

Prionace Cantor, 1849

CARCH Prion

Genus : Prionace Cantor, 1849, J.Asianic Soc.Bengal, 18:1399. Placed on the Official List of Generic Names in Zoology by the International Commission on Zoological Nomenclature (Opinion 723.3d, 1965, Name no. 1660).

Type Species: Squalus glaucus Linnaeus, 1758, by suspension of the Rules under Opinion 723 of the International Commission on Zoological Nomenclature (1965:32).

Synonymy : Genus Thalassorhinus Valenciennes, in Bonaparte, 1838; also Valenciennes, in Müller & Henle, 1839; Genus Cynocephalus Gill, 1862 (junior homonym of Cynocephalus Boddaert, 1768 and Cynocephalus Geoffroy & Cuvier, 1795, in Mammalia); Genus Thalassinus Moreau, 1881; Genus Galeus Garman, 1913 (junior homonym of Galeus Rafinesque, 1809, Galeus Cuvier, 1817 and Galeus Leach, 1818).

Diagnostic Features: Body rather slender. Head narrow, only moderately depressed, not trowel-shaped; snout narrowly parabolic in dorsoventral view, very long, with preoral length greater than internarial space and mouth width; eyes large, without posterior notches; spiracles absent; unique papillose gillrakers present on internal gill openings; nostrils small, internarial space about 2.5 to 3 times the nostril width; anterior nasal flaps very short and broadly triangular, not tubular; labial furrows very short with uppers shorter than lowers and with their ends falling far behind eyes; teeth well differentiated in upper and lower jaws; upper and anteroposteriors with broad, triangular, curved erect to oblique, serrated cusps but with no blades or cusplets (except in very young specimens); lowers with slender cusps, no blades or cusplets, and variable serrations; cusps of lower teeth not prominently protruding when mouth is closed; 24 to 31/25 to 34 rows of teeth. Interdorsal ridge absent; low dermal keels present on caudal peduncle; upper precaudal pit transverse and crescentic. First dorsal origin well behind pectoral rear tips, its midbase much closer to pelvic than to pectoral bases, and free rear tip slightly anterior to pelvic origins; second dorsal fin much smaller than first, its height 1/2 of first dorsal height or less; its origin slightly posterior to anal insertion; pectoral fins very narrow and somewhat falcate, pectoral length from origin to free rear tip 1/2 or less of pectoral anterior margin; pectoral origins varying from under interspace between third and fourth gill slits to under fourth gill slits; anal slightly larger than second dorsal, with short preanal ridges and a deeply notched posterior margin. Colour intense deep blue above, white below, without a colour pattern. Large sharks, adults possibly reaching 4 m or more.

Remarks : The complex nomenclatural and systematic history of this genus is discussed in detail in Bigelow & Schroeder (1948) and Compagno (1979). It is generally regarded as being monotypic, with a single, extremely wide-ranging species, the blue shark (Prionace glauca). The status of Thalassorhinus and its synonym Thalassinus is discussed in Compagno (1979).

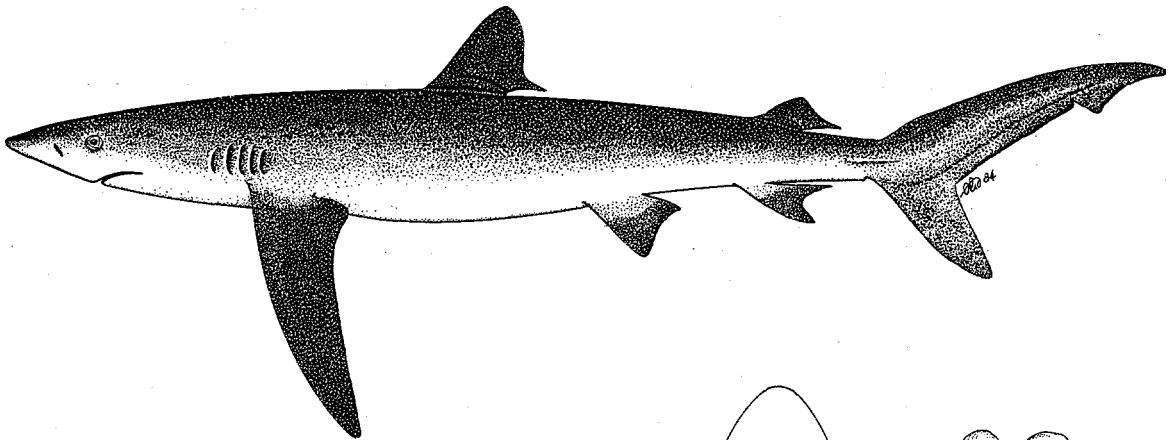
Prionace glauca (Linnaeus, 1758)

CARCH Prion 1

Squalus glaucus Linnaeus, 1758, Syst.Nat., (10)1:235. Placed on the Official List of Specific Names in Zoology by the International Commission on Zoological Nomenclature (Opinion 723.4d, 1965, name no. 2058). Holotype: None. Type Locality: "Habitat in Oceano Europaeo".

Synonymy : ? Squalus adscentionis Osbeck, 1765; ? Squalus rondeletii Risso, 1810; Squalus caeruleus Blainville, 1825; ? Galeus thalassinus Valenciennes, in Cuvier, 1835; ? Thalassorhinus vulpecula Valenciennes, in Bonaparte, 1838; also in Müller & Henle, 1839; Carcharias (Prionodon) hirundinaceus Valenciennes, in Müller & Henle, 1839; Thalassinus rondeletii Moreau, 1881; Carcharias pugae Perez Canto, 1886; Carcharias gracilis Philippi, 1887; Hypoprion / Hemigaleus isodus Philippi, 1887; ? Carcharias aethiops Philippi, 1896; Prionace macki Phillipps, 1935.

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



Field Marks : Dorsal coloration dark blue, bright blue on sides and abruptly white on the undersides, usually slender body, long snout, large eyes, gillraker papillae, long, narrow, pointed pectoral fins, short labial furrows, first dorsal fin on back but closer to the pelvic bases than the pectorals, second dorsal less than a third size of first, a weak keel on the caudal peduncle, and a narrow-lobed caudal fin with a long ventral lobe.

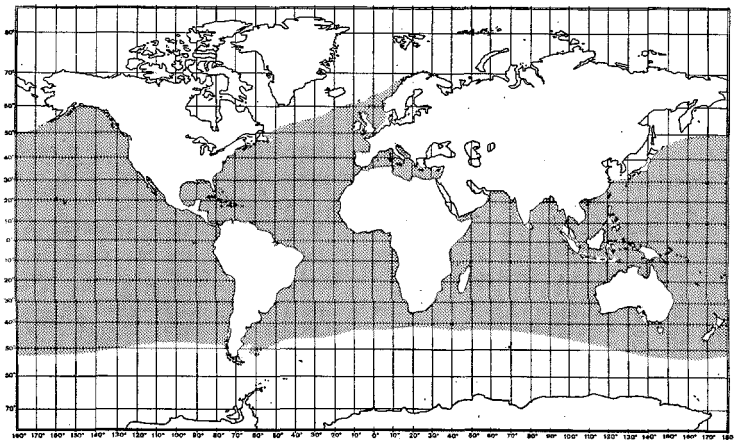
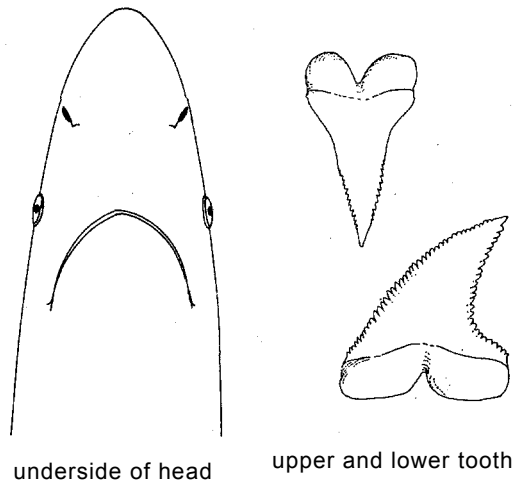
Diagnostic Features : See genus.

Geographical Distribution : Oceanic and circumglobal in temperate and tropical waters (probably the widest ranging chondrichthyan): Western Atlantic: Newfoundland to Argentina. Central Atlantic. Eastern Atlantic: Norway to South Africa, Mediterranean. Indo-West Pacific: South Africa and southern Arabian Sea to Indonesia, Japan, Australia, New Caledonia and New Zealand. Central Pacific. Eastern Pacific: Gulf of Alaska to Chile.

Habitat and Biology : A wide-ranging, oceanic-epipelagic and fringe-littoral shark, occurring from the surface to at least 152 m depth. Although an offshore species, it may venture inshore, especially at night, and often in areas with a narrow continental shelf or off oceanic islands. In temperate waters blue sharks occasionally venture to the edges of kelp forests or sufficiently far inshore to be caught in pound nets. The blue shark is often found in large aggregations, not tightly organized schools, and frequently close to or at the surface in temperate waters. It prefers relatively cool water at 7° to 16°C but can tolerate water at 21°C or even more; it ranges far into the tropics but shows tropical submergence and occurs at greater depths there. In the tropical Indian Ocean the greatest abundance of blue sharks occurs at depths of 80 to 220 m, with temperatures about 12° to 25° C.

The blue shark is often seen cruising slowly at the surface, with its large pectoral fins outspread, and its first dorsal fin and terminal caudal lobe out of the water. When disturbed, hooked or attacking prey it is capable of bursts of speed; one was seen by the writer to jump partway out of the water when hooked on a pelagic longline. It will often circle a food item before moving in to devour it.

In the Pacific the blue shark is present in greatest abundance between 20° and 50° N, but in this area it shows strong seasonal fluctuations in abundance, connected with yearly migrations northward in summer and southward in winter. In the tropics between 20° N and S it is uniformly abundant throughout the year. In the North Atlantic, tagging and recapturing of individuals has shown a regular clockwise trans-Atlantic migration route with



the current system there. Sharks tagged off the USA have been recovered off Spain, in the Straits of Gibraltar, and in the equatorial north-central Atlantic, while sharks tagged in the Canary Islands have turned up off Cuba. Apparently the sharks ride the Gulf Stream to Europe, take various currents down the European and African coasts, and ride the Atlantic North Equatorial Current to the Caribbean region. There is considerable sexual segregation in populations, with females more abundant at higher latitudes than males.

Viviparous, with a yolk-sac placenta; number of young 4 to 135 per litter. The number of young varies considerably among females, more so than any other livebearing shark, and may be partially dependent on size of the female. In the Indian Ocean sex ratios of fetuses were in aggregate 1:1, though individual females often have slightly more of one sex than another. The gestation period is 9 to 12 months, and possible maximum age at least 20 years. Off the western North Atlantic most female blue sharks are immature at 0 to 4 years old, adolescent at 4 to 5 years, and adult from 5 to 6 years and beyond. Males mature at about 4 to 5 years of age. Unlike some other carcharhinids, clasper growth in males is apparently a prolonged and gradual process that may take at least a year, making the condition of claspers rather difficult to use for determining maturation of males. Females have a prolonged maturation phase in their fourth and fifth years during which time they become sexually active and copulate with males. Five-year old females store sperm in their shell glands after the mating season in late spring to early winter, and retain it for a prolonged period while their ovaries and oviducts enlarge and become differentiated; in their sixth year, in the next spring, fertilization occurs and young are born in spring to early summer of their seventh year. Some females may mature a year earlier than the majority or shift out of phase with them in having young out of the usual season. Sharks in tropical areas may mate throughout the year.

Courtship behaviour and copulation has not been observed in the blue shark, but these apparently involve biting of females by males. Among adult and subadult sharks, this behaviour is sufficiently consistent with sex that sharks in the field can be sexed accurately merely by the presence or absence of bite wounds or scars. The blue shark has an unusual morphological adaptation for this behaviour; adolescent and mature females develop skin about three times as thick as males.

The blue shark feeds heavily on relatively small prey, especially bony fishes and squid, though other invertebrates, small sharks, and mammalian carrion is readily taken and seabirds occasionally are caught at the surface of the water. Much of the prey of the blue shark is pelagic, though bottom fishes and invertebrates figure in its diet also. Fish prey include herring, sardines and other clupeids, anchovies, conger eels, Pacific salmon, daggertooths (*Anotopterus*), lancetfish, needlefish, sauries, flyingfish and their eggs, pipefish, hake, cod, haddock, pollock, whiting and other gadoids, mullet, pomfrets, mackeral, damselfish, tuna (including bigeyes and yellowfins), jacks, remoras, sea bass, trunkfish, rockfish, spiny dogfish (*Squalus acanthias*) and, in one instance, a goblin shark (*Mitsukurina*).

Squid are a very important prey of these sharks; some species form huge breeding aggregations, which are attended by blue sharks. Some sharks slowly ingest masses of squid almost like browsing herbivores, and leisurely swim forward and sweep their heads and tails in broad arcs, catching squid at the corners of their mouths. Newly arrived and presumably hungry sharks may rapidly charge through dense schools of squid gulping down large masses. These sharks also feed on the undersides of dense schools, assuming a vertical posture and lunging upward into the school to take prey. With scattered or alert squid the sharks may attack in swift, fast turns and catch them in their mouth corners. Cuttlefish, vampire squid and pelagic octopi are also taken by blue sharks, as well as sea snails, slipper lobsters, shrimp, mantis shrimp and crabs (including swimming crabs). In the eastern North Pacific, masses of pelagic red crabs are readily eaten by these sharks. The papillose gillrakers of the blue shark, unique among the requiem sharks, may be very useful for preventing small prey like squid, red crabs or anchovies from slipping out the internal gill slits. On the other hand, these sharks proverbially gather in great numbers at a whale carcass and may feast avidly on its blubber in a feeding frenzy. Whale and porpoise blubber and meat have been recorded from blue shark stomachs. These sharks are also known to attack the cod-ends of trawls to remove the fish. Blue sharks have been seen biting at floating objects such as tin cans and boxes at the surface.

A dangerous species, with several attacks on people and boats on record. Spearfishing divers have been harassed by these sharks, and have had to fend them off with spears to keep from being bitten. Sometimes these sharks will slowly circle divers, possibly out of curiosity, in some instances for a quarter of an hour or more. An odd 'sport' for divers off southern California is swimming with blue sharks that have been baited into the vicinity of a boat, possibly as a test of virility on the part of the mostly male divers. The blue shark is not strongly aggressive under such circumstances of contact with people underwater, but on the other hand is not very timid. A slowly approaching shark of this species should be handled with caution, as it may bite (possibly in test-feeding) after circling for some time.

Size : Maximum size 383 cm on reasonably good evidence, though unconfirmed reports of larger individuals up to 4.8 to 6.5 m are mentioned in the literature; males maturing between 182 and 281 cm, and reaching at least 311 cm, females adolescent at 173 to 221 cm, adult at 221 to at least 323 cm; size at birth about 35 to 44 cm.

A length/weight equation for the blue shark (Strasberg, 1958) is: $\text{Log Wt (lbs)} = -5.396 + 3.134 \log \text{TL (cm)}$.

Interest to Fisheries : This common oceanic shark is usually caught with pelagic longlines but also hook-and-lines, pelagic trawls, and even bottom trawls near coasts. It is utilized fresh, smoked, and dried salted for human consumption; its hides are used for leather; fins for shark-fin soup base; and also for fishmeal and liver oil. This shark is also considered a game fish and taken by sports anglers with rod and reel.

Literature : Bigelow & Schroeder (1948); Strasberg (1958); Fourmanoir (1961); Garrick & Schultz (1963); Randall (1963); Stevens (1973, 1974, 1975, 1976); Feder, Turner & Limbaugh (1974); Bass, D'Aubrey & Kistnasamy (1975b); Clarke & Stevens (1975); Gubanov & Grigor'ev (1975); Compagno & Vergara (1978); Sciarotta & Nelson (1979); Casey (1979); Pratt (1979); Tricas (1979); Compagno (1979, 1981); Cadenat & Blache (1981).

Rhizoprionodon Whitley, 1929

CARCH Rhiz

Genus : Rhizoprionodon Whitley, 1929, Aust.Zool., 5(4):354. Proposed as a replacement name for Rhizoprion Ogilby, 1915.

Type Species: Carcharias (Scoliodon) crenidens Klunzinger, 1879, by original designation; a junior synonym of Carcharias acutus Rüppell, 1837.

Synonymy : Genus Rhizoprion Ogilby, 1915 (junior homonym of Rhizoprion Jourdan, 1861, in Mammalia); Genus Protozygaena Whitley, 1940.

Field Marks : Requiem sharks with long, parabolic or subangular snouts, small, wide-spaced nostrils, no spiracles, labial furrows varying from short and confined to mouth corners to rather long but falling behind eyes, fairly large eyes, oblique- and narrow-cusped small teeth in both jaws, these with distal blades and serrations variably present or absent but without cusplets, no keels on caudal peduncle, transverse crescentic precaudal pits, second dorsal fin 1/3 height of first or less, second dorsal origin far behind anal origin and about opposite its insertion, anal fin with elongated preanal ridges and a straight or slightly concave posterior margin.

Diagnostic Features: Body fairly slender to moderately stout. Head fairly broad, only moderately depressed, not trowel-shaped; snout narrowly to broadly parabolic or obtusely wedge-shaped in dorsoventral view, long, with preoral length greater than internarial space and mouth width; eyes rather large, without notches; spiracles absent; no papillose gillrakers on internal gill openings; nostrils small, internarial space about 3 to 5 times the nostril width; anterior nasal flaps very short, narrowly triangular, and not tubular; labial furrows short to rather long, with uppers shorter or longer than lowers falling far behind eyes; teeth similar in upper and lower jaws, anteroposteriors with slender oblique cusps and distal blades but no cusplets; serrations variably developed; cusps of lower teeth not prominently protruding when mouth is closed; 25 to 28/24 to 28 rows of teeth. Interdorsal ridge absent or rudimentary; no dermal keels present on caudal peduncle; upper precaudal pit transverse and crescentic. First dorsal origin usually over pectoral inner margins but sometimes slightly behind their rear tips, its midbase about equidistant between pectoral and pelvic bases or closer to the pectorals, and free rear tip usually anterior to pelvic origins but occasionally over them; second dorsal fin much smaller than first, its height 1/3 first dorsal height or less, its origin about over anal insertion; pectoral fins moderately broad and triangular, slightly falcate, pectoral length from origin to free rear tip 2/5 to 4/5 of pectoral anterior margin; pectoral origins varying from below third to below fourth gill slits; anal considerably larger than second dorsal, with very long preanal ridges and a straight or slightly concave posterior margin. Colour light grey, yellowish or brownish-grey above, without a colour pattern. Small sharks, adults not exceeding 1.3 to 1.5 m and most smaller than 1 m.

Remarks : The arrangement of this genus follows V. Springer (1964) in most details, except that the subgenus Protozygaena is not recognized (see Compagno, 1979 for a discussion of the classification and nomenclature of Rhizoprionodon and Protozygaena). Most of the species in Rhizoprionodon were formerly placed in Scoliodon, but the latter name is restricted to the very distinct S. laticaudus.

The list of species recognized below is provisional. Particularly, the allopatric species pairs R. oligolinx-taylori and R. terraenovae-porosus are not sharply distinguished and may represent in each case clinal variation within a single wide-ranging species (Compagno, 1979). F. Sotelo (pers. comm.) is working on this problem in R. terraenovae-porosus.

Key to Species (Modified from Springer, 1964)

- 1a. Upper labial furrows reduced and often inconspicuous, generally less than 1% of total length and rarely up to 1.3%; uppers usually shorter than lower furrows. Tooth rows averaging fewer, counts 23 to 25/21 to 24 but mostly below 25/24
 - 2a. Total number of enlarged hyomandibular lateral line pores just behind mouth corners on both sides of head fewer, 7 to 16 and rarely above 14. Precaudal vertebral centra 84 to 91 **R. oligolinx**
 - 2b. Total number of enlarged hyomandibular pores greater, 15 to 22. Precaudal vertebral centra 73 to 80 **R. taylori**
- 1b. Upper labial furrows long and rather prominent, more than 1.1% of total length and usually more than 1.3%; uppers usually as long or longer than lower furrows. Tooth rows more numerous in average, counts 23 to 30/21 to 28 but mostly 25/24 or higher

- 3a. Teeth more numerous 27 to 30/26 to 28; total tooth rows in both jaws (combined counts) 53 to 58. Prenarial length from snout tip to incurrent apertures of nostrils usually greater, 4.5 to 6% of total length **R. longurio**
- 3b. Tooth less numerous, 23 to 27/22 to 26, mostly below 27/26; total tooth rows in both jaws 47 to 53, mostly below 53. Prenarial length usually less at any given size, 3.2 to 5.1% of total length
- 4a. Smaller sharks, attaining 64 cm total length or less. Appressed pectoral apex falling anterior to first dorsal midbase. Precaudal vertebral centra 79 to 90 and mostly above 84, outnumbering caudal centra by 5 to 20 centra; monospondylous-diplospondylous transition with last monospondylous centra only slightly longer and larger than first diplospondylous centra **R. lalandii**
- 4b. Larger sharks, reaching over 100 cm total length. Appressed pectoral apex falling opposite or behind first dorsal midbase. Precaudal vertebral centra 55 to 79 and equal or less in number than caudal centra; monospondylous-diplospondylous transition prominent, with last monospondylous centra much longer and larger than first diplospondylous centra
- 5a. Prenarial length greater, 4 to 5.4% of total length. Dorsal-pectoral ratio (length of first dorsal fin from origin to apex + length of pectoral anterior margin times 100) usually greater, 91 to 114 and mostly 100 or more **R. acutus**
- 5b. Prenarial length less, 3.2 to 4.5% of total length. Dorsal-pectoral ratio usually less, 81 to 104 and mostly below 100
- 6a. Precaudal vertebrae fewer, 58 to 66, mostly below 66 **R. terraenovae**
- 6b. Precaudal vertebrae more numerous, 66 to 75, most above 66 **R. porosus**

Rhizoprionodon acutus (Rüppell, 1837)

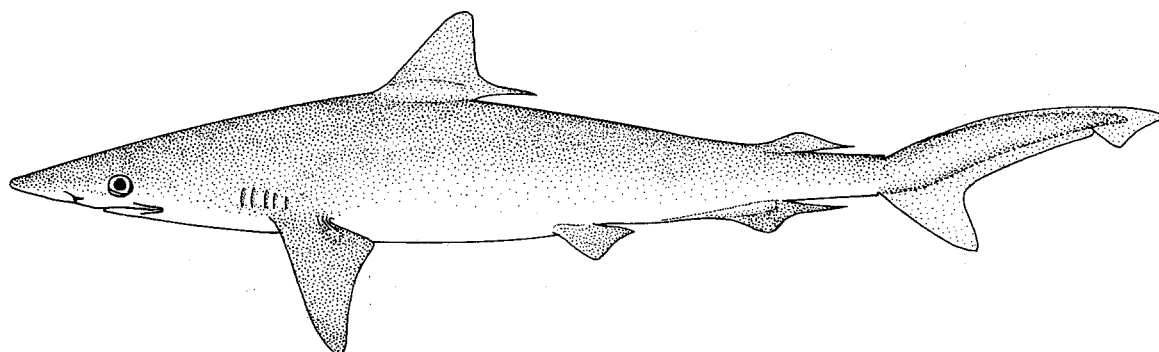
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Carcharias acutus Rüppell, 1837, Neue Wirbel.Faun.Abyssinien. Fisch Rothen Meeres, (11):65, pl. 18, fig. 4. Lectotype: Naturmuseums Senckenberg, SMF 2783, 440 mm stuffed specimen, designated by Klausewitz (1960:292). Type Locality: Djedda, Red Sea.

Synonymy : Carcharias (Prionodon) sorrakowa Bleeker, 1853; Carcharias (Scoliodon) walbeehmi Bleeker, 1856 (also spelled walbenii); Carcharias (Scoliodon) crenidens Klunzinger, 1879; Carcharias aaronis Hemprich & Ehrenberg, 1899; Scoliodon longmani Ogilby, 1912; Scoliodon vagatus Garman, 1913; Carcharias eumeces Pietschmann, 1913.

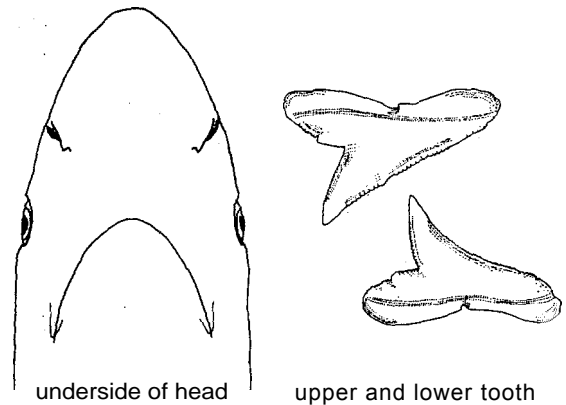
Other Scientific Names Recently in Use : Scoliodon sorrakowa (Bleeker, 1853); often spelled sorrakowah; Scoliodon walbeehmi (Sleeker, 1856).

FAO Names : En - Milk shark; Fr - Requin à museau pointu; Sp - Cazón lechoso.



Field Marks: In its area the only requiem shark with long upper and lower labial furrows, the first dorsal origin well behind the anal origin, and long preanal ridges. Key to species and diagnostic features give characters separating this from other, similar species in its genus.

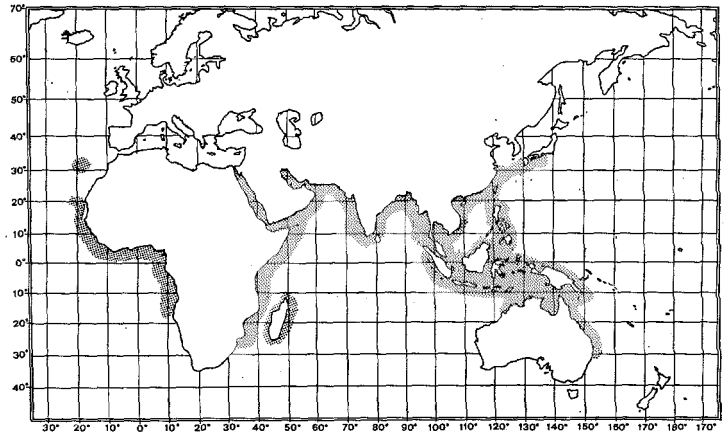
Diagnostic Features: Prenarial snout 4 to 5.4% of total length; upper labial furrows long, 1.4 to 2% of total length; total count of enlarged hyomandibular pores on both sides of head just behind mouth angle usually over 16; teeth serrated in adults; teeth not well-differentiated between sexes; total tooth rows usually 25/24. First dorsal origin usually over or slightly in front of pectoral free rear tips; second dorsal origin ranges from above last third of anal base to over its insertion; pectoral anterior margin usually equal to or shorter than first dorsal length from origin to free rear tip. Posterior monospondylous



precaudal centra greatly enlarged; precaudal centra usually less numerous than caudals (rarely the two are equal), precaudals 55 to 79, total centra 121 to 162. Size moderate, males maturing over 60 cm total length. Colour grey, grey-brown or purplish brown above, pale below, pectoral fins with a light margin.

Geographical Distribution : Eastern Atlantic: Madeira and Mauritania to Angola. Indo-West Pacific: South Africa and Red Sea to Pakistan, India, Malaysia, Indonesia, Thailand, China (including Taiwan Province), Japan, The Philippines, Australia (Queensland).

Habitat and Biology : An abundant inshore and offshore shark of continental shelves, at depths of a metre or less down to about 200 m. It often occurs off sandy beaches, in midwater or near the bottom, and sometimes in estuaries, but it does not tolerate very low salinities and does not range into fresh water. Off Natal, South Africa, numbers fluctuate throughout the year, with greatest abundance in summer.



A viviparous shark, with a yolk-sac placenta; number of young 1 to 8 per litter, usually 2 to 5. Off South Africa mating occurs in summer, young are born in summer after a gestation period of about a year, and maturation occurs at about two years of age; maximum age is at least 8 years. In the eastern Atlantic, young are also born in summer, but in winter off Bombay, India.

The milk shark feeds primarily on bony fishes but also takes cephalopods and other invertebrates. Its diet includes lizardfish, wrasses, goatfishes, sardines and herring, threadfins, hairtails, croakers, mojarras, tongue-soles, squid, octopi, cuttlefish, crabs, shrimp and sea snails.

This species is harmless to people. It is often preyed upon by larger sharks, but off Natal, South Africa, the use of gillnets to reduce the numbers of large, dangerous sharks off beaches has resulted in an increase in numbers of milk sharks through reduced predation by larger sharks.

Size : Maximum exceptionally to 178 cm, but most adults smaller, less than 1.1 m; males maturing at about 68 to 72 cm, and reaching 178 cm; females maturing at about 70 to 81 cm and reaching 165 cm; size at birth between 25 and 39 cm.

Interest to Fisheries : This is one of the most abundant sharks if not the most abundant shark in the inshore waters where it occurs, and is a ready object of artisanal and smallscale commercial fisheries as well as offshore fishing fleets. It is caught on longlines, hook-and-line, in bottom trawls, and probably other gear and utilized fresh and possibly dried salted for food and for fishmeal.

Literature : Setna & Sarangdhar (1949a); Cadenat (1957); V. Springer (1964); Nair *et al.* (1974); Bass, D'Aubrey & Kistnasamy (1975b); Compagno (1981); Cadenat & Blache (1981); Van der Elst (1981).

Remarks : The name 'milk shark' refers to the use of its flesh in India to promote lactation in women.

Rhizoprionodon lalandii (Valenciennes, 1839)

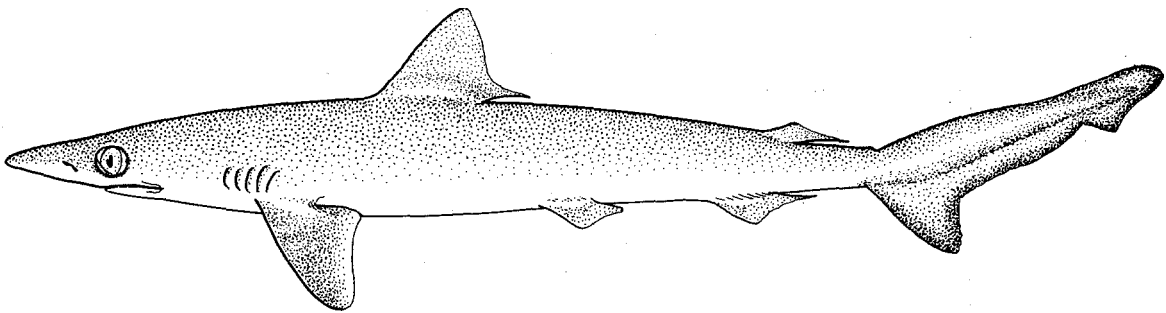
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Carcharias (*Scoliodon*) *lalandii* Valenciennes, in Müller & Henle, 1839, *Syst.Beschr.Plagiost.*, (2):30. Lectotype: Museum National d'Histoire Naturelle, Paris, MNHN 945, 303 mm, immature male, Brazil, designated by V. Springer (1964:619). Type Locality: Rio de Janeiro, Martinique, Guadeloupe.

Synonymy : *Scoliodon intermedius* Garman, 1913.

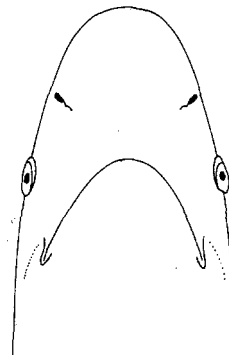
Other Scientific Names Recently in Use : *Scoliodon* or *Rhizoprionodon lalandei* (Valenciennes, in Müller & Henle, 1839), emended spelling.

FAO Names: En - Brazilian sharpnose shark; Fr - Requin aiguille brésilien; Sp - Cazón picudo chino.

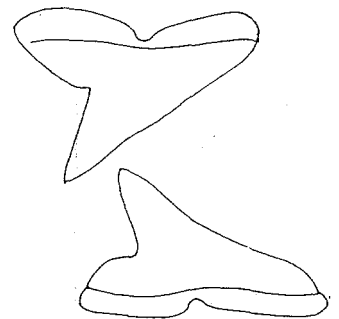


Field Marks: In its area the only requiem shark with long upper and lower labial furrows, small second dorsal fin with origin far behind anal origin, long anal ridges, and adpressed pectoral fin apex falling in front of first dorsal midbase. See key to species and diagnostic features for characters separating it from allopatric members of its genus.

Diagnostic Features: Prenarial snout 4.4 to 5.1% of total length; upper labial furrows long, 1.4 to 2.1% of total length; total count of enlarged hyomandibular pores on both sides of head just behind mouth angle usually over 17 (6 to 14 on each side); teeth not serrate or irregularly serrate in adults; adult males with narrower, higher, more flex-cusped anterolateral teeth than adult females or immature males; total tooth rows usually 25/24. First dorsal origin over or slightly posterior to pectoral free rear tips; second dorsal origin usually above anal insertion but occasionally over the rear fourth of its base; pectoral anterior margin usually shorter than first dorsal length from origin to free rear tip; adpressed pectoral apex reaching to below first third of first dorsal base or falling behind it. Posterior monospondylous precaudal centra slightly enlarged; precaudal centra more numerous than caudals, precaudals 79 to 90, total centra 153 to 168. Size moderately small, males maturing at about 50 cm total length. Body dark grey or grey-brown above, light below, pectorals with light margins, dorsals dusky.



underside of head



upper and lower tooth

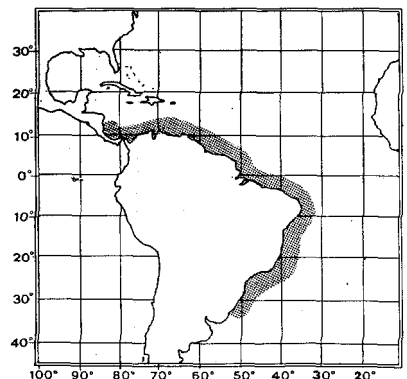
Geographical Distribution : Western Atlantic: Panama to southern Brazil.

Habitat and Biology : A common tropical littoral shark of the South American continental shelf, at depths of 3 to 70 m; prefers muddy and sandy bottoms, and not normally found in lagoons and estuaries.

Development viviparous, with a yolk-sac placenta; number of young 1 to 4 per litter. Mating season in summer.

Eats small bony fishes, including sardines and anchovies, as well as shrimp and squid.

Size : Maximum about 77 cm, males maturing between 45 and 50 cm and reaching 64 cm, adult females 54 to at least 77 cm; size at birth 33 to 34 cm.



Interest to Fisheries : Fished in shallow water where it occurs, with bottom longlines, trammelnets, and probably other gear, and utilized dried salted for human consumption.

Literature : V. Springer (1964); Sadowsky (1967); Compagno & Vergara (1978).

Rhizoprionodon lonqurio (Jordan & Gilbert, 1882)

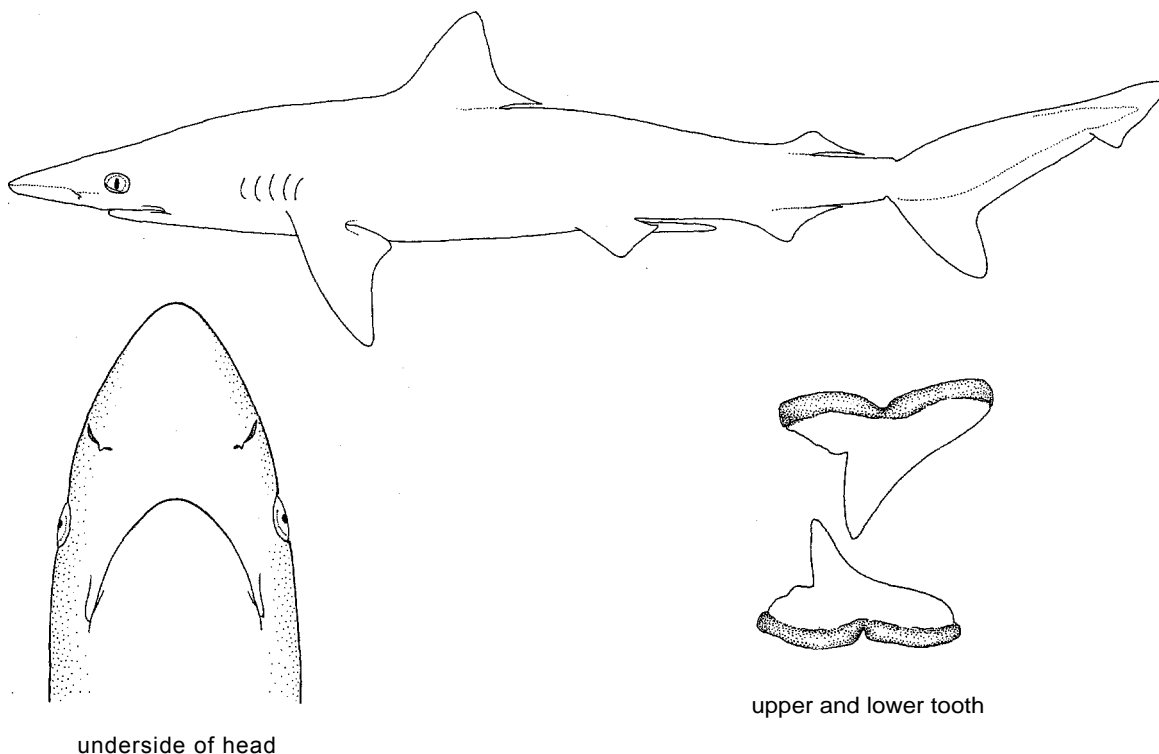
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Carcharias (Scoliodon) lonqurio Jordan & Gilbert, 1882, *Proc.U.S.Nat.Mus.*, 5:106. Holotype: Three syntypes in U.S. National Museum of Natural History collections: USNM 28306, 517 mm female, USNM 28330, 792 mm adult male, and USNM 29551, 518 mm female, all from Pacific Mexico. Type Locality: Mazatlan, Mexico, eastern Pacific.

Synonymy : None.

Other Scientific Names Recently in Use : *Scoliodon lonqurio* (Jordan & Gilbert, 1882).

FAO Names : En - Pacific sharpnose shark; Fr - Requin bironche; Sp - Cazón picudo pacífico.



Field Marks : The only requiem shark in the eastern Pacific with long labial furrows and a second dorsal origin well behind the anal origin. See key to species and diagnostic features for characters separating it from other members of its genus.

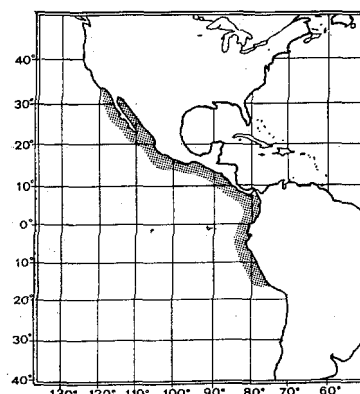
Diagnostic Features : Prenarial snout 4.5 to 6% of total length; upper labial furrows long, 2.1 to 2.6% of total length; total count of enlarged hyomandibular pores on both sides of head just behind mouth angle usually over 16 (8 to 15 on each side); teeth with serrated edges in adults; teeth not differentiated between sexes; total tooth rows usually 27 to 29/26 to 28. First dorsal origin usually over or slightly in front of pectoral free rear tips; second dorsal origin above last third of anal base in front of its insertion; pectoral anterior margin usually equal to or shorter than first dorsal length from origin to free rear tip; adpressed apex of pectoral reaches anterior third or two-thirds of first dorsal base. Posterior monospondylous precaudal centra greatly enlarged; precaudal centra variably 12 less to 8 more than caudals, precaudals 68 to 86, total counts 146 to 167. Size moderate, males maturing over 60 cm total length. Colour grey or grey-brown above, white below, pectoral fins with light edges, dorsals with dusky tips.

Geographical Distribution : Eastern Pacific: Southern California to Peru.

Habitat and Biology : An abundant but little-known tropical littoral shark of the continental shelves of the eastern Pacific, found at depths from the intertidal to at least 27 m depth.

Size : Maximum at least 110 cm and possibly to 154 cm, males maturing between 58 and 69 cm and reaching at least 92 cm, adult females 103 to possibly 154 cm; size at birth between 33 to 34 cm.

Interest to Fisheries : A locally abundant shark, in some areas (as in the Gulf of California) one of the most abundant if not the most abundant of inshore sharks; fished by longline and probably other gear and utilized fresh or fresh frozen for human consumption and also for fishmeal.



Literature : Beebe & Tee-Van (1941); V. Springer (1964); Kato, Springer & Wagner (1967).

Rhizoprionodon oligolinx Springer, 1964

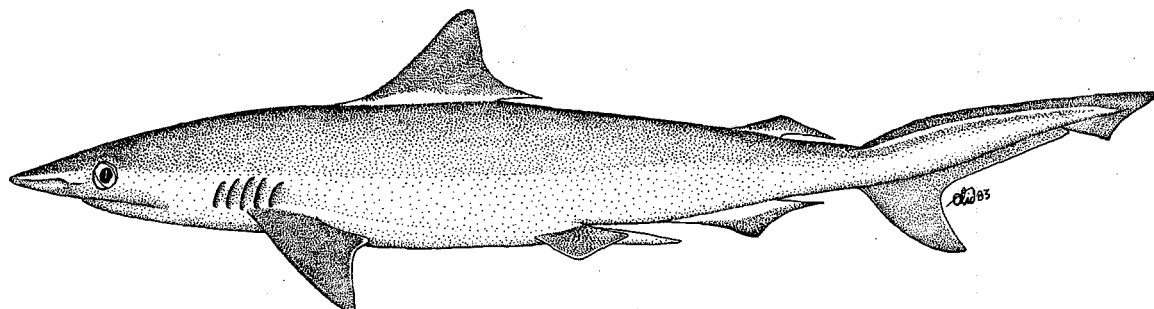
CARCH Rhiz 4

Rhizoprionodon oligolinx Springer, 1964, Proc.U.S.Natl.Mus., 115(34930):621, figs 12-23, pl. 2C. Holotype: U.S. National Museum of Natural History, USNM 196799, 489 mm adult male, formerly in George Vanderbilt Foundation collection, GVF 2467. Type Locality: Gulf of Thailand, depth from 0 to 10 m.

Synonymy : None.

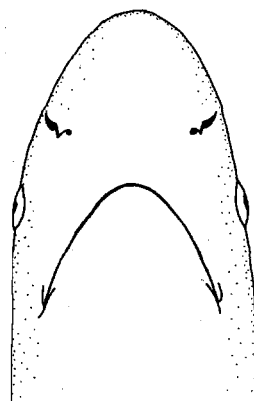
Other Scientific Names Recently in Use : Scoliodon palasorrah (not Carcharias (Prionodon) palasorrah Bleeker, 1853, a junior synonym of Scoliodon laticaudus).

FAO Names : En - Grey sharpnose shark; Fr - Requin aiguille gris; Sp - Cazón picudo gris.

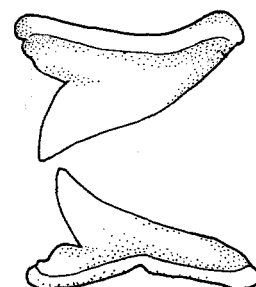


Field Marks: See key to species and diagnostic features.

Diagnostic Features: Prenarial snout 3.7 to 4.7% of total length; upper labial furrows long, 0.3 to 1.3% of total length; total count of enlarged hyomandibular pores on both sides of head just behind mouth angle usually less than 16 (3 to 8 per side); tooth edges not regularly serrate; anterolateral teeth of adult males with slenderer, higher, more flexed cusps than females or immature males; total tooth rows usually 23 to 25/21 to 24. First dorsal origin over of just behind pectoral free rear tips; second dorsal origin ranges from above last third of anal base to just in front of its insertion; pectoral anterior margin shorter than first dorsal length from origin to free rear tip; adpressed pectoral apex reaching below first third of first dorsal base or falling in front of it Posterior monospondylos precaudal centra hardly enlarged; precaudal centra more numerous than caudals, precaudals 84 to 91, total counts 151 to 164. Size small, males maturing at under 38 cm total length. Colour grey or brownish-grey above, pale below, bronzy when fresh, fins with dusky edges but not conspicuously marked.



underside of head



upper and lower tooth

Geographical Distribution : Indo-West Pacific: The "Gulf" between the Arabian Peninsula and Iran and Pakistan to India, Sri Lanka, Malaysia, Singapore, Thailand, Kampuchea, Sumatra, Java, Madura Straits, China, ?Japan, Palau Islands (Angaur Island).

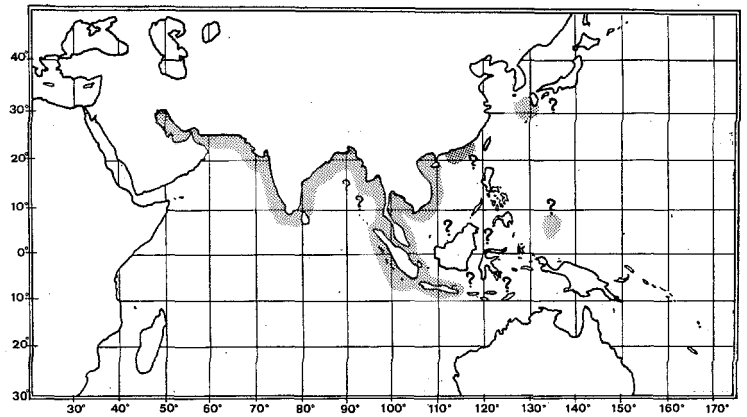
Habitat and Biology : A common but little-known littoral, inshore and offshore tropical shark of the continental and insular shelves. Viviparous, with a yolk-sac placenta; number of young 3 to 5 per litter. In Bombay waters, most are born in winter (January to February).

Size : Maximum 70 cm; males maturing between 29 and 38 cm and reaching 61 cm, females maturing between 32 and 41 cm and reaching 70 cm; size at birth between 21 and 26 cm.

Interest to Fisheries : A common fisheries species off India, Pakistan, Sri Lanka and Thailand; taken with gillnets and line gear and utilized fresh and probably dried salted for human consumption.

Literature : Setna & Sarangdhar (1949); V. Springer (1964); Nair, Appukuttan & Rajapandian (1974).

Remarks : This species is close to *R. taylori*, but is apparently geographically separated from it as presently known. The author follows Springer (1964) in recognizing this species as separate from *R. taylori*.



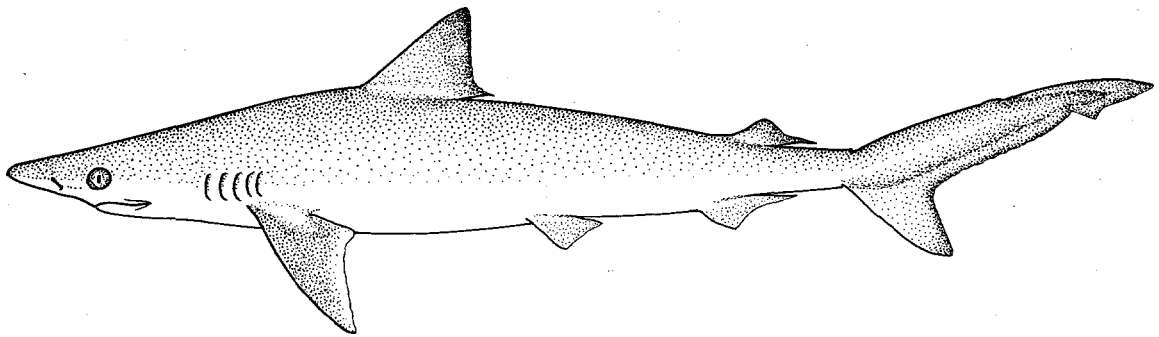
Rhizoprionodon porosus (Poey, 1861)

CARCH Rhiz 2

Squalus porosus Poey, 1861, *Memorias*, 2:339, pl. 19, figs 11-12. Holotype: Unknown, 815 mm male (presumably adult) mentioned. Type Locality: Cuba.

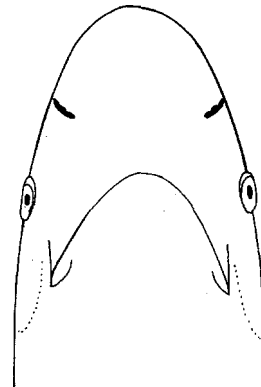
Synonymy : None.

FAO Names: En - Caribbean sharpnose shark; Fr - Requin aiguille antillais; Sp - Cazón picudo antillano.

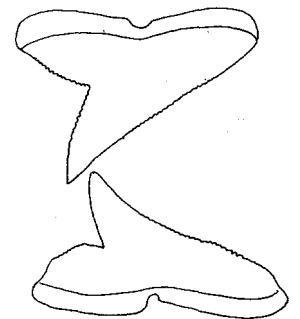


Field Marks : See key to species and diagnostic features.

Diagnostic Features : Prenarial snout 3.3 to 4.5% of total length; upper labial furrows short, 1.3 to 2.3% of total length; total count of enlarged hyomandibular pores on both sides of head just behind mouth angle usually over 17 (9 to 19 on each side); teeth with serrations in adults; dentitions not differentiated between the sexes; total tooth rows usually 25/24. First dorsal origin usually over or slightly behind pectoral free rear tips; second dorsal origin ranging from above anal midbase to over rear fourth of its base; pectoral anterior margin usually longer than first dorsal length from . origin to free rear tip; adpressed pectoral apex reaching behind first third of first dorsal base. Posterior monospondylous precaudal



underside of head



upper and lower tooth

centra moderately enlarged; precaudal centra less numerous than caudals, precaudals 66 to 75, total counts 136 to 159. Size moderate, males maturing at over 58 cm total length. Colour brown or grey-brown above, white below, sometimes with white spots on sides and white-edged fins.

Geographical Distribution : Western Atlantic: Bahamas, Cuba, Jamaica, Hispanola, Puerto Rico, Virgin Islands, Martinique, Honduras, Panama, Venezuela, Brazil, Uruguay.

Habitat and Biology : An abundant tropical littoral shark, usually found close inshore on the continental and insular shelves of the Caribbean and South America, but also found in offshore waters down to 500 m depth; one was caught near the surface in water 6036 m deep, well offshore, but this is exceptional.

Viviparous, with a yolk-sac placenta; number of young 2 to 6. Gestation period about 10 to 11 months; gives birth in the spring or early summer off southern Brazil.

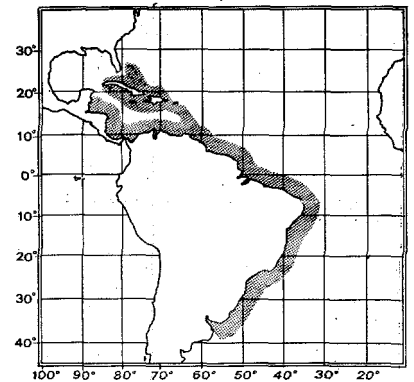
Mostly eats small bony fishes, including wrasses, but also marine snails, squid and shrimp.

Size : Maximum about 110 cm, males maturing at about 60 cm and reaching at least 85 cm, females maturing at about 80 cm and reaching at least 108 cm; size at birth about 31 to 39 cm.

Interest to Fisheries : One of the commonest, if not the most common, inshore sharks where it occurs, and a regular object of artisanal and commercial fisheries. It is caught mainly with floating longlines but also bottom trawls (especially shrimp trawls), trammelnets, and probably hook-and-line. It is used salted or frozen for human consumption and processed into fishmeal.

Literature : V. Springer (1964); Sadowsky (1967); Randall (1967); Compagno & Vergara (1978).

Remarks : It is uncertain whether this Caribbean, Central and South American species is separable from the northern *R. terraenovae* which is allopatric to it, or instead represents a southern and Caribbean subspecies of *terraenovae* or a clinal variant of it. Springer (1964) gives reasons for recognizing the species, which are tentatively followed here pending detailed studies of the *terraenovae-porosus* group of *Rhizoprionodon* along the coasts of Central and South America.



Rhizoprionodon taylori (Ogilby, 1915)

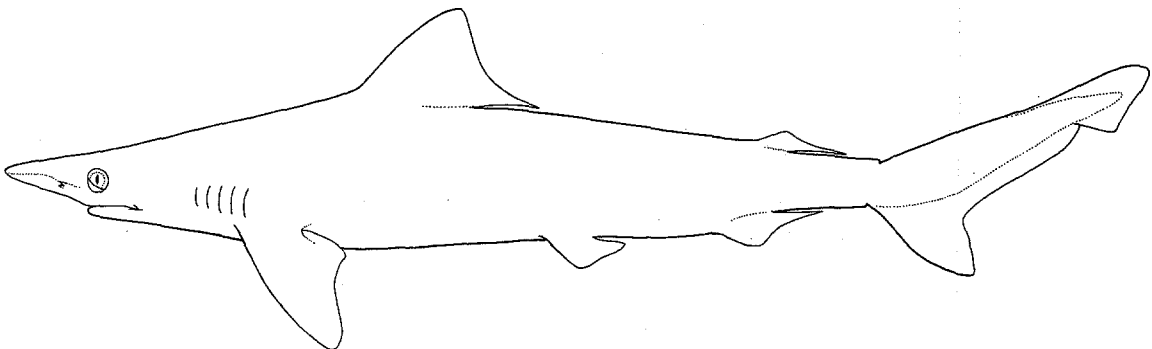
CARCH Rhiz 6

Physodon taylori Ogilby, 1915, *Mem. Queensland Mus.*, 3:117. Holotype: Queensland Museum, 112/738, 637 mm, apparently lost. Type Locality: Townsville, northern Queensland.

Synonymy : None.

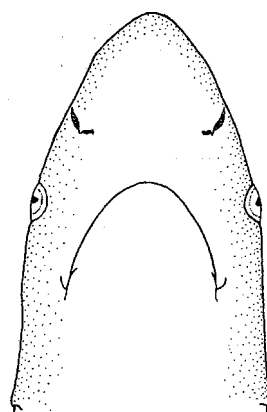
Other Scientific Names Recently in Use : *Protozygaena taylori* (Ogilby, 1915).

FAO Names : En - Australian sharpnose shark; Fr - Requin aiguille réchine; Sp - Cazón picudo australiano.

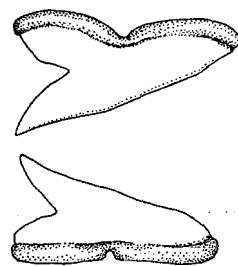


Field Marks : See key to. species and diagnostic features.

Diagnostic Features: Prenarial snout 4 to 5% of total length; upper labial furrows short, 0.7 to 1.1% of total length; total count of enlarged hyomandibular pores on both sides of head just behind mouth angle usually over 16 (7 to 11 per side); teeth not serrate; total tooth rows usually 24 to 25/21 to 23. First dorsal origin over pectoral free rear tips; second dorsal origin ranges from above last fourth to sixth of anal base; pectoral anterior margin shorter than first dorsal length from origin to free rear tip; adpressed pectoral apex reaching first third of first dorsal base or ending in front of it. Posterior monospondylous precaudal centra hardly enlarged; precaudal centra less numerous than caudals, precaudals 73 to 80, total counts 135 to 149. Size small, males maturing over 40 cm total length. Colour brownish-grey above, white below, fins light-edged but not conspicuously marked.



underside of head



upper and lower tooth

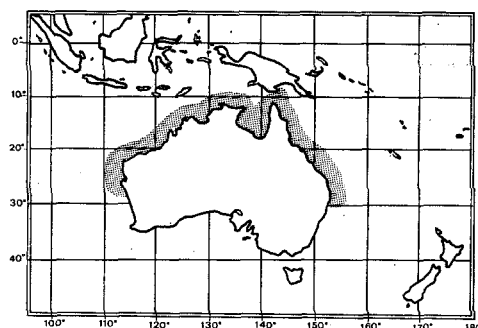
Geographical Distribution: Western South Pacific: Australia (Western and northern Australia, Queensland).

Habitat and Biology : A little-known but common tropical inshore shark of the Australian continental shelf. Viviparous, with a yolk-sac placenta; number of young 2 per litter.

Size: Maximum about 67 cm, males adolescent at about 41 cm.

Interest to Fisheries : Apparently very common and taken in mackerel nets, but utilization not recorded.

Literature : Whitley (1940); V. Springer (1964).



Rhizoprionodon terraenovae (Richardson, 1836)

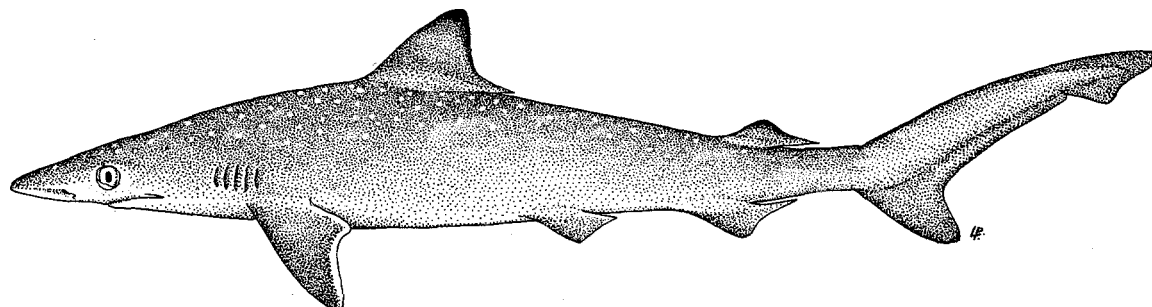
CARCH Rhiz 7

Squalus (*Carcharias*) *terrae novae* Richardson, 1836, *Fauna Boreali Americana*, 3:289. Holotype: None? Type Locality: Newfoundland.

Synonymy : None.

Other Scientific Names Recently in Use : *Scoliodon terraenovae* (Richardson, 1836).

FAO Names : En - Atlantic sharpnose shark; Fr - Requin aiguille gussi; Sp - Cazón picudo atlántico.



Field Marks : See key to species and diagnostic features.