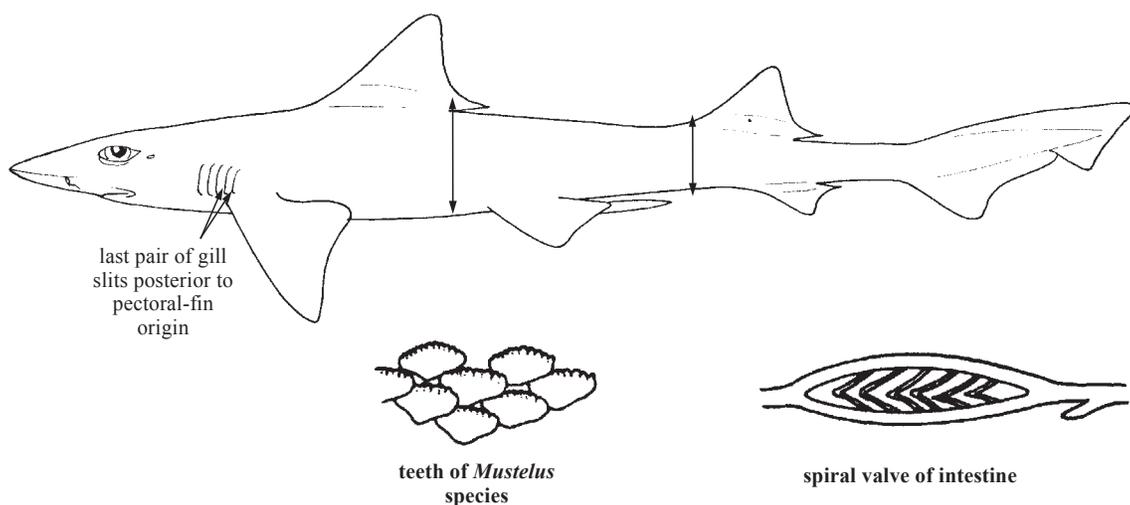


TRIAKIDAE

Houndsharks (smoothhounds, topes)

Diagnostic characters: Body elongated 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 above sides of head in species in the area, **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**; mouth ending below or behind eyes; labial furrows moderately long; teeth usually similar in both jaws, but differentiated in a few species found elsewhere; in *Mustelus* (the only genus in Area 31), **the teeth are numerous, small, cuspless (or weak-cusped), and arranged in a pavement**, while species found elsewhere have compressed blade-like teeth with one cusp and sometimes one or more minor cusps or cusplets. Two dorsal fins, the **first dorsal fin much shorter than caudal fin** (about as long as caudal fin in one New Guinean species), and with its **base entirely anterior to pelvic fins**; **second dorsal fin somewhat smaller than the first dorsal fin, originating ahead of anal fin**; **anal fin as large as or smaller than second dorsal fin**; caudal fin asymmetrical, its ventral lobe varying from virtually absent to strong, **its upper edge not rippled**. Caudal peduncle not flattened dorsoventrally or expanded laterally, **without keels or precaudal pits. Intestine with a corkscrew-shaped spiral valve**, with 6 to 10 turns. **Colour:** back usually greyish brown, belly white. Some species are capable of undergoing slow colour changes.

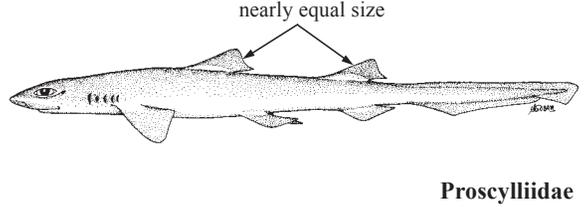
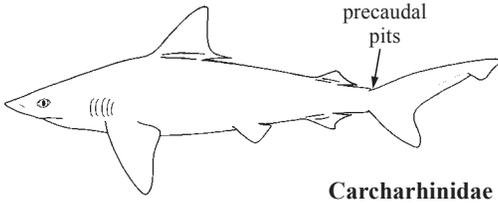


Habitat, biology, and fisheries: Houndsharks are widely distributed in tropical and warm-temperate waters ranging from the intertidal to the upper continental slopes (to 300 m or more). The species are variably ovoviviparous (aplacental viviparous) or viviparous (placental viviparous) and either have a yolk sac placenta (including all species known from Area 31) or lack one. They feed on a wide variety of small to medium-sized bony fishes (both demersal and pelagic) and fish eggs, small sharks (including batoids), chimaeroids, crustaceans (including brachyurid crabs, hermit crabs, lobsters, slipper lobsters, mantis shrimp, ghost shrimp, shrimp and prawns, and isopods), king crabs, gastropods, bivalves (whole bivalves and their siphons), cephalopods (squids and octopi), tunicates, cephalochordates, polychaete worms, echiuroid worms, sipunculoid worms, holothurians, coelenterates, and rarely garbage. None of the species are injurious to people. Many species are used for human consumption (fresh, frozen, smoked, or dried-salted) as well as in the preparation of various subproducts such as shark fins, liver oil, and fish meal. Houndsharks include important fisheries species, particularly smoothhounds (*Mustelus*) and tope sharks (*Galeorhinus*), because of their abundance in inshore areas and because they are readily captured with light line and net gear. Several species of houndsharks are caught by sports fishers and by spearfishing divers. Some species are displayed in public aquaria and are often hardy and attractive, active animals that do well in captivity.

Similar families occurring in the area

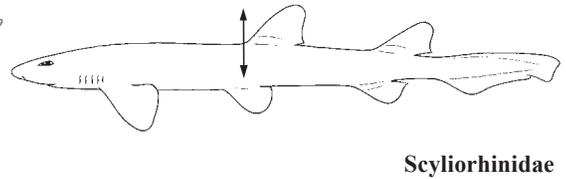
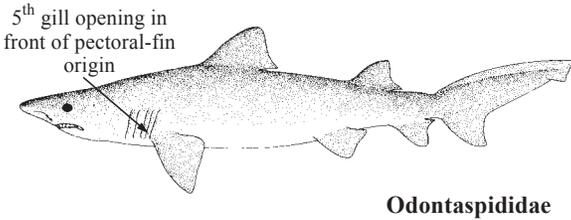
Carcharhinidae: species in the area with blade-like teeth with one strong cusp, not in mosaic or pavement but with 1 to 4 series functional in sides of jaw; lower caudal-fin lobe always strong; precaudal pits present; intestine with a scroll-valve, like a rolled bib.

Proscylliidae: species in the area with small teeth with 1 slender cusp and mostly 2 or more minor cusps or cusplets, teeth comblike at mouth angles; second dorsal fin about as large as first dorsal fin, with its origin about opposite anal-fin origin.



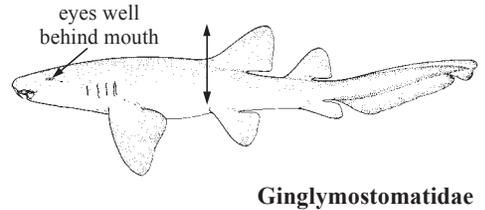
Odontaspidae: fifth gill opening well in front of pectoral-fin origin; eye without nictitating eyelids; teeth blade-like.

Scyliorhinidae: first dorsal-fin base over or behind pelvic-fin base.



Ginglymostomatidae: origin of first dorsal-fin base over or posterior to pelvic-fin bases; nostril connected with mouth by a deep nasoral groove, its anterior margin with a long, cylindrical barbel; eyes well behind mouth (eyes over mouth in triakids).

Other shark families: either caudal fin very long (Alopiidae), or head with 'hammer-like' lateral projections (Sphyrnidae), or caudal fin lunate and size of adults much larger (Cetorhinidae, Rhincodontidae, Lamnidae), or a single dorsal fin and 6 gill slits (Hexanchidae), or anal fin absent (Squalidae, Centrophoridae, Etmopteridae, Somniosidae, Oxynotidae, Dalatiidae, Squatinidae, and Pristiophoridae).



Key to the species of Triakidae occurring in the area

- 1a. Upper labial furrows longer than lower furrows and 1.6 to 2.7% of total length (Fig. 1); larger species, maturing at 75 to over 80 cm and reaching 122 to 140 cm → 2
- 1b. Upper labial furrows about as long as lower furrows and 0.8 to 1.8% of total length (Fig. 2); smaller species, maturing at 47 to 60 cm and reaching 90 cm → 3

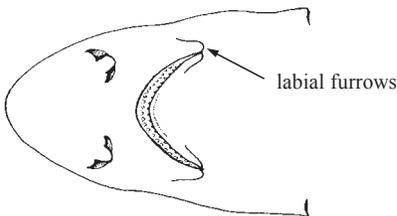


Fig. 1 ventral view of head

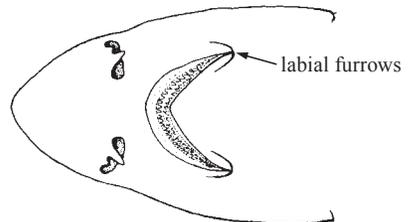


Fig. 2 ventral view of head

- 2a. Denticles on back mostly or entirely lanceolate; monospondylous precaudal vertebral centra 34 to 42, precaudal centra 85 to 100 *Mustelus canis*
- 2b. Lateral trunk denticles on back between pectoral and pelvic fins tricuspidate; monospondylous precaudal vertebral centra 26 to 29, precaudal centra 65 to 72 *Mustelus sinusmexicanus*
- 3a. Lateral trunk denticles on back between pectoral and pelvic fins tricuspidate; preoral snout longer, 6.9 to 9.6% total length *Mustelus higmani*
- 3b. Denticles on back mostly or entirely lanceolate; preoral snout slightly shorter, 4.2 to 7.3% total length → 4
- 4a. Eyes larger, length 3.2 to 4.3% of total length; internarial width broader, 2.7 to 3.1% of total length; mouth broader, width 5.4 to 6.9% of total length; monospondylous precaudal vertebral centra 42 to 47. *Mustelus minicanis*
- 4b. Eyes smaller, length 2.3 to 3.4% of total length; internarial width narrower, 2.3 to 2.8% of total length; mouth narrower, width 4.6 to 5.6% of total length; monospondylous precaudal vertebral centra 33 to 38. *Mustelus norrisi*

List of species occurring in the area

The symbol  is given when species accounts are included.

-  *Mustelus canis* (Mitchill, 1815).
-  *Mustelus higmani* Springer and Lowe, 1963.
-  *Mustelus minicanis* Heemstra, 1997.
-  *Mustelus norrisi* Springer, 1939.
-  *Mustelus sinusmexicanus* Heemstra, 1997.

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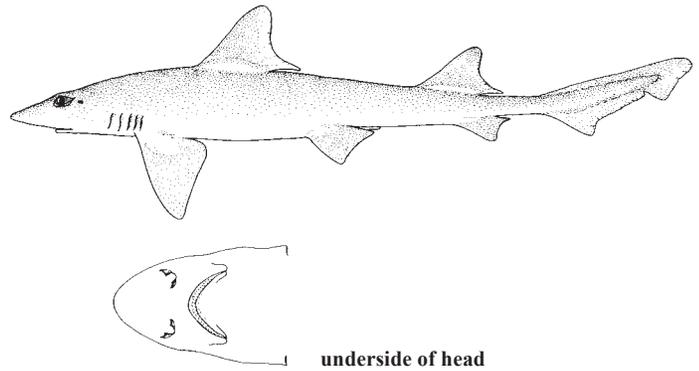
Mustelus canis (Mitchill, 1815)

CTI

Frequent synonyms / misidentifications: *Allomycter dissutus* Guitart Manday, 1972, *Mustelus canis insularis* Heemstra, 1997 / *M. sinusmexicanus*, Heemstra, 1997.

FAO names: **En** - Dusky smooth-hound (AFS: Smooth dogfish); **Fr** - Emissole douce; **Sp** - Musola dentuda (Area 31: Mamón dentudo).

Diagnostic characters: A moderate-sized shark with an elongate and slender body, moderately flat on its ventral surface; a low sharp-edged dermal ridge on midline of back, particularly conspicuous between the 2 dorsal fins. Head flattened above and ending in a thin-tipped snout; snout moderately long, **preoral length 5.5 to 8.0% of total length**; 5 gill slits, the fourth above pectoral-fin origin; **eyes moderately large, length 2.2 to 4.2% of total length**; eyes with longitudinal external nictitating lower eyelids; spiracles small but prominent; **space between nostrils broad, internarial width 2.7 to 3.6% total length**; **mouth relatively broad, width 4.7 to 6.8% of total length**; **labial furrows of upper jaw longer than those of lower jaw, length 1.6 to 2.7% of total length**. **Teeth small, ovate, low, arranged in several rows in a mosaic or pavement pattern, their cutting edges bluntly rounded**.

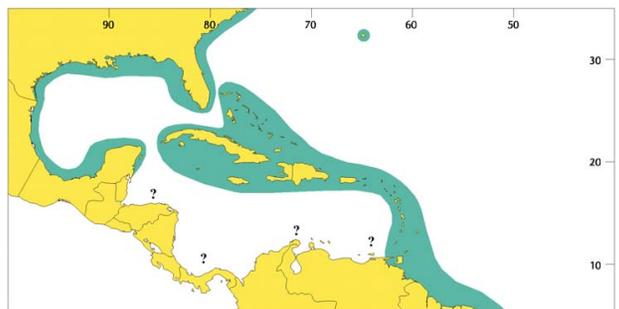


First dorsal fin higher than the second dorsal fin, base of first dorsal-fin anterior to pelvic-fin origins; both dorsal fins with rounded apices, deeply concave rear margins and acute rear corners; anal-fin origin about under mid-point of second dorsal-fin base; caudal fin rising only slightly above longitudinal axis of trunk, with a truncate tip and a well-marked subterminal notch, its ventral lobe small and rounded, but well defined; pectoral fins broad, their posterior margins nearly straight; pelvic-fin bases below interdorsal space. Caudal peduncle slightly compressed laterally, without keels or precaudal pits. **Dermal denticles on backs usually with a single cusp. Monospondyloous precaudal vertebral centra 34 to 42, precaudal centra 85 to 100. Colour:** back uniformly olive grey or slaty grey, the colour tone changing with the substrate; belly yellowish or whitish grey; posterior margin of first dorsal fin white in younger specimens.

Size: Maximum total length to 150 cm, common to 100 cm; size at birth between 34 and 39 cm; males maturing at about 82 cm, females at about 90 cm.

Habitat, biology, and fisheries: An active bottom shark inhabiting coastal waters, especially on muddy bottoms; rarely down to 150 m; occasionally found in fresh water but not ascending rivers very far above their mouths. Migrates north and south with the seasons in the northern part of its range. Viviparous (placental viviparous), with 4 to 20 young per litter. Feeds mainly on crustaceans (crabs, lobsters, shrimps); also, on a variety of small demersal and pelagic bony fish, king crabs, squid, bivalves, gastropods, polychaete worms, and occasionally garbage. Kept in aquaria for public viewing. Fished in coastal waters, an important fisheries catch off Cuba, Mexico, and northeastern Venezuela, but probably caught wherever it occurs. Separate statistics are not reported for this species which is apparently abundant in some localities. Caught mainly with bottom longlines; also with floating longlines, probably gill nets, and occasionally with bottom trawls. Marketed fresh and salted, not highly esteemed as a food-fish in some places.

Distribution: Western Atlantic; Canada south along the eastern coast of the USA to Florida and the Gulf Coast to Texas, Mexico, Bermuda, the Bahamas, Cuba, Jamaica, Puerto Rico and the Lesser Antilles to Venezuela, Suriname, French Guiana, Brazil, Uruguay, and Argentina; possibly absent from the Atlantic coast of Central America and northwestern South America. There are 2 allopatric subspecies, *M. canis canis* from continental waters from Canada to Argentina, and an insular form, *M. canis insularis*, from the islands of the Caribbean.

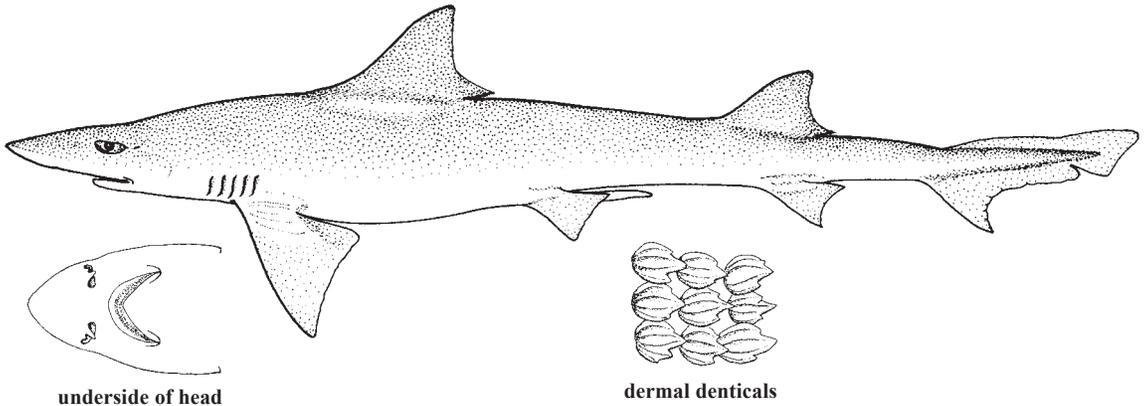


Mustelus higmani Springer and Lowe, 1963

CTJ

Frequent synonyms / misidentifications: None / *Mustelus minicanis*, Heemstra, 1997.

FAO names: **En** - Smalleye smooth-hound; **Fr** - Emissole tiyeux; **Sp** - Musola amarilla (Area 31: Mamón amarillo).

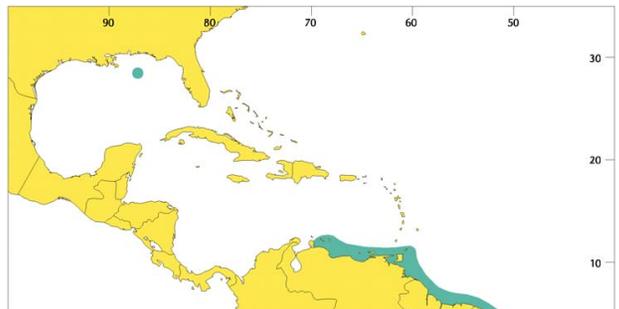


Diagnostic characters: A small shark (the smallest *Mustelus* species along with *M. minicanis*) with an elongate and slender body, moderately flat on ventral surface; a low, sharp-edged dermal ridge on midline of back, particularly conspicuous between the 2 dorsal fins. Head flattened above and ending in a thin-tipped snout; **snout moderately long, preoral length 6.9 to 9.6% of total length**; 5 gill slits, the fourth above pectoral-fin origin; **eyes small, eye length 2.2 to 3.4% of total length**; eyes with longitudinal external nictitating lower eyelids; spiracles small but prominent; space between nostrils broad, **internarial width 2.7 to 3.8% total length**; **mouth relatively broad, width 5.1 to 7.3% of total length**; **labial furrows about equal in length on both jaws, length of uppers 0.8 to 1.8% of total length and about as long as lower furrows**. **Teeth small, low, oval, arranged in several rows in a mosaic or pavement pattern, their cutting edges bluntly rounded, crenulated, and with low blunt cusps**. First dorsal fin higher than the second dorsal fin, base of first dorsal fin anterior to pelvic-fin origins; both fins with moderately pointed apices, deeply concave posterior margins and acute free rear tips; anal-fin origin about under midpoint of second dorsal-fin bases; caudal fin very low with a truncate tip and a well marked subterminal notch, its ventral lobe small and pointed; pectoral fins short and broad, their posterior margins slightly concave; pelvic-fin bases below interdorsal space. Caudal peduncle slightly compressed laterally, without keels or precaudal pits. **Dermal denticles of back mostly tricuspidate. Monospondylous precaudal vertebral centra 34 to 39, precaudal centra 80 to 90. Colour:** back and upper sides pale grey with golden to brassy reflections (some specimens have a more uniform bronze colour); belly whitish.

Size: Maximum total length to about 65 cm, common to 55 cm; size at birth between 21 and 24 cm; males maturing at about 43 cm and females about 48 cm.

Habitat, biology, and fisheries: An active bottom shark inhabiting coastal waters down to the edge of the continental shelf and the upper and middle slopes, especially on muddy bottoms; close inshore to about 900 m. Enters brackish estuaries and lagoons. Viviparous (placental viviparous), number of young 1 to 7 per litter. Feeds mainly on crustaceans (crabs, shrimps, stomatopods), also on cephalopods and fishes. Mainly caught on shrimp grounds off the Guyanas. Separate statistics are not reported for this species. Caught mainly with bottom longlines, beam trawls, and shrimp seines. Marketed fresh and salted in limited quantities.

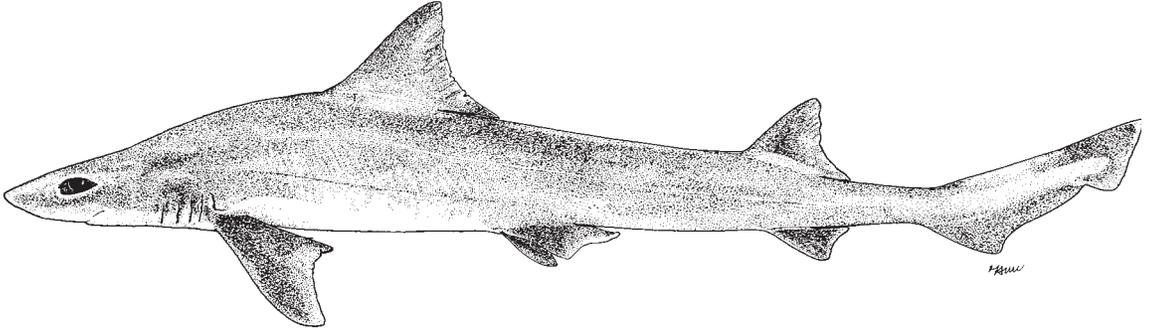
Distribution: Western Atlantic: northern Gulf of Mexico (USA), also Curaçao, Venezuela, Trinidad, Guyana, Suriname, French Guiana, and Brazil.



***Mustelus minicanis* Heemstra, 1997**

Frequent synonyms / misidentifications: None / *Mustelus canis* (Mitchell, 1815); *M. norrisi* Springer, 1940; *M. higmani* Springer and Lowe, 1963.

FAO names: En - Dwarf smooth-hound; Sp - Mamón enano.

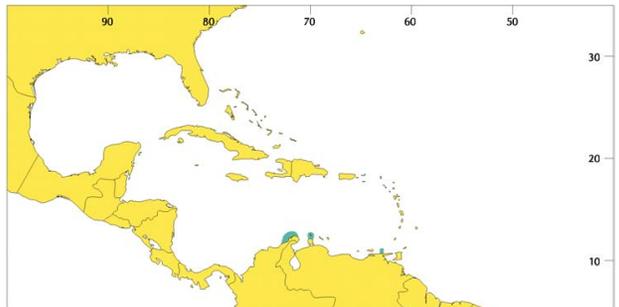


Diagnostic characters: A small shark with an elongate and slender body, moderately flat on ventral surface and with a low sharp-edged dermal ridge on midline of back, particularly conspicuous between the 2 dorsal fins. Head flattened above and ending in a thin-tipped snout; snout moderately long, **preoral length 6.1 to 7.3% of total length**; 5 gill slits, the fourth above pectoral-fin origin; **eyes large, length 3.2 to 4.3% of total length**; eyes oval, with longitudinal external nictitating lower eyelids; spiracles small but prominent; space between nostrils broad, **internarial width 2.7 to 3.1% total length**; **mouth relatively broad, width 5.4 to 6.9% of total length**; **small, low teeth arranged in several rows in a mosaic pattern, their cutting edges bluntly rounded with a low weak cusp and no cusplet**; labial furrows of upper jaw about as long as those of lower jaw, **length 1.3 to 1.7% of total length**. First dorsal fin higher than second dorsal fin, base of first dorsal fin anterior to pelvic-fin origins; both dorsal fins with narrowly rounded apices, deeply concave posterior margins and acute rear corners; anal-fin origin about under midpoint of second dorsal-fin base; caudal fin rising only slightly above longitudinal axis of trunk, with a truncate tip and a well marked subterminal notch, its ventral lobe poorly developed; pectoral fins moderately broad, their distal margins shallowly concave; pelvic-fin origin considerably closer to anal fin than to pectoral-fin origin. Caudal peduncle slightly compressed laterally, without keels or precaudal pits. **Dermal denticles on back primarily lanceolate but with some tricuspidate. Monospondylous precaudal vertebral centra 42 to 47, precaudal centra 85 to 100. Colour:** dorsal surface grey above, light below, juveniles usually with dusky spots on dorsal-fin apices and tip of caudal fin.

Size: Maximum size about 57 cm; size at birth about 21 to 22 cm; males maturing at about 47 cm and females adult at 57 cm.

Habitat, biology, and fisheries: An uncommon tropical bottom-dwelling shark, found at depths of 71 to 183 m. Biology poorly known. Viviparous (placental viviparous), young 5 per litter. Interest to fisheries minimal; possibly caught as bycatch in offshore trawl fisheries for shrimp and bony fishes.

Distribution: In the western north Atlantic off Colombia and Venezuela (Cape La Vela, Colombia, to Rio Caribe, Venezuela).

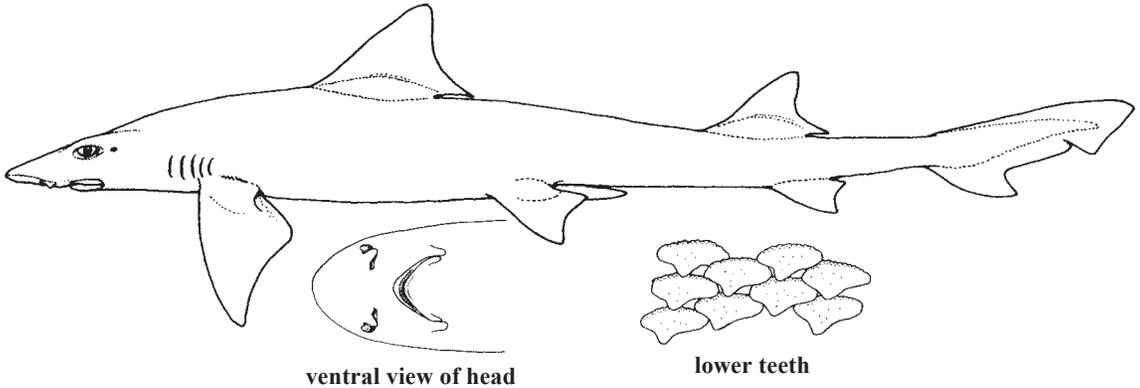


Mustelus norrisi Springer, 1939

MTR

Frequent synonyms / misidentifications: None / *Mustelus canis*, (Mitchell, 1815); *M. sinuamexicanus*, Heemstra, 1997.

FAO names: **En** - Narrowfin smooth-hound (AFS: Florida smoothhound); **Fr** - Emissole veuve; **Sp** - Musola viuda (Area 31: Mamón viudo).

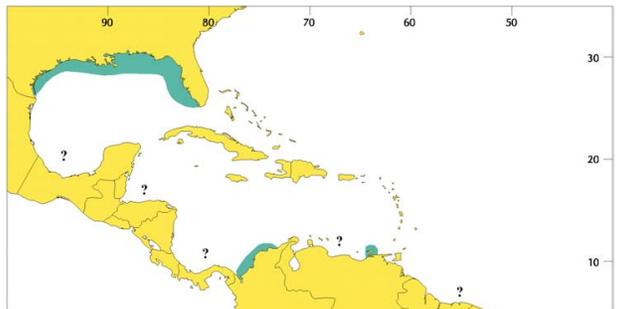


Diagnostic characters: A moderate-sized shark with an elongate and slender body, rather flat on ventral surface; a low sharp-edged dermal ridge on midline of back, particularly conspicuous between the 2 dorsal fins. Head flattened above and ending in a thin-tipped snout; snout moderately long, **preoral length 4.2 to 6.5% of total length**; 5 gill slits, the fourth above pectoral-fin origin; **eyes small, length 2.3 to 3.4% of total length**; eyes oval, with longitudinal external nictitating lower eyelids; spiracles small but prominent; **space between nostrils broad, internarial width 2.3 to 2.8% of total length**; **mouth relatively narrow, width 4.6 to 5.6% of total length**; **labial furrows of upper jaw as long as those of lower jaw, length 1.0 to 1.7% of total length**. **Teeth small, low, and oval, arranged in several rows in a mosaic or pavement pattern, their cutting edges with low blunt cusps.** First dorsal fin higher than second dorsal fin, base of first dorsal fin anterior to pelvic-fin origins; both dorsal fins with rounded apices, deeply concave posterior margins and acute free rear tips; anal-fin origin about under midpoint of second dorsal-fin base; caudal fin rising only slightly above longitudinal axis of trunk, with a truncate tip and a well-marked subterminal notch, its ventral lobe moderately large and falcate in adults; pectoral fins narrow, their posterior margins concave; pelvic-fin bases below interdorsal space. Caudal peduncle slightly compressed laterally, without keels or precaudal pits. **Dermal denticles on backs usually with a single cusp. Monospondylous precaudal vertebral centra 33 to 38, precaudal centra 87 to 100.** **Colour:** grey or greyish brown above, pale below, some individuals with light apex and posterior margin on first dorsal fin.

Size: Maximum total length about 98 cm; size at birth 29 to 30 cm; males maturing at 57 to 61 cm, females at about 65 cm.

Habitat, biology, and fisheries: A common tropical-subtropical bottom shark of the continental shelves, found on sandy and mud bottom from close inshore to at least 84 m depth, but with most records shallower than 55 m. Migratory in the Gulf of Mexico, moving inshore in water shallower than 55 m in the winter months and apparently retreating into deeper water in other seasons. Viviparous (placental viviparous), with number of young 7 to 14 per litter. Eats mostly crabs and shrimp, but also small bony fishes. Probably regularly taken within its range, but details of commercial fisheries are lacking.

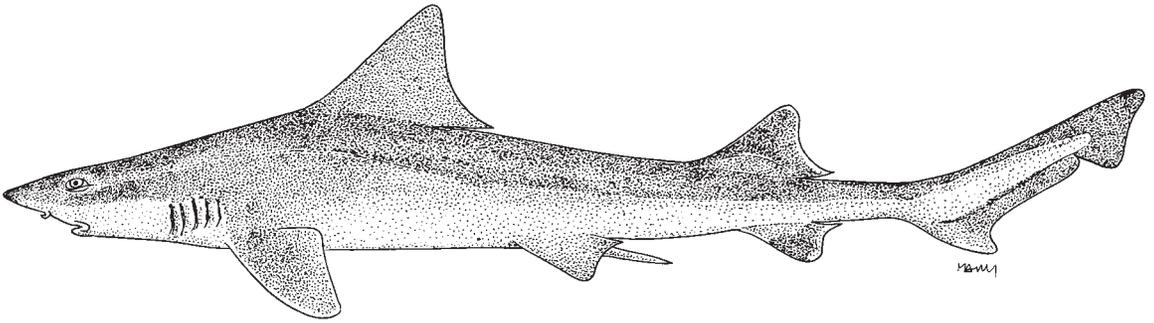
Distribution: Western Atlantic: Gulf of Mexico coast of USA (west coast of Florida, Alabama, Texas), southern Caribbean coast of Colombia and Venezuela, and southern Brazil (Recife, Vitoria and Cananeia).



Mustelus sinuamexicanus Heemstra, 1997

Frequent synonyms / misidentifications: None / *Mustelus canis* (Mitchell, 1815); *M. norrisi* Springer, 1939.

FAO names: En - Gulf smooth-hound; Sp - Mamón del Golfo.

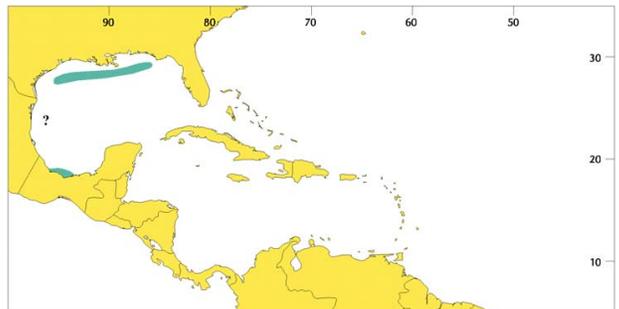


Diagnostic characters: A moderate-sized shark with an elongate and slender body, moderately flat on ventral surface; a low sharp-edged dermal ridge on midline of back, particularly conspicuous between the 2 dorsal fins. Head flattened above and ending in a thin-tipped snout; **snout moderately long, preoral length 4.8 to 6.3% of total length**; 5 gill slits, the fourth above pectoral-fin origin; **eye moderately large, length 1.9 to 3.1% of total length**; eyes oval, with longitudinal external nictitating lower eyelids; spiracles small but prominent; **space between nostrils broad, internarial width 2.6 to 3.3% total length**; **mouth relatively broad, width 4.7 to 6.1% of total length**; **labial furrows of upper jaw longer than those of lower jaw, length of upper labial furrows 1.9 to 2.5% of total length**. **Teeth, small, low, arranged in several rows in a mosaic or pavement pattern, their cutting edges bluntly rounded with a relatively strong low cusp and weak cusplet.** First dorsal fin higher than second dorsal fin, base of first dorsal fin anterior to pelvic-fin origins; both dorsal fins with rounded apices, deeply concave posterior margins and acute free rear tips; pectoral fins broad, their posterior margins nearly straight; pelvic-fin bases below interdorsal space; anal-fin origin about under midpoint of second dorsal-fin base; caudal fin rising only slightly above longitudinal axis of trunk, with a truncate tip and a well marked subterminal notch, its ventral lobe small and rounded, but well developed. Caudal peduncle slightly compressed laterally, without keels or precaudal pits. **Dermal denticles on back primarily tricuspidate. Monospondylous precaudal vertebral centra 26 to 29, precaudal centra 65 to 72. Colour:** dorsal surface grey or grey-brown above, light below, juveniles usually with dusky spots on dorsal-fin apices and tip of caudal fin.

Size: Maximum total length to about 140 cm; size at birth about 39 to 43 cm; males maturing at about 80 cm, size at maturity uncertain for females but mature at 118 cm.

Habitat, biology, and fisheries: Offshore continental shelf and uppermost slope at depths of 36 to 229 m, with most records between 42 and 91 m. This species does not occur inshore in shallow water. Biology little-known, viviparous (placental viviparous), with litter of 8 young. Probably a bycatch of offshore line and trawl fisheries for sharks, bony fishes, and crustaceans, but utilization uncertain.

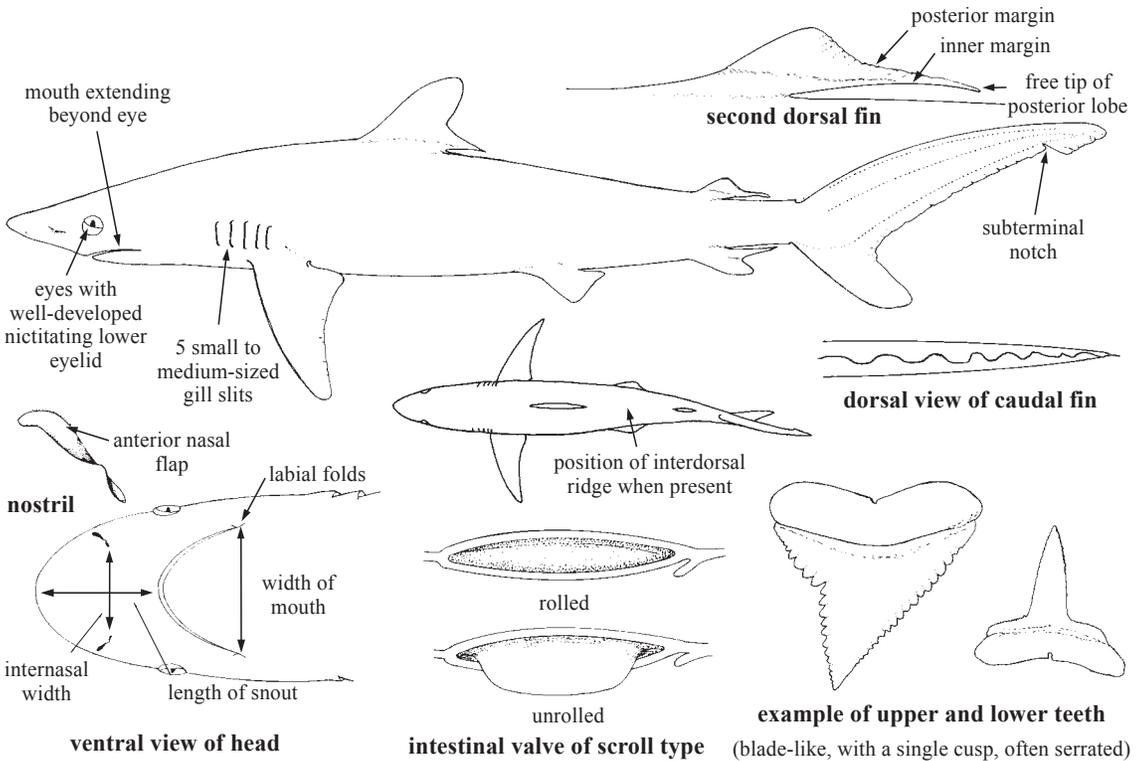
Distribution: Western North Atlantic: Gulf of Mexico coast of the USA and Mexico (Panama City, Florida, Alabama, Louisiana, Mississippi, and Texas, USA, also Bay of Campeche, Mexico).



CARCHARHINIDAE

Requiem sharks (ground sharks, blue sharks, sharpnose sharks)

D **Diagnostic characters:** Small to large sharks. Body cylindrical or slightly compressed, not depressed and without lateral ridges; precaudal tail much shorter than trunk. Head not expanded laterally, conical to moderately depressed; **eyes on sides of head, with a well-developed nictitating lower eyelid**; snout short to moderately long, conical and slightly pointed to depressed and broadly rounded, usually not blade-like (except *Isogomphodon*) and without lateral teeth and barbels; nostrils well separated from mouth, nostrils without barbels, nasoral grooves, or circumnasal grooves; mouth usually large, arched and elongated, and **extending well behind eyes**; labial furrows usually present on both jaws but generally greatly reduced, confined to mouth corners, and barely visible when mouth is closed (*Galeocerdo* and *Rhizoprionodon* species in Area 31 have well-developed labial furrows that are visible when mouth is closed); upper labial furrows usually not reaching front of mouth (except in *Galeocerdo*); **teeth small to large, blade-like**, with a single cusp and with cusplets variably developed; **anterior teeth in upper jaw smaller than lateral teeth**; **upper anterior and lateral teeth not separated by a gap with smaller intermediate teeth on each side**; 5 small to medium-sized gill slits present, the last 1 to 3 over or behind pectoral-fin origins, their upper ends not expanded onto dorsal surface of head; no gill sieves and usually no gill rakers on internal gill slits (short dermal gill rakers present in *Prionace*); spiracles usually absent (but always present in *Galeocerdo*). Two dorsal fins, without spines, the **first dorsal fin** moderately large, high and angular or subangular, its base much shorter than the caudal fin and **located over the interspace between the pectoral and pelvic-fin bases and entirely anterior to origins of pelvic fins** (free rear tip of first dorsal fin may reach or extend posterior to pelvic origins in *Negaprion* and *Rhizoprionodon*); second dorsal fin varying from less than 0.2 of the height of the first dorsal fin to almost as high as it (*Negaprion*); anal fin present and moderately large, with its origin varying from somewhat anterior to the second dorsal-fin origin to about under its insertion; **caudal fin strongly asymmetrical**, much less than half of total length, **with a rippled or undulated dorsal margin**, a well-marked subterminal notch, and **a short but well-defined ventral caudal lobe**; vertebral axis of caudal fin raised above body axis. Caudal peduncle not strongly depressed dorsoventrally or widely expanded laterally, usually without longitudinal keels but with weak keels present in 2 genera (*Prionace* and *Galeocerdo*); **precaudal pits present and well developed**. **Intestinal valve of scroll type**. **Colour:** brown, grey, yellowish, or bluish above, white to cream or yellowish below, some species with prominent dark or light markings on fins and a dark line on flanks; body usually without a prominent colour pattern (except for *Galeocerdo*).



Habitat, biology, and fisheries: The Carcharhinidae or requiem sharks are one of the largest families of non-batoid sharks and are the dominant sharks on the continental and insular shelves in warm-temperate and tropical waters, and generally have high diversity and abundance as well as high biomass in these waters. Small to very large species often occur close inshore in waters less than 100 m deep, but most large requiem sharks are more abundant well offshore on the outer shelves, but still occur near or over the continental and insular shelves. A few species, including the blue, silky, and oceanic whitetip sharks are oceanic, while others, including the night shark (*Carcharhinus signatus*), are semi-oceanic in deep water (183 to 366 m) off the continental slopes. Several very large species, including bull, lemon, and tiger sharks are common close inshore in bays, off beaches, and on rocky and coral reefs. Several inshore requiem sharks enter enclosed estuaries or river mouths and may occur in brackish or fresh water; in Area 31 the bull shark (*Carcharhinus leucas*) penetrates far up rivers to the fall lines (or to the nearest dams blocking rivers) and may be found in fresh-water lakes including Lake Nicaragua. Most requiem sharks are found from the surface and the intertidal to the lower shelves and the open ocean down to 200 m, but the bignose shark (*Carcharhinus altimus*) is unusual in extending its range to near the bottom on the upper continental and insular slopes between 200 and 440 m.

Requiem sharks are active, strong swimmers, occurring singly or in small to large schools or aggregations. Some species may be more or less continually active, while others can rest motionless on the bottom for extended periods. Many are more active at night or at dawn and dusk than daytime. Except for the possibly ovoviviparous (aplacental viviparous) or semiplacental tiger shark (*Galeocerdo cuvier*), all species are viviparous (placental viviparous) with a yolk-sac placenta, and have litters of young from 1 or 2 to 135. All are capable predators, feeding heavily on a wide variety of bony fishes, other sharks (including batoids), squid, octopi, cuttlefishes, crabs, lobsters, and shrimp but also birds, turtles, sea snakes, marine mammals, gastropods, bivalves, and carrion.

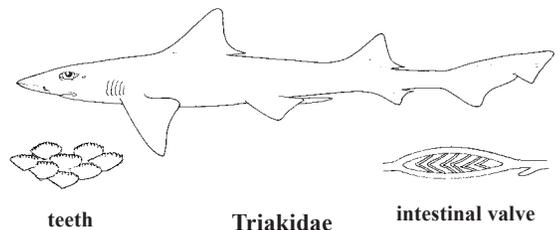
The Carcharhinidae is by far the most important shark family for fisheries in the tropics and in warm-temperate waters, and various species figure prominently in catches within the area. Requiem sharks are utilized primarily for human food, and marketed fresh, dried-salted, and frozen; but requiem sharks are also utilized for the preparation of various subproducts, including oil and Vitamin A from the liver, gelatine, fish meal, cartilage for medicinals, leather, and sandpaper from the skin, and fins for the oriental soup market. Several species are the subjects of recreational or sports fisheries including international big-game angling. Separate statistics by species are mostly not available and several of the Western Central Atlantic carcharhinids are often misidentified. The catch of carcharhinid sharks (as 'requiem sharks') reported from Area 31 in between 1995 and 1999 ranged from 6 278 t to 12 215 t.

Many carcharhinids are negatively affected by fisheries and habitat degradation in the area and worldwide. Larger species generally have long maturation times and relatively low fecundity, and are particularly vulnerable to overfishing at all growth stages through targeted and bycatch fisheries. They are also threatened by degradation of inshore nursery areas through development and pollution. Several species of requiem sharks are now protected in USA waters following dramatic declines in fisheries catches, and several species have been placed on the latest (Year 2000) IUCN (World Conservation Union) Red List of threatened organisms by the IUCN Shark Specialist Group.

The larger carcharhinids make up an important fraction of shark species known to have bitten people, although shark incidents are relatively few each year. Ironically, requiem sharks are also the most important family for ecotouristic shark diving worldwide. Several species in Area 31, including the bull, silky, oceanic whitetip, tiger, lemon, blacktip, Caribbean reef sharks, and even Caribbean sharpnose sharks, are important subjects of observational diving tours in the area, particularly in the Bahamas but also off Turks and Caicos and the USA (Florida). The commercial value of these sharks alive in places such as the Bahamas may be far greater than their value dead as fisheries products. Several species of requiem sharks that occur in Area 31 are displayed for public viewing in large aquaria and oceanaria.

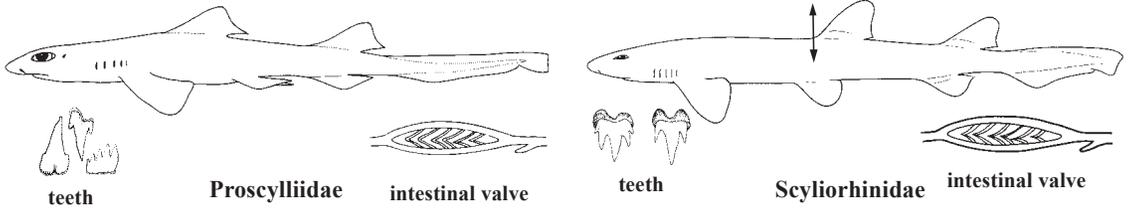
Similar families occurring in the area

Triakidae: species in the area with eyes dorsolateral on head; numerous small, blunt or single-cusped crushing teeth in several functional rows along jaws that form a mosaic pattern or pavement; precaudal pits absent; dorsal caudal margin not undulated; intestine with a corkscrew or auger-like spiral valve.



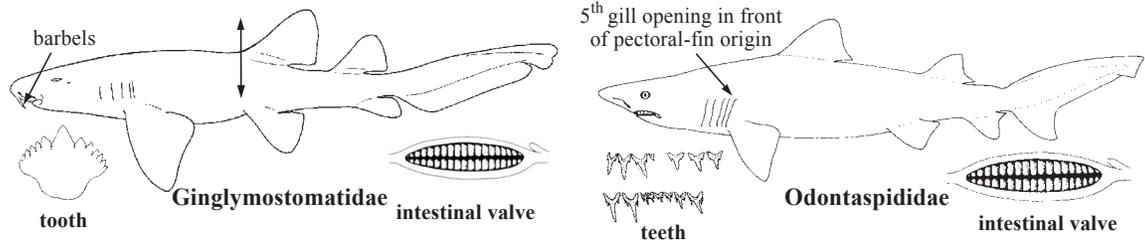
Proscylliidae: the single species (*Eridacnis barbouri*) in the area with eyes dorsolateral on head; teeth small and with 1 slender cusp and mostly 2 or more minor cusps or cusplets, teeth comb-like at mouth angles; precaudal pits absent; dorsal caudal margin not undulated; intestine with a spiral valve.

Scyliorhinidae: first dorsal-fin base over or posterior to pelvic-fin bases; teeth usually comb-like at mouth angles; precaudal pits absent; dorsal caudal margin not undulated; intestine with a spiral or spiral-ring valve.



Ginglymostomatidae: origin of first dorsal-fin base over or partly posterior to pelvic-fin bases; nostrils connected with mouth by deep nasoral grooves; anterior margins of nostrils with long, cylindrical barbels; eyes well behind mouth.

Odontaspidae: fifth gill opening in front of pectoral-fin origin; eyes without nictitating eyelids; largest teeth in front part of jaw on either side of symphysis; large upper anterior teeth separated from smaller lateral teeth at sides by a gap and 1 to 5 rows of intermediate teeth.



Other shark families: either caudal fin very long (Alopiidae), or head with hammer-like lateral projections (Sphyrnidae), or caudal fin lunate and with a strong caudal keel (Cetorhinidae, Lamnidae, Rhinodontidae), or a single dorsal fin and 6 or 7 gill slits (Chlamydoselachidae, Hexanchidae), or anal fin absent (Echinorhinidae, Squalidae, Centrophoridae, Etmopteridae, Somniosidae, Oxynotidae, Dalatiidae, Pristiophoridae, and Squatinidae).

Key to the species of Carcharhinidae occurring in the area

- 1a. Upper labial furrows very long, extending to eyes; spiracles present and relatively large; low but conspicuous lateral keels present on caudal peduncle (Fig. 1); narrow vertical dark bars present on back, bold in young but obscure or absent in adults *Galeocerdo cuvier*
- 1b. Upper labial furrows long to very short, not extending to eyes; spiracles usually absent; lateral keels usually absent (except for weak keels in *Prionace glauca*) (Fig. 2) → 2

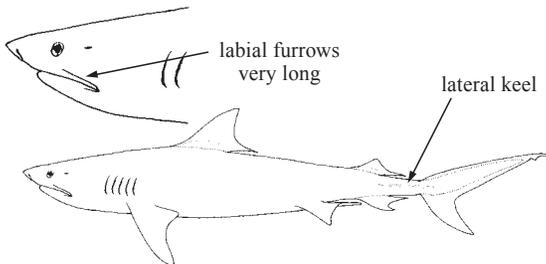


Fig. 1 *Galeocerdo cuvier*

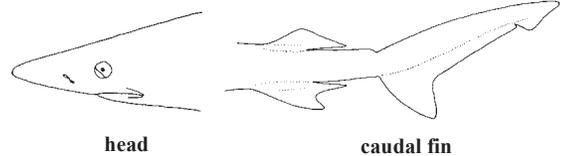


Fig. 2 other species

- 2a. Second dorsal fin nearly as large as first, second dorsal-fin height 0.8 to 1.0 times first dorsal-fin height (Fig. 3) *Negaprion brevirostris*
- 2b. Second dorsal fin considerably smaller than first, height 0.2 to 0.5 times first dorsal-fin height → 3

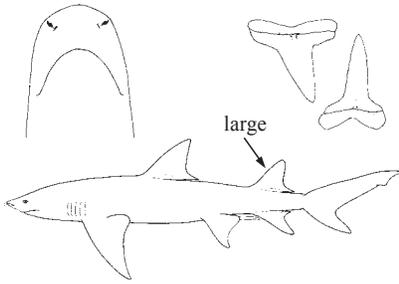


Fig. 3 *Negaprion*

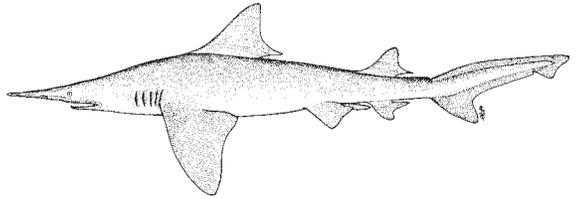


Fig. 4 *Isogomphodon oxyrinchus*

- 3a. Snout very long, narrow and triangular in dorsal or ventral view; teeth very numerous, over 45 rows in each jaw (Fig. 4) *Isogomphodon oxyrinchus*
- 3b. Snout short to very long, thick and broadly rounded to narrowly rounded or pointed in dorsal or ventral view, not triangular; tooth rows always less than 40 and usually less than 35 in each jaw → 4

- 4a. Midlength of first dorsal-fin base considerably closer to pelvic-fin origins than to pectoral-fin insertions; inner gill openings with short gill rakers; back dark blue, fading to purple-black after death (Fig. 5) *Prionace glauca*
- 4b. Midlength of first dorsal-fin base usually closer to pectoral-fin insertions than to pelvic-fin origins, sometimes equidistant between pectoral and pelvic-fin bases; no gill rakers; back grey, blue-grey, or brownish → 5

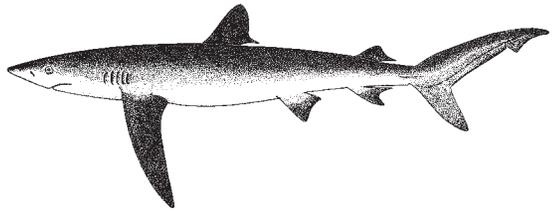


Fig. 5 *Prionace glauca*

- 5a. Upper labial folds long and prominent, horizontal on upper lip; anal-fin base expanded anteriorly by a very long pair of preanal ridges (Fig. 6) (*Rhizoprionodon*) → 6
- 5b. Upper labial folds short to rudimentary, almost vertical at mouth corners; preanal ridges very short or absent (Fig. 7) (*Carcharhinus*) → 8

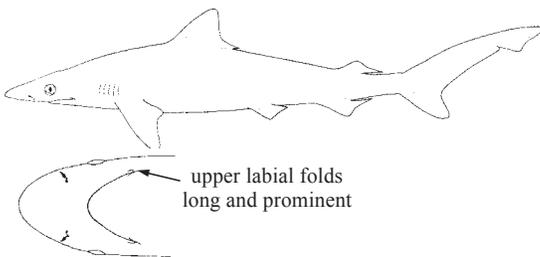


Fig. 6 *Rhizoprionodon*

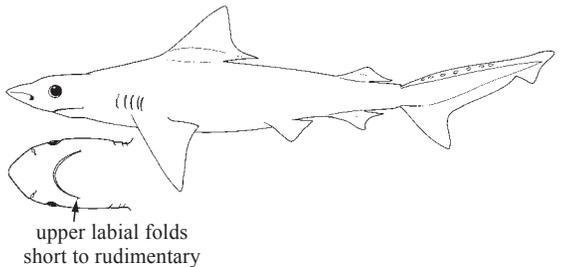


Fig. 7 *Carcharhinus*

- 6a. Smaller sharks, attaining 64 cm total length or less; appressed pectoral-fin apex falling anterior to first dorsal-fin midbase; precaudal vertebral centra 79 to 90 and mostly above 84, outnumbering caudal centra by 5 to 20 centra; transition between monospondylous and diplospondylous vertebral centra with last monospondylous centrum only slightly longer and larger than first diplospondylous centrum (Fig. 8) *Rhizoprionodon lalandii*
- 6b. Larger sharks, reaching over 100 cm total length; appressed pectoral-fin apex falling opposite or behind first dorsal-fin midbase; precaudal vertebral centra 55 to 79 and equal to or less in number than caudal centra; transition between monospondylous and diplospondylous vertebral centra prominent, with last monospondylous centrum much longer and larger than first diplospondylous centrum → 7

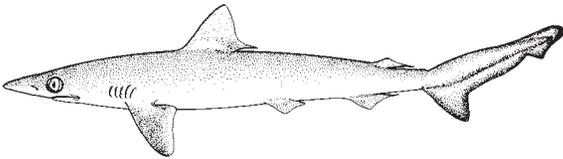


Fig. 8 *Rhizoprionodon lalandii*

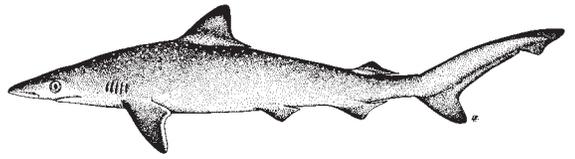


Fig. 9 *Rhizoprionodon terraenovae*

- 7a. Precaudal vertebrae fewer, 58 to 66, mostly below 66; body usually with white spots (Fig. 9) *Rhizoprionodon terraenovae*
- 7b. Precaudal vertebrae more numerous, 66 to 75, mostly above 66; body without white spots (Fig. 10) *Rhizoprionodon porosus*

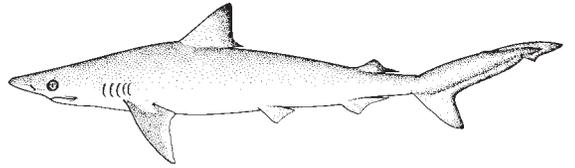


Fig. 10 *Rhizoprionodon porosus*

- 8a. Pectoral and first dorsal fins very broad distally and broadly rounded apically, only slightly tapering toward their apices; most fin tips mottled white in adults, also black-tipped and with black dorsal saddle-marks on the caudal peduncle in juveniles (Fig. 11) *Carcharhinus longimanus*
- 8b. Pectoral and first dorsal fins tapering distally and usually pointed or narrowly rounded; fins not mottled white, often black tipped but without black saddles on the caudal peduncle → 9

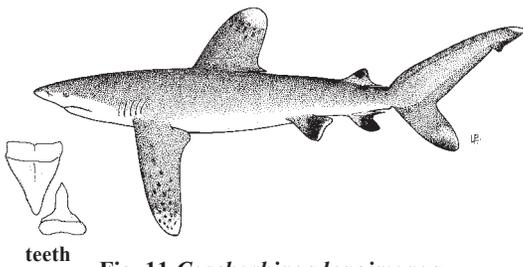


Fig. 11 *Carcharhinus longimanus*

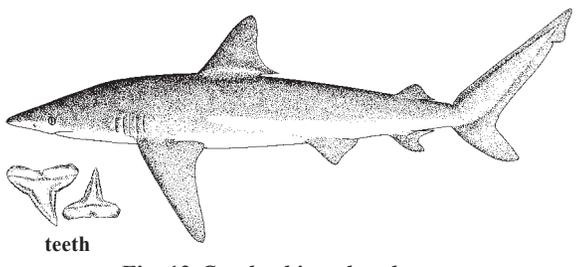
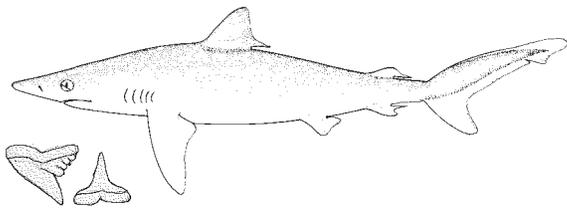


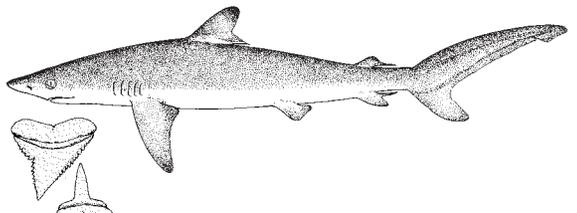
Fig. 12 *Carcharhinus brachyurus*

- 9a. Upper anterolateral teeth with bent, hooked, narrow cusps (Fig. 12) *Carcharhinus brachyurus*
- 9b. Upper anterolateral teeth variably shaped, and broad or narrow, but with cusps nearly straight → 10
- 10a. Interdorsal ridge present → 11
- 10b. Interdorsal ridge absent → 17

- 11a. Snout very long, narrow and pointed, preoral length 1.7 to 1.9 times internarial width; cusps of upper anterolateral teeth smooth-edged or weakly serrated (Fig. 13) . *Carcharhinus signatus*
- 11b. Snout shorter, narrowly to broadly rounded, preoral length less than 1.6 times internarial width; cusps of upper anterolateral teeth regularly serrated → 12



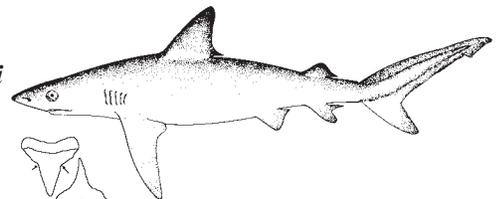
teeth Fig. 13 *Carcharhinus signatus*



teeth Fig. 14 *Carcharhinus falciformis*

- 12a. Very coarse serrations or small cusplets on feet of upper anterolateral teeth; first dorsal-fin origin well behind pectoral-fin free rear tips; inner margin of second dorsal fin very long, usually over twice fin height but occasionally down to 1.6 times fin height (Fig. 14) *Carcharhinus falciformis*
- 12b. Serrations on feet of upper anterolateral teeth small and fine; first dorsal-fin origin over or anterior to pectoral-fin free rear tips; inner margin of second dorsal fin shorter and generally less than twice fin height, but up to 2.1 times it in *Carcharhinus obscurus* → 13

- 13a. Upper anterolateral teeth with narrow cusps; anteroposterior teeth in 12 to 13/11 to 12 rows on each side (Fig. 15) . *Carcharhinus perezii*
- 13b. Upper anterolateral teeth with broad-based cusps, triangular in form; anteroposterior teeth in 13 to 16/12 to 16 rows on each side but usually at least 14/13 rows → 14



teeth Fig. 15 *Carcharhinus perezii*

- 14a. First dorsal-fin origin in front or over pectoral-fin insertions or at least nearer to the pectoral-fin insertions than to pectoral-fin free rear tips → 15
- 14b. First dorsal-fin origin opposite or somewhat in front of pectoral-fin rear tips but closer to them than pectoral-fin insertions → 16

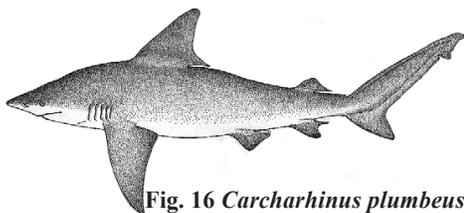
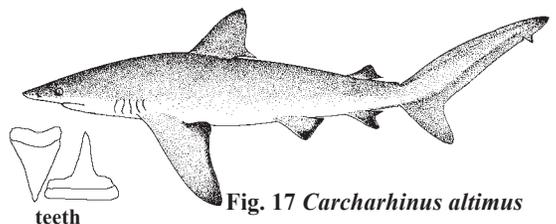


Fig. 16 *Carcharhinus plumbeus*



teeth Fig. 17 *Carcharhinus altimus*

- 15a. Anterior nasal flaps usually low and inconspicuous; distance from nostrils to mouth more than 2.4 times in mouth width; upper anterolateral teeth moderately high and broad; upper anterolateral teeth in 13 to 15 rows on each side but usually in 14 rows; first dorsal fin very high, with height about half predorsal space from snout tip to first dorsal origin in adults; interdorsal ridge low (Fig. 16) *Carcharhinus plumbeus*
- 15b. Anterior nasal flaps usually high and triangular; distance from nostrils to mouth less than 2.4 times in mouth width; upper anterolateral teeth very high and narrow; upper anterolateral teeth in 14 to 16 rows on each side (usually in 15 rows); first dorsal fin lower, with height much less than half predorsal space in adults; interdorsal ridge high (Fig. 17) *Carcharhinus altimus*

16a. Upper anterolateral teeth relatively high and narrow; pectoral fins nearly straight; first dorsal fin higher and with a nearly straight anterior margin, height 8.3 to 11.9% of total length; second dorsal fin higher and less elongated, with height 2.1 to 3.3% of total length and inner margin length 1.3 to 1.7 times its height; precaudal vertebral centra 103 to 109 (Fig. 18)

..... *Carcharhinus galapagensis*

16b. Upper anterolateral teeth relatively low and broad; pectoral fins more falcate; first dorsal fin lower and with a more rounded anterior margin, height 6.0 to 9.1% of total length; second dorsal fin lower and more attenuated, with height 1.5 to 2.3% of total length and inner margin length 1.6 to 2.1 times the height; precaudal vertebral centra 89 to 95 (Fig. 19). . . *Carcharhinus obscurus*

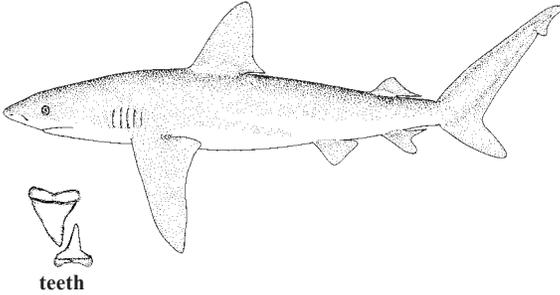


Fig. 18 *Carcharhinus galapagensis*

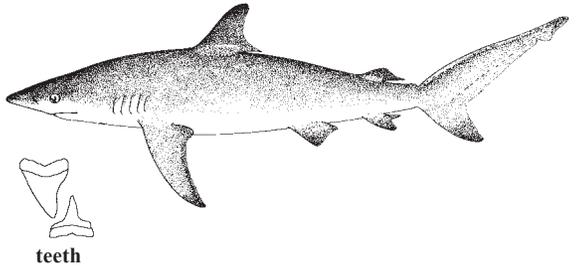


Fig. 19 *Carcharhinus obscurus*

17a. Snout very short and broadly rounded, preoral length 0.7 to 1.0 times internarial width; upper anterolateral teeth with very broad, triangular cusps and straight to concave distal margins; lower anterolateral teeth with strongly arched roots (Fig. 20) *Carcharhinus leucas*

17b. Snout longer and parabolic or wedge-shaped to pointed, preoral length 1.1 to 1.8 times internarial width; upper anterolateral teeth with narrow cusps and strongly notched distal margins; lower anterolateral teeth with nearly transverse roots → 18

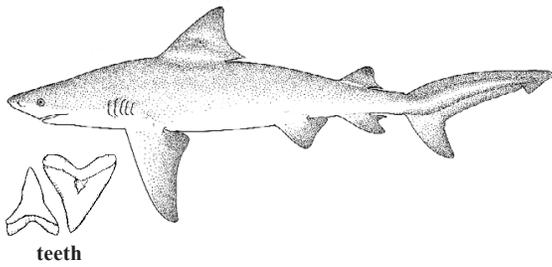


Fig. 20 *Carcharhinus leucas*

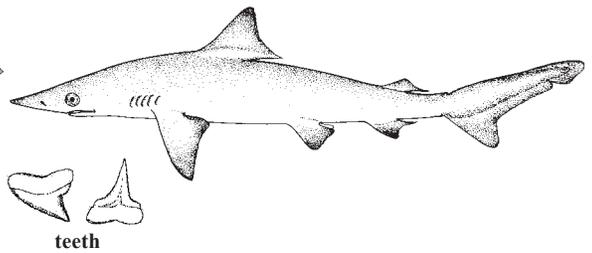


Fig. 21 *Carcharhinus porosus*

18a. Origin of second dorsal fin well behind anal-fin origin, about opposite its midbase (Fig. 21)

..... *Carcharhinus porosus*

18b. Origin of second dorsal fin about over anal-fin origin. → 19

19a. Only 12 or 13 rows of upper anteroposterior teeth; upper anterolateral teeth with oblique cusps; lower anterolateral teeth with mostly oblique cusps; gill slits shorter, third gill slit 2.4 to 3.2% of total length; snout tip with a dusky or black blotch, fins not black-tipped (Fig. 22) *Carcharhinus acronotus*

19b. Twelve to 18 rows of upper anteroposterior teeth, but usually in 14 or more rows; upper anterolateral teeth with erect or nearly erect cusps; lower anterolateral teeth with mostly erect cusps; gill slits longer, third gill slit 3.8 to 6.5% of total length; snout tip without a dark blotch, fins often black-tipped. → 20

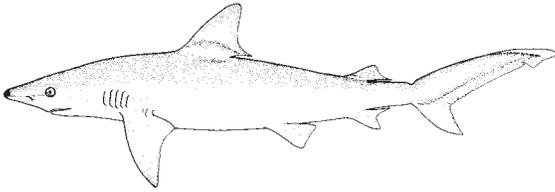


Fig. 22 *Carcharhinus acronotus*

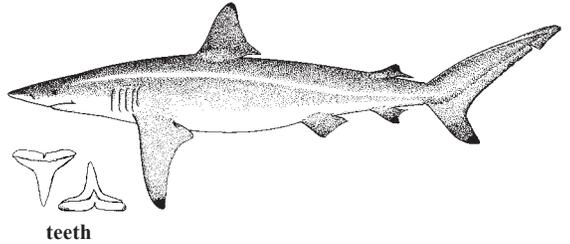


Fig. 23 *Carcharhinus brevipinna*

20a. Upper labial furrows noticeably elongated and prominent; 15 to 18 rows of upper anteroposterior teeth on each side, usually at least 16 rows; first dorsal fin lower, its height about 6.0 to 8.8% of total length and less than 0.45 times the interdorsal space; first dorsal-fin origin over or just behind pectoral-fin free rear tips (Fig. 23) *Carcharhinus brevipinna*

20b. Upper labial furrows shorter and less noticeable; 12 to 16 rows of anteroposterior teeth on each side, usually 15 or fewer; first dorsal fin higher, its height 7.5 to 12.4% of total length and at least 0.45 times the interdorsal space; first dorsal-fin origin over or just behind pectoral-fin insertions → 21

21a. Teeth with smooth edges in both jaws, except for weakly and irregularly serrated upper teeth of adults; gill slits longer, third gill slit 4.8 to 6.5% of total length; no black tips on fins (Fig. 24) *Carcharhinus isodon*

21b. Teeth with serrated edges in both jaws; gill slits shorter, third gill slit 3.8 to 4.9% of total length; fins usually black-tipped (Fig. 25) *Carcharhinus limbatus*

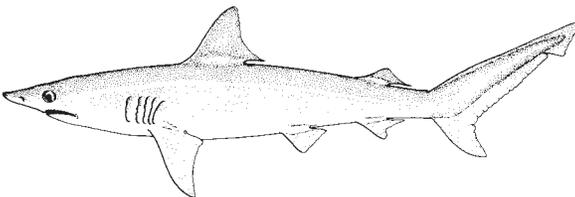


Fig. 24 *Carcharhinus isodon*

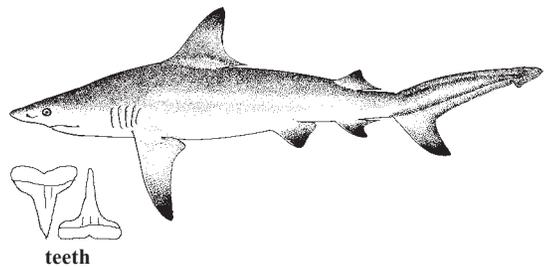


Fig. 25 *Carcharhinus limbatus*

List of species occurring in the area

The symbol  is given when species accounts are included.

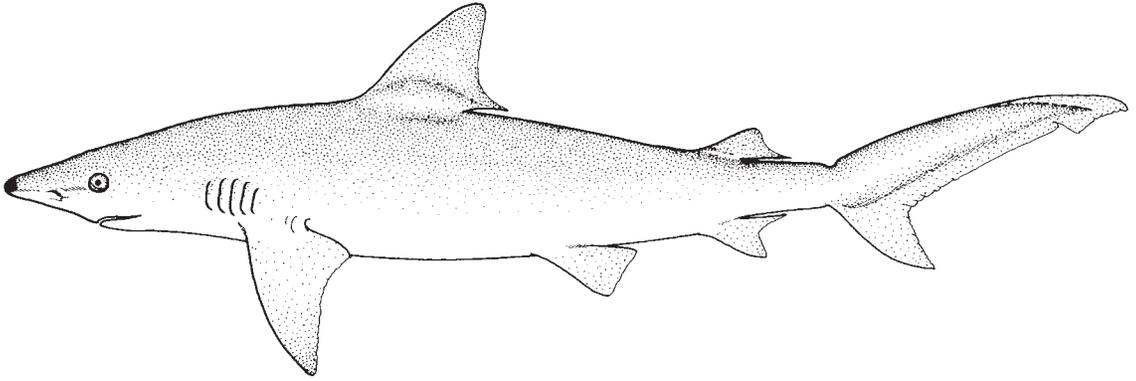
-  *Carcharhinus acronotus* (Poey, 1860).
-  *Carcharhinus altimus* (Springer, 1950).
-  *Carcharhinus brachyurus* (Günther, 1870).
-  *Carcharhinus brevipinna* (Müller and Henle, 1839).
-  *Carcharhinus falciformis* (Müller and Henle, 1839).
-  *Carcharhinus galapagensis* (Snodgrass and Heller, 1905).
-  *Carcharhinus isodon* (Müller and Henle, 1839).
-  *Carcharhinus leucas* (Müller and Henle, 1839).
-  *Carcharhinus limbatus* (Müller and Henle, 1839).
-  *Carcharhinus longimanus* (Poey, 1861).
-  *Carcharhinus obscurus* (Lesueur, 1818).
-  *Carcharhinus perezii* (Poey, 1876).
-  *Carcharhinus plumbeus* (Nardo, 1827).
-  *Carcharhinus porosus* (Ranzani, 1840).
-  *Carcharhinus signatus* (Poey, 1868).
-  *Galeocerdo cuvier* (Péron and Lesueur, in Lesueur, 1822).
-  *Isogomphodon oxyrhynchus* (Müller and Henle, 1839).
-  *Negaprion brevirostris* (Poey, 1868).
-  *Prionace glauca* (Linnaeus, 1758).
-  *Rhizoprionodon lalandii* (Müller and Henle, 1839).
-  *Rhizoprionodon porosus* (Poey, 1861).
-  *Rhizoprionodon terraenovae* (Richardson, 1836).

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Carcharhinus acronotus (Poey, 1861)

CCN

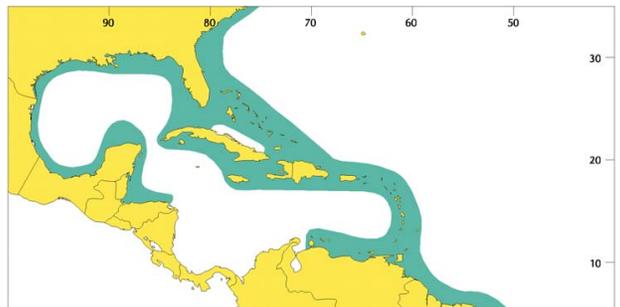
Frequent synonyms / misidentifications: None / None.**FAO names:** **En** - Blacknose shark; **Fr** - Requin nez noir; **Sp** - Tiburón amarillo.

Diagnostic characters: Body moderately stout. Eyes moderately large, internal nictitating lower eyelids present. **Snout relatively long, preoral length 1.4 to 1.7 times internarial width, thin-tipped but rounded;** anterior nasal flaps in the form of low, narrowly triangular lobes; upper labial furrows very short. **Teeth in upper jaw with narrow, mostly oblique cusps, their bases coarsely serrated and outer margins deeply notched; teeth in lower jaw with broad bases and slender, very low, oblique cusps; anteroposterior tooth row counts 12 to 13/11 to 12 on each side, total tooth row counts 25 to 28/23 to 25.** Spiracles absent; gill slits short, height of third gill slits about 2.4 to 3.2% of total length; gill arches without papillae. First dorsal fin moderately high, height 7.8 to 9.8% of total length; first dorsal fin with a broadly convex anterior margin and a pointed apex in adults (rounded in young), an origin above or slightly behind inner margins of pectoral fins, and the midlength of its base closer to the pectoral-fin insertions than to the pelvic-fin origins; second dorsal fin much smaller than first, height 2.6 to 2.9% of total length; second dorsal fin with a slightly concave posterior margin, an origin opposite origin of anal fin, a slightly attenuated free rear tip, and an inner margin less than twice the fin height; anal fin with a deeply notched posterior margin and without long preanal ridges; pectoral fins small, narrow, and semifalcate. **No interdorsal ridge between dorsal fins;** no keels on caudal peduncle. Precaudal vertebral centra 80 to 88, total vertebral centra 161 to 181. **Colour:** grey or yellowish brown on back (some individuals are completely brown), lower sides and belly paler to whitish; **a dusky blotch on tip of snout** (darker in young individuals).

Size: Maximum total length possibly 200 cm but most less than 164 cm; matures at about 100 cm; size at birth about 50 cm; males maturing between 97 and 106 cm, females at about 103 cm.

Habitat, biology, and fisheries: An abundant inshore shark in the area, particularly off the southeastern Atlantic and Gulf coast of USA and the northeastern coast of Venezuela. Inhabits coastal waters, mainly over sandy or coralline bottoms at depths of 18 to 64 m. Number of young 3 to 6 per litter. Feeds on small fishes. Kept in large aquaria for public viewing in the area. Fished heavily in USA waters, also off Venezuela, but also caught incidentally throughout its range. Separate statistics not reported. Caught inshore with gill nets and longlines. Marketed fresh and salted. No limits to catches at present, considered vulnerable to overfishing because of low fecundity and uncontrolled fisheries.

Distribution: Western Atlantic: USA (North Carolina to Florida, Gulf of Mexico off Florida, Louisiana, and probably Mississippi and Texas), Mexico (Gulf and Caribbean coasts), Bahamas, Cuba, Virgin Islands, Puerto Rico, Antilles, Trinidad and Tobago, Belize, Honduras, Guyana, Venezuela, and the north and south coasts of Brazil.



Carcharhinus altimus (Springer, 1950)

CCA

Frequent synonyms / misidentifications: None / *Carcharhinus galapagensis* (Snodgrass and Heller, 1905), *Carcharhinus obscurus* (Lesueur, 1818), *Carcharhinus plumbeus* (Nardo, 1827).

FAO names: En - Bignose shark; Fr - Requin babosse; Sp - Tiburón baboso.

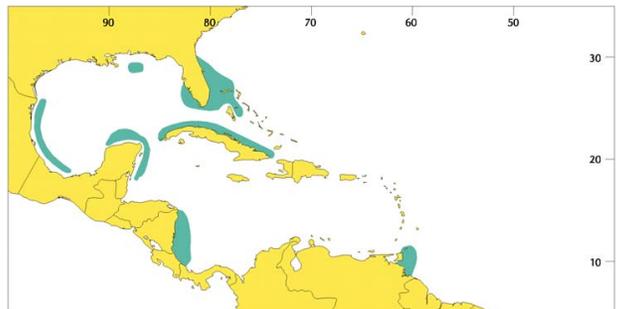
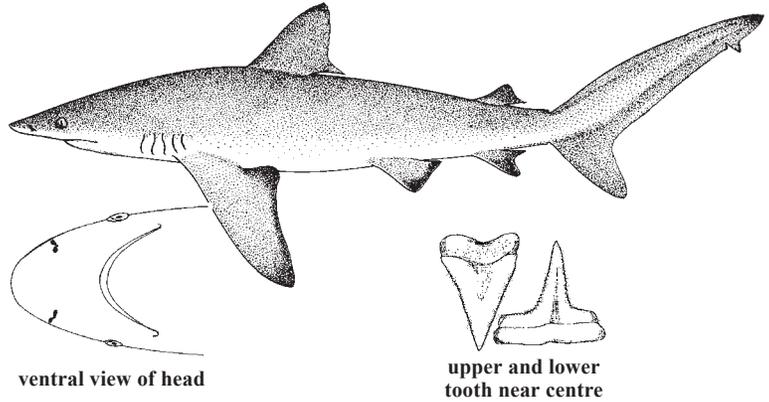
Diagnostic characters: Body slender. Eyes moderately large, internal nictitating lower eyelids present. **Snout rounded and moderately long, preoral length 1.3 to 1.4 times internarial space; anterior nasal flaps expanded as low, broadly triangular lobes;** upper labial furrows very short. Teeth with serrated edges, **upper teeth broadly triangular and erect in front of mouth, with very high cusps,** progressively oblique posteriorly; teeth in lower jaw erect and narrow-cusped; anteroposterior tooth row counts 14 to 16/14 to 16 on each side, total tooth row counts 31 to 34/29 to 31. Spiracles absent; gill slits long, height of third gill slits about 3.1 to 3.9% of total length; gill arches without papillae.

First dorsal fin moderately high, height 8.3 to 11.9% of total length; first dorsal fin with a nearly straight anterior margin, a narrowly rounded apex, an origin over inner margins of pectoral fins, and the midlength of its base closer to the pectoral-fin insertions than to the pelvic-fin origins; second dorsal fin much smaller than first but relatively high, height 2.8 to 3.4% of total length; second dorsal fin with a slightly concave posterior margin, an origin about opposite that of anal fin, a slightly attenuated free rear tip, and an inner margin less than 1.5 times the fin height; anal fin with a deeply notched posterior margin and without long preanal ridges; **pectoral fins long and not strongly falcate,** broad-tipped but with angular apices. **A high interdorsal ridge present between dorsal fins;** no keels on caudal peduncle. Precaudal vertebral centra 101 to 110, total vertebral centra 194 to 206. **Colour:** back greyish; belly whitish; inner corners of pectoral fins blackish.

Size: Maximum total length to about 3 m; common to 2.4 m; size at birth between 70 and 90 cm; adults 216 to about 300 cm.

Habitat, biology, and fisheries: Bottom dwelling, usually found in the deeper areas of the continental shelves and uppermost slopes near the bottom, ranging from the surface to 430 m depth, but commonly between 80 and 220 m; rare in shallow waters and at the surface. Number of young 3 to 15 per litter. Feeds chiefly on bony fishes, small sharks and rays, and cephalopods. Taken mainly on deep-set and pelagic longlines in the area, probably also in bottom trawls and probably on hook-and-line and with gill nets. Caught commercially off the north coast of Cuba, the USA (Florida), and Mexico. Separate statistics not reported. Flesh eaten and made into fish meal for chicken feed, the liver is processed for oil and the skin made into shagreen for sanding wood. Conservation status unknown, protected off the USA.

Distribution: Circumglobal, with patchy records in tropical and warm-temperate seas. In the area from southern Florida and the Bahamas, Cuba, the Gulf of Mexico (USA and Mexico) and the Atlantic coast of Mexico, Costa Rica, Nicaragua, Trinidad, and Venezuela; also southern Brazil. Widespread in the Atlantic, Pacific and Indian Oceans but sporadically recorded, probably because it prefers deeper water than most other *Carcharhinus* species and is rarely caught in-shore in the area.

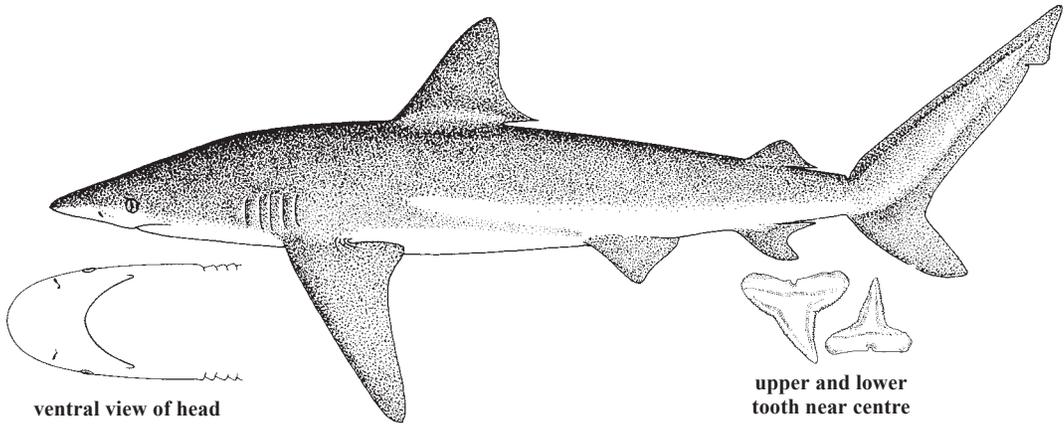


Carcharhinus brachyurus (Günther, 1870)

BRO

Frequent synonyms / misidentifications: *Carcharias remotus* Duméril, 1865 / *Carcharhinus obscurus* (Lesueur, 1818).

FAO names: **En** - Copper shark (AFS: Narrowtooth shark); **Fr** - Requin cuivre; **Sp** - Tiburón cobrizo.

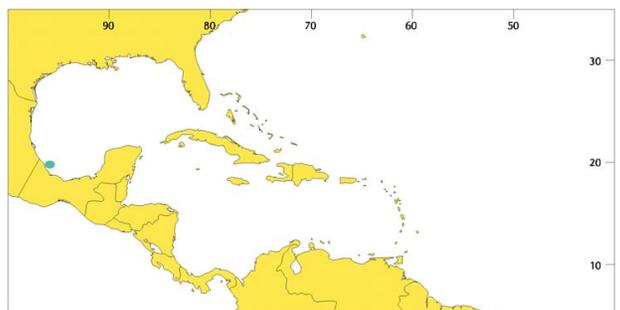


Diagnostic characters: Body slender to moderately stout. Eyes small to moderately large, internal nictitating lower eyelids present. Snout rounded or broadly angular, preoral length **1.1 to 1.4 times internarial width**; anterior nasal flaps very short to rudimentary; labial furrows short. **Upper teeth with narrow, mostly oblique and somewhat flexed cusps, well-delimited from the tooth bases and finely serrated**; lower teeth with moderately high, narrow, erect to semioblique, weakly serrated cusps; anteroposterior tooth row counts 14 to 16/14 to 15 on each side, total tooth row counts 29 to 36/29 to 35. Spiracles absent; gill slits short to moderately long, height of third gill slits about 2.5 to 4.1% of total length. First dorsal fin moderately high, height 6.8 to 9.7% of total length; first dorsal fin with a broadly convex anterior margin, a narrowly rounded or angular apex, an origin over inner margins of pectoral fins, and the midlength of its base closer to the pectoral-fin insertions than to the pelvic-fin origins; **second dorsal fin much smaller than first dorsal fin but moderately high**, height 2.0 to 2.5% of total length; second dorsal fin with a slightly concave posterior margin, an origin over that of anal fin, and an inner margin much shorter than half the fin height; anal fin with a deeply notched posterior margin and without long preanal ridges; pectoral fins large, narrow, and not strongly falcate, apically pointed. **Usually no interdorsal ridge** (occasionally a weak ridge present); no keels on caudal peduncle. Precaudal vertebral centra 96 to 110, total vertebral centra 179 to 203. **Colour:** dark brownish grey to bronzy 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.

Size: Maximum total lengths to about 2.9 m; matures at between 2 and 2.5 m, with females somewhat larger than males; size at birth about 59 to 70 cm; males maturing at about 200 to 229 cm, females maturing below 240 cm.

Habitat, biology, and fisheries: A coastal and offshore, littoral and semioceanic shark, preferring temperate and subtropical waters to tropical seas. Found on the continental and insular shelves, from the intertidal to at least 100 m on the bottom and at the surface over water up to 360 m deep. Number of young 13 to 20 per litter. Feeds on bottom-dwelling bony fishes, including gurnards, flatfishes, hakes, puffers, sea catfishes, jacks, and mullets; also on rays, small sharks, squids, and cuttlefishes. Rarely bites people. Taken in bottom trawls, gill nets, beach seines, and by longline.

Distribution: Nearly circumglobal in temperate, subtropical and some tropical seas, but with a patchy distribution reflecting its preference for temperate seas. In the area a questionable record from off Veracruz, Mexico (Gulf of Mexico), also southern Brazil to Argentina. Wide-ranging in the eastern Atlantic, Mediterranean Sea, and the Indo-Pacific.

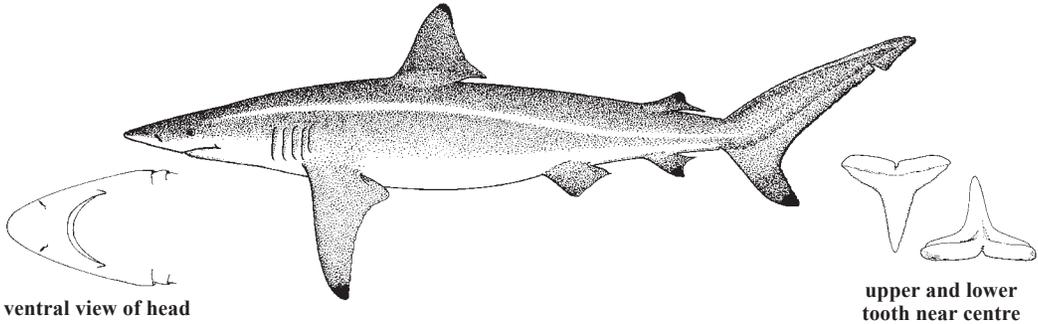


Carcharhinus brevipinna (Müller and Henle, 1839)

CCB

Frequent synonyms / misidentifications: *Isogomphodon maculipinnis* (Poey, 1865) / *Carcharhinus limbatus* (Müller and Henle, 1839).

FAO names: **En** - Spinner shark; **Fr** - Requin tisserand; **Sp** - Tiburón aleta negra.



Diagnostic characters: Slender-bodied, medium to large. Eyes small, internal nictitating lower eyelids present. **Snout pointed and long, preoral length 1.5 to 1.8 times internarial space;** anterior nasal flaps rudimentary, very low; labial folds short, but usually the **upper labial furrows longer and more prominent** than in other *Carcharhinus* species. **Upper and lower teeth nearly symmetrical and very similar,** with mostly erect, very narrow cusps, upper teeth with entirely or partly serrated edges, **lower teeth smooth;** **anteroposterior tooth row counts 15 to 18/14 to 17 on each side,** total tooth row counts 32 to 37/29 to 35. Spiracles absent; **gill slits relatively long, height of third gill slit about 3.6 to 5.5% of total length;** **gill arches without papillae.** **First dorsal fin** moderately high, height 6.0 to 8.8% of total length, with a broadly convex anterior margin, a narrowly rounded apex, **an origin above or slightly behind free rear tips of pectoral fins,** and the midlength of its base closer to the pectoral-fin insertions than to the pelvic-fin origins; second dorsal fin much smaller than first dorsal fin but relatively high, height 1.8 to 2.5% of total length; second dorsal fin with a nearly straight posterior margin, an origin about over that of anal fin, a somewhat attenuated free rear tip, and its inner margin less than twice height of fin, with a deeply notched posterior margin and without long preanal ridges; anal fin with a deeply notched posterior margin and without long preanal ridges; pectoral fins moderate, narrow, falcate and with pointed tips. **No interdorsal ridge between dorsal fins;** no keels on caudal peduncle. Precaudal vertebral centra 84 to 96, total vertebral centra 155 to 185. **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 fins unmarked or nearly so in small individuals (below 1 m).

Size: Maximum total length to about 2.8 m, common to 2.5 m; size at birth about 60 to 75 cm; males maturing at 159 to 203 cm, females at 170 to 200 cm.

Habitat, biology, and fisheries: An active, fast-swimming shark, often making vertical spinning leaps out of the water, as a feeding technique. Number of young 6 to 15 per litter. Feeds mostly on small schooling fishes, also small sharks, rays, and squids. Occasionally bites people. Fished especially off Cuba, northern Gulf of Mexico (Mexico and the USA) and the east coast of Florida. Separate statistics not reported. Caught with gill nets, longlines, and hook-and-line. Utilized fresh and dried-salted for human consumption, hides used for leather, fins used in the oriental sharkfin trade, and livers for vitamin oil production. Conservation status little known, but thought to be vulnerable to overfishing.

Distribution: Widespread in the area, but records are spotty in part due to confusion with *C. limbatus*. Ranges from North Carolina to Florida, Cuba, the Bahamas, Puerto Rico, Jamaica, the Gulf of Mexico (USA and Mexico), the Atlantic coast of Mexico, and Guayana; also the north and south coasts of Brazil. 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.

