS :

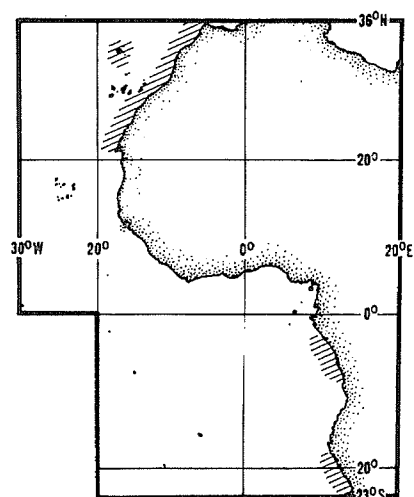
Offshore.

CATCHES, FISHING GEAR AND FORMS OF UTILIZATION :

Separate statistics are not reported for this species.

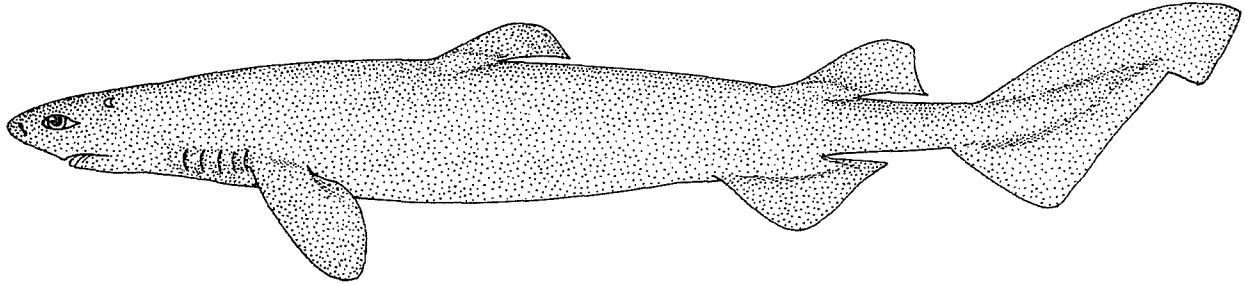
Caught in bottom trawls.

Utilized for fishmeal.



FAO SPECIES IDENTIFICATION SHEETS

FAMILY: SQUALIDAE

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)**Dalatias licha** (Bonnaterre, 1788)OTHER SCIENTIFIC NAMES STILL IN USE : Scymnorhinus licha (Bonnaterre, 1788)

VERNACULAR NAMES:

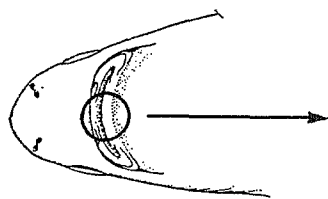
FAO : En - Kitefin shark
 Fr - Squale liche
 Sp - Carochó

NATIONAL :

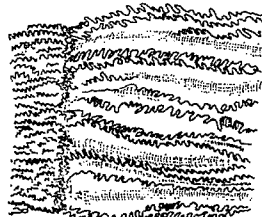
DISTINCTIVE CHARACTERS :

A small to moderately large shark of cylindrical body; dermal denticles of back low, sessile, with short, pointed cusps and longitudinal ridges; eyes moderately large; snout rounded and conical, about as long as mouth width; lips very thick and fringed with transverse pleats and grooves; teeth differing in upper and lower jaws, uppers much smaller, not bladelike, with slender, erect to semi-oblique, needlelike cusps and no cusplets; lowers very large, bladelike, with a single, very broad, high, erect or semi-erect cusp, no cusplets, a shallow to deep outer notch and serrations. No spines on dorsal fins; first dorsal closer to pectorals than to pelvics, its origin posterior to inner corners of pectorals; second dorsal slightly larger than first; pectoral fins considerably shorter than upper caudal margin; caudal fin with subterminal notch strongly developed, its lower lobe very weak or undeveloped. Caudal peduncle without dermal keels or precaudal pits.

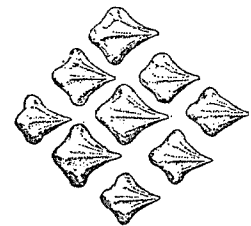
Colour: a uniform dark grey or chocolate brown, rear edges of fins light.



underside of head



fringed lips

upper and lower
teeth on symphysis

dermal denticles

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA :

The combination of characters underlined above readily separates this shark from all other squalids known in the area.

SIZE :

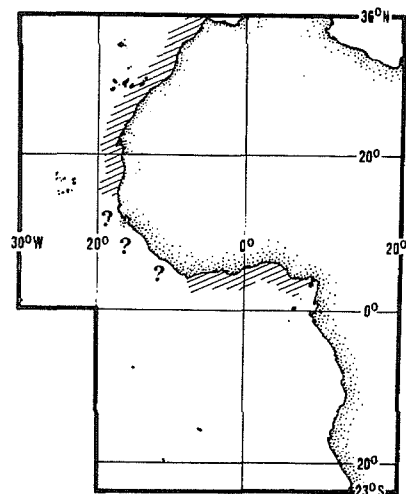
Maximum: possibly to 182 cm, most adults between 100 and 150 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR :

In the area found from off Morocco to Senegal, including Madeira, and from Ivory Coast to Cameroon; also, off the Azores, northward to the North Sea and Scotland, and in the western Mediterranean. Elsewhere, in the Western North Atlantic, Western Indian Ocean and Western and Central Pacific.

A common bottom and midwater shark of the outer continental shelves and upper slopes, usually found below 200 m and down to 1 000 m, but sometimes in shallower water. Ovoviviparous, number of young 3 to 16, size at birth about 30 cm. Found in schools or groups usually of one sex.

Feeds on a wide variety of small to moderately large bottom and midwater bony fishes, squid and octopuses, crustaceans, and on other sharks and skates.



PRESENT FISHING GROUNDS :

Offshore.

CATCHES, FISHING GEAR AND FORMS OF UTILIZATION :

Separate statistics are not reported for this species.

Caught in bottom trawls.

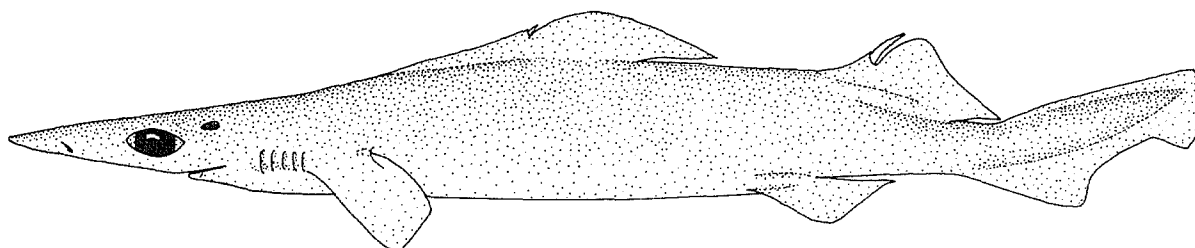
Utilized for fishmeal; hides for leather.

FAO SPECIES IDENTIFICATION SHEETS

FAMILY: SQUALIDAE

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)Deania calcea (Lowe, 1839)

OTHER SCIENTIFIC NAMES STILL IN USE: None



0 20 cm

VERNACULAR NAMES:

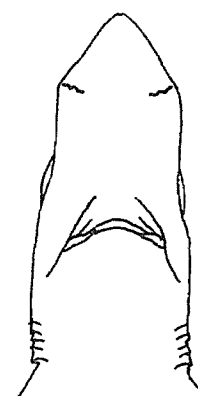
FAO : En - Birdbeak dogfish
 Fr - Squalé savate
 Sp - Tollo pajarito

NATIONAL :

DISTINCTIVE CHARACTERS :

Body moderately stout and compressed; dermal denticles of back with high crowns and cusps resembling small pitchforks. Snout extremely long, more so than distance from mouth to origin of pectoral fins; upper labial grooves moderately long, the distance between their anterior ends equal to or greater than their lengths (taken from their anterior ends to mouth angles). Teeth unlike in upper and lower jaws, uppers smaller, broad and bladelike but with elongated, erect cusps and no cusplets; lowers much larger, bladelike, broad and unserrated, with erect or oblique cusps (more erect in adult males than adult females or juveniles of both sexes), no cusplets, and a deeply notched outer edge. A moderately large spine on first dorsal fin, and a much larger one on second dorsal, both spines with grooves; first dorsal fin very long and low, its base longer, but its height less than in second dorsal, and its origin anterior to inner corners of pectoral fins; the latter shorter than upper margin of caudal fin, with angular inner corners; caudal fin with a well-developed sub-terminal notch and a weak lower lobe. Caudal peduncle without dermal keels or precaudal pits.

Colour: light grey or brownish grey.



underside of head

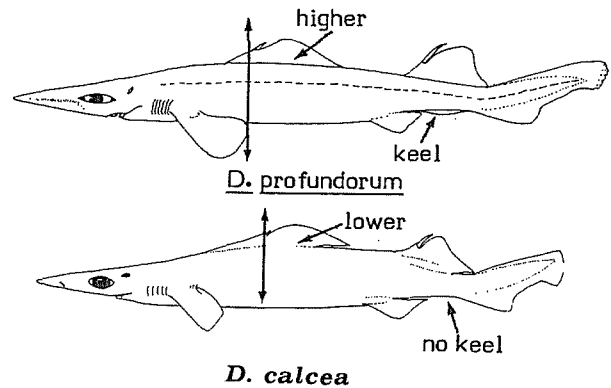
teeth at centre
of jaws

dermal denticle

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA :

Deania profundorum: a smaller species closely resembling D. calcea and occurring in the area off Senegal and Mauritania, also off Namibia and elsewhere in the Western North Atlantic, Western Indian Ocean, and Western Pacific. It differs in having a shorter, higher first dorsal fin, with its origin over the inner corners of pectoral fins and a low keel on the underside of caudal peduncle (absent in D. calcea).

No other members of the family Squalidae in the area show the combination of pitchfork-shaped denticles on the back and an extremely long snout (longer than the distance from mouth to pectoral origins).



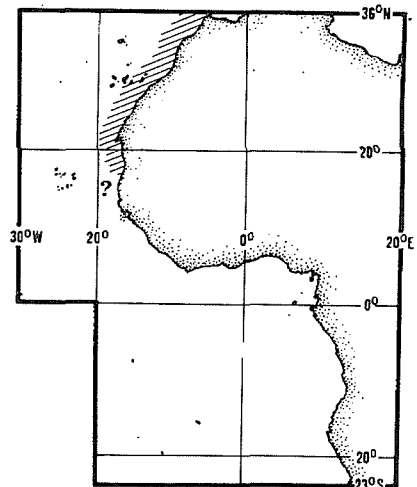
SIZE :

Maximum: Adults to about 110 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR :

In the area it occurs from Morocco to Mauritania, including Madeira and possibly to Senegal; also, northward along the Atlantic slope to the Faeroe Islands and Iceland. Elsewhere in the Western Indian Ocean, Western Pacific, and Eastern South Pacific.

A deepwater shark, occurring on the upper continental slopes and outer shelves from about 460 to 1 430 m depth. Ovoviviparous, number of young not reported.



PRESENT FISHING GROUNDS :

Offshore.

CATCHES, FISHING GEAR AND FORMS OF UTILIZATION :

Separate statistics are not reported for this species.

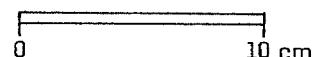
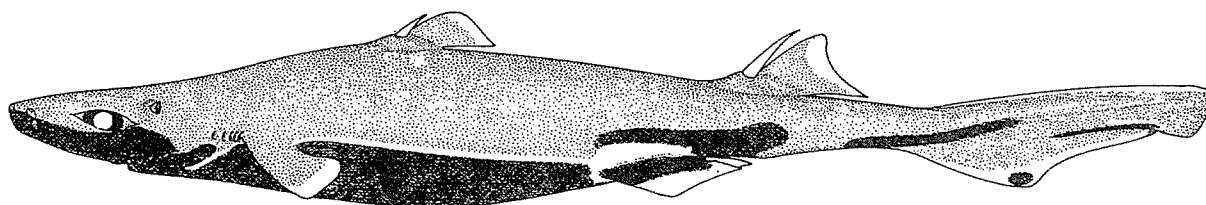
Caught in pelagic trawls and possibly other types of gear.

FAO SPECIES IDENTIFICATION SHEETS

FAMILY: SQUALIDAE

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)*Etmopterus spinax* (Linnaeus, 1758)

OTHER SCIENTIFIC NAMES STILL IN USE: None



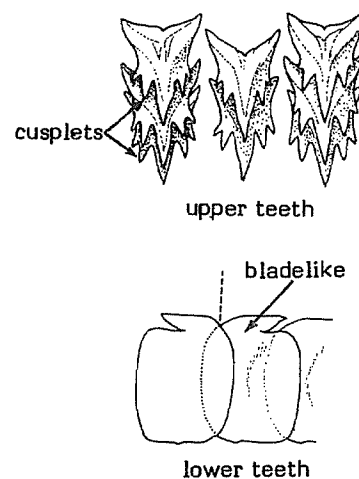
VERNACULAR NAMES:

FAO: En - Velvet belly
Fr - Sagre commun
Sp - Negrito

NATIONAL:

DISTINCTIVE CHARACTERS:

Body moderately stout, cylindrical in cross section; dermal denticles of back close-spaced, with slender, curved, bristle-like, pointed crowns, those of body and tail not in longitudinal rows and clumps separated by naked skin; snout moderately elongated, denticles also present on underside of snout. Greatest head width about equal to length of snout; spiracles moderately large; labial furrows short, not forming a groove around mouth; lips smooth, thin, not papillose or suctional; teeth in upper and lower jaws unlike, uppers not bladelike, with a narrow medial cusp and side cusplets, lowers larger, broad, compressed, bladelike, with a single oblique, low, smooth-edged cusp. Dorsal fins with strong, grooved, spines, second spine much larger than the first; position of first dorsal fin between pectorals and pelvics, its origin behind free rear tips of pectoral fins; second dorsal fin much larger than the first; distance from pelvic fin insertions (rear end of fin base) to lower caudal fin origin only about half that from pectoral insertions to pelvic origins, not more than $\frac{2}{3}$ of upper caudal margin, and shorter than space between first and second dorsal bases; caudal fin moderately long, narrow, and asymmetrical, with a subterminal notch but a hardly developed lower lobe; no keels or precaudal pits on caudal peduncle. Luminous organs present on sides.



Colour: brown above, black on underside of head and abdomen; an elongated, single black marking above and behind pelvic fins, and other elongated black marking at caudal fin base and along caudal fin axis.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA :

Etmopterus polli: underside of snout without denticles; first dorsal fin origin in front of free rear tips of pectoral fins; distance from pelvic fin insertions to lower caudal fin origin about as long as that from pectoral insertions to pelvic origins, about as long as caudal fin, and longer than the interspace between dorsal fin bases; denticles of rear of trunk and tail in longitudinal rows; black flank marking divided into anterior and posterior parts.

Etmopterus pusillus: denticles on sides low-crowned, without pointed cusps; gill slits longer; body uniformly coloured, without conspicuous dark markings.

Etmopterus princeps: denticles on sides with lower, conical to thornlike crowns, more wide-spaced; width of head 1.2 to 1.4 times the snout length; colour almost uniformly dark, without conspicuous markings.

Centroscymnus fabricii: both upper and lower teeth small and not bladelike, with a median cusp and side cusplets.

Other members of the family Squalidae in the area: upper teeth without cusplets.

SIZE :

Maximum: to about 60 cm, maturing between 33 and 36 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR :

Probably occurring throughout the area; specifically recorded from Morocco to Senegal, the Canary Islands, Sierra Leone, Ivory Coast to Nigeria, and Cameroon to Gabon. Northward extending into the Mediterranean and the North Atlantic to Iceland and Norway, southward to South Africa.

A common deepwater shark caught on or above the bottom at depths from 100 to 1 000 m. Ovoviviparous, litter size from 6 to 20, embryos born at about 12 to 14 cm length.

Feeds on small fishes, squids and crustaceans.

PRESENT FISHING GROUNDS :

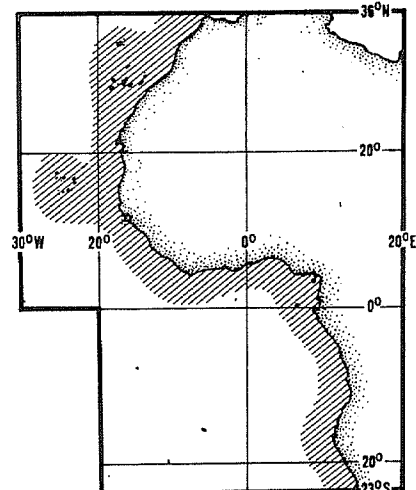
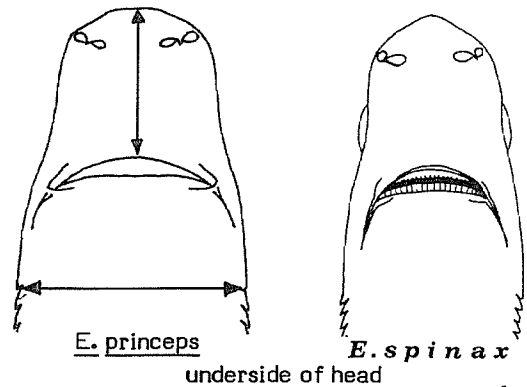
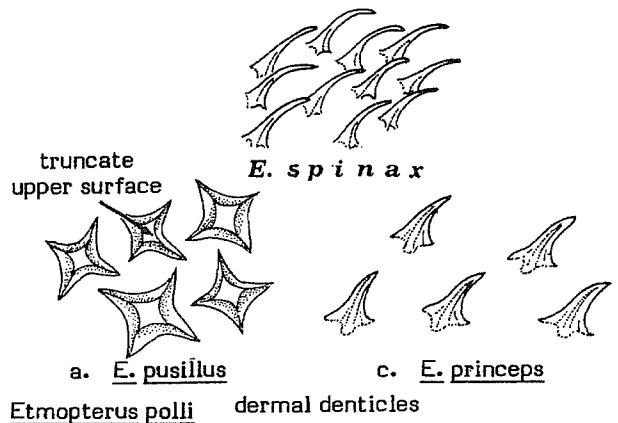
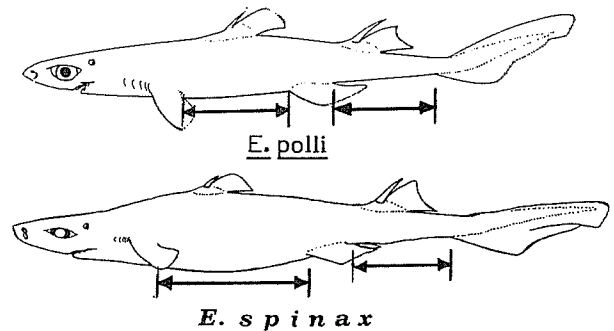
Offshore waters.

CATCHES, FISHING GEAR AND FORMS OF UTILIZATION :

Separate statistics are not reported for this species.

Caught with bottom and pelagic trawls.

Utilized dried salted and processed to fishmeal.

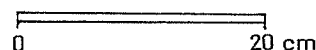
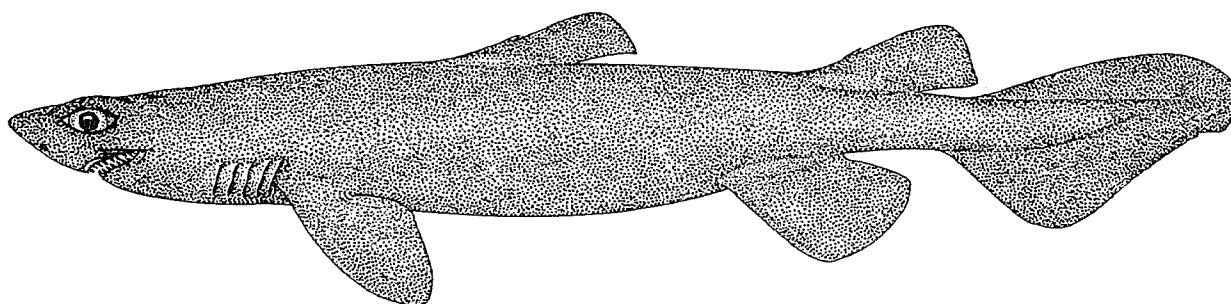


FAO SPECIES IDENTIFICATION SHEETS

FAMILY : SQUALIDAE

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)*Scymnodon ringens* Bocage & Capello, 1864

OTHER SCIENTIFIC NAMES STILL IN USE : None



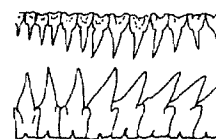
VERNACULAR NAMES:

FAO : En - Knifetooth dogfish
 Fr - Squale grogneur commun
 Sp - Bruja

NATIONAL :

DISTINCTIVE CHARACTERS :

Body moderately stout and slightly compressed; dermal denticles of back with cusps and longitudinal (but no transverse) ridges in young and adults. Snout broadly rounded, shorter than mouth width; mouth very large and strongly arched; upper labial grooves (measured from their front ends to mouth angles) moderately long, shorter than distance between their front ends; teeth differing in upper and lower jaws, uppers much smaller, not bladelike, with extremely long, slender, erect cusps and no cusplets; lowers very large, unserrated, compressed, bladelike, with a single very large, erect or semi-erect cusp, no cusplets and a deeply notched outer edge. A very small spine with lateral grooves on anterior edges of both dorsal fins; first dorsal short and low, a little smaller than the second, its origin slightly posterior to pectoral inner corners; pectoral fins with their inner corners rounded; pelvic fins very large, much more so than second dorsal fin; caudal fin with subterminal notch hardly indicated, lower caudal lobe not differentiated. Caudal peduncle without dermal keels or precaudal pits.



teeth near symphysis

Colour: uniformly brownish-black.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA :

Scymnodon obscurus: similar to S. ringens in having teeth with elongated cusps, small fin spines and brownish-black coloration, but differs in its slender body, the transverse ridges on the back denticles (in addition to the longitudinal ones), the more elongated, pointed snout (much longer than mouth width), a much smaller, less arched mouth, smaller pelvic fins, (about equal in size to second dorsal fin or slightly larger), and a caudal fin with a strong subterminal notch and a short lower lobe. A deepwater shark of the upper continental slopes ranging from 550 to 1 450 m depth. In the area, it occurs off Morocco, Madeira, the Cape Verde Islands, and Senegal; also, northward along the Atlantic slope and the Faeroe Ridge to Iceland; elsewhere it is reported from the Western Atlantic and possibly the Western Indian Ocean.

The combination of characters underlined above sets this species apart from all other members of Squalidae in the area.

SIZE :

Adults to 110 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR :

Recorded from off Morocco to Senegal; also off Spain and Portugal and northward along the Atlantic slope to Scotland.

A deepwater shark of the upper continental slopes and outer shelves, ranging from 200 to 700 m depth. Probably ovoviviparous.

PRESENT FISHING GROUNDS :

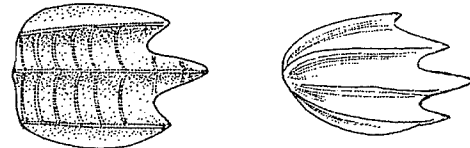
Offshore in the northern part of the area.

CATCHES, FISHING GEAR AND FORMS OF UTILIZATION :

Separate statistics are not reported for this species

Caught in bottom trawls, also fixed bottom nets and with line gear.

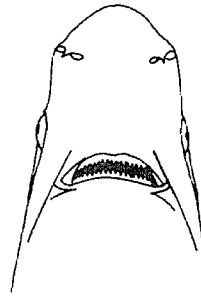
Utilized dried salted and for fishmeal.



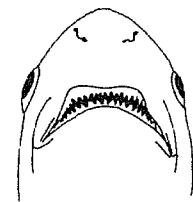
S. obscurus

S. ringens

denticle

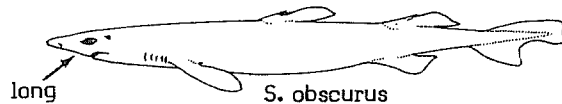


S. obscurus

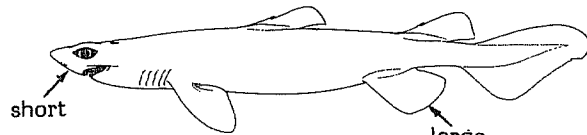


S. ringens

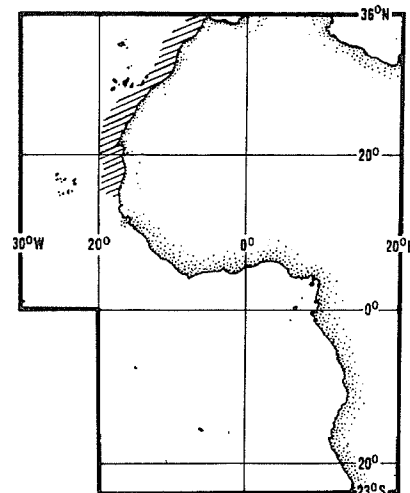
underside of head



S. obscurus

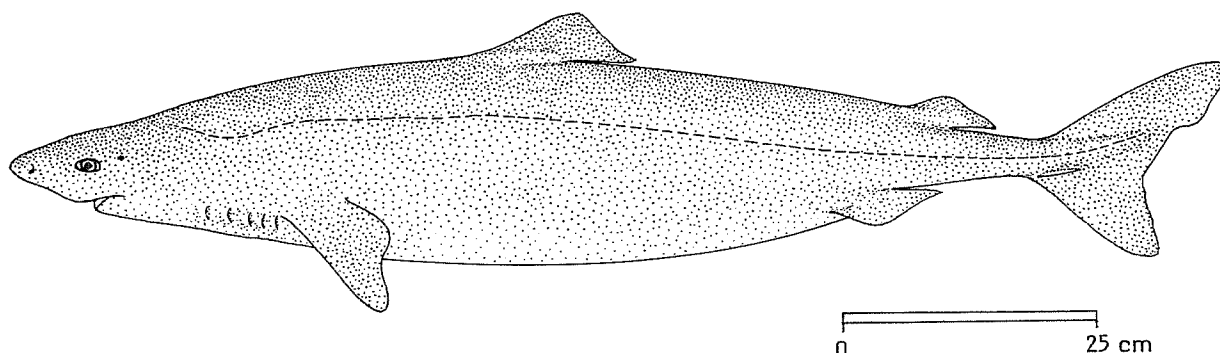


S. ringens



FAO SPECIES IDENTIFICATION SHEETS

FAMILY : SQUALIDAE

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)Somniosus rostratus (Risso, 1826)OTHER SCIENTIFIC NAMES STILL IN USE : ?Somniosus bauchotae Quero, 1976

VERNACULAR NAMES:

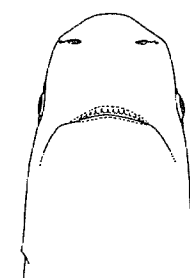
FAO : En - Little sleeper shark
Fr - Laimargue de la Méditerranée
Sp - Tollo boreal (= Tiburón boreal)

NATIONAL :

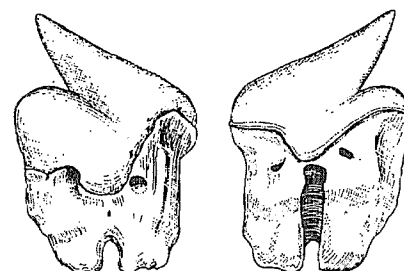
DISTINCTIVE CHARACTERS :

Body moderately stout and slightly compressed; dermal denticles of back thornlike, with pointed cusps and longitudinal ridges; eyes small; snout broadly rounded, moderately elongated, slightly longer than mouth width; lips smooth, not ridged or plicated; teeth differing in upper and lower jaws, uppers much smaller, not bladelike, with short erect cusps and no cusplets; lowers large, bladelike, unserrated, with a single, moderately long, semi-erect cusp, no cusplets and a deeply notched outer edge. No spines on dorsal fins; first dorsal short and low, about as large as second and as pelvics, its origin well posterior to inner corners of pectoral fins, its free rear tip far ahead of pelvic origins; pectoral fins considerably shorter than upper caudal margin; caudal fin with subterminal notch strongly developed, slightly asymmetrical, with a long, strongly differentiated lower lobe. Caudal peduncle without dermal keels or precaudal pits; a low dermal keel present on lower base of caudal fin.

Colour:



underside of head



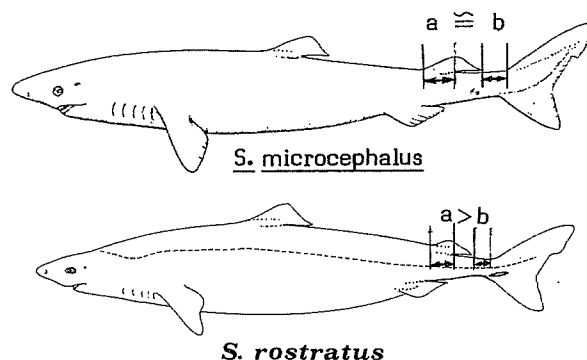
lingual view

labial view

lower tooth

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA :

Somniosus microcephalus: not recorded from Fishing Area 34 but possibly occurring in very deep water (1 000 m or more), in its northern part. Known to occur in the Eastern North Atlantic, and possibly also in the Western North Atlantic and off South Africa. It differs from S. rostratus in the following characters: distance from free rear tip of second dorsal fin to upper caudal origin about as long as second dorsal base (less than 7/10 the length of second dorsal base in S. rostratus); more oblique, shorter cusps to the lower teeth; no light organs on sides (present in S. rostratus), and a much greater size, adults often from 240 to 430 cm and probably reaching 640 or even 730 cm.



The combination of characters underlined above readily distinguishes this species from all other members of the family known from the area.

SIZE :

Maximum: 140 cm, adults at about 100 cm or less.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR :

In the area recorded only off Madeira; also occurring off Portugal, France and in the eastern Mediterranean. Elsewhere, possibly off Japan (if S. longus is conspecific).

An uncommon deep-water shark. Ovoviviparous, number of young not recorded.

PRESENT FISHING GROUNDS :

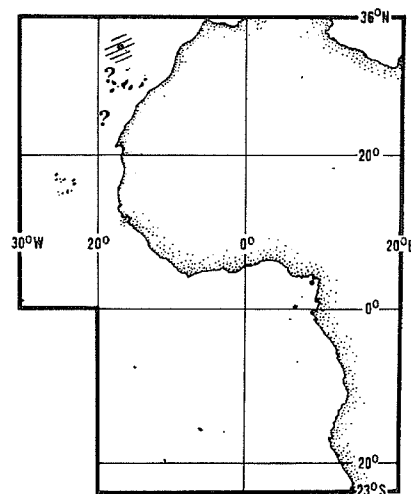
Incidental catches offshore, in the north of the area.

CATCHES, FISHING GEAR AND FORMS OF UTILIZATION :

Separate statistics are not reported for this species.

Captured in bottom trawls.

Utilized for fishmeal.

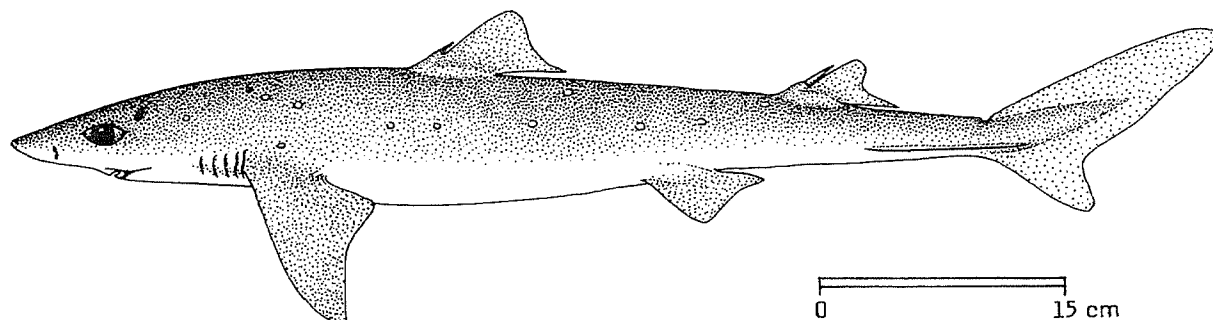


FAO SPECIES IDENTIFICATION SHEETS

FAMILY: SQUALIDAE

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)Squalus acanthias Linnaeus, 1758

OTHER SCIENTIFIC NAMES STILL IN USE: None



VERNACULAR NAMES:

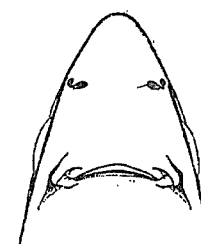
FAO: En - Piked dogfish
Fr - Aiguillat commun
Sp - Mielga

NATIONAL:

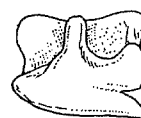
DISTINCTIVE CHARACTERS:

Body rather elongated and fusiform; denticles of back with narrow to moderately broad crowns, with 3 cusps in adults. Snout pointed, slightly longer than mouth width, the distance from its tip to inner edge of nostril about equal to that from latter point to anterior end of upper labial groove; nostrils with elongated flaps lacking accessory lobes on their medial edges; teeth alike in both jaws, small, compressed, and with a single, strongly oblique cusp a notched outer edge, and no cusplets or serrations. First dorsal fin larger than second, its origin over or posterior to inner corners of pectorals; both dorsal fins with a strong, moderately long and ungrooved spine; first dorsal spine rather short, posterior to inner corners of pectorals, its tip falling well below fin apex; second dorsal spine longer, reaching nearly or quite to the fin apex; pectoral fins rather elongate, their inner corners narrowly rounded and their posterior margins concave; caudal fin asymmetrical, without a subterminal notch, but with a strong ventral lobe. Caudal peduncle with a low lateral keel on each side and an upper precaudal pit.

Colour: dark grey or grey-brown above, light grey to white, below usually with an irregular row of small white spots on sides.



underside of head



upper tooth

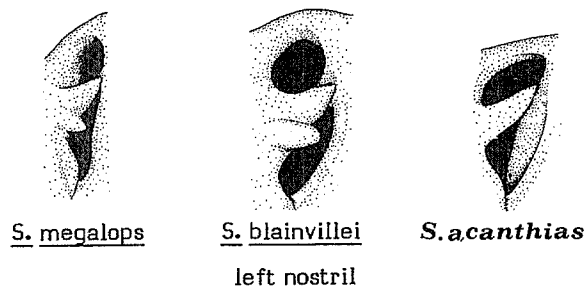


lower tooth

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA :

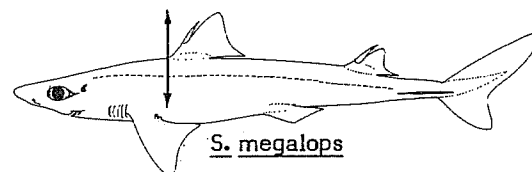
Squalus megalops and S. blainvillei: nostrils with accessory lobes on the anterior nasal flaps; first dorsal spine originating over inner margins of pectoral fins; these fins relatively broader; no white spots on sides.

Other species of Squalidae: fin spines grooved, or absent, usually a subterminal notch on caudal fin, no precaudal pits and no white spots on sides.



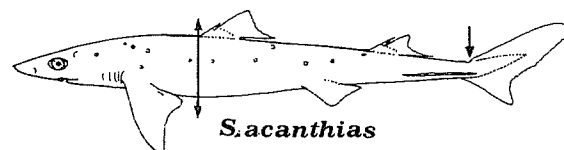
SIZE :

Maximum: about 122 cm in the Eastern North Atlantic, most adults between 55 and 100 cm; may grow larger elsewhere.



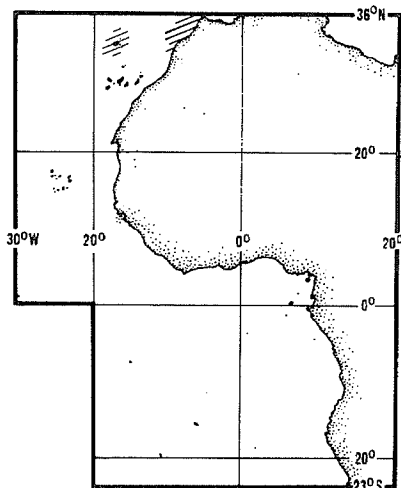
GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR :

A temperate to boreal shark entering the area from the north (off Morocco, where it is very rare, and the Canary Islands); also northward to Iceland and the Murmansk coast and in the Mediterranean and the Black Sea. Elsewhere, populations occur off the Cape of Good Hope, in the western side of the North and South Atlantic, and in the South and North Pacific.



A strong-swimming, voracious shark occurring near the bottom and well off it, ranging in depths from a few meters in inshore waters normally down to 200 m but exceptionally to greater depths (950 m on the upper slopes). Occurs often in large schools of a single sex. Ovoviviparous, number of young 3 to 11 in the Eastern Atlantic, gestation period 18 to 22 months, size at birth between 20 and 33 cm.

Feeds primarily on bony fishes, especially schooling species, but also on bottom-dwelling forms, squids and crabs.



PRESENT FISHING GROUNDS :

Offshore and inshore, in the extreme north of the area. North of the area subject to important fisheries for food, also commonly taken by sports fishermen.

CATCHES, FISHING GEAR AND FORMS OF UTILIZATION :

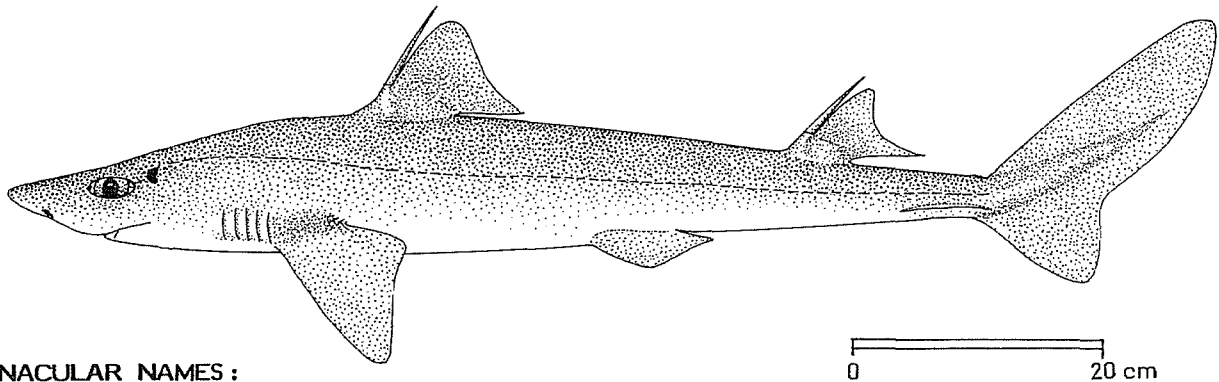
Separate statistics are not reported for this species.

Captured in bottom trawls.

Utilized fresh and dried salted; the hides are processed for leather.

FAO SPECIES IDENTIFICATION SHEETS

FAMILY: SQUALIDAE

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)Squalus blainvillei (Risso, 1826)OTHER SCIENTIFIC NAMES STILL IN USE: Squalus "fernandinus" not of Molina, 1782, in part

VERNACULAR NAMES :

FAO : En - Longnose spurdog
 Fr - Aiguillat coq
 Sp - Galludo

NATIONAL :

DISTINCTIVE CHARACTERS :

Body moderately elongated and fusiform; denticles of back with broad crowns and 3 cusps in adults. Snout pointed, slightly longer than mouth width, the distance from its tip to inner edge of nostril greater than that from latter point to anterior end of upper labial groove; nostrils with elongated anterior flaps having short accessory lobes on their medial edges; teeth alike in both jaws, small, compressed, and with a single, strongly oblique cusp, a notched outer edge, and no cusplets or serrations; first dorsal fin larger and higher than second, its origin over inner margins of pectoral fins, close to pectoral fin insertions; a strong, very long, ungrooved spine on both dorsal fins, generally reaching or extending above their apices; base of first dorsal spine over inner margins of pectoral fins; pectoral fins rather broad, their inner corners narrowly rounded and their posterior margins nearly straight; caudal fin asymmetrical, without a subterminal notch but with a strong ventral lobe. Caudal peduncle with a low lateral keel on each side and an upper precaudal pit.

Colour: back more or less dark brown, belly whitish.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA :

Squalus acanthias: no accessory lobes on anterior nasal flaps; origin of first dorsal fin over or posterior to inner corners of pectorals; fin spines shorter, the first posterior to inner corners of pectoral fins; pectoral fins narrower; usually white spots on sides.

S. acanthiasS. blainvillei

Squalus megalops: in the area sometimes confused with S. blainvillei; differs in having slender, lanceolate denticles on back in adults, a shorter snout (distance from snout tip to inner edge of nostril about equal to that from latter point to anterior end of upper labial groove), pectoral fins with deeply concave posterior margins and acutely pointed inner corners (but they may be straighter, and with bluntly pointed inner corners in large adults).

Squalus asper Merrett, 1973: a wide-ranging, recently discovered species from the Western North Atlantic, Western Indian Ocean, and Central Pacific. Although not yet reported from Fishing Area 34, it should be watched for in trawl catches of dogfish. It is characterized by a heavy body, a broad head and snout, large tricuspid denticles in adults (giving it a rougher appearance than other spiny dogfish), very large accessory lobes on the anterior nasal flaps, a short snout (distance from snout tip to inner edge of nostril about equal to that from nostril to anterior end of upper labial groove), moderately long fin spines, first dorsal fin positioned more posteriorly, with its origin about over, and its spine posterior to inner corners of pectorals, the second dorsal fin about as large as the first, very broad pectoral fins with bluntly rounded inner corners and nearly straight posterior margins, and a weaker ventral caudal lobe than other species of Squalus.

Squalus "fernandinus" of authors (not of Molina, 1782, = Squalus acanthias): some writers distinguish under this name a second species of Squalus belonging to the blainvillei species group, but differing from what they consider to be typical blainvillei by having a shorter first dorsal fin spine not reaching the fin apex. The status of this species is uncertain and other writers consider it conspecific with S. blainvillei. Both forms have been reported from this area.

Other Squalidae: fin spines grooved or absent, usually a subterminal notch on caudal fin, and no precaudal pits.

SIZE :

To at least 95 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR :

In the area, from Morocco, the Canaries, Senegal and probably Gabon to Angola and Namibia; also, northward to the Bay of Biscay and in the Mediterranean. Elsewhere in the Western Atlantic, Indian Ocean, and Western, Central and Southeastern Pacific.

A tropical to temperate, offshore shark trawled in the area near the bottom at depths between 16 and 440 m, but elsewhere to, at least, 750 m. Ovoviviparous, number of fetuses 4 to 9, size at birth 22 to 26 cm. Feeds on bony fishes, cephalopods and crustaceans.

PRESENT FISHING GROUNDS :

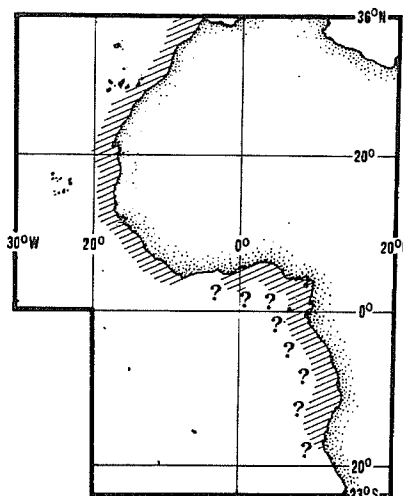
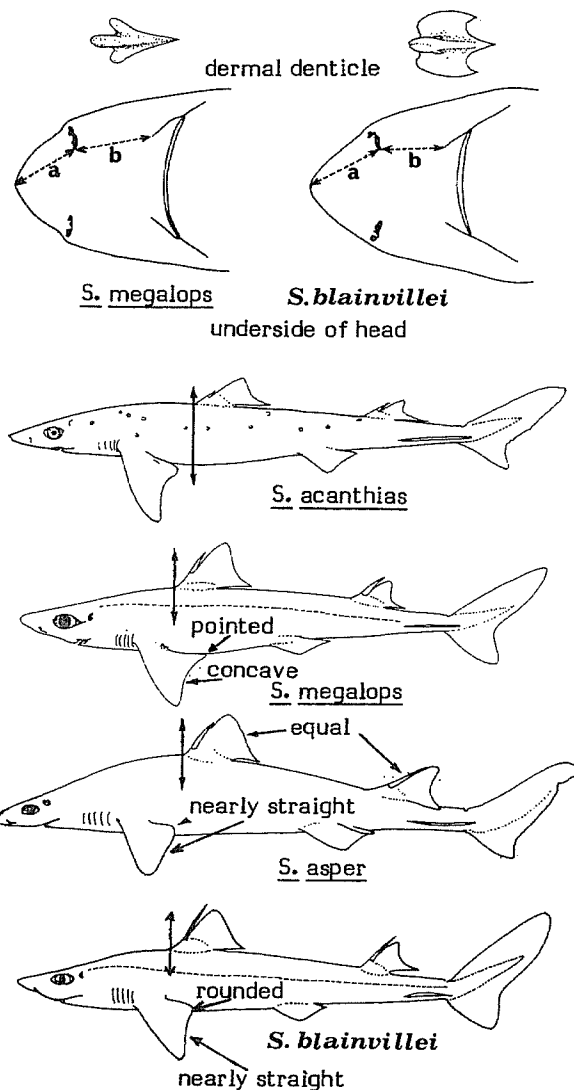
Offshore in the area.

CATCHES, FISHING GEAR AND FORMS OF UTILIZATION :

Separate statistics are not reported for this species.

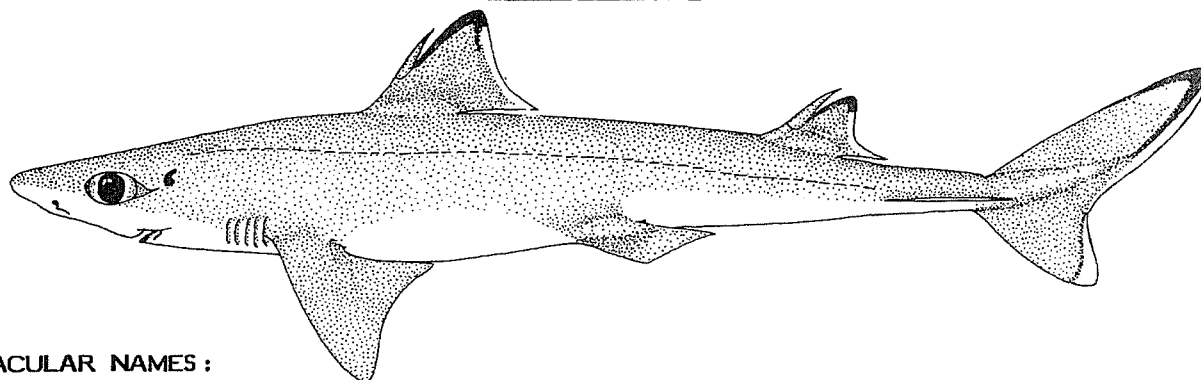
Caught in bottom trawls and with gillnets and line gear.

Utilized fresh, dried salted, and smoked.



FAO SPECIES IDENTIFICATION SHEETS

FAMILY : SQUALIDAE

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)Squalus megalops (Macleay, 1881)OTHER SCIENTIFIC NAMES STILL IN USE : Squalus acutipinnis Regan, 1908

VERNACULAR NAMES :

FAO : En - Bigeye spurdog
 Fr - Aiguillat à gros yeux
 Sp - Galludo oñón

NATIONAL :

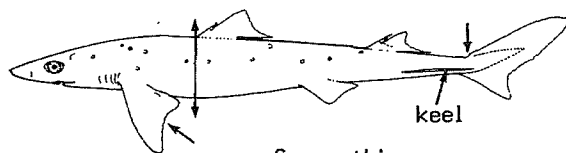
DISTINCTIVE CHARACTERS :

Body moderately elongated and fusiform; denticles of back with slender, lanceolate crowns and a single cusp in adults. Snout pointed and slightly longer than mouth width, the distance from its tip to inner edge of nostril about equal to that from latter point to anterior end of upper labial groove; nostrils with elongated anterior flaps having short accessory lobes on their medial edges; teeth alike in both jaws, small, compressed, and with a single, strongly oblique cusp, a notched outer edge, and no cusplets or serrations. First dorsal fin larger and higher than second, its origin over inner margins of pectoral fins, close to pectoral fin insertions; a strong, moderately long ungrooved spine on both dorsal fins; first dorsal spine rather long, over inner margins of pectoral fins, its tip falling just below the fin apex; second dorsal spine longer and reaching above fin apex; pectoral fins rather broad, their inner corners usually acutely pointed and their posterior margins deeply concave; caudal fin asymmetrical, without a subterminal notch but with a strong ventral lobe. Caudal peduncle with a low lateral keel on each side and an upper precaudal pit.

Colour: dark brown or grey above, cream-white below; no white spots on sides.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA :

Squalus acanthias: denticles on back tricuspidate in adults, anterior nasal flaps without accessory lobes; origin of first dorsal fin over or posterior and its spine always posterior to inner corners of pectorals; fin spines shorter; pectoral fins with narrowly rounded inner corners; usually white spots on sides.



S. acanthias S. megalops

left nostril

Squalus blainvillei: denticles of sides broad and 3-cusped; distance from snout tip to inner edge of nostril greater than that from nostril to anterior end of upper labial groove; pectoral fins with narrowly rounded inner corners and shallowly concave to nearly straight posterior margins.

Other species of Squalidae: fin spines grooved or absent; usually caudal fin with a subterminal notch and without precaudal pits.

SIZE :

Maximum: about 71 cm, most adults between 40 and 70 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR :

In the area found off Guinea, and from Gabon to Namibia. Elsewhere in the South Western Indian Ocean and Western Pacific.

A tropical to temperate, offshore, shark living in groups of considerable numbers at moderate depths (in the area between 16 and 250 m; elsewhere to at least 450 m). Ovoviviparous, number of fetuses in a litter 2 to 4, size at birth between 18 and 24 cm.

Feeds primarily on bony fishes, also on cephalopods, crustaceans, and other elasmobranchs.

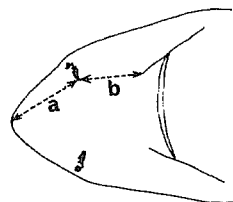
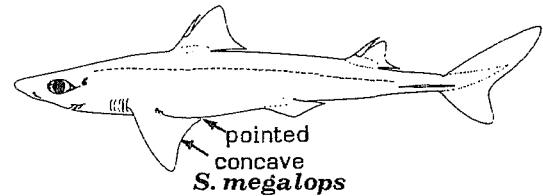
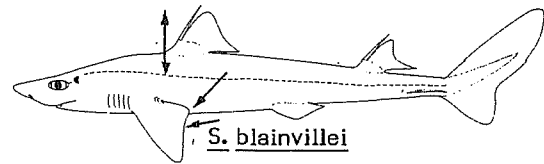
PRESENT FISHING GROUNDS :

Probably offshore.

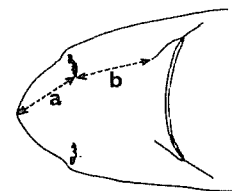
CATCHES, FISHING GEAR AND FORMS OF UTILIZATION :

Information not recorded for this species, probably because of its being confused with S. blainvillei in catch reports. Probably taken in bottom trawls.

Utilized fresh, dried salted, and smoked.



S. blainvillei



S. megalops

underside of head



S. blainvillei

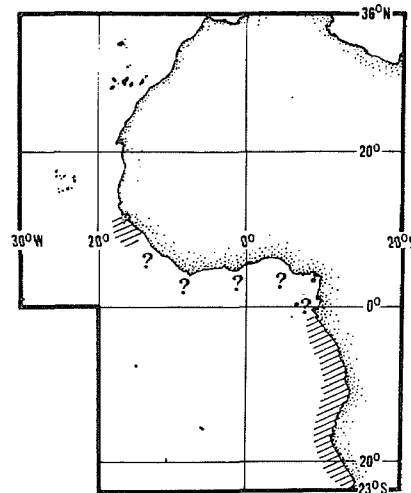


S. acanthias



S. megalops

dermal denticle



FAO SPECIES IDENTIFICATION SHEETS

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)

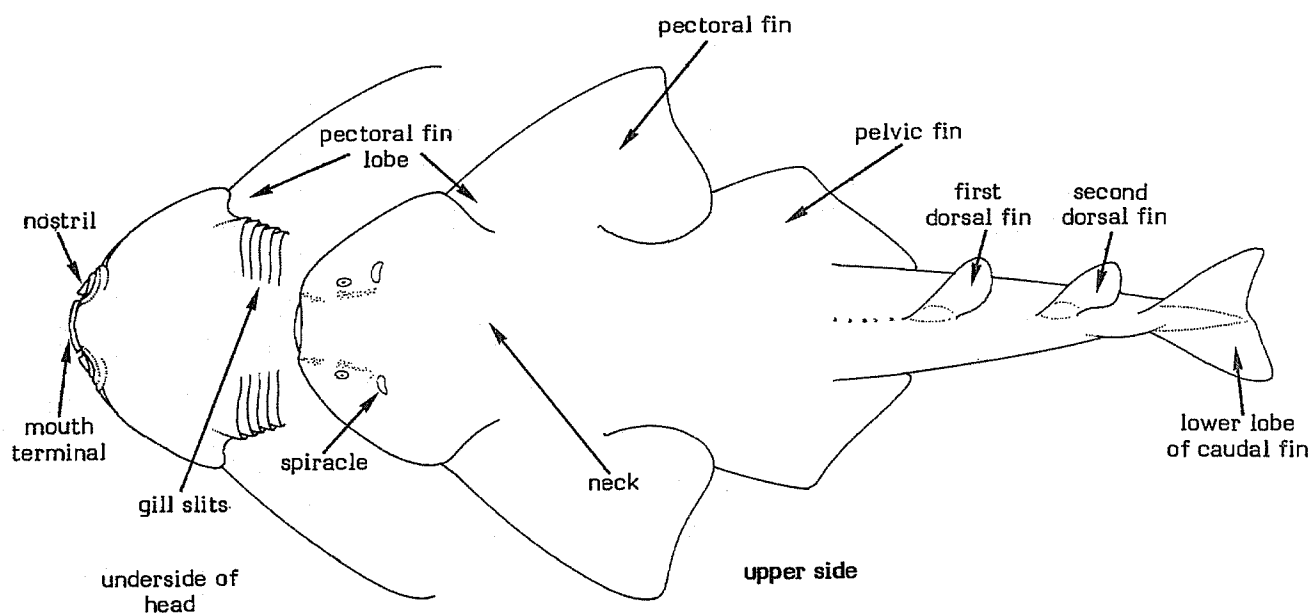
SQUATINIDAE

Angel sharks or sand devils

Moderately large, flattened, raylike sharks. Head transversely oval or round, with a distinct neck at the pectoral fin bases; 5 pairs of moderately long gill slits situated ventrolaterally and not visible dorsally; no gill rakers; nostrils at tip of snout, with anterior flaps shaped as elaborate barbels; eyes on dorsal surface of head, without nictitating eyelids; mouth terminal, short and angular, extending under front of eyes when jaws are not protruded; teeth small, similar in both jaws, with a single, strong, needle-sharp cusp and no cusplets. Pectoral fins greatly enlarged, with a broad triangular lobe extending forward from their bases on either side of gill slits (but not fused to sides of head as in rays); pelvic fins enlarged and wing-like; 2 equally small, spineless dorsal fins located far rearward on tail, the first originating behind the pelvic fin bases; anal fin absent; caudal fin very short, nearly symmetrical but not lunate, its lower lobe slightly longer than the upper. Caudal peduncle moderately depressed, with a short, low, longitudinal keel on each side, but without precaudal pits. Intestine with an auger- or corkscrew-like spiral valve.

Colour: grey or brownish above, white below, with irregular darker markings or light ocelli.

Angel sharks are widely distributed and often abundant in cool temperate to tropical regions, ranging in depth from shallow inshore waters down to the upper continental slope. They are bottom-dwelling, often buried in sand or mud, and feed on small fishes. Ordinarily harmless, but aggressive when provoked and capable of causing serious cuts with their small but sharp teeth and strong jaws. Angel sharks are commonly caught in trawls but their use as food is rather limited.



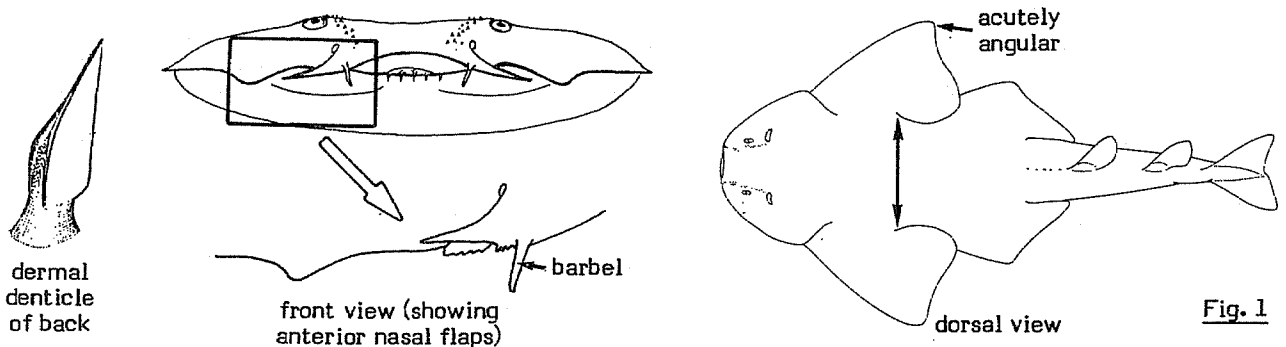
SIMILAR FAMILIES OCCURRING IN THE AREA :

The combination of characters underlined above readily distinguishes the angelsharks from all other shark families in the area.

Rays (Batoidea): pectoral fins fused to head over ventral gill slits, no neck at pectoral fin bases, usually a ventral mouth, and lower lobe of caudal fin (when present) much shorter than the upper.

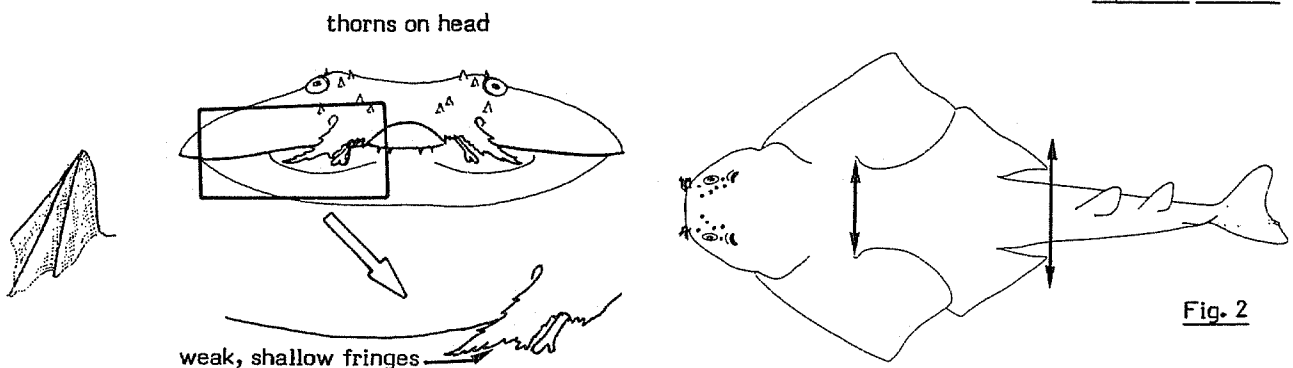
KEY TO SPECIES OCCURRING IN THE AREA :

- 1 a. Head broader and less oblong; trunk very broad, width at rear end of pectoral fin bases about 3.6 to 4.0 times in total length; pectoral fins shorter, higher, and apically more acutely angular; no thorns (or greatly enlarged denticles) on head; eyes smaller, their length 3.5 to 5.5 times in the space between them; denticles of back with very narrow, sharp-cusped crowns; anterior nasal flaps on front of head relatively small, weakly fringed, and widely separated; section of upper lip between nasal flaps expanded as a low, broad arc; barbel on each anterior nasal flap simple (Fig. 1) Squatina squatina

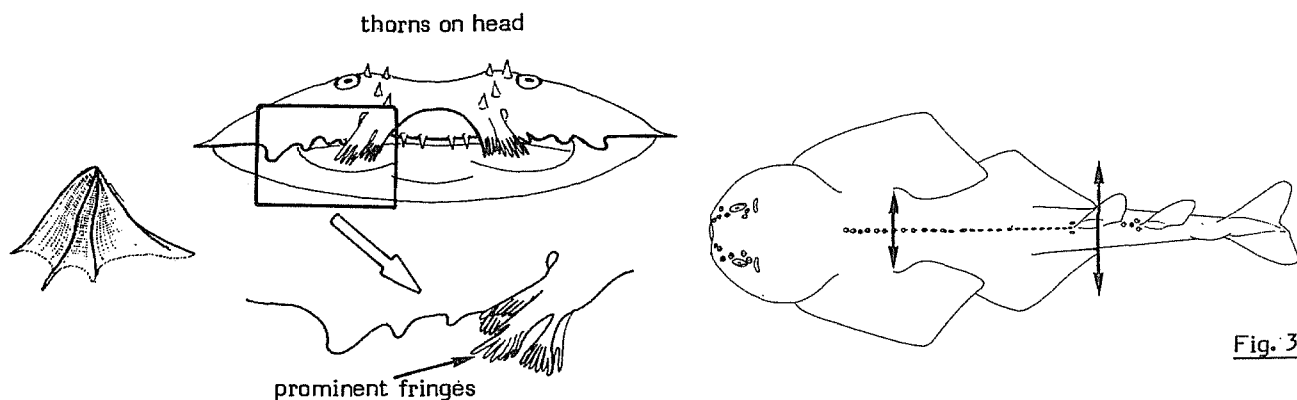


- 1 b. Head narrower and more oblong; trunk narrower, width at rear ends of pectoral fin bases about 4.9 to 6.0 times in total length; pectoral fins longer, lower, and apically less angular; prominent, enlarged thorns present on head; eyes larger, their length 2.8 to 3.4 times in the space between them; denticles of back with very broad, blunt-cusped crowns; anterior nasal flaps on front of head relatively large, weakly to strongly fringed, and narrowly separated; section of upper lip between nasal flaps usually expanded as a high and narrow arc; barbel on each anterior nasal flap complex, with weak to strong fringes (Figs. 2,3)

- 2 a. Thornlike denticles on midline of back either small and confined to tail behind the pelvic bases and in front of the first dorsal fin, or entirely absent; origin of first dorsal fin usually behind rear tips of pelvic fins but sometimes opposite them; denticles of back with posteriorly hooked, wedge-shaped crowns; dermal folds on sides of head without triangular lobes; anterior nasal flaps and anterior nasal barbels with weak, shallow fringes; white spots on back very large and prominent (Fig. 2) Squatina oculata



- 2 b. Thornlike denticles on midline of back very large, extending anterior to base of head and also present between the dorsal fins and behind the second dorsal; origin of first dorsal fin about opposite or slightly anterior to rear tips of pelvic fins; denticles of back with erect, unhooked, pyramidal crowns; dermal folds on sides of head with prominent triangular lobes; anterior nasal flaps and anterior nasal barbels with strong, deep, very prominent fringes; white spots on back small, less prominent or obscure (Fig. 3) Squatina aculeata



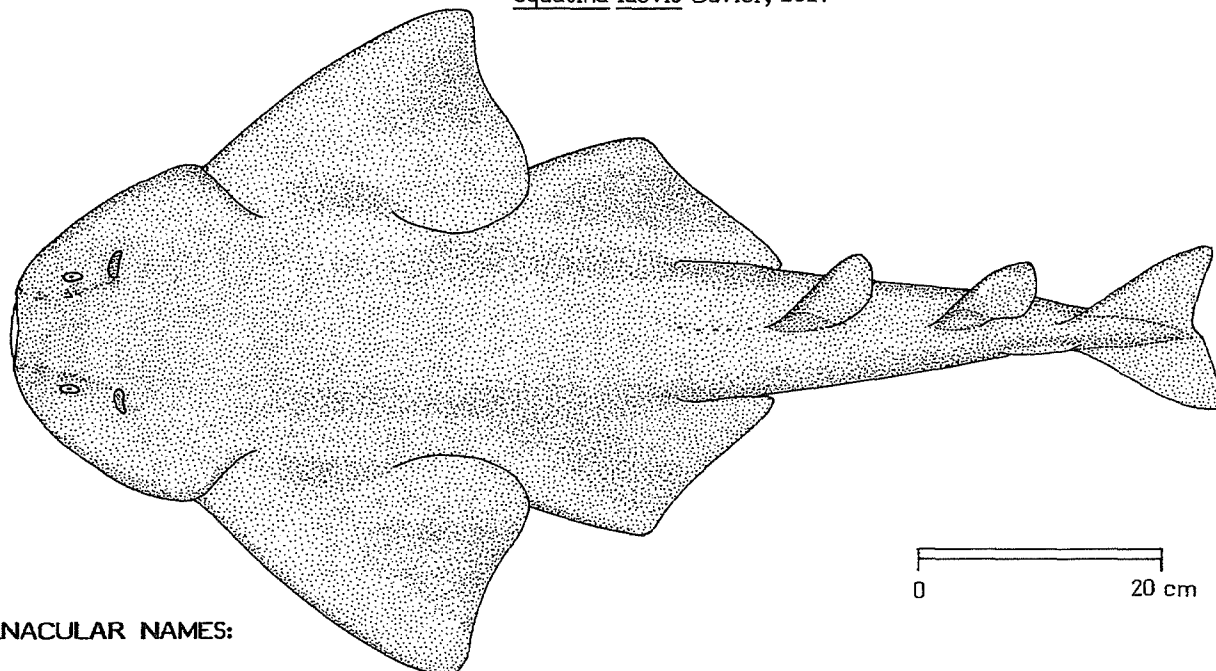
LIST OF SPECIES OCCURRING IN THE AREA :

Code numbers are given for those species for which Identification Sheets are included

<u>Squatina aculeata</u> Cuvier, 1829	SQUAT Squat 2
<u>Squatina oculata</u> Bonaparte, 1840	SQUAT Squat 3
<u>Squatina squatina</u> (Linnaeus, 1758)	SQUAT Squat 1

FAO SPECIES IDENTIFICATION SHEETS

FAMILY : SQUATINIDAE

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)*Squatina squatina* (Linnaeus, 1758)OTHER SCIENTIFIC NAMES STILL IN USE : *Squatina vulgaris* Risso, 1810
Squatina angelus Blainville, 1816
Squatina laevis Cuvier, 1817

VERNACULAR NAMES:

FAO : En - Angelshark
Fr - Ange de mer commun
Sp - Angelote

NATIONAL :

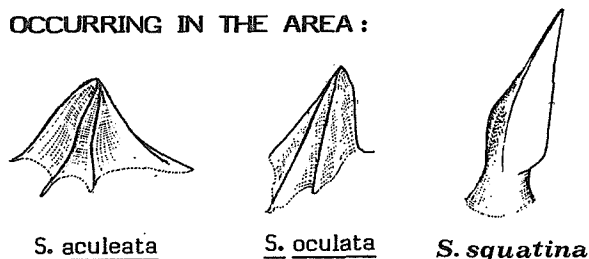
DISTINCTIVE CHARACTERS :

A moderately large, flattened, raylike shark. Body greatly depressed and very broad, the width across rear ends of pectoral fin bases about 3.6 to 4.0 times in total length. Dermal denticles of back with very narrow, sharp-cusped crowns; clusters of moderately enlarged denticles present on snout and between eyes, but no large thorns on head; enlarged thornlike denticles on midline of back either absent or, when present, small and extending from pelvic fin bases to first dorsal fin. Head greatly depressed, transversely oval, very broad and short, with a distinct "neck" at pectoral fin origins; eyes relatively small, their diameter 3.5 to 5.5 times in space between them and 0.6 to 1.0 times in spiracle width; 5 moderately long gill slits, ventrolaterally situated and concealed by the anterior pectoral fin lobes; spiracles very large; nostrils at tip of snout; anterior nasal flaps broadly separated, smooth or weakly fringed, each with a simple barbel; posterior nasal flaps small, smooth or weakly fringed; section of upper lip between anterior nasal flaps formed as a low and broad arc; dermal folds on sides of head with a single triangular lobe; mouth terminal, short, extending below eyes; teeth in both jaws with a strong, short cusp and no cusplets; the enlarged pectoral fins relatively short, high, and pointed apically; pelvic fins broad; first dorsal fin originating opposite or somewhat posterior to free rear tips of pelvic fins; anal fin absent; caudal fin short, nearly symmetrical, its lower lobe longer than the upper; caudal peduncle with a pair of short keels and a weak upper precaudal pit.

Colour: light to dark brown or grey-brown above, white below, with obscure dark mottling or bands and sometimes relatively inconspicuous, irregular or symmetrical white spots on pectoral fins, back and tail.

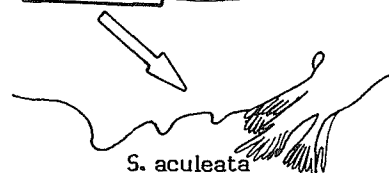
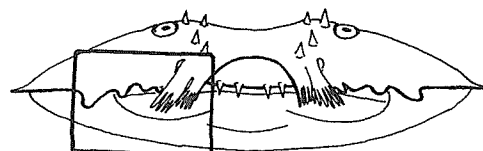
DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA :

Squatina aculeata and Squatina oculata: body narrower, width across rear ends of pectoral fin bases about 4.9 to 6.0 times in total length (3.6 to 4 times in S. squatina); prominent thorns present on head; eyes larger, their diameter 2.8 to 3.4 times in space between them and 1.0 to 1.7 times the spiracle width (3.5 to 5.5 and 0.6 to 1 times respectively, in S. squatina); denticles of back with very broad, blunt-cusped crowns; pectoral fins longer, lower, and apically less angular; anterior nasal flaps relatively large, weakly to strongly fringed and narrowly separated, the section of upper lip between them usually expanded as a high and narrow arc; anterior nasal barbel with weak to strong fringing.

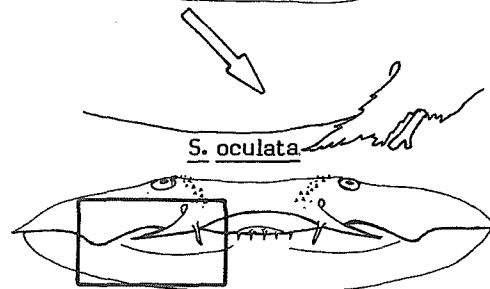
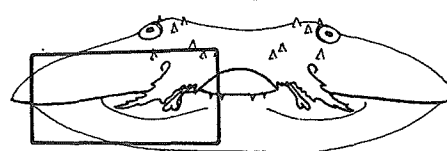


S. aculeata S. oculata S. squatina

dermal denticle of back



S. aculeata



S. oculata



S. squatina

SIZE :

Maximum: at least 180 cm (said to attain 244 cm), but common to 100 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR :

In the area, found off Morocco and the Canary Islands; nominally also off Senegal and Ghana (but these records probably are corresponding to S. aculeata). Northward it extends to Norway, Sweden and the Shetland Islands and into the Mediterranean.

A temperate-water, bottom-dwelling shark of the continental shelves, occurring from close inshore waters down to 150 m depth. Often buries itself in mud or sand, but can swim strongly well off the bottom; more active at night; seasonally migrates northward in the summer. Ovoviviparous, number of fetuses in a litter 9 to 20, length of young at birth about 24 cm.

Feeds especially on flatfishes but also other demersal bony fishes and skates, crustaceans and molluscs.

PRESENT FISHING GROUNDS :

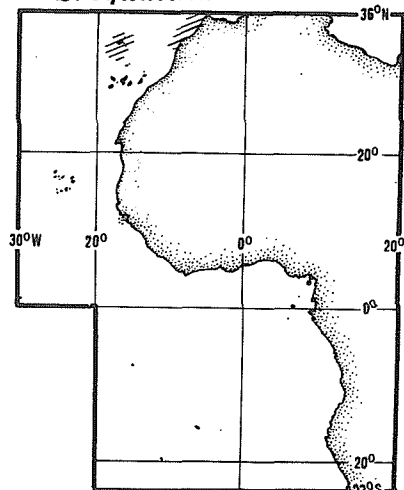
Inshore and offshore, probably only in the extreme northern part of the area (especially off the Canary Islands).

CATCHES, FISHING GEAR AND FORMS OF UTILIZATION :

Separate statistics are not reported for this species.

Caught in bottom trawls and on line gear.

Utilized fresh, dried salted, and possibly for oil and fishmeal.

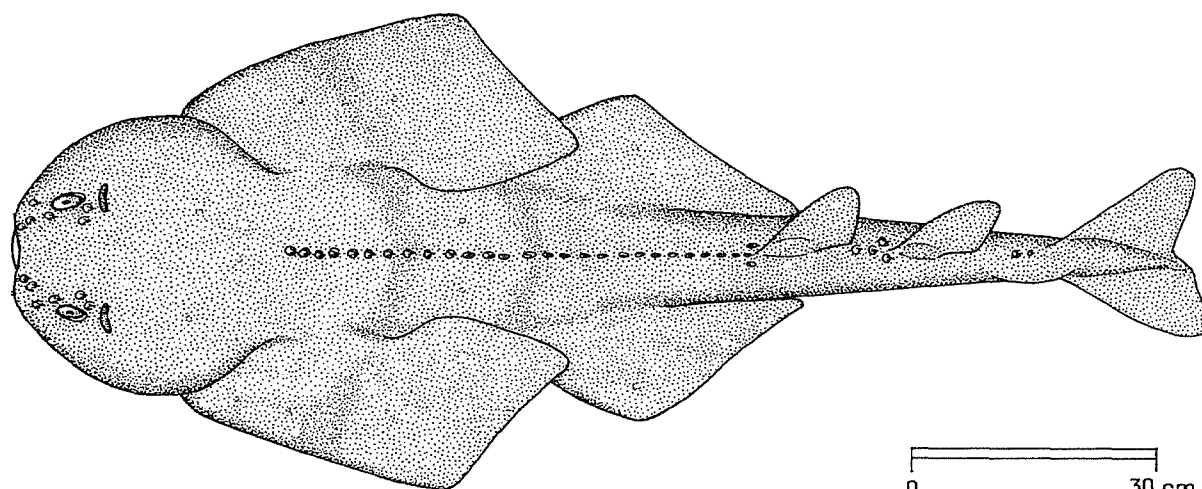


FAO SPECIES IDENTIFICATION SHEETS

FAMILY : SQUATINIDAE

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)*Squatina aculeata* Cuvier, 1829

OTHER SCIENTIFIC NAMES STILL IN USE : None



VERNACULAR NAMES:

FAO : En - Sawback angelshark
Fr - Ange de mer épineux
Sp - Angelote espinudo

NATIONAL :

DISTINCTIVE CHARACTERS :

A moderately large, flattened, raylike shark. Body greatly depressed and broad, the width across rear ends of pectoral fin bases about 5.4 to 6.0 times in total length. Dermal denticles of back with very broad, erect, blunt-tipped pyramidal crowns; very large thorns present on snout and between eyes and spiracles; very large thorns on midline of back and tail, from base of head to behind second dorsal fin. Head greatly depressed, nearly circular, with a distinct "neck" at pectoral fin origins; eyes relatively large, their diameter about 3.1 times in space between them and about 1.3 times in spiracle width; 5 moderately long gill slits, ventrolaterally situated and concealed by the anterior pectoral fin lobes; spiracles very large; nostrils at tip of snout; anterior nasal flaps narrowly separated and deeply fringed, each with a strongly branched barbel; posterior nasal flaps large, strongly fringed; section of upper lip between anterior nasal flaps formed as a high and narrow arc; dermal folds on sides of head with 3 triangular lobes on each side; mouth terminal, short, extending below eyes; teeth in both jaws with a strong, short cusp and no cusplets; the enlarged pectoral fins relatively long, low and moderately pointed apically; pelvic fins broad; position of first dorsal fin origin ranging from slightly anterior to slightly posterior to free rear tips of pelvic fins; anal fin absent; caudal fin short, nearly symmetrical, its lower lobe longer than the upper; caudal peduncle with a pair of short keels and a weak upper precaudal pit.

Colour: brown or grey brown above, white below, with obscure darker markings and small, relatively obscure, symmetrical white spots.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA :

Squatina squatina: body broader, width across rear ends of pectoral fin bases 3.6 to 4.0 times in total length (5.4 to 6 times in S. aculeata); dermal denticles of back narrow-crowned, with sharp, posteriorly hooked cusps; moderately enlarged clusters of denticles present on snout and between eyes and spiracles; thorns on midline of back either absent or small and confined to the space between pelvic fin bases and the first dorsal origin; head broader and more transversely oval; eyes smaller, their diameter 3.5 to 5.5 times in space between them and 0.6 to 1.0 times in spiracle width (3.1 and 1.3 times respectively in S. aculeata); anterior nasal flaps smooth or weakly fringed, anterior nasal barbels simple; posterior nasal flaps smooth or weakly fringed and small; upper lip between anterior nasal flaps exposed as a broad low arc; pectoral fins usually higher and more pointed apically.

Squatina oculata: thornlike denticles on midline of back either small and confined to tail behind the pelvic fin bases and to the area in front of first dorsal fin, or entirely absent; denticles of back with posteriorly hooked crowns; dermal folds on sides of head without triangular lobes; origin of first dorsal fin usually somewhat posterior, but sometimes opposite, to free rear tips of pelvic fins; anterior and posterior nasal flaps as well as anterior nasal barbels with weak, shallow fringes; white spots of back large and prominent.

SIZE :

Maximum: 188 cm; becoming adult at 124 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR :

In the area recorded from Morocco, Senegal, Guinea to Nigeria, and Gabon to Angola, but possibly more widespread; also extending into the western Mediterranean.

A warm-temperate to tropical species of the continental shelves and uppermost continental slopes, ranging in depth from 30 to 300 m.

PRESENT FISHING GROUNDS :

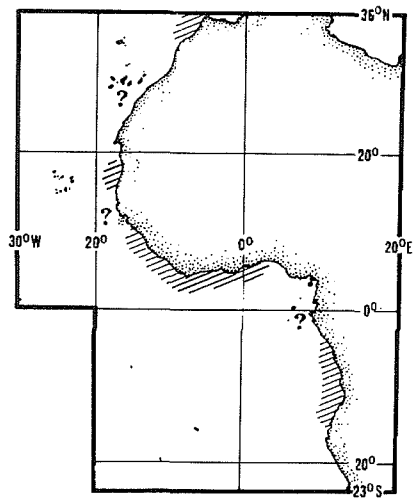
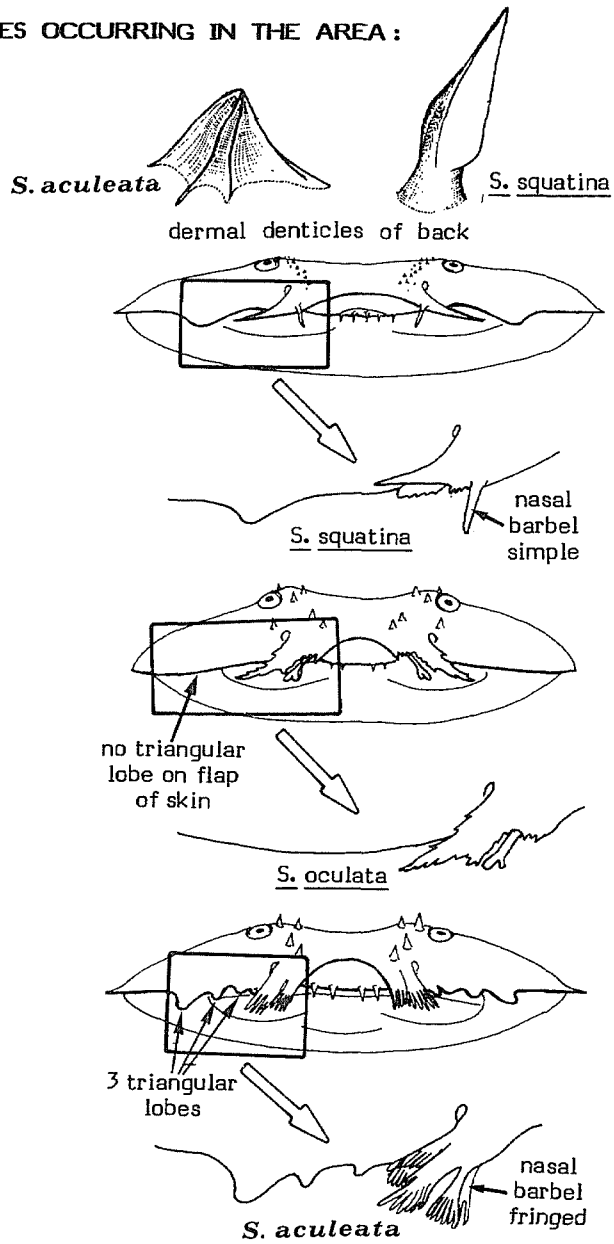
Inshore and offshore waters in the area.

CATCHES, FISHING GEAR AND FORMS OF UTILIZATION :

Separate statistics are not reported for this species.

Caught primarily in bottom trawls, but also with fixed bottom nets, on line gear, and even in pelagic trawls.

Utilized dried salted, fresh and for oil; hides are used for leather.



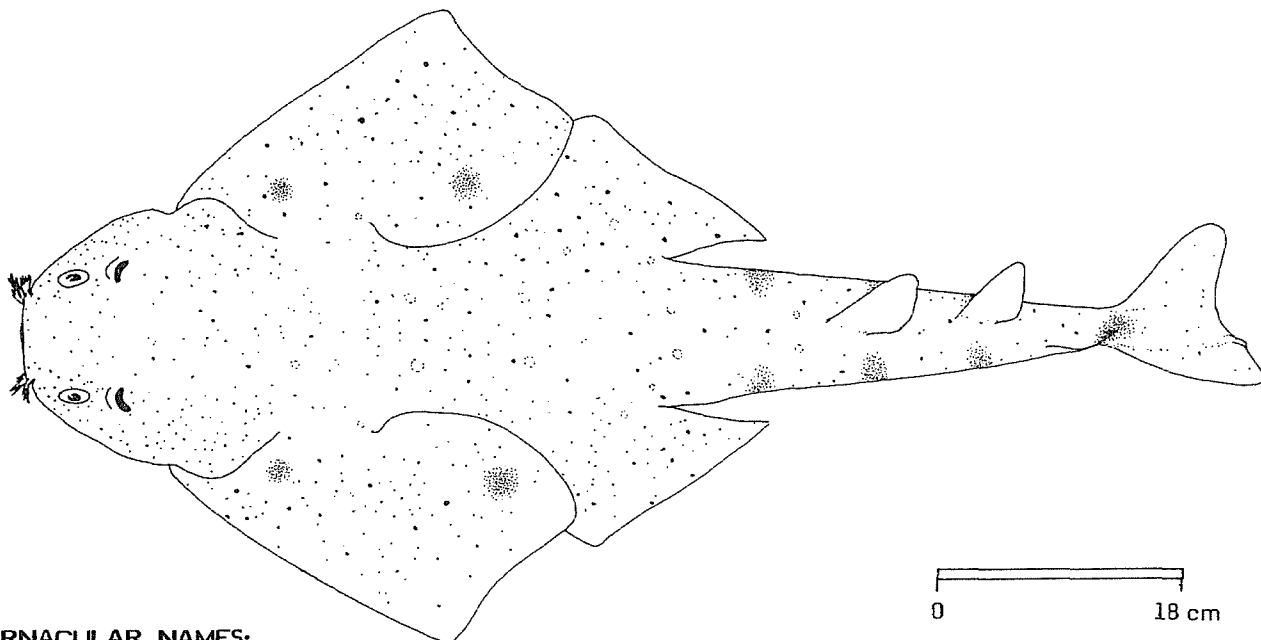
FAO SPECIES IDENTIFICATION SHEETS

FAMILY : SQUATINIDAE

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)

Squatina oculata Bonaparte, 1840

OTHER SCIENTIFIC NAMES STILL IN USE : None



VERNACULAR NAMES:

FAO : En - Smoothback angelshark
Fr - Ange de mer ocellé
Sp - Pez ángel

NATIONAL :

DISTINCTIVE CHARACTERS :

A moderately large, flattened, raylike shark. Body greatly depressed and broad, the width across rear ends of pectoral fin bases about 4.9 to 5.9 times in total length. Dermal denticles of back with broad, wedge-like crowns and blunt, posteriorly hooked cusps; large thorns present on snout and between eyes and spiracles; large thornlike denticles on midline of back either absent or, when present, small and extending from pelvic fin bases to first dorsal fin origin. Head greatly depressed, nearly circular, relatively elongated, with a distinct "neck" at pectoral fin origins; eyes relatively large, their diameter 2.8 to 3.4 times in space between them and 1.0 to 1.7 times the spiracle width; 5 moderately long gill slits, ventrolaterally situated and concealed by the anterior pectoral fin lobes; spiracles very large; nostrils at tip of snout; anterior nasal flaps narrowly separated, large and weakly fringed, each with a slightly branched barbel; posterior nasal flaps small, smooth or weakly fringed; section of upper lip between anterior nasal flaps formed as a high and narrow arc; dermal folds on sides of head without triangular lobes; mouth terminal, short, extending below eyes; teeth in both jaws with a strong, short cusp and no cusplets; the enlarged pectoral fins relatively long, low and moderately pointed apically; pelvic fins broad; position of first dorsal fin origin ranging from slightly behind to opposite to free rear tips of pelvic fins; anal fin absent; caudal fin short, nearly symmetrical, its lower lobe longer than the upper; caudal peduncle with a pair of short keels and a weak upper precaudal pit.

Colour: light brown above, white below, with darker bars on tail, dark spots on pectoral fins and body, and prominent, symmetrical, large white ocelli on pectoral fins, back and tail; edges of pectoral and pelvic fins dusky.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA :

Squatina aculeata: dermal denticles of back with erect, pyramidal crowns and unhooked cusps; greatly enlarged thornlike denticles on midline of body from base of head to behind second dorsal fin; anterior nasal flaps, and barbels, and posterior nasal flaps with strong, deep, very prominent fringes; dermal folds on sides of head with prominent triangular lobes; white spots on back smaller, less prominent or obscure.

Squatina squatina: body broader, width across rear ends of pectoral fin bases about 3.6 to 4.0 times in total length (4.9 to 5.9 times in *S. oculata*); dermal denticles of back with very narrow, sharp-cusped crowns; clusters of moderately enlarged denticles on snout and between eyes, but no large thorns on head; head broader and more transversely oval; eyes smaller, their diameter 3.5 to 5.5 times in space between them and 0.6 to 1.0 times in spiracle width; anterior nasal barbel simple; anterior and posterior nasal flaps smaller, the anteriors broadly separated, with lip section between them formed as a broad, low arc; dermal folds on sides of head with a single triangular lobe on each side; pectoral fins shorter, higher and more pointed apically; first dorsal origin usually about opposite free rear tips of pelvic fins; white spots on dorsal surface, when present, small and obscure, ground colour of back usually darker and markings more obscure.

SIZE :

Maximum: possibly to 160 cm; most adults between 30 and 95 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR :

In the area, from Morocco to Angola; also in the Mediterranean.

A warm-temperate to tropical species of the continental shelves and upper continental slopes, ranging in depths from 20 to 500 m or more, but more common in deeper, cooler waters below 100 m. Ovoviviparous.

Feeds on bony fishes.

PRESENT FISHING GROUNDS :

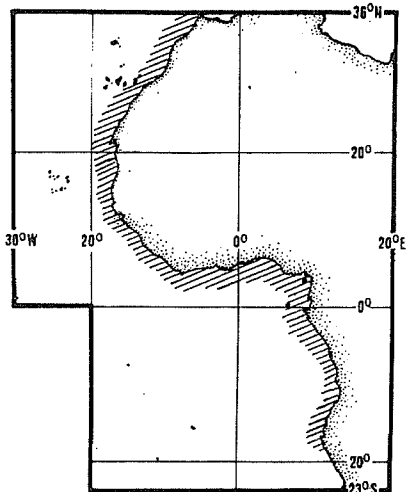
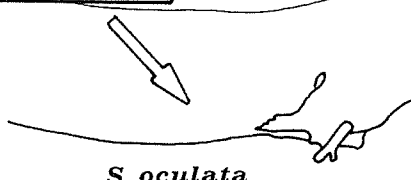
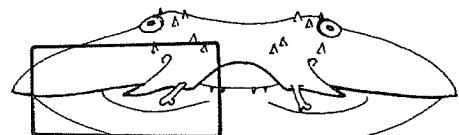
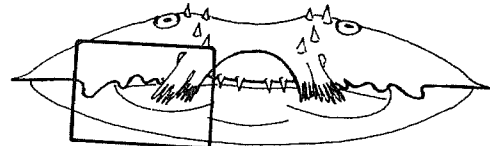
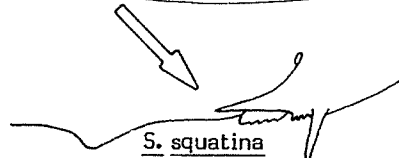
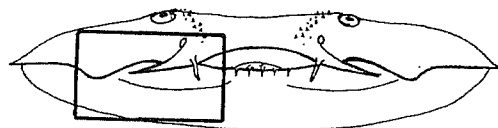
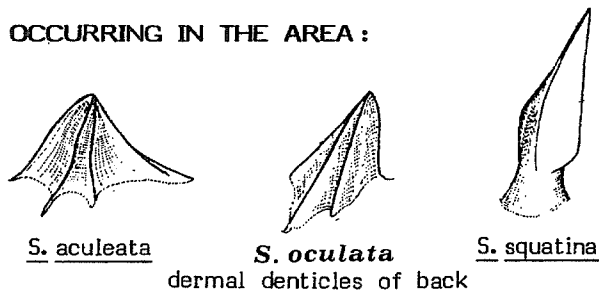
Both inshore and offshore waters in the area.

CATCHES, FISHING GEAR AND FORMS OF UTILIZATION :

Separate statistics are not reported for this species.

Caught primarily in bottom trawls, but also in fixed bottom nets, on line gear, and even in pelagic trawls.

Utilized fresh, dried salted, and processed for oil and fishmeal.



FAO SPECIES IDENTIFICATION SHEETS

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)

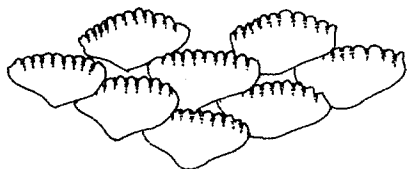
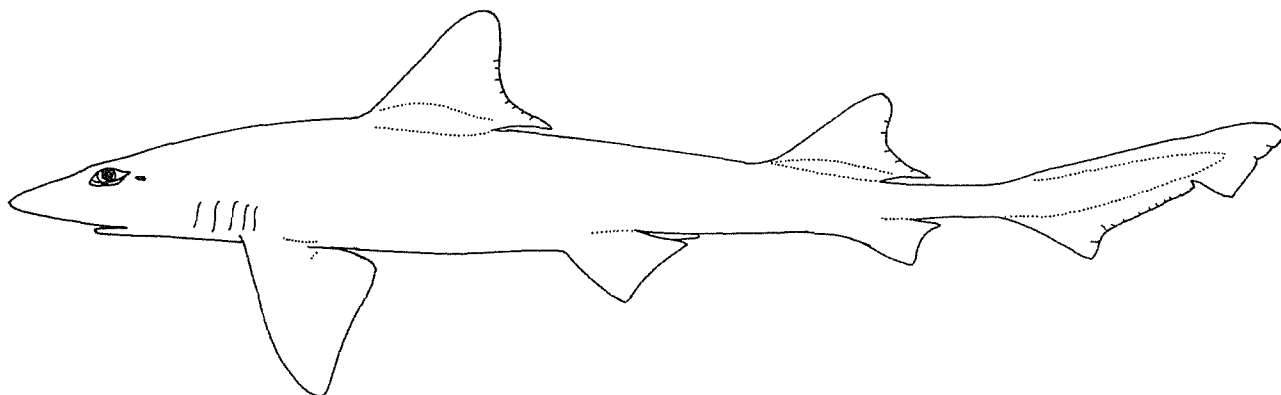
TRIAKIDAE*

Houndsharks, smoothhounds, topes

Body elongate and slender to moderately stout. Head with 5 gill slits, the last pair posterior to pectoral fin origins; small spiracles present; gill arches without rakers; eyes horizontally oval, situated on or above sides of head, with a nictitating eyelid partly or entirely within the eye opening; anterior nasal flaps of nostrils either broadly to narrowly expanded or greatly reduced, but not in the form of slender barbels; teeth either numerous, small, cusplless (or weak-cusped) arranged in a pavement (*Mustelus*) or larger, bladelike, with a strong cusp and small cusplets but no serrations (*Galeorhinus*); mouth ending below or posterior to eyes; labial furrows moderately long. Two dorsal fins, the first much shorter than caudal fin its base entirely anterior to pelvic fins; second dorsal fin somewhat smaller than the first, originating ahead of anal fin; anal fin as large as or smaller than the second dorsal; caudal fin asymmetrical, its lower lobe varying from virtually absent to strong, its upper edge not rippled. Caudal peduncle not flattened dorso-ventrally or expanded laterally, without keels or precaudal pits. Intestine with a corkscrew or auger-like spiral valve, with 6 to 10 turns.

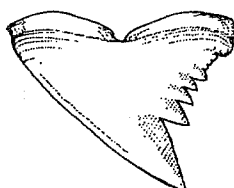
Colour: back usually greyish brown, belly white. Some species are capable of undergoing slow colour changes.

Houndsharks are widely distributed in tropical and warm temperate to cold seas, ranging from shallow to moderately deep waters (300 m or more). They feed either on bottom-dwelling organisms (crustaceans, molluscs), or on fishes. Smoothhounds (*Mustelus*) and topes (*Galeorhinus*) are important commercial species used especially for food. They are the only members of the family found in the area.

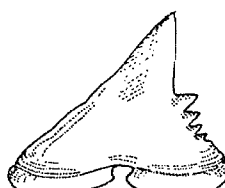


Mustelus

teeth



Galeorhinus



spiral valve of intestine

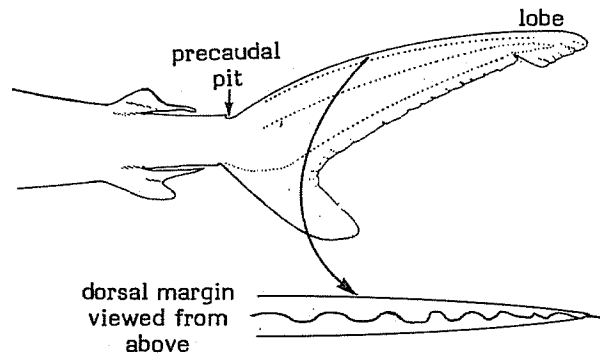
*Family diagnosis only applies to species present in the area

SIMILAR FAMILIES OCCURRING IN THE AREA :

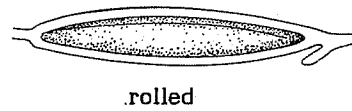
Carcharhinidae and Hemigaleidae: upper edge of caudal fin with a rippled or undulating margin; precaudal pits present; teeth more or less unlike in upper and lower jaws (for the species in the area). Furthermore, Carcharhinidae with an intestinal valve of scroll type.

Leptochariidae: anterior nasal flaps formed as slender barbels; teeth not bladelike, with long cusps and cusplets; upper labial furrows longer, nearly reaching front of mouth; intestinal valve with 14 to 16 turns.

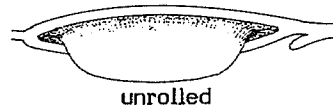
Other shark families: origin of first dorsal fin over or posterior to pelvic fin bases (Scyliorhinidae and Ginglymostomatidae); nostrils with oronasal grooves and nasal barbels, eyes behind mouth (Ginglymostomatidae); 5th gill slit in front of pectoral fin origin, eyes without nictitating folds, anterior teeth enlarged and separated from lateral teeth in upper jaw by a gap and usually small intermediate teeth (Odontaspidae, Mitsukurinidae and Pseudocarchariidae); caudal fin as long as rest of shark (Alopiidae); head with "hammer" like lateral projections (Sphyrnidae); caudal fin lunate and size of adults much larger (Lamnidae, Cetorhinidae, Rhinodontidae), a single dorsal fin and 6 or 7 gill slits (Hexanchidae and Chlamydoselachidae), or no anal fin (Squalidae, Echinorhinidae and Squatinidae).



Carcharhinidae



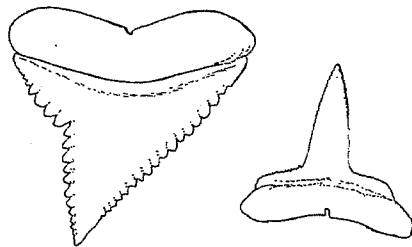
rolled



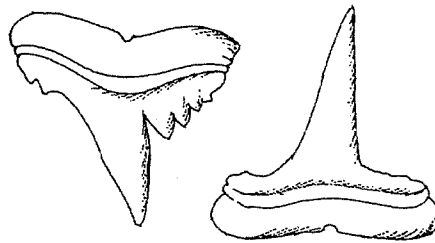
unrolled

intestinal valve of scroll type

Carcharhinidae

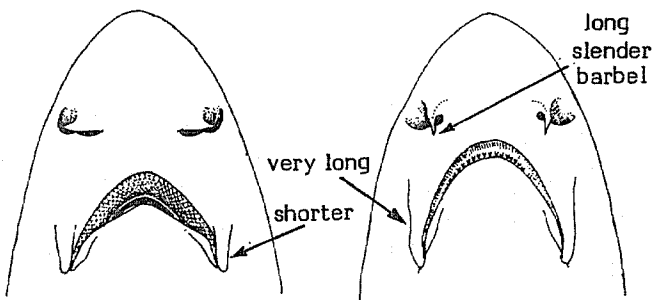


Carcharhinidae



Hemigaleidae

examples of unequal upper and lower teeth



Triakidae

Leptochariidae

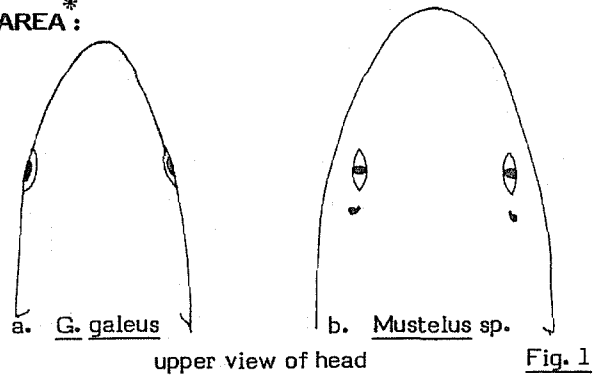


upper and lower lateral tooth

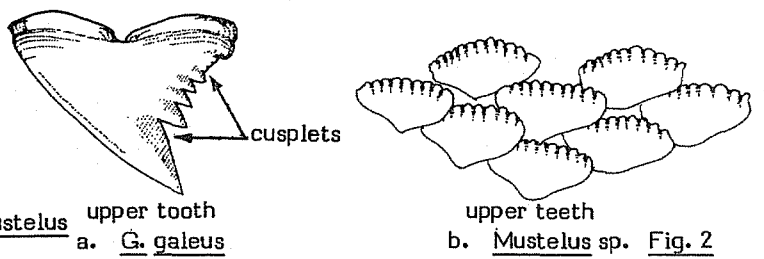
Leptochariidae

KEY TO GENERA AND SPECIES OCCURRING IN THE AREA*

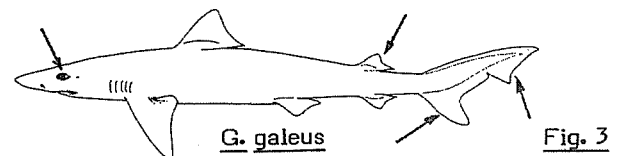
1 a. Eyes on sides of head (Fig. 1a); teeth compressed, bladelike, and not in a pavement, with a strong cusp and cusplets (Fig. 2a); second dorsal fin about as large as anal fin; caudal fin with a strong lower lobe and a long terminal lobe about half the length of caudal fin (Fig. 3)..... Galeorhinus galeus



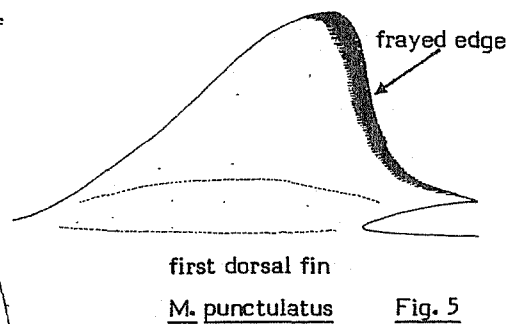
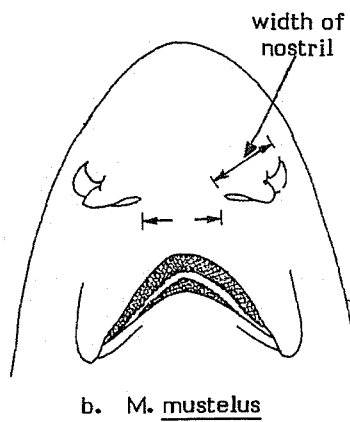
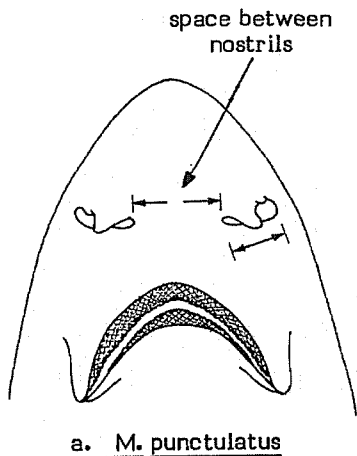
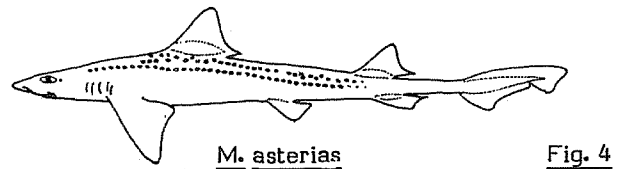
1 b. Eyes above sides of head (Fig. 1b); teeth not bladelike and forming a pavement, blunt-crowned, without cusplets and with low cusps usually present only in young (Fig. 2b); second dorsal fin much larger than anal fin; caudal fin with a weak or absent lower lobe and with a terminal lobe less than half the length of caudal fin (Figs. 4,7,9) Mustelus



2 a. Sides of body with numerous small white spots; origin of first dorsal fin more anterior, usually just behind pectoral fin insertions (Fig. 4) Mustelus asterias**



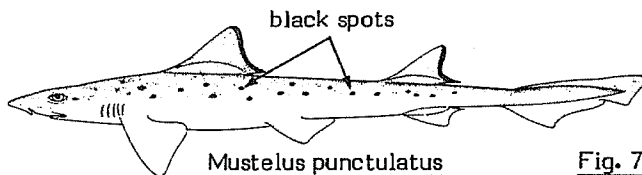
2 b. Sides of body without white spots; origin of first dorsal fin more posterior, usually at midlengths of pectoral inner margins or slightly posterior to their midlengths



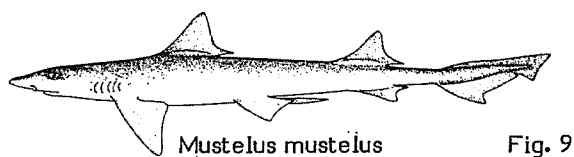
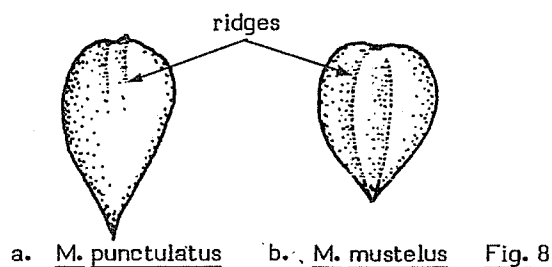
*Characters and nomenclature for Eastern Atlantic members of Mustelus taken from Dr. Phillip C. Heemstra's (1973) revision of the genus

**Very similar to Mustelus palumbes Smith, 1957, a South African species that reaches southern Namibia and might enter Area 34. It also has white spots, but differs in having a broader internarial space, over 1.5 times the width of nostril

3 a. Posterior edges of dorsal fins with a dark, frayed band of ceratotrichia (hornlike fin rays free of denticles and skin) (Fig. 5); space between nostrils about 1.1 to 1.2 times the nostril width (Fig. 6a); black spots usually present on back (Fig. 7); denticles of back with ridges extending only along anterior halves of crowns (Fig. 8a) .. Mustelus punctulatus



3 b. Posterior edges of dorsal fins without a frayed band of ceratotrichia; space between nostrils about 1.5 to 1.7 times the nostril width (Fig. 6b); usually no black spots on back (Fig. 9); denticles of back with ridges extending the entire lengths of crowns (Fig. 8b) Mustelus mustelus



LIST OF SPECIES OCCURRING IN THE AREA :

Code number are given for those species for which Identification Sheets are included

<u>Galeorhinus galeus</u> (Linnaeus, 1758)	TRIAK Galeo 1
<u>Mustelus asterias</u> Cloquet, 1821*	TRIAK Must 2
<u>Mustelus mustelus</u> (Linnaeus, 1758)**	TRIAK Must 1
<u>Mustelus punctulatus</u> Risso, 1826	TRIAK Must 3

Prepared by L.J.V. Compagno, Tiburón Center of Environmental Studies, San Francisco State University, Tiburon, California, U.S.A.

*The arrangement of the genus Mustelus follows Dr. Phillip C. Heemstra's (1973) revision of the genus in an unpublished Ph.D. thesis, which he is preparing for publication shortly

**Including Mustelus mediterraneus Quignard & Capape, 1972

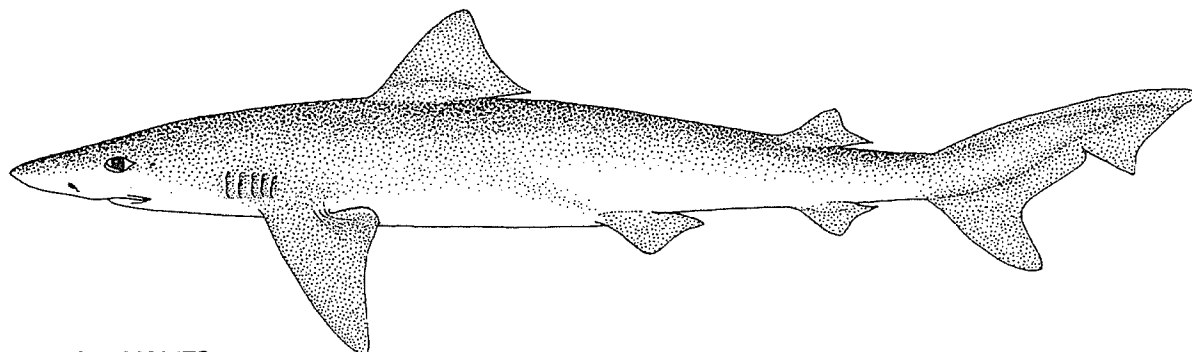
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: TRIAKIDAE

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)

Galeorhinus galeus (Linnaeus, 1758)

OTHER SCIENTIFIC NAMES STILL IN USE: None



VERNACULAR NAMES:

FAO: En - Tope shark
Fr - Requin-hâ
Sp - Cazón



NATIONAL:

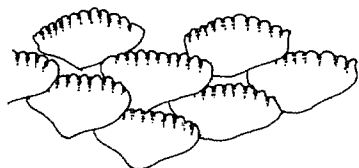
DISTINCTIVE CHARACTERS:

A small to medium-sized shark with a moderately elongate body. Head flattened above and below, snout relatively long and narrowly rounded; nostrils with very small nasal flaps, not formed as barbels; 5 gill slits, the last two above pectoral fin bases; eyes horizontally oval on sides of head, with well-differentiated nictitating lower eyelids entirely, or almost entirely, inside the eye openings; spiracles very small; mouth broadly rounded, with moderately long labial grooves that do not reach front of mouth; teeth small, alike in both jaws, compressed, bladelike; lateral teeth with short, oblique cusps and outer cusplets only; anterior teeth, in the area of symphyses, more symmetrical, smaller, with both inner and outer cusplets. First dorsal fin on back between pectoral and pelvic fin bases much larger than the second; second dorsal fin about as large as anal fin, its origin slightly anterior to that of the latter; caudal fin with a strong lower lobe and a very long terminal lobe about half as long as upper edge of fin. No interdorsal ridge; caudal peduncle without keels or precaudal pits. Denticles on sides broad, strongly cuspidate and ridged, with strong side cusps in adults.

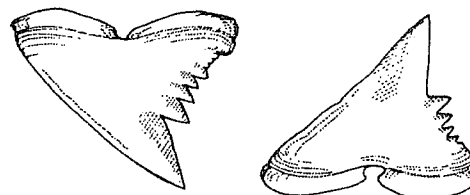
Colour: dark grey or grey-brown above, white below, pectoral fins with light rear margins.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Mustelus species: interdorsal ridge present; denticles on sides with weak or no side cusps; eyes above sides of head; anterior nasal flaps larger, broader; mouth more angular; teeth not bladelike, their crowns low and rounded, forming a pavement;



Mustelus sp.
upper teeth forming a pavement



Galeorhinus galeus
upper and lower tooth

second dorsal fin larger than anal fin and nearly as large as first dorsal; caudal fin with a weak or undeveloped lower lobe, and its terminal lobe less than half as long as upper edge of fin.

Species of Hemigaleidae and Carcharhinidae: caudal fin with a rippled upper edge and a terminal lobe much less than half the length of upper edge of fin; precaudal pits present on caudal peduncle.

Species of Leptochariidae: body slimmer and smaller; labial furrows longer, reaching front of mouth; nasal barbels present; teeth not bladelike; first dorsal fin nearly as large as second; caudal fin with a weak lower lobe and a much shorter terminal lobe; intestine with 14 to 16 turns in its spiral valve (4 to 6 in *Galeorhinus galeus*).

SIZE :

Maximum: to about 167 cm, most individuals smaller.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR :

A wide-ranging species found from Morocco to Senegal and off the Canary Islands; also northward extending into the Mediterranean and to Iceland and Norway; southward to off S. Namibia and South Africa. Elsewhere, found in the Western South Atlantic, the Western South Pacific and the Eastern Pacific. Furthermore, unconfirmed tropical records of this species from Ivory Coast, Nigeria, and Gabon to Zaire.

An active, strong-swimming, schooling shark found in continental temperate waters, near as well as well off the bottom, from inshore waters down to 300 m depth. Strongly migratory in higher latitudes. Oviparous, number of young in a litter 20 to 40, size at birth about 40 cm, gestation period about 10 months.

Feeds heavily on small schooling fishes, especially gadoids, other bottom fishes, crustaceans, and echinoderms.

PRESENT FISHING GROUNDS :

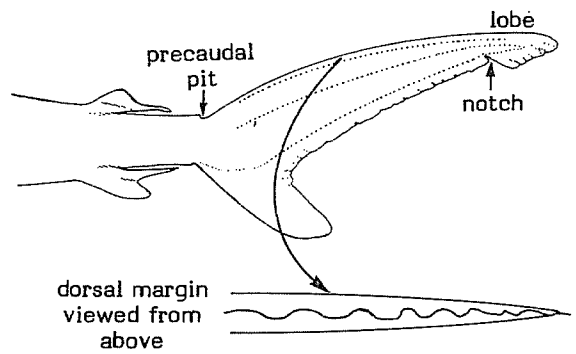
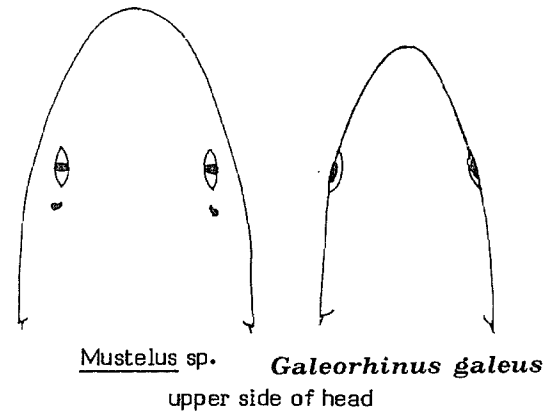
Inshore and offshore waters in the northern part of the area.

CATCHES, FISHING GEAR AND FORMS OF UTILIZATION :

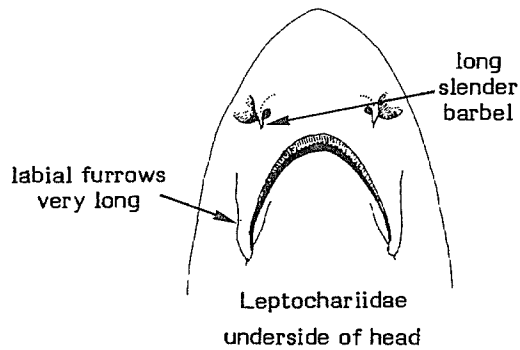
Separate statistics are not reported for this species.

Caught with bottom trawls, on longlines, and in pelagic trawls.

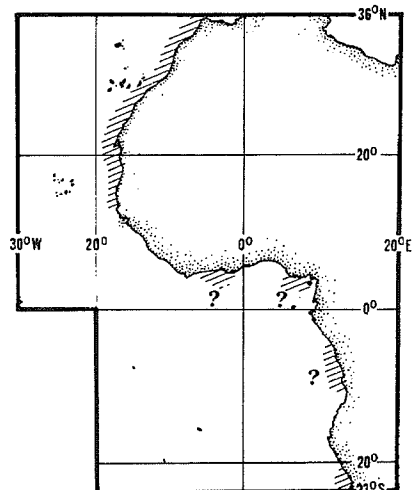
Utilized fresh, dried salted and processed for oil (Vitamin A) and fishmeal.



Carcharhinidae



Leptochariidae
underside of head



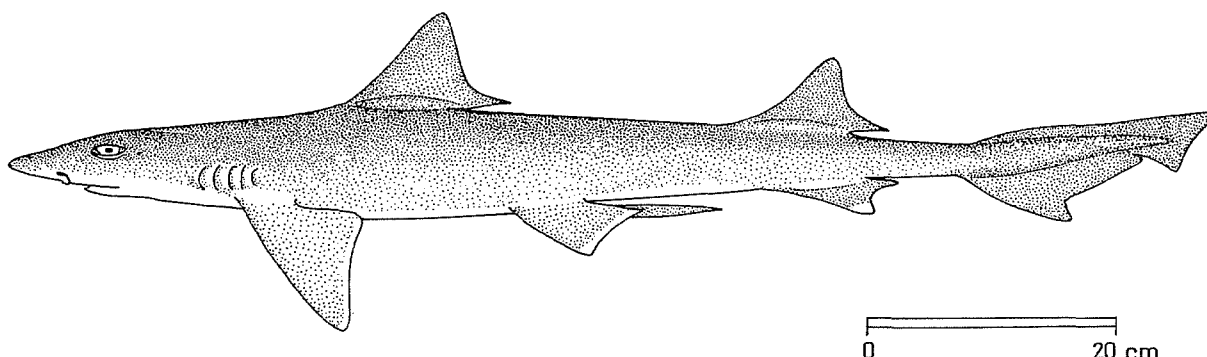
FAO SPECIES IDENTIFICATION SHEETS

FAMILY : TRIAKIDAE

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)

Mustelus mustelus (Linnaeus, 1758)

OTHER SCIENTIFIC NAMES STILL IN USE : Mustelus canis (not of Mitchill, 1817)



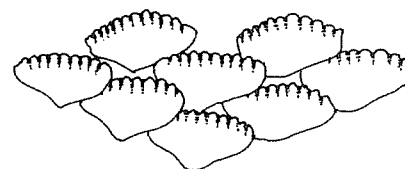
VERNACULAR NAMES:

FAO : En - Smoothhound
 Fr - Emissole lisse
 Sp - Musola

NATIONAL :

DISTINCTIVE CHARACTERS :

A small to medium-sized shark with a moderately elongated body. Head flattened above and below, snout relatively long and narrowly rounded; nostrils with long, broad nasal flaps, not formed as barbels, the distance between them about 1.5 to 1.7 times the nostril width; 5 gill slits, the last two over pectoral fin bases; eyes horizontally oval, above sides of head, with well-developed nictitating lower eyelids partly inside the eye openings; spiracles moderately large; mouth broadly angular, with moderately long labial furrows that do not reach front of mouth; teeth small, alike in both jaws, blunt-crowned, not bladelike, without cusplets and with low cusps only in young. First dorsal fin on back between pectoral and pelvic fin bases, its origin about over midlengths or rear halves of pectoral inner margins; second dorsal fin almost as large as first dorsal, and much larger than anal fin, its origin well in front of anal fin; rear edges of dorsal fins without frayed margins; caudal fin with lower lobe short in adults and hardly developed in young, the terminal lobe less than half the length of upper edge of fin. An interdorsal ridge present; caudal peduncle without keels or precaudal pits. Denticles on sides narrow-crowned, with strong medial cusps, lateral cusps weak or absent; ridges of denticles extending over entire length of crowns.



upper teeth

Colour: back and sides plain grey, underside cream-white; no small white spots on sides, usually no black spots.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA :

Mustelus asterias: denticles on sides broader-crowned, with ridges restricted to anterior halves of crowns; distance between nostrils 1.2 to 1.3 times the nostril width (1.5 to 1.7 times in M. mustelus); origin of first dorsal fin more anterior, ahead of midlengths of pectoral inner margins and usually just posterior to pectoral fin insertions; caudal fin with lower lobe hardly developed in adults; numerous small white spots on sides.

Mustelus punctulatus: denticles on sides with ridges restricted to anterior halves of crowns; distance between nostrils 1.1 to 1.2 times the nostril width; rear edges of dorsal fins with a frayed margin formed of bare ceratotrichia, without skin or denticles; usually small dark spots on sides.

Other superficially similar small sharks: teeth not blunt, molariform or arranged in pavements.

SIZE :

Maximum: 160 cm, most between 100 and 120 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR :

Widespread in the area, from Morocco, the Canary Islands and Madeira to Angola. Northward extending into the Mediterranean and along the Atlantic coast of Europe, to France and the British Isles, southward to South Africa.

A small bottom-living shark found in continental waters down to at least 350 m depth, but most common in waters from 5 to 50 m. Viviparous, with a yolk-sac placenta, number of young up to 15.

Primarily a crustacean feeder but probably also taking small fishes.

PRESENT FISHING GROUNDS :

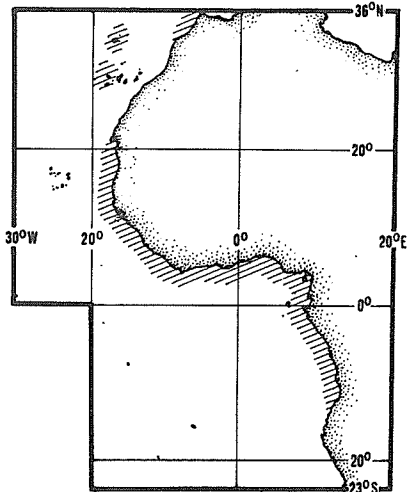
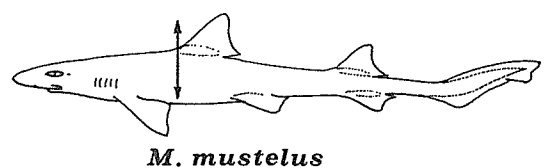
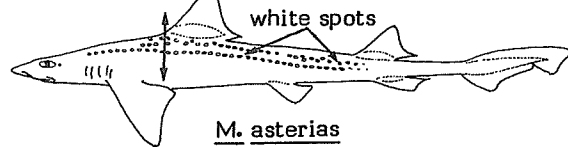
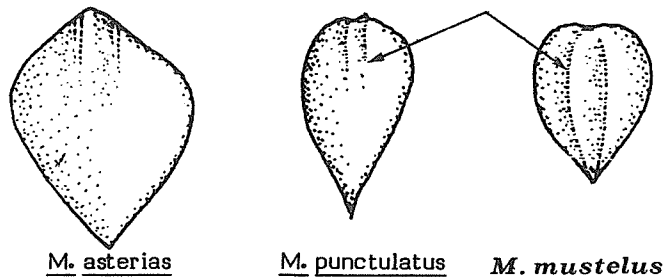
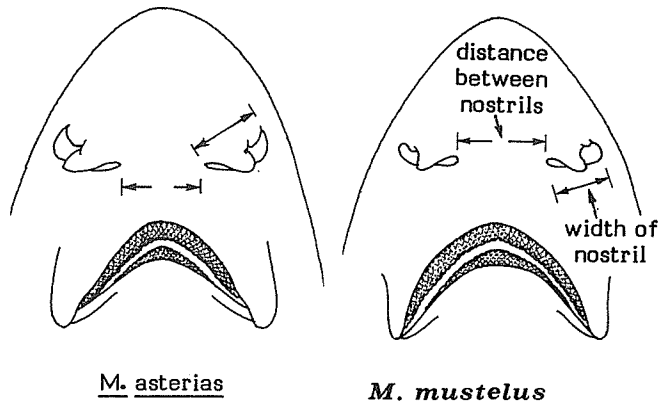
Primarily inshore, but also taken offshore. Probably one of the most important among the small sharks in the area (along with other Mustelus species), in inshore as well as offshore fisheries.

CATCHES, FISHING GEAR AND FORMS OF UTILIZATION :

Separate statistics are not reported for this species.

Caught in bottom trawls, fixed bottom nets, on line gear, and occasionally even in pelagic trawls.

Utilized fresh, dried salted, smoked, and processed for oil and fishmeal.



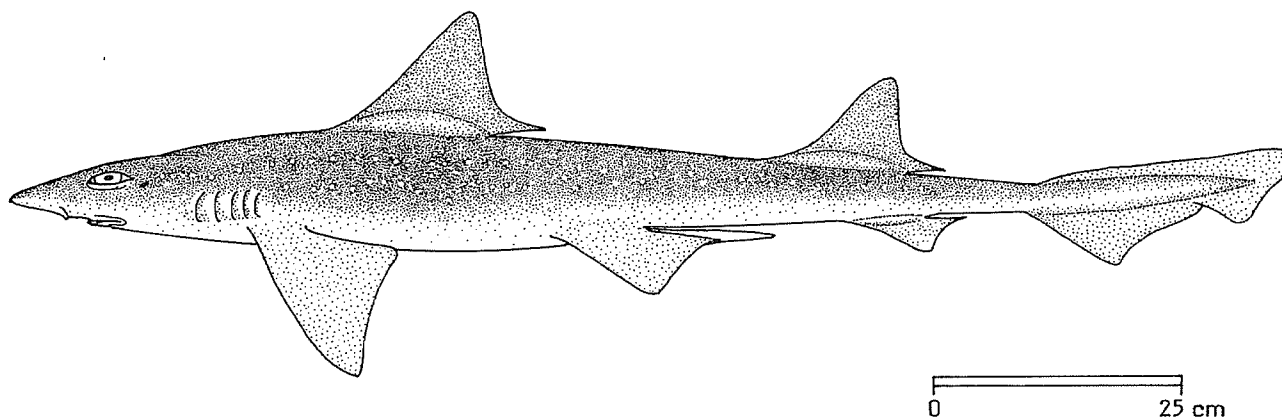
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: TRIAKIDAE

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)

Mustelus asterias Cloquet, 1821

OTHER SCIENTIFIC NAMES STILL IN USE: None



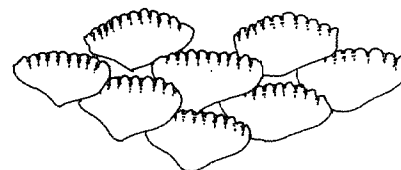
VERNACULAR NAMES:

FAO : En - Starry smoothhound
 Fr - Emissole tachetée
 Sp - Musola estrellada

NATIONAL :

DISTINCTIVE CHARACTERS :

A small to medium-sized shark with a moderately elongate body. Head flattened above and below, snout relatively long and narrowly rounded; nostrils with long, broad nasal flaps, not formed as barbels, the distance between them about 1.2 to 1.3 times the nostril width; 5 gill slits, the last two over pectoral fin base; eyes horizontally oval, above sides of head, with well-developed nictitating lower eyelids partly inside the eye openings; spiracles moderately large; mouth broadly angular, with moderately long labial furrows that do not reach front of mouth; teeth small, alike in both jaws, blunt-crowned, not bladelike, without cusplets and with low cusps only in young. First dorsal fin on back between pectoral and pelvic fin bases, its origin just posterior to pectoral insertions and usually well anterior to midlengths of pectoral inner margins; second dorsal fin almost as large as first dorsal, and much larger than anal fin, its origin well in front of anal fin; rear edge of dorsal fins without frayed margins; caudal fin with lower lobe hardly developed in adults, and absent in young, the terminal lobe less than half the length of upper edge of fin. An interdorsal ridge present; caudal peduncle without keels or precaudal pits. Denticles on sides relatively broad-crowned, with strong medial cusps, lateral cusps weak or absent; ridges on denticles restricted to anterior halves of crowns.



upper teeth

Colour: grey above and cream-white below, upper surface spotted with white dots.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA :

Mustelus mustelus: denticles on sides narrower-crowned, with ridges extending over the entire length of crowns; distance between nostrils about 1.5 to 1.7 times the nostril width (1.2 to 1.3 times in M. asterias); first dorsal origin more posterior, over to midlengths or rear halves of pectoral inner margins; caudal fin of adults with a short lower lobe; sides without white dots.

Mustelus punctulatus: rear edges of dorsal fins with a frayed margin formed of bare ceratotrichia, without skin or denticles; origin of first dorsal fin more posterior, over midlengths or rear halves of pectoral inner margins; caudal fin probably with a short lower lobe in adults; no white dots on sides, but usually with scattered black spots.

Other superficially similar small sharks: teeth not blunt, molariform, or arranged in pavements.

SIZE :

Maximum: 180 cm, but most individuals attain nearly 120 cm at adulthood.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR :

In the area, from Morocco to Mauritania, and the Canary Islands. Northward extending into the Mediterranean and to the British Isles and North Sea.

A small, common, inshore continental species with a more temperate-water distribution than M. mustelus, found near the bottom in the shallows and down to at least 70 m depth. Ovoviviparous, no yolk-sac placenta, number of fetuses between 7 to 15, size at birth about 30 cm, gestation period about 12 months.

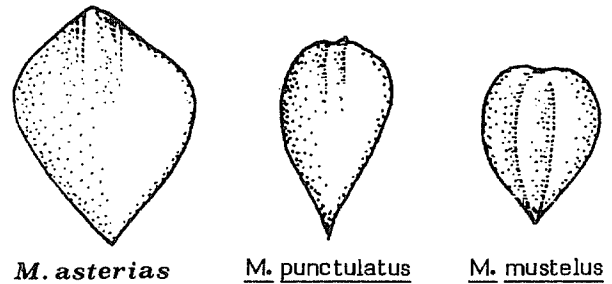
Feeds almost entirely on crustaceans, especially crabs and small lobsters.

PRESENT FISHING GROUNDS :

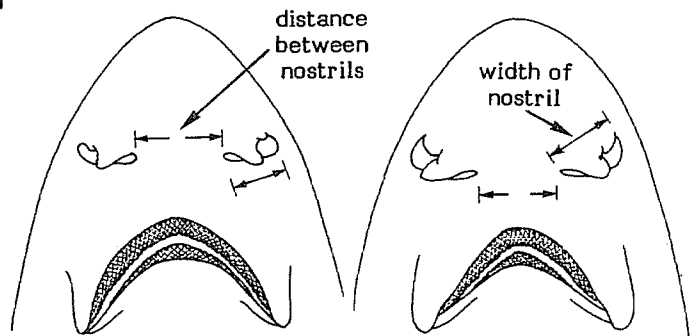
Probably inshore in the northern part of the area. No information available on abundance in fishery.

CATCHES, FISHING GEAR AND FORMS OF UTILIZATION :

Separate statistics are not reported for this species.

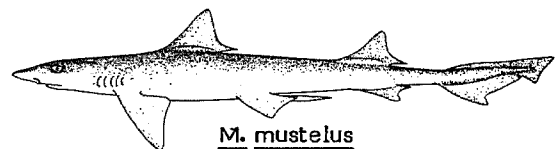


dermal denticles

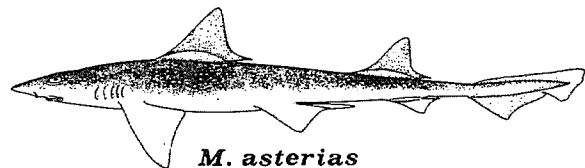


M. mustelus

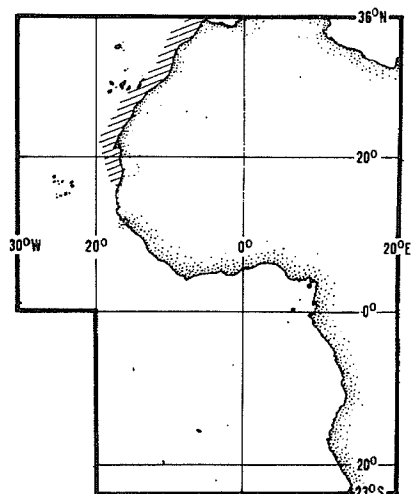
M. asterias



M. mustelus



M. asterias



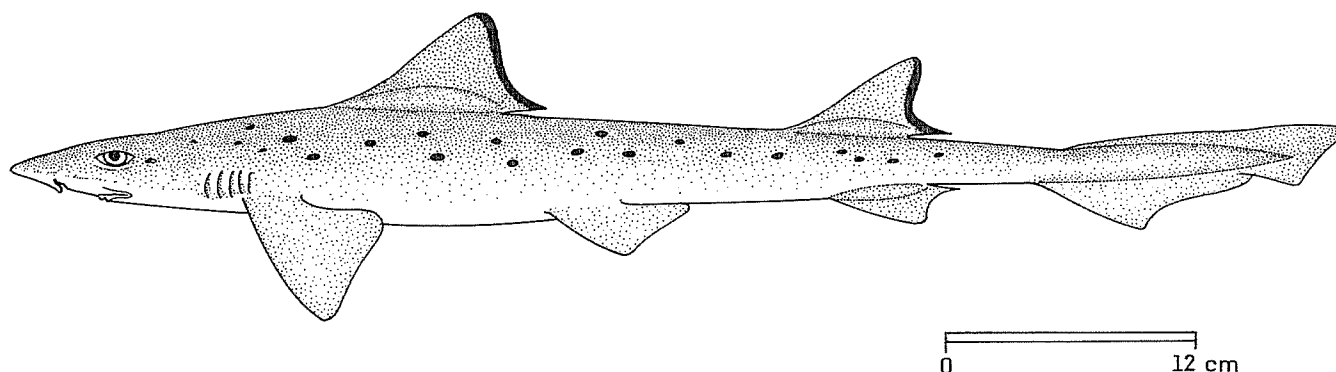
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: TRIAKIDAE

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)

Mustelus punctulatus Risso, 1826

OTHER SCIENTIFIC NAMES STILL IN USE : *Mustelus mediterraneus* Quignard & Capape, 1972



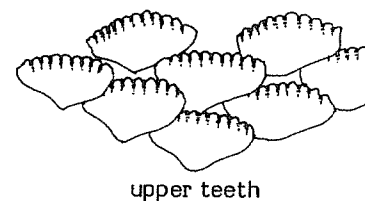
VERNACULAR NAMES:

FAO : En - Blackspotted smoothhound
Fr - Emissole pointillée
Sp - Musola pimienta

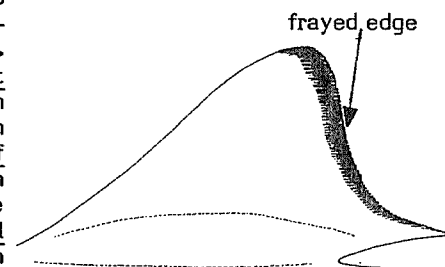
NATIONAL :

DISTINCTIVE CHARACTERS :

A small to medium-sized shark with a moderately elongated body. Head flattened above and below, snout relatively long and narrowly rounded; nostrils with long, broad nasal flaps, not formed as barbels, the distance between them about 1.1 to 1.2 times the nostril width; 5 gill slits, the last two over pectoral fin bases; eyes horizontally oval, above sides of head, with well-developed nictitating lower eyelids partly inside the eye openings; spiracles moderately large; mouth broadly angular, with moderately long labial furrows that do not reach front of mouth; teeth small, alike in both jaws, blunt-crowned, not bladelike, without cusplets and with low cusps only in young. First dorsal fin on back between pectoral and pelvic fin bases, its origin about over midlengths or rear halves of pectoral inner margins; second dorsal fin almost as large as the first, and much larger than anal fin, its origin well in front of anal fin; rear edges of dorsal fins with broad, dark margins formed of denticle- and skin-free, frayed ceratotrichia (hornlike rays); caudal fin probably with lower lobe short in adults, but hardly developed in young, the terminal lobe less than half the length of upper edge of fin. An interdorsal ridge present; caudal peduncle without keels or precaudal pits. Denticles on sides with strong medial cusps, lateral cusps weak or absent; ridges on denticles restricted to anterior halves of crowns.



upper teeth



first dorsal fin

Colour: back and sides plain grey, underside cream-white, small black spots present on sides.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA :

Mustelus mustelus: denticles on sides with ridges extending over the entire length of crowns; space between nostrils broader, 1.5 to 1.7 times the nostril width (1.1 to 1.2 times in M. punctulatus); rear edges of dorsal fins without margins of bare ceratotrichia; sides usually unspotted.

Mustelus asterias: origin of first dorsal fin more anterior, ahead of midlength of pectoral inner margins and usually just behind pectoral fin insertions; rear edges of dorsal fins without margins of bare ceratotrichia; lower lobe of caudal fin hardly developed in adults; sides with numerous small white spots, but no black spots.

Other superficially similar small sharks: teeth not blunt, molariform, or arranged in pavements.

SIZE :

Maximum: to at least 69 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR :

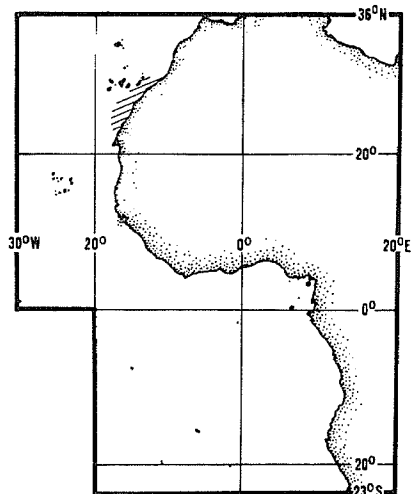
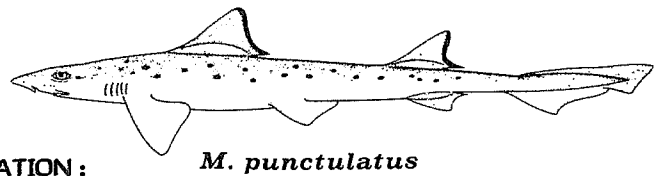
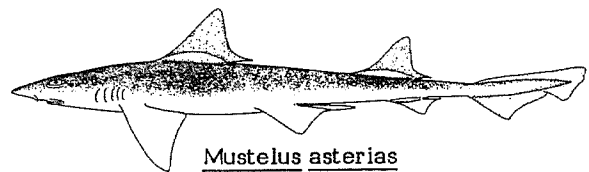
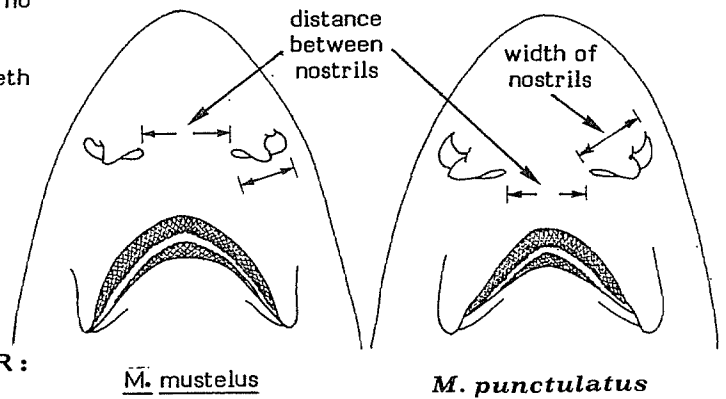
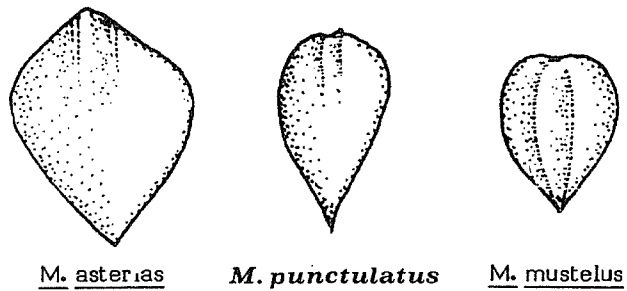
In the area, known only from the Spanish Sahara, but possibly more widespread and confused with M. mustelus. Northward extending into the Mediterranean Sea.

PRESENT FISHING GROUNDS :

No information is available on abundance and utilization of this species in the area, possibly because of its confusion with M. mustelus.

CATCHES, FISHING GEAR AND FORMS OF UTILIZATION :

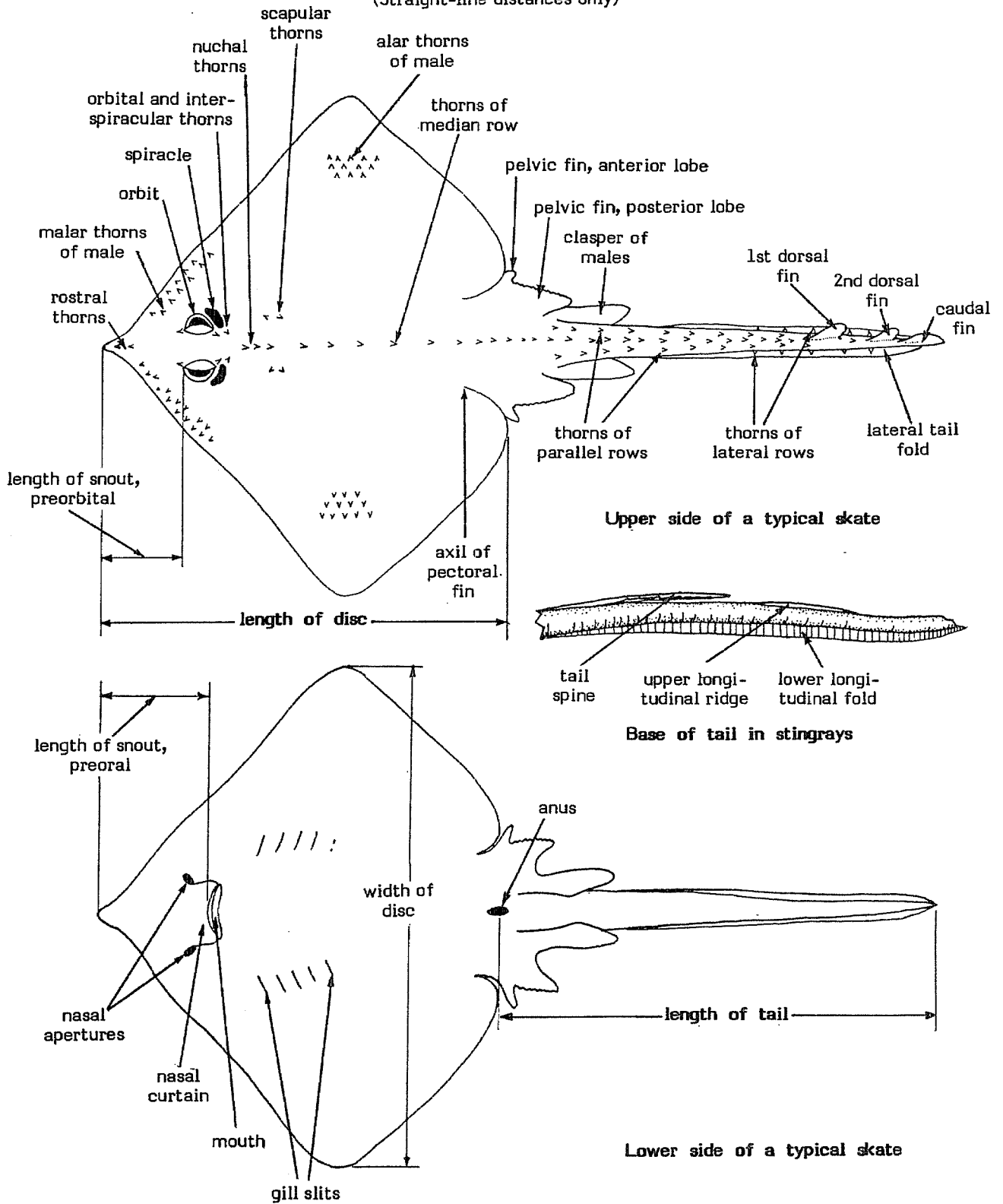
Separate statistics are not reported for this species.

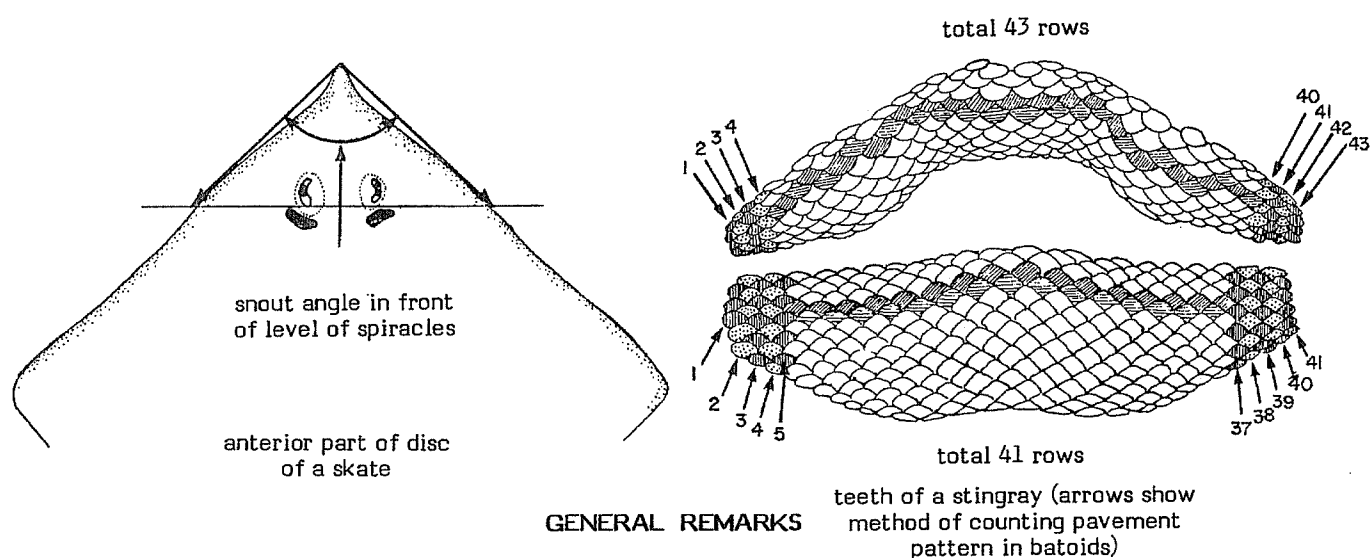


BATOID FISHES

TECHNICAL TERMS AND PRINCIPAL MEASUREMENTS USED

(Straight-line distances only)





The group named "batoid fishes" or Rajiformes comprises a variety of forms commonly known as sawfishes, guitarfishes, rays and skates, and mantas. All have a dorsoventrally flattened body, and pectoral fins which are more or less broadly enlarged and united anteriorly with the sides of the head. Thus the body forms a circular, oval or rhombic disc with the tail more or less distinctly marked off. Eyes and spiracles are on the dorsal surface in the majority of species, while the mouth, nasal apertures, and the five pairs of gill slits are on the ventral surface. An anal fin is always lacking. However, three batoid families, namely the Pristidae or sawfishes, the Rhinobatidae or guitarfishes, and the Rhynchobatidae or wedgefishes, resemble sharks in general appearance.

Batoids vary greatly in size, ranging in total length from about 30 cm (dwarf species of Rajidae) to more than 6 m (Pristidae). Some may reach a disc width of more than 7 m and a weight of one and a half tons (Mobulidae). Locomotion is achieved through lateral undulations of the hind part of the body (Pristidae, Rhinobatidae, Rhynchobatidae, Torpedinidae) by undulating waves running along the pectoral fins from head rearward (e.g. Rajidae), or by winglike movements of the entire pectoral fins (e.g. Myliobatidae, Mobulidae). Fertilization is internal, hence the well developed copulatory organs (claspers) in males, which are distinct already in the late embryonic stages. The Rajidae and probably their closely related families are oviparous, the large eggs being enclosed in horny rectangular capsules. The remaining families are ovoviviparous, i.e. embryos develop in the oviducts of the female.

Although primarily marine, batoids also inhabit estuaries and brackish lagoons, and sometimes occur in the lower reaches of rivers, even far upstream in a few cases. However, one family, the Potamotrygonidae, is confined to freshwater in South American rivers draining into the Atlantic Ocean. Batoids are widely distributed in all oceans, from the Arctic to the Antarctic and from shallow coastal waters down to the abyssal plains. This applies particularly to the family Rajidae (skates), which has representatives at all latitudes and depths, but becomes rare in shallow tropical waters and coral reef areas. The Torpedinidae (electric rays) are also abundant in temperate latitudes, but all remaining families are restricted to tropical and subtropical areas and show a preference for relatively shallow waters. Moreover, some of these families are confined to particular, well defined geographical regions.

The living batoids are grouped into about 20 families with about 50 genera and 400 described species, more than 100 of which belong to the genus *Raja* Linnaeus, 1758. About 60 new species have been described in the course of the past 20 years, most of them within the family Rajidae. A further increase in rajid species is to be expected with continuing intensification of exploratory and commercial fishing in deeper waters, particularly along continental slopes. The taxonomic status of several families and of many genera and species is still under discussion and needs critical review. Since modern revisional work has so far been restricted to a few geographical communities, mainly of the Rajoidei, taxonomic and nomenclatorial alterations are likely to occur also in the future.

The batoid fishes known from the Eastern Central Atlantic comprise 11 families, 18 genera and about 80 species. Although apparently none is the object of a special fishery, many species are a regular bycatch of other fisheries, although some are sufficiently abundant and tasty to be exploited more or less regularly in small-scale coastal fisheries. The catch of batoids reported from Fishing Area 34 exceeded 11 000 tons in 1978, but the actual landings are probably much higher. The flesh (wings or body) is usually marketed fresh, smoked, dried salted, rarely also deep-frozen. Offshore trawlers use batoids also for producing fishmeal and oil.

KEY WITH PICTURE GUIDE TO FAMILIES OCCURRING IN THE AREA

(Illustrations show type genera)

1 a. Body shark-like, only moderately depressed; pectoral fins barely enlarged; tail not distinctly marked off from body

2 a. Snout extremely elongated into a firm, flat, narrow blade, the edges of which are armed with a single series of large tooth-like structures (saw) (Fig. 1)

Pristidae

2 b. Snout wedge-shaped and greatly elongated, but not blade-like, without lateral teeth

3 a. Caudal fin conspicuously bilobed, lunate in form, both lobes pointed; rear edges of pectoral fins falling short of origin of pelvic fins; origin of first dorsal fin over or slightly anterior to bases of pelvic fins (Fig. 2)

Rhynchobatidae

3 b. Caudal fin not bilobed; rear edges of pectoral fins extending to origin of pelvic fins or farther; origin of first dorsal fin well posterior to rear tips of pelvic fins (Fig. 3)

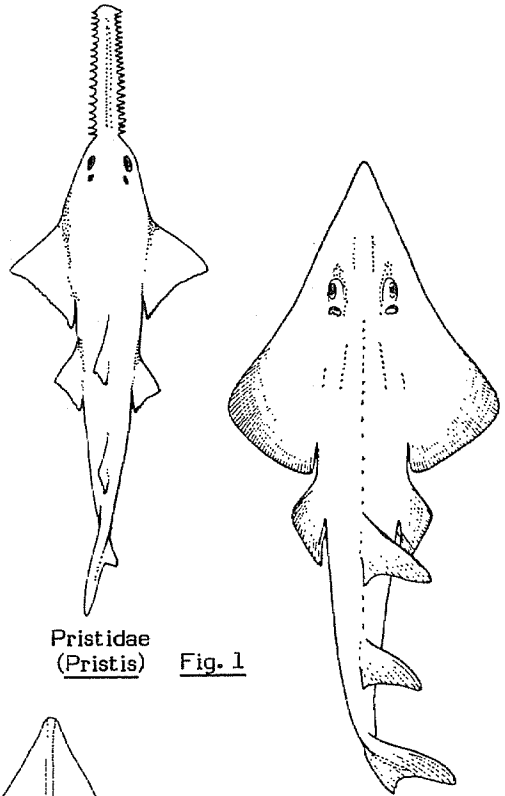
Rhinobatidae

1 b. Body distinctly depressed and disc-like with pectoral fins greatly enlarged; tail more or less sharply marked off from body

4 a. Tail short and very massive; two dorsal fins present; caudal fin well developed

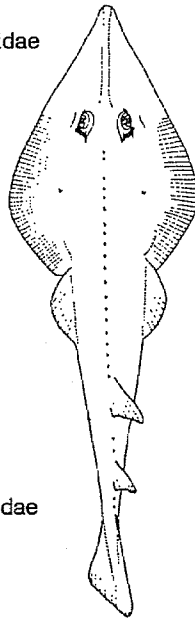
5 a. Disc normally not very thick, its margins more or less thin, not conspicuously fleshy; mouth straight; disc roundish or bluntly angled anteriorly, without electric organs (Fig. 4)

Platyrrhinidae

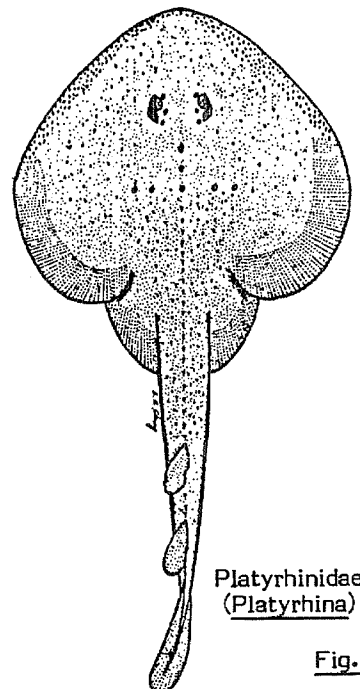


Pristidae (Pristis) Fig. 1

Rhynchobatidae (Rhynchobatus) Fig. 2

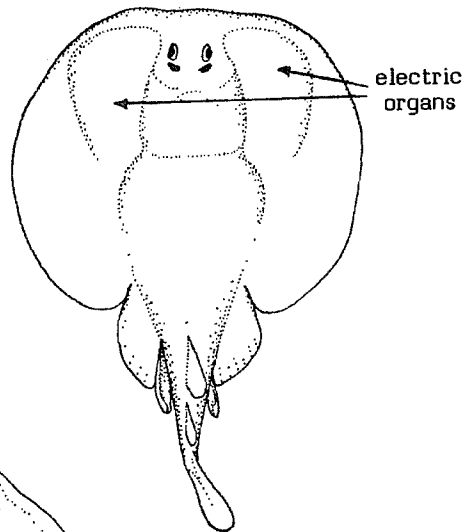


Rhinobatidae (Rhinobatos) Fig. 3



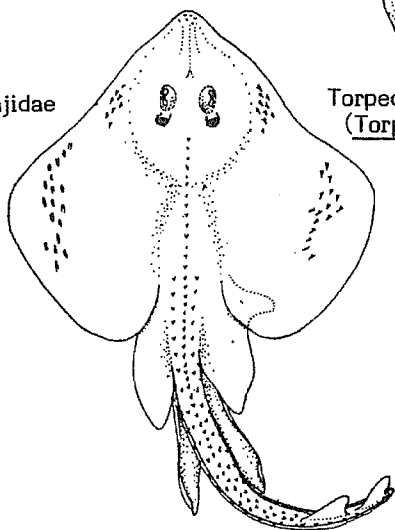
Platyrrhinidae (Platyrrhina) Fig. 4

5 b. Disc thicker than in most other batoids and fleshy toward margins; well developed and powerful electric organs along sides of head within anterior part of disc; body soft and flabby; mouth curved; disc truncate or emarginate anteriorly (Fig. 5) Torpedinidae



4 b. Tail variable in shape and length, but mostly slender. If present at all, dorsal fins very small and caudal fin rudimentary

6 a. Tail moderately slender, short to barely elongated; two small dorsal fins and a rudimentary caudal fin present (Fig. 6); pseudobranchial folds present at anterior walls of spiracles (Fig. 7); none of the prickles, thornlets and/or thorns on tail greatly enlarged as a saw-edged spine (or spines) Rajidae



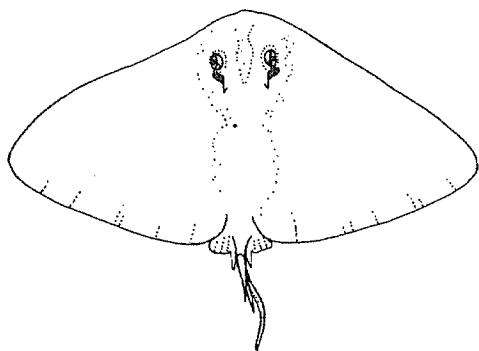
Torpedinidae (Torpedo) Fig. 5

6 b. Tail short, moderately to very slender, or very long and whip-like; at most a single dorsal fin on base of tail in some species; no caudal fin; no pseudobranchial folds at anterior walls of spiracles; usually one or more greatly enlarged saw-edged spine(s) on upper surface of tail

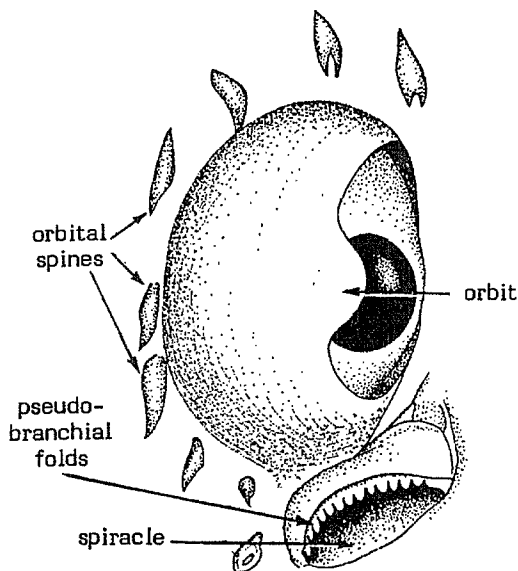
7 a. Eyes and spiracles on top of head; anterior part of head not marked off from disc, no separate cephalic fins or rostral lobes

Rajidae (Raja) Fig. 6

8 a. Disc more than 1.5 times as broad as long; tail conspicuously shorter than disc width (Fig. 8); transverse parts of nasal curtains smooth-edged; no papillae on floor of mouth.. Gymnuridae



Gymnuridae (Gymnura) Fig. 8



Rajidae Fig. 7

8 b. Disc at most 1.3 times as broad as long; tail (if undamaged) much longer than disc width in most species (Fig. 9); transverse parts of nasal curtains with fringed margins; several fleshy papillae on floor of mouth Dasyatidae

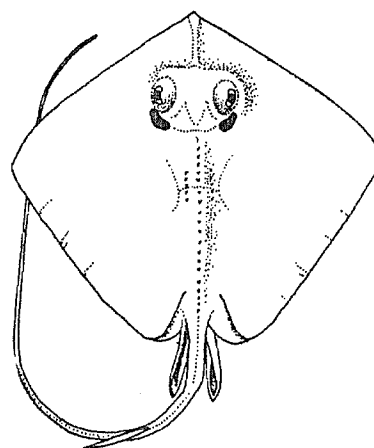
7 b. Eyes and spiracles on sides of head; anterior part of head distinctly marked off from disc, or anterior margins of pectorals forming separate cephalic lobes or fins

9 a. Pectoral fins anteriorly separated and forming two thin cephalic fins (Fig. 10); teeth minute and set in bands of many series Mobulidae

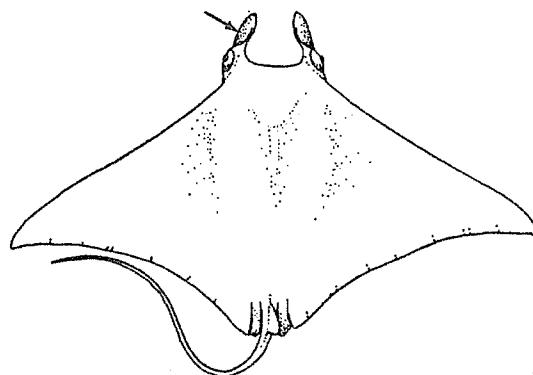
9 b. Anterior parts of pectoral fins forming a fleshy lobe extending below front of head; this lobe with or without a more or less deep median notch; teeth large and in a few series only

10 a. Subrostral lobe undivided (Fig.11); several fleshy papillae on floor of mouth Myliobatidae

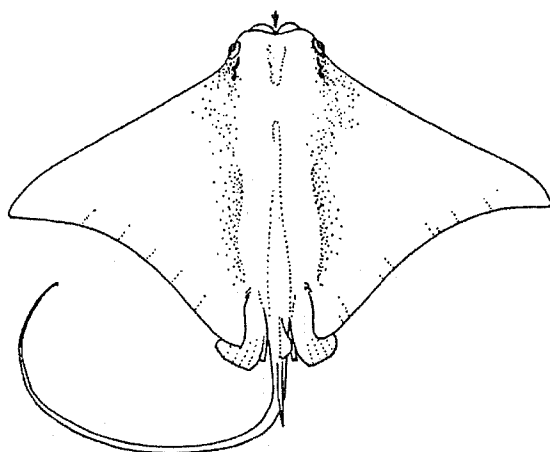
10 b. Subrostral lobe deeply incised in midline to produce two basally continuous parts (Fig. 12); no papillae on floor of mouth .. Rhinopteridae



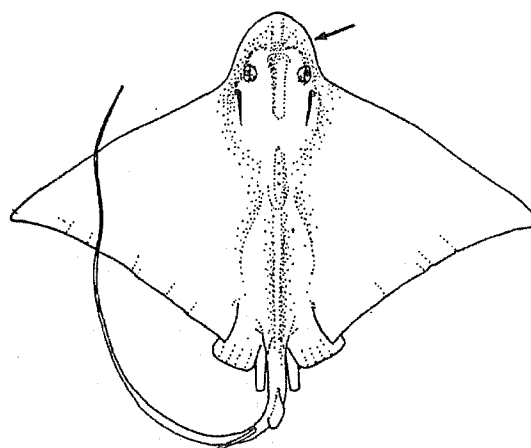
Dasyatidae
(Dasyatis) Fig. 9



Mobulidae
(Mobula) Fig. 10



Rhinopteridae
(Rhinoptera) Fig. 12



Myliobatidae
(Myliobatis) Fig. 11

LIST OF SPECIES OCCURRING IN THE AREA

Code numbers are given for those species for which Identification Sheets are included

PRISTIDAE	PRIST
<u>Pristis microdon</u> Latham, 1794	PRIST Prist 1
<u>Pristis pectinata</u> Latham, 1794	PRIST Prist 2
<u>Pristis pristis</u> (Linnaeus, 1758)	PRIST Prist 3
RHINOBATIDAE	RHINOB
<u>Rhinobatos albomaculatus</u> Norman, 1930	RHINOB Rhinob 1
<u>Rhinobatos blochii</u> Müller & Henle, 1841	
<u>Rhinobatos cemiculus</u> E. Geoffroy Saint-Hilaire, 1817	RHINOB Rhinob 2
* <u>Rhinobatos congolensis</u> Giltay, 1928	
** <u>Rhinobatos halavi</u> (Forsskal, 1775)	
<u>Rhinobatos irvinei</u> Norman, 1931	
** <u>Rhinobatos percellens</u> (Walbaum, 1792)	
* <u>Rhinobatos rarus</u> Garman, 1908	
<u>Rhinobatos rhinobatos</u> (Linnaeus, 1758)	RHINOB Rhinob 3
PLATYRHINIDAE	PLATY
<u>Zanobatus schoenleinii</u> (Müller & Henle, 1841)	
RHYNCHOBATIDAE	RHYNCH
<u>Rhynchobatus lubberti</u> Ehrenbaum, 1914	RHYNCH Rhynch 1
TORPEDINIDAE	TORPED
<u>Torpedo (Torpedo) bauchotae</u> Cadenat, Capapé & Desoutter, 1978	
<u>Torpedo (Tetronarce) mackayana</u> Metzelaar, 1919	
<u>Torpedo (Torpedo) marmorata</u> Risso, 1810	
<u>Torpedo (Tetronarce) nobiliana</u> Bonaparte, 1835	
<u>Torpedo (Torpedo) torpedo</u> (Linnaeus, 1758)	
<u>Torpedo (Torpedo) spp.</u>	
<u>Torpedo (Tetronarce) spp.</u>	
RAJIDAE	RAJ
<u>Bathyraja smithsii</u> (Müller & Henle, 1841)	
<u>Bathyraja sp.</u>	
<u>Breviraja sp.</u>	
<u>Raja africana</u> Capapé, 1977	
<u>Raja (Rostroraja) alba</u> Lacépède, 1803	
<u>Raja (Rajella) bathyphila</u> Holt & Byrne, 1908	
<u>Raja (Dipturus) batis</u> Linnaeus, 1758	
<u>Raja (Rajella) bigelowi</u> Stehmann, 1978	
<u>Raja (Raja) brachyura</u> Lafont, 1873	
<u>Raja (Rajella) caudaspinosa</u> v. Bonde & Swart, 1923	
<u>Raja (Leucoraja) circularis</u> Couch, 1838	
<u>Raja (Raja) clavata</u> Linnaeus, 1758	
<u>Raja (Rajella) confundens</u> Hulley, 1970	
<u>Raja dageti</u> Capapé, 1977	

Raja (Rajella) dissimilis Hulley, 1970
Raja (Dipturus) doutrei Cadenat, 1960
Raja (Leucoraja) fullonica Linnaeus, 1758
Raja (Raja) herwigii Krefft, 1965
Raja (Rajella) ? leopardus v. Bonde & Swart, 1923
Raja (Leucoraja) leucosticta Stehmann, 1971
Raja (Raja) maderensis Lowe, 1839
Raja (Raja) microocellata Montagu, 1818
Raja (Raja) miraletus Linnaeus, 1758
Raja (Raja) montagui Fowler, 1910
Raja (Leucoraja) naevus Müller & Henle, 1841
Raja (Dipturus) oxyrinchus Linnaeus, 1758
Raja (Raja) radula Delaroche, 1809
Raja (Raja) rouxi Capapé, 1977
Raja (Malacoraja) spinacidermis Barnard, 1923
Raja (Raja) straeleni Poll, 1951
Raja undulata Lacepède, 1802
Raja (Raja) sp., cf. clavata
Raja (Amblyraja) sp., cf. hyperborea/robertsi
Raja (Rajella) sp., cf. sadowskii
Raja (Dipturus) sp., cf. springeri

DASYATIDAE

DASY

Dasyatis centroura (Mitchill, 1815)
Dasyatis garouaensis (Stauch & Blanc, 1962)
Dasyatis margarita (Günther, 1870)
Dasyatis marmorata (Steindachner, 1892)
Dasyatis pastinaca (Linnaeus, 1758)
Dasyatis rudis (Günther, 1870)
Dasyatis ukpam (Smith, 1859)
Dasyatis violacea (Bonaparte, 1832)
Dasyatis sp.

DASY Dasy 3

DASY Dasy 4

DASY Dasy 5

Taeniura grabata (E. Geoffroy Saint-Hilaire, 1817)

Urogymnus asperrimus (Bloch & Schneider, 1801)

GYMNURIDAE

GYMN

Gymnura altavela (Linnaeus, 1758)
Gymnura hirundo (Lowe, 1843)
Gymnura micrura (Bloch & Schneider, 1801)

GYMN Gymn 1

GYMN Gymn 2

MYLIOBATIDAE

MYLIO

Aetobatus flagellum (Bloch & Schneider, 1801)
Aetobatus narinari (Euphrasen, 1790)

MYLIO Aeto 1

Myliobatis aquila (Linnaeus, 1758)

MYLIO Mylio 2

Pteromylaeus bovinus (E. Geoffroy Saint-Hilaire, 1817)

MYLIO Ptero 1

RHINOPTERIDAE

RHINOP

Rhinoptera bonasus (Mitchill, 1815)
Rhinoptera marginata (E. Geoffroy Saint-Hilaire, 1817)
Rhinoptera peli Bleeker, 1863

RHINOP Rhinop 1

FAO Sheets

BATOID FISHES

Fishing Areas 34, 47 (in part)

MOBULIDAE

MOBUL

Manta birostris (Donndorff, 1798)

MOBUL Mant 1

Mobula coilloti Cadenat & Rancurel, 1960

MOBUL Mobul 1

* * Mobula hypostoma (Bancroft, 1831)

Mobula lucasana Beebe & Tee Van, 1938

Mobula mobular (Bonnaterre, 1788)

Mobula rancureli Cadenat, 1959

Mobula rochebrunei (Vaillant, 1879)

MOBUL Mobul 2

Prepared by M. Stehmann, Aussenstelle Ichthyologie, Institut für Seefischerei, Zoologisches Institut und Zoologisches Museum, Hamburg, Federal Republic of Germany

* Taxonomic status uncertain, possibly synonymous with one of the remaining species mentioned

* * Occurrence in the area doubtful

* * * Records under this name reported from the area, but probably referring to one of the other species

FAO SPECIES IDENTIFICATION SHEETS

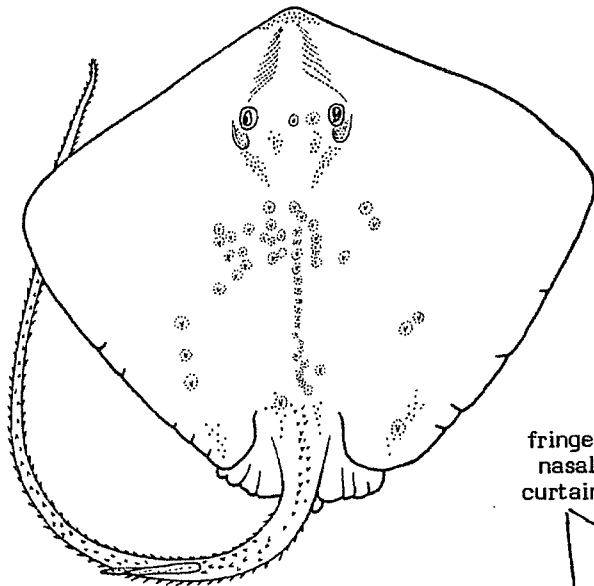
FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)

DASYATIDAE

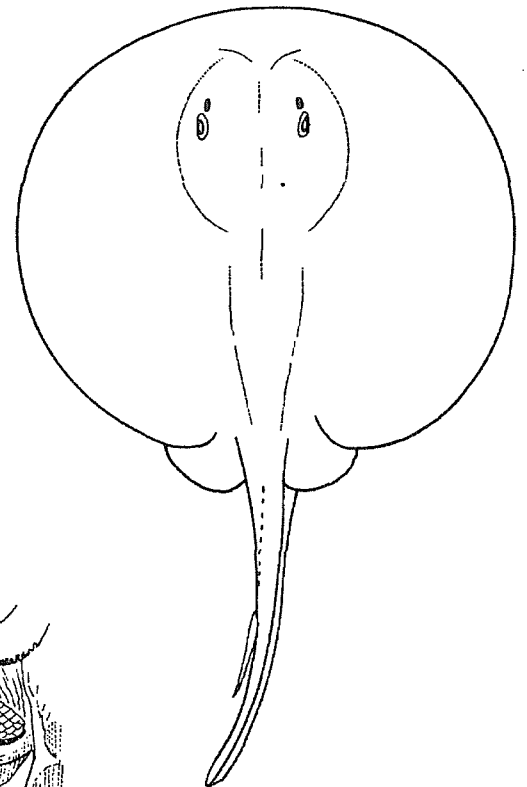
Stingrays or whipsrays

Stingrays of varying size, disc width from about 30 cm to more than 2 m. Disc not more than 1.3 times as broad as long, rhombic, oval, or nearly circular in outline. Pectoral fins fused with sides of head over its entire length, no subrostral lobes or cephalic fins. Snout obtuse to moderately pointed; eyes and spiracles on top of head; several fleshy papillae on floor of mouth; small teeth in many series forming bands along jaws; nasal curtains distinctly fringed. No dorsal fins, no caudal fin. Tail distinctly marked off from body, moderately slender to whip-like, tapering, usually much longer than disc, and with one or more long, saw-edged, poisonous spines on its basal part. Some species with a longitudinal fold and/or ridge on upper and/or lower surface of tail. Skin of upper side naked or set to varying degrees with tubercular thorns, thornlets and prickles.

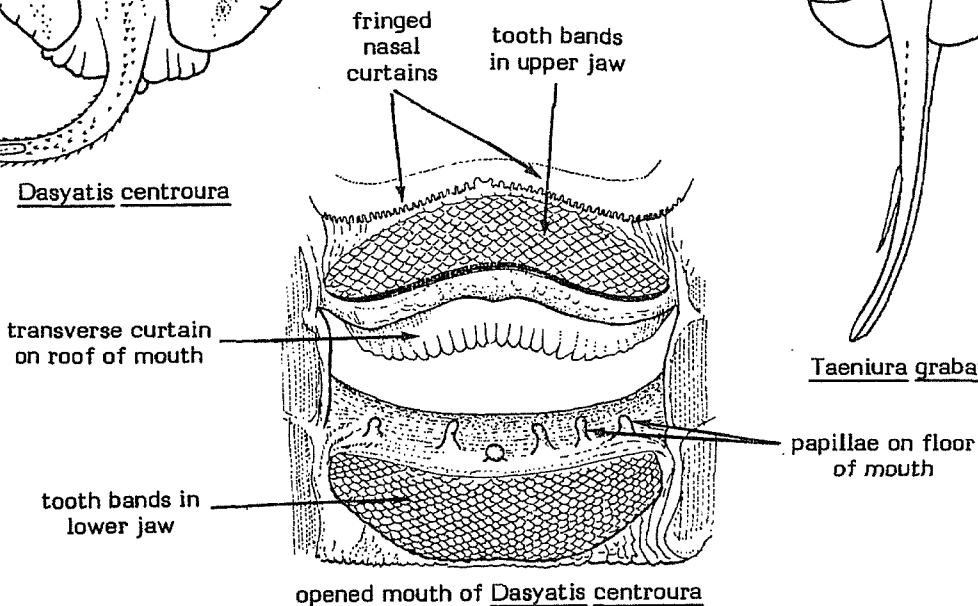
Colour: upper side mostly uniform grey to dark brown, darker or paler markings present in several species; lower side generally whitish. Dark markings or borders may occur.



Dasyatis centroura

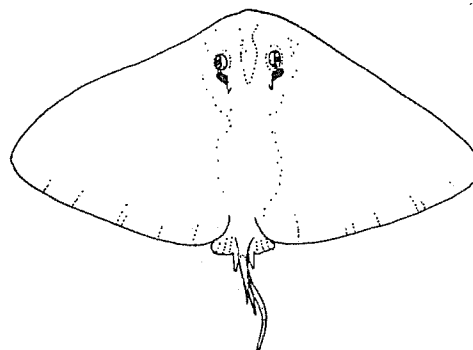


Taeniura grabata



opened mouth of Dasyatis centroura

Stingrays inhabit primarily warm waters and are usually found in shallow coastal areas, lagoons, river mouths, and especially in mangrove-lined habitats. Some even enter the freshwater of rivers, partly far upstream, while a few may also occur in deeper water (below 100 m). All are ovoviviparous. Some stingrays are reportedly abundant in certain localities and are regularly seen in local markets (e.g. Ivory Coast, Ghana, Senegal). The flesh (wings) is well esteemed as food (smoked, dried salted). Other parts and whole specimens are used for fishmeal and oil mainly on board offshore trawlers.



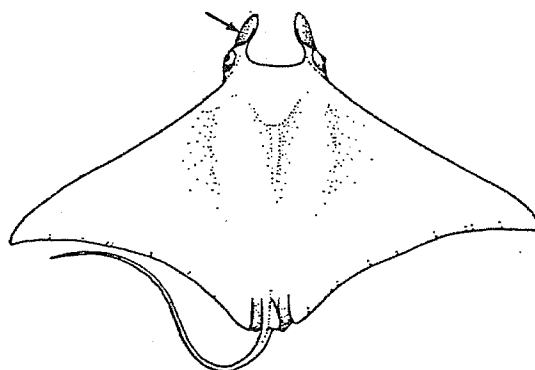
Gymnuridae

SIMILAR FAMILIES OCCURRING IN THE AREA :

Gymnuridae: disc more than 1.5 times as broad as long; no papillae on floor of mouth; nasal curtains smooth-edged.

Myliobatidae, Rhinopteridae, Mobulidae: head distinctly marked off from body, anterior portions of pectorals forming separate lobes or fins. Eyes and spiracles on sides of head.

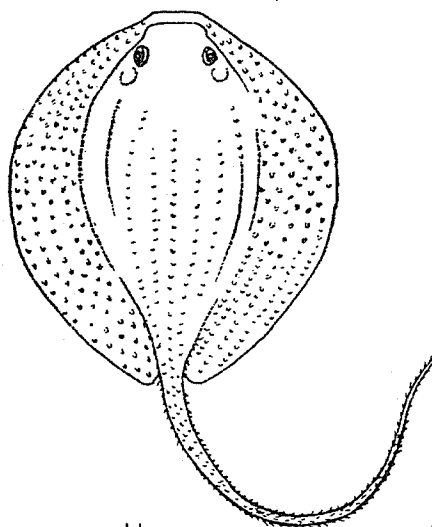
Other families of rays and skates: lack the characteristic tail spine of stingrays and usually have shorter and less slender tails with two dorsals and a caudal fin.



Mobulidae

KEY TO GENERA OCCURRING IN THE AREA :*

- 1 a. Tail (if undamaged) distinctly longer than disc and very slender; disc oval or more or less rhombic; with or without tail spine
- 2 a. Disc oval; never a spine on tail (Fig. 1) Urogymnus



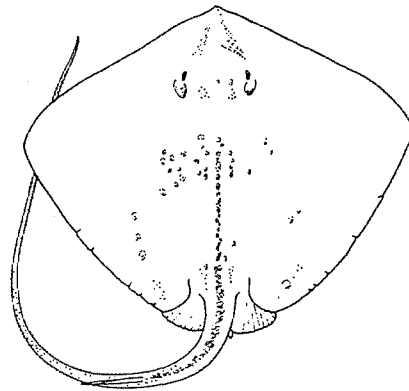
Urogymnus

Fig. 1

* Only applies to species occurring in the area

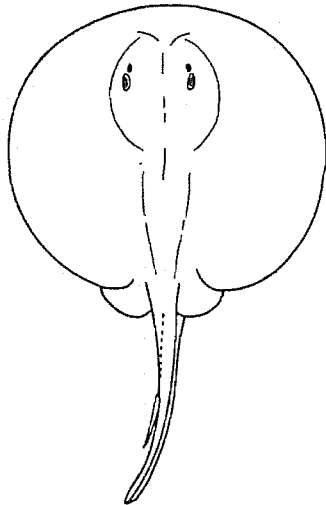
2 b. Disc more or less rhombic; one or more spines on tail (rarely lacking) (Fig. 2) Dasyatis

1 b. Tail about as long as disc and relatively thick; disc roundish; tail spine present (Fig. 3) Taeniura



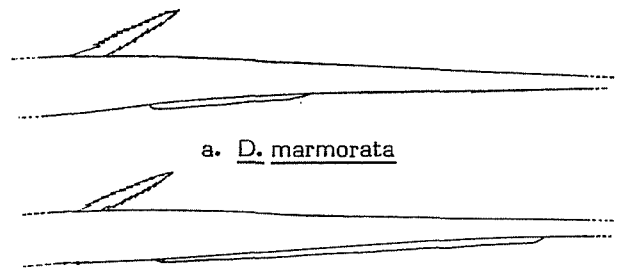
Dasyatis

Fig. 2



Taeniura

Fig. 3



a. D. marmorata

b. other Dasyatis species

Fig. 1

(schematic)

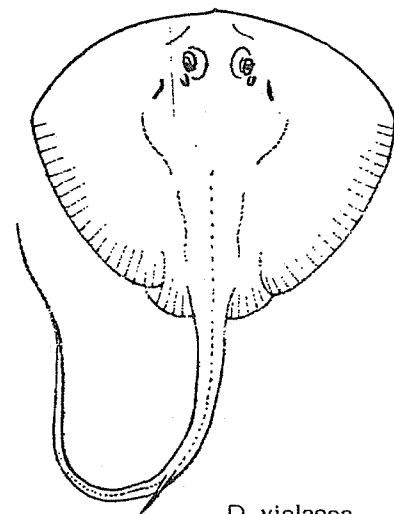
KEY TO THE SPECIES OF Dasyatis IN THE AREA:*

1 a. Upper side of disc with a broad brown outer margin, centrally with a distinct pattern of sea-blue mottling on a golden-brown background; lower tailfold very short, about twice the length of tail spine measured from below its origin backward (Fig. 1a) D. marmorata

1 b. Upper side of disc plain-coloured, without a distinct pattern; lower tailfold extending backward usually distinctly more than twice the length of tail spine (Fig. 1b)

2 a. Shape of disc nearly trapezoid, its anterior contour subtruncate as a continuous arc of great radius; snout angle more than 150° (Fig. 2) .. D. violacea

2 b. Shape of disc rhombic or subquadrangular, its anterior contour more or less obtusely angled; snout angle much less than 150°



D. violacea

Fig. 2

* Dasyatis marmorata, D. rudis and D. ukpam are poorly known, the last two nowhere illustrated. Key characters were taken from literature references only, and could not be confirmed by examination of actual specimens

3 a. Upper surface of tail behind origin of spine without a longitudinal ridge, except perhaps in embryos and young

4 a. A single, large, whitish tubercular thorn on midshoulder within a field of spinules (Fig. 3); occasionally a second, much smaller tubercle in front of the large pearl-like thorn D. margarita

4 b. Either no thorns on body at all, or several thorns of varying size on posterior part of midbody and root of tail

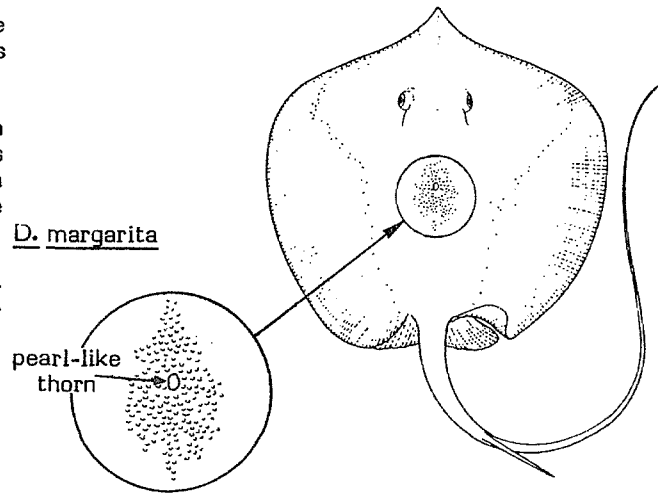
5 a. No larger tubercles or thorns on disc, but this and tail densely and entirely covered with fine spinules; tail about 1.5 times as long as disc; disc rhombic, 1.5 times broader than long; larger specimens reported with many more than 100 tooth rows D. rudis

5 b. Upper side of disc completely covered with close-set spinules, which increase in size toward midbody and occur as large plate-like tubercles on posterior part of back and on root of tail; tail about 2.5 times as long as disc; disc rather subquadrangular, about as broad as long; probably much less than 100 tooth rows D. ukpam

3 b. A longitudinal ridge of varying length on upper surface of tail behind origin of spine, present also in large adults

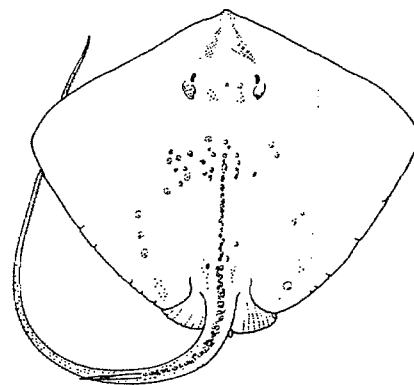
6 a. Upper longitudinal ridge on tail very short, only as long as spine and placed below it; except in small juveniles, a large number of prominent, close-set thorns in an irregular median row from nape to origin of spine; additional thorns on head, nape/shoulder area and inner parts of the wings develop with age; sides and top of tail from spine rearward always very rough, with many thornlets and thorns (Fig. 4) D. centroura

6 b. Upper longitudinal ridge on tail very long, greatly exceeding the length of spine backwards; disc and tail naked except for a regular median row of widely spaced, small thorns from nape to root of tail and a few thorns on shoulders in large specimens (Fig. 5) D. pastinaca



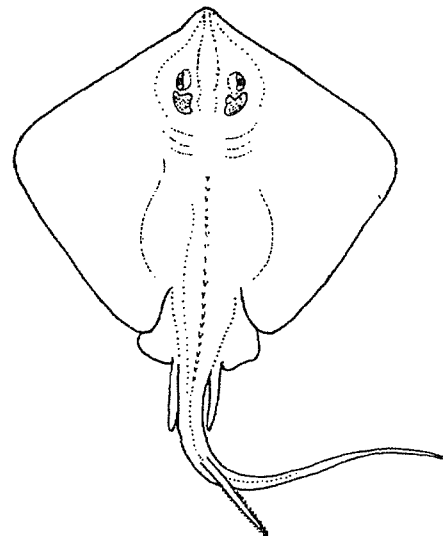
D. margarita

Fig. 3



D. centroura

Fig. 4



D. pastinaca

Fig. 5

LIST OF SPECIES OCCURRING IN THE AREA :

Code numbers are given for those species for which Identification Sheets are included

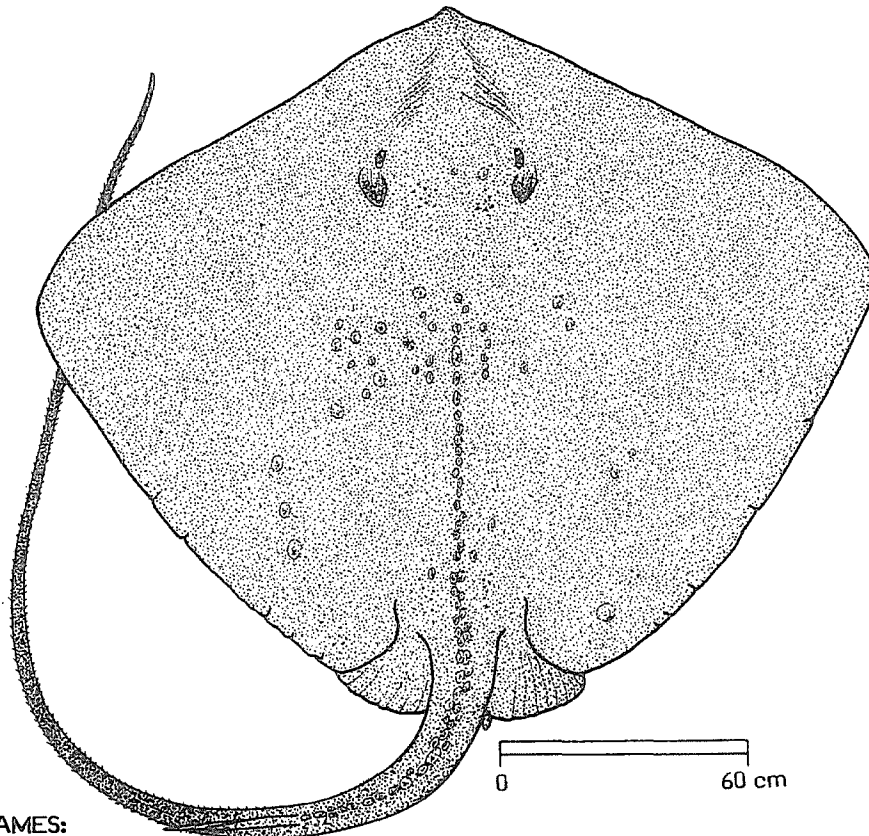
<u>Dasyatis centroura</u> (Mitchill, 1815)	DASY Dasy 3
* <u>Dasyatis garouaensis</u> (Stauch & Blanc, 1962)	
<u>Dasyatis margarita</u> (Günther, 1870)	DASY Dasy 4
<u>Dasyatis marmorata</u> (Steindachner, 1892)	
<u>Dasyatis pastinaca</u> (Linnaeus, 1758)	DASY Dasy 5
<u>Dasyatis rudis</u> (Günther, 1870)	
<u>Dasyatis ukpam</u> (Smith, 1859)	
<u>Dasyatis violacea</u> (Bonaparte, 1832)	
<u>Dasyatis</u> sp.	
<u>Taeniura grabata</u> (E. Geoffroy Saint-Hilaire, 1817)	
<u>Urogymnus asperrimus</u> (Bloch & Schneider, 1801)	

Prepared by M. Stehmann, Aussenstelle Ichthyologie, Institut für Seefischerei, Zoologisches Institut und Zoologisches Museum, Hamburg, Federal Republic of Germany

* This species only known from a few specimens captured in exclusively fresh waters of Cameroon and Nigeria. Apparently only inhabiting, fairly upstream, rivers draining into the Gulf of Guinea. Therefore not included in the key

FAO SPECIES IDENTIFICATION SHEETS

FAMILY: DASYATIDAE

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)Dasyatis centroura (Mitchill, 1815)OTHER SCIENTIFIC NAMES STILL IN USE : Dasyatis aspera (Cuvier, 1817)
Dasyatis hastata (DeKay, 1842)

VERNACULAR NAMES:

FAO : En - Roughtail stingray
Fr - Pastenague épineuse
Sp - Raja látigo lija

NATIONAL :



lateral view of tail

DISTINCTIVE CHARACTERS :

Disc rhombic, about 1.2 to 1.3 times as broad as long, its front margins (anterior to level of spiracles) straight or weakly sinuous and its outer corners sharply angled to abruptly rounded (snout angle about 130° to 140°); tip of snout not projecting; mouth straight; teeth blunt and small, arranged in a pavement pattern of 45 rows; a transverse row of 5 or 6 fleshy papillae on floor of mouth. Tail slender, about 1.5 to 2 times as long (if undamaged) as disc and with 1 (sometimes 2 or 3) long, serrated and poisonous spine(s) on its base; axils of pectorals nearer to origin of tail spine than to rear margins of orbits; tail with a short dorsal ridge only below spine and a low longitudinal fold on ventral side from below origin of spine backwards for a distance about equal to that from anus to origin of spine; an irregular row of many tubercular thorns along midline of back to spine and additional thorns scattered on head and inner parts of wings; disc otherwise sparsely and irregularly prickled above, smooth below; dorsal surface posterior to spine and entire sides of tail rough with thorns decreasing in size rearward.

Colour: upper side uniform dark olive-brown or brown, whitish below, with or without darker bordering. Tail behind spine, as well as lower fold, may be blackish.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA :

D. pastinaca: upper ridge on tail very long, greatly exceeding the length of spine (as long as spine in D. centroura); disc and tail naked, except for a median row of small thorns from nape to root of tail and a few thorns on shoulders in larger specimens.

D. margarita, D. rudis and D. ukpam: no upper ridge on tail. Furthermore, a single large, whitish tubercular thorn on midshoulder in a field of spinules in D. margarita.

D. violacea: shape of disc nearly trapezoid; snout angle more than 150° (130 to 140 in D. centroura).

D. marmorata: disc with a distinct pattern of sea-blue mottling on a golden brown background; lower tailfold very short, about twice the length of tail spine (much longer than twice the length of tail spine in D. centroura).

Urogymnus asperrimus: disc oval, never a spine on tail.

Taeniura grabata: tail only about as long as disc; disc roundish.

SIZE :

Maximum: more than 300 cm total length, disc width over 200 cm. Weight exceeding 200 kg.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR :

Present throughout the area; also extending into the Mediterranean and northward along the Atlantic Coast of Europe to the Bay of Biscay. Also found in the Western Atlantic. Most abundant in tropical latitudes.

Inhabits shelf areas; often in shallow coastal waters but it has also been reported from 300 m depth. A demersal species, preferring soft bottoms, but also an active swimmer during the summer migrations to higher latitudes.

Feeds on bottom-dwelling animals with preference for bivalves, crustaceans and worms.

PRESENT FISHING GROUNDS :

Shelf waters off Ivory Coast and Ghana.

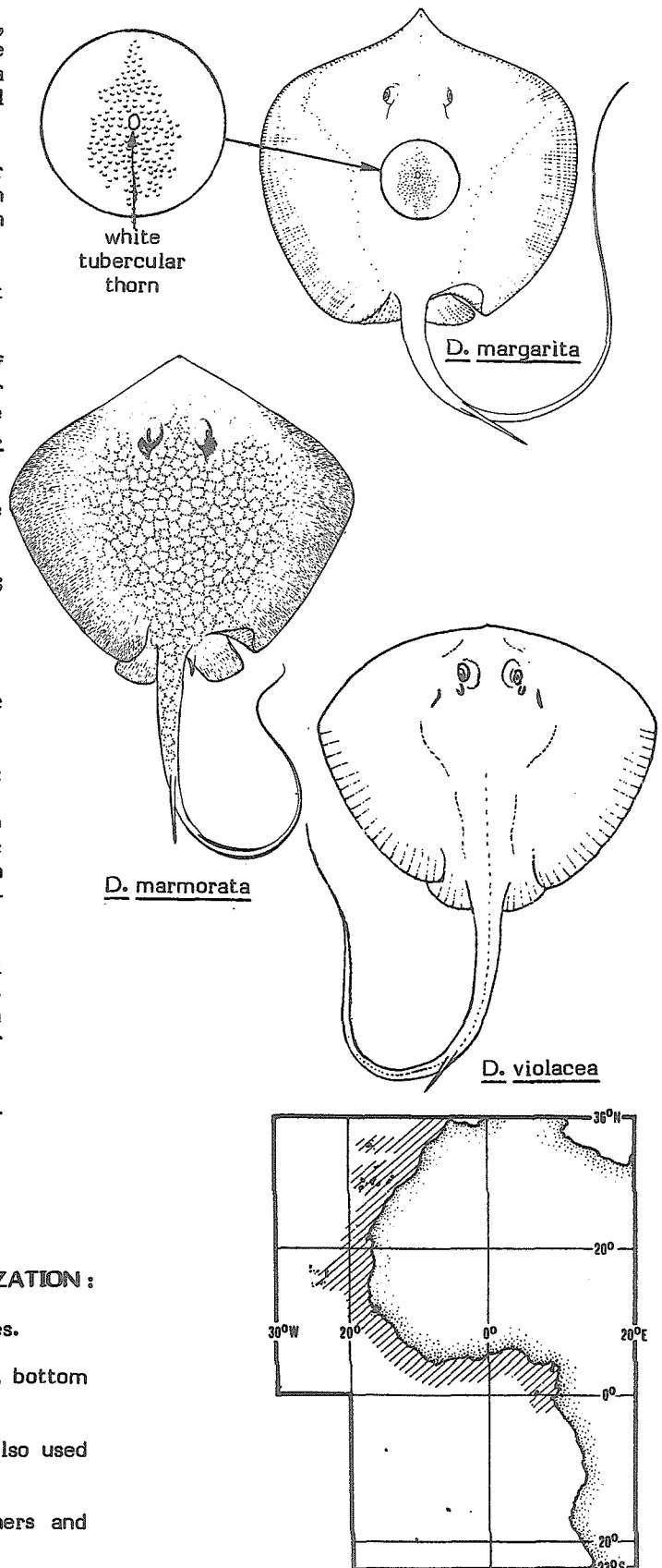
CATCHES, FISHING GEAR AND FORMS OF UTILIZATION :

Separate statistics are not reported for this species.

Caught mainly with bottom trawls, trammelnets, bottom longlines, and on hook and line.

Marketed (wings) fresh, smoked, dried salted, also used for fishmeal and oil.

Harmful to shellfish banks, dangerous to bathers and fishermen due to the poisonous spine.

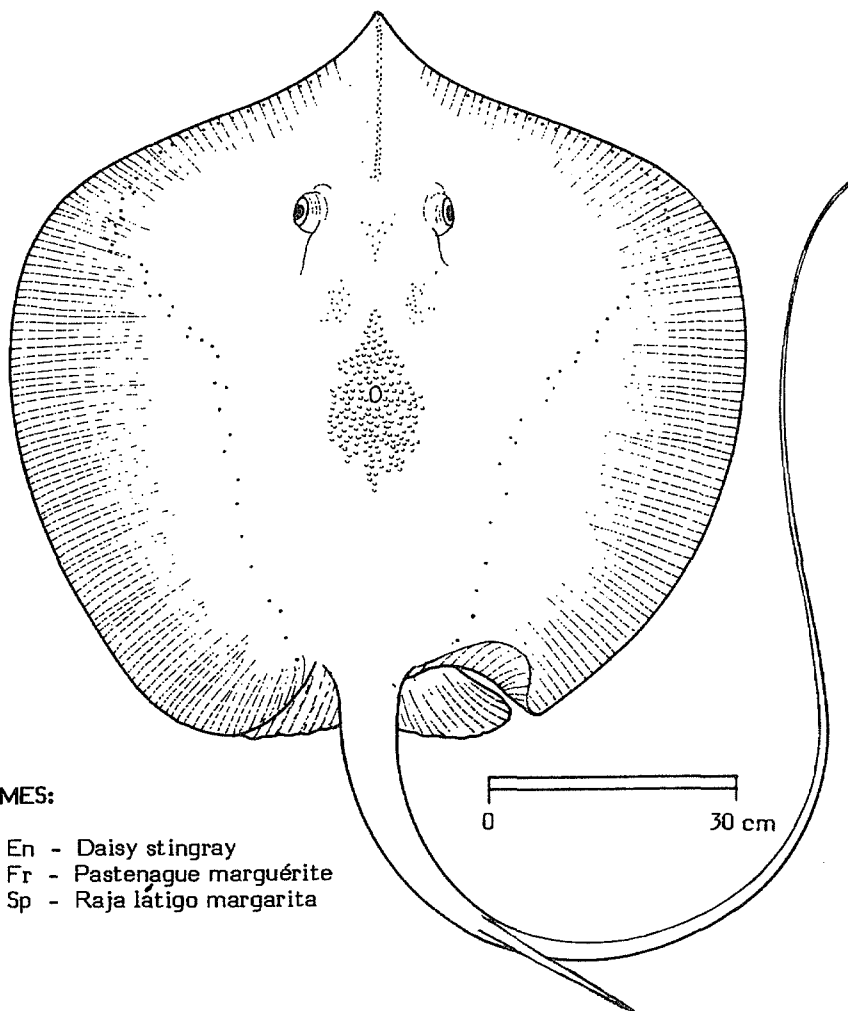


FAO SPECIES IDENTIFICATION SHEETS

FAMILY: DASYATIDAE

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)*Dasyatis margarita* (Günther, 1870)

OTHER SCIENTIFIC NAMES STILL IN USE: None



VERNACULAR NAMES:

FAO: En - Daisy stingray
Fr - Pastenague marguérite
Sp - Raja látigo margarita

NATIONAL :

DISTINCTIVE CHARACTERS :

Disc subquadrangular, about as broad as long, its front margins (anterior to level of spiracles) distinctly concave, so that tip of snout projects; snout angle about 120°; outer corners of disc broadly rounded and thus indistinct. Mouth nearly straight; teeth blunt and small, arranged in a pavement pattern of 35 to 40 rows; a transverse row of 5 (3 long central and a short one on either side) fleshy papillae on floor of mouth. Tail slender, if undamaged, up to 2.5 times as long as disc with usually 1 long, serrated and poisonous spine on its base; axils of pectorals equidistant from origin of tail spine and rear margins of orbits; a relatively short, low, longitudinal fold on ventral side of tail from below origin of spine backward; no dorsal ridge on tail; no dorsal or caudal fins. A single, large, whitish tubercular (pearl-like) thorn on midshoulder within an area of close-set spinules, which may extend, depending on growth, from between eyes to root of tail; wings, head and lower side smooth; tail with a few scattered thorns on upper surface.

Colour: plain greyish-brown above, white below.

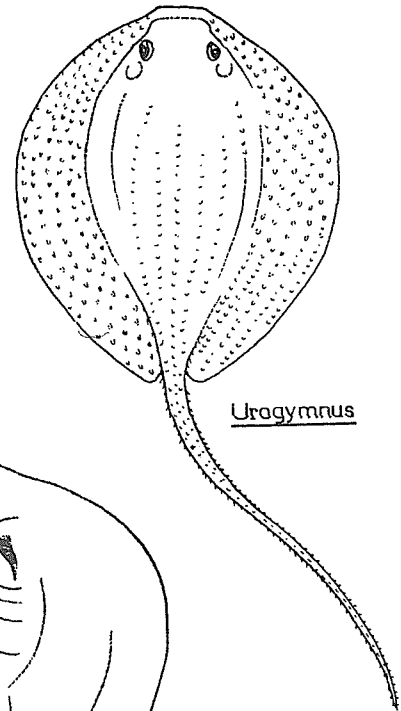
DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA :

Dasyatis sp. and D. ukpam: commonly confused with D. margarita; presently not distinguishable.

Remaining Dasyatis species: no large, pearl-like thorn in a field of spinules on midshoulder. Furthermore, the characteristic shape of the anterior disc margin separates D. margarita from most other species.

Urogymnus asperrimus: disc oval; never a spine on tail; entire upper side set with spinules and thorns.

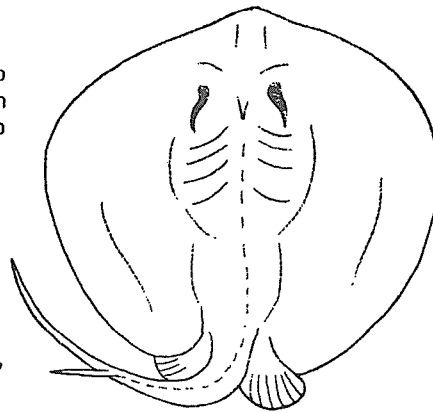
Taeniura grabata: tail about as long as disc; disc roundish, its front edge nearly truncate.



Urogymnus

SIZE :

Maximum: more than 200 cm total length and up to 100 cm disc width. Most specimens usually much smaller, but larger sizes most probably referring to closely related species.



Taeniura

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR

Found from Senegal to Congo.

Coastal and inshore waters to about 60 m depth, also in lagoons.

Feeds on all kinds of bottom-dwelling animals.

PRESENT FISHING GROUNDS :

Inshore waters off Senegal, Ivory Coast and Ghana.

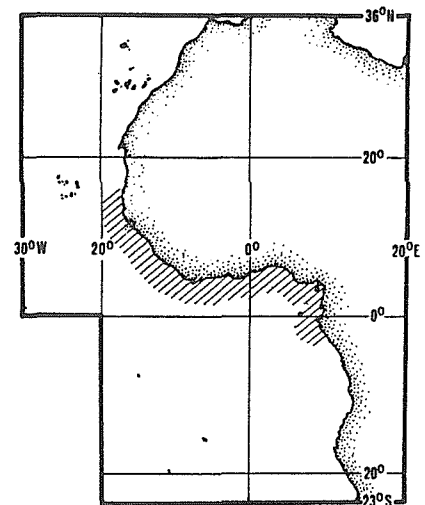
CATCHES, FISHING GEAR AND FORMS OF UTILIZATION :

Separate statistics are not reported for this species.

Caught mainly with trammelnets, bottom trawls, bottom longlines, and on hook and line.

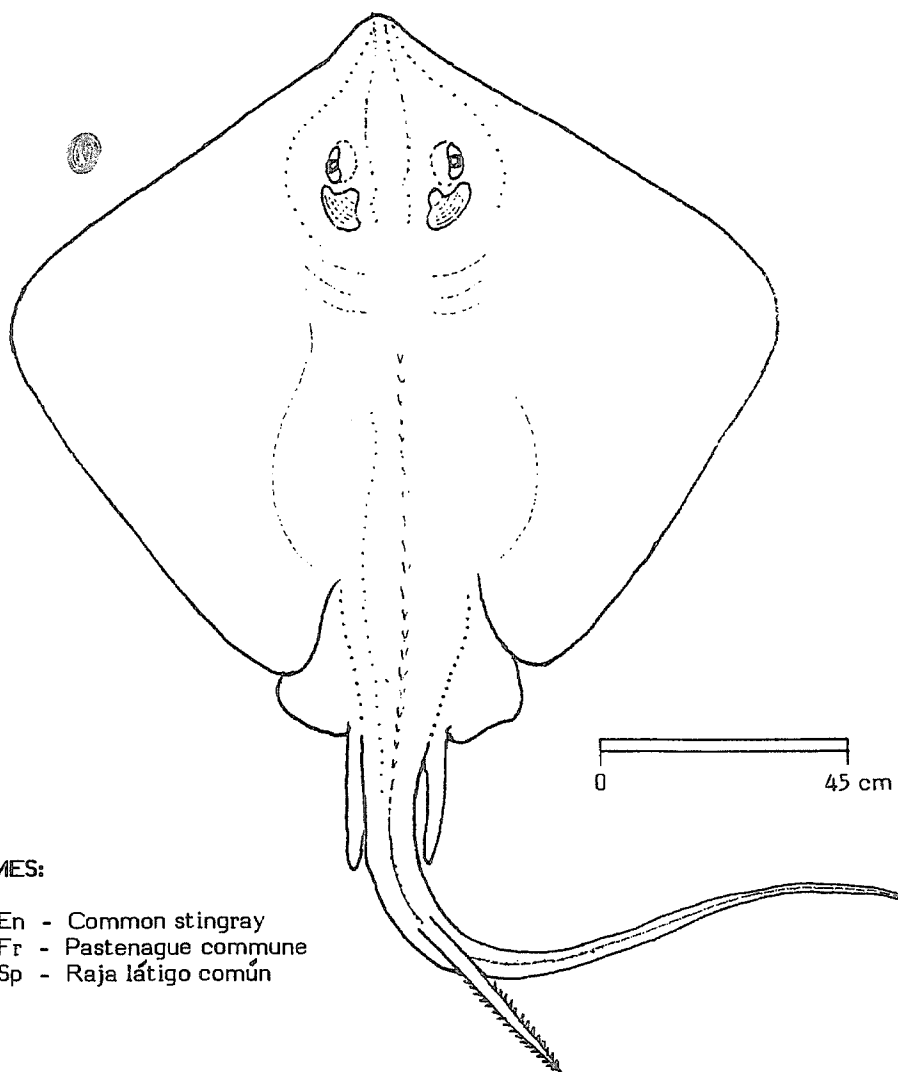
Marketed (wings) smoked and dried salted; also processed to fishmeal and oil.

Dangerous to bathers and fishermen due to the poisonous spine.



FAO SPECIES IDENTIFICATION SHEETS

FAMILY : DASYATIDAE

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)Dasyatis pastinaca (Linnaeus, 1758)OTHER SCIENTIFIC NAMES STILL IN USE : Trygon pastinaca (Linnaeus, 1758)

VERNACULAR NAMES:

FAO : En - Common stingray
 Fr - Pastenague commune
 Sp - Raja látigo común

NATIONAL :

DISTINCTIVE CHARACTERS :

Disc rhombic, about 1.2 times as broad as long, its front margins (in front of level of spiracles) weakly concave and forming an obtuse angle of about 110°; tip of snout not projecting. Mouth nearly straight; teeth blunt and small, arranged in a pavement pattern of 22 to 46 rows; a transverse row of 3 to 5 fleshy papillae on floor of mouth. Tail slender, if undamaged, about 1.5 times as long as disc with usually 1 (rarely more) long, serrated, poisonous spine(s) on its base; axils of pectorals nearer to origin of tail spine than to rear margins of orbits; a long, low, longitudinal fold on ventral side of tail from origin of spine backward, and a long dorsal ridge originating below spine. Several tubercular thorns in a median row along back and on shoulders, but no additional thorns on wings and head; disc otherwise smooth above and below.

Colour: upper side uniformly greyish-green to olive-brown; whitish below, disc margins grey to brown.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA :

Dasyatis centroura: upper ridge on tail only as long as spine (greatly exceeding length of spine in D. pastinaca); except in juveniles, a large number of prominent close-set thorns in an irregular median row from nape to origin of spine and additional thorns on head, nape/shoulder area and inner parts of wings develop with age; also, sides and top of tail from base of spine rearward always very rough with many thornlets and thorns.

D. margarita, D. rudis and D. ukpam: no upper ridge on tail. Furthermore, a single, large, whitish tubercular thorn in a field of spinules on midshoulder in D. margarita.

D. violacea: shape of disc nearly trapezoid; snout angle more than 150° (about 110° in D. pastinaca).

D. marmorata: disc with a distinct pattern of sea-blue mottling on a golden brown background; lower tailfold very short, about twice the length of tail spine (much longer than twice the length of spine in D. pastinaca).

Urogymnus asperrimus: disc oval, never a spine on tail; entire upper side set with spinules and thorns.

Taeniura grabata: tail about as long as disc; disc roundish.

SIZE :

Maximum: up to 250 cm total length and 140 cm disc width.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR :

In the area, found from the Straits of Gibraltar to Mauritania* ; also extending into the Mediterranean and the Black Sea and northward along the Atlantic coast of Europe up to South Ireland and the Western Baltic Sea. Also occurring off South Africa .

Inhabits shallow coastal waters (to about 60 m depth) on soft bottoms.

Feeds mainly on bottom-living invertebrates.

PRESENT FISHING GROUNDS :

Shallow coastal waters off the Canary Islands and North West Africa. Locally abundant.

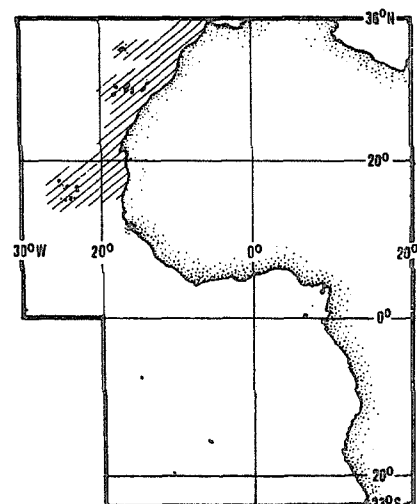
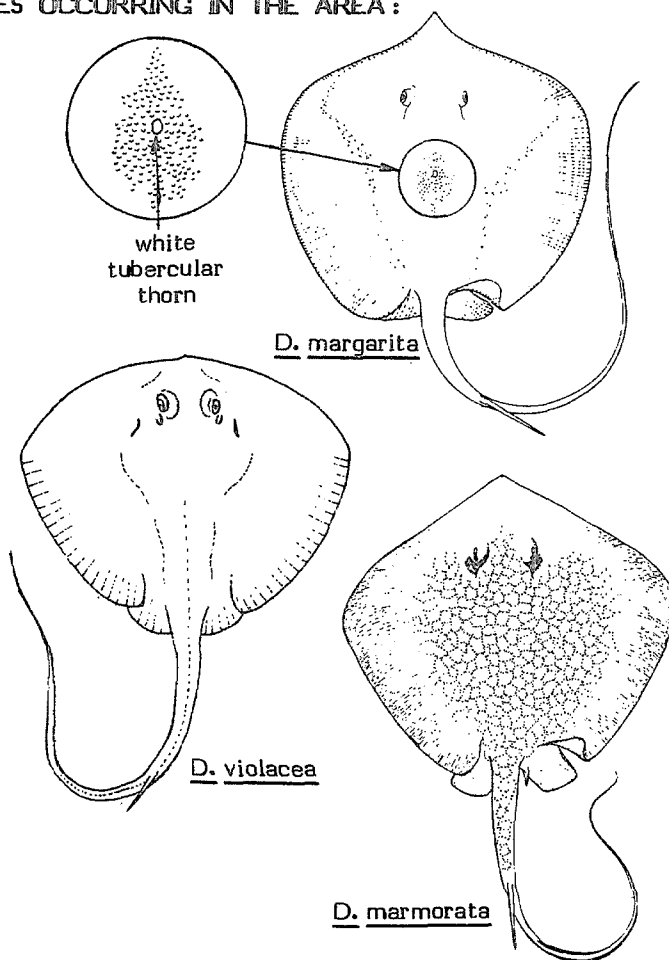
CATCHES, FISHING GEAR AND FORMS OF UTILIZATION :

Separate statistics are not reported for this species.

Caught mainly with bottom trawls, bottom longlines, trammelnets, and on hook and line.

Marketed (wings) smoked, dried salted, and also used for fishmeal and oil.

Harmful to shellfish banks, dangerous to bathers and fishermen due to the poisonous spine.



* This species has also been reported farther south along the West African coast to Angola. However, the records mentioned in the literature appear to be misidentifications of mainly D. marmorata, which apparently replaces D. pastinaca in the tropical Eastern Atlantic

FAO SPECIES IDENTIFICATION SHEETS

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)

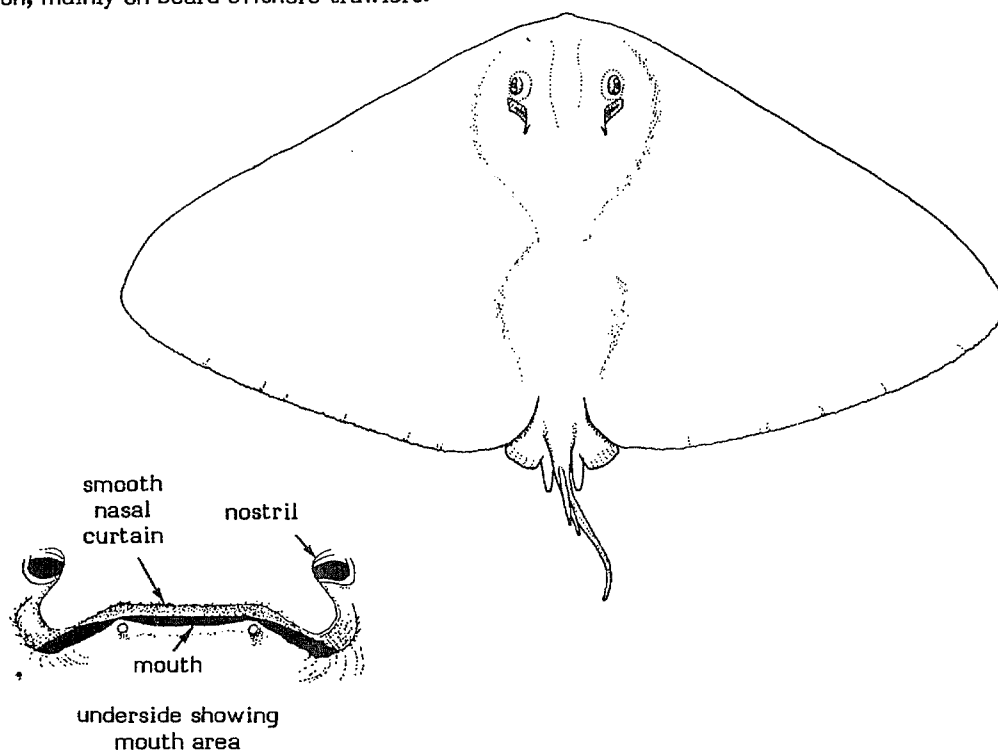
GYMNURIDAE

Butterfly rays

Large stingrays (maximum disc width more than 2 m) with a broad lozenge-shaped disc at least 1.5 times broader than long, and a slender, distinctly marked-off tail. Pectoral fins fused to sides of head over its entire length, not forming subrostral lobes or cephalic fins. Snout short and very obtusely angled; eyes and spiracles on top of head; spiracular tentacles present in some species; transverse nasal curtain smooth-edged, but may be finely fringed occasionally; no fleshy papillae on floor of mouth; numerous small teeth in bands along jaws. Dorsal fin absent*; caudal fin generally wanting. Tail rather slender and distinctly shorter than even disc length, with low longitudinal folds on upper and/or lower surfaces. A long, saw-edged, poisonous spine (or spines) present on tail in some species, but lacking in others. Skin of both sides of disc naked in most species, but may be more or less rough above in large specimens of some.

Colour: upper side greyish, olive-brown to dark brown, often in mixed shades and with a reddish cast. Ground colour frequently speckled or marbled with darker and/or paler spots and blotches; lower side of disc usually white, often with a brownish or rusty cast, and sometimes with narrow dark edgings. Tail above and below correspondingly dark and light, and often with a number of light and dark crossbars above and on sides.

Butterfly rays are cosmopolitan in tropical and warm-temperate seas, usually on sandy and muddy bottoms in shallow coastal waters, including lagoons, estuaries, and river mouths. The species are ovoviviparous and feed on all kinds of bottom dwelling animals. Though not rare locally, butterfly rays appear to be less abundant than stingrays (Dasyatidae) and are marketed less frequently, mainly in the Canary Islands and Ghana. The flesh (wings) appears to be as good as that of stingrays and is offered smoked and dried salted. Also used for fishmeal and oil production, mainly on board offshore trawlers.



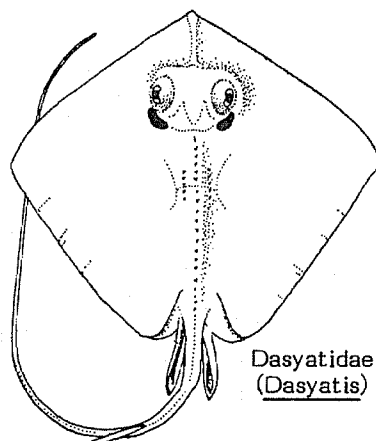
* Except for an extralimital genus

SIMILAR FAMILIES OCCURRING IN THE AREA :

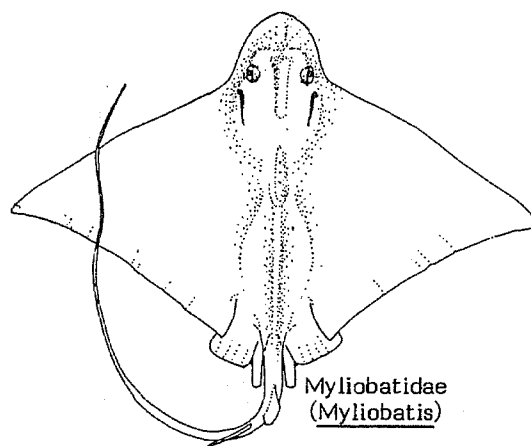
Dasyatidae: disc at most 1.3 times as broad as long; tail, if more or less undamaged, much longer than disc length; nasal curtain deeply fringed; fleshy papillae present on floor of mouth.

Myliobatidae, Rhinopteridae, Mobulidae: head distinctly marked off from body, anterior portions of pectoral fins forming separate lobes or cephalic fins; eyes and spiracles on sides of head.

Other families of rays and skates: two dorsal fins and a caudal fin, and no large, serrated tail spine.



Dasyatidae
(Dasyatis)



Myliobatidae
(Myliobatis)

KEY TO GENERA OCCURRING IN THE AREA :

Gymnura only.

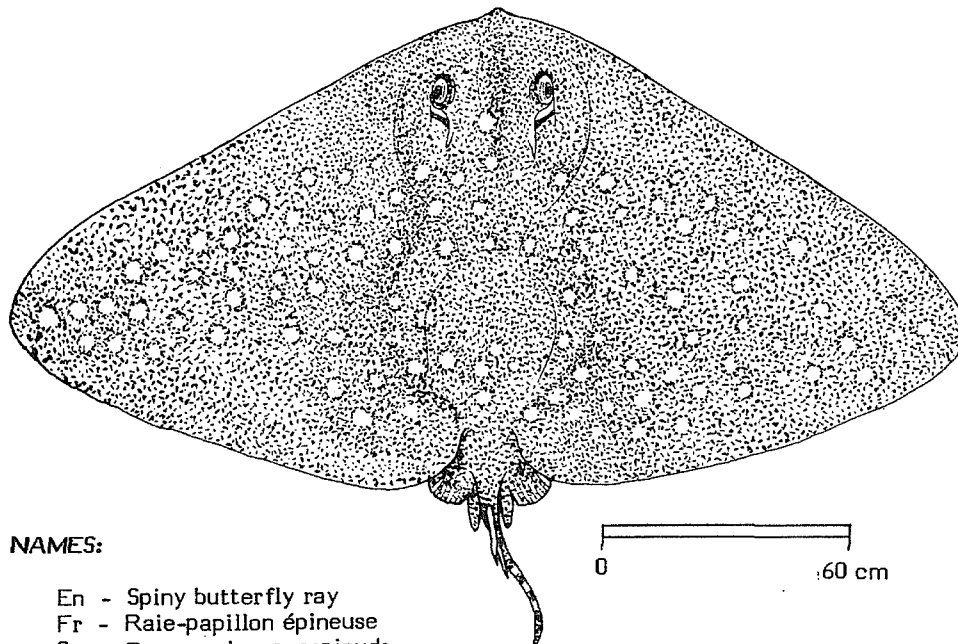
LIST OF SPECIES OCCURRING IN THE AREA :

Code numbers are given for those species, for which Identification Sheets are included

<u>Gymnura altavela</u> (Linnaeus, 1758)	GYMN Gymn 1
<u>Gymnura hirundo</u> (Lowe, 1843)	
<u>Gymnura micrura</u> (Bloch & Schneider, 1801)	GYMN Gymn 2

FAO SPECIES IDENTIFICATION SHEETS

FAMILY: GYMNURIDAE

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)Gymnura altavela (Linnaeus, 1758)OTHER SCIENTIFIC NAMES STILL IN USE: Pteroplatea altavela (Linnaeus, 1758)

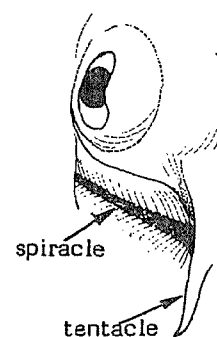
VERNACULAR NAMES:

FAO : En - Spiny butterfly ray
 Fr - Raie-papillon épineuse
 Sp - Rayamariposa espinuda

NATIONAL :

DISTINCTIVE CHARACTERS :

Disc lozenge-shaped, at least twice as broad as long, its front margins slightly sinuous and its outer corners narrowly angled. Snout short and very obtusely angled (about 135°), its preorbital length about 55 to 60% of the distance between outer margins of eyes; tip of snout not projecting; a distinct, single long tentacle at the inner posterior corner of each spiracle; mouth relatively small and straight; teeth small, more or less pointed, arranged in close-set pavement or parallel rows (about 60 to 140 in upper jaw), their number increasing with growth; nasal curtain smooth-edged, finely fringed at rear edge in some young individuals. Tail slender and very short, only about 1/3 of disc length, even if undamaged, with one or two long, serrated poisonous spines at its base arising a short distance behind tips of pelvic fins; a low longitudinal fold or keel along upper side from below spine to tip of tail and an identical keel below, from level of rear pelvic corners to end of tail. Skin smooth above and below, but a few large adults have been reported as rough above.



Colour: upper background colour dark brown to coffee-brown with a greyish or reddish cast, variously patterned with dark and light spots and blotches, often giving a marbled appearance; sometimes with an ocellus-like pale-edged blotch. Tail with a number of alternating dark and light crossbars, which are less distinct in larger specimens. Lower side white with a brownish, rosy, or rusty cast. Disc and pelvics with narrow dark edges, and underside of tail with more or less distinct dark clouding in its anterior part.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA :

Gymnura micrura: tail spine and spiracular tentacles always lacking.

Gymnura hirundo: spiracular tentacles lacking; upper surface of tail rounded, without longitudinal keel.

SIZE :

Maximum: possibly up to 400 cm disc width (a few records), but usually to about 200 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR :

In the area, from the Straits of Gibraltar to about Congo including Madeira and the Canary Islands; also extending into the Mediterranean and northward to Portugal. In the Western Atlantic, from Massachusetts southward to the La Plata River. Most abundant in tropical latitudes, but nowhere reported as really common.

Inhabits mainly inshore waters, but is also found to about 60 m depth, rarely deeper. A demersal species on soft bottoms; occasionally observed in small groups.

Feeds on all kinds of bottom dwelling animals, but seems to prefer fish and cephalopods.

PRESENT FISHING GROUNDS :

Inshore waters of Canary Islands and Ghana.

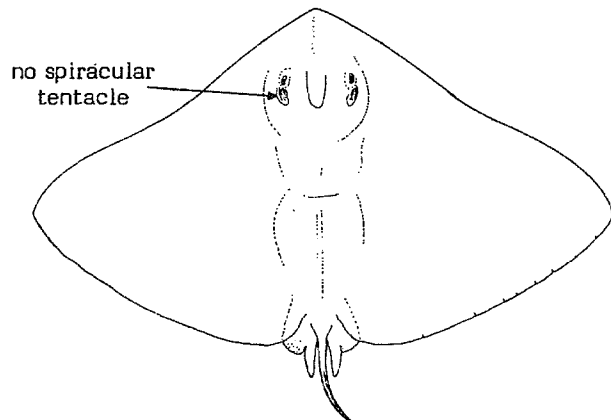
CATCHES, FISHING GEAR AND FORMS OF UTILIZATION :

Separate statistics are not reported for this species.

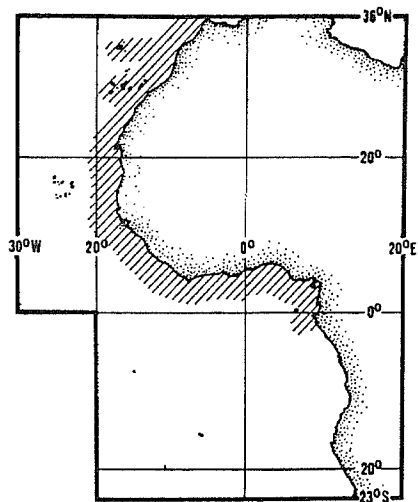
Caught with bottom trawls, trammelnets, bottom longlines, and on hook and line.

Marketed (wings) smoked, dried salted, also used for producing fishmeal and oil.

Relatively dangerous to bathers and fishermen due to its sting.

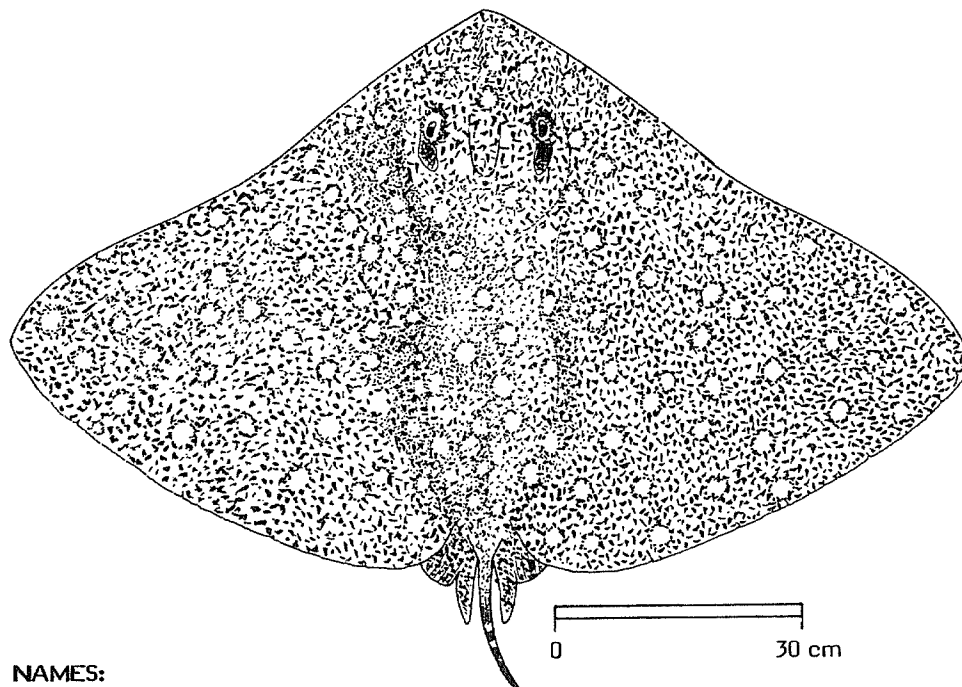


G. micrura



FAO SPECIES IDENTIFICATION SHEETS

FAMILY : GYMNURIDAE

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)Gymnura micrura (Bloch & Schneider, 1801)OTHER SCIENTIFIC NAMES STILL IN USE : Pteroplatea micrura (Bloch & Schneider, 1801)

VERNACULAR NAMES:

FAO : En - Smooth butterfly ray
 Fr - Raie-papillon glabre
 Sp - Rayamariposa menor

NATIONAL :

DISTINCTIVE CHARACTERS :

Disc lozenge-shaped, 1.6 to 1.8 times as broad as long, its anterior margins weakly sinuous and its outer corners sharply angled. Snout short and obtusely angled (120° to 130° in males, 130° to 140° in females), its preorbital length about 70 to 80% of the distance between outer margins of eyes in females, about 100% in males; tip of snout not projecting; no spiracular tentacles; mouth relatively small and nearly straight; teeth small and pointed, 60 to 120 close-set parallel rows in upper jaw, their number increasing with growth; rear margin of nasal curtain at most finely fringed in some specimens. Tail slender and very short (only $1/3$ of disc length even if undamaged), always lacking the enlarged serrated spine, but bearing, throughout the posterior two thirds of its length, an upper and a lower keel originating opposite each other. Skin perfectly smooth on both sides.

Colour: background of upper side grey, brown, greenish olive, or purple and always variegated with darker and paler spots and vermiculated streaks to give a marbled appearance. Lower side white; margins of disc variously darker edged. Tail with 3 or 4, more or less distinct dark cross-bars and irregular darker bordering.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA :

Gymnura altavela: generally 1 or 2 serrated spines on tail and a long tentacle at each spiracle.

Gymnura hirundo: tail spine always present. No keel along upper side of tail.

SIZE :

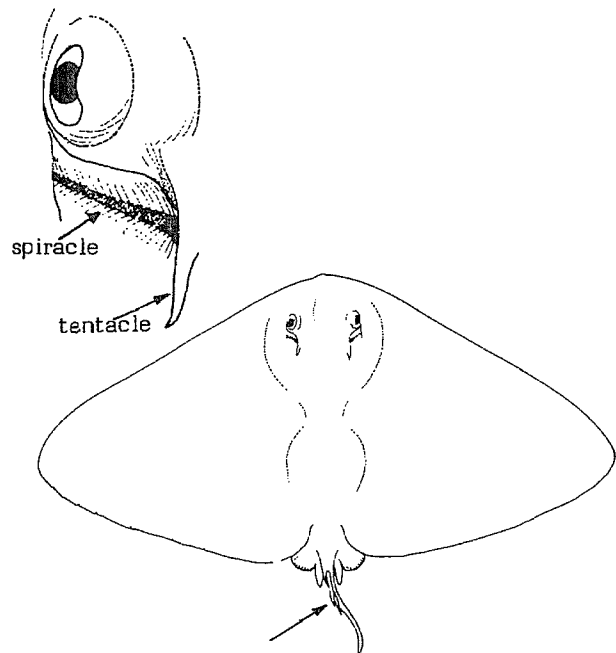
Maximum: to about 120 cm disc width.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR :

In the area, found from Senegal southward throughout the Gulf of Guinea. Also reported to occur in the Western Atlantic from Massachusetts to Brazil*.

Inhabits mainly sandy bottoms in inshore waters, also entering estuaries. A demersal species nowhere reported as abundant in the area.

Feeds on all kinds of bottom-dwelling animals.



G. altavela

PRESENT FISHING GROUNDS :

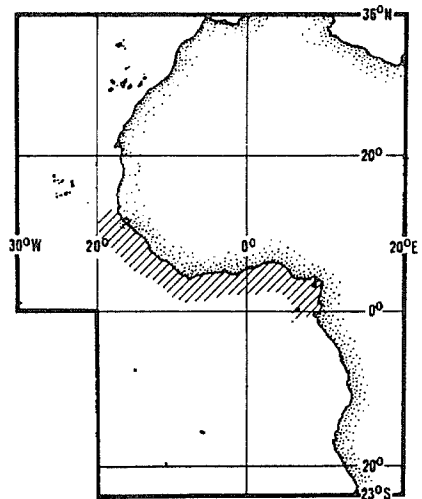
Inshore waters off Ghana.

CATCHES, FISHING GEAR AND FORMS OF UTILIZATION :

Separate statistics are not reported for this species.

Caught with bottom trawls, trammelnets, and on hook and line.

Marketed (wings) smoked and dried salted.



*Records from outside the Atlantic Ocean appear to be misidentifications of related species.

FAO SPECIES IDENTIFICATION SHEETS

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)

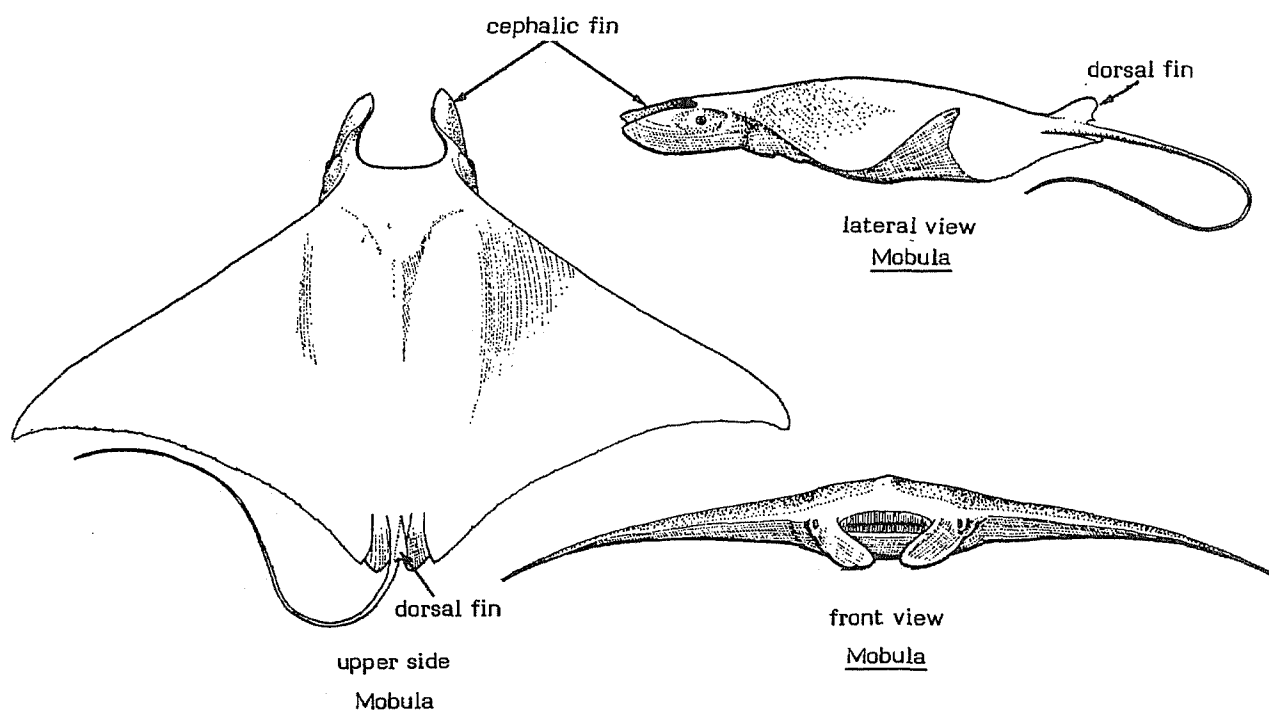
MOBULIDAE

Devil rays, mantas

Stingrays of very large size with a broad, lozenge-shaped disc which may attain over 7 m width in some species (*Manta*). Head broad, its anterior part marked off from body disc. Margins of pectoral fins separated anteriorly to form two cephalic fins which project beyond front of head in vertical orientation; eyes and spiracles on sides of head; mouth terminal or on lower side of head without fleshy papillae; teeth minute, forming a band of numerous rows along one or both jaws; gills modified to function also as a filter-apparatus, formed by horny membranous plates arising from each visceral arch. A small dorsal fin on base of tail; no caudal fin. Tail slender, very long and whiplike, distinctly marked off from body and bearing a long serrated spine (or spines) in some species. Skin naked or more or less rough due to the presence of small tubercles and scattered spinules.

Colour: upper side of body and outer surfaces of cephalic fins grey, reddish to olive-brown, or blackish; lower side of body and inner surfaces of cephalic fins creamy or greyish white. Irregular patterns with a few pale blotches and dark dots may occur dorsally.

Devil rays and mantas occur in tropical and subtropical latitudes of all oceans, over continental shelves as well as around larger offlying islands. They are pelagic and highly migratory, swimming often in small schools close to the surface by flapping their wing-like pectoral fins; they are reported to leap out of the water occasionally. Mobulids feed by plankton filtration, but also on small schooling fishes; all are ovoviviparous. None of the species in Fishing Area 34 is sufficiently abundant to be considered of significant commercial interest. However, some are caught rather frequently with trammelnets, purse seines, midwater trawls and harpoons. The flesh (wings) is highly esteemed and more or less regularly marketed locally (Senegal, Ivory Coast, Ghana, Nigeria), smoked, dried salted and even as fresh fillet. Other parts and whole specimens are used for fishmeal and oil mainly on board foreign offshore trawlers.

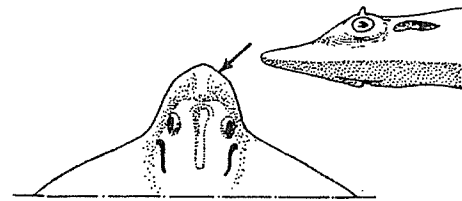


SIMILAR FAMILIES OCCURRING IN THE AREA :

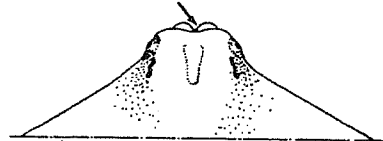
Myliobatidae, Rhinopteridae: anterior portions of pectoral fins forming a fleshy lobe extending below front of head, with a median incision (Rhinopteridae) or without (Myliobatidae); teeth very large, in 1 to 7 rows only.

Dasyatidae, Gymnuridae: eyes and spiracles on top of head; anterior margins of pectoral fins continuous along sides of head, which is not marked off from body.

Other families of rays and skates: always with two dorsals and a caudal fin.



Myliobatidae



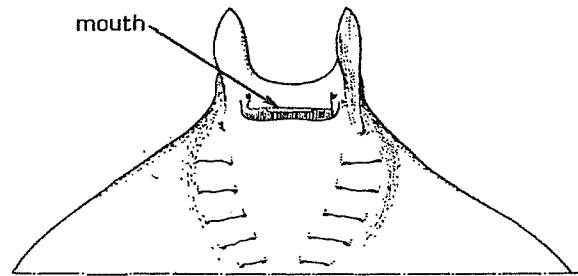
Rhinopteridae



Gymnuridae

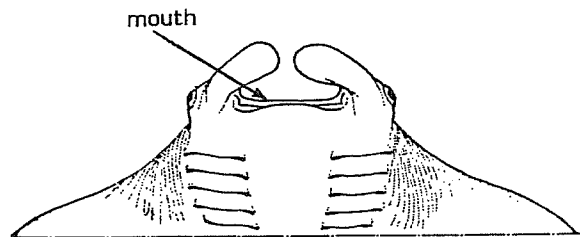
KEY TO GENERA OCCURRING IN THE AREA :

- 1 a. Mouth on lower surface of head (Fig. 1) Mobula
- 1 b. Mouth terminal, extending across front of head (Fig. 2) Manta



Mobula

Fig. 1



Manta

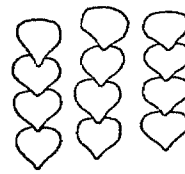
Fig. 2

underside of front part

KEY TO THE SPECIES OF *Mobula* IN THE AREA*

1 a. A large serrated spine on base of tail behind dorsal fin always present

2 a. About 150 to 160 rather wide-spaced parallel rows of teeth in each jaw; each individual tooth relatively small, cardi-form, its tip broadly triangular and overlapping, within a transverse series, the rear edge of the following tooth (Fig. 1a); tooth bands occupying the entire length of jaws. Upper side with fine spinules loosely scattered over posterior part of wings and body, those in midline of back and on root of tail usually as enlarged tubercles; dorsal fin uniformly dark-coloured



a. *M. mobular*

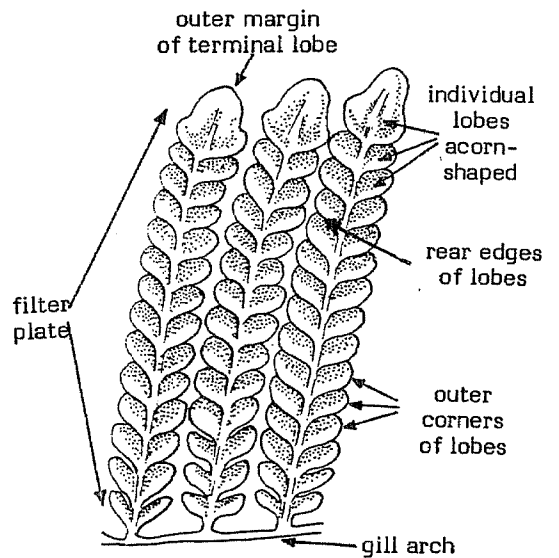


b. *M. rancureli*

teeth in upper jaw Fig. 1

2 b. About 250 to 260 wide-spaced transverse rows of teeth in each jaw, arranged in pavement pattern; each individual tooth minute, narrowly drop-shaped with a more or less pointed tip; within a transverse series, each tooth separated from the other by a distance of more than a tooth length (Fig. 1b); tooth bands present only on median portion of jaw, occupying 80 to 90% of jaw length; upper side of disc and root of tail completely covered with very close-set, lanceolate spinules, none of them enlarged; dorsal fin blackish-brown, with a distinct light spot at its upper extremity

M. rancureli



a. *M. hypostoma*

1 b. Never a large serrated spine on base of tail

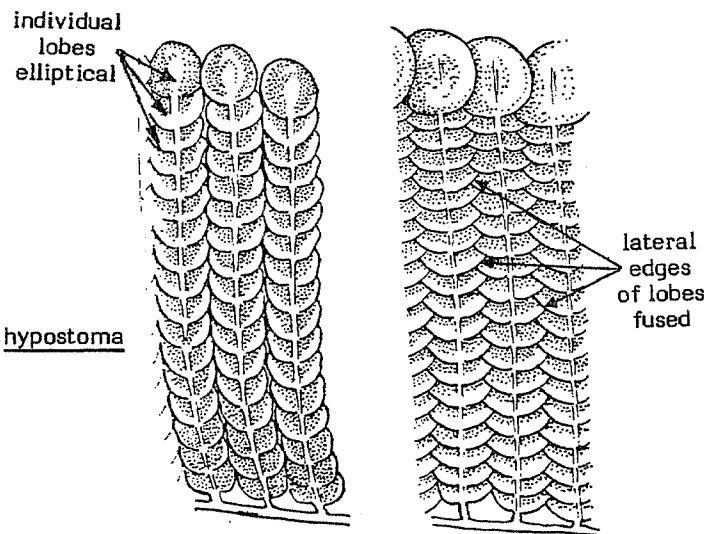
3 a. Tooth bands occupying at most the median 50% of jaw length

4 a. Distance between front line of head and origin of dorsal fin less than 45% of greatest disc width; branchial (gill) filter plates with acorn-shaped lobes; rear part of these lobes forming a blunt angle of straight edges; free outer corners narrowly rounded (Fig. 2a)

M. hypostoma

4 b. Distance between front line of head and origin of dorsal fin 47 to 52% of greatest disc width; branchial filter plates with elliptical lobes; rear part of lobes more or less trapezoid to broadly rounded; free outer edges slightly convex (Fig. 2b) ..

M. rochebrunei



b. *M. rochebrunei*

c. *M. coilloti*

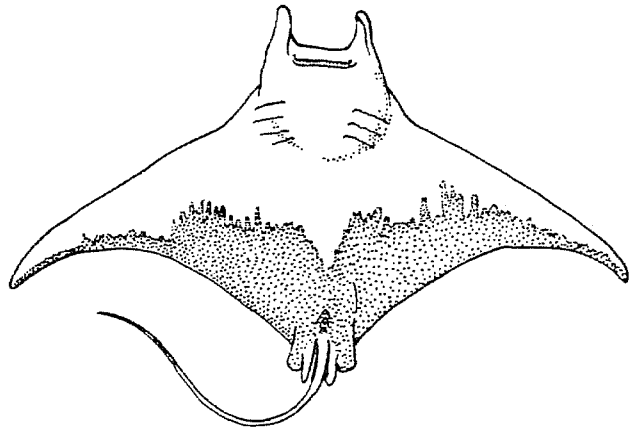
examples of branchial filter plates Fig. 2

* Species descriptions and illustrations available in the literature do not allow a comparative analysis of several important characters. This key is tentative and should be revised on the basis of material and with the help of information expected from users. Such information is also badly needed to clarify the question of the presence of *M. hypostoma* in the Eastern Atlantic

3 b. Tooth bands occupying distinctly more than the median 50% of jaw lengths (about 65 to 85%)

5 a. Both sides of disc completely covered with very close-set, strong, needle-like spinules; tail with similar spinules, densely set along anterior two thirds of sides, but smooth above and throughout its posterior third; lower side of disc white in its anterior half, greyish posteriorly (Fig. 3); dorsal fin uniformly grey; teeth elongate and rectangular, their inner edges deeply dentate (Fig. 4a); lobes of adjoining branchial filter plates fused along their lateral edges (a unique character among species of the genus) (Fig. 2c)

M. coilloti

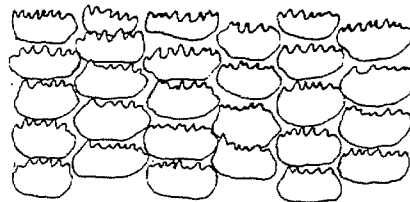


M. coilloti
lower view

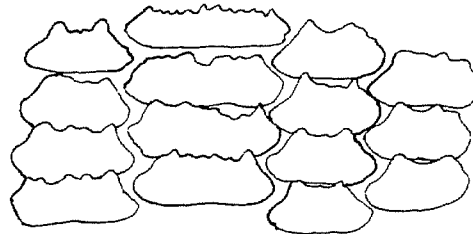
Fig. 3

5 b. Both sides of disc either with more or less loosely scattered fine spinules (except for a smooth broad band running ventrally from outer corners along posterior margins of disc), or completely smooth; tail smooth, but skin of upper surface with a criss-cross of low dermal ridges; lower side of disc uniformly white; dorsal fin dark, with a more or less distinct light blotch at its upper extremity; teeth trapezoid to rectangular with a few blunt points at their inner edges, which can also be undulated (Fig. 4b); lateral edges of individual lobes of branchial filter-plates entirely free (as in Figs. 2a,b)

M. lucasana



a. M. coilloti



b. M. lucasana

teeth in lower jaw

Fig. 4

LIST OF SPECIES OCCURRING IN THE AREA :

Code numbers are given for those species for which Identification Sheets are included

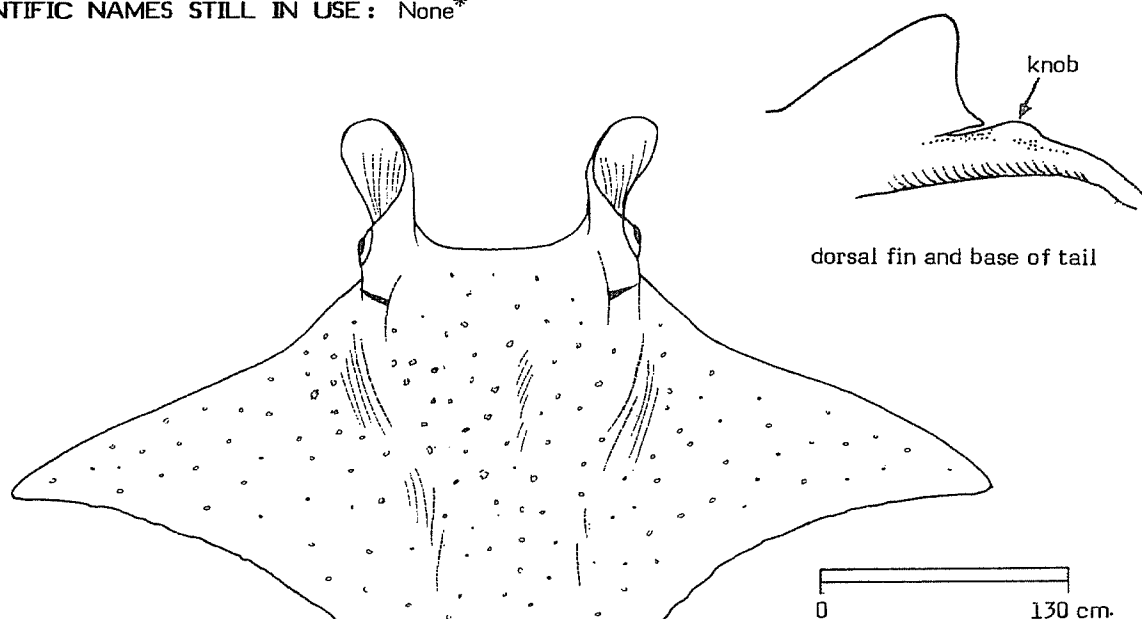
<u>Manta birostris</u> (Donndorff, 1798)	MOBUL Mant 1
<u>Mobula coilloti</u> Cadenat & Rancurel, 1960	MOBUL Mobul 1
<u>Mobula hypostoma</u> (Bancroft, 1831)	
<u>Mobula lucasana</u> Beebe & Tee Van, 1938	
<u>Mobula mobular</u> (Bonnaterre, 1788)	
<u>Mobula rancureli</u> Cadenat, 1959	
<u>Mobula rochebrunei</u> (Vaillant, 1879)	MOBUL Mobul 2

FAO SPECIES IDENTIFICATION SHEETS

FAMILY: MOBULIDAE

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)*Manta birostris* (Donndorff, 1798)

OTHER SCIENTIFIC NAMES STILL IN USE: None*



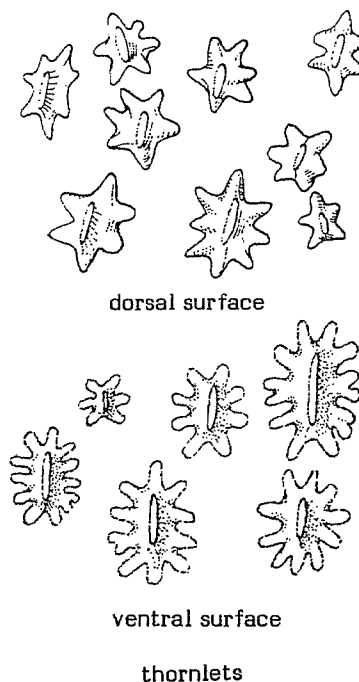
VERNACULAR NAMES:

FAO: En - Giant Atlantic manta
Fr - Mante atlantique
Sp - Manta atlántica gigante

NATIONAL:

DISTINCTIVE CHARACTERS:

Disc broadly lozenge-shaped, about two times broader than long, its anterior margins straight to weakly convex, the outer corners acute and the posterior margins distinctly concave. Head very broad, marked off from body disc anteriorly (from about level of spiracles onward); anterior parts of pectoral fins separate to form two long, vertically orientated cephalic fins; eyes and spiracles on sides of head; mouth without fleshy papillae terminal and very wide, extending across front of head between insertions of cephalic fins; numerous minute, flattened teeth arranged in bands of about 270 transverse rows, forming a close-set pavement pattern occupying the median 3/4 of jaw length; nasal curtain smooth-edged; individual lobes of each branchial filter-plate with broadly rounded and deeply fringed inner margins, and with lateral edges fused to those of adjoining plates. No caudal fin, but a small dorsal fin on base of tail. Tail whip-like and shorter than disc width; usually without a long, serrated spine behind dorsal fin, but with a prominent hard, rounded ridge or knob in the same position. Small thornlets scattered on upper side of disc and tail, dorsal fin and outer surfaces of cephalic fins generally; tubercles present ventrally on disc and tail, but these less distinct and somewhat differing in shape.



* A number of nominal species have been described from around the world. Recent opinions indicate that all are most probably identical with the Atlantic *M. birostris*, except for possibly one Pacific Central American species

Colour: upper surface of disc and tail, and outer surface of cephalic fins may be plain, reddish or olive-brown to blackish; often an irregular white patch on each shoulder, sometimes crossed by a series of dark spots; some individuals may show a pair of indistinct whitish bands on each wing, or a large white, triangular patch on posterior area of disc in addition to anterior markings. Lower side of disc, tail and inner surfaces of cephalic fins uniformly white, but mouth surrounded by a more or less dark band; margins of wings grey-edged and abdomen may be irregularly blotched with grey to black.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA :

Mobula species: mouth on lower surface of head.

SIZE :

Maximum: about 7 m disc width; weight up to 1.2 tons; common to 4.5 m disc width.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR :

Worldwide in tropical and subtropical waters, sometimes reaching temperate latitudes. In the area, found from about Senegal to Congo, including around islands.

Usually inhabits shallow coastal waters and appears to rest for long periods on the sea bottom; however, it can also be observed swimming in pairs or small groups near the surface, leaping out of the water occasionally. Can be approached rather easily.

A filter-feeder, hence the modified branchial apparatus, the food consisting mainly of all kinds of planktonic crustaceans but also of small schooling fishes.

PRESENT FISHING GROUNDS :

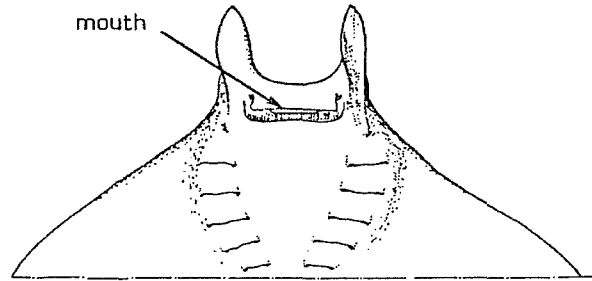
Shallow coastal waters off Senegal, Ivory Coast, Ghana, Nigeria, but also taken by offshore trawlers.

CATCHES, FISHING GEAR AND FORMS OF UTILIZATION :

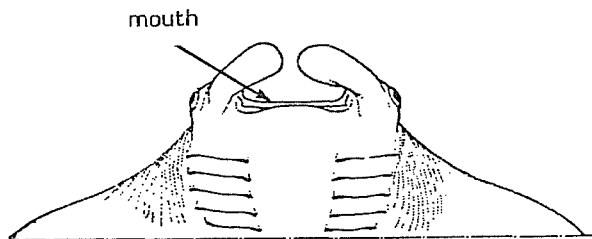
Separate statistics are not reported for this species.

Caught with trammelnets, purse seines, longlines, driftnets, and pelagic trawls.

Locally and occasionally marketed (wings) occasionally as fresh fillets, smoked or dried salted. Also used for fishmeal and oil on board large offshore trawlers.

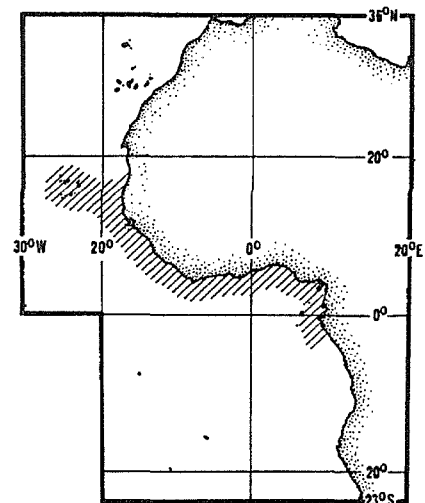


Mobula



Manta

underside of front part

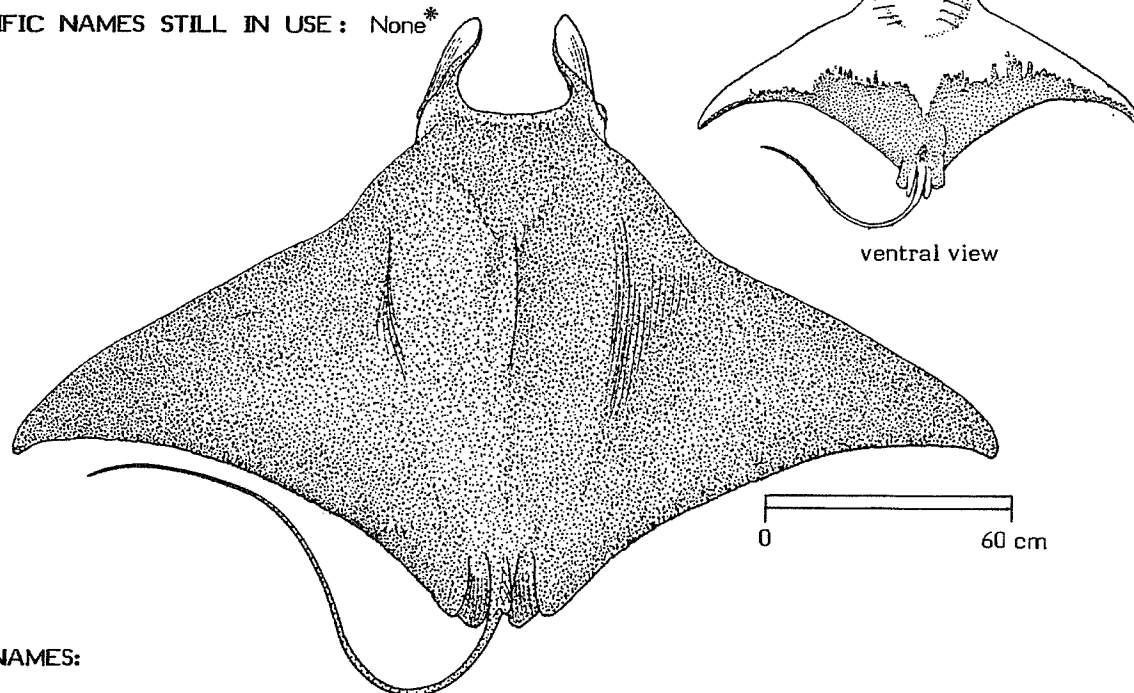


FAO SPECIES IDENTIFICATION SHEETS

FAMILY: MOBULIDAE

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)*Mobula coilloti* Cadenat & Rancurel, 1960

OTHER SCIENTIFIC NAMES STILL IN USE: None*



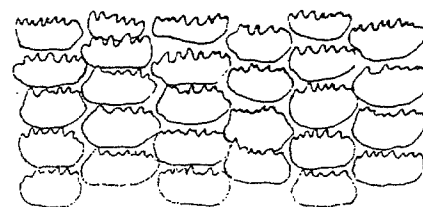
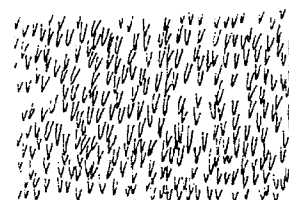
VERNACULAR NAMES:

FAO : En - Greater Guinean mobula
Fr - Diable géant de Guinée
Sp - Diablo gigante de Guinea

NATIONAL :

DISTINCTIVE CHARACTERS :

Disc broadly lozenge-shaped, about two times broader than long, its anterior margin with a strong notch at level of nape, and distinctly convex thereafter; outer corners sharply pointed and posterior margin strongly concave. Head broad, its anterior part marked off from body disc; anterior parts of pectoral fins separated and forming 2 long, vertically oriented cephalic fins; eyes and spiracles on sides; mouth on lower surface of head, very wide (width equal to distance between cephalic fins at front of head), almost straight, and without fleshy papillae; teeth small, flattened, broadly rectangular to hexagonal, their inner edges strongly dentate, arranged in a pavement pattern occupying more than median 50% of jaw lengths and composed of 120 close-set tooth rows in each jaw; adjoining branchial filter plates fused to each other by the lateral edges of their individual lobes, inner (or rear) margin of each lobe broadly and evenly rounded and finely serrated. No caudal fin, but a small dorsal fin on base of tail, originating at level of pectoral fin axils. Tail whip-like, shorter than disc width, never bearing a large serrated spine behind dorsal fin. Both sides of disc, and anterior two thirds of sides of tail covered with very close-set, strong, needle-like spinules; tail smooth on upper side and throughout its posterior third.

*M. coilloti*

dorsal spinules

* However this recently described species may have been mistaken for other species of this genus within the area

Colour: upper side of disc and of pelvics, outer surfaces of cephalic fins and dorsal fin uniform light metallic grey, but lower posterior tip of dorsal fin pale-edged; tail grey becoming darker rearward. Inner surfaces of cephalic fins and anterior half of lower side of disc plain white, posterior half of disc and lower side of pelvic fins distinctly grey including outer corners of wings, the white and grey disc areas being separated by an irregular, but sharp line.

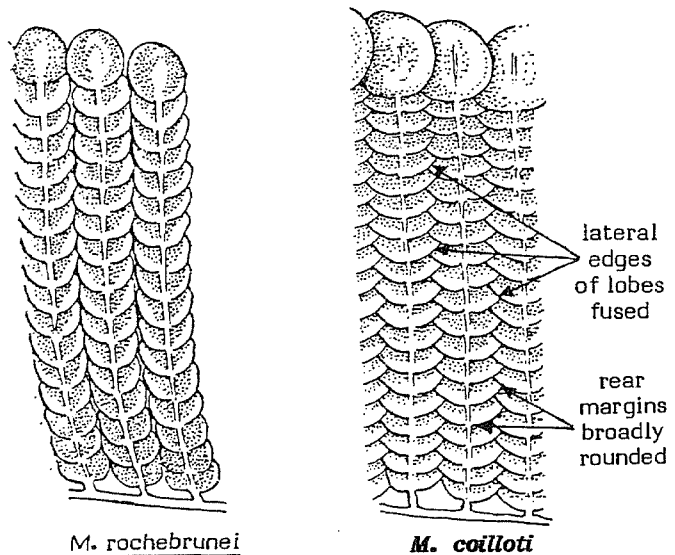
DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA :

Other Mobula species: lateral edges of individual lobes of branchial filter-plates entirely free. Furthermore, teeth trapezoid to rectangular, their inner edges with a few blunt points or undulated, lower side of disc uniformly white and dorsal fin with a light blotch at its upper extremity, in M. lucasana; tooth bands occupying at most the median 50% of jaw lengths in M. hypostoma and M. rochebrunei (more than 50% in M. coilloti); a large serrated spine always present at base of tail behind dorsal fin in M. mobular and M. rancureli.

Manta birostris: mouth terminal across front of head.

SIZE :

Maximum: about 250 cm disc width, weight about 160 kg.



examples of branchial filter plates

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR :

Reported only from Ivory Coast; no further records hitherto confirmed, but probably present throughout the Gulf of Guinea.

Detailed information on behaviour is not available.

Feeds by filtration on larger planktonic organisms.

PRESENT FISHING GROUNDS :

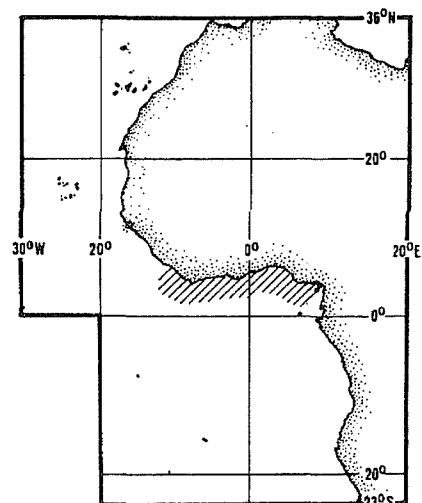
Probably throughout the Gulf of Guinea.

CATCHES, FISHING GEAR AND FORMS OF UTILIZATION :

Separate statistics are not reported for this species.

Caught with trammelnets, purse seines, harpoons, and in pelagic trawls.

Marketed locally (wings) smoked and dried salted. Whole specimens also used for fishmeal and oil production on board foreign offshore trawlers.

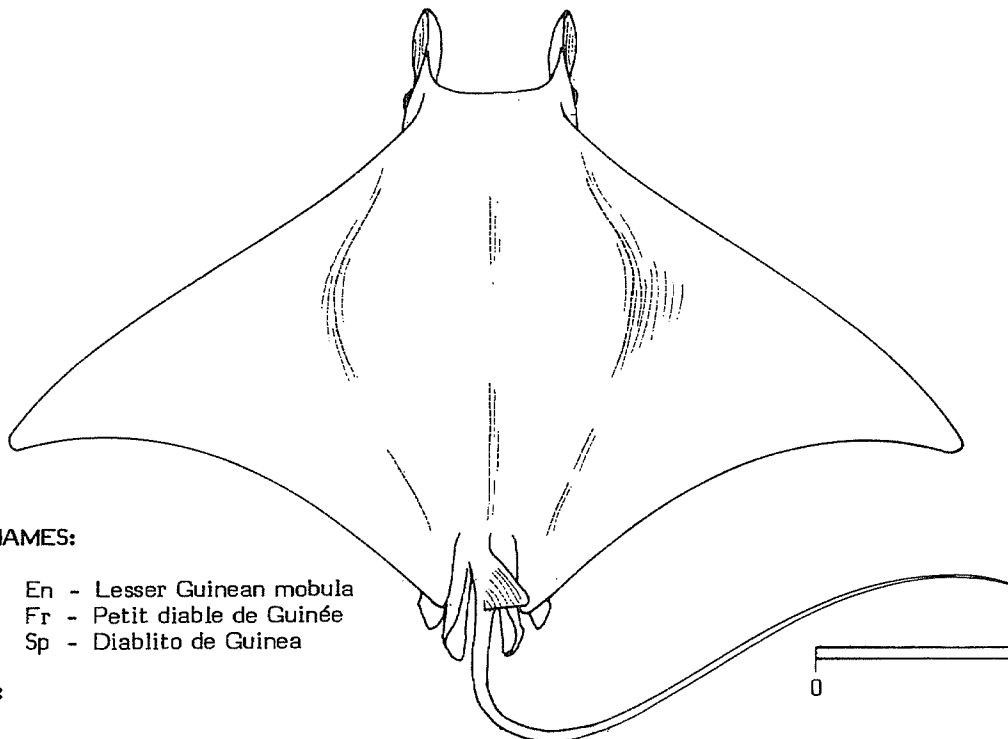


FAO SPECIES IDENTIFICATION SHEETS

FAMILY : MOBULIDAE

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)Mobula rochebrunei (Vaillant, 1879)

OTHER SCIENTIFIC NAMES STILL IN USE : None*



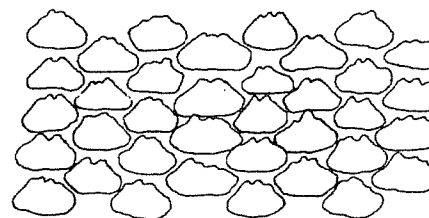
VERNACULAR NAMES:

FAO : En - Lesser Guinean mobula
Fr - Petit diable de Guinée
Sp - Diablito de Guinea

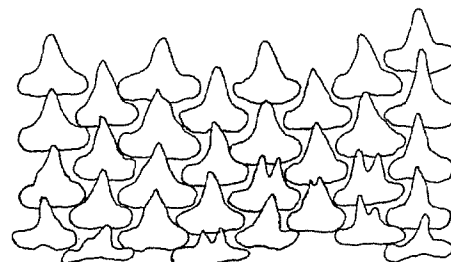
NATIONAL :

DISTINCTIVE CHARACTERS :

Disc broadly lozenge-shaped, about 1.7 times broader than long, its anterior margins straight to weakly convex, its outer corners very acute and its posterior margins distinctly concave. Head broad, its anterior part marked off from body disc; anterior parts of pectoral fins separated and forming 2 long, vertically orientated cephalic fins; eyes and spiracles on sides of head; mouth on lower surface of head, nearly straight, its width equal to distance between cephalic fins at front of head; numerous small teeth arranged in arranged of 60 to 80 rows in a close-set pavement pattern occupying at most the median 50% of jaw lengths; single teeth in females flattened and either broadly trapezoid with a gross crenation at narrow inner edge (larger specimens), or triangular to rhombic with a blunt triangular inner tip (smaller specimens); single teeth in males also flattened and arrowhead-shaped, the long sharp, inner tip doubled in smaller individuals, irregularly single-pointed in larger ones; lobes of branchial filter plates with free lateral edges (not fused to those of adjoining plates); inner parts of individual lobes trapezoid in outline and smooth-edged. A small dorsal fin present on base of tail; no caudal fin; tail whip-like and shorter than disc width, never bearing a large, serrated spine behind dorsal fin. Upper and lower sides of trunk covered with more or less loose-set, fine spinules; scattered spinules may also occur on inner parts of wings; tail probably smooth behind dorsal fin.



adult female



adult male

teeth of lower jaw

* The distinction between this species and M. hypostoma is still not quite clear as well as the occurrence of the latter in the Eastern Atlantic

Colour: reported as dorsally plain dark bluish, with a reddish cast more or less confined to a median band along back, on pelvic fins, claspers (males), and root of tail; tail behind dorsal fin blackish. Lower side may be plain white, but no detailed description is available.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA :

Mobula hypostoma: distance between frontline of head and origin of dorsal fin less than 45% of disc width (47 to 52% in M. rochebrunei); individual lobes of branchial filter-plates acorn shaped, their inner margins forming a blunt angle with straight edges, their free outer corners narrowly rounded.

M. coilloti and M. lucasana: tooth bands occupying distinctly more than the median 50% of jaw length.

M. mobular and M. rancureli: a large serrated spine always present at base of tail behind dorsal fin.

Manta birostris: mouth terminal across front of head.

SIZE :

Maximum: about 130 cm disc width, weight to about 29 kg.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR :

Found only in the area from about Senegal to possibly Congo.

Detailed information on behaviour is not available for this species.

Feeds by plankton filtration, mainly on pelagic crustaceans and occasionally on small schooling fishes.

PRESENT FISHING GROUNDS :

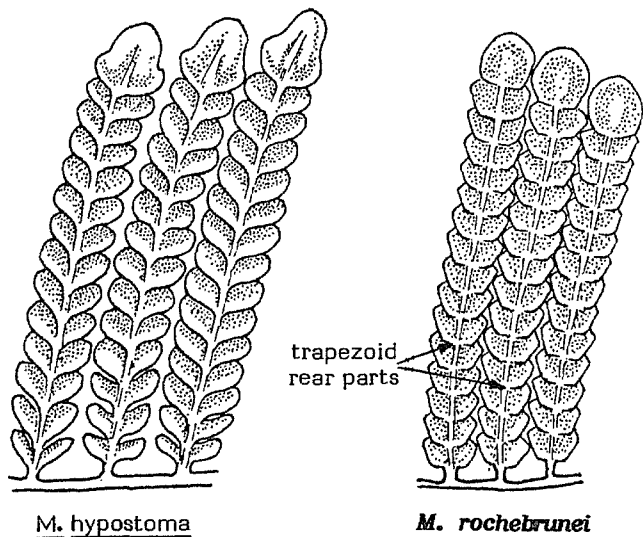
Senegal, probably whole Gulf of Guinea; locally rather abundant (*Senegal*).

CATCHES, FISHING GEAR AND FORMS OF UTILIZATION :

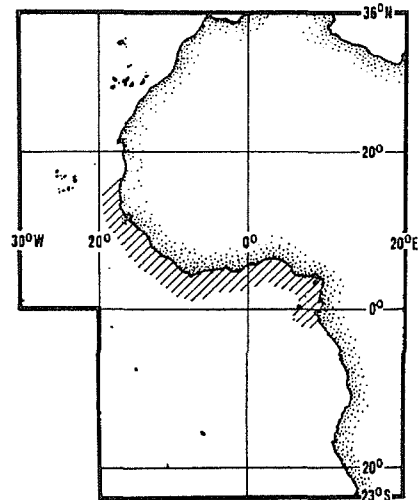
Separate statistics are not reported for this species.

Caught with trammelnets, purse seines and harpoons, particularly during the shark fishing season from November to July, when several hundreds of individuals have been taken per month.

Marketed locally (wings) smoked and dried salted, their flesh being highly esteemed. Whole specimens also used for fishmeal and oil on board foreign offshore trawlers.



examples of branchial filter plates



FAO SPECIES IDENTIFICATION SHEETS

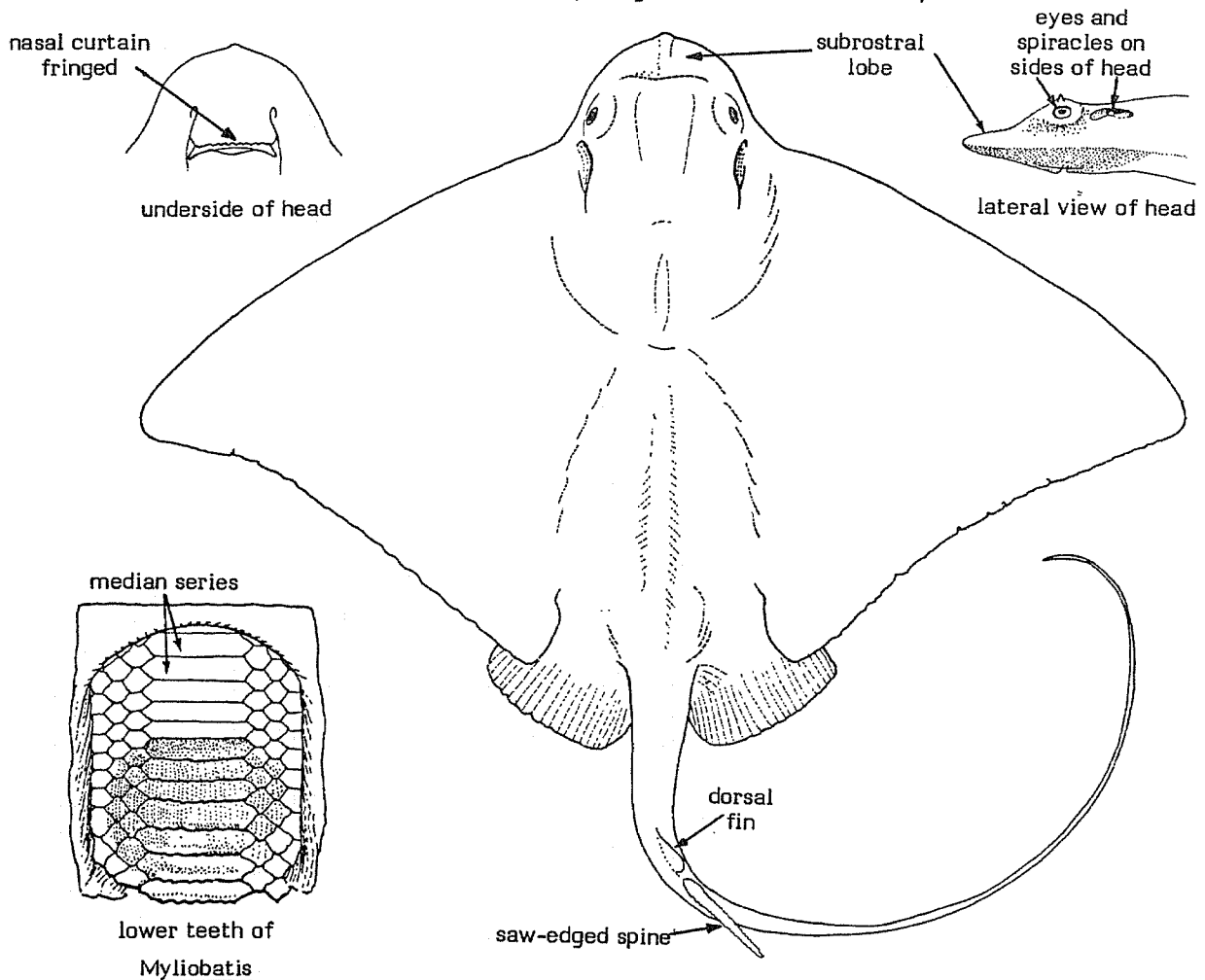
FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)

MYLIOBATIDAE

Eagle rays and bull rays

Stingrays of fairly large size. Disc rhombic to lozenge-shaped, distinctly broader than long. Fully grown specimens of various species may attain 2.5 m disc width or more. Anterior part of head distinctly marked off from disc; anterior parts of pectoral fins forming an undivided fleshy subrostral lobe which extends below front of head; eyes and the very large spiracles on sides of head; mouth straight to slightly curved, with several fleshy papillae on floor; teeth large, combined to form a dental plate, in 1 to 7 series only, those of the median series (if more than 1) much larger than the others; nasal curtain greatly expanded, its free rear margin fringed and overlapping jaws, either continuous medially, or deeply incised to form two medially fused lobes. Tail whip-like, much longer than disc and marked off from body. No caudal fin, but a small dorsal fin present on base of tail in front of the long, serrated spine (or spines), which is lacking in some species. Skin on dorsal surface either naked, or with tubercles around orbits, along back, and sometimes also on tail.

Colour: all shades of brown dorsally, either uniform or with patterning of light and/or dark spots and blotches or transversal bands on disc. Whitish below, margins of disc dark in some species.



Eagle rays inhabit continental shelf waters in tropical to temperate latitudes of all oceans, including the Mediterranean, but occur also around larger offlying islands. They are quick, active swimmers moving by flapping their wing-like pectoral fins, and migrate over long distances. Though observed also close to the surface, when they occasionally jump out of the water, they usually occur in groups of individuals swimming close to the bottom, feeding more or less exclusively on demersal crustaceans and hard-shelled molluscs. All species are ovoviviparous, the newly born closely resembling their parents. None of the eagle rays is the object of a regular fishery, but some are frequently caught in tropical waters with bottom trawls, trammelnets, longlines, or on hook and line. The flesh (wings) is well esteemed locally and marketed fresh, smoked and dried salted, (e.g. Senegal, Ivory Coast, Ghana, Nigeria); also used for fishmeal and oil on board offshore trawlers.

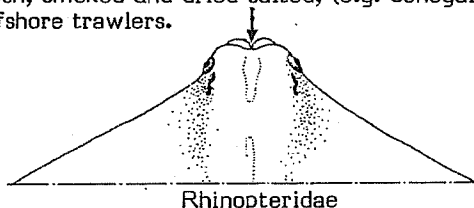
SIMILAR FAMILIES OCCURRING IN THE AREA :

Rhinopteridae: subrostral lobe deeply incised in the midline, thus divided into 2 basally fused lobes; no papillae on floor of mouth.

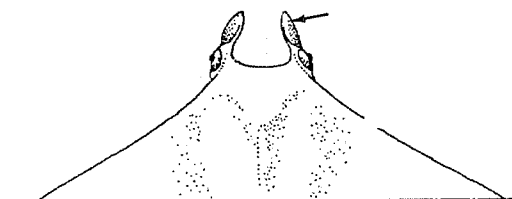
Mobulidae: anterior parts of pectoral fins forming two separate cephalic fins; teeth minute, in bands of numerous series.

Dasyatidae, Gymnuridae: eyes and spiracles on top of head; anterior parts of pectoral fins continuous along sides of head, which is not marked off from disc, no separate subrostral lobe or cephalic fins.

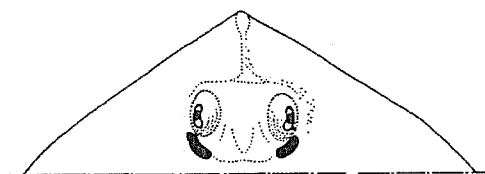
Other families of rays and skates: always with two dorsals and a caudal fin; no serrated tail spine.



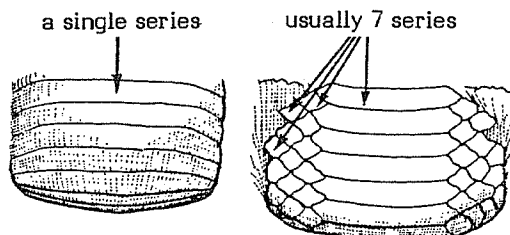
Rhinopteridae



Mobulidae



Dasyatidae



Aetobatus

Myliobatis, Pteromyliæus

Fig. 1

Fig. 2

arrangement of teeth in upper jaw

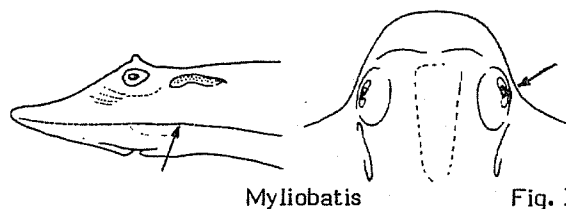
KEY TO GENERA OCCURRING IN THE AREA :

1 a. A single series of very large teeth in each jaw (Fig. 1) Aetobatus

1 b. More than 1, usually 7 series of teeth in each jaw, those of the median series much larger than the others (Fig. 2)

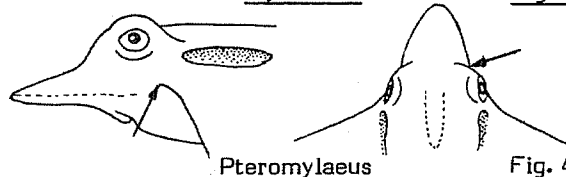
2 a. Rostral part of pectoral fins (subrostral lobe) connected with main portions of fins through continuous borders along sides of head; these borders with short radial cartilages (Figs. 3a,b) Myliobatis

2 b. Rostral part of pectoral fins (subrostral lobe) entirely separate from main portions of fins which end at sides of head at level of rear margins of orbits (Figs. 4a,b) Pteromyliæus



Myliobatis

Fig. 3



Pteromyliæus

Fig. 4

a. lateral view head b. upper side

LIST OF SPECIES OCCURRING IN THE AREA :

Code numbers are given for those species for which Identification Sheets are included

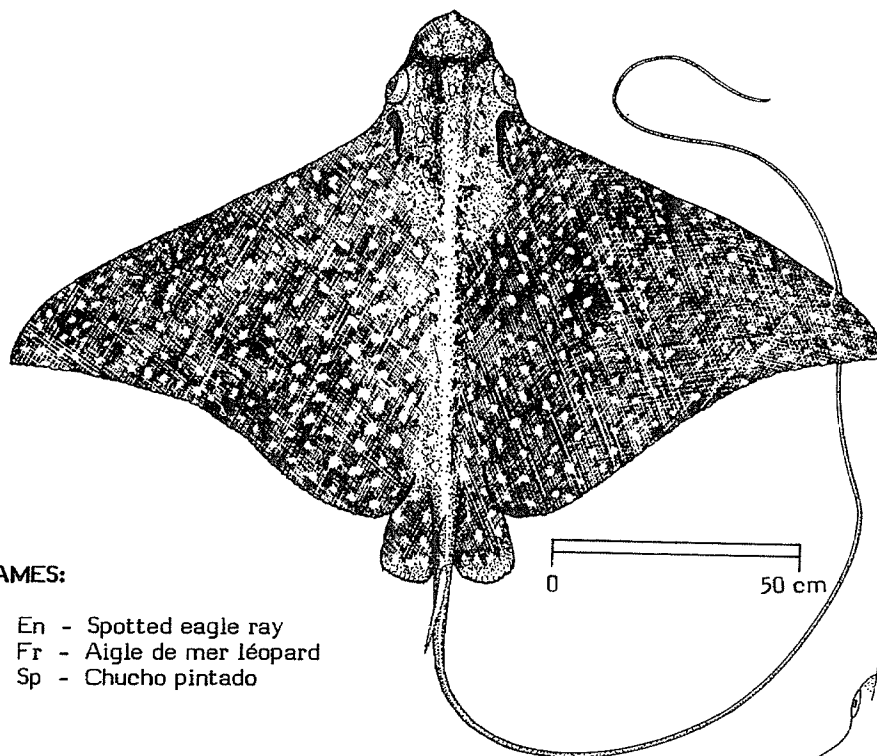
- | | |
|---|---------------|
| * <u>Aetobatus flagellum</u> (Bloch & Schneider, 1801) | |
| <u>Aetobatus narinari</u> (Euphrasen, 1790) | MYLIO Aeto 1 |
| <u>Myliobatis aquila</u> (Linnaeus, 1758) | MYLIO Mylio 2 |
| <u>Pteromylaeus bovinus</u> (E. Geoffroy Saint-Hilaire, 1817) | MYLIO Ptero 1 |

Prepared by M. Stehmann, Aussenstelle Ichthyologie, Institut für Seefischerei, Zoologisches Institut und Zoologisches Museum, Hamburg, Federal Republic of Germany

* Taxonomic status uncertain

FAO SPECIES IDENTIFICATION SHEETS

FAMILY : MYLIOBATIDAE

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)*Aetobatus narinari* (Euphrasen, 1790)OTHER SCIENTIFIC NAMES STILL IN USE : *Stoasodon narinari* Euphrasen, 1790*

VERNACULAR NAMES:

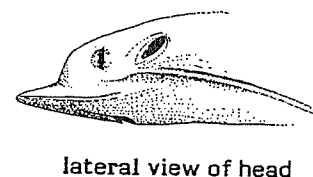
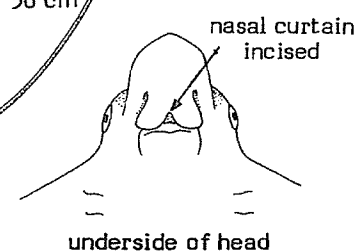
FAO : En - Spotted eagle ray
 Fr - Aigle de mer léopard
 Sp - Chucho pintado

NATIONAL :

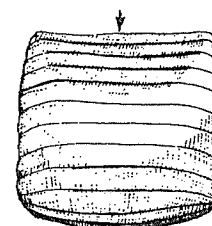
DISTINCTIVE CHARACTERS :

Disc rhombic to lozenge-shaped, about twice as broad as long. Head conspicuously marked off from disc, snout projecting as a single flattened subrostral lobe below front of head; eyes and spiracles on sides of head; mouth nearly straight, with several fleshy papillae on floor and roof; nasal curtain greatly expanded, more or less deeply incised medially, its rear margin fringed; teeth very large, in a single series in each jaw. "Wing"-parts of pectorals completely separated from subrostral lobe and originating at level of spiracles; a small dorsal fin on base of tail at level of free inner margins of pelvics, no caudal fin. Tail distinctly marked off from body, whip-like, up to 3.5 times longer than disc (if undamaged). One to 5 but usually 1 or 2 long, serrated "stings" originating close behind dorsal fin. Upper and lower surfaces of tail with a low, short, longitudinal ridge from spine rearward. Skin everywhere naked.

Colour: upper side greyish, olive or chestnut-brown, regularly with patterns of whitish, yellowish or bluish spots variable in size and shape (circular, elliptical, or annular); pectoral margins often blackish. Lower side plain white, outer margins of pectorals and pelvics, as well as tip of subrostral lobe often dark. Tail blackish, its root white. Fresh specimens may show pale crossbars on tail.



a single series (no lateral rows)



* A number of nominal species have been described from around the world. Recent opinions indicate that all of them most probably fit in either of the two *Aetobatus* species listed for the Eastern Central Atlantic

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA :

Aetobatus flagellum: upper side plain-coloured, without any pattern; head, midzone of disc and tail prickly dorsally, at least in large specimens.

Myliobatis aquila and Pteromylaeus bovinus: usually 7 series of teeth in each jaw (only a single series in Aetobatus species)

SIZE :

Maximum: up to 370 cm total length, 280 cm disc width, and more than 200 kg; common to 140 cm width.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR :

In the area, found from Senegal and the Cape Verde Islands to Angola. A pantropical species found also in the Western Central Atlantic, in the Indo-Pacific and Eastern Pacific oceans.

Usually found in shallow inshore waters, also around offlying islands, often in large schools of several hundred individuals. Swims close to the surface occasionally leaping out of the water, or close to the bottom. Produces loud sounds when captured. Ovoviviparous, each female reported to deliver up to 10 young.

Feeds chiefly on hard-shelled molluscs (mainly bivalves).

PRESENT FISHING GROUNDS :

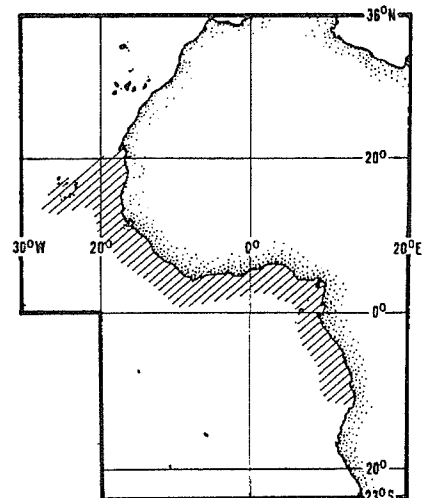
Mainly surface inshore waters throughout its range.

CATCHES, FISHING GEAR AND FORMS OF UTILIZATION :

Separate statistics are not reported for this species.

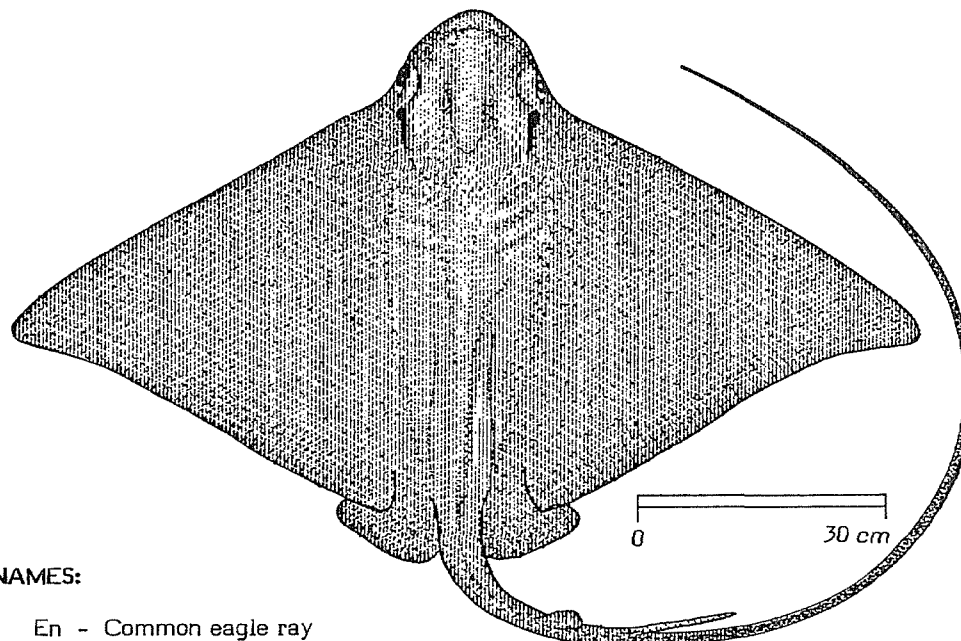
Caught with trawls, trammelnets and longlines.

Rarely used for human consumption. Dangerous due to its "sting" and particularly harmful to cultures and banks of bivalves. Also used for fishmeal and oil on board foreign offshore trawlers.



FAO SPECIES IDENTIFICATION SHEETS

FAMILY : MYLIOBATIDAE

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)*Myliobatis aquila* (Linnaeus, 1758)OTHER SCIENTIFIC NAMES STILL IN USE : *Myliobatis cervus* Smith, 1934

VERNACULAR NAMES:

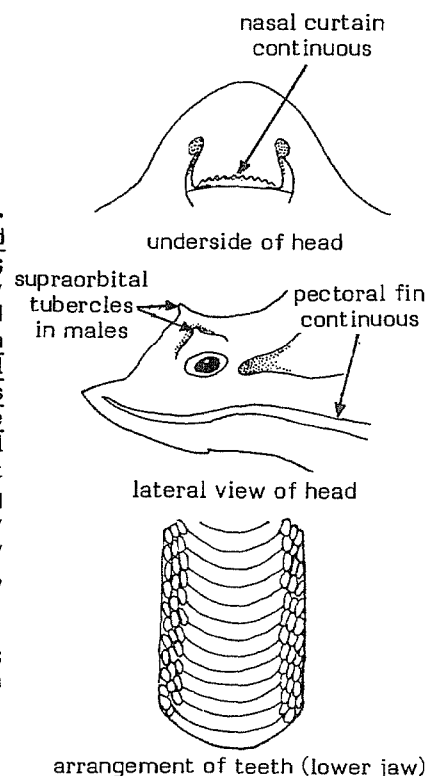
FAO : En - Common eagle ray
 Fr - Aigle commun
 Sp - Aguila marina

NATIONAL :

DISTINCTIVE CHARACTERS :

Disc rhombic to lozenge-shaped, about two times broader than long. Head distinctly marked off from disc, snout projecting as a single flattened subrostral lobe below front of head; eyes and spiracles on sides of head; mouth straight, with several fleshy papillae on its floor; nasal curtain greatly expanded, its transverse free rear margin at most slightly emarginate and fringed; teeth large, usually in 7 series in each jaw, those of the median series much longer than the others, and fused to form dental plates. Rostral part of pectoral fins (subrostral lobe) connected with main portions of the fins (wings) by continuous borders along sides of head; a small dorsal fin on base of tail, its origin far behind rear tips of pelvics; no caudal fin. Tail conspicuously marked off from body, circular in cross section, whip-like, about 2 to 2.5 times longer than disc (if undamaged). One or rarely two, long serrated "stings" originating relatively close behind dorsal fin. Skin usually smooth above and below, but large adults may be somewhat prickly dorsally along midbody and on base of tail. Large adult males show a prominent, blunt, conical supraorbital tubercle on each side.

Colour: upper side of disc uniformly brown with olive to violet shades; lower side whitish, margins of disc somewhat reddish brown. Tail blackish above and below.



arrangement of teeth (lower jaw)

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA :

Aetobatus species: a single series of very large teeth in each jaw (7 series in Myliobatis aquila).

Pteromylaeus bovinus: main portion of pectorals (wings) originating at sides of head at level of orbits and entirely separated from subrostral lobe. Dorsal fin originating at level of pelvic axils.

Rhinopteridae: subrostral lobe deeply incised.

SIZE :

Maximum: up to 150 cm total length and 100 cm disc width.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR :

Found throughout the area; also extending into the Mediterranean and northward to southern England and Ireland (single records also northward to Scotland southwestern North Sea and Skagerrak/Kattegat); southward to South Africa. Also reported from the southwestern Indian Ocean north to Natal. Most common in temperate and subtropical latitudes and apparently less common in the tropical Eastern Atlantic. Senegal appears to be the southern limit of abundance within the Area 34.

This species inhabits coastal waters to about 100 m depth. It is moderately migratory, swimming close to soft bottoms, sometimes in groups. Ovoviviparous, females delivering up to 7 young.

Feeds on all kinds of bottom-dwelling animals with preference for molluscs and crustaceans.

PRESENT FISHING GROUNDS :

Inshore waters throughout its range; locally abundant.

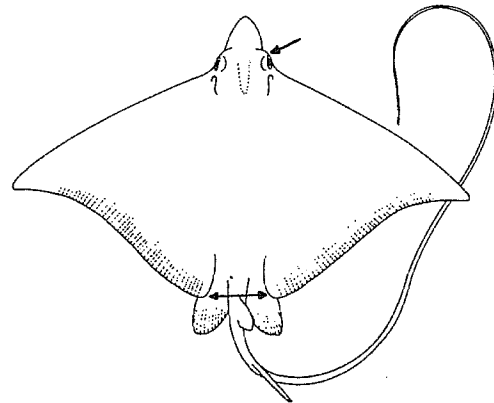
CATCHES, FISHING GEAR AND FORMS OF UTILIZATION :

Separate statistics are not reported for this species.

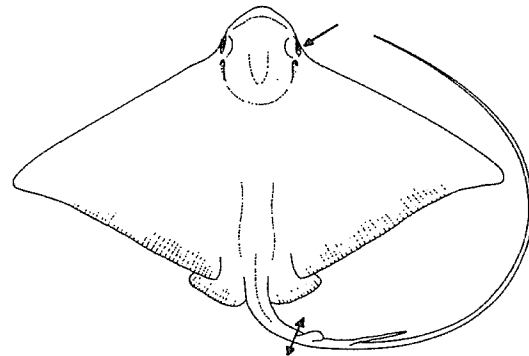
Caught with bottom trawls, trammelnets, purse seines, long-lines, and on hook and line.

Marketed locally (wings) smoked and dried salted. Used also for fishmeal and oil on board foreign offshore trawlers.

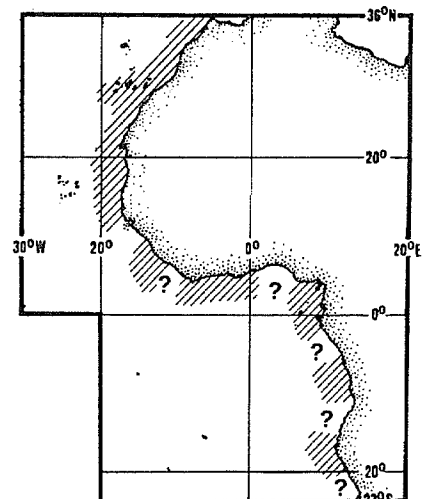
Dangerous due to its "sting", may be harmful to banks and cultures of bivalves.



Pteromylaeus bovinus

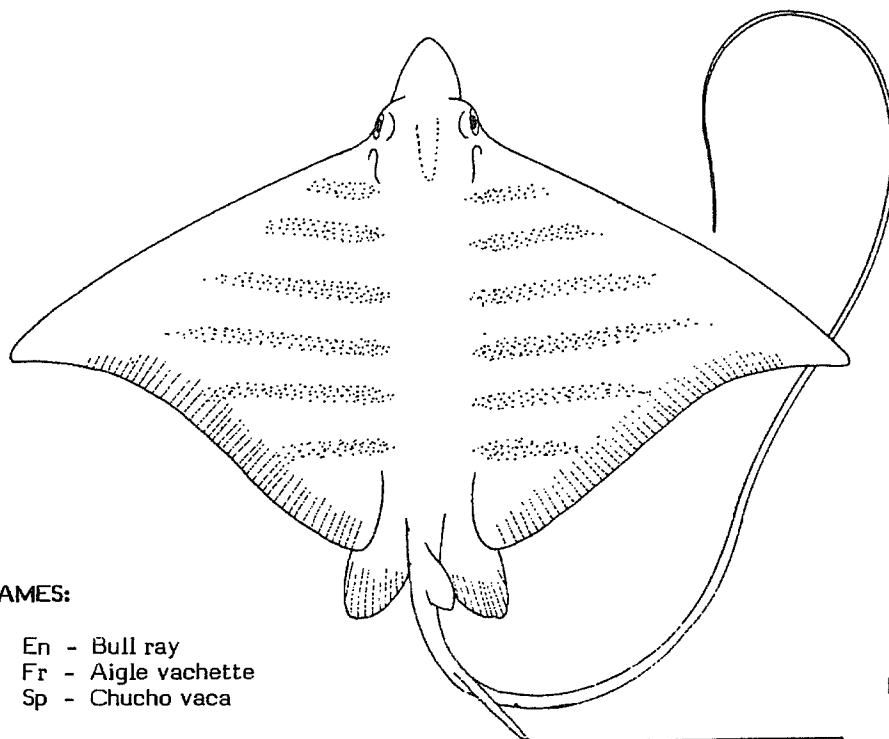


Myliobatis aquila



FAO SPECIES IDENTIFICATION SHEETS

FAMILY: MYLIOBATIDAE

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)*Pteromylaeus bovinus* (E. Geoffroy Saint-Hilaire, 1817)OTHER SCIENTIFIC NAMES STILL IN USE: *Myliobatis bovina* E. Geoffroy Saint-Hilaire, 1817

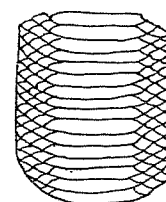
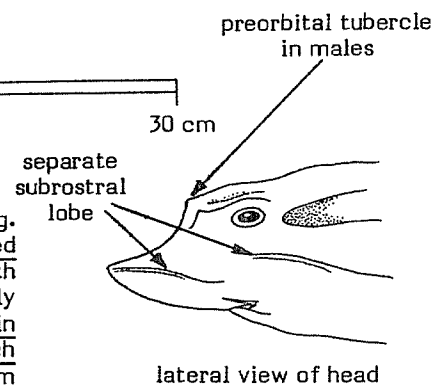
VERNACULAR NAMES:

FAO: En - Bull ray
Fr - Aigle vachette
Sp - Chucho vaca

NATIONAL:

DISTINCTIVE CHARACTERS:

Disc rhombic to lozenge-shaped, about 1.5 to 2 times broader than long. Head distinctly marked off from disc, snout projecting as a single flattened subrostral lobe below front of head; eyes and spiracles on sides of head; mouth nearly straight with several fleshy papillae on its floor; nasal curtain greatly expanded, its transverse free rear margin concave and finely fringed in juveniles, but rather lobate in adults; teeth large, usually in 7 series in each jaw, those of the median series much larger than the others, and fused to form dental plates. Main part of pectoral fins (wings) completely separate from subrostral lobe, and originating at level of orbits; a small dorsal fin on base of tail between free inner margins of pelvics; no caudal fin. Tail conspicuously marked off from body and circular in cross section, whip-like, up to 3 times longer than disc (if undamaged). One to 4 long serrated "stings" originating at a short distance behind dorsal fin. Skin smooth above and below in juveniles, but larger specimens distinctly prickly on upper surface of head, more so along midbody, and tail. Large adult males develop a large, blunt, preorbital tubercle at upper edge of each orbit.



arrangement of teeth (lower jaw)

Colour: upper side of disc uniformly brown with olive to violet shades; disc usually patterned with 7 to 9 transverse dark bands, which are much more distinct in young than in large specimens; lower side white. Tail dark behind sting, often also with alternating sections of grey and olive.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA :

Myliobatis aquila: outer borders of subrostral lobe continuous along sides of head and connected with wings; origin of dorsal fin far behind rear tips of pelvics.

Aetobatus species: a single series of very large teeth in each jaw (7 series in Pteromylaeus bovinus).

Rhinopteridae: subrostral lobe deeply incised in midline.

SIZE :

Maximum: about 260 cm total length and 150 cm width, when about 60 kg; common to 1 m width.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR :

Found throughout the area, including offlying islands, also extending into the Mediterranean and northward to Portugal, southward to South Africa. Elsewhere, in the Southwestern Indian Ocean from Natal to the Cape.

Inhabits subtropical and tropical latitudes mainly in coastal inshore waters (to 100 m depth). Moderately migratory, often swimming close to soft bottoms, sometimes in groups. Ovoviviparous, each female reported to give birth to up to 6 young.

Feeds on all kinds of bottom-dwelling animals, with preference for molluscs and crustaceans.

PRESENT FISHING GROUNDS :

Inshore waters off the Canary Islands, Ivory Coast and Ghana; locally common.

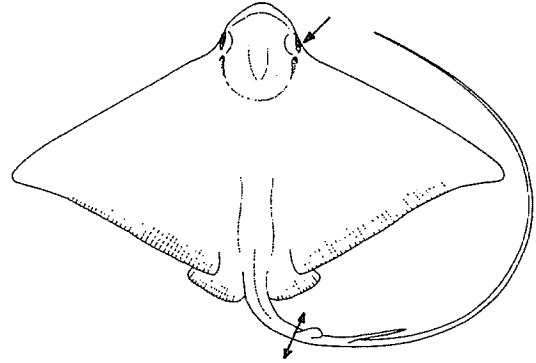
CATCHES, FISHING GEAR AND FORMS OF UTILIZATION :

Separate statistics are not reported for this species.

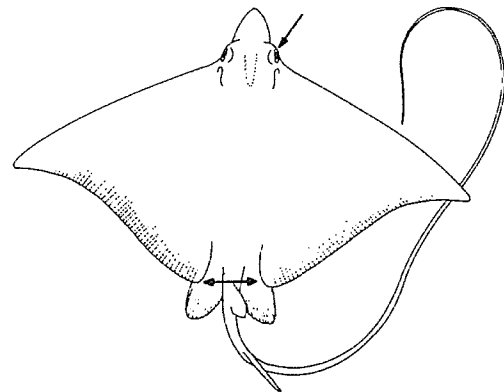
Caught with bottom trawls, trammelnets, purse seines, long-lines, and on hook and line.

Marketed locally (wings) dried salted and smoked. Used also for fishmeal and oil on board foreign offshore trawlers.

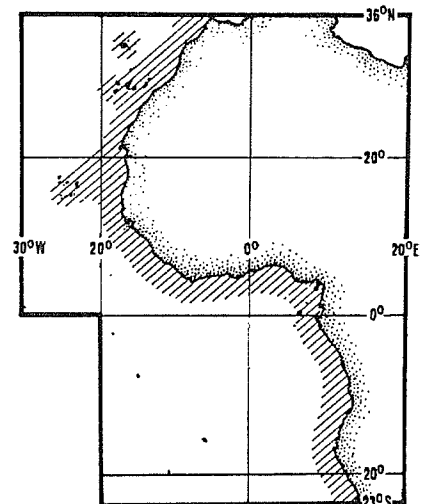
Dangerous due to its "sting", may be harmful to banks and cultures of bivalves.



Myliobatis aquila



Pteromylaeus bovinus



FAO SPECIES IDENTIFICATION SHEETS

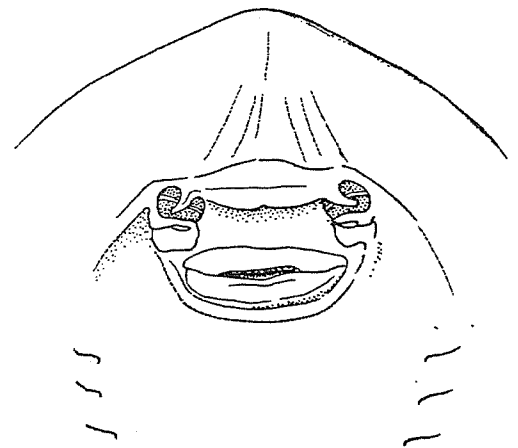
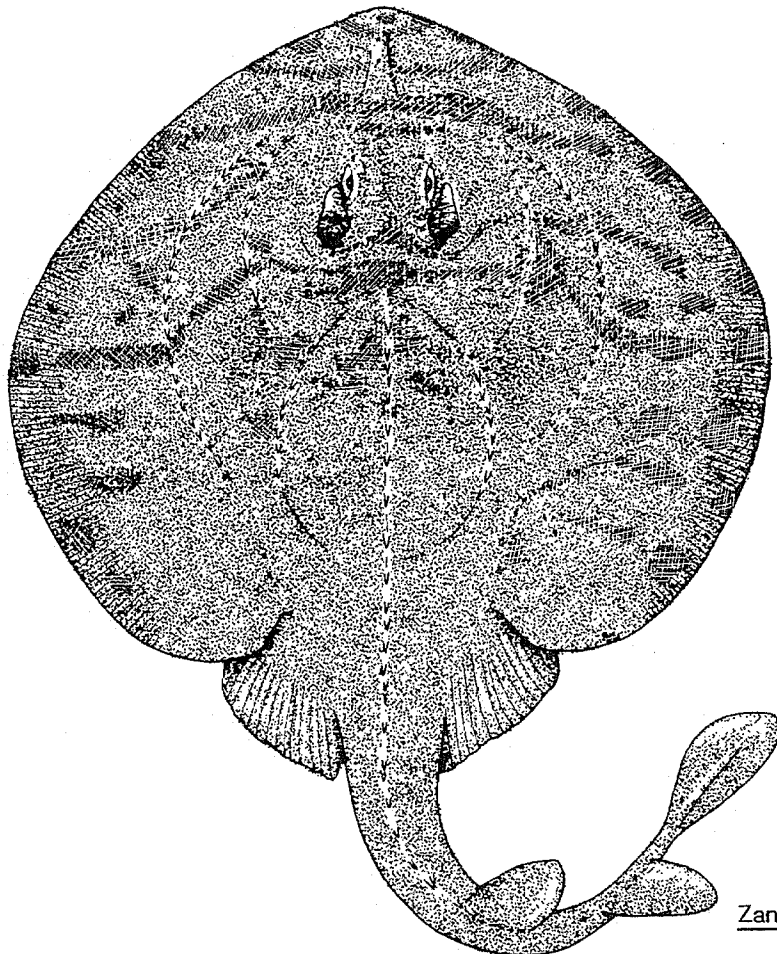
FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)

PLATYRHINIDAE

(Family often combined by authors with Rhinobatidae.
The classification here accepts recent opinions following Garman, 1913)

Thornback-guitarfishes

Guitarfishes of fairly small size, total length distinctly less than 1 m. Shape of disc more or less circular, disc width equal to, or a little larger than, its length. Snout short and bluntly angled; no subrostral lobe or cephalic fins; rostral cartilage more or less reduced, not extending to tip of snout; eyes and spiracles on top of head; large nostrils almost transverse, connected with the straight mouth by a deep groove; teeth small and numerous, in bands of transverse series along jaws. Tail relatively massive, about as long as body, but distinctly marked off from disc. Pectoral fins well expanded, fused with sides of head over its entire length; two well developed dorsal fins located far behind pelvics; the elongate caudal fin well developed, without a distinct subcaudal lobe; rear margins of pectorals overlapping origin of pelvics; a dermal fold along each side of tail. Skin usually more or less closely set with dermal denticles of varying size and shape. Dorsally a regular pattern of enlarged denticles always shown, usually several of such thorns on snout, around orbits, on shoulders, and in 1 to 3 rows along midline of body and tail from nape to second dorsal fin; thornlets also usually present along anterior margins of disc, and along mid-body, and particularly in a longitudinal row (or rows) on inner pectorals following the insertion points of basal cartilages of pectoral radials.



underside of head

Zanobatus schoenleinii

Colour: upper side mostly uniformly brown to olive, dark transverse bands and dark spots on disc in one species. White below with dark bordering or spots on posterior parts of pectorals, on pelvics and tail, but one extraterritorial species completely brown below.

Thornback-guitarfishes mainly inhabit coastal waters, also off large offlying islands, but are reported to about 300 m depth. Subtropical and tropical latitudes of all the three oceans, one species also to temperate waters in the N.W. Pacific. All species are demersal, fairly inactive, and feed on all kinds of bottom-dwelling animals. Ovoviviparous, except for possibly the genus Zanobatus. Though locally abundant, they are only a bycatch in bottom-trawl fisheries and are occasionally found in local markets.

SIMILAR FAMILIES OCCURRING IN THE AREA :

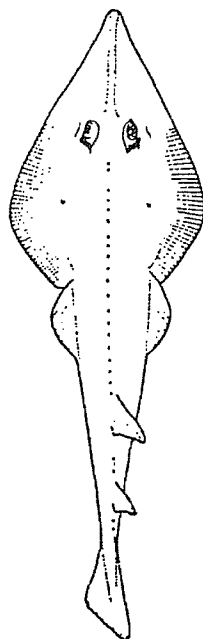
Rhinobatidae: body only moderately depressed; pectoral fins barely expanded; snout typically wedge-shaped and greatly elongated; general appearance rather shark-like, with the very massive tail not distinctly marked off from body.

Rhynchobatidae: general body shape as in Rhinobatidae, but caudal fin conspicuously bilobed, rear edges of pectorals falling short of origin of pelvics, and origin of first dorsal fin over or slightly anterior to pelvic bases.

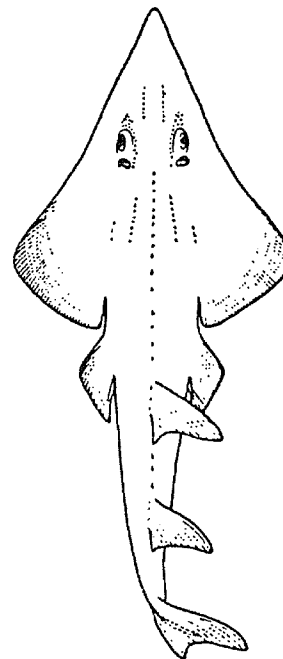
Pristidae: snout extremely elongated into a firm, flat and narrow blade, bearing large, tooth-like structures along each edge.

Torpedinidae: disc very thick and flabby, with thick margins; well developed electric organs along sides of head; skin nearly always naked.

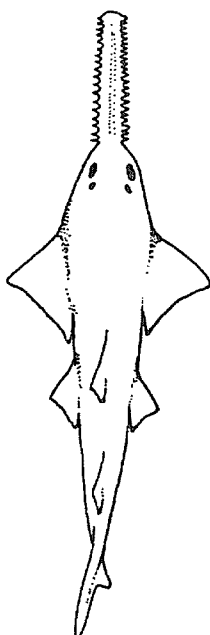
Other families of rays and skates: tail not stout; if present at all, 1 or 2 very small dorsal fins; caudal fin rudimentary or lacking.



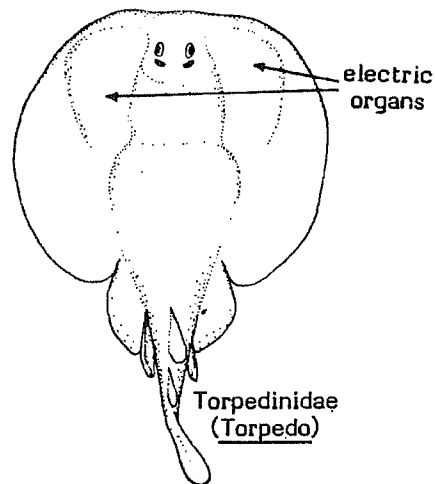
Rhinobatidae
(Rhinobatos)



Rhynchobatidae
(Rhynchobatus)



Pristidae
(Pristis)



Torpedinidae
(Torpedo)

GENERA OCCURRING IN THE AREA :

Zanobatus only.

LIST OF SPECIES OCCURRING IN THE AREA :

Zanobatus schoenleinii (Müller & Henle, 1841)

FAO SPECIES IDENTIFICATION SHEETS

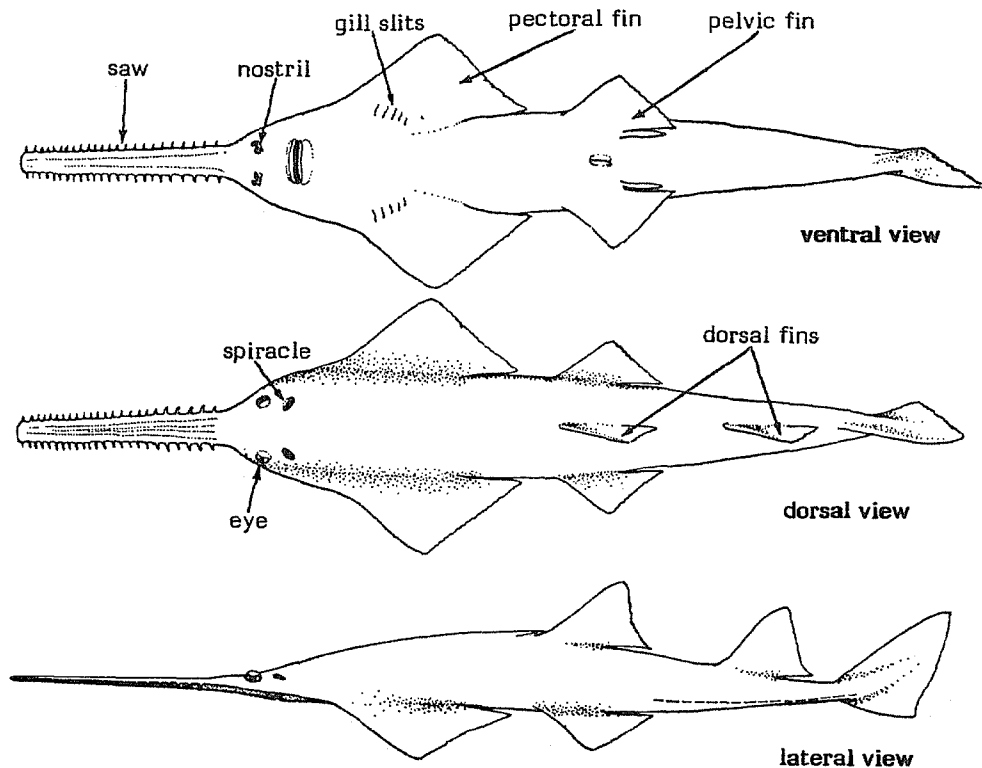
FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)

PRISTIDAE

Sawfishes

Rays of shark-like appearance, commonly reaching to about 5 m in total length. Head flattened dorso-ventrally, gill slits always on lower surface; snout extremely prolonged as a flat, narrow and firm blade (saw), armed along its edges with a single series of transverse, tooth-like structures; eyes and spiracles on top of head, spiracles well posterior to eyes; mouth transverse and straight, without pits or furrows at corners; numerous teeth in pavement pattern forming bands along jaws; nasal apertures well in front of, and completely separated from mouth; pectoral fins barely enlarged, not extending forward to level of mouth, fused to posterior part of head, terminating anterior to level of pelvic fin origins. Two large and widely separated dorsal fins; caudal fin well developed, with or without a well defined lower lobe. Tail not marked off from trunk, with a low, longitudinal ridge along either side. Entire body, including saw and fins, closely covered with minute, flat, relatively uniform ovoid scales; no larger tubercles.

Colour: more or less uniform brown, olive, grey or yellowish above and on sides, usually white below; fins may be darker; margins of fins and lateral keels of tail sometimes whitish.



Sawfishes inhabit inshore waters, including those of large offlying islands, estuaries, river mouths, as well as freshwater in all tropical and subtropical areas. They occur on sandy and muddy bottoms, normally not deeper than about 10 m, and are often locally very abundant. All species are ovoviviparous. They feed on all kinds of bottom-dwelling animals and small schooling fishes using the saw for grubbing or attacking. Although there is no regular fishery for sawfishes, they are frequently caught with trammelnets, longlines, and bottom trawls. They are marketed locally fresh, dried salted and frozen, but most often are caught for their saws as tourist trophies.

SIMILAR FAMILIES OCCURRING IN THE AREA :

No other family of rays and skates has the snout prolonged as a saw-like blade; none of the other batoid families, except the Rhinobatidae and Rhynchobatidae, have a shark-like appearance.

KEY TO GENERA OCCURRING IN THE AREA :

Pristis only.

LIST OF SPECIES OCCURRING IN THE AREA* :

Code numbers are given for those species for which Identification Sheets are included

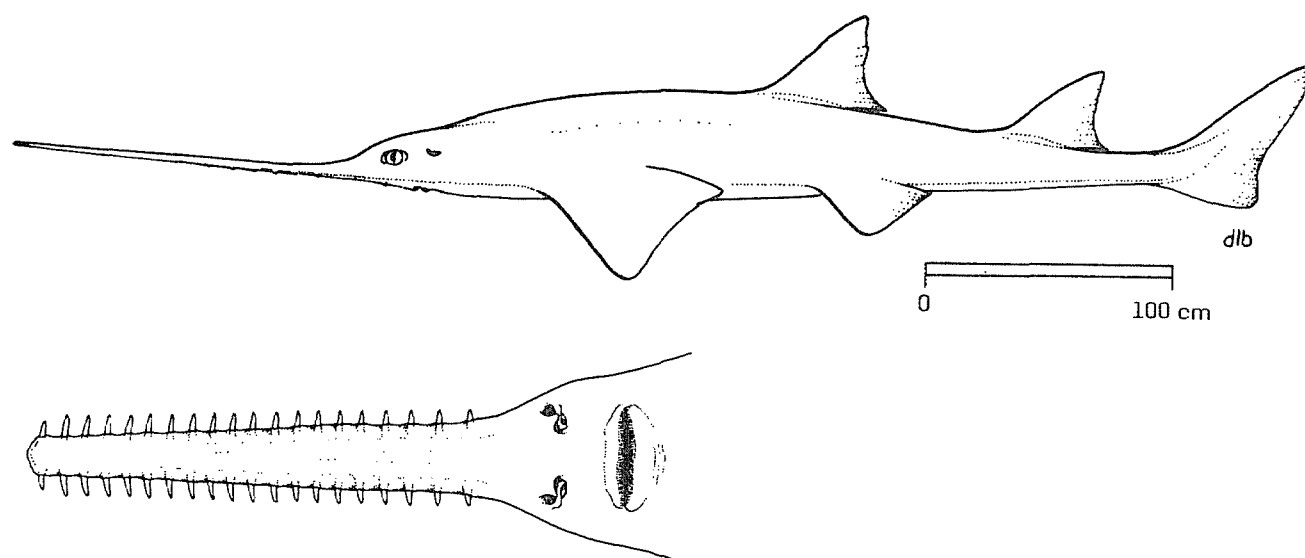
<u>Pristis microdon</u> Latham, 1794	PRIST Prist 1
<u>Pristis pectinata</u> Latham, 1794	PRIST Prist 2
<u>Pristis pristis</u> (Linnaeus, 1758)	PRIST Prist 3

Prepared by M. Stehmann, Aussenstelle Ichthyologie, Institut für Seefischerei, Zoologisches Institut und Zoologisches Museum, Hamburg, Federal Republic of Germany

* The family is represented worldwide by a single genus (Pristis) comprising a large number of nominal species which can be divided into two groups according to the presence or absence of a definite lower caudal fin lobe. Due to the poor representation of sawfishes in collections, where usually only juveniles or saws are kept, a critical revision of this family, although urgently needed, is presently impossible. Thus the validity of many nominal species remains uncertain and hence, all information on geographical distribution of these species should be viewed with reservations.

FAO SPECIES IDENTIFICATION SHEETS

FAMILY: PRISTIDAE

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)*Pristis microdon* Latham, 1794OTHER SCIENTIFIC NAMES STILL IN USE: *Pristis perotteti* Müller & Henle, 1841

VERNACULAR NAMES:

FAO : En - Large tooth sawfish
Fr - Poisson-scie grandent
Sp - Pejesierra

NATIONAL :

DISTINCTIVE CHARACTERS :

Body shark-like, only the head moderately depressed; neither the head, nor the tail marked off from body. Snout extremely elongated into a firm double-edged saw-blade with transverse tooth-like structures arranged in 16 to 23 pairs; spiracles well posterior to eyes; nostrils well in front of, and completely separated from the straight mouth; teeth numerous and small, forming bands in pavement pattern along jaws. Pectoral fins barely enlarged and fused to the posterior part of head, originating behind level of mouth and ending anterior to origin of pelvics; two large and widely separated dorsal fins, the origin of first well in advance of pelvic fin origins; caudal fin well developed, with a definite lower lobe. A low keel on each side of tail. Entire body, including saw and fins, completely covered with close-set, minute, flattened, ovoid scales; no large tubercles.

Colour: uniform olive above, dirty cream below.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA :

Pristis pectinata and P. pristis: caudal fin without a definite lower lobe; first dorsal fin originating opposite to pelvic origin.

SIZE :

Maximum: 6 m total length, 600 kg.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR :

In the area, from about Senegal to Angola. Elsewhere, tropical and subtropical latitudes of the Western Atlantic, Indian Ocean (north of about 30°S), Indo-Pacific, Eastern Central Pacific, and Australia.

A more or less stationary demersal species occurring mainly in inshore coastal waters to about 10 m depth, and around offlying islands. Regularly found in estuaries, lagoons, river mouths, and even fresh waters. Ovoviviparous, gravid females reported with 15 to 20 embryos.

Feeds on all kinds of bottom-dwelling animals and small gregarious fishes.

PRESENT FISHING GROUNDS :

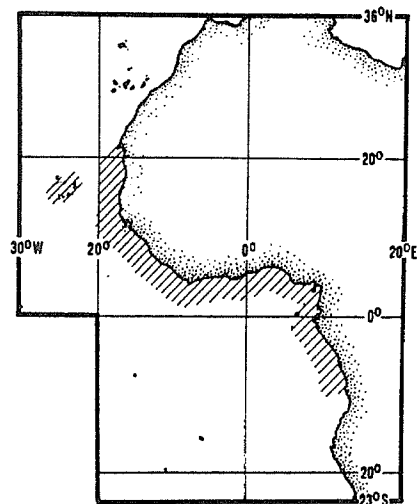
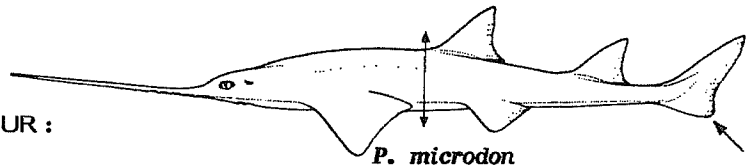
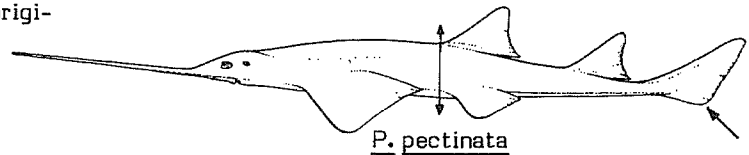
Shallow inshore waters off Senegal, Ivory Coast, Nigeria, but probably exploited in the whole area between Senegal and Angola. Locally very abundant.

CATCHES, FISHING GEAR AND FORMS OF UTILIZATION :

Separate statistics are not reported for this species.

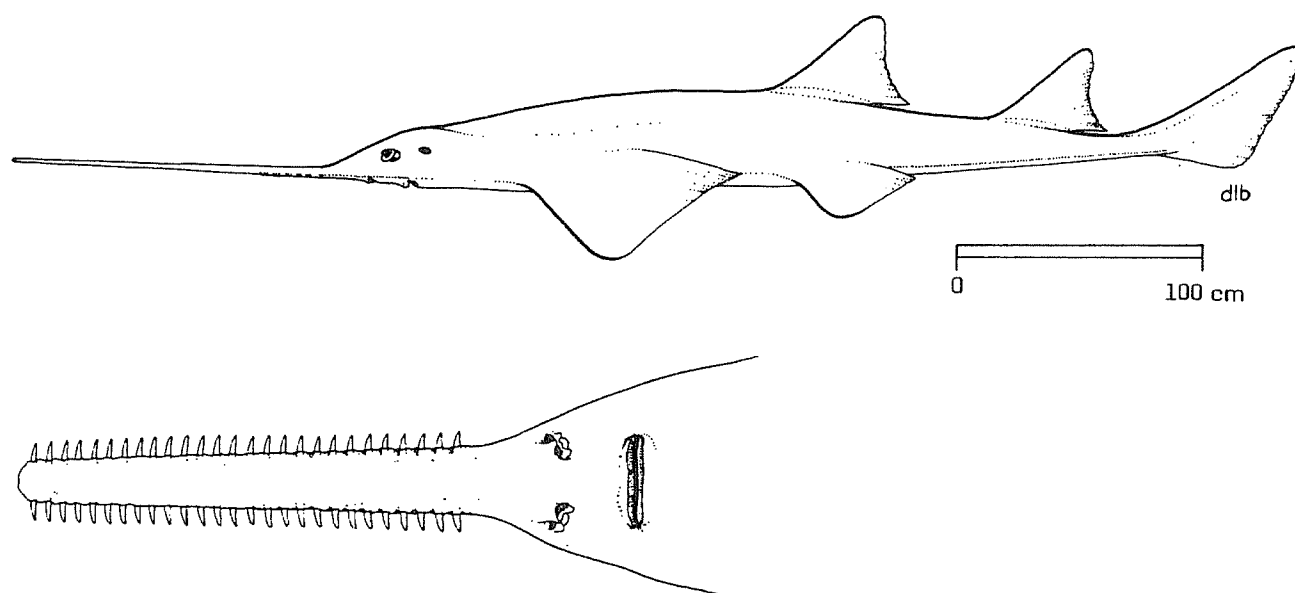
Caught with trammelnets, longlines, and bottom trawls.

Marketed locally fresh, frozen and dried salted; saws sold as tourist souvenirs. Often damaging nets and fishing gear when entangled.



FAO SPECIES IDENTIFICATION SHEETS

FAMILY : PRISTIDAE

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)Pristis pectinata Latham, 1794OTHER SCIENTIFIC NAMES STILL IN USE : Pristis pectinatus Latham, 1794

VERNACULAR NAMES:

FAO : En - Smalltooth sawfish
 Fr - Poisson-scie tident
 Sp - Pejepeine

NATIONAL :

DISTINCTIVE CHARACTERS :

Body shark-like, only the head moderately depressed; neither the head, nor the tail marked off from body. Snout extremely elongated into a firm double-edged saw-blade with transverse tooth-like structures arranged in 24 to 32 pairs; spiracles well posterior to eyes; nostrils well in front of, and completely separated from the straight mouth; teeth small and numerous, forming bands in pavement pattern along jaws. Pectoral fins barely expanded and fused to the posterior part of head, originating behind level of mouth and ending anterior to origin of pelvics; two large and widely separated dorsal fins, the origin of first about opposite to pelvic fin origins; caudal fin well developed, without a definite lower lobe; a low keel present on either side of tail. Entire body, including saw and fins, completely covered with close-set, minute, flattened, ovoid scales; no large tubercles.

Colour: uniformly dark greyish brown on back and sides, whitish below.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA :

Pristis pristis: only 16 to 20 pairs of rostral teeth (24 to 32 in P. pectinata).

Pristis microdon: caudal fin with a definite lower lobe; first dorsal fin origin well in advance of pelvic origins.

SIZE :

Maximum: about 6 m total length and over 350 kg.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR :

In the area, from about the Straits of Gibraltar to Angola. Elsewhere, in tropical and subtropical latitudes of the Western Atlantic, Indian Ocean, Indo-Pacific, and Eastern Central Pacific.

A more or less stationary demersal species occurring mainly in inshore coastal waters to about 10 m depth, also around offlying islands. Regularly found in estuaries, lagoons, river mouths, and even freshwater. Ovoviviparous, gravid females reported with 15 to 20 embryos.

Feeds on all kinds of bottom-dwelling animals and small gregarious fishes.

PRESENT FISHING GROUNDS :

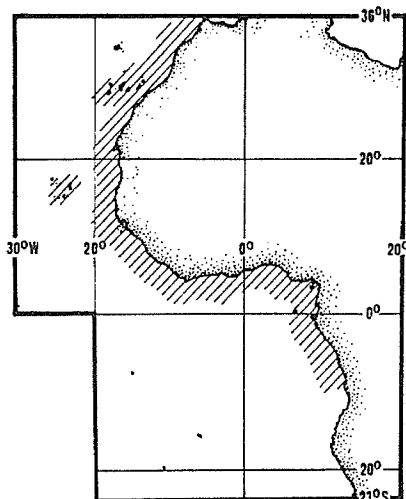
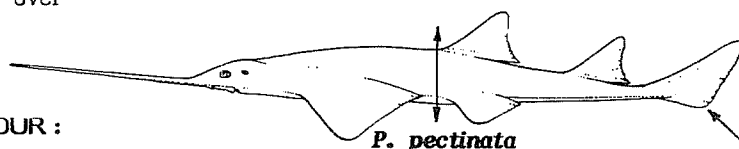
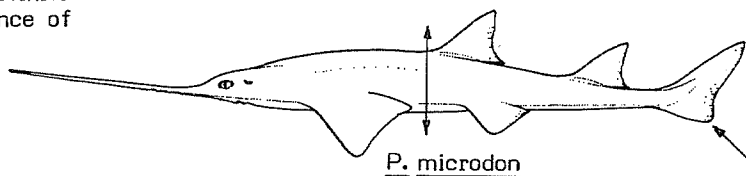
Shallow coastal waters off Senegal, Ivory Coast, Nigeria, but probably exploited throughout the area from about Mauritania to Angola. Locally very abundant.

CATCHES, FISHING GEAR AND FORMS OF UTILIZATION :

Separate statistics are not reported for this species.

Caught with trammelnets, longlines and bottom trawls.

Marketed locally fresh, frozen and dried salted; saws sold as tourist souvenirs. Often damaging nets and fishing gear when entangled.

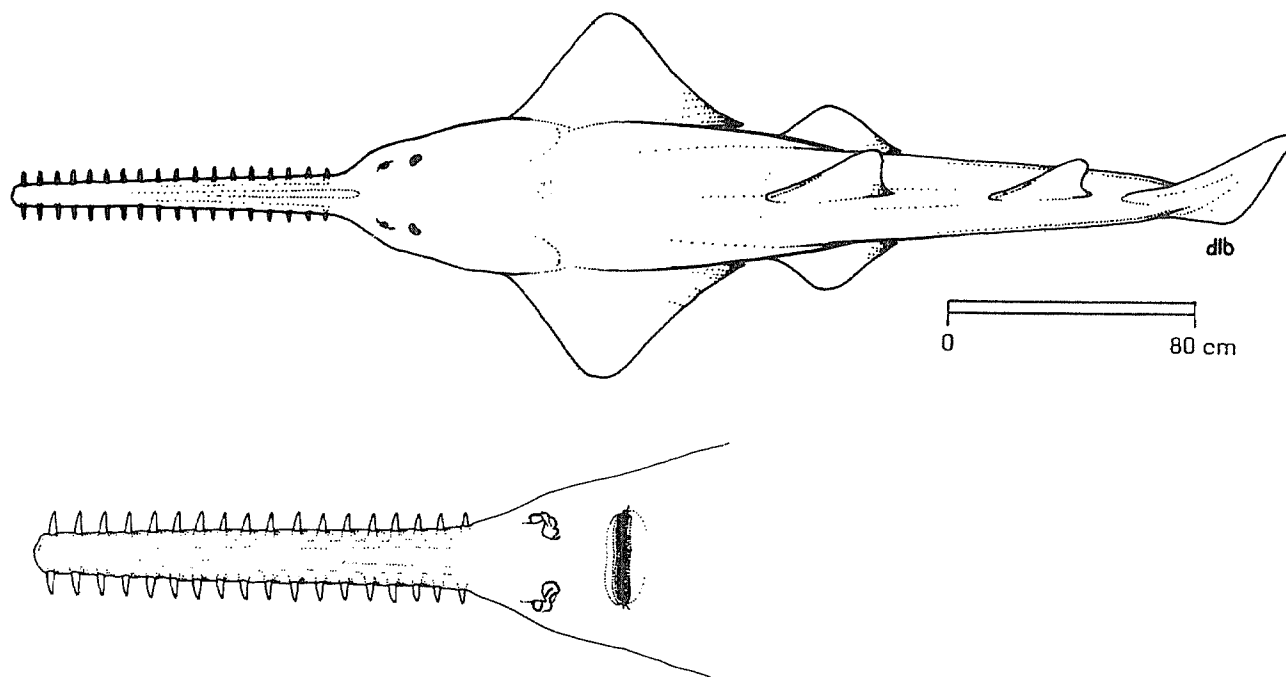


FAO SPECIES IDENTIFICATION SHEETS

FAMILY : PRISTIDAE

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)*Pristis pristis* (Linnaeus, 1758)

OTHER SCIENTIFIC NAMES STILL IN USE : None



VERNACULAR NAMES:

FAO : En - Common sawfish
 Fr - Poisson scie commun
 Sp - Pez sierra común

NATIONAL :

DISTINCTIVE CHARACTERS :

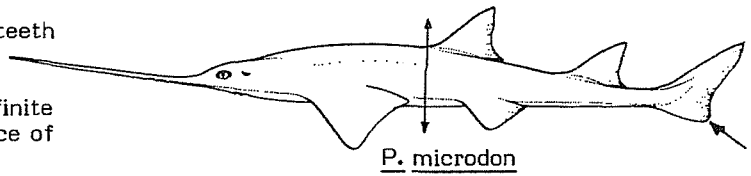
Body shark-like, only the head moderately depressed; neither the head, nor the tail marked off from body. Snout extremely elongated into a firm, double-edged saw-blade with transverse tooth-like structures arranged in 16 to 20 pairs; spiracles well posterior to eyes; nostrils well in front of, and completely separated from the straight mouth; teeth small and numerous, forming bands in pavement pattern along jaws. Pectoral fins barely expanded and fused to the posterior part of the head, originating behind level of mouth and ending anterior to origin of pelvic fins; two large and widely separated dorsal fins, the origin of first about opposite to pelvic fin origins; caudal fin well developed, without a definite lower lobe; a low keel on either side of tail. Entire body, including saw and fins, completely covered with close-set, minute, flattened, ovoid scales; no large tubercles.

Colour: uniform grey-ochre on back and sides, creamy-white below.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA :

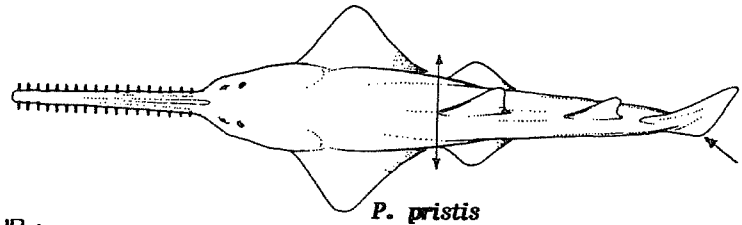
Pristis pectinata: 24 to 32 pairs of rostral teeth
(16 to 20 in P. pristis).

Pristis microdon: caudal fin with a definite lower lobe. Origin of first dorsal fin well in advance of pelvic origins.



SIZE :

Maximum: to about 5 m total length.

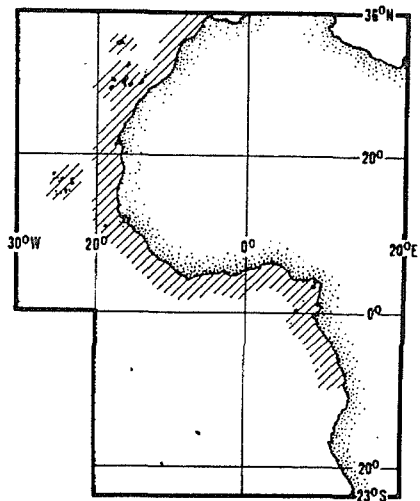


GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR :

Throughout the area from the Straits of Gibraltar to Angola; also extending into the Mediterranean and northward to Portugal. Rare in northern regions, but locally common in tropical latitudes.

A more or less stationary demersal species occurring in inshore coastal waters to moderate depths, also around offlying islands. Found in estuaries, lagoons, river mouths, and even freshwater. Ovoviviparous.

Feeds on all kinds of bottom-dwelling animals and small gregarious fishes.



PRESENT FISHING GROUNDS :

Shallow coastal waters off the Canary Islands, Senegal, Ivory Coast and Nigeria.

CATCHES, FISHING GEAR AND FORMS OF UTILIZATION :

Separate statistics are not reported for this species.

Caught with trammelnets, longlines and bottom trawls.

Marketed locally fresh and dried salted; saws sold as tourist souvenirs. May damage nets and fishing gear when entangled.

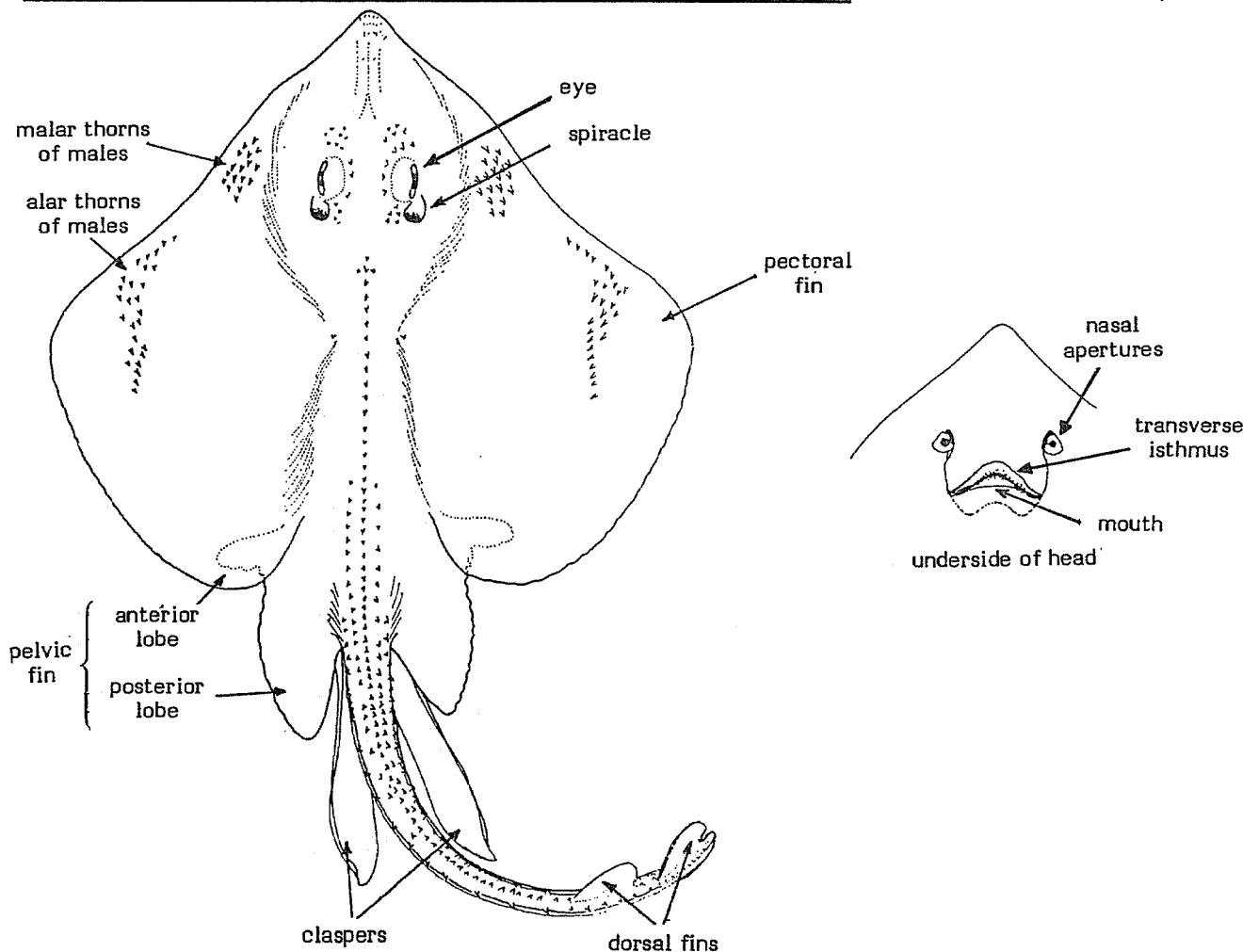
FAO SPECIES IDENTIFICATION SHEETS

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)

RAJIDAE

Skates

Batoid fishes of very small size (20 to 30 cm total length for *Breviraja*) to rather large size (more than 2 m total length for *Bathyraja* and subgenus *Dipturus* of *Raja*). Body strongly flattened dorsoventrally; head, trunk and the broadly enlarged pectoral fins forming a rhombic or sometimes rather circular disc. Pectoral fins completely fused to sides of head and trunk from tip or about midlength of snout to insertion of pelvic fins. Tail moderately slender, distinctly marked off from disc, with a narrow longitudinal fold along each side, its length less than two times the disc width. Eyes and spiracles on top of head, spiracles immediately behind eyes and with pseudobranchial folds at anterior walls. Shape of snout ranging from acutely angled to obtusely rounded. Front of cranium extending as a rostral bar, which is stout or delicate; anterior pectoral fin rays either extending to tip of snout (species with a delicate rostral bar) or to about midlength of snout (species with stout rostral bar to tip of snout). Mouth transverse to more or less bowed. Numerous small teeth in bands along jaws, obtuse to pointed and showing sexual dimorphism in many species, placed either in pavement pattern or in parallel rows or in combination of both. Nasal apertures small and short in front of mouth; their inner margins expanded posteriorly as large nasal curtains, which are joined to a broad transverse isthmus in front of mouth. Pelvic fins bilobed; the two lobes separated by a more or less deep notch in their joint outer margin only. Two small dorsal fins far posterior



on tail; caudal fin a narrow fold on dorsal surface of tail only. Dorsal surface more or less densely to sparsely covered with prickles and often more or less distinct thorns; the latter usually in pattern arrangement of patches, rows, and single tubercles in distinct regions; at least a median row of thorns along tail (except in the subgenus Malacoraja of Raja, and besides malar and alar thorns of adult males). Ventral surface smooth to more or less prickly, rarely also some irregular thorns developed. Squamation may vary with growth, age, and sexual maturity.

Colour: skates show nearly all kinds of basic colouration on dorsal surface and also all kinds of pattern besides plain colour. The ventral surface may be uniformly dark or light, or mottled with both, or a light centre of the disc is bordered with dark; some species with darkly pigmented pores. Generally one may characterize deep-water skates as usually plain dark coloured on both sides, while shallow-water species are mainly white ventrally and often extremely variegated on dorsal surface, colour and pattern of which may vary depending on nature of substrate.

Skates are widely distributed in all oceans from the Arctic to the Antarctic and from shallow coastal waters down to abyssal depths; they only become rare in tropical shallow waters, especially in the vicinity of coral reefs. Skates are predominantly marine; occasionally they enter brackish waters, but never freshwaters. As typical bottom dwellers they are predominantly stationary, feeding on all kinds of bottom-living animals, but some species are reported to have migrated over very far distances. All skates are oviparous. They are the most diverse batoids in number of species, body shape, size, colouration, squamation, habitat and geographical distribution. There is a commercial fishery on skates in several parts of the world, particularly so in the Eastern Central Atlantic. Only the wings of skates are used for human consumption in fresh, salted or smoked form.

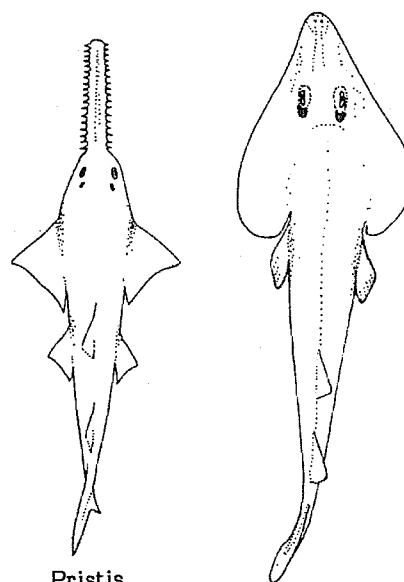
SIMILAR FAMILIES OCCURRING IN THE AREA :

Pristidae, Rhinobatidae, Rhynchobatidae: body shark-like, tail massive, not distinctly marked off from body sector, and with two well developed dorsal fins as well as a large caudal fin; pectoral fins barely enlarged.

Platyrrhinidae: tail very massive with two well developed dorsals and a large caudal fin.

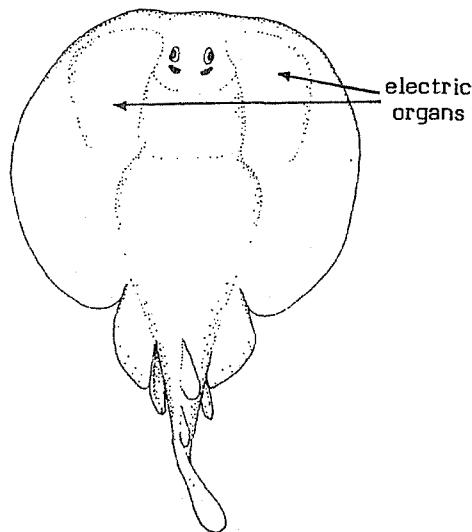
Torpedinidae: tail massive; disc thick and with fleshy margins, well developed electric organs along sides of head.

Remaining families (stingrays): pelvic fins with a single lobe only; tail in most species very long and like a whiplash toward its tip, usually one or more greatly enlarged and saw-edged spines on tail; if present at all, a single dorsal fin at origin of tail; no pseudobranchial folds in spiracles.

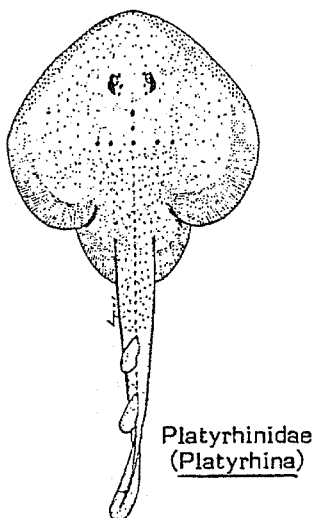


Pristis

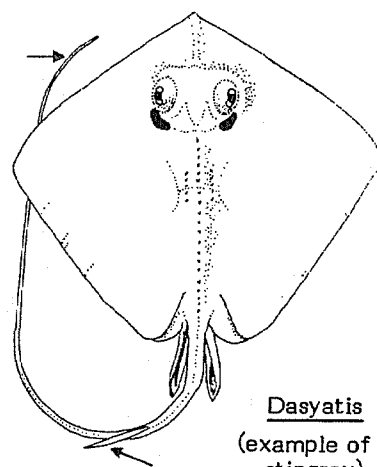
Rhinobatos



Torpedo



Platyrrhinidae
(Platyrrhina)



Dasyatis
(example of a stingray)

KEY TO GENERA OCCURRING IN THE AREA :

- 1 a. Anterior pectoral fin rays falling distinctly short of tip of snout; rostral cartilage extending to tip of snout, stiff and stout, though somewhat tapering toward tip (visible in opposite light) (Fig. 1a)
- 1 b. Anterior pectoral fin rays extending almost to tip of snout; rostral cartilage extending to tip of snout, or over two thirds of this distance only, but generally delicate and flexible (visible in opposite light) (Fig. 1b)

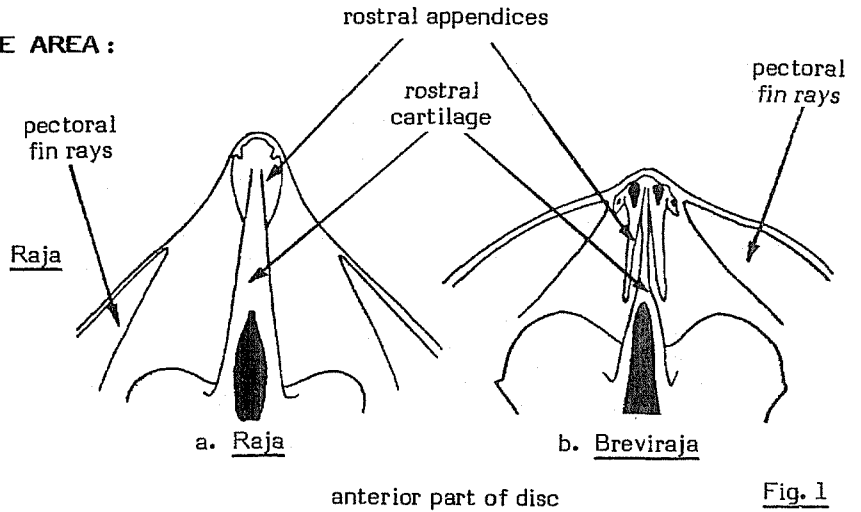


Fig. 1

- 2 a. Dwarf species in deep water (maximum total length about 30 cm); upper side of disc with distinct separate thorns on orbital rims, nape/shoulder area, and along midbody and tail (Fig. 2)
- 2 b. Large-growing species in deep water (total length up to about 2 m); no thorns on upper side of disc, but a median row on tail only (Fig. 3)

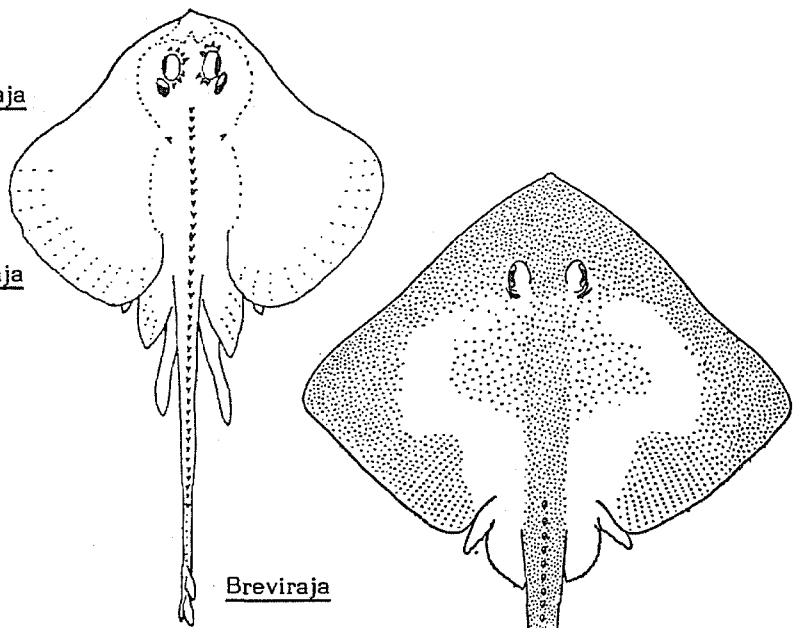


Fig. 2

Bathyraja

Fig. 3

LIST OF SPECIES OCCURRING IN THE AREA :

- Bathyraja smithsii (Müller & Henle, 1841)
- Bathyraja sp.
- Breviraja sp.

This list of species is tentative. There is a large amount of still unidentified recent material representing new records as well as new species for the area. The author will present the final information in his contributions to CLOFETA and, in cooperation with B. Seret, in the forthcoming batoid volume of "Faune Tropicale". At a later stage, species sheets for FAO Fishing Area 34 will also be added

Raja africana Capapé, 1977
Raja (Rostroraja) alba Lacepède, 1803
Raja (Rajella) bathyphila Holt & Byrne, 1908
Raja (Dipturus) batis Linnaeus, 1758
Raja (Rajella) bigelowi Stehmann, 1978
Raja (Raja) brachyura Lafont, 1873
Raja (Rajella) caudaspinosa v. Bonde & Swart, 1923
Raja (Leucoraja) circularis Couch, 1838
Raja (Raja) clavata Linnaeus, 1758
Raja (Rajella) confundens Hulley, 1970
Raja dageti Capapé, 1977
Raja (Rajella) dissimilis Hulley, 1970
Raja (Dipturus) doutrei Cadenat, 1960
Raja (Leucoraja) fullonica Linnaeus, 1758
Raja (Raja) herwigii Krefft, 1965
Raja (Rajella) ? leopardus v. Bonde & Swart, 1923
Raja (Leucoraja) leucosticta Stehmann, 1971
Raja (Raja) maderensis Lowe, 1839
Raja (Raja) microocellata Montagu, 1818
Raja (Raja) miraletus Linnaeus, 1758
Raja (Raja) montagui Fowler, 1910
Raja (Leucoraja) naevus Müller & Henle, 1841
Raja (Dipturus) oxyrinchus Linnaeus, 1758
Raja (Raja) radula Delaroche, 1809
Raja (Raja) rouxi Capapé, 1977
Raja (Malacoraja) spinacidermis Barnard, 1923
Raja (Raja) straeleni Poll, 1951
Raja undulata Lacepède, 1802
Raja (Raja) sp., cf. clavata
Raja (Amblyraja) sp., cf. hyperborea/robertsi
Raja (Rajella) sp., cf. sadowskii
Raja (Dipturus) sp., cf. springeri

FAO SPECIES IDENTIFICATION SHEETS

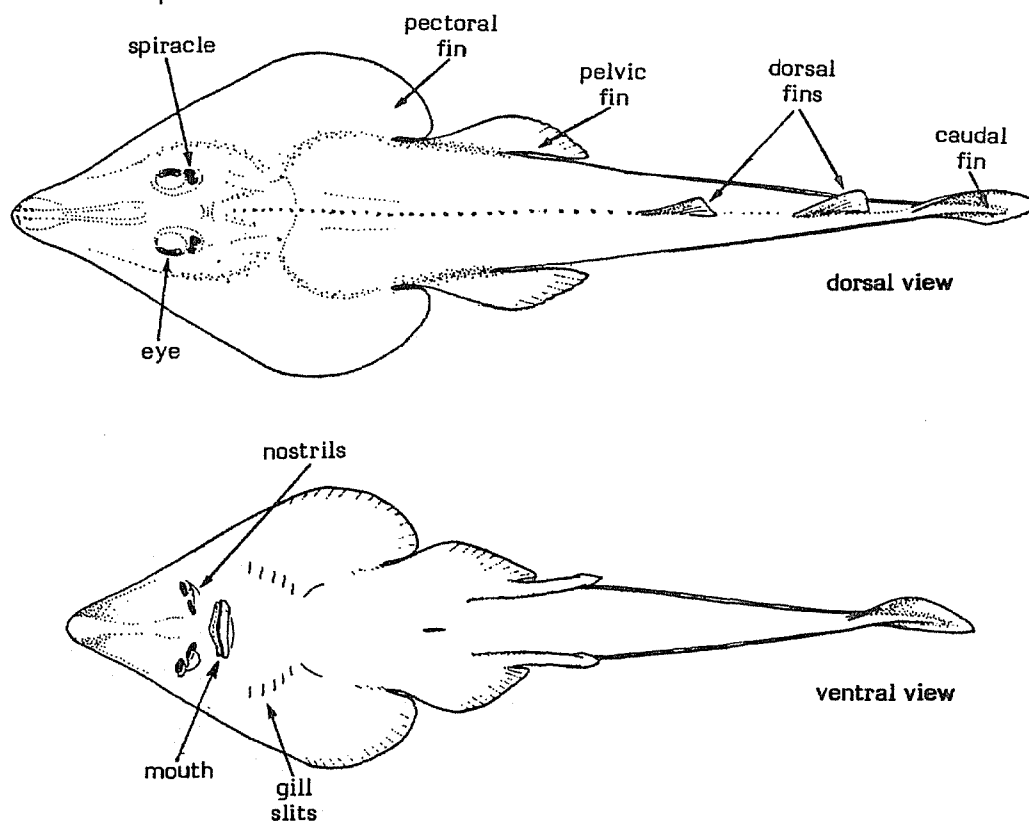
FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)

RHINOBATIDAE

Guitarfishes

Medium-sized rays (up to about 2 m in total length). Head and anterior part of trunk either moderately flattened with a long, wedge-like (but never saw-like) snout, or strongly flattened, disc-like, with a relatively short, bluntly angled snout; tail massive and shark-like in the majority of species, not distinctly marked off from body in the former group of species, more or less marked off in the latter group; disc at most about as broad as long, but usually the length exceeding width. Rostral cartilage stout and broad, extending to tip of snout; eyes and spiracles on top of head and closely set; nostrils large and almost transverse to oblique, completely separated from each other* and from the relatively small and straight mouth; numerous small teeth in bands of transverse series along both jaws. No subrostral lobes or cephalic fins; pectoral fins moderately expanded and continuous along sides of head to about half of snout length, their anterior rays extending to tip of snout or nearly so; hind margins of fins reaching to origins of pelvics or beyond; two widely separated and well developed dorsal fins, the first originating well posterior to tips of pelvics; caudal fin well developed, without a distinct lower lobe. Tail usually longer than body, with a dermal fold present along either side. Body, tail and fins with close-set small scales of various shapes, except for the area between gill slits in some species; larger tubercles often developed on snout, orbital region, nape, shoulder area and along midline of body and tail.

Colour: plain-coloured in all shades of grey and brown dorsally, often patterned with more or less distinct dark and light spots and/or bands. Lower side plain, coloured as above or whitish. Dark markings on snout and along margins of fins often present.



* Character applying to species from the area only

Guitarfishes are sluggish bottom-living animals occurring over sandy or muddy bottoms in shallow coastal areas, including brackish waters and sometimes even freshwater, in all tropical, subtropical and warm-temperate latitudes. Their food consists of small fishes and bottom-dwelling invertebrates. The majority of species is ovoviviparous, but some are supposed to be oviparous. There is no special fishery for guitarfishes in the Eastern Central Atlantic at the present time. They are, however, rather abundant in some localities and caught very easily, and hence, often seen in local fish markets. The flesh, especially the fins, is sold dried salted, but it is considered of mediocre quality.

SIMILAR FAMILIES OCCURRING IN THE AREA :

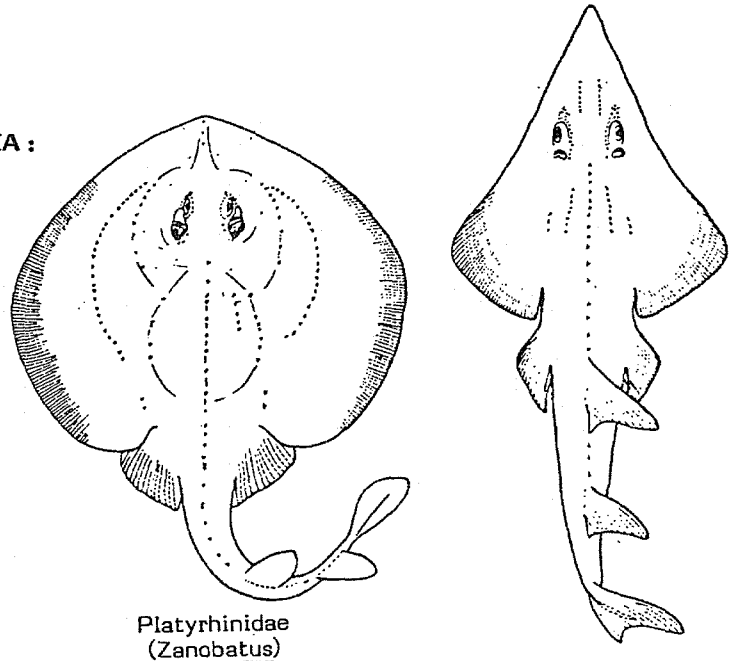
Platyrrhinidae: disc more or less circular because of the broadly expanded pectorals; tail less stout, and marked off from disc; rostral cartilage not extending to tip of snout.

Rhynchobatidae: caudal fin with a distinct lower lobe; rear edges of pectorals falling short of origin of pelvics; origin of first dorsal fin over or slightly anterior to bases of pelvics.

Pristidae: snout extremely elongated into a firm, flat and narrow blade bearing large, tooth-like structures along either edge.

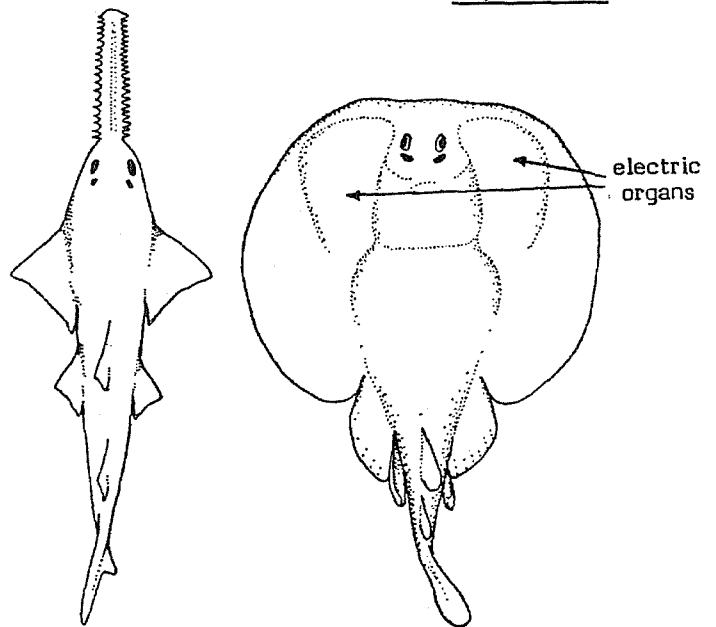
Torpedinidae: disc very thick and flabby, with thick margins; well developed and powerful electric organs along sides of head; skin nearly always naked.

Other families of rays and skates: tail not stout; if present at all, 1 or 2 very small dorsal fins and a rudimentary caudal fin.



Platyrrhinidae
(Zanobatus)

Rhynchobatidae
(Rhynchobatus)



Pristidae
(Pristis)

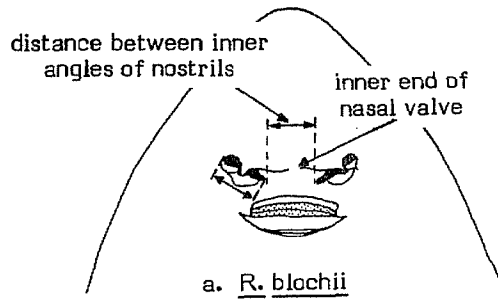
Torpedinidae
(Torpedo)

KEY TO GENERA OCCURRING IN THE AREA :

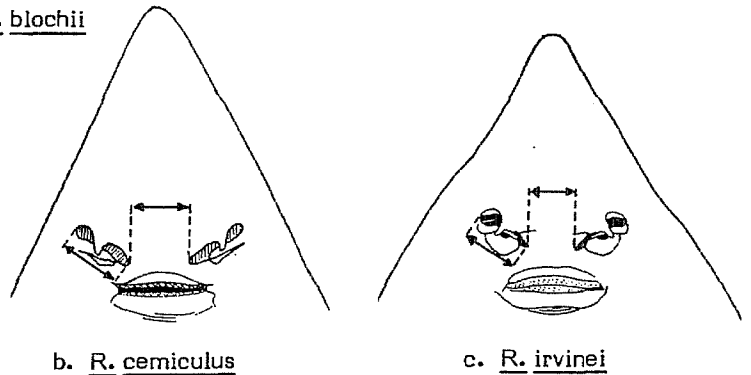
Rhinobatos only.

KEY TO SPECIES OCCURRING IN THE AREA*:

1 a. Inner ends of anterior nasal valves greatly extended onto internasal space, where they almost meet at midline; length of nasal aperture less than distance between inner angles of nostrils; a single tentacle at posterior margin of each spiracle (on upper side of head); snout short and not pointed, its angle about 95° (Fig. 1a) R. blochii



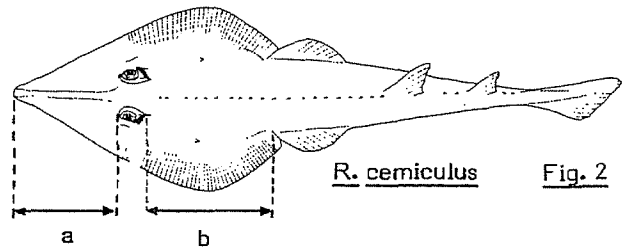
1 b. Inner ends of anterior nasal valves either not, or at most, extending to level of inner angles of nostrils and thus widely separate; length of nasal aperture exceeding distance between inner angles of nostrils (Figs. 1b,c); two tentacles at posterior margin of each spiracle, the inner of which may be smaller; snout elongate and pointed, its angle distinctly less than 80° (Figs. 1b,c)



2 a. Anterior nasal valves not extending onto internasal space (Fig. 1b); preorbital length (a) equal to, or at most, a little shorter, than distance from rear edge of orbits to pectoral fin axils (b, Fig. 2); interspace between rostral ridges narrow, the ridges joining toward tip of snout or nearly so; usually a dark blotch on underside of snout .. R. cemiculus

underside of head

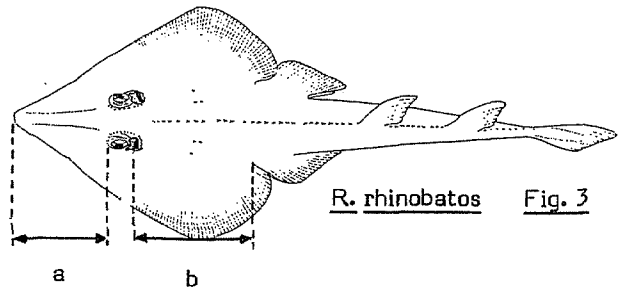
Fig. 1



R. cemiculus

Fig. 2

2 b. Anterior nasal valves extending onto internasal space to about level of inner angles of nostrils (Fig. 1c); preorbital length (a) distinctly shorter than distance between rear margins of orbits and pectoral fin axils (b, Fig. 3); rostral ridges separated by a considerable interspace throughout their entire length; underside of snout plain white



R. rhinobatos

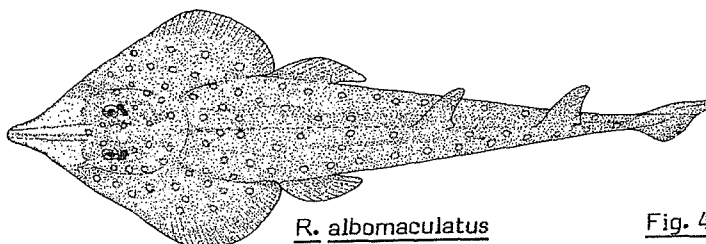
Fig. 3

* A large number (about 30) of nominal species have been described from around the world. Most of the characters used as distinctive, proved to be unprecise and to undergo changes with growth and age. Even extensive and critical revisions and discussions (e.g. Norman, 1926; Bigelow & Schroeder, 1953) were unable to elucidate the problems due to the lack of adequate study material. A modern revision on a worldwide basis is urgently needed and will certainly reduce the number of species. Thus, the validity of many nominal species along with their geographical distribution remains uncertain. Distributional notes on the species sheets should be viewed in this light. The present key has no revisional meaning, but only attempts to distinguish between the more or less clearly defined species as far as possible. Future information, hopefully to be received from users of these sheets, might enable ichthyologists to attempt a revision of the Eastern Central Atlantic representatives of this family

3 a. Upper side uniformly brown without any colour pattern R. rhinobatos

3 b. Brown upper side always variegated with light roundish spots (Fig. 4)

4 a. Upper side brown with numerous small, circular, bluish-white spots with blackish rims; no thorns on shoulders; thorns in middorsal row blunt and flattened, often indistinct in larger specimens (Fig. 4)



R. albomaculatus

R. albomaculatus

Fig. 4

4 b. Upper side greenish to khaki with a symmetrical pattern of large, rather few, circular, faint pale spots with dark rims, their diameter almost equal to that of iris; 3 thorns on each shoulder; small and pointed thorns in mid-dorsal row persistent R. irvinei

LIST OF NOMINAL SPECIES REPORTED FROM THE AREA :

Code numbers are given for those species for which Identification Sheets are included

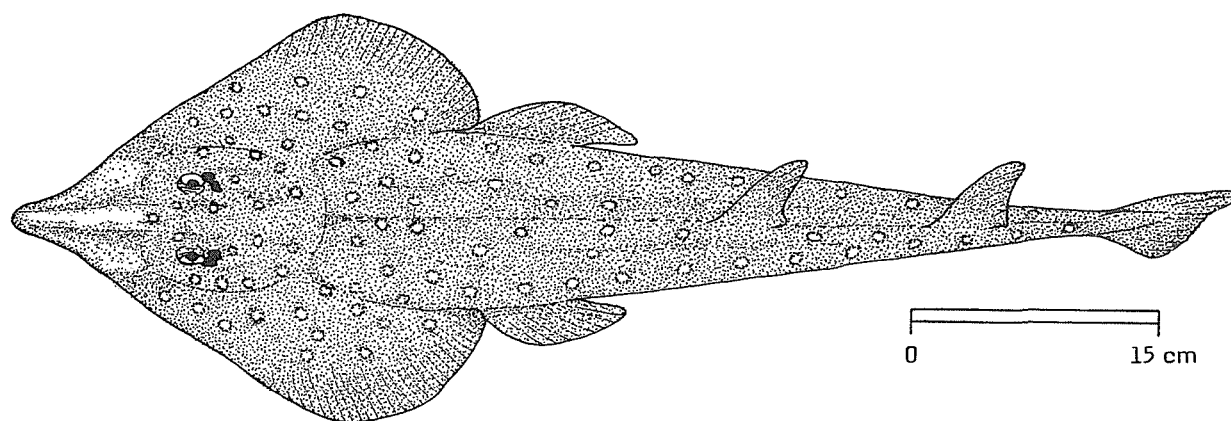
- Rhinobatos albomaculatus Norman, 1930 RHINOB Rhinob 1
- Rhinobatos blochii Müller & Henle, 1841
- Rhinobatos cemiculus E. Geoffroy Saint-Hilaire, 1817 RHINOB Rhinob 2
- * Rhinobatos congolensis Giltay, 1928
- ** Rhinobatos halavi (Forsskål, 1775)
- Rhinobatos irvinei Norman, 1931
- ** Rhinobatos percellens (Walbaum, 1792)
- * Rhinobatos rarus Garman, 1908
- Rhinobatos rhinobatos (Linnaeus, 1758) RHINOB Rhinob 3

Prepared by M. Stehmann, Aussenstelle Ichthyologie, Institut für Seefischerei, Zoologisches Institut und Zoologisches Museum, Hamburg, Federal Republic of Germany

* Taxonomic status uncertain
** Occurrence in the area doubtful

FAO SPECIES IDENTIFICATION SHEETS

FAMILY : RHINOBATIDAE

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)Rhinobatos albomaculatus Norman, 1930OTHER SCIENTIFIC NAMES STILL IN USE : None; probably sometimes misidentified as R. percellens within the area

VERNACULAR NAMES:

FAO : En - Whitespotted guitarfish
 Fr - Poisson-guitare à lunaires
 Sp - Guitarra pecosa

NATIONAL :

DISTINCTIVE CHARACTERS :

Body shark-like, only head and anterior part of trunk depressed; neither head, nor tail marked off from body. Snout elongate and pointed, typically wedge-shaped, forming an angle of 60° to 70°; rostral cartilage broad and stout, extending to tip of snout; rostral ridges separated by a large interspace throughout their length; preorbital length distinctly shorter than distance from rear margins of orbits to axils of pectorals; eyes and spiracles on top of head and close together; 2 tentacles on posterior margins of spiracles; nostrils large and oblique, completely separated from each other and from the straight mouth; anterior nasal valves extending onto internasal space to about level of inner angles of nostrils; posterior margins of nostrils greatly expanded as large semi-circular lobes; teeth small and numerous, forming bands in pavement pattern along jaws. Pectoral fins moderately expanded, continuous along sides of head to about level of half the snout length, their rear tips overlapping origin of pelvics; 2 well developed, widely separated dorsal fins, the first originating well posterior to tips of pelvics; caudal fin well developed, without a definite lower lobe; a dermal fold present along each lower edge of tail. Entire body, including fins, completely covered with minute flattened scales; small tubercles present mainly in juveniles on orbital region and along midbody in a row from nape to first dorsal and between dorsal fins; median thorns may persist in adults, in which case they are blunt and flattened; generally no thorns on shoulders.

Colour: upper side khaki-brown with a pattern of numerous small, circular, bluish-white spots with blackish rims. Lower side plain white.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA :

Rhinobatos irvinei: upper side brown, with a symmetrical pattern of large, faint, circular spots with dark rims, their diameter about equal to that of orbits; 3 thorns present on each shoulder (none in R. albomaculatus); small and pointed thorns in mid-dorsal row always persistent in large specimens.

R. rhinobatos: upper side uniformly brown without any colour pattern.

R. cemiculus: anterior nasal valves not extending onto internasal space; preorbital length equal to, or a little shorter than, distance from rear edge of orbits to pectoral fin axils; interspace between rostral ridges narrow; usually a dark spot on underside of snout.

R. blochii: inner ends of anterior nasal valves greatly extended onto internasal space, where they almost meet at midline; a single tentacle at posterior margin of spiracles (2 in R. albomaculatus); snout angle about 95° (60° to 70° in R. albomaculatus).

SIZE :

Maximum: up to 75 cm total length and about 1.5 kg.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR :

Gulf of Guinea to Angola.

Inhabits inshore coastal waters to about 35 m depth. A more or less inactive stationary species living on soft bottoms. Ovoviviparous.

Feeds mainly on crustaceans.

PRESENT FISHING GROUNDS :

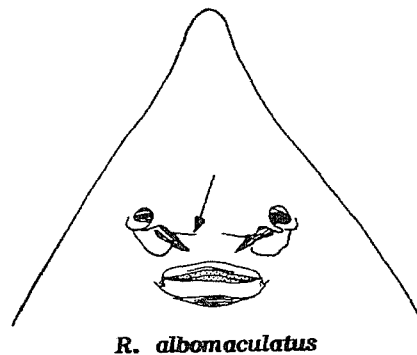
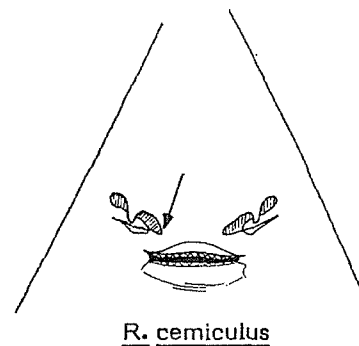
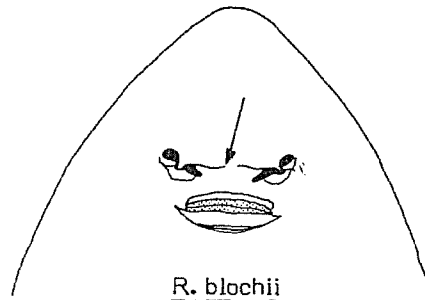
Inshore waters off Ghana, but probably whole Gulf of Guinea. Locally common.

CATCHES, FISHING GEAR AND FORMS OF UTILIZATION :

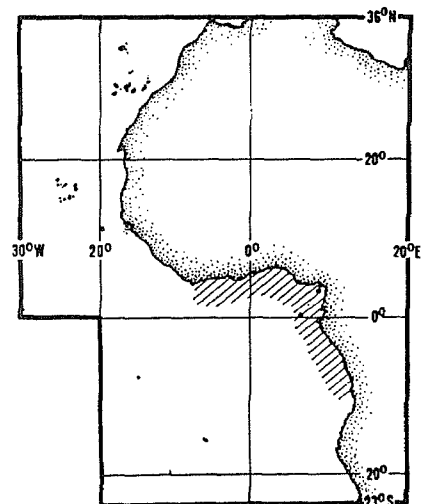
Separate statistics are not reported for this species.

Caught with bottom trawls, trammelnets, and on hook and line.

Marketed locally frequently smoked and dried salted. Reportedly the flesh is of mediocre quality.

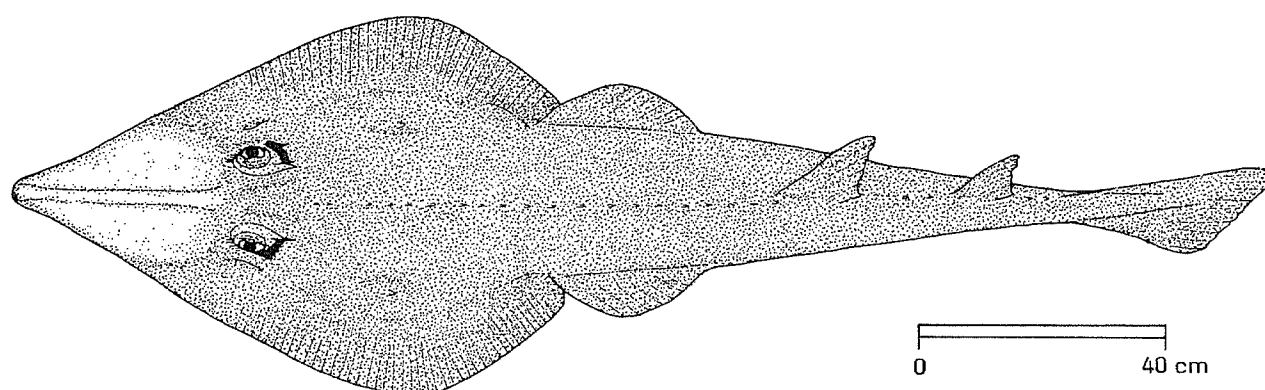


underside of head



FAO SPECIES IDENTIFICATION SHEETS

FAMILY : RHINOBATIDAE

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)Rhinobatos cemiculus E. Geoffroy Saint-Hilaire, 1817OTHER SCIENTIFIC NAMES STILL IN USE : Rhinobatos congolensis Giltay, 1928
Rhinobatos rasmus Garman, 1908

VERNACULAR NAMES:

FAO : En - Blackchin guitarfish
 Fr - Poisson-guitare fousseux
 Sp - Guitarra barbanegra

NATIONAL :

DISTINCTIVE CHARACTERS :

Body shark-like, only the head and anterior part of trunk depressed; neither head, nor tail marked off from body. Snout very elongate and pointed, typically wedge-shaped, forming an angle of about 60° to 65°; rostral cartilage fairly narrow and stout, extending to tip of snout; rostral ridges separated by a narrow interspace posteriorly, and joining completely or nearly so anteriorly; preorbital length equal to, or at most a little shorter than distance from rear margins of orbits to pectoral fin axils, and 6 to 8 times the eye diameter; eyes and spiracles on top of head; 2 tentacles on posterior margins of spiracles; nostrils large and oblique, completely separated from each other and from the straight mouth; anterior nasal valves not extending onto internasal space, but confined to anterior margins of nostrils; posterior margins of nostrils barely expanded as narrow oval flaps; teeth small and numerous, forming bands in pavement pattern along jaws. Pectoral fins moderately expanded, continuous along sides of head to about level of half the snout length, their rear tips overlapping origin of pelvics; 2 well developed, widely separated dorsal fins, the first originating well posterior to tips of pelvics; caudal fin well developed, without a definite lower lobe; a dermal fold present along each lower edge of tail. Entire body, including fins, completely covered with minute, flattened scales. A row of thornlets along each rostral ridge, and a number also around orbits and above spiracles; a median row of large pointed thorns from nape to first dorsal fin and between dorsals, and 1 to 3 thorns on each shoulder persisting in adults.

Colour: upper side uniformly brown, except for the pale semi-transparent rostral area; lower side white, but usually a blackish blotch on snout, mainly in juveniles.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA :

Other Rhinobatos species: anterior nasal valves extending onto internasal space. Further distinguishing characters of these species are the following:

R. rhinobatos, R. albomaculatus and R. irvinei: preorbital length distinctly shorter than distance between rear margins of orbits and pectoral fin axils (equal to, or only slightly shorter in R. cemiculus).

R. blochii: a single tentacle at posterior margin of spiracle (2 in R. cemiculus); snout angle about 95° (60° to 65° in R. cemiculus).

SIZE :

Maximum: up to about 2 m total length; common to about 150 cm and 25 kg.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR :

In the area, from the Straits of Gibraltar to Angola; also extending into the Mediterranean and northward to Portugal.

A rather inactive and stationary demersal species, inhabiting shallow coastal waters, occasionally to about 80 m depth, on soft bottoms. Ovoviviparous.

Feeds on all kinds of small bottom-dwelling animals, mainly invertebrates.

PRESENT FISHING GROUNDS :

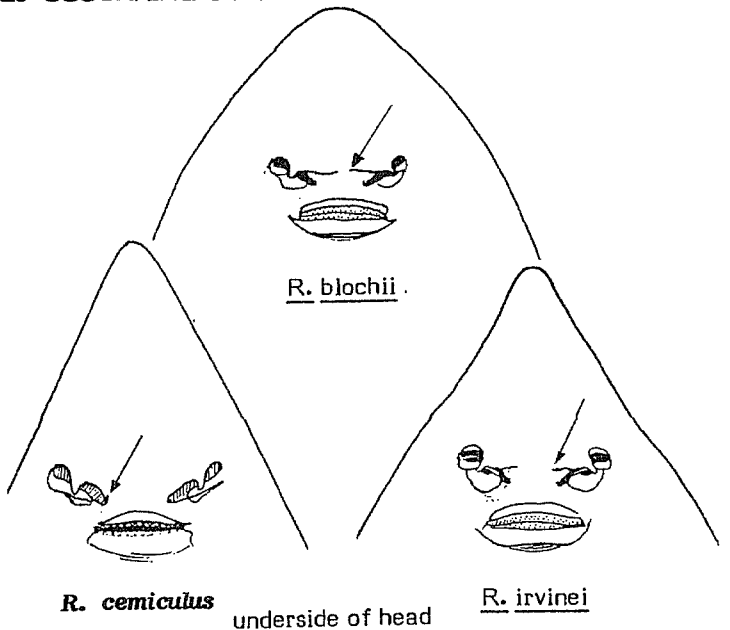
Shallow coastal waters off the Canary Islands, Senegal and the whole Gulf of Guinea; probably also off N.W. Africa. Locally abundant.

CATCHES, FISHING GEAR AND FORMS OF UTILIZATION :

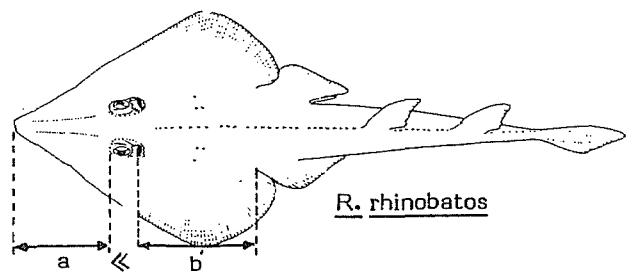
Separate statistics are not reported for this species.

Caught with bottom trawls, trammelnets and longlines.

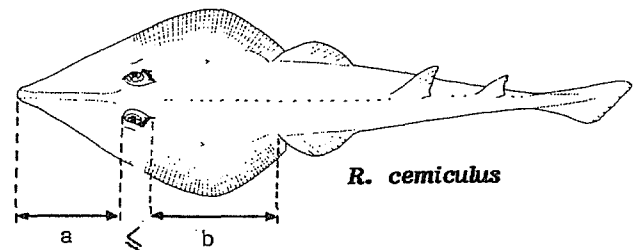
Regularly found in local markets fresh, smoked and dried salted. Also taken by foreign offshore trawlers. Reportedly the flesh is of mediocre quality.



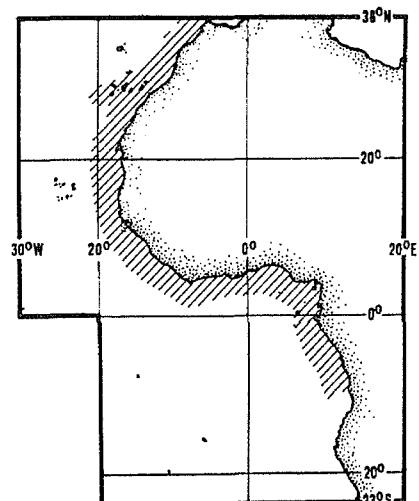
R. cemiculus **R. irvinei**
underside of head



R. rhinobatos



R. cemiculus

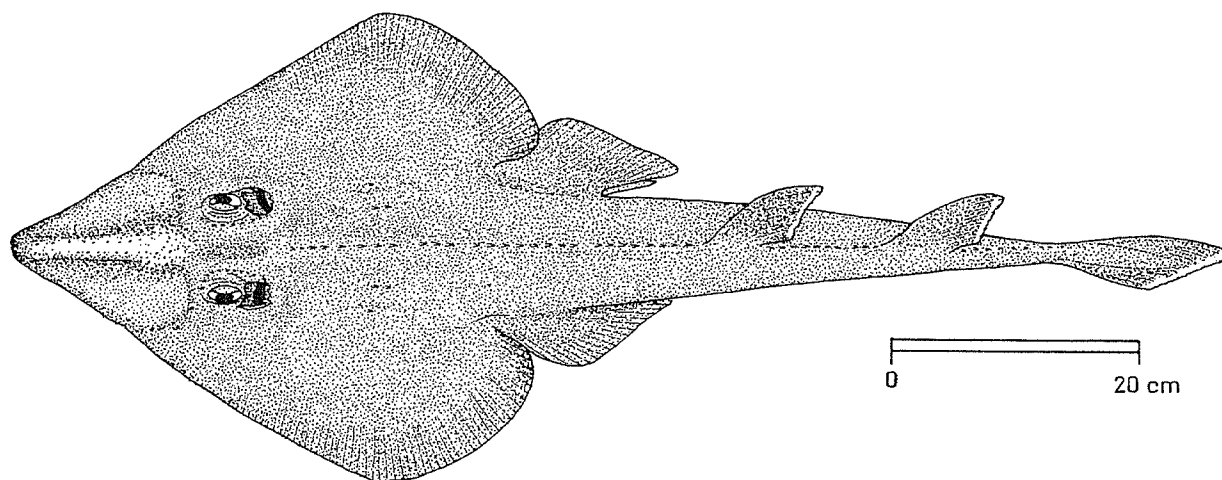


FAO SPECIES IDENTIFICATION SHEETS

FAMILY : RHINOBATIDAE

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)Rhinobatos rhinobatos (Linnaeus, 1758)

OTHER SCIENTIFIC NAMES STILL IN USE : None



VERNACULAR NAMES:

FAO : En - Common guitarfish
 Fr - Poisson-guitare commun
 Sp - Guitarra comun

NATIONAL :

DISTINCTIVE CHARACTERS :

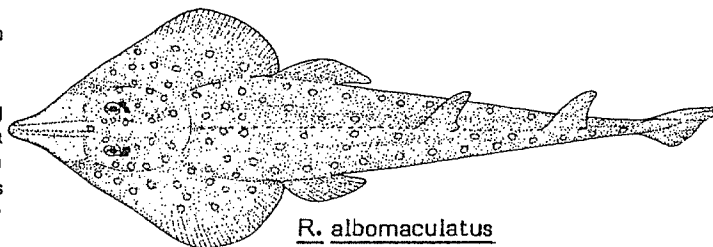
Body shark-like, only the head and anterior part of trunk depressed; neither head, nor tail marked off from body. Snout elongate and pointed, typically wedge-shaped, forming an angle of about 65°; rostral cartilage broad and stout, extending to tip of snout; rostral ridges separated by a large interspace throughout their length; preorbital length distinctly shorter than distance from rear margins of orbits to pectoral fin axils, at most 5 times as long as eye diameter; eyes and spiracles on top of head; 2 tentacles on posterior margins of spiracles; nostrils large and oblique, completely separated from each other and from the straight mouth; anterior nasal valves extending onto internasal space to about level of inner angles of nostrils; posterior margins of nostrils greatly expanded as large spatulate lobes; teeth small and numerous, forming bands in pavement pattern along jaws. Pectoral fins moderately expanded, continuous along sides of head to level of half the snout length, their rear tips overlapping origin of pelvics; 2 well developed, widely separated dorsal fins, the first originating well posterior of tips of pelvics; caudal fin well developed, without a definite lower lobe; a dermal fold present along each lower edge of tail. Entire body, including fins, completely covered with minute flattened scales; coarse spinules along rostral ridges and small thornlets in front of eyes, mainly in juveniles; a median row of small pointed thorns from nape to first dorsal and between dorsal fins persisting in adults, as well as 2 or 3 thorns on each shoulder; thorns more prominent in smaller specimens.

Colour: upper side uniformly khaki-brown with pattern of very faint greenish blotches, rostral area semi-transparent lighter brown; lower side plain white.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA :

Rhinobatos albomaculatus and R. irvinei: brown upper side, always variegated with light roundish spots.

R. cemiculus: anterior nasal valves not extending onto internasal space; preorbital length equal to, or a little shorter than distance from rear edge of orbits to pectoral fin axils; interspace between rostral ridges narrow, the ridges joining toward tip of snout or nearly so; usually a dark blotch on underside of snout.



R. albomaculatus

R. blochii: inner ends of anterior nasal valves greatly extended onto internasal space and almost meeting at midline; a single tentacle at posterior margins of spiracles (2 in R. rhinobatos); snout shorter, forming an angle of 95° (of about 65° in R. rhinobatos).

SIZE :

Maximum: up to 1 m total length, possibly more.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR :

In the area, found from the Straits of Gibraltar to Angola; also extending into the Mediterranean and northward to the southern Bay of Biscay.

A rather inactive and stationary demersal species, inhabiting shallow coastal waters on soft bottoms, occasionally to about 90 m depth. Ovoviviparous.

Feeds on all kinds of small bottom-dwelling animals, mainly invertebrates.

PRESENT FISHING GROUNDS :

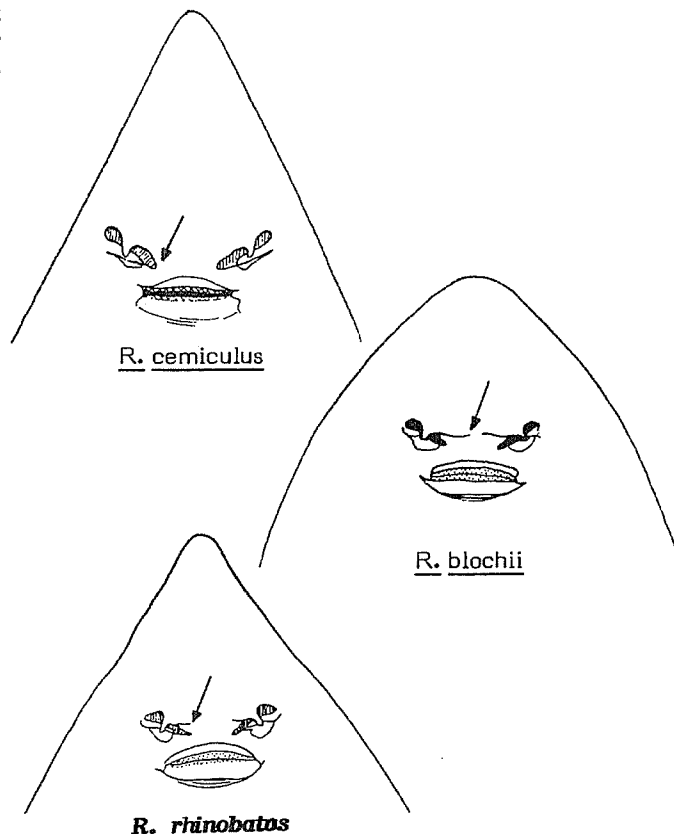
Shallow coastal waters throughout its range. Locally abundant.

CATCHES, FISHING GEAR AND FORMS OF UTILIZATION :

Separate statistics are not reported for this species.

Caught with bottom trawls, trammelnets and longlines.

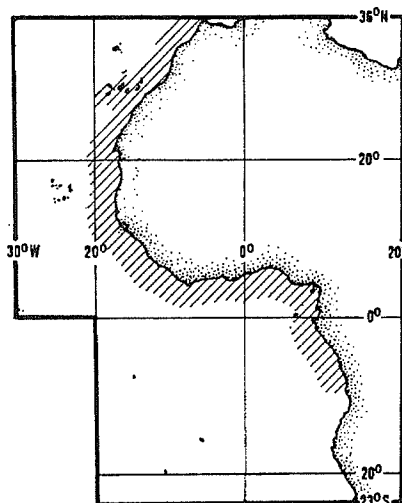
Regularly found in local markets, fresh, dried salted, and smoked. Also taken by foreign offshore trawlers. Reportedly, the flesh is of mediocre quality.



R. cemiculus

R. blochii

R. rhinobatos



FAO SPECIES IDENTIFICATION SHEETS

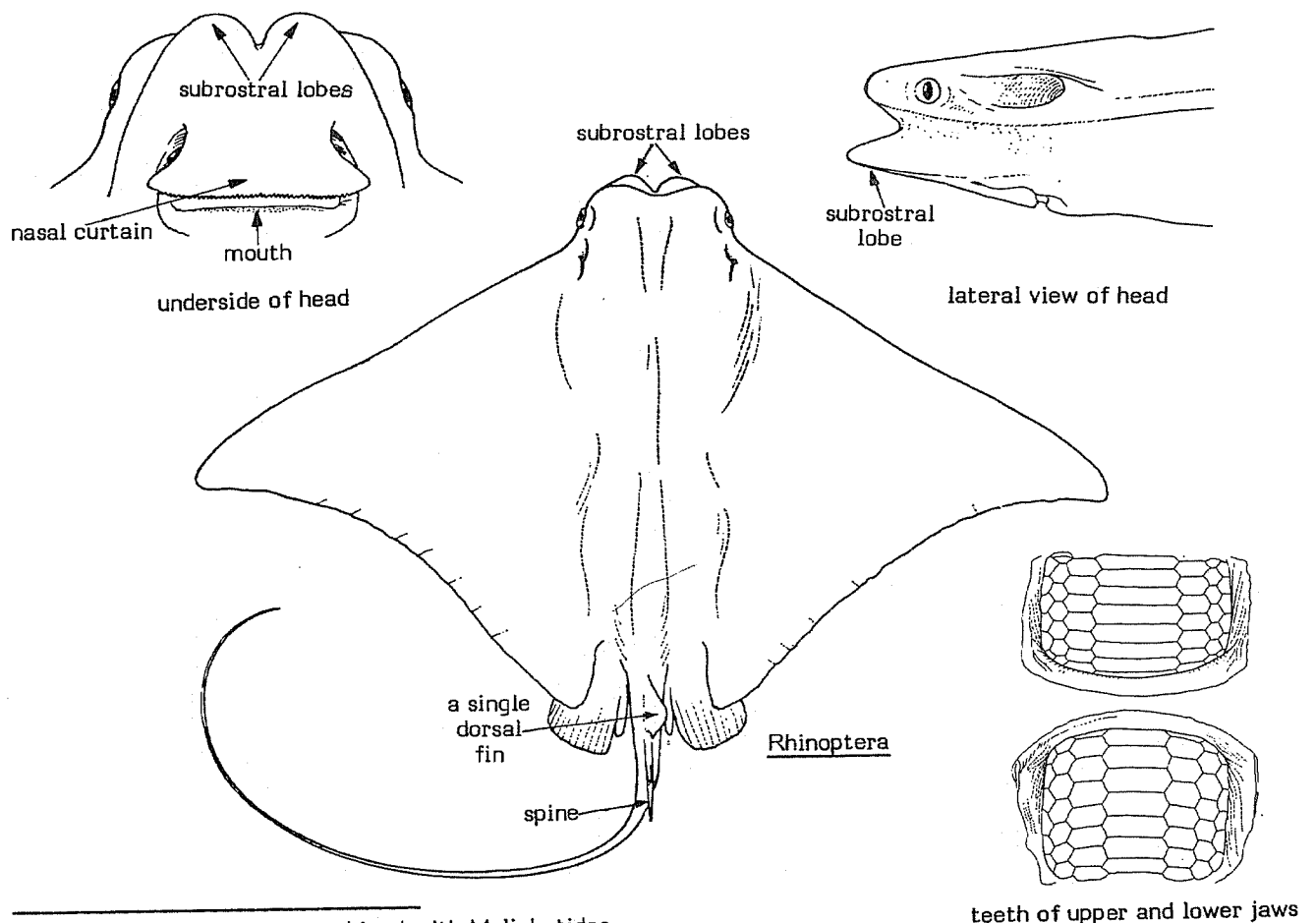
FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)

RHINOPTERIDAE*

Cownose rays

Stingrays of fairly large size (full grown specimens up to about 2 m disc width). Disc rhombic to lozenge-shaped, distinctly broader than long. Anterior part of head marked off from disc; pectoral fins forming anteriorly a fleshy subrostral lobe barely extending below front of head which is relatively short and deeply incised in the midline, thus appearing as two distinct, but basally continuous lobes; eyes and the very large spiracles on sides of head; mouth straight, without fleshy papillae on roof and floor; teeth large, in 5 or more (up to 20) series, combined to form a dental plate; those of median series somewhat larger than the others; nasal curtain greatly expanded and continuous medially, its free rear margin straight and fringed with short loblets overlapping upper jaw. Wings (main portions of pectoral fins) originating on upper sides of head at level of posterior edge of orbits, completely separated from subrostral part of pectorals at lower level of head; a small dorsal fin present on base of tail at level of free inner margins of pelvics and in front of the long, serrated spine (or spines); no caudal fin; tail whip-like, longer than disc and marked off from body; skin naked in some species, but more or less prickly in others.

Colour: all shades of brown dorsally, usually uniform, but occasionally with an indistinct pattern. Whitish below, often more or less dark toward outer angles of pectorals.



* This family is often combined with Myliobatidae

teeth of upper and lower jaws

Cownose rays inhabit coastal waters of tropical and subtropical latitudes of the world, but occur also around larger offlying islands. They are quick, active swimmers moving by flapping their wing-like pectoral fins. Reportedly migratory; they usually occur in groups, swimming close to the bottom, but have also been observed close to the surface, when they occasionally jump out of the water. All species are ovoviviparous and feed more or less exclusively on hard-shelled molluscs but also on larger crustaceans. Cownose rays are nowhere the object of a regular fishery, but some are rather frequently caught locally in tropical waters with bottom trawls, trammelnets, longlines, or on hook and line. The flesh (wings) is marketed locally (e.g. Ivory Coast, Nigeria) dried salted and smoked. Other parts and whole specimens are used for fishmeal and oil mainly on board foreign trawlers.

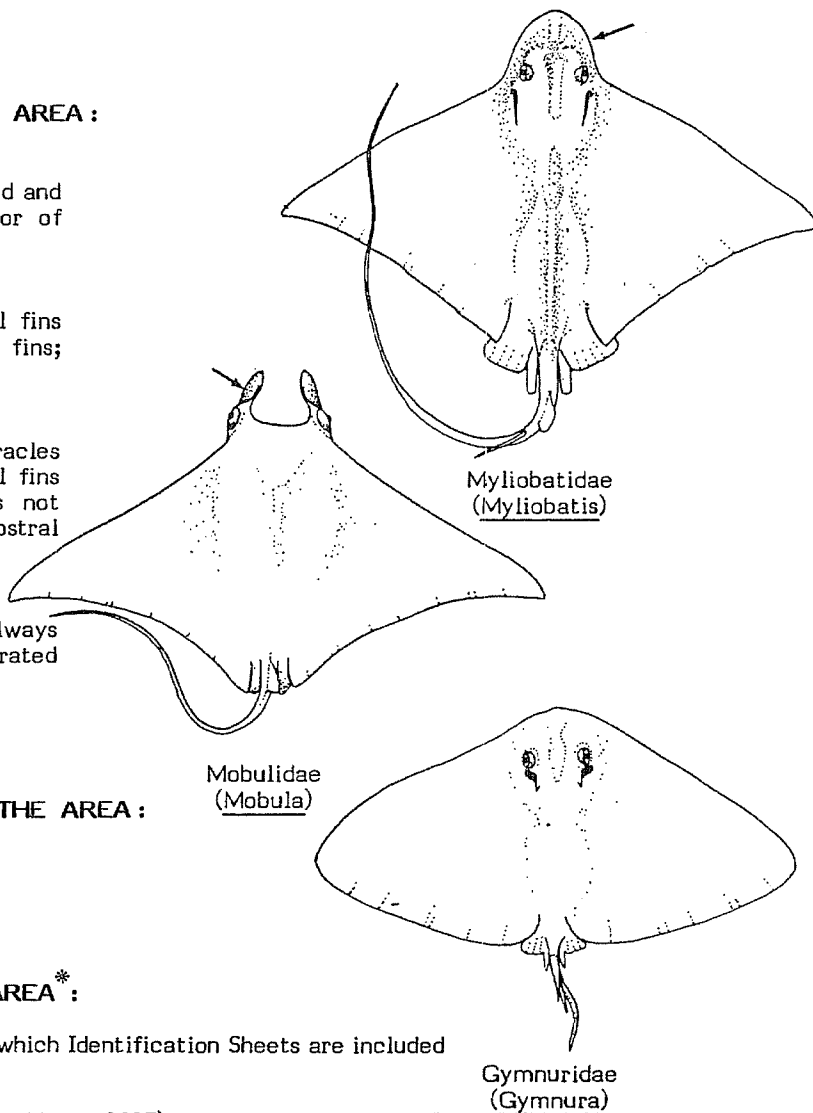
SIMILAR FAMILIES OCCURRING IN THE AREA :

Myliobatidae: subrostral lobe undivided and projecting; several fleshy papillae on floor of mouth.

Mobulidae: anterior parts of pectoral fins forming two completely separate cephalic fins; teeth minute, in bands of numerous series.

Dasyatidae, Gymnuridae: eyes and spiracles on top of head; anterior parts of pectoral fins continuous along sides of head, which is not marked off from disc; no separate subrostral lobe or cephalic fins.

Other families of rays and skates: always with two dorsals and a caudal fin, and no serrated tail spine.



Myliobatidae
(Myliobatis)

Mobulidae
(Mobula)

Gymnuridae
(Gymnura)

KEY TO THE GENERA OCCURRING IN THE AREA :

Rhinoptera only.

LIST OF SPECIES OCCURRING IN THE AREA* :

Code numbers are given for those species for which Identification Sheets are included

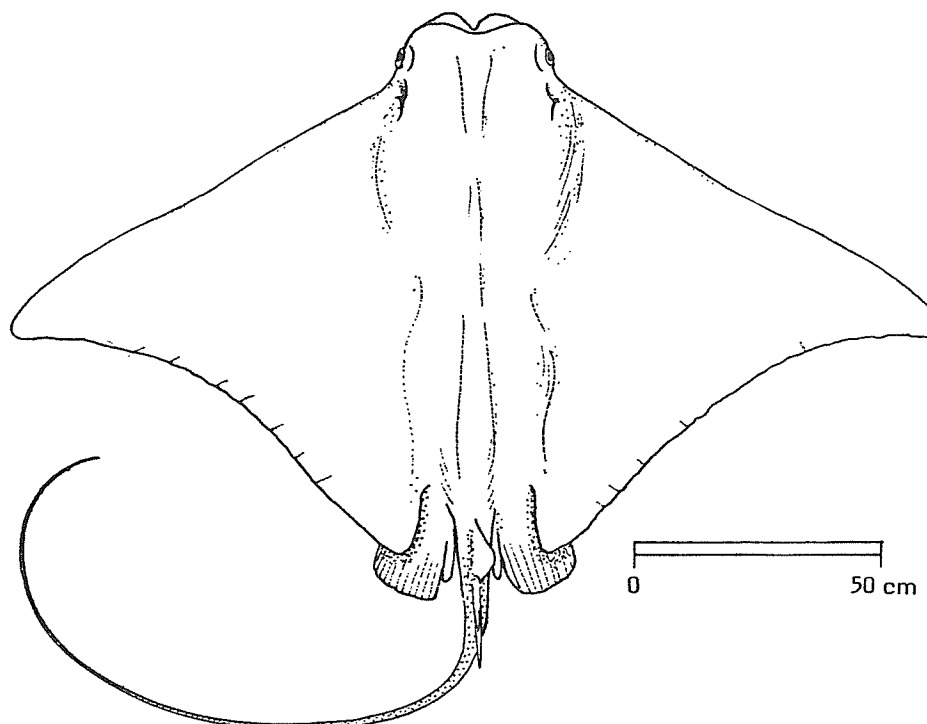
- | | |
|---|-----------------|
| <u>Rhinoptera bonasus</u> (Mitchill, 1815) | |
| <u>Rhinoptera marginata</u> (E. Geoffroy Saint-Hilaire, 1817) | RHINOP Rhinop 1 |
| <u>Rhinoptera peli</u> Bleeker, 1863 | |

Prepared by M. Stehmann, Aussenstelle Ichthyologie, Institut für Seefischerei, Zoologisches Institut und Zoologisches Museum, Hamburg, Federal Republic of Germany

* A number of rhinopterid species have been described from around the world. They appear so closely related to each other that there is general consensus to include all of them in the single genus Rhinoptera. However, the distinction between species is often weak, and in several cases is mainly based on geographical separation. The validity of several species, as well as the distribution of many of them, must therefore remain uncertain until a worldwide revision has been carried out. The list of species as well as the description on the species sheet should be viewed in this light

FAO SPECIES IDENTIFICATION SHEETS

FAMILY : RHINOPTERIDAE

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)Rhinoptera marginata (E. Geoffroy Saint-Hilaire, 1817)OTHER SCIENTIFIC NAMES STILL IN USE : ? Rhinoptera peli Bleeker, 1863

VERNACULAR NAMES:

FAO : En - Lusitanian cownose ray
 Fr - Mourine lusitanienne
 Sp - Gavilán lusitánico

NATIONAL :

DISTINCTIVE CHARACTERS :

Disc rhombic to lozenge-shaped, about twice as broad as long. Anterior part of head marked off from disc, its front margin only slightly concave; fleshy subrostral lobe barely projecting from lower level of head and deeply incised at midline, thus externally appearing as bilobed; eyes and the very large spiracles on sides of head; mouth nearly straight, without fleshy papillae on roof or floor; teeth large and flattened, about 3 times broader than long, usually in 9 rows, combined to form a dental plate in each jaw, those of the median row conspicuously larger than the others; nasal curtain greatly expanded; its rear margin continuous, straight, fringed with short loblets, and overlapping the upper jaw. Pectoral fins falciform, their main portions (wings) originating on upper side of head at level of rear margins of orbits, completely separated from subrostral parts; a small dorsal fin on base of tail between free inner margins of pelvics; no caudal fin; tail distinctly marked-off from body, whip-like and circular in cross-section, about twice as long as disc (if undamaged), with one (rarely more) long, serrated "stings" originating close behind dorsal fin. Skin either entirely smooth above and below, or somewhat prickly above along midbody.

Colour: plain greenish-brown to bronze above; white with a rosy cast below, margins of disc and particularly, outer corners dark. Tail dark.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA :

Rhinoptera bonasus: teeth in 6 to 8 series, normally 7 (usually 9 in R. marginata).

R. peli: original description most probably based on a juvenile R. marginata.

Myliobatidae: subrostral lobe undivided and usually more projecting.

SIZE :

Maximum: up to 2 m disc width.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR :

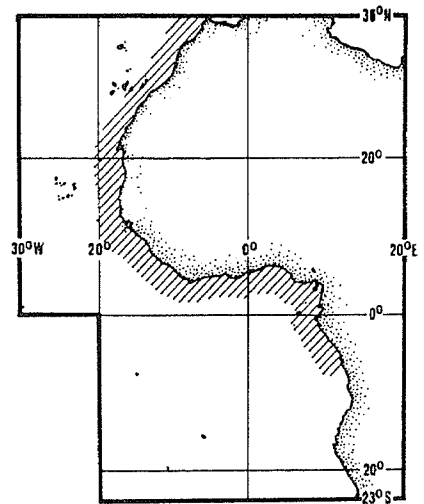
In the area, from the Straits of Gibraltar to the Gulf of Guinea; also extending into the southern Mediterranean and northward to Portugal.

A demersal species inhabiting soft bottoms in shallow inshore waters (to about 30 m depth) sometimes occurring in groups, especially while migrating. Oviparous.

Feeds on hard-shelled molluscs but also on large crustaceans.

PRESENT FISHING GROUNDS :

Shallow inshore waters off Ivory Coast and Nigeria. Locally abundant in tropical waters.



CATCHES, FISHING GEAR AND FORMS OF UTILIZATION :

Separate statistics are not reported for this species.

Caught with bottom trawls, trammelnets, long-lines, and on hook and line.

Marketed (wings) locally dried salted and smoked. Whole specimens also used for fishmeal and oil on board foreign trawlers.

Dangerous due to its "sting". May cause damage to banks and cultures of bivalves.

RHYNCH

1981

FAO SPECIES IDENTIFICATION SHEETS

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)

RHYNCHOBATIDAE

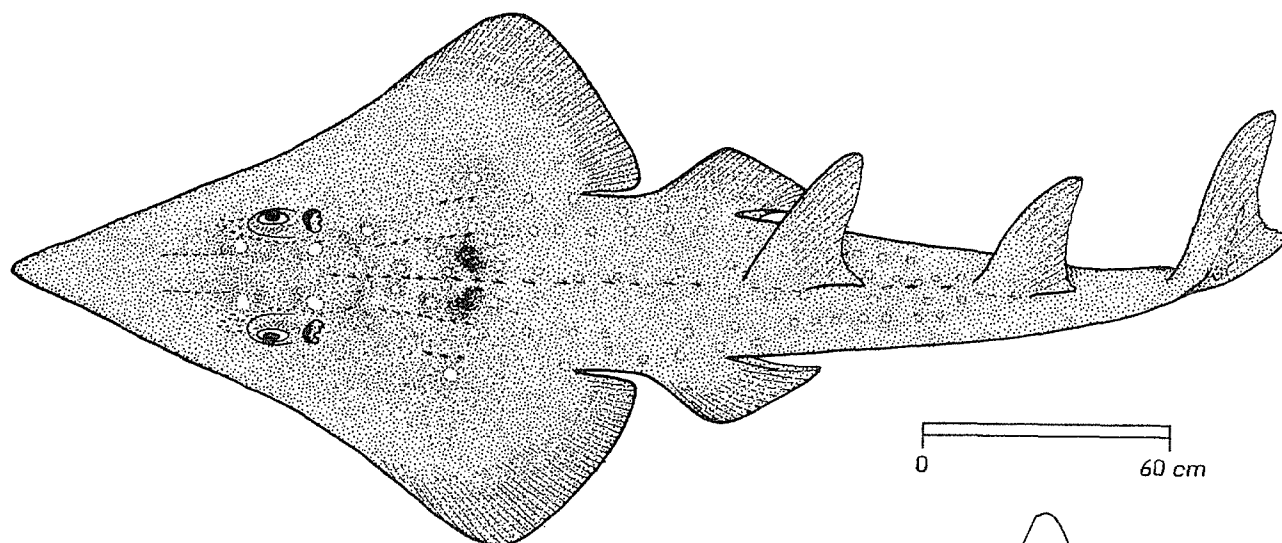
Wedgefishes

A single species in the area; see species sheets for:

Rhynchobatus lübberti Ehrenbaum, 1914 RHYNCH Rhynch 1

FAO SPECIES IDENTIFICATION SHEETS

FAMILY : RHYNCHOBATIDAE

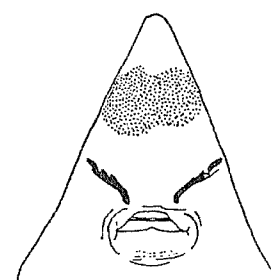
FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)Rhynchobatus libberti Ehrenbaum, 1914OTHER SCIENTIFIC NAMES STILL IN USE : Rhynchobatus atlanticus Regan, 1915

0 60 cm

VERNACULAR NAMES:

FAO : En - African wedgefish
Fr - Poisson-paille africain
Sp - Pez cuña africano

NATIONAL :



underside of head

DISTINCTIVE CHARACTERS :

Body shark-like, disc always longer than broad; head and anterior part of trunk depressed; neither head, nor tail marked off from body. Snout elongate and sharply pointed, typically wedge-shaped, forming an angle of about 50°; rostral cartilage broad and stout, extending to tip of snout, rostral ridges joining anteriorly; preorbital length about equal to distance from rear margins of orbits to axils of pectorals; eyes and spiracles close-set on top of head; 2 tentacles on posterior margins of spiracles; nostrils very large and oblique, separated from each other and from the straight mouth; anterior nasal valves not extending onto internasal space; posterior margin of nostrils hardly expanded; teeth small and numerous, forming bands in pavement pattern along jaws. Pectoral fins moderately expanded and continuous along sides of head to a short distance in front of mouth, their rear tips falling short of origin of pelvics; 2 well-developed, widely-separated dorsal fins, the first originating over pelvic fin bases; caudal fin well developed, with a definite lower lobe, a deeply concave posterior margin and sharp-tipped lobes; tail with a dermal fold along each lower edge. Entire body, including fins, covered with minute flattened scales; a row of fairly large, pointed thorns along each rostral ridge; 2 additional thorns may occur on tip of snout; a patch of thornlets and thorns in front of each orbit, extending backward to level of spiracles as a simple row; a median row of large pointed thorns from nape to first dorsal fin and between dorsals, flanked by two other rows on the nape-shoulder area. Additional thorns are usually present on outer shoulder.

Colour: more or less yellowish to greenish above with a pattern of numerous circular dark-rimmed white spots, except for head and tail; 2 large, blackish blotches on shoulder placed between the three rows of thorns; alternating pale and dark crossbars may occur in the interorbital space; lower side white, with a large transverse blackish blotch on snout.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA :

Species of *Rhinobatidae*: caudal fin without a distinct lower lobe; rearward extension of pectorals reaching to origin of pelvics or beyond; origin of first dorsal fin well posterior to tips of pelvics.

Species of *Pristidae*: snout extremely elongated into a firm, flat and narrow blade bearing large, tooth-like structures along either edge.

Species of *Platyrrhinidae*: disc more or less circular because of the broadly-expanded pectorals; tail less stout, and marked off from disc; rostral cartilage not extending to tip of snout.

Species of *Torpedinidae*: disc very thick and flabby; well developed and powerful electric organs along sides of head; skin nearly always naked.

Other families of rays and skates: tail not stout; if present at all, 1 or 2 very small dorsal fins and a rudimentary caudal.

SIZE :

Maximum: up to 3 m total length.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR :

Found from about Senegal to Congo.

A sluggish, bottom-living animal occurring on sandy and soft bottoms in shallow coastal waters (to 35 m depth). Ovoviviparous.

Feeds on all kinds of bottom-dwelling animals, mainly crustaceans.

PRESENT FISHING GROUNDS :

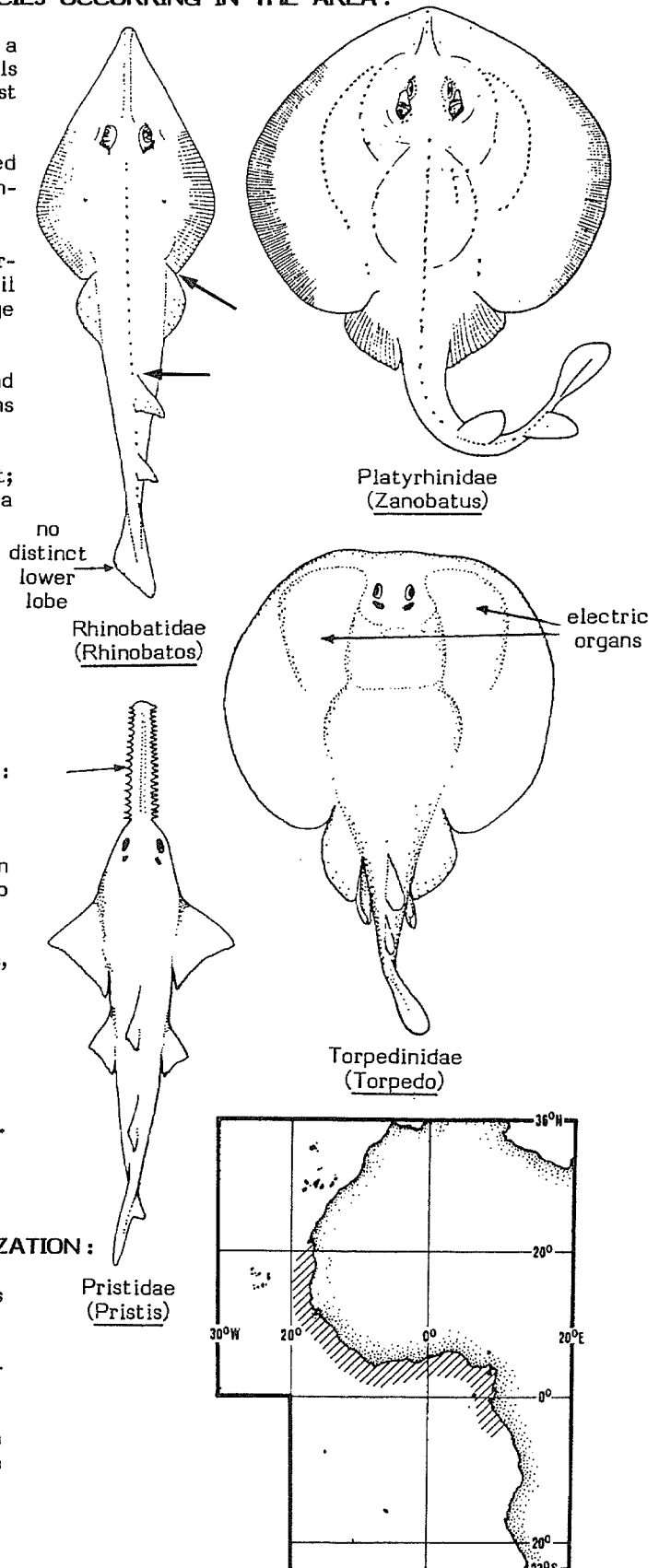
Shallow coastal waters throughout its range. Locally abundant.

CATCHES, FISHING GEAR AND FORMS OF UTILIZATION :

Separate statistics are not reported for this species.

Caught with bottom trawls, trammelnets, long-lines, and on hook and line.

Marketed locally smoked and dried salted. Flesh of mediocre quality. Also used for fishmeal and oil on board foreign trawlers.



FAO SPECIES IDENTIFICATION SHEETS

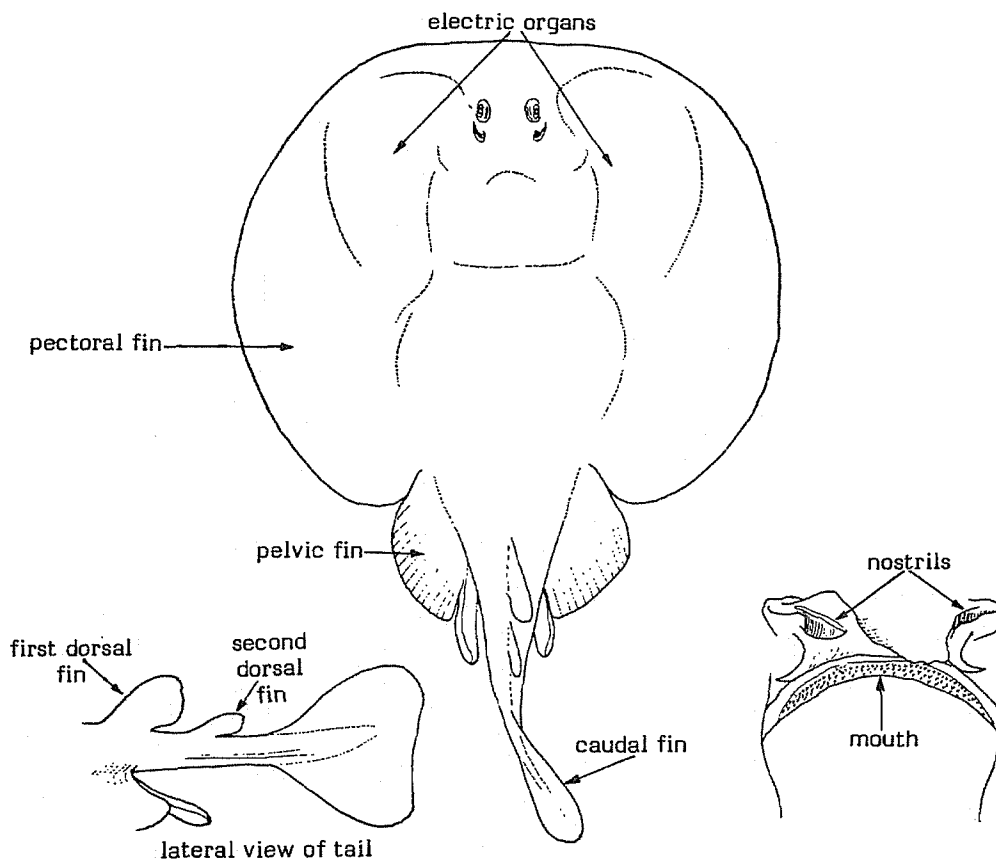
FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)

TORPEDINIDAE

Electric rays

Heavy-bodied rays of medium size (maximum total length to about 180 cm, maximum weight to 90 kg, but most species less than 1 m total length). Body greatly flattened dorso-ventrally; head, trunk and the broadly expanded pectoral fins forming a more or less circular disc. Anterior contour of disc conspicuously truncate or emarginate, the snout extremely short; rostral cartilage absent or reduced; eyes and spiracles small and close-set on top of head; posterior margins of spiracles either smooth, or with tentacles; nostrils transverse and relatively large, closer to mouth than to end of snout, their inner margins broadly expanded rearward and fused as a transverse nasal curtain, the continuous smooth free margin of which nearly overlaps the upper jaw; mouth fairly small and distinctly arcuate, flanked by long, longitudinal grooves; numerous small monocuspid teeth in pavement pattern forming bands along both jaws. Pectoral fins very thick toward their margins, completely fused to sides of head, and expanded rearward to, or slightly beyond the origin of the single-lobed pelvic fins. Tail very massive and shark-like, distinctly shorter than body and marked off from it, with a narrow dermal fold along either lower edge; 2 conspicuous, separated dorsal fins, the first larger than the second and originating partly or entirely above pelvic fin bases; caudal fin large, subtriangular. Skin very soft and completely naked, except in one of the Eastern Central Atlantic species. Two very well developed and powerful electric organs (their shape visible externally) flank the head along its entire length. Consistency of body typically soft and flabby.

Colour: upper side either plain dark, or variegated with all kinds of light and dark patterns (coloured ocelli, spots, blotches, or marblings) on various shades of brown; lower side white, often with dark bordering of disc and pelvics.



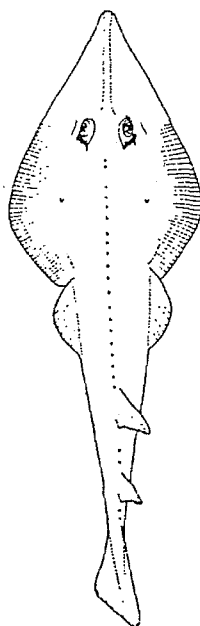
These particular electric rays inhabit shelf areas of the world from temperate to tropical latitudes to about 100 m depth, but occur mainly in shallow or even inshore waters, although some have been reported from as deep as 350 m depth. They usually live inactive on soft bottoms, often buried in sand or mud, and appear sluggish when swimming; however, certain species (e.g. *T. nobiliana*) are reported as highly migratory, the adults swimming pelagically. Food consists of bottom-dwelling invertebrates and small to large-sized fishes. All species are ovoviviparous. Electric rays are locally very abundant, particularly in the subtropics and tropics. There is no special fishery for them or any use for human consumption, although they are frequently caught in large numbers (mainly as bycatch).

SIMILAR FAMILIES OCCURRING IN THE AREA :

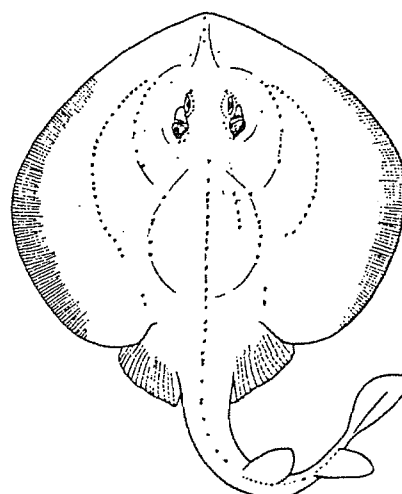
Pristidae, Rhinobatidae, Rhynchobatidae: pectoral fins barely expanded, thus no real body disc; general appearance shark-like and tail not marked off from body; snout long and pointed, either greatly projecting as a firm saw-blade, or wedge-shaped.

Platyrrhinidae: snout short but bluntly angled; first dorsal fin originating far behind pelvics; disc relatively thin and not fleshy toward margin; skin covered with more or less close-set dermal denticles and larger tubercles; no electric organs.

Other families of rays and skates: tail not stout; if present at all, 1 or 2 very small dorsal fins; caudal fin rudimentary or lacking.



Rhinobatidae
(Rhinobatos)



Platyrrhinidae
(Zanobatus)

KEY TO GENERA OCCURRING IN THE AREA :

Torpedo only.

LIST OF SPECIES OCCURRING IN THE AREA :

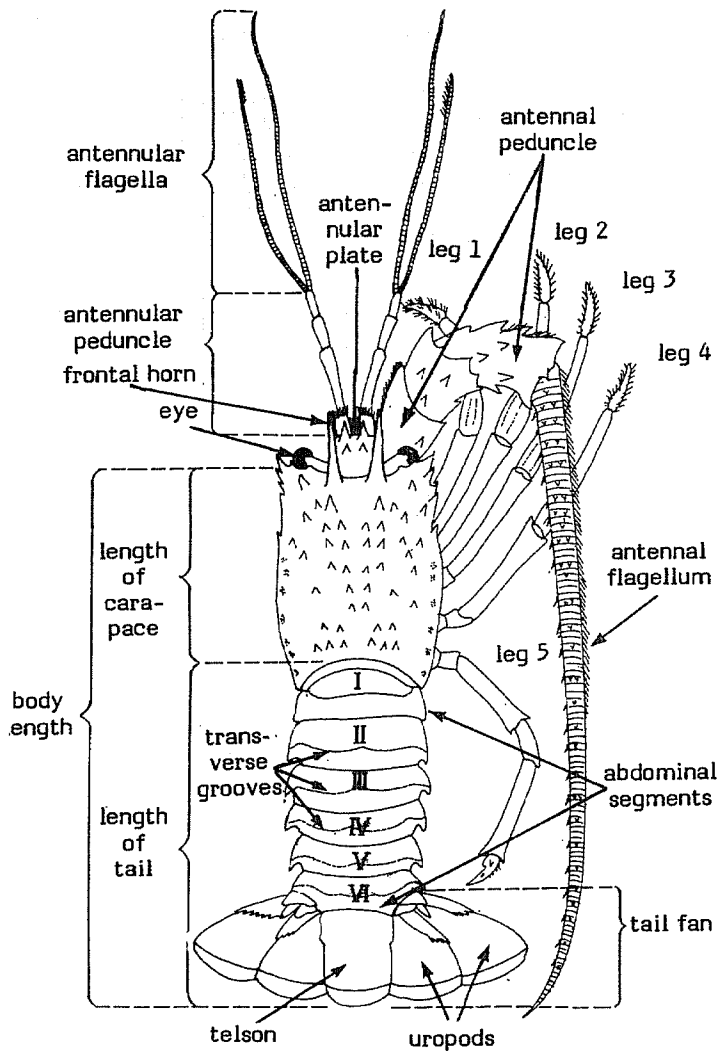
- Torpedo (Torpedo) bauchotae Cadenat, Capapé & Desoutter, 1978
- * Torpedo (Tetronarce) mackayana Metzelaar, 1919
- Torpedo (Torpedo) marmorata Risso, 1810
- Torpedo (Tetronarce) nobiliana Bonaparte, 1835
- Torpedo (Torpedo) torpedo (Linnaeus, 1758)
- Torpedo (Torpedo) sp.
- Torpedo (Tetronarce) sp.

Prepared by M. Stehmann, Aussenstelle Ichthyologie, Institut für Seefischerei, Zoologisches Institut und Zoologisches Museum, Hamburg, Federal Republic of Germany

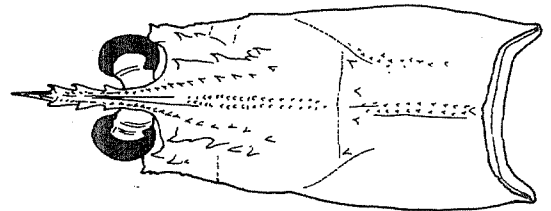
* *T. mackayana* is clearly distinctive as the only species in the area with a double row of spinulose papillae along either posterior margin of the disc. *T. nobiliana* and *T. torpedo* are also well defined and extensively described and illustrated in the literature, the former species being characterized by a plain dark upper colour, the latter by having usually 5 large, blue ocelli. But at least in the southern part of the area the situation is very confusing with regard to a number of forms (? species) of the *T. marmorata* type, including its consubgener *T. bauchotae*. A similar situation also exists concerning several forms (? species) of the subgenus *Tetronarce*. A critical review of the *Torpedo* species in the tropical Eastern Atlantic resulted in the realization, that the distinction between species is rather weak due to the nature of characters used. However, a number of apparently significant characters have not been used, or were overlooked. It is therefore not only impossible, but also senseless to present a key to the species of the area, the number of which is probably greater than indicated in the above list.

LOBSTERS

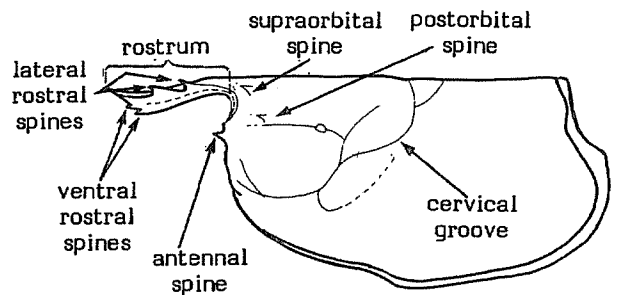
TECHNICAL TERMS AND PRINCIPAL MEASUREMENTS USED



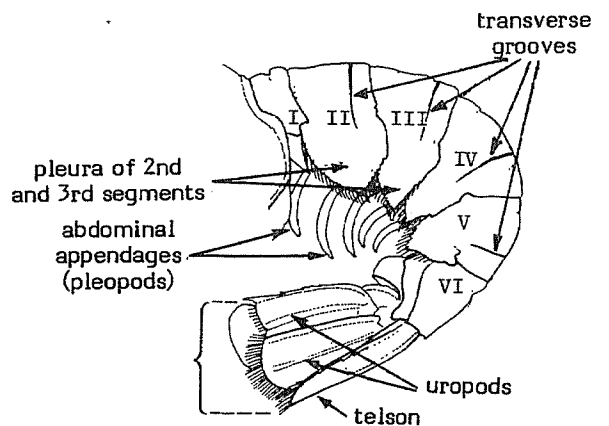
general shape (dorsal view) of a spiny lobster (Panulirus sp.) (no rostrum, no pincers)



carapace (dorsal view) of a true lobster (Nephrops sp.)



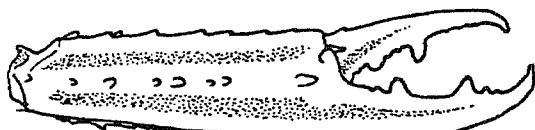
carapace (lateral view) of a lobster (Homarus)



tail (abdomen) in lateral view segments numbered I to VI



simple dactyl (Panulirus)



slender true pincer (Nephrops)



massive true pincer (Homarus)

Types of terminal segments of legs in first pair

GENERAL REMARKS

The lobsters include a variety of crustaceans ranging in size (measured from the tip of the rostrum to the end of the tail, thus excluding any of the appendages) from a few to more than 60 cm. They are more or less elongate animals with cylindrical or flattened bodies and a prominent tail or abdomen consisting of 6 movable segments and a terminal fan. The tail is usually about as long as the rigid and often spiny or tuberculate head or carapace. The eyes are stalked and usually movable in the sockets of the carapace, but reduced or unpigmented in some families (e.g., the deep-sea Polychelidae). The most conspicuous of the appendages of the anterior part of the body, situated before and below the carapace, are a pair of usually small, slender antennules, a pair of more robust antennae (long, simple, and cylindrical in most families, scale-like in the slipper-lobsters or Scyllaridae) and 5 pairs of legs (pereiopods, thoracic legs or walking legs). The first pair of legs is enlarged in certain families (Nephropidae, Polychelidae), in others it differs hardly at all from the following legs (Palinuridae, Scyllaridae). The legs may all end in a simple curved dactyl (e.g., in Palinuridae and Scyllaridae) or some of them may terminate in true pincers or chelae (i.e., the first three pairs in Nephropidae, 4 or 5 pairs in Polychelidae, and the last pair in females of Palinuridae and Scyllaridae). The abdominal appendages are short and biramous, leaf-like supple abdominal legs or pleopods.

In the Eastern Atlantic, the lobsters are represented by 4 families and about 20 species, of which only a few can be considered to be of interest to fisheries at the present time. The spiny and slipper lobsters (Palinuridae and Scyllaridae, respectively), as well as some of the true lobsters (Nephropidae) usually occur in fairly shallow waters, often on a rocky bottom or a bottom with coarse sediment. Other Nephropidae as well as the Polychelidae are found in deeper water on a muddy bottom.

The three major commercial species of lobsters from the coasts of Europe and the Mediterranean (e.g., Homarus gammarus, Nephrops norvegicus and Palinurus elephas) are present only in the northernmost part of Fishing Area 34 where they are still of considerable commercial importance. The other spiny lobsters occurring in Fishing Area 34 also form the object of more or less intensive fisheries. The slipper lobsters are marketed when of good size, but there is no special fishery for these species. The deep-sea Polychelidae so far are uninteresting as regards commercial fishing.

The spiny lobsters are practically all caught with lobster pots, but also with vertical nets; occasional specimens are taken by trawlers as admixture to other catches; slipper lobsters are usually taken with vertical nets. Most of the species are sold and consumed locally; some of the spiny lobsters are exported (live or as frozen tails), mostly to Spain and France.

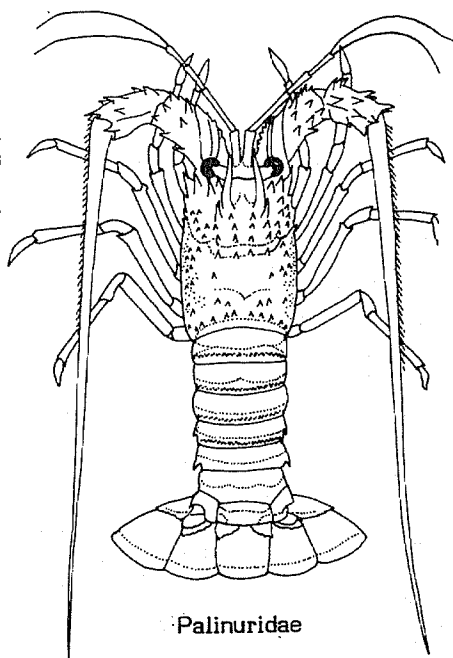
GUIDE TO FAMILIES OCCURRING IN THE AREA

NEPH NEPHROPIDAE: True lobsters and lobsterettes

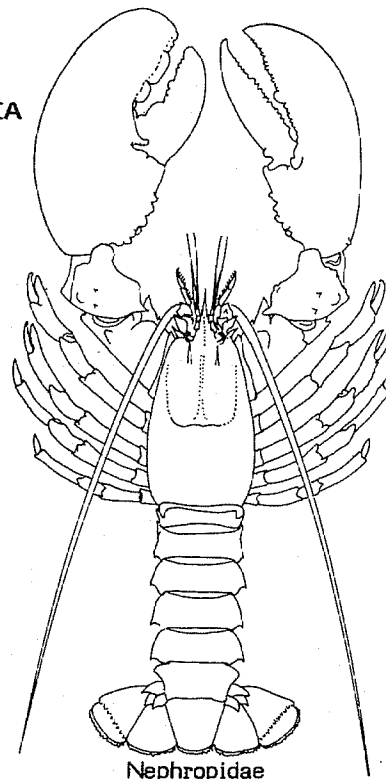
Body tubular; carapace with a well developed rostrum; first 3 pairs of legs with pincers, first pair much larger than others; antennae cylindrical, longer than body.

PALIN PALINURIDAE: Spiny lobsters

Body tubular; carapace without a rostrum; legs without true pincers; first pair not enlarged (except in Justitia, a Western Atlantic species); antennae enlarged, cylindrical, longer than body.



Palinuridae



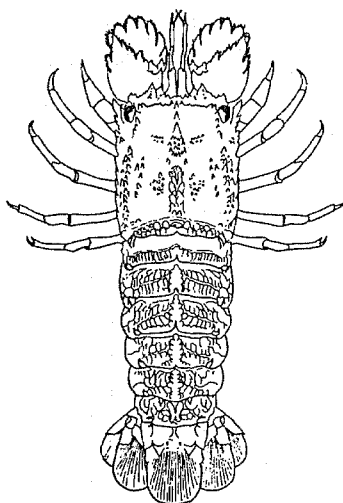
Nephropidae

POLYCHELIDAE

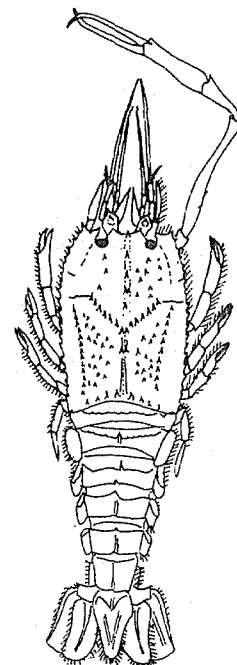
Eyes small and lacking pigment; soft-bodied deep-sea lobsters; carapace without a rostrum; telson of tail fan pointed; first 4 or all legs with pincers, first pair enlarged; antennae cylindrical, shorter than body. No species of interest to fisheries in Fishing Area 34.

SCYLL SCYLLARIDAE: Slipper lobsters

Body strongly flattened dorso-ventrally; carapace without a rostrum; legs without pincers, none of them enlarged; antennae scale-like.



Scyllaridae



Polychelidae

LIST OF SPECIES OCCURRING IN THE AREA

(excluding Polychelidae which are of no interest to fisheries)

Code numbers are given for those species for which Identification Sheets are included

NEPHROPIDAE

Homarus gammarus (Linnaeus, 1758)

NEPH Hom 1

Nephrops norvegicus (Linnaeus, 1758)

NEPH Neph 1

Nephropsis atlantica Norman, 1882

PALINURIDAE

Palinurus charlestoni Forest & Postel, 1964

PALIN Palin 2

Palinurus elephas (Fabricius, 1787)

PALIN Palin 1

Palinurus mauritanicus Gruvel, 1911

PALIN Palin 3

Panulirus argus (Latreille, 1804)

PALIN Panul 1

Panulirus echinatus S.I.Smith, 1869

PALIN Panul 4

Panulirus regius De Brito Capello, 1864

PALIN Panul 5

SCYLLARIDAE

Scyllarides herklotsi (Herklots, 1851)

SCYL Scyld 4

Scyllarides latus (Latreille, 1803)

SCYL Scyld 1

Scyllarus arctus (Linnaeus, 1758)

SCYL Scylr 1 (= SCYL Scyl 1, Area 37)

Scyllarus caparti Holthuis, 1952

Scyllarus paradoxus Miers, 1881

Scyllarus posteli Forest, 1963

Scyllarus pygmaeus (Bate, 1888)

Scyllarus subarctus Crosnier, 1970

FAO SPECIES IDENTIFICATION SHEETS

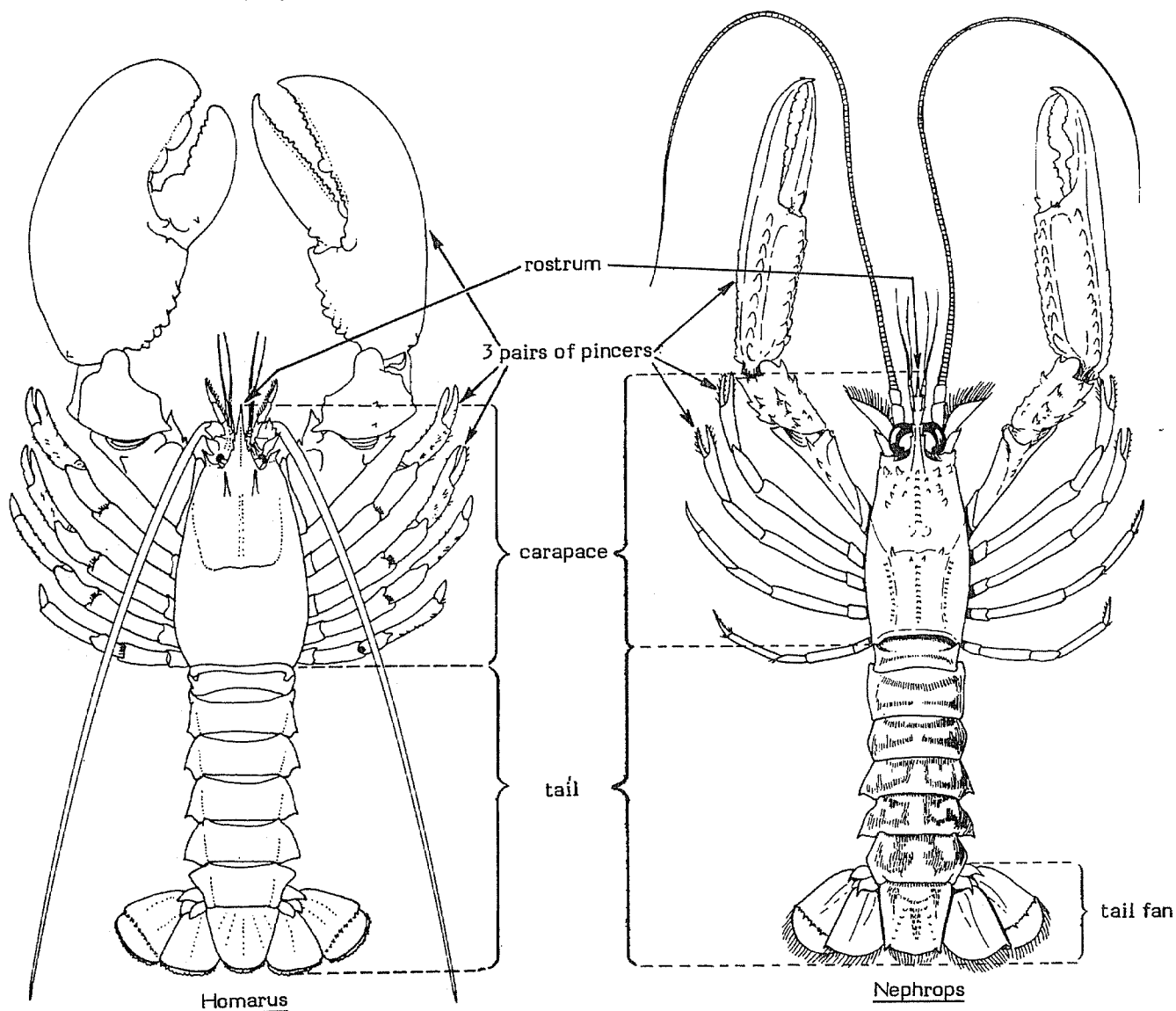
FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)

NEPHROPIDAE

True lobsters

Moderate- to large-sized crustaceans. Carapace (or "head") cylindrical, with a well developed, toothed median rostrum and variously ornamented with spines, mostly in anterior half; eyes movable, usually well developed and with black pigment, but small and unpigmented in one deep-water form. Antennae long and whip-like, antennules slender, ending in 2 long flagella. Tail powerful, with a well developed fan; abdominal segments either smooth, or transversely grooved, spiny, or granulate. First 3 pairs of walking legs ending in true pincers, the first pair, and especially its pincers, usually enlarged.

Colour: variable, depending on the species; some dark blue, others pink or red.



examples of basic types of true lobsters

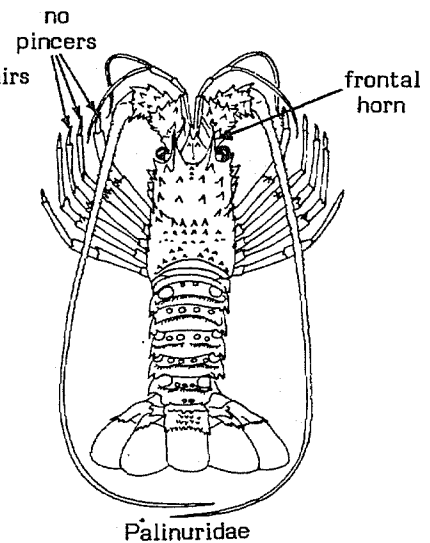
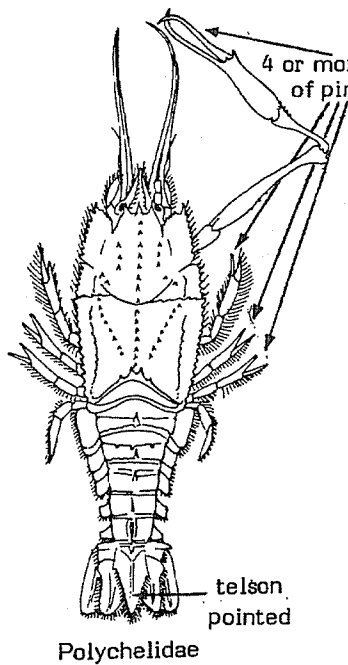
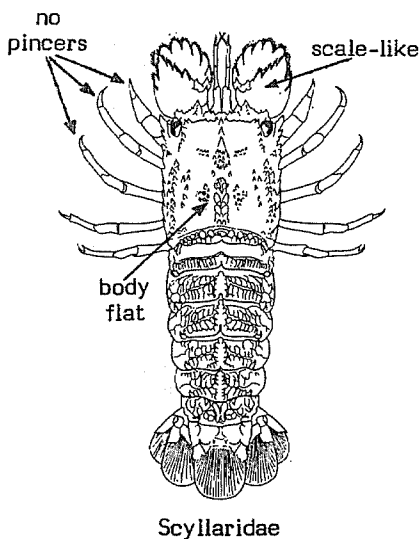
This family comprises three species in Fishing Area 34, adult specimens ranging from 8 to over 65 cm, and occurring from just below the tidal zone to beyond 1 800 m depth. All of them are bottom-dwelling, usually preferring either muddy or rocky substrates and hiding in burrows or sheltered places. At present, the two important commercial species in the Eastern Central Atlantic are the European lobster, *Homarus gammarus*, and the Norway lobster, *Nephrops norvegicus*. Although the major fishing grounds for both these species are located outside (to the north) of Fishing Area 34, they are also exploited in Moroccan waters. The third species, *Nephropsis atlantica*, is a deep-sea form (480 to about 1 800 m); it has never been caught in great quantities and furthermore is too small (less than 10 cm) to be of significant commercial interest at present. The true lobsters are caught with lobster pots and with bottom trawls (*N. norvegicus*); they are marketed mainly fresh.

SIMILAR FAMILIES OCCURRING IN THE AREA :

Palinuridae: carapace without a median rostrum, but with strong frontal horns over the eyes; all walking legs without pincers, first pair not greatly enlarged.

Scyllaridae: body strongly flattened; rostrum rudimentary or absent; no enlarged pincers; antennae scale-like.

Polychelidae (no species of interest to fisheries in Fishing Area 34): blind, deep-sea lobsters with a very soft body; rostrum absent; 4 or 5 pairs of legs with pincers; telson pointed.



KEY TO GENERA OCCURRING IN THE AREA :

- 1 a. First pair of legs large, massive; surface of palm smooth, without grooves or ridges or dense pubescence (Fig. 1); abdomen smooth, without grooves or pubescence
- 1 b. First pair of legs rather slender with hairy grooves or a dense pubescence; abdomen with transverse piliferous grooves or densely pubescent

Homarus

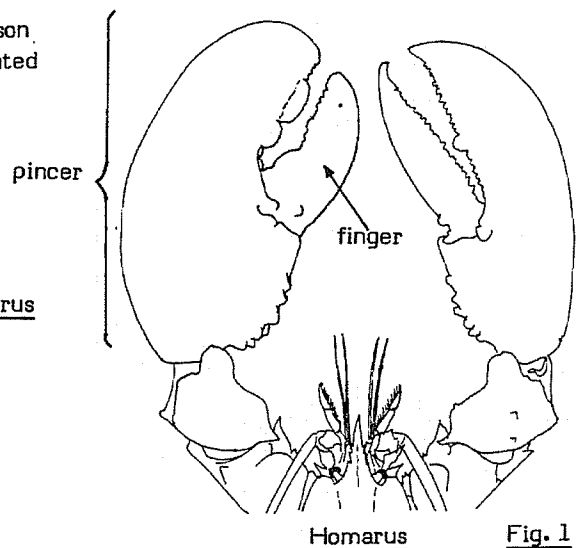
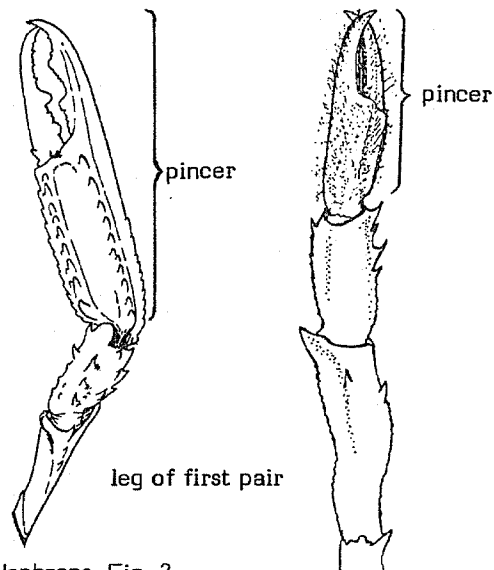


Fig. 1

- 2 a. Eyes large, cornea very large, black, kidney-shaped; pincers with longitudinal raised rows of tubercles and piliferous grooves (Fig. 2); abdomen with transverse wide piliferous grooves, one or two per segment Nephrops
- 2 b. Eyes very small, inconspicuous, without black pigment; pincers without grooves but with woolly hairs (Fig. 3); abdomen without grooves, but with long hairs Nephropsis



Nephrops Fig. 2

Nephropsis Fig. 3

LIST OF SPECIES OCCURRING IN THE AREA :

Code numbers are given for those species for which Identification Sheets are included

<u>Homarus gammarus</u> (Linnaeus, 1758)	NEPH Hom 1
<u>Nephrops norvegicus</u> (Linnaeus, 1758)	NEPH Neph 1
<u>Nephropsis atlantica</u> Norman, 1882	

FAO SPECIES IDENTIFICATION SHEETS

FAMILY : NEPHROPIDAE

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)

Homarus gammarus (Linnaeus, 1758)

OTHER SCIENTIFIC NAMES STILL IN USE : Homarus vulgaris H. Milne Edwards, 1837

VERNACULAR NAMES:

FAO : En - European lobster
Fr - Homard européen
Sp - Bogavante

NATIONAL :

DISTINCTIVE CHARACTERS :

Carapace smooth, with only two pairs of spines behind eyes, the external pair very small. Rostrum strong, about 1 fourth of the length of carapace, its lateral margins armed with 4 or 5 teeth; a median groove extends from tip of rostrum to hind border of carapace. Abdominal segments smooth, without teeth or crests. First pair of legs ending in large pincers, one with cutting edges of fingers finely denticulated (cutting pincer) and the other with stronger irregular teeth (crushing pincer). Second and third pairs of legs much more slender, but also with pincers.

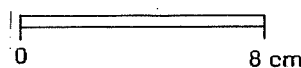
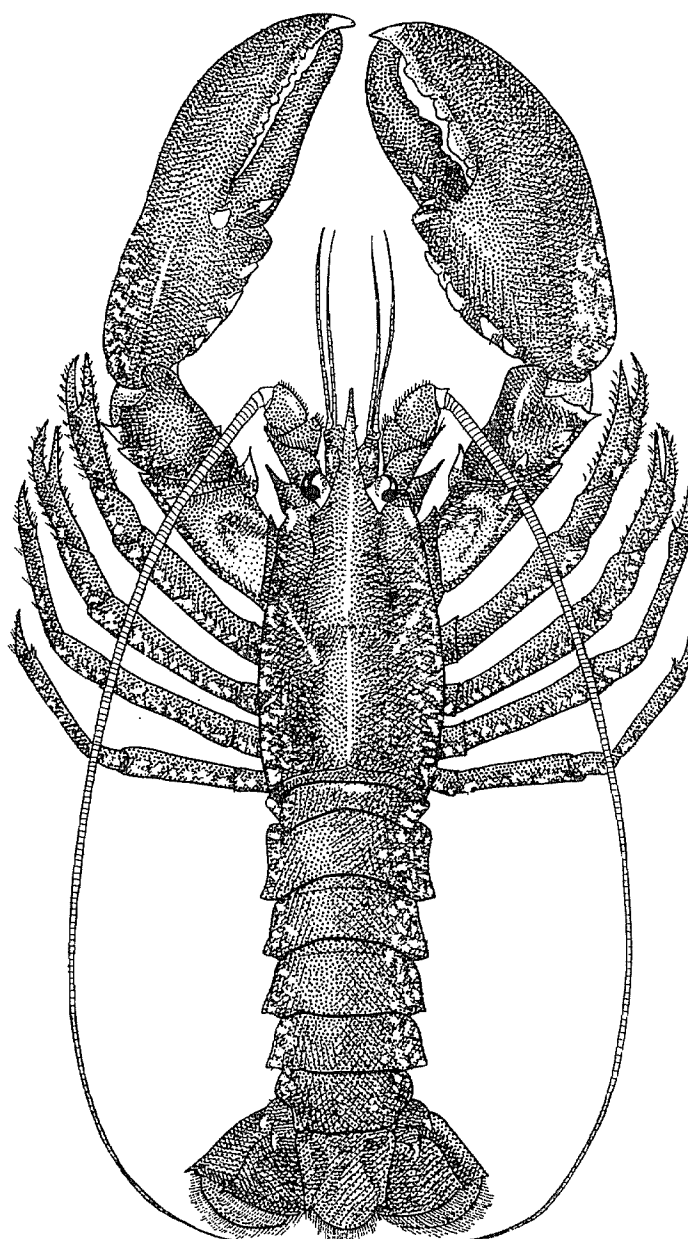
Colour bluish-black, with mottlings on the upper side, while the underside is yellowish.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA :

None of the other lobsters occurring in the area has the characteristic massive pincers on first pair of legs.

SIZE :

Maximum: 65 cm; common to 40 cm.



GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR :

In the area, present from the Straits of Gibraltar to southern Morocco, as far south as Agadir, and perhaps also occurring in Ifni. Northward extending into the Mediterranean and the Black Sea, as well as along the Atlantic coasts of Europe up to the Lofoten Islands.

Inhabits rock bottoms from the coastline down to about 60 m depth.

PRESENT FISHING GROUNDS :

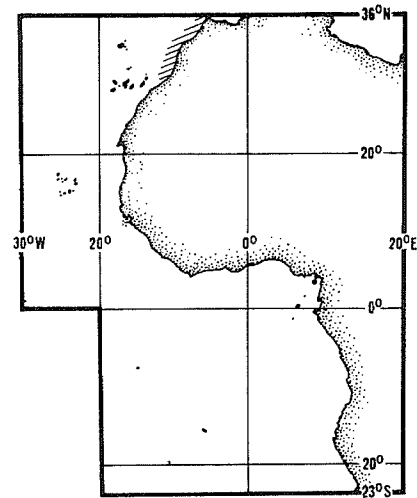
Caught regularly off the Moroccan coast, but its major fishing areas are in the Mediterranean and further north.

CATCHES, FISHING GEAR AND FORMS OF UTILIZATION :

Separate statistics from Fishing Area 34 are not available.

Mainly caught with lobster pots.

Sold fresh in local markets.



FAO SPECIES IDENTIFICATION SHEETS

FAMILY : NEPHROPIDAE

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)*Nephrops norvegicus* (Linnaeus, 1758)

OTHER SCIENTIFIC NAMES STILL IN USE : None

VERNACULAR NAMES:

FAO : En - Norway lobster
 Fr - Langoustine
 Sp - Cigala

NATIONAL :

DISTINCTIVE CHARACTERS :

Carapace covered with short hair and armed with sharp spines arranged mainly in longitudinal lines; some spines are placed on the margins of a transverse (cervical) groove; rostrum rather slender and about half the length of the rest of carapace; its tip curved upward and the lateral borders armed with 3 or 4 spines, ventral margin with 1 or 2 teeth. Upper side of abdominal segments with broad hairy grooves interrupted at the midline and extending to the strongly developed lateral plates (pleura). First pair of walking legs developed into strong, elongated pincers, armed with spines arranged in longitudinal series; second and third pairs of legs much smaller, but also ending in pincers.

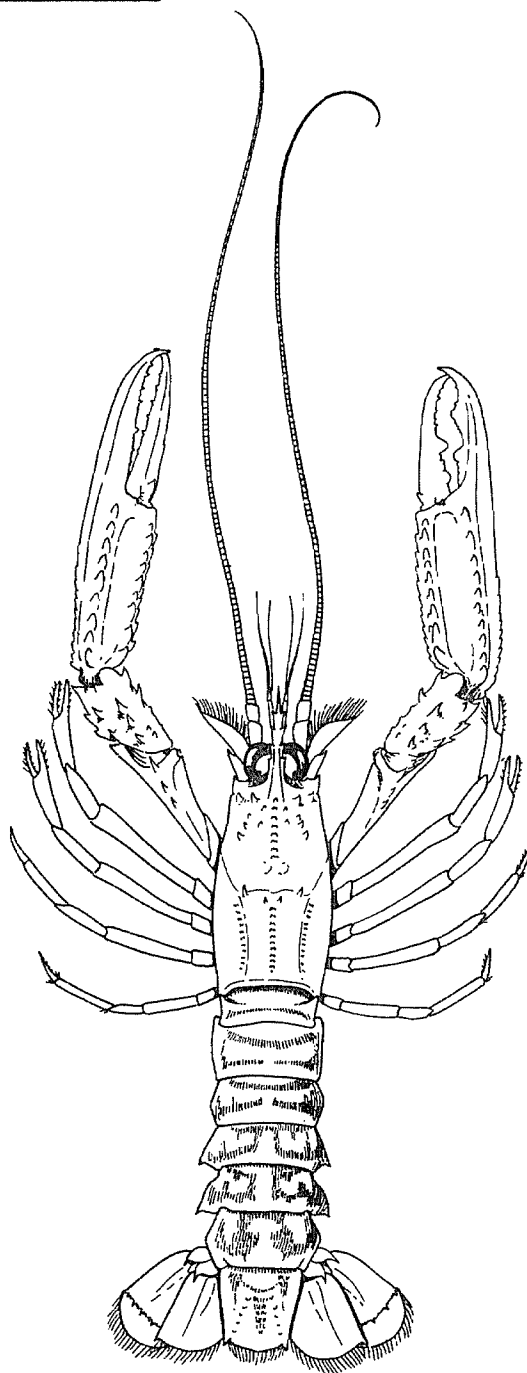
Colour: pink with dark orange red spots, especially distinct on the fingers of the pincers and on the segment preceding them (carpus); eggs bright greenish blue.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA :

The characteristic shape and sculpturing of carapace and legs readily distinguishes this species from other lobster species occurring in the area.

SIZE :

Maximum: 24 cm; common to 19 cm.



GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR :

In the area, present from the Straits of Gibraltar to Casablanca (Morocco). Also present in the Mediterranean and extending northward in the Eastern Atlantic up to Norway and Iceland.

Inhabits mud or sandy mud bottoms, mainly between 100 and 300 m depth, but may occur from 20 to 800 m.

PRESENT FISHING GROUNDS :

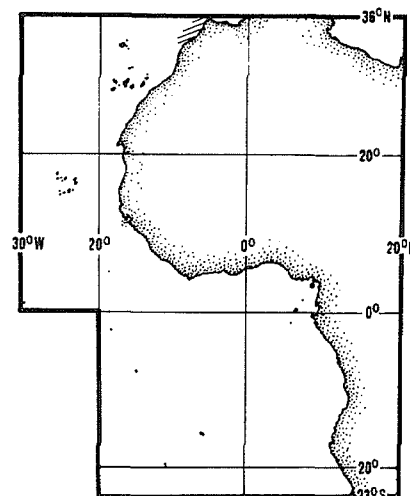
Continental shelf and slope off Morocco.

CATCHES, FISHING GEAR AND FORMS OF UTILIZATION :

Separate statistics for Fishing Area 34 are not available.

Caught with bottom trawls.

Marketed fresh.



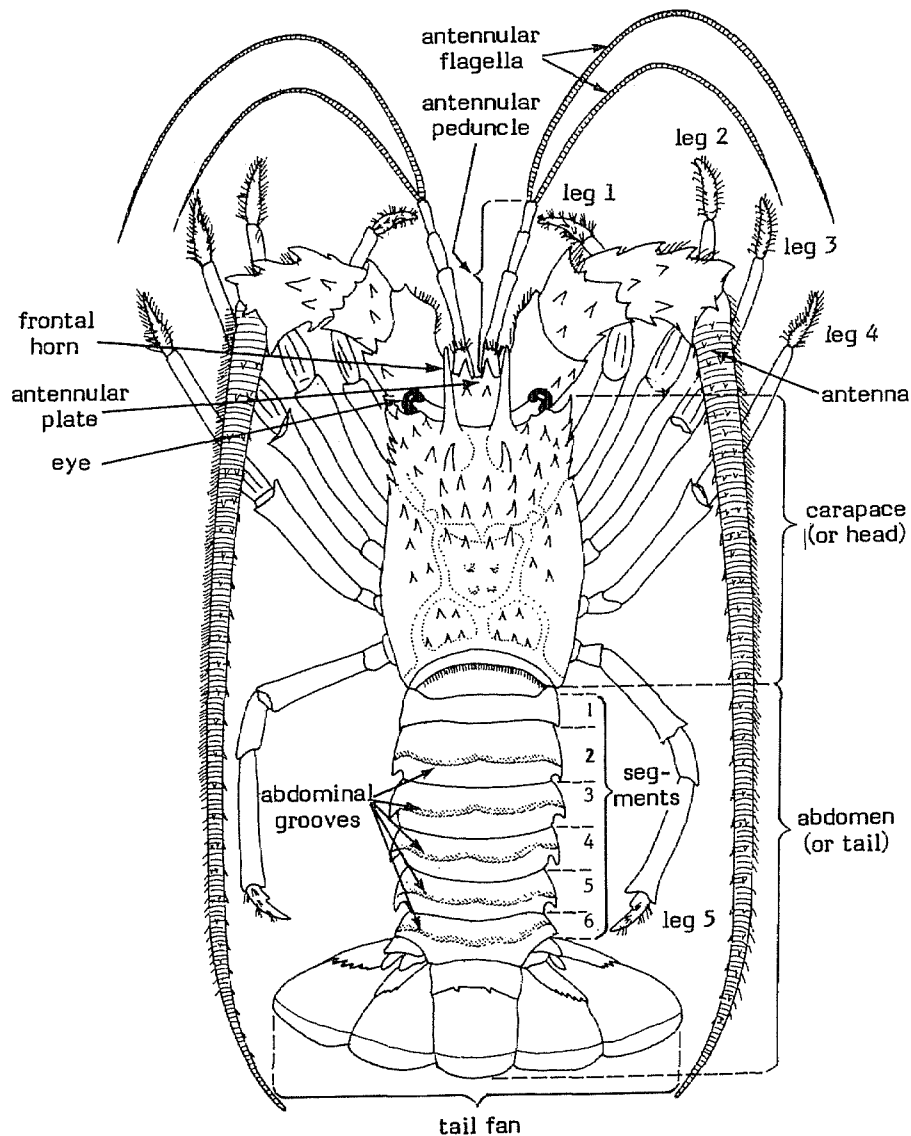
FAO SPECIES IDENTIFICATION SHEETS

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)

PALINURIDAE *

Spiny lobsters

Moderate- to large-sized crustaceans. Carapace (or "head") rounded in section (subcylindrical), without a distinct median rostrum, ornamented with spines and nodules of various sizes; each eye protected by a strong, spiny frontal projection of the carapace (frontal horns). Antennae long and whip-like, antennules slender, each consisting of a segmented peduncle and 2 long or short flagella; bases of antennae separate by a broad antennular plate, usually bearing 1 or 2 pairs of spines. Tail powerful, with a well developed fan; abdominal segments either smooth or with a transverse groove. Legs with simple claws instead of true pincers or chelae although imperfect pincers may be present occasionally, the first pair usually not greatly enlarged.



*Diagnosis applies to Eastern Atlantic representatives only

Colour: most species brightly coloured and patterned with bands or spots.

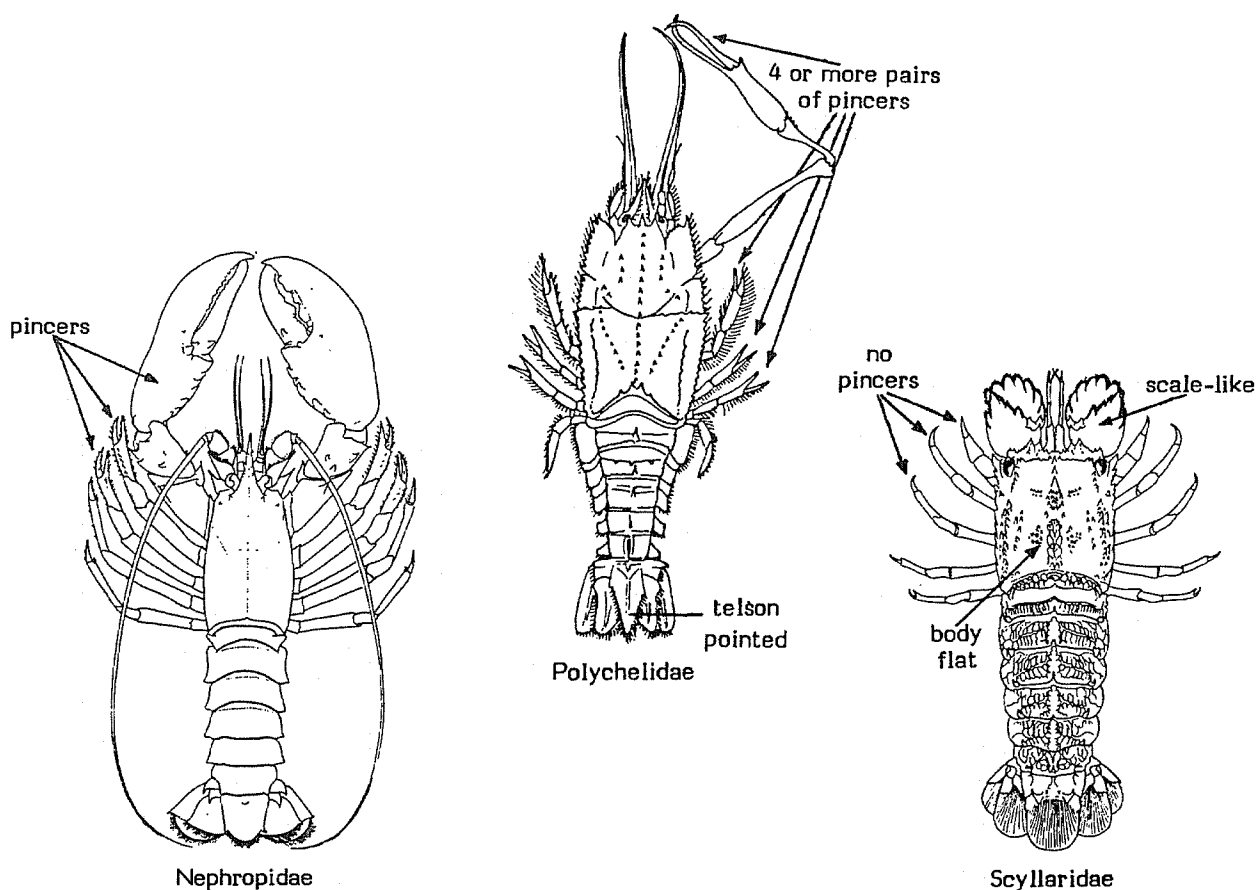
This family includes 5 Eastern Atlantic representatives ranging in maximum size from 37 to 50 cm (total length measured from anterior margin of carapace to tip of tail; one record of a specimen of 75 cm length needs confirmation). Most are shallow-water forms (rarely extending beyond 100 m depth), living singly or in groups in coral reefs, rocky areas or other habitats that offer protection, although two species, Palinurus mauritanicus and P. charlestoni, are more common in deeper water, down to over 300 m. The spiny lobster fishery in this fishing area is mostly confined to the northern part (Morocco, Mauritania, Senegal, Cape Verde Islands), while further south there is only a local fishery of minor importance. All species are primarily caught with lobster pots or with vertical nets. The annual catch of spiny lobsters from the area was estimated by Postel (1967) to be about 3 000 to 4 000 tons (mostly Palinurus mauritanicus).

SIMILAR FAMILIES OCCURRING IN THE AREA :

Nephropidae: body tubular; a well developed rostrum present; first 3 pairs of legs ending in true pincers, first pair much larger than the others.

Scyllaridae: body strongly flattened; rostrum rudimentary or absent; no enlarged pincers; antennae scale-like.

Polychelidae (no species of interest to fisheries in Fishing Area 34): blind, deep-sea lobsters with a very soft body; rostrum absent; 4 or 5 pairs of legs with pincers; telson pointed.



KEY TO GENERA OCCURRING IN THE AREA :

1 a. Frontal horns with denticulations on inner margin, denticles also present on anterior margin of carapace between the horns, with the rudimentary rostrum showing as a large denticle (Fig. 1a); antennular flagella shorter than last segment of peduncle (Fig. 2a)

Palinurus

1 b. No denticles on frontal horns nor on anterior margin of carapace between horns; rostrum absent (Fig. 1b); antennular flagella longer than entire peduncle (Fig. 2b)

Panulirus

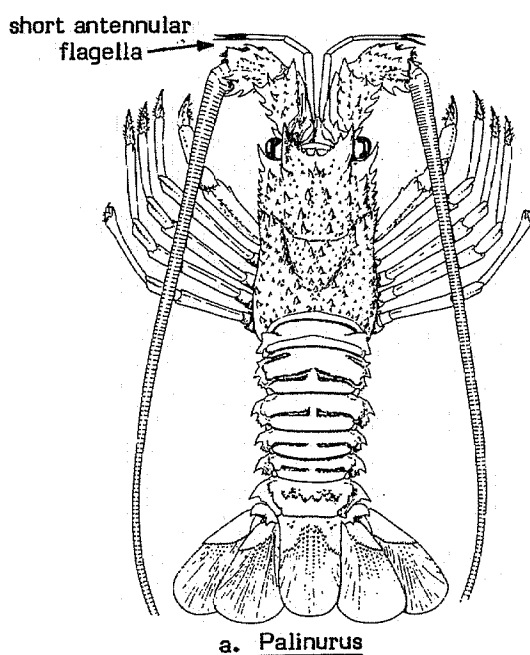
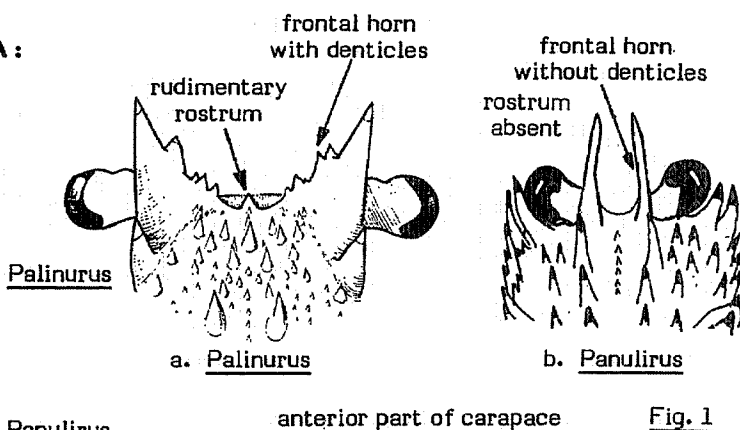
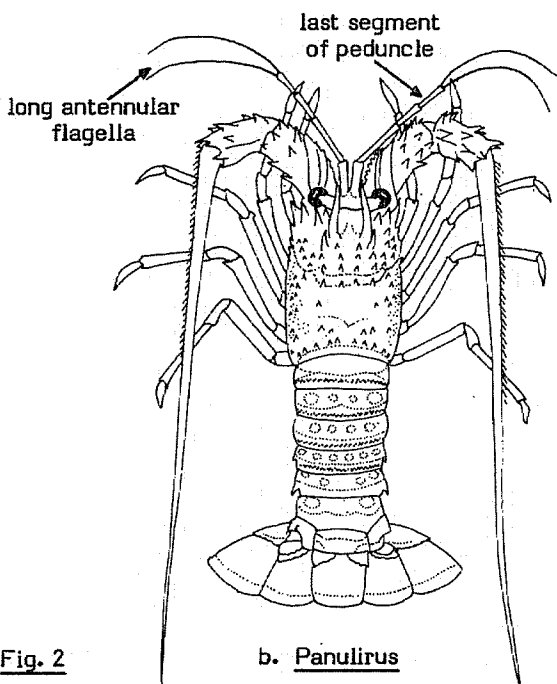


Fig. 2



LIST OF SPECIES OCCURRING IN THE AREA :

Code numbers are given for those species for which Identification Sheets are included

Palinurus charlestoni Forest & Postel, 1964
Palinurus elephas (Fabricius, 1787)
Palinurus mauritanicus Gruvel, 1911

PALIN Palin 2
PALIN Palin 1
PALIN Palin 3

* Panulirus argus (Latreille, 1804)
Panulirus echinatus S.I. Smith, 1869
Panulirus regius de Brito Capello, 1864

PALIN Panul 1
PALIN Panul 4
PALIN Panul 5

Prepared by L.B. Holthuis, Rijksmuseum van Natuurlijke Historie, Leiden, The Netherlands

Drawing of Palinurus charlestoni prepared by W.C. Gertenaar, Leiden, The Netherlands

* This important commercial species from the Western Central Atlantic is included here because on two occasions it has been captured alive in the present area; its presence may be due to an intentional or unintentional introduction

FAO SPECIES IDENTIFICATION SHEETS

FAMILY : PALINURIDAE

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)Palinurus elephas (Fabricius, 1787)OTHER SCIENTIFIC NAMES STILL IN USE : Palinurus vulgaris Latreille, 1804

VERNACULAR NAMES:

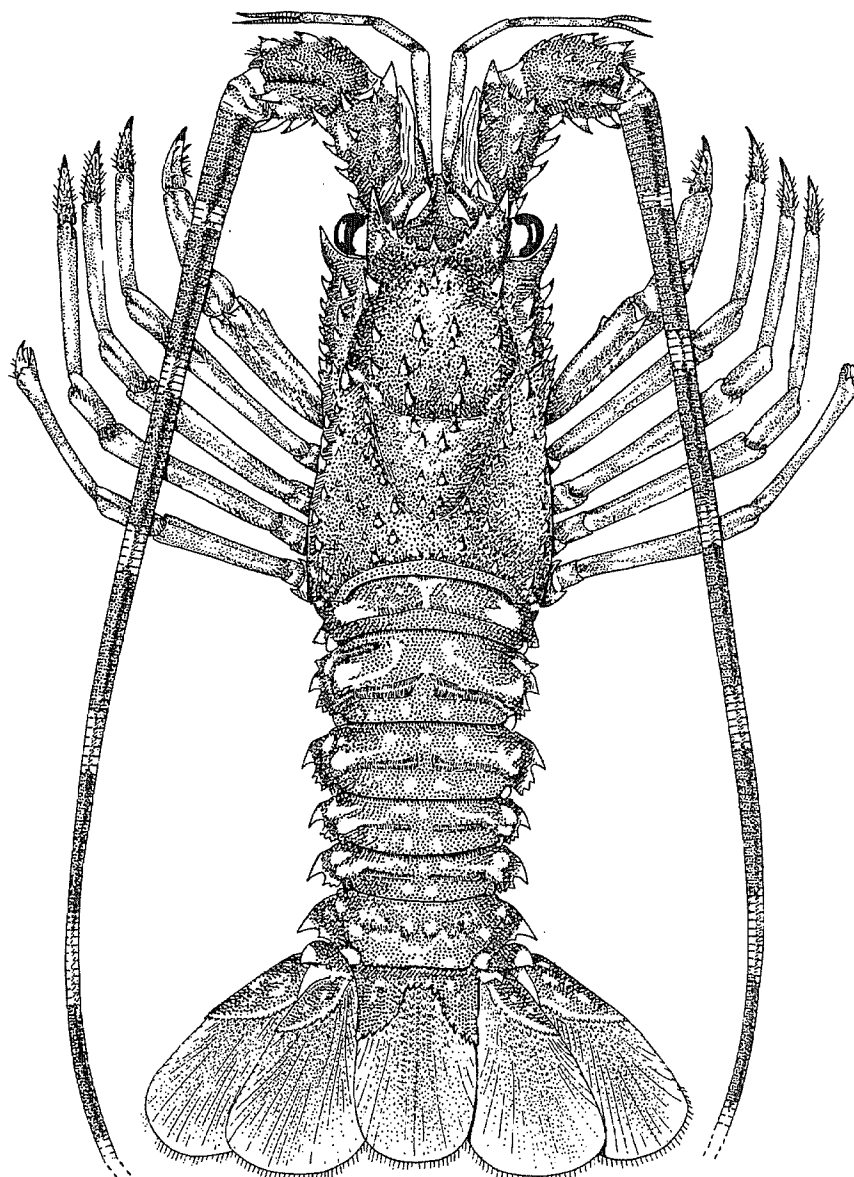
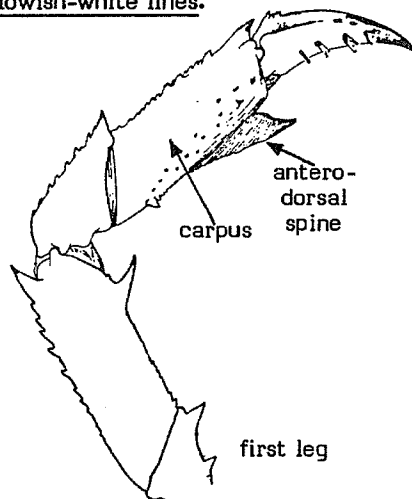
FAO : En - Common spiny lobster
 Fr - Langouste rouge
 Sp - Langosta común

NATIONAL :

DISTINCTIVE CHARACTERS :

Carapace sub-cylindrical, widest in its posterior quarter, not inflated, upper surface with numerous spinules and spines, the stronger ones arranged in longitudinal rows; anterior border of carapace bearing 2 strong, rather narrowly triangular, frontal horns with an only slightly convex outer margin, separate by a deeply concave margin armed with several denticles and a small, but distinct, rostrum.

Colour: general background brownish-red to brownish violet; abdomen dark, with a pair of large symmetrical yellowish blotches on dorsal plates of segments I to V. Walking legs with longitudinal yellowish-white lines.



0 8 cm

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA :

Palinurus charlestoni a species from deeper waters (50 to 300 m depth): abdomen marbled with white; legs with broad dark rings on each segment instead of longitudinal stripes.

P. mauritanicus a species from deeper waters (40 to 600 m depth): carapace greatly inflated in adult males; frontal horns much flatter; anterior carapace margin not as deeply concave; carpus of first pair of legs without dorsal spine; abdomen marbled with white; legs ringed or irregularly spotted, without longitudinal white stripes.

Panulirus species: anterior carapace margin (between horns) smooth, rostrum absent; antennular flagella longer than entire peduncle.

SIZE :

Maximum: 50 cm; common to 40 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR :

In the area, from the Straits of Gibraltar to Agadir (Morocco). Also present in the Mediterranean (except the southeastern part), the Azores and along the Atlantic coasts of Europe up to Western Norway.

Found on rocky bottoms from sublittoral waters down to about 70 m depth.

PRESENT FISHING GROUNDS :

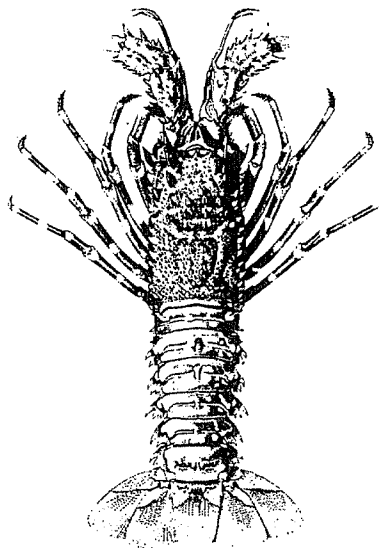
Coastal waters of the continental shelf off Morocco.

CATCHES, FISHING GEAR AND FORMS OF UTILIZATION :

Separate statistics are not reported for this species within Fishing Area 34.

Caught with lobster pots or by hand (spearing)

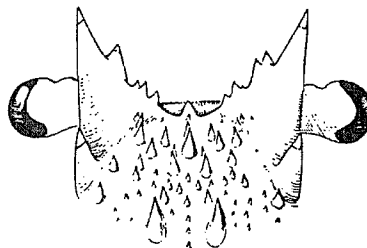
Sold fresh in local markets.



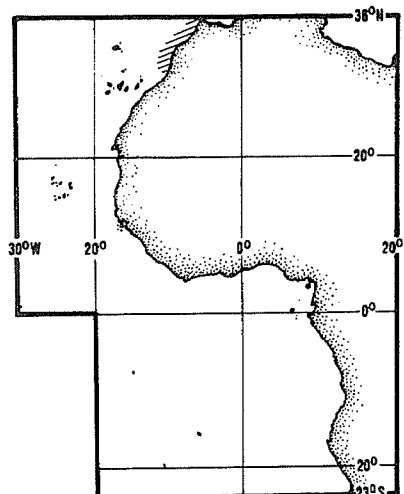
P. charlestoni



P. mauritanicus



P. elephas



FAO SPECIES IDENTIFICATION SHEETS

FAMILY : PALINURIDAE

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)Palinurus charlestoni Forest & Postel, 1964

OTHER SCIENTIFIC NAMES STILL IN USE : None

VERNACULAR NAMES:

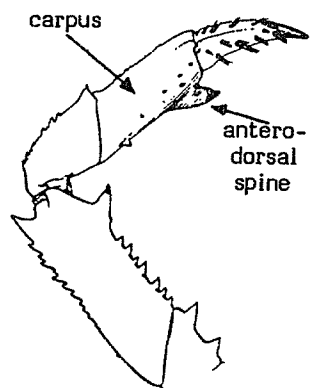
FAO : En - Cape Verde spiny lobster
 Fr - Langouste des Iles du Cap Vert
 Sp - Langosta de las Islas de Cabo Verde

NATIONAL :

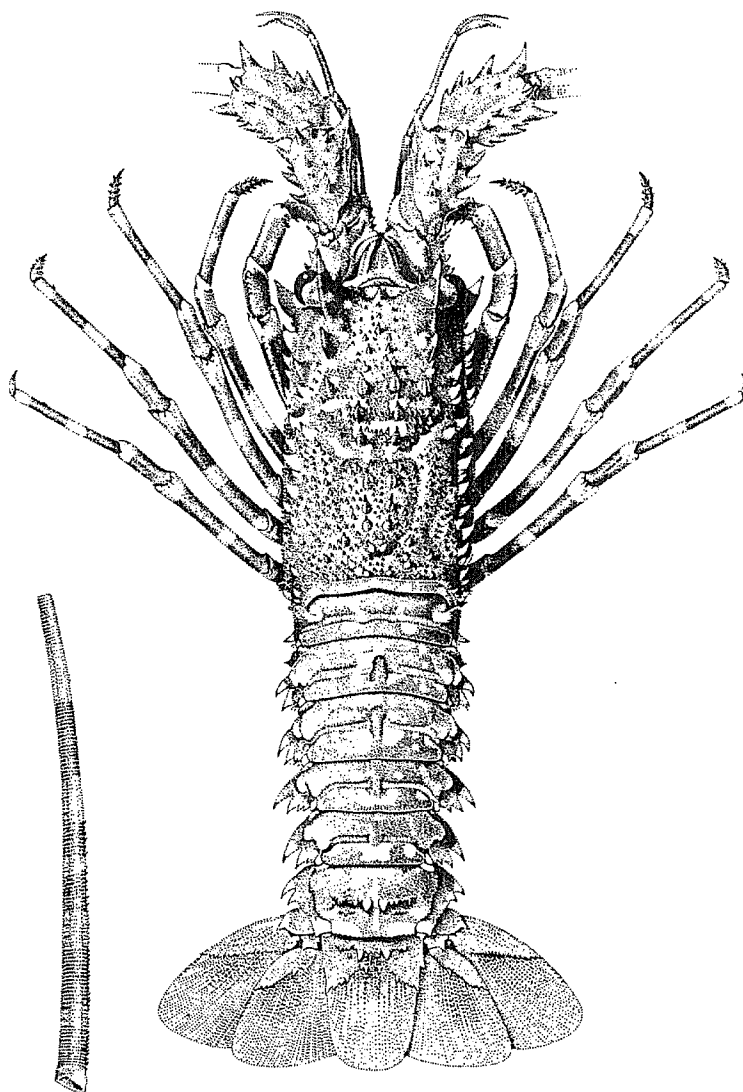
DISTINCTIVE CHARACTERS :

Carapace sub-cylindrical, widest in its posterior quarter, not inflated, its upper surface with spinules and spines, the largest of which are arranged in longitudinal rows; anterior border of carapace bearing 2 strong, narrowly triangular, and externally convex frontal horns their tips separated by a deeply concave margin armed with several denticles and a distinct rostrum. Carpus of first pair of legs with an antero-dorsal spine; in the adult male, the first pair of legs bear a strong tooth on the anterior region of the propodus; this, together with the dactyl which folds against it, forms an imperfect pincer; in the female, the fifth pair of legs end in small pincers.

Colour: reddish, with whitish marbling and spots all over the dorsal surface of thorax and abdomen; legs with 2 broad dark rings on propodus and merus, one on carpus; no longitudinal lines of colour on the legs.



first leg

antennal
flagellum

0 ————— 9 cm

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA :

Palinurus elephas (a species from shallower water, above 70 m depth): abdomen dark, with a pair of large, symmetrical, yellowish blotches on each segment; legs with yellowish white longitudinal stripes.

P. mauritanicus: carapace greatly inflated in adult males; frontal horns much flatter, anterior carapace margin not as deeply concave; carpus of first pair of legs without dorsal spine.

Panulirus species: anterior carapace margin (between horns) smooth, rostrum absent; antennular flagella longer than entire peduncle.

SIZE :

Maximum: 50 cm; common to 40 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR :

So far only known from the Cape Verde Islands.

Found on rocky, uneven bottoms at depths between 50 and 300 m, probably even deeper, often on steep slopes.

PRESENT FISHING GROUNDS :

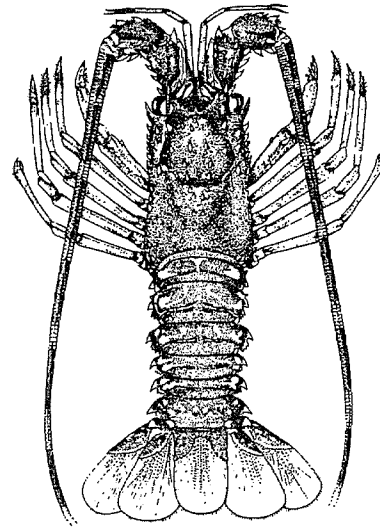
Deeper waters of the continental shelf. The first attempts at a commercial fishery have been made in 1963. On an average, two spiny lobsters are caught per pot per day in the most productive areas.

CATCHES, FISHING GEAR AND FORMS OF UTILIZATION :

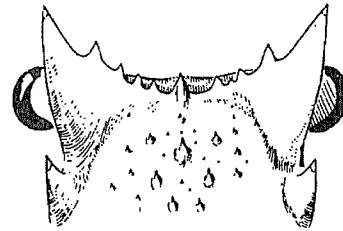
Separate statistics are not reported for this species.

Caught with lobster pots (often lost due to rough bottoms).

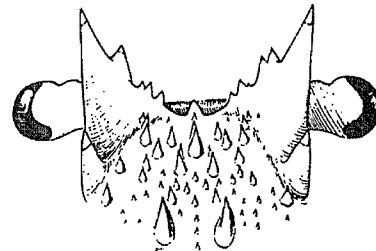
Marketed live and as frozen tails (mostly exported to France).



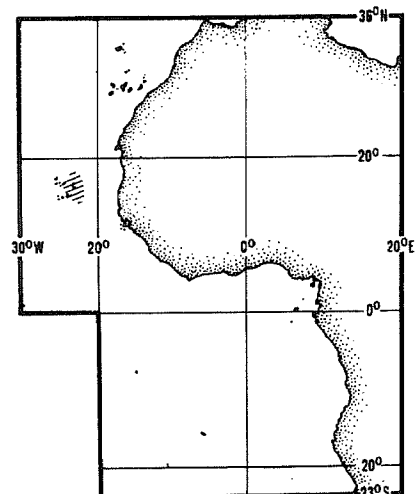
P. elephas



P. mauritanicus



P. charlestoni



FAO SPECIES IDENTIFICATION SHEETS

FAMILY: PALINURIDAE

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)Palinurus mauritanicus Gruvel, 1911

OTHER SCIENTIFIC NAMES STILL IN USE: None

VERNACULAR NAMES:

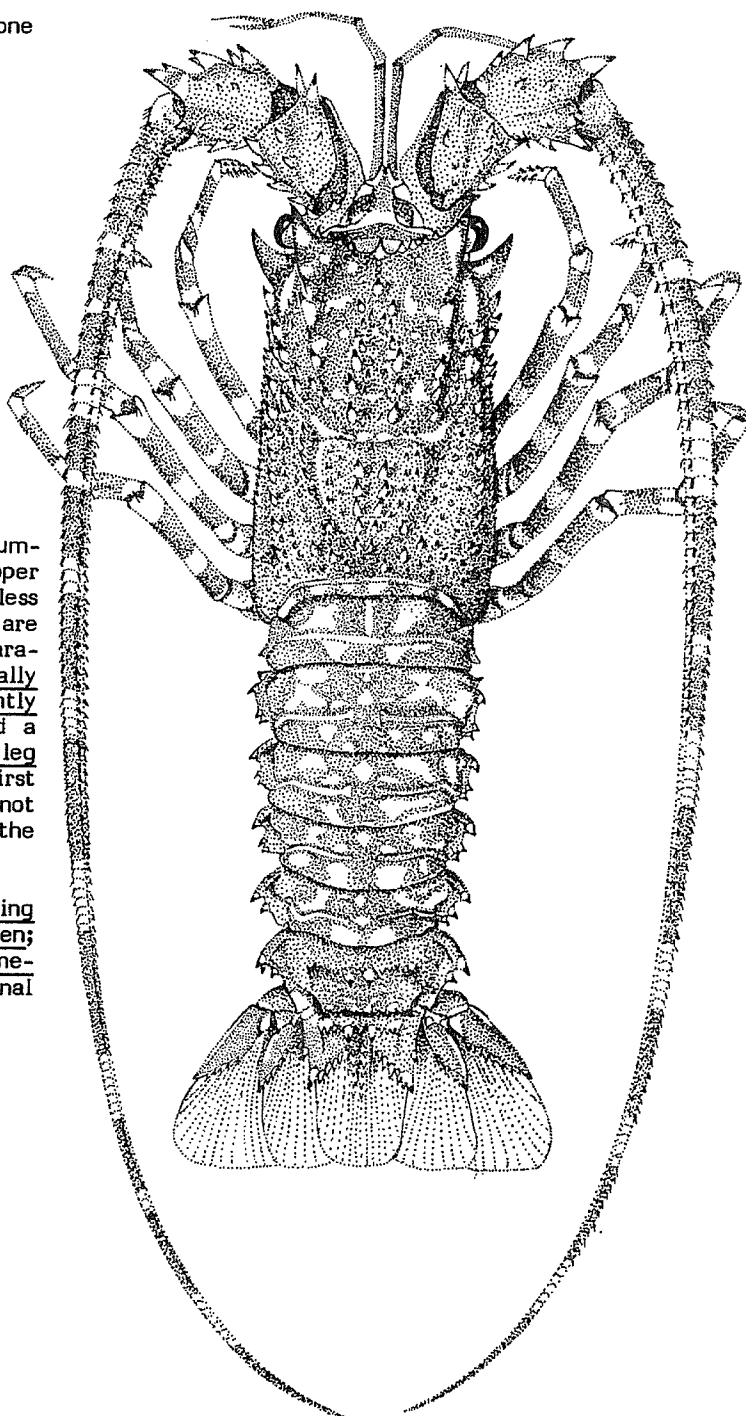
FAO: En - Pink spiny lobster
 Fr - Langouste rose
 Sp - Langosta rosada

NATIONAL :

DISTINCTIVE CHARACTERS:

Carapace sub-cylindrical in small and medium-sized specimens, greatly inflated in adult males, upper surface covered with spinules and spines, but less densely so than in *P. elephas*; the larger spines are arranged in longitudinal rows; anterior border of carapace bearing 2 strong and rather wide, externally convex, frontal horns, their tips separated by a slightly concave margin armed with several denticles and a small, but distinct, rostrum. Carpus of first walking leg without anterodorsal spine; in adult males, the first pair of legs hardly differ from the following and are not subchelate (not forming imperfect pincers); in the female, the fifth legs end in pincers.

Colour: reddish or pink, with whitish marbling and spots all over dorsal surface of thorax and abdomen; legs with irregular pink or red spots, which sometimes form distinct transverse bands; never longitudinal stripes on legs.



0 10 cm

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA :

Palinurus charlestoni and P. elephas: frontal horns narrowly triangular, anterior carapace margin (between horns) deeply concave; carapace not inflated in adult males; carpus of first pair of legs with a large antero-dorsal spine. Furthermore, P. elephas occurs in shallower water (down to 70 m depth) and differs by its coloration (dark abdomen with a pair of symmetrical yellowish blotches on each segment and legs with longitudinal yellowish white stripes).

Panulirus species: anterior carapace margin (between horns) smooth, rostrum absent; antennular flagella longer than entire peduncle.

SIZE :

Maximum: 50 cm (one record of 75 cm); common to 45 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR :

In the area, from Gibraltar to Southern Senegal (14°N). Also present in the Western Mediterranean and along the Atlantic coast of Europe up to the British Isles.

Found on rocky, mud and coral bottoms at depths between 40 and 600 m (mostly around 200 m).

PRESENT FISHING GROUNDS :

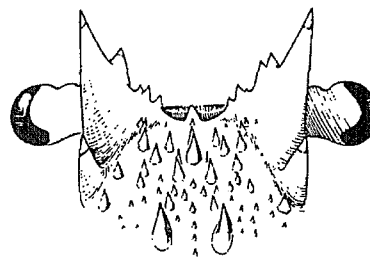
In the area, the main fishing grounds are off Mauritania and northern Senegal, near the edge of the continental shelf. This species is the most important commercial West African lobster.

CATCHES, FISHING GEAR AND FORMS OF UTILIZATION :

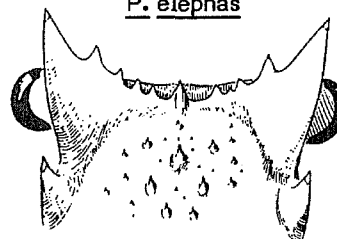
Separate statistics are not available to FAO, but the annual catch is estimated at 2 500 to 3 000 tons.

Formerly, the species was taken by trawlers, mostly as an incidental catch in addition to other fishery products. After 1954 trawlers started to specialize in the capture of the species, but since 1958 the lobster pot fishery gradually replaced trawling.

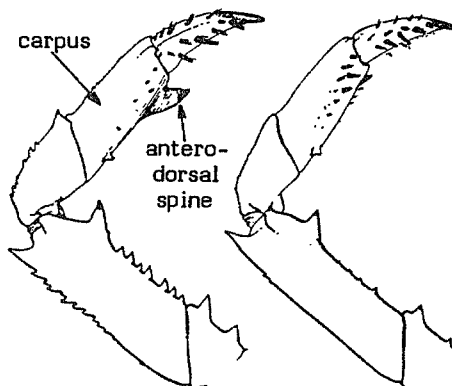
Marketed and exported live and frozen; mostly sold in French ports.



P. elephas

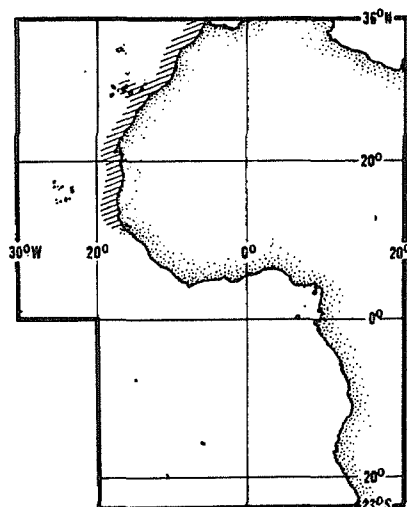


P. mauritanicus



P. charlestoni

P. mauritanicus



FAO SPECIES IDENTIFICATION SHEETS

FAMILY : PALINURIDAE

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)*Panulirus argus* (Latreille, 1804)

OTHER SCIENTIFIC NAMES STILL IN USE : None

VERNACULAR NAMES:

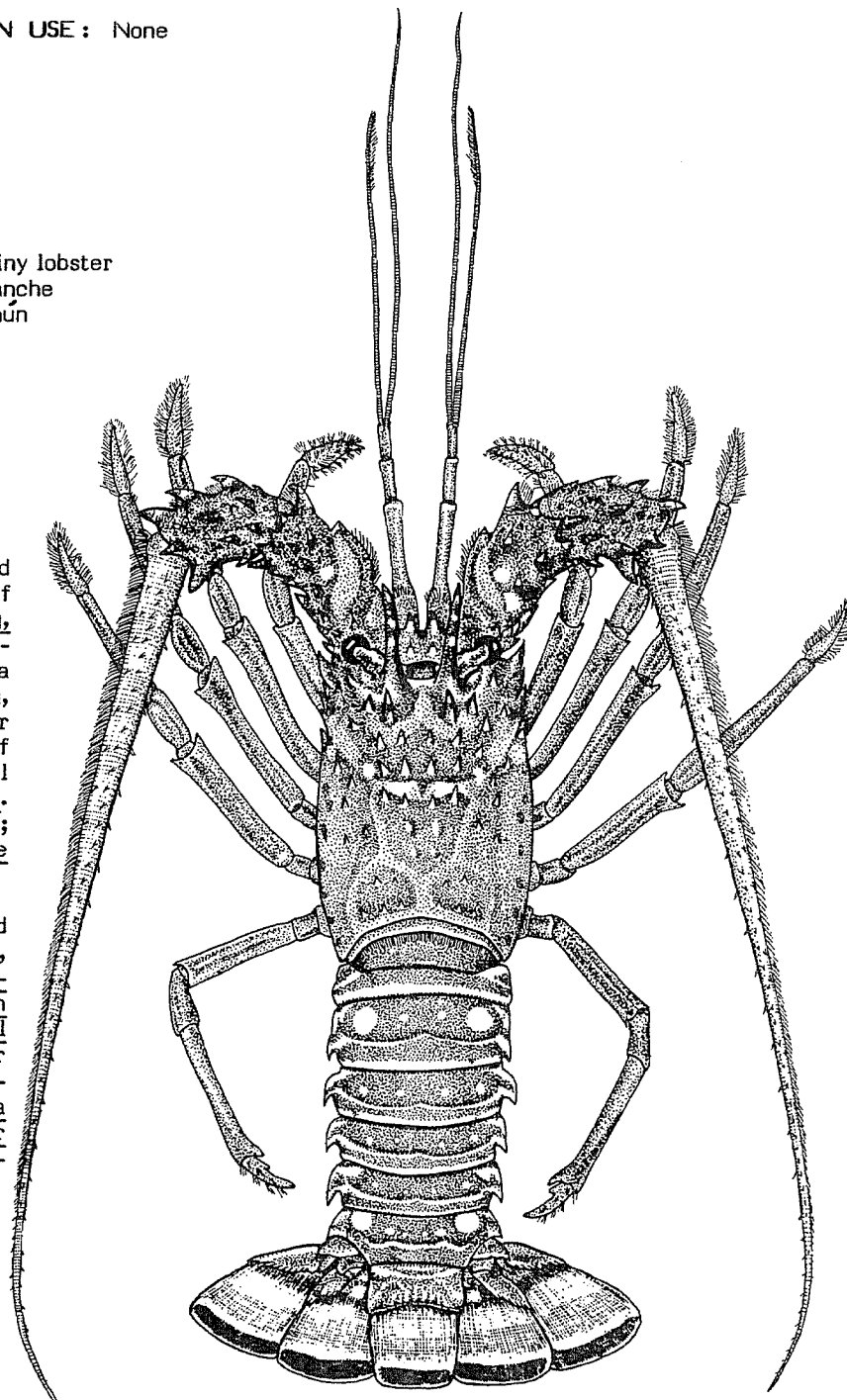
FAO : En - Caribbean spiny lobster
Fr - Langouste blanche
Sp - Langosta común

NATIONAL :

DISTINCTIVE CHARACTERS :

Carapace sub-cylindrical, covered with numerous spines and nodules of various sizes. Frontal horns very strong, sharp and strongly curved; anterior margin of carapace smooth and without a distinct median rostrum. Antennae long, stiff, whip-like; antennules slender, their flagella longer than peduncles; bases of antennae separated by a broad antennal plate bearing 2 pairs of strong spines. Tail powerful, with a well developed fan; each abdominal segment with a complete transverse groove. Legs without pincers.

Colour: very variable, mottled greenish purple, also tan, brown, reddish, bluish or greenish; tail with 4 conspicuous yellowish white spots, one on each side of second and last abdominal segments, in addition to other smaller spots; a light band along posterior margin of each segment; tail fan with a dark red or brown band along posterior margin; legs with light and dark longitudinal stripes.



0 8 cm

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA :

Other *Panulirus* species: none has the 4 typical large, rounded, yellowish white spots on tail, nor the dark band along posterior margin of tail fan. These species can be further distinguished by the following characters:

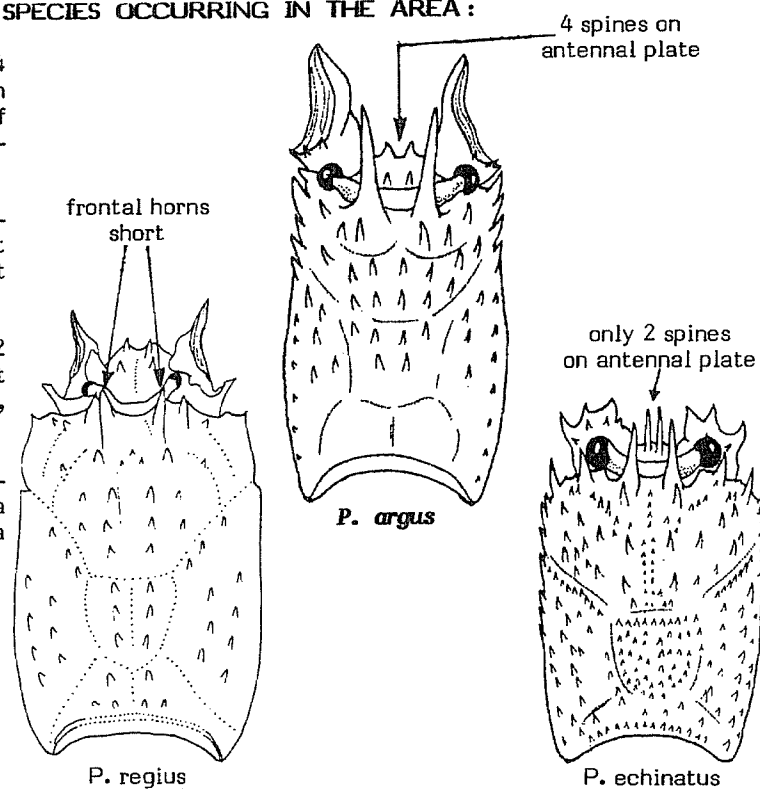
Panulirus regius: frontal horns short, triangular; abdominal grooves wide filled with short hair, not sharply delimited and interrupted at midline.

P. echinatus: antennal plate with only 2 spines; abdominal grooves slightly interrupted at midline; tail covered with numerous rounded, pale spots but without transverse bands.

Panulirus species: anterior margin of carapace (between horns) denticulated and bearing a rudimentary median rostrum; antennular flagella shorter than last segment of peduncle.

SIZE :

Maximum: 45 cm; common to 28 cm.



GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR :

Mainly occurring in Bermuda and the Atlantic coast of America, roughly between 35°N and 23°S, but two specimens of this species have been caught (in September and December 1964 respectively) at two different localities of Ivory Coast (4°13' and 3°44'W respectively).

Normally a shallow-water species but may occur down to about 90 m, possibly even deeper. Found among rocks, reefs or in any habitat that affords shelter including eelgrass.

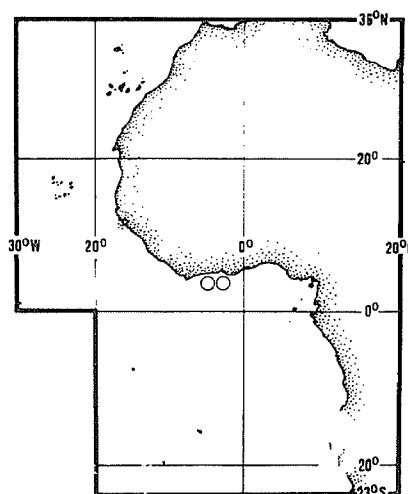
PRESENT FISHING GROUNDS :

As this species has been only occasionally taken in the Eastern Central Atlantic, it is assumed that it was (intentionally or accidentally) introduced into this area, but there are no signs of the establishment of a West African population. An identification for this important Western Atlantic species is included here in order to draw attention to its possible presence in the area.

CATCHES, FISHING GEAR AND FORMS OF UTILIZATION :

Not commercially fished in Fishing Area 34.

carapace and antennal plate



O = one record only

FAO SPECIES IDENTIFICATION SHEETS

FAMILY : PALINURIDAE

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)*Panulirus echinatus* S.I. Smith, 1869

OTHER SCIENTIFIC NAMES STILL IN USE : None

VERNACULAR NAMES:

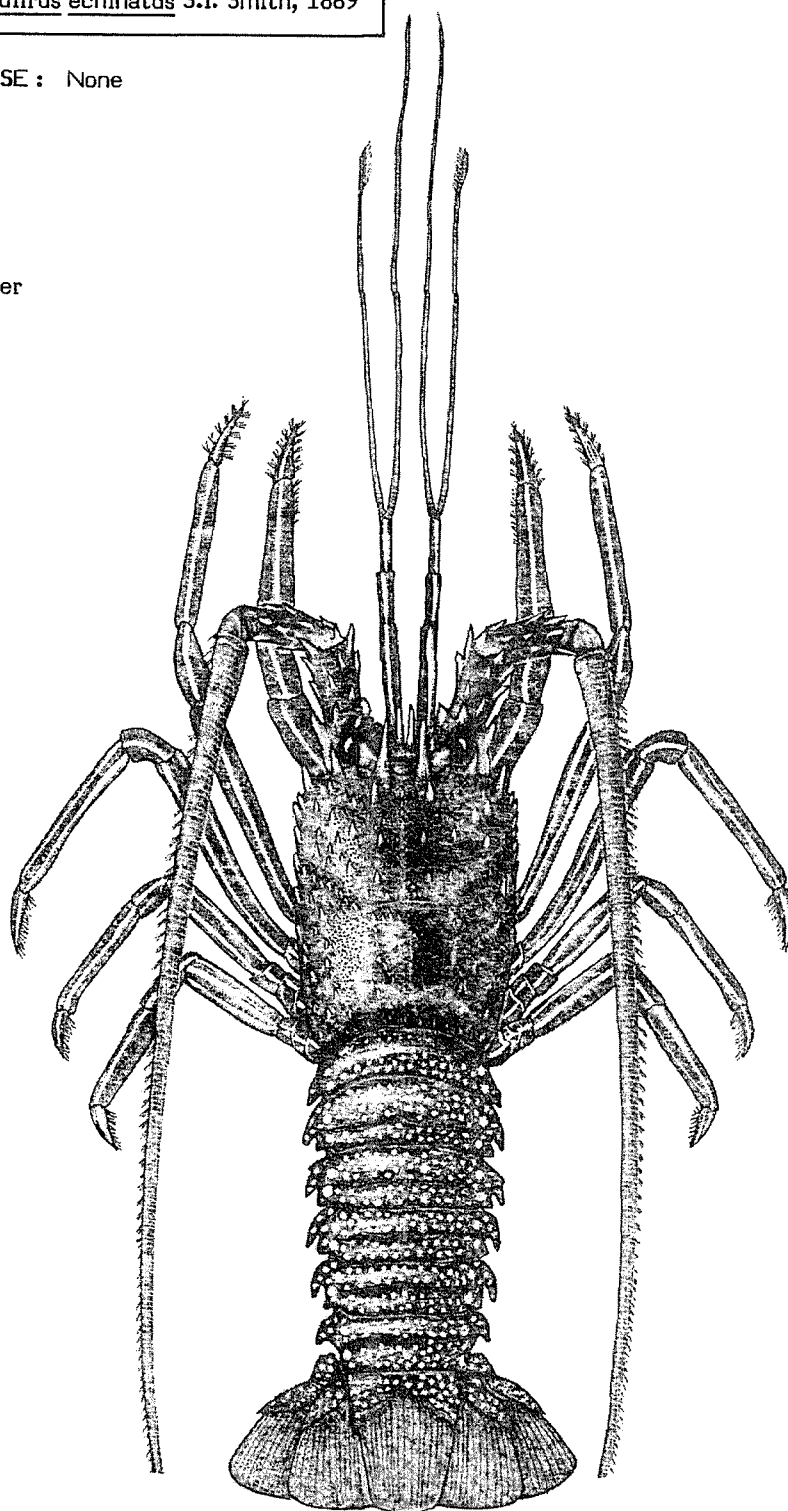
FAO : En - Brown spiny lobster
Fr - Langouste brune
Sp - Langosta marrón

NATIONAL :

DISTINCTIVE CHARACTERS :

Carapace sub-cylindrical, covered dorsally with spines and spinules. Frontal horns medium-sized, somewhat curved forward; anterior margin of carapace smooth, and without a distinct median rostrum. Antennae long, stiff, whip-like; antennules slender, their flagella longer than peduncles; bases of antennae separated by a broad antennal plate bearing only 2 strong spines. Tail powerful, with a well developed fan; each abdominal segment with a sharply defined transverse groove, usually slightly interrupted in the midline. Legs without pincers (except for fifth leg of female).

Colour: brown, reddish brown or purple, densely speckled with numerous distinct, rounded whitish spots; on the tail the spots are evenly distributed and more or less uniform in size, except for a single larger spot at base of the pleura on each segment; tail fan uniformly coloured, with spots only on the firm parts; legs striped with darker and lighter lines on all segments.



0 8 cm

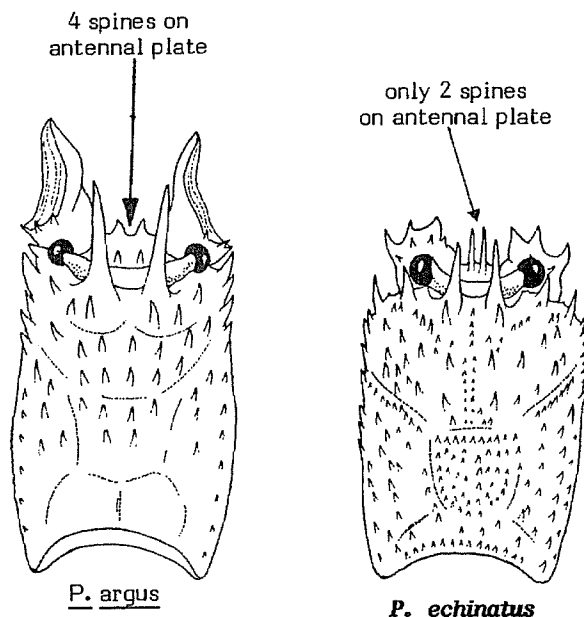
DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA :

Other Panulirus species: antennal plate with 4 spines (2 in P. echinatus); tail not uniformly speckled, each segment with a pale (in P. regius also a dark green) transverse band. Further distinguishing characters of these species are the following:

Panulirus argus: abdominal grooves not interrupted at midline; tail with 4 large, rounded yellowish white spots (one on each side of segments II and VI); tail fan with a dark band along posterior margin.

P. regius: tail bluish green.

Palinurus species: anterior margin of carapace (between horns) denticulated and bearing a rudimentary median rostrum; antennular flagella shorter than last segment of peduncle.



carapace and antennal plate

SIZE :

Maximum: 39 cm; common to 30 cm. Some populations consist of small-sized individuals (10 to 15 cm).

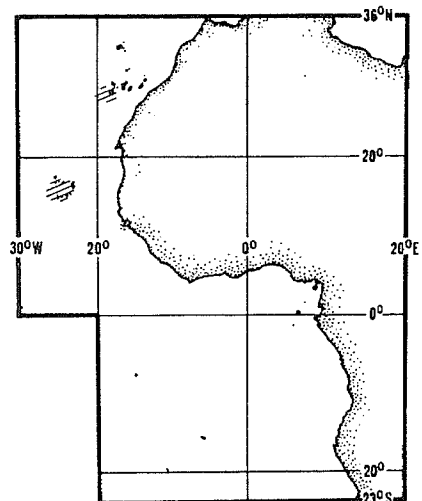
GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR :

Atlantic Islands between 27°N and 20°S (Canary and Cape Verde Islands, St. Paul's Rocks, Atol das Rocas, Fernando de Noronha, Ilha da Trindade, Ascension, St. Helena). Also N.E. Brazil (Ceará, Rio Grande do Norte and Pernambuco States).

Found on rocky bottoms from the coastline to 35 m depth.

PRESENT FISHING GROUNDS :

The species is fished wherever it occurs, but in many areas it is so rare that there is no important regular fishery. In St. Helena it is reported to be of local commercial importance; in the Cape Verde Islands it is the most abundant coastal lobster.



CATCHES, FISHING GEAR AND FORMS OF UTILIZATION :

Separate statistics are not reported for this species.

In the Cape Verde Islands it is taken with lobster pots, and occasionally by diving.

Marketed mostly fresh.

FAO SPECIES IDENTIFICATION SHEETS

FAMILY : PALINURIDAE

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)Panulirus regius De Brito Capello, 1864OTHER SCIENTIFIC NAMES STILL IN USE : Panulirus rissonii (Desmarest, 1825)

VERNACULAR NAMES:

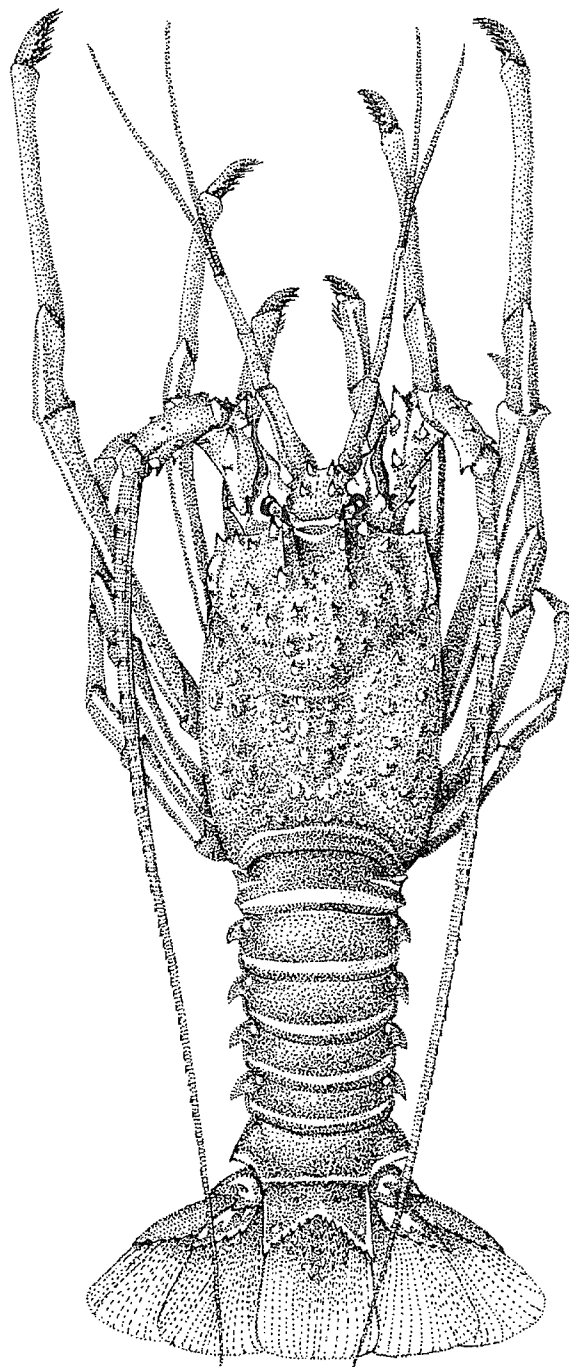
FAO : En - Royal spiny lobster
 Fr - Langouste royale
 Sp - Langosta real

NATIONAL :

DISTINCTIVE CHARACTERS :

Carapace sub-cylindrical, covered dorsally with spines and scattered spinules. Frontal horns usually short, triangular and not much curved forward; anterior margin of carapace smooth and without a distinct median rostrum. Antennae long, stiff and whiplike; antennules slender, their flagella longer than peduncles; bases of antennae separated by an antennal plate bearing 4 strong spines, and sometimes a few very small additional spinules. Tail powerful, with a well developed fan; each abdominal segment with a wide transverse groove filled with short hairs and not sharply delimited, interrupted on the midline. Legs without pincers (except for the fifth pair of female).

Colour: various shades of green; tail green, each segment with a white transverse band separated from the posterior margin by a very dark green or dark brown band; a small white spot on bases of pleura of each abdominal segment. Legs with longitudinal white and green stripes. Tail fan not banded.



0 7 cm

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA :

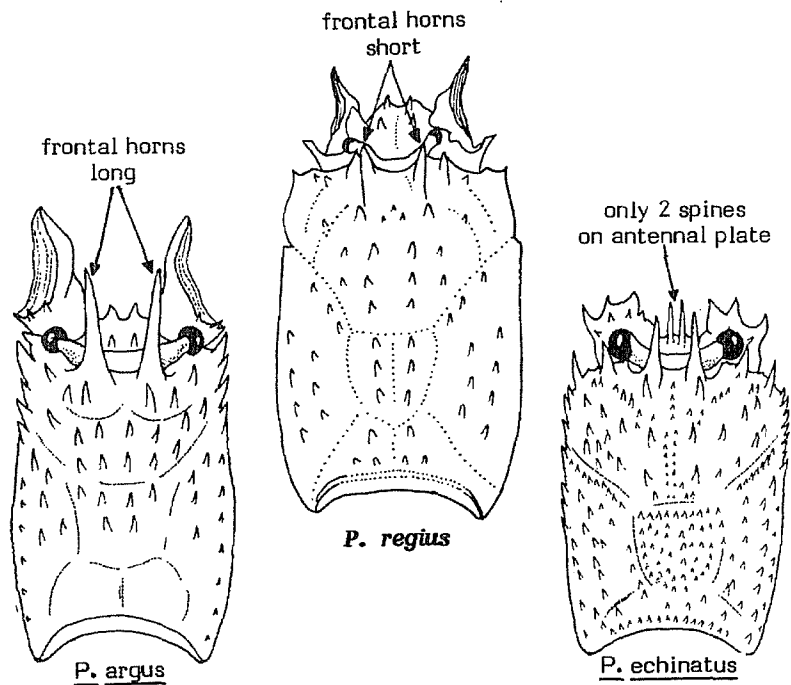
Panulirus argus: frontal horns long, slender and strongly curved; abdominal grooves not interrupted at midline; tail with 4 large, rounded, yellowish white spots (one on each side of segments II and VI); tail fan with a dark band along posterior margin.

P. echinatus: antennal plate with only 2 spines (4 in P. regius); abdominal grooves sharply delimited; abdomen more or less uniformly speckled with pale spots, without transverse bands.

Palinurus species: anterior margin of carapace (between horns) denticulated and bearing a rudimentary median rostrum; antennular flagella shorter than last segment of peduncle.

SIZE :

Maximum: 35 cm; common to 25 cm.



carapace and antennal plate

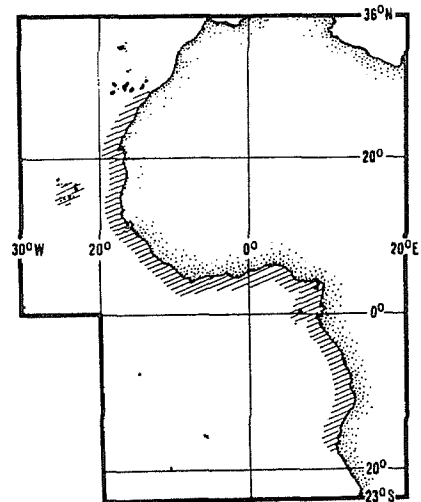
GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR :

From Morocco (Cape Juby), about 28°N to southern Angola (Mocâmedes) to 15°S, inclusive the Cape Verde Islands and the islands in the Benin Bight. The species has several times been found in the Western Mediterranean (Nice, Marseille, East coast of Spain).

Inhabiting shallow-water from the sublittoral to about 40 m depth, most commonly between 5 and 15 m; it seems to prefer rocky bottoms.

PRESENT FISHING GROUNDS :

Shallow waters of the continental shelf throughout its range. Despite its extensive fishing area, this species is not among the most important commercial West African lobsters.



CATCHES, FISHING GEAR AND FORMS OF UTILIZATION :

Separate statistics are not reported for this species.

Caught with vertical nets, trawls; sometimes also with lobster pots or by hand.

Marketed live or frozen; a large part of the catch is exported to France and Spain.

FAO SPECIES IDENTIFICATION SHEETS

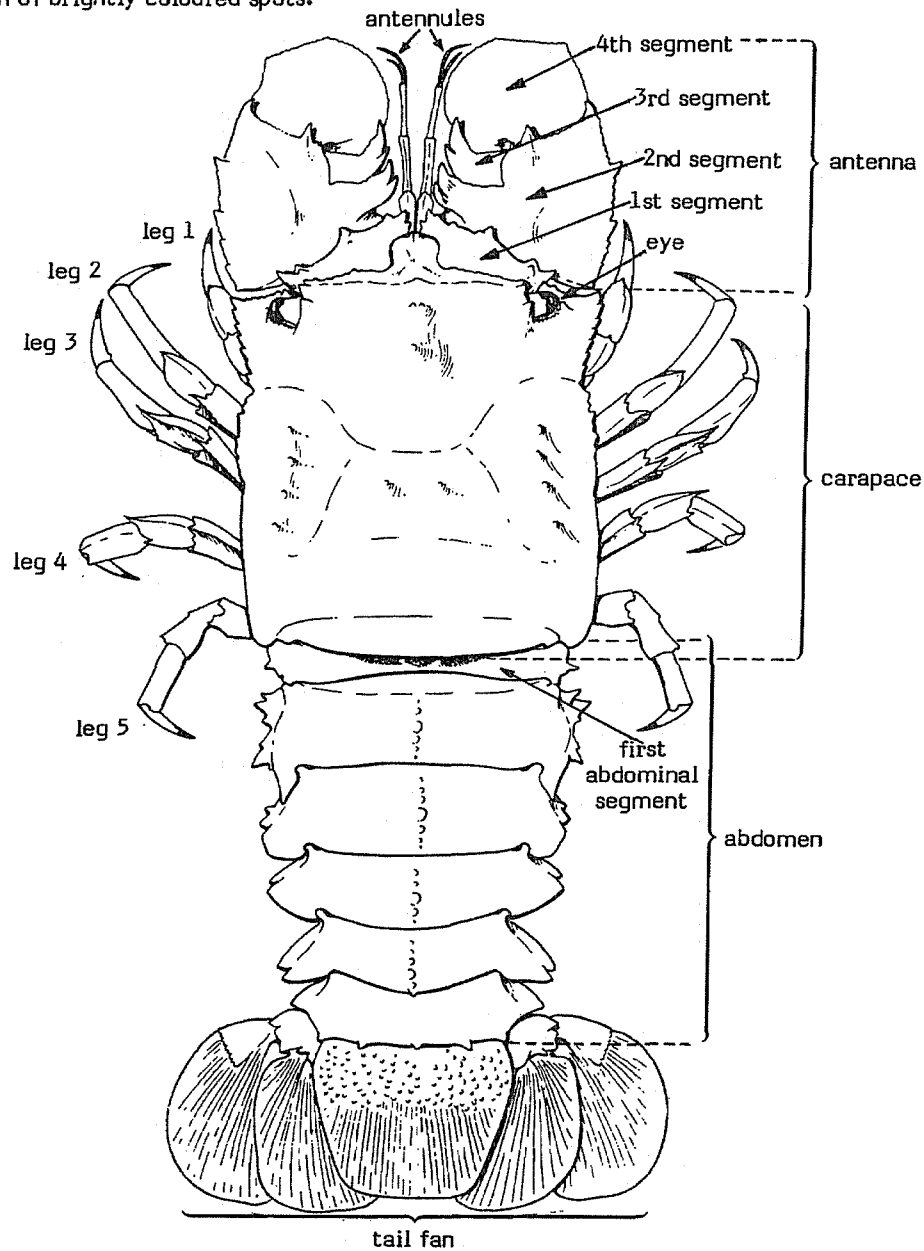
FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)

SCYLLARIDAE

Slipper lobsters, locust lobsters, flat lobsters

Small to large crustaceans. Body more distinctly flattened than in any other group of lobsters. Carapace (or "head") usually granular, sometimes with blunt teeth; eyes movable but recessed into anterior margin of carapace. Antennae short and broad, plate-like, lacking long flagella; antennules short and slender. Tail broad, powerful, with a well developed fan. All legs without pincers (except the fifth leg of female, which ends in a small pincer); none of the legs enlarged.

Colour: usually drab brownish in various shades; anterior part of first abdominal segment often with a characteristic pattern of brightly coloured spots.



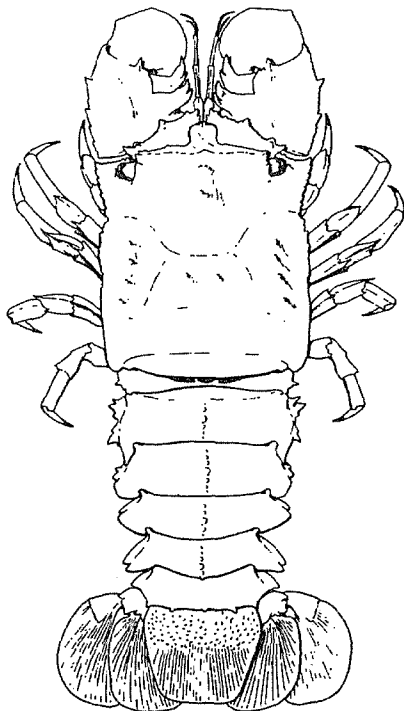
This family comprises 8 species in Fishing Area 34, ranging in size from 5 to 45 cm, and occurring from a few meters to about 150 m depth, with a few records down to 360 m. All slipper lobsters are benthic species, many of them living on level bottoms (sand, mud or rock) but some preferring reef areas. There is no established fishery for any of the Eastern Atlantic species, although when caught incidentally to other fishing operations, at least three are known to be taken and consumed or sold in local markets.

SIMILAR FAMILIES OCCURRING IN THE AREA :

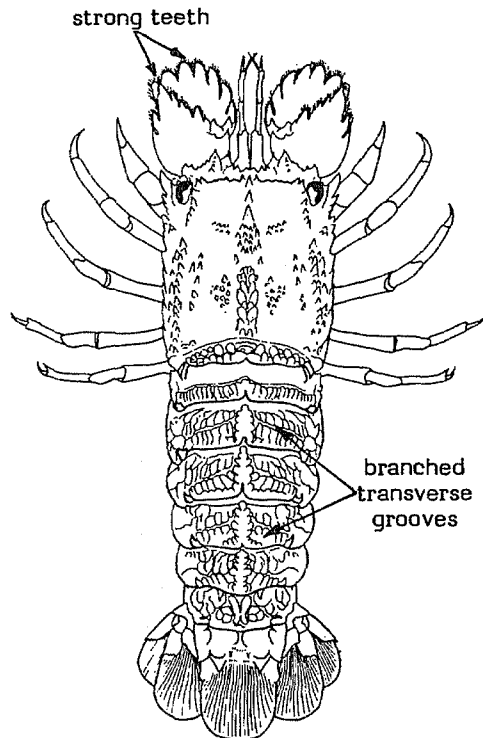
No other family of lobsters has such a flattened body or plate-like antennae without true flagella.

KEY TO GENERA OCCURRING IN THE AREA :

- 1 a. Margin of distal plate (or fourth segment) of antennae rounded or with a blunt angle, lacking strong teeth; abdominal segments without transverse grooves, but evenly granular. Size large, up to 45 cm (Fig. 1) Scyllarides
- 1 b. Margin of distal plate of antenna cut into strong teeth; abdominal segments each with a branched transverse groove. Size small, up to 12 cm (Fig. 2) Scyllarus



Scyllarides Fig. 1



Scyllarus Fig. 2

LIST OF SPECIES OCCURRING IN THE AREA :

Code numbers are given for those species for which Identification Sheets are included

Scyllarides herklotsii (Herklots, 1851)
Scyllarides latus (Latreille, 1803)

SCYL Scyld 4
SCYL Scyld 1

Scyllarus arctus (Linnaeus, 1758)
Scyllarus caparti Holthuis, 1952
Scyllarus paradoxus Miers, 1881
Scyllarus posteli Forest, 1963
Scyllarus pygmaeus (Bate, 1888)
Scyllarus subarctus Crosnier, 1970

SCYL Scylr 1 (= SCYL Scyl 1, Area 37)

Prepared by L.B. Holthuis, Rijksmuseum van Natuurlijke Historie, Leiden, The Netherlands

Drawing of Scyllarides herklotsi prepared by W.C.G. Gertenaar, Leiden, The Netherlands

FAO SPECIES IDENTIFICATION SHEETS

FAMILY : SCYLLARIDAE

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)Scyllarides latus (Latreille, 1803)

OTHER SCIENTIFIC NAMES STILL IN USE : None

VERNACULAR NAMES:

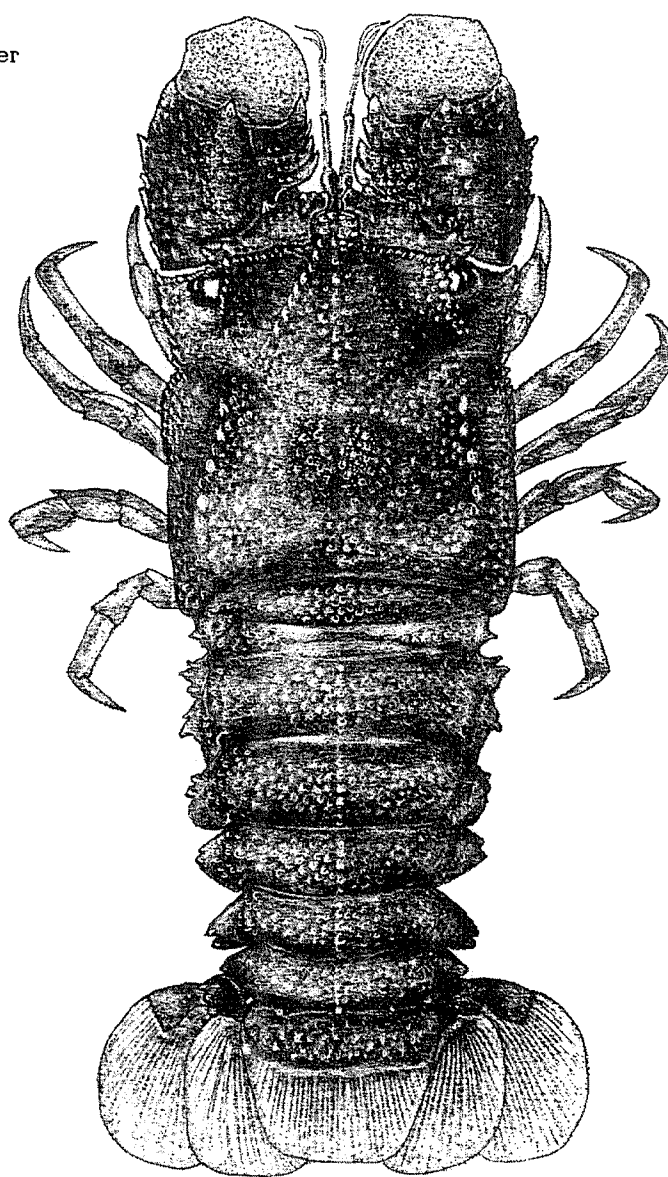
FAO : En - Mediterranean locust lobster
 Fr - Grande cigale
 Sp - Cigarra

NATIONAL :

DISTINCTIVE CHARACTERS :

Carapace massive, rectangular, almost as broad as long, covered with large granules, their bases hairy, and their summits provided with 1 or 2 horny tubercles; certain areas of carapace surface elevated and separated by grooves; anterior border truncate, rostrum slightly prominent. Abdominal segments equally covered with hairy granules in regions remaining exposed when the animal is extended; abdominal segments II, III and IV with a blunt mid-dorsal ridge consisting of tubercles cornified at tips. Antennae transformed into two paddle-shaped plates, each consisting of 4 segments, of which the second and the fourth (= last) are the largest; second with rather short, but well differentiated teeth on its anterior and lateral borders, while the borders of the fourth are rounded and entire, with only one blunt prominence in the antero-external region.

Colour: brownish red; antennules violet-blue; smooth anterior part of the first abdominal segment with 3 close-set, dark red spots, the central one circular, surrounded by a narrow circle of pale yellowish; the 2 lateral ones irregular and lined against the yellow circle on either side.



0 ————— 8 cm.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA :

Scyllarides herklotsii: the 3 red spots on anterior part of first abdominal segment widely spaced; grooves and ridges on dorsal surface of body less strongly marked.

Scyllarus species: size much smaller; margin of distal (fourth) segment of antenna deeply cut into teeth; abdominal segments with branched transverse grooves.

SIZE :

Maximum: 45 cm; common to 36 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR :

In the area, around Madeira and the Cape Verde Islands, as well as along the coast of West Africa from the Straits of Gibraltar to at least Senegal and Gambia (exact southern limit of range is not known, because of a confusion with S. herklotsii). Also present in the entire Mediterranean (but not the Black Sea), and off Portugal, from Lisbon southward.

Lives on rocky and muddy bottoms down to 100 m depth, usually between 4 and 10 m.

PRESENT FISHING GROUNDS :

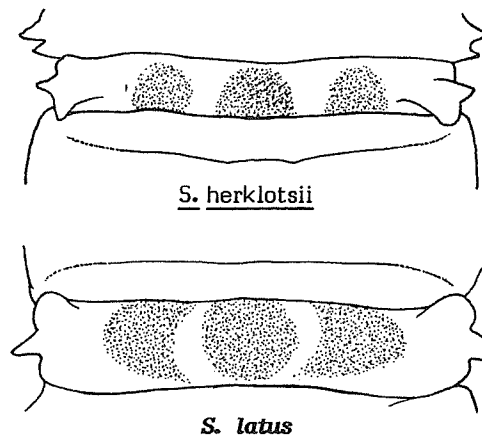
Shallow waters of the continental shelf.

CATCHES, FISHING GEAR AND FORMS OF UTILIZATION :

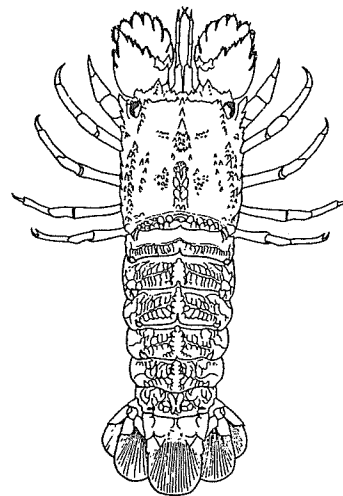
Separate statistics are not reported for this species.

Caught with trawls and bottom nets.

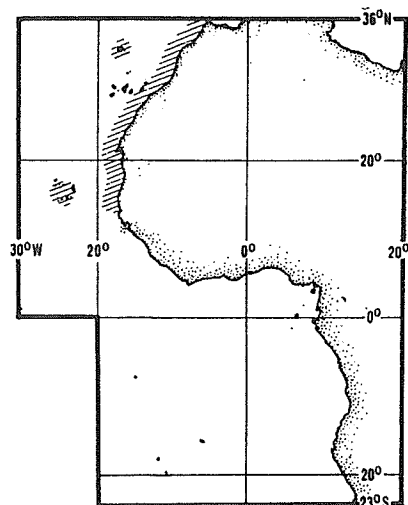
Marketed fresh.



first abdominal segment



Scyllarus



FAO SPECIES IDENTIFICATION SHEETS

FAMILY : SCYLLARIDAE

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)Scyllarides herklotsii (Herklots, 1851)

OTHER SCIENTIFIC NAMES STILL IN USE : None

VERNACULAR NAMES:

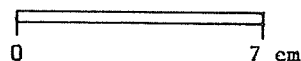
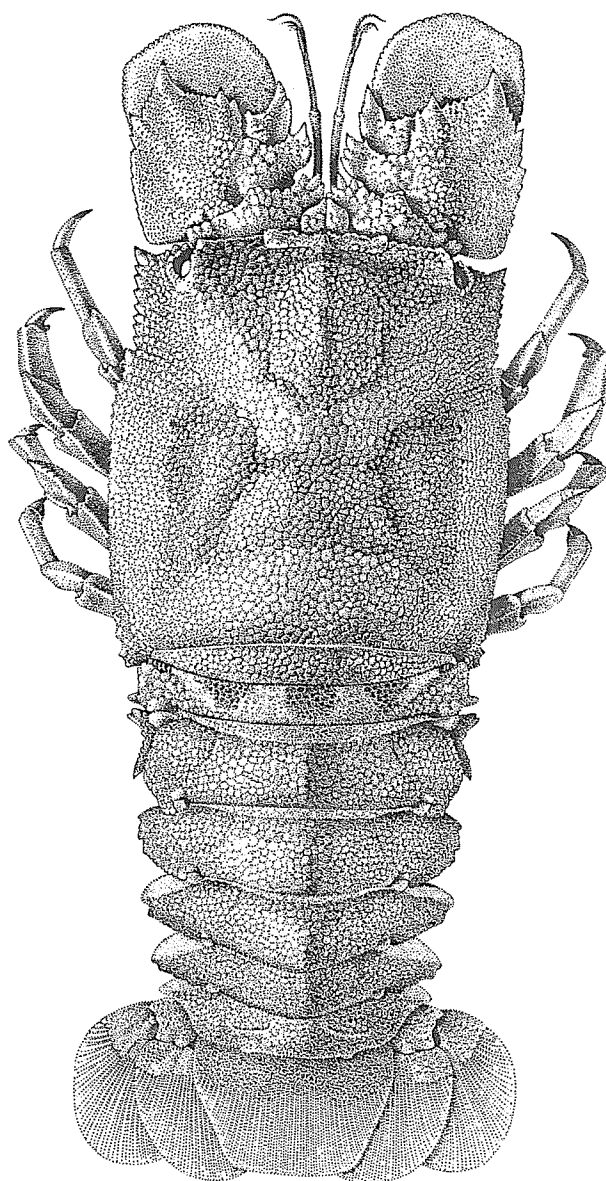
FAO : En - Red locust lobster
 Fr - Cigale rouge
 Sp - Cigarra roja

NATIONAL :

DISTINCTIVE CHARACTERS :

Carapace massive, rectangular, almost as broad as long, densely covered with granules, interspread with scattered short hairs; certain areas of the surface somewhat elevated and separated by shallow, wide grooves; rostrum small. Abdominal segments also covered with granules, mid-dorsal ridge absent or rather indistinct. Antennae transformed into paddle-shaped plates, each consisting of 4 visible segments; margin of distal (fourth) segment entire or minutely crenulated, rounded, with a blunt external angle; second-largest (second) segment with rather short, but distinct, teeth (especially on anterior margin).

Colour: brownish red to dark red; smooth anterior part of first abdominal segment with 3 dark red, well separated spots; tips of the legs violet.



DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA :

Scyllarides latus: red spots on first abdominal segment very close together; central spot circular and surrounded with a narrow yellowish ring, lateral spots irregular in outline and lined against the yellow ring; carapace and abdomen much rougher, with the grooves and elevations more pronounced.

Scyllarus species: size much smaller; margin of distal (fourth) segment of antenna deeply cut into teeth; each abdominal segment with branched transverse grooves.

SIZE :

Maximum: about 32 cm; common to 25 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR :

In the area, from northern Senegal (St. Louis, 16°N) to southern Angola (Ponta do Pinda 15°45'S).

Lives on sand, rock, or sometimes mud bottoms in depths between 5 and 70 m, but also reported from deeper waters (beyond 200 m).

PRESENT FISHING GROUNDS :

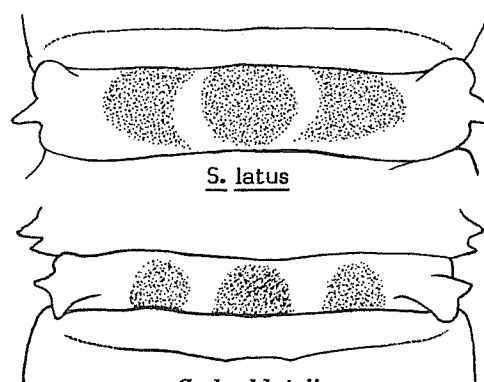
Continental shelf, but the species is at present of minor commercial value.

CATCHES, FISHING GEAR AND FORMS OF UTILIZATION :

Separate statistics are not reported for this species.

Usually caught with vertical nets sometimes taken in trawls.

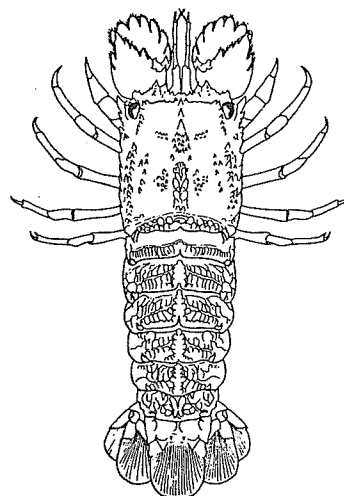
Marketed fresh on local markets.



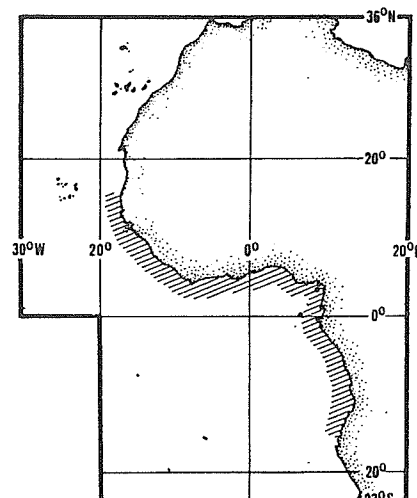
S. latus

S. herklotsii

first abdominal segment



Scyllarus



FAMILY : SCYLLARIDAE

FISHING AREAS
34, 47 (in part)
(E.C. Atlantic)Scyllarus arctus (Linnaeus, 1758)

OTHER SCIENTIFIC NAMES STILL IN USE : None

VERNACULAR NAMES:

FAO : En - Small European locust lobster
 Fr - Petite cigale
 Sp - Santiaguino

NATIONAL :

DISTINCTIVE CHARACTERS :

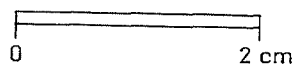
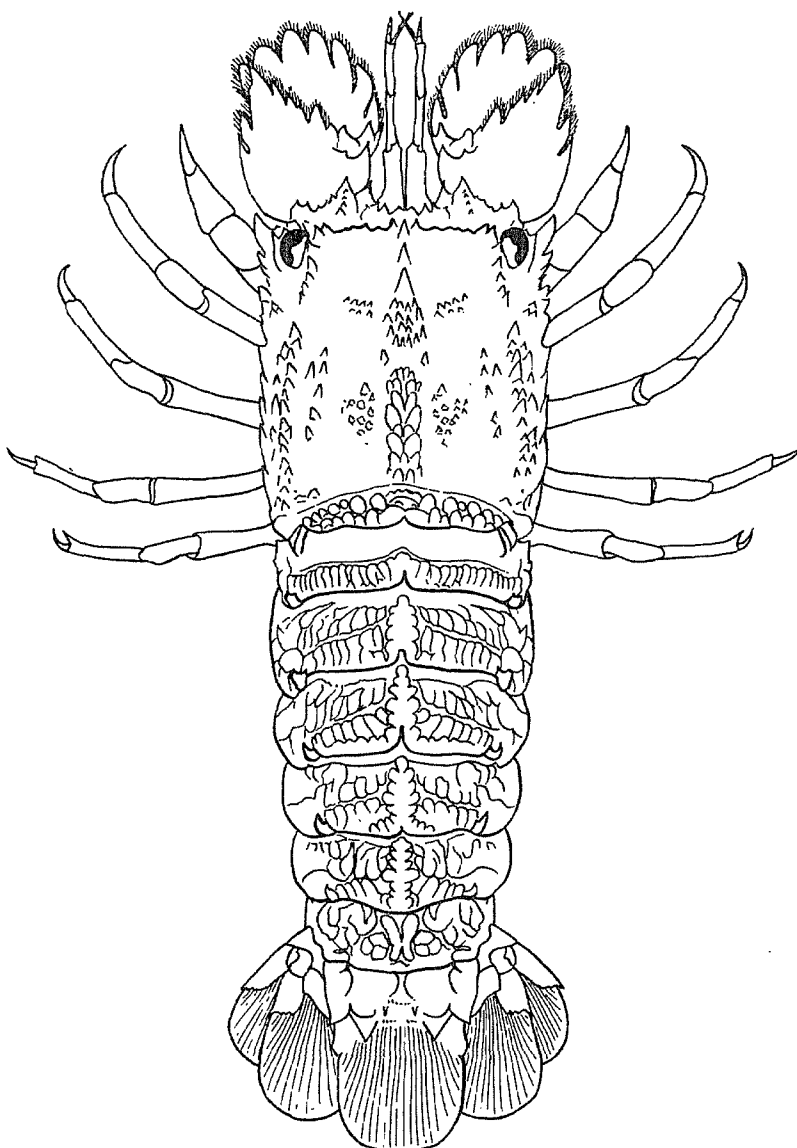
Carapace rectangular, a little longer than broad, with a scarcely prominent rostrum and 3 longitudinal keels consisting of depressed tubercles and teeth, one on the mid-line and two at sides; median keel anteriorly with 3 regularly spaced, pointed teeth; entire carapace covered with short hair. Antennae considerably modified, each forming a four-segmented paddle-shaped plate; anterior margin of distal (fourth) segment divided into 7 lobes or teeth. Posterior half of abdominal segments with branched grooves accounting for the squamiform or arborescent ornamentation of the tail; anterior half of abdominal segments (concealed when abdomen is stretched out) perfectly smooth.

Colour: carapace and abdomen showing various shades of reddish brown, tips of spines white, hairs very dark brown; thoracic legs with dark blue annular markings.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA :

Scyllarus pygmaeus (Morocco, Madeira, Canary and Cape Verde Islands and Mediterranean, from 5 to 100 m depth): size much smaller (maximum 5.5 cm): a transverse hairy ridge on smooth anterior part of each abdominal segment.

S. paradoxus (Senegal to Sierra Leone, São Tomé, from 5 to 20 m depth): size much smaller (maximum 5.8 cm); a transverse hairy groove on anterior part of each abdominal segment.



S. subarctus (recorded from southern Angola, 16°37'S and northern Namibia, 17°13'S, from 126 to 155 m depth): size smaller (maximum 6 cm); the posterior (third) of the 3 median teeth preceding the cervical groove on carapace much larger and more erect than the other two; distance between third and second teeth greater than that between second and first.

S. caparti (from Senegal to Angola, once reported in the Adriatic Sea, from 21 to 109 m depth): size smaller (maximum 5 cm); only 2 median teeth on anterior third of carapace before the cervical groove (3 in *S. arctus*); branched grooves on tail wide; a pronounced median crest on abdominal segments II to IV.

S. posteli (Senegal to Congo, and Bay of Cadiz (Spain), from 5 to 70 m depth): maximum length 9 cm; only 2 median teeth on anterior third of carapace before the cervical groove; last segment of sternum (lower surface of thorax) with a strong median, backward-pointing spine.

Scyllarides species: size much larger; margin of distal segment of antennae smooth or slightly crenulated with a single, blunt, external angle; tail without branched grooves.

SIZE :

Maximum: 12 cm; common to 10 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR :

In the area, found off Madeira, the Canary Islands and along the Atlantic coast of Morocco as far south as Agadir. Also present throughout the Mediterranean (but not in the Black Sea) and along the Atlantic coast of Europe up to the English Channel.

Found on muddy and rocky bottoms and in eel-grass beds, usually at depths between 4 and 50 m; rarely reported from beyond 100 m depth.

PRESENT FISHING GROUNDS :

Coastal areas of the continental shelf. On the Moroccan coast, it is more abundant than *Scyllarides latus*, but because of its small size, it is only of minor commercial importance.

CATCHES, FISHING GEAR AND FORMS OF UTILIZATION :

Separate statistics are not reported for this species.

Caught with trammel nets and pots (Mediterranean).

Marketed fresh.

