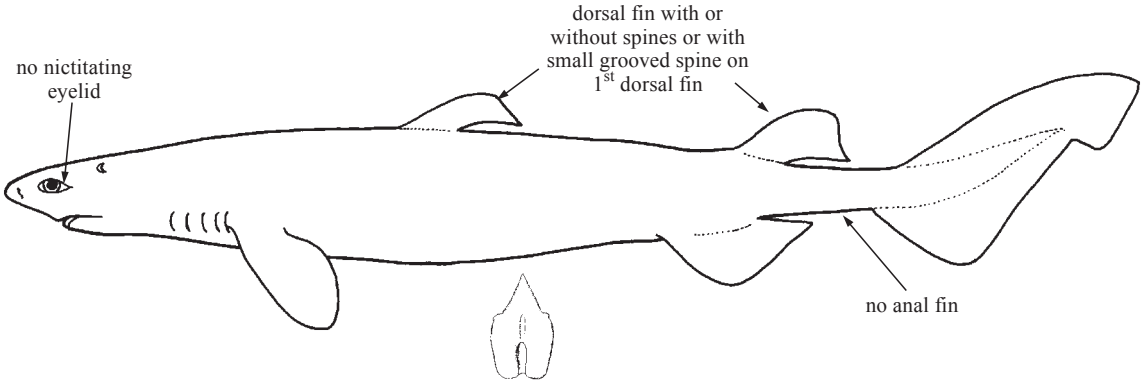
DALATIIDAE

Kitefin sharks

Diagnostic characters: Dwarf to moderately large sharks, with cylindrical or slightly compressed bodies, with lateral ridges absent between pectoral and pelvic fins and without precaudal pits, caudal keels present or absent. **Head with 5 gill slits, all anterior to pectoral fins**, the fifth not abruptly longer than the others; **spiracles always present, large and just behind eyes; eyes on sides of head, without nictitating eyelids**. Snout short to moderately elongated, narrow, conical, not flattened and not formed as a rostral saw; no barbels on snout; nostrils fairly wide-spaced, internarial width greater than or subequal to nostril width; mouth short and nearly transverse, lips smooth or papillose; **teeth strong-cusped, dissimilar in both jaws, upper teeth narrow, and needle-like, without cusplets; lower teeth compressed, broad, blade-like, and without cusplets, adjacent teeth imbricated, upper teeth much smaller than lowers. Two dorsal fins either without spines on their anterior margins or with a small grooved spine present on first dorsal fin**; dorsal fins small, rounded, narrow, and with weakly concave posterior margins; first dorsal fin subequal in area to second or smaller; origin of first dorsal fin close to or well in front of pelvic-fin origins, behind pectoral-fin insertions and opposite or (usually) behind pectoral-fin free rear tips; **no anal fin**; caudal fin strongly asymmetrical to nearly symmetrical, with subterminal notch present and with a lower lobe varying from virtually absent to very strong; pelvic fins variably smaller to larger than second dorsal fin. Dermal denticles close-set, not greatly enlarged and plate-like. **Colour:** body greyish to blackish brown, fins either colour of body or with transparent webs, body without conspicuous black marks, luminescent organs present or absent.

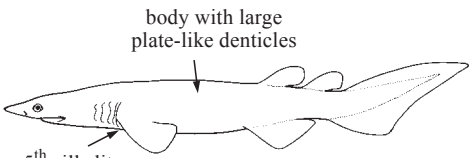


teeth *Dalatias licha*

Habitat, biology, and fisheries: Occurs in deep water near the bottom on continental and insular slopes between 200 to at least 1 800 m, but most species are dwarf oceanic sharks and occur in the epipelagic, mesopelagic, and probably bathypelagic zones. Occasional individuals occur in shallow water on the continental shelves, and may wash up on beaches. Circumglobal in temperate to tropical seas and may range into higher latitudes. Feed on a wide variety of bony fishes, other elasmobranchs, cephalopods, crustaceans, worms, and tunicates; some species are partially ectoparasitic and take chunks out of larger marine animals, including bony fishes, elasmobranchs, and cetaceans. Reproduction is ovoviviparous, with 6 to 16 young per litter. In the Far East and the eastern Atlantic one kitefin shark, *Dalatias licha*, is commonly fished with line gear and bottom trawls, and fixed bottom nets for human consumption and for their livers, which are extremely large, oily, and have a high squalene content.

Similar families occurring in the area

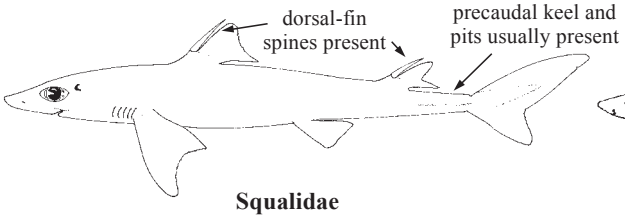
Echinorhinidae: body set with sparse, large, plate-like denticles; spiracles small and well behind eyes; fifth pair of gill slits abruptly longer than others; mouth broadly rounded; teeth not imbricated, upper teeth nearly as large as lower teeth, with cusplets present in large juveniles and adults.



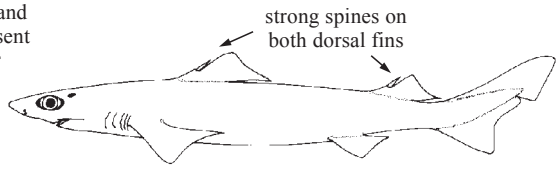
Echinorhinidae

Squalidae: snout flattened; nostrils far apart; upper teeth nearly as large as lowers, both upper and lower teeth imbricated and blade-like; precaudal keels and usually upper precaudal pits present; fin spines present on both dorsal fins, second dorsal fin falcate; no subterminal notches on caudal fin.

Centrophoridae: snout flattened; nostrils far apart; both upper and lower teeth compressed, imbricated and blade-like; dorsal fins larger and with origin of first anterior to pectoral-fin rear tips; strong fin spines present on both dorsal fins.



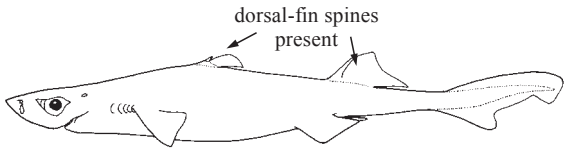
Squalidae



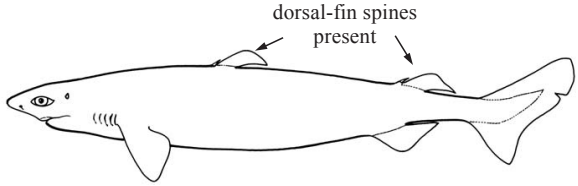
Centrophoridae

Etmopteridae: snout flattened; nostrils far apart; cusplets present on upper teeth; fin spines present on both dorsal fins; origin of first dorsal fin over or behind the pectoral-fin free rear tips; second dorsal fin more or less falcate; body usually with conspicuous black markings and luminescent organs.

Somniosidae: snout broader and more flattened; nostrils far apart; species in the area with fin spines on both dorsal fins.



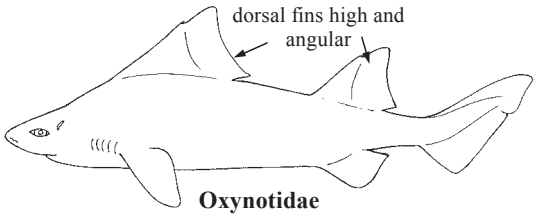
Etmopteridae



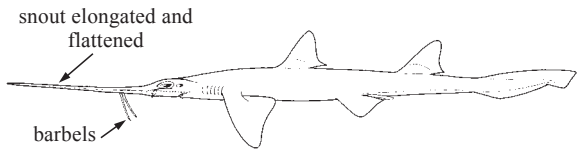
Somniosidae

Oxynotidae: body high and compressed; conspicuous lateral keels present on abdomen; dorsal fins very high and angular, large dorsal-fin spines present but buried in the dorsal fins with only the tips exposed.

Pristiophoridae: snout elongated into a flattened blade with lateral teeth; barbels present in front of nostrils.



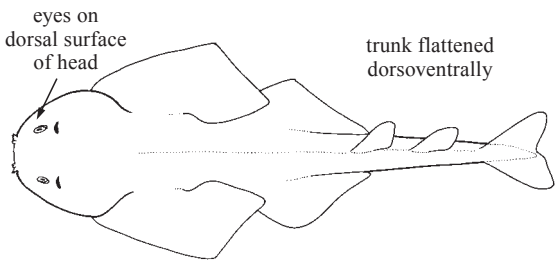
Oxynotidae



Pristiophoridae

Squatinidae: trunk much flattened dorsoventrally; eyes on dorsal surface 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.



Squatinidae

Key to the species of Dalatiidae occurring in the area

1a. First dorsal fin with a spine; second dorsal-fin base about twice as long as first (Fig. 1) . . . . . ***Squaliolus laticaudus***

1b. Both dorsal fins spineless; dorsal-fin bases subequal in length . . . . . → ***2***

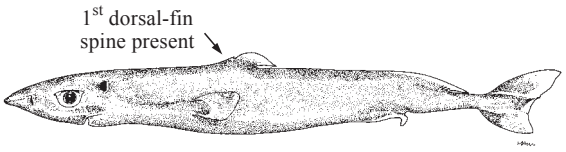


Fig. 1 ***Squaliolus laticaudus***

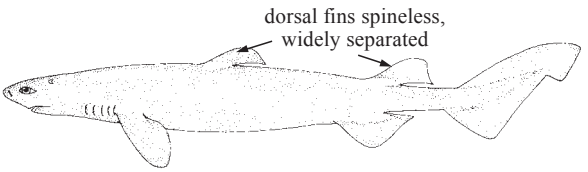


Fig. 2 ***Dalatias licha***

2a. Lips fringed; edges of lower teeth serrated; dorsal fins widely separated, the first dorsal fin closer to the pectoral fins than to the pelvic fins (Fig. 2) . . . . . ***Dalatias licha***

2b. Lips not fringed; edges of lower teeth smooth; dorsal fins far back on body and close together, the first dorsal fin closer to the pelvic fins than the pectoral fins . . . . . → ***3***

3a. Ventral lobe of caudal fin very long, about 2/3 the length of dorsal lobe; lower teeth smaller and more numerous, in 25 to 31 rows (Fig. 3) . . . . . ***Isistius brasiliensis***

3b. Ventral lobe of caudal fin shorter, about half the length of dorsal lobe; lower teeth larger and fewer, in 19 rows (Fig 4) . . . . . ***Isistius plutodus***

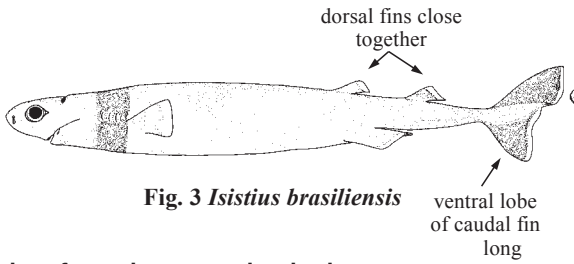


Fig. 3 ***Isistius brasiliensis***

Fig. 4 ***Isistius plutodus***

List of species occurring in the area

The symbol is given when species accounts are included.

Dalatias licha (Bonnaterre, 1788).

Isistius brasiliensis (Quoy and Gaimard, 1824).

Isistius plutodus Garrick and Springer, 1964.

Squaliolus laticaudus Smith and Radcliffe, 1912.

References

Bigelow, H.B. and W.C. Schroeder. 1948. Chapter three, Sharks. In Fishes of the Western North Atlantic. *Mem. Sears Fnd. Mar. Res*., (1)1:56-576.

Bigelow, H.B. and W.C. Schroeder. 1957. A study of the sharks of the suborder Squaloidea. *Bull. Mus. Comp. Zool. Harvard*, 117:150 p.

Cadenat, J. and J. Blache. 1981. Requins de Méditerranée et d' Atlantique (plus particulièrement de la Côte Occidentale d' Afrique). *Ed. OSTROM, Faune Tropicale*, (21):330 p.

Compagno, L.J.V. and R. Vergara R. 1978. Squalidae. In *FAO species identification sheets for fisheries purposes. Western Central Atlantic (Fishing Area 31) Volume V*, edited by W. Fischer. Rome, FAO, 10 pp.

Compagno, L.J.V. 1984. FAO Species Catalogue. Vol. 4, Sharks of the World. An annotated and illustrated catalogue of shark species known to date. *FAO Fish. Synop.*, (125)Vol.4,Pt.1:250 p.

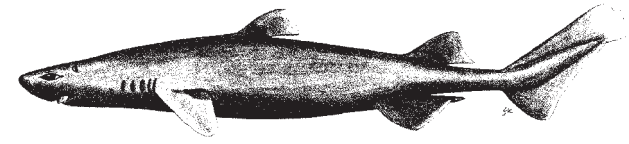
McEachran, J.D. and J.D. Fechhelm. 1998. *Fishes of the Gulf of Mexico*, vol. 1, Myxiniformes to Gasterosteiformes. Austin, University of Texas Press, 1112 p.

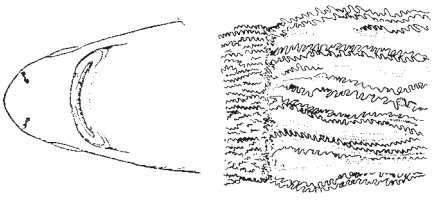
Shirai, S. 1992. *Squalean phylogeny. A new framework of "squaloid" sharks and related taxa.* Sapporo, Hokkaido University Press, 151 p.

Dalatias licha (Bonnaterre, 1788)

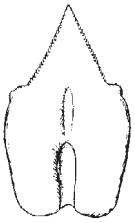
En - Kitefin shark; **Fr** - Squale liche; **Sp** - Carocho.

Maximum total length to at least 160 cm. Occurs on the bottom and in the midwater of the outer continental and insular shelves from 40 to 1 800 m depth. Feeds on bony fishes, as well as sharks, skates, cephalopods, and crustaceans. Caught for its squalene-rich liver, leather, and meat, also for fish meal. Western Atlantic (Georges Bank and Gulf of Mexico), eastern Atlantic, Mediterranean, western Indian Ocean, and western and central Pacific.

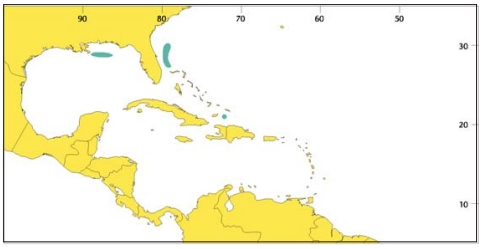




ventral view of head and fringed lips



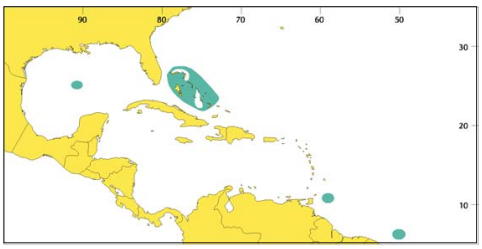
teeth



Isistius brasiliensis (Quoy and Gaimard, 1824)

En - Cookiecutter shark; **Fr** - Squalelet féroce; **Sp** - Tollo cigarro.

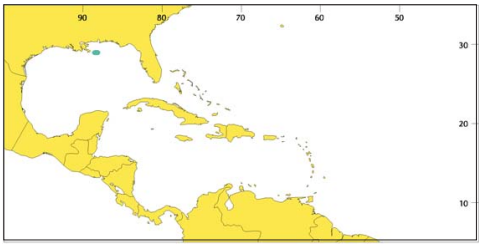
Maximum total length at about 50 cm. Makes diurnal vertical migrations probably from below 1 000 m in the day to or near the surface at night. Feeds on free living deep-water prey, but is also a facultative ectoparasite on larger marine organisms. Of no importance to fisheries in the area. A widespread oceanic shark in temperate and tropical oceans.

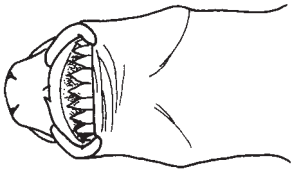


Isistius plutodus Garrick and Springer, 1964

En - Largetooth cookiecutter shark; **Fr** - Squalelet dentu; **Sp** - Tollo cigarro dentón.

Maximum total length at least 42 cm. Oceanic, found off the bottom and sometimes near the surface over the slopes and trenches in water 800 to 6 440 m deep. An ectoparasite on larger marine organisms. No importance to fisheries in the area. A rare, and sporadically distributed shark in the western Atlantic and western Pacific, in the area in the northern Gulf of Mexico (USA), also off Brazil, Sahora Republic, Australia, and Okinawa, Japan.



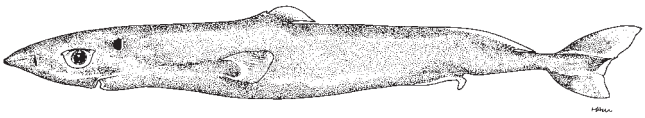


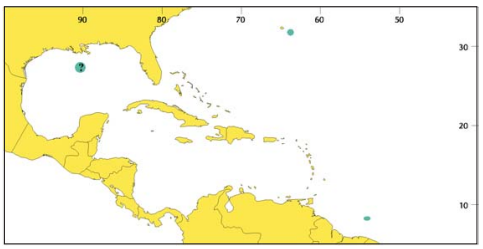
ventral view of head

Squaliolus laticaudus Smith and Radcliffe, 1912

En - Spined pygmy shark; **Fr** - Squale nain; **Sp** - Tollo pigmeo espinudo.

Maximum total length to about 25 cm. Epipelagic near continental and island land masses, usually over the slopes at depths of 200 to 500 m. Feeds on deep-water squids and bony fishes. Of no interest to fisheries. Oceanic and nearly circumtropical.





Order SQUATINIFORMES
SQUATINIDAE

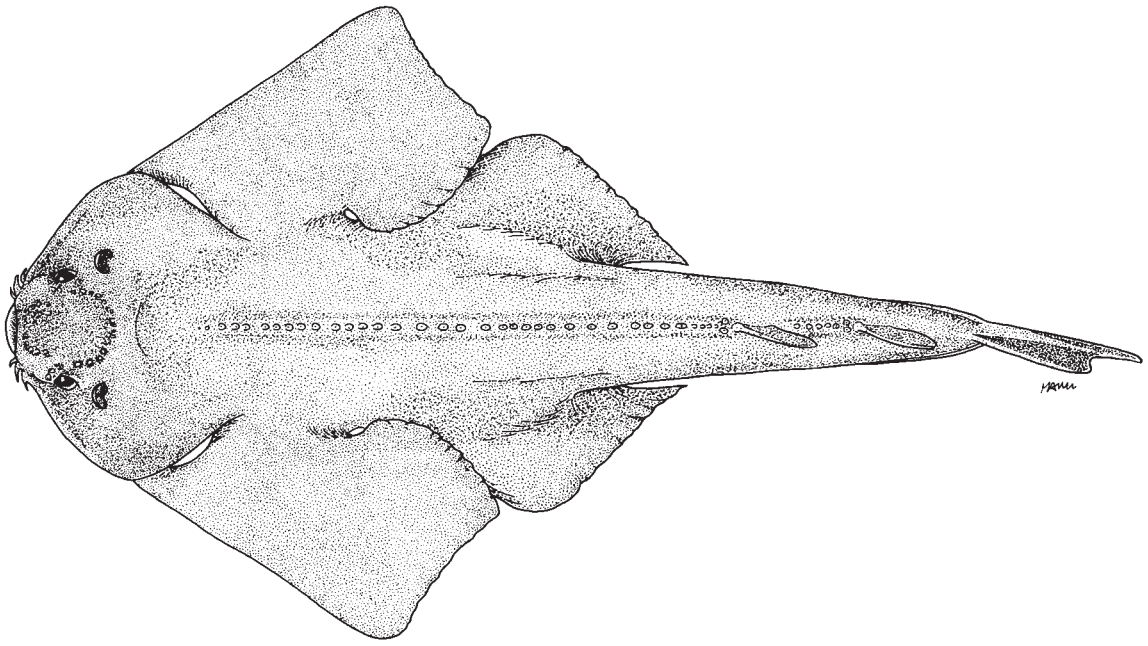
Angel sharks (sand devils)

A single species occurring in the area.

Squatina dumeril (Lesueur, 1818) SUD

Frequent synonyms / misidentifications: None / Uncertain.

FAO names: En - Sand devil (AFS: Atlantic angel shark); **Fr** - Ange de mer de sable; **Sp** - Tiburón ángel.

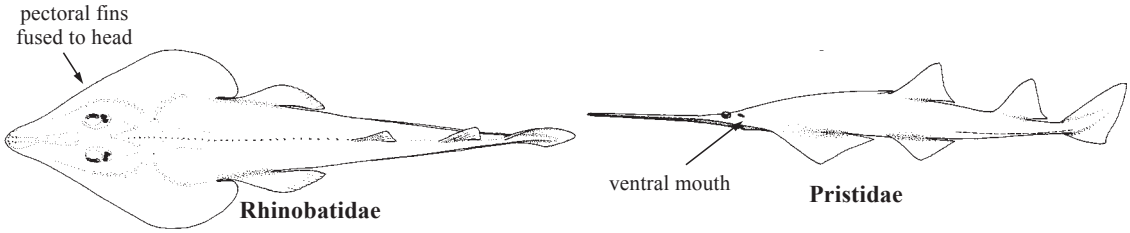


Diagnostic characters: A moderately large, **flattened, ray-like shark. Head and body greatly depressed; head transversely oval, with a distinct neck at bases of pectoral fins**; no nictitating lower eyelids; nostrils at tip of snout, each with a bifid nasal barbel; mouth short, angular, and **terminal on head**, extending under front of eyes; teeth small, similar in both jaws, with a single, strong, needle-sharp cusp, and no cusplets; 5 moderately long gill openings **ventrolaterally situated and not visible dorsally**; no gill rakers. Spineless dorsal fins situated far rearward on tail, the first originating behind free rear tips of pelvic fins. Caudal fin very short, much less than half the total length, nearly symmetrical but not lunate, **with the lower lobe slightly longer than the upper** and with the vertebral axis extending ventrally into it (hypocercal caudal fin); peduncle moderately depressed, with a low longitudinal keel on each side; no precaudal pits. **Pectoral fins greatly enlarged and triangular, with a large triangular lobe extending from their bases on each side to parallel the gill openings (but not fused to sides of head above them as in rays)**; 2 equally small, anal fin absent. **Colour:** back blue-grey or light grey, underside white, with irregular reddish markings above and below.

Similar families occurring in the area

The combination of characters such as terminal mouth, greatly flattened head and body, ventrolateral gill openings, free anterior lobes of the very large, triangular pectoral fins, dorsal fins posterior in position, absence of anal fin, and long lower caudal-fin lobe with vertebral axis bent into it, readily distinguishes this shark from all other sharks (including rays) in the area.

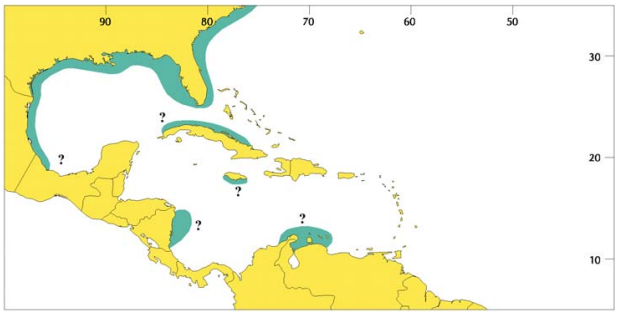
Guitarfishes (Rhinobatidae) and sawfishes (Pristidae) are rays that are superficially similar to *Squatina dumeril*, but have the pectoral fins fused to the head over the ventral gill openings, ventral mouths, small cuspless teeth, and a heterocercal caudal fin with the lower lobe of caudal fin, when present, shorter than the upper lobe and with the vertebral axis extending into the upper lobe.



Size: Maximum to about 155 cm, maturing between 90 and 120 cm. Size at birth 28 to 30 cm.

Habitat, biology, and fisheries: Often occurring close inshore but descending to considerable depths on the outer continental shelf and even the upper slope, down to 450 and even 1 390 m. On the Atlantic coast of the USA it appears in shallow water in summer but disappears in winter, possibly by retreating into deep water. A little-known bottom-dweller, probably burying itself in mud and sand and feeding on bottom fishes including skates and bony fishes, crustaceans, and molluscs. Harmless unless provoked; will snap when captured and can inflict severe lacerations with its trap-like jaws and pointed teeth. It is caught mostly as bycatch of demersal trawl fisheries targeting other fishes in continental waters. Separate statistics are not reported for this species; it is not utilized to any extent. As this species is recorded in a wide range of habitats over a broad area, and as the western south Atlantic angel sharks comprise 3 species rather than 1 (Vooren and da Silva, 1991), specimens of *Squatina dumeril* need to be critically compared to determine if only a single species is involved.

Distribution: Western north Atlantic: Atlantic coast of the USA (Massachusetts to the Florida Keys); entire Gulf of Mexico from off the USA (Florida, Alabama, Mississippi, Louisiana, and Texas) and Mexico (Tamaulipas and Veracruz); also Caribbean off Cuba, Nicaragua, Jamaica, and Venezuela.



References

Bigelow, H.B. and W.C. Schroeder. 1948. Sharks. In Fishes of the Western North Atlantic. *Mem. Sears Found. Mar. Res.*, (1)1:56-576.

Compagno, L.J.V. 1978. Squatinidae. In *FAO species identification sheets for fisheries purposes. Western Central Atlantic (Fishing Area 31)*, edited by W. Fischer. Vol. 5. Rome, FAO (unpaginated).

Compagno, L.J.V. 1984. FAO Species Catalogue. Vol. 4, Sharks of the World. An annotated and illustrated catalogue of shark species known to date. *FAO Fisheries Synop.*, (125)Vol.4.Pt.1:249 p.

McEachran, JD. and J.D. Fechhelm. 1998. *Fishes of the Gulf of Mexico, Vol. 1, Myxiniformes to Gasterosteiformes*. Austin, Texas, University of Texas Press,1112 p.

Roux, C. 1977. Les anges de mer (Squatinidae) de l`Atlantique et de la Mediterranee. *Bull. Off. Nat. Peches Tunisie*, 1 (2):159-168.

Vooren, C.M. and K.G. da Silva. 1991. On the taxonomy of the angel sharks from southern Brazil, with the description of *Squatina occulta* sp. nov. *Rev. Brasil. Biol.*, 51(3):589-602.

Order PRISTIOPHORIFORMES
PRISTIOPHORIDAE

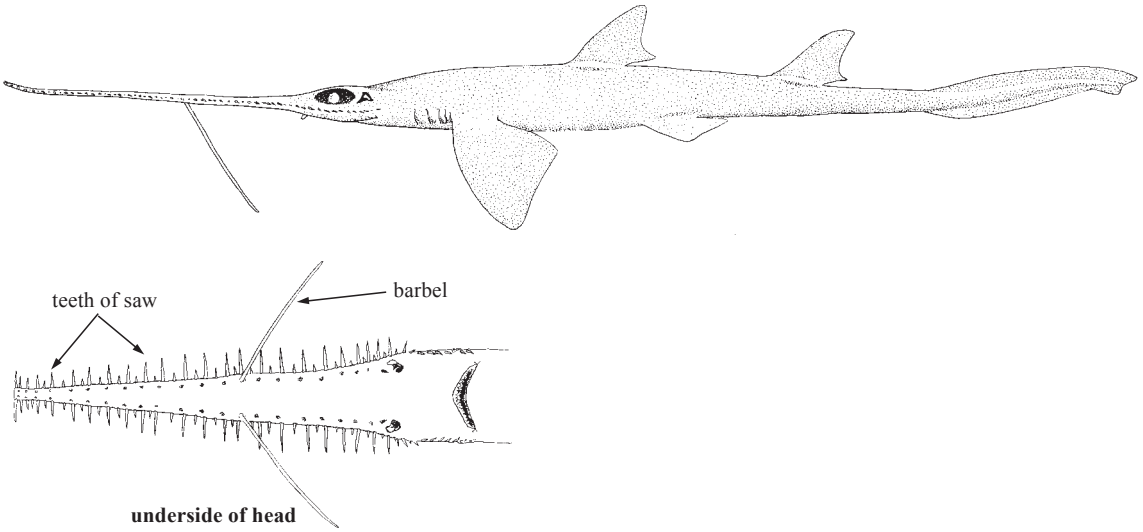
Sawsharks

A single species occurring in the area.

Pristiophorus schroederi Springer and Bullis, 1960 PPH

Frequent synonyms / misidentifications: None / None.

FAO names: En - Bahamas sawshark; **Fr** - Requin scie d'Amérique; **Sp** - Tiburón sierra americano.

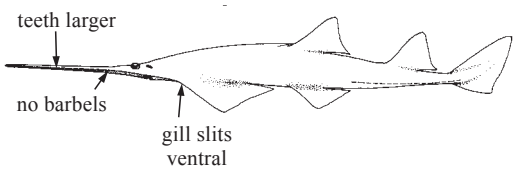


Diagnostic characters: A small shark. Body moderately depressed. **Snout extremely long, greatly flattened, with enlarged pointed dermal denticles along sides forming the teeth of a rostral saw and a pair of long barbels on its ventral surface in front of nostrils**; nostrils without barbels or nasoral grooves; mouth small, short, and angular, located far posterior, mostly behind eyes; teeth very small, not blade-like, with 1 conical cusp, alike in both jaws. Head with 5 small lateral gill slits, the last in front of pectoral-fin origins; no gill rakers. Two moderately large dorsal fins, without spines, the first on back just ahead of pelvic fins; caudal fin much less than half the total length, asymmetrical, with a subterminal notch and no ventral lobe; pectoral fins broad and moderately large; **anal fin absent**. No precaudal pits, but a long low dermal keel extending on tail from behind pelvic fins to base of caudal fin on each side. **Colour:** light grey or brownish above, whitish below.

Similar families occurring in the area

No other non-batoid sharks have rostral saws and elongated barbels on the snout.

Sawfishes (Pristidae, a family of 'flat' sharks or batoid fishes) also have a rostral saw, but differ from the sawsharks in having the pectoral fins expanded anteriorly over the gill openings and fused to the sides of the head, so that the head and pectoral fins form a distinct pectoral disc with the gill openings ventral (as in other batoids); additionally, the trunk is shorter and more depressed, the first dorsal fin is partially or entirely above the pelvic-fin bases, the rostral saw has relatively few, uniformly large teeth (small and varying in size along the rostrum in Pristiophoridae) and no barbels. Furthermore, the species of sawfishes are much larger, reaching 6 m or more.

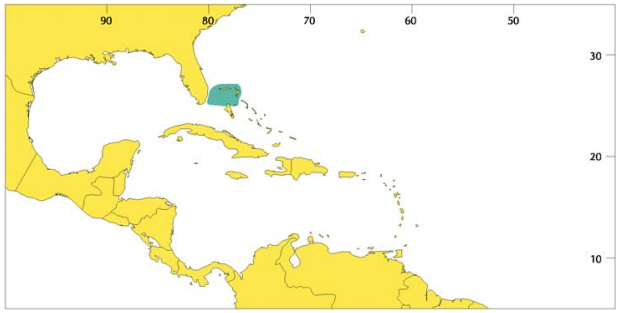


Pristidae

Size: Reported to reach about 81 cm in total length.

Habitat, biology, and fisheries: Occurs on the bottom on the upper and middle insular slopes at depths of 438 to about 952 m. Biology poorly known. Not fished presently, but possibly a discarded bycatch of deep-water demersal fisheries.

Distribution: Only known from off the Bahamas region, between Cuba, Florida, and the Bahamas.



References

Bullis, H. R., Jr. and J. R. Thompson. 1965. Collections by the exploratory fishing vessels *Oregon, Silver Bay, Combat*, and *Pelican* made during 1956 to 1960 in the southwestern North Atlantic. *U.S. Fish. Wildl. Serv. Spec. Sci. Rep. Fish.*, (510), 130 p.

Compagno, L. J. V. 1978. Pristiophoridae. In *FAO species identification sheets for fisheries purposes. Western Central Atlantic (Fishing Area 31), Volume V*, edited by W. Fischer. Rome, FAO (unpaginated).

Compagno, L. J. V. 1984. FAO Species Catalogue. Vol. 4. Sharks of the World. An annotated and illustrated catalogue of shark species known to date. *FAO Fish. Synop.,* (125)Vol.4,Pt.1:250 p.

Springer, S. and H. R. Bullis, Jr. 1960. A new species of sawshark, *Pristiophorus schroederi*, from the Bahamas. *Bull. Mar. Sci. Gulf Caribbean*, 10(2):241-254.