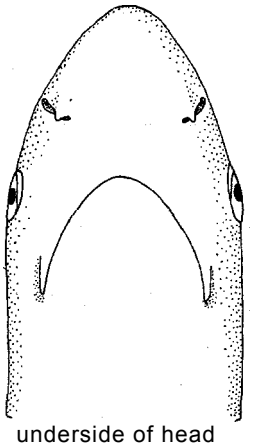
Diagnostic Features: Prenarial snout 3.6 to 4.5% of total length; upper labial furrows long, 1.6 to 2.2% of total length; total count of enlarged hyomandibular pores on both sides of head just behind mouth angle usually over 16 (8 to 18 per side); teeth serrate in adults; teeth not differentiated in males and females; 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 anal midbase to just in front of its insertion; 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 centra enlarged; precaudal centra less numerous than caudals, precaudals 58 to 66, total centra 126 to 144. Size moderate, males maturing over 64 cm total length. Colour grey or grey-brown, white below, large specimens with small light spots, pectorals with white margins, dorsals with dusky tips.



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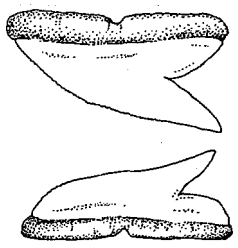
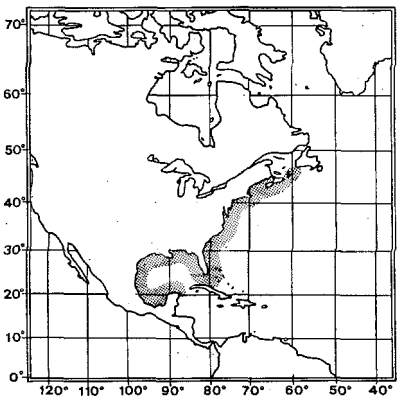


upper and lower tooth

Geographical Distribution : Western North Atlantic: New Brunswick to Florida, Gulf of Mexico.



Habitat and Biology : An abundant small coastal warm-temperate and tropical shark of the continental shelves; ranging from the intertidal to possibly 280 m deep, but usually in water less than 10 m deep. It often occurs close to the surf zone off sandy beaches, and also enclosed bays, sounds, harbours, and marine to brackish estuaries. It readily tolerates reduced salinities in estuaries and river mouths but does not penetrate far into fresh. water. In the northern Gulf of Mexico it shows a regular inshore-offshore seasonal migration, retreating to deeper water with the onset of winter in October or November and returning inshore in spring, April and May.

Viviparous, with a yolk-sac placenta; number of young 1 to 7 per litter, most commonly 4 or 6 per litter, with larger females carrying more young; the sex ratio of near term fetuses is 1:1. Off Texas, Florida and North Carolina young are born in late spring and summer (June to August). In the Gulf of Mexico mating occurs in late spring to summer, mid-May to mid-July, and are born in May or June after a 10 to 11 month gestation period. Gravid female sharks move into inshore waters to deposit their young, and in the northern Gulf. of Mexico outnumber adult males by nearly 3:1.

Feeds on small bony fishes, including menhaden and other clupeids, snake eels, silversides, wrasses, small jacks, croakers, mojarras, toadfish, filefish, shrimp, crabs, segmented worms and molluscs (gastropod feet). It is harmless to people.

Size : Maximum at least 110 cm, males maturing between 65 and 80 cm and reaching at least 103 cm, females maturing at 85 to 90 cm and reaching 110 cm; size at birth about 29 to 37 cm.

Interest to Fisheries: A common inshore shark, fished in Mexican waters for food.

Literature : Bigelow & Schroeder (1948); Baughman & Springer (1950); V. Springer (1964); Clark & von Schmidt (1965); Parsons (1983).

Scoliodon Müller & Henle, 1837

CARCH Scol

Genus: Scoliodon Müller & Henle, 1837, Ber.Akad.Wiss.Berlin, 114.

Type Species : Scoliodon laticaudus Müller & Henle, 1838, by subsequent monotypy.

Synonymy : Genus Physodon Valenciennes, in Bonaparte, 1838; also Subgenus Physodon Valenciennes, in Müller & Henle, 1839.

Diagnostic Features: Body moderately stout. Head broad, greatly depressed, and trowel-shaped; snout parabolic or bell-shaped in dorsoventral view, very long, with preoral length greater than internarial space and mouth width; eyes small, without posterior notches; spiracles absent; no papillose gillrakers on internal gill openings; nostrils small, internarial space about 4 to 6 times nostril width; anterior nasal flaps very short, narrowly triangular, and not tubular; labial furrows very short to rudimentary, with uppers shorter than lowers and falling far behind eyes; teeth similar in upper and lower jaws, anteroposteriors with slender oblique cusps and distal blades but no cusplets or serrations; cusps of lower teeth not prominently protruding when mouth is closed; 25 to 33/24 to 34 rows of teeth. Interdorsal ridge absent or rudimentary; no dermal keels present on caudal peduncle; upper precaudal pit transverse and crescentic. First dorsal origin over or behind pectoral rear tips, its midbase much closer to pelvic bases than to pectorals and its free rear tip about over pelvic midbases; second dorsal fin much smaller than first, its height 1/3 of first dorsal height or less, its origin behind anal midbase; pectoral fins very broad and triangular, not falcate, pectoral length from origin to free rear tip about equal to pectoral anterior margin; pectoral origins under interspace between fourth and fifth gill slits; anal fin much larger than second dorsal, with short preanal ridges and a straight or slightly concave posterior margin. Colour light grey, yellowish or brownish grey above, without a colour pattern.

Remarks : The arrangement of this genus follows Springer (1964). See Compagno (1979) for a comprehensive account of the classification, nomenclature and relationships of the genus. Scoliodon is apparently the sister group of the hammerhead family Sphyrnidae, but is retained in the Carcharhinidae because it lacks all of the more extreme derived character states of hammerheads.

Scoliodon laticaudus Müller & Henle, 1838

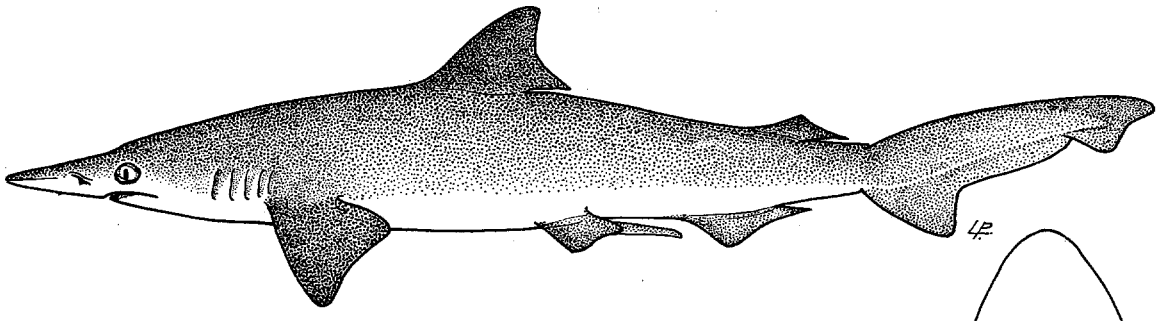
CARCH Scol 1

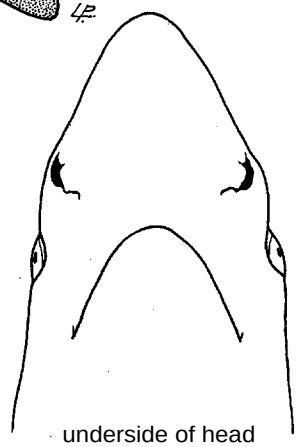
Scoliodon laticaudus Müller & Henle, 1838, Syst.Beschr.Plagiost., (1):27; reassigned as Carcharias (Scoliodon) laticaudus Müller & Henle, 1839, Ibid, (2):28, pl.8. Holotype: A single specimen, Zoologisches Museum, Berlin, ISZZ 7830, 420 mm (stuffed specimen) was mentioned in Müller & Henle's initial account of this species (Plagiostomen, (1):27, 1838), making it the presumptive holotype; however, additional specimens preserved in alcohol in the Museum National d'Histoire Naturelle, Paris, were mentioned to their emended description of the species (Plagiostomen, (2):28, 1839). Springer (1964) selected one of these Paris specimens, MNHN 1123, 518 mm adult female, as a lectotype. Type Locality: "Aus Indien".

Synonymy : Carcharias (Physodon) muelleri Valenciennes, in Müller & Henle, 1839; Carcharias (Scoliodon) macrorhynchos Bleeker, 1852; Carcharias (Prionodon) palasorra Bleeker, 1853.

Other Scientific Names Recently in Use : Physodon muelleri (Valenciennes, in Müller & Henle, 1839); Scoliodon palasorra (Bleeker, 1853); Carcharias sorrakowah "Cuvier, 1817" (not Carcharias (Prionodon) sorrakowa Bleeker, 1856, = Rhizoprionodon acutus).

FAO Names: En - Spadenose shark; Fr - Requin épée; Sp - Cazón espadachin.





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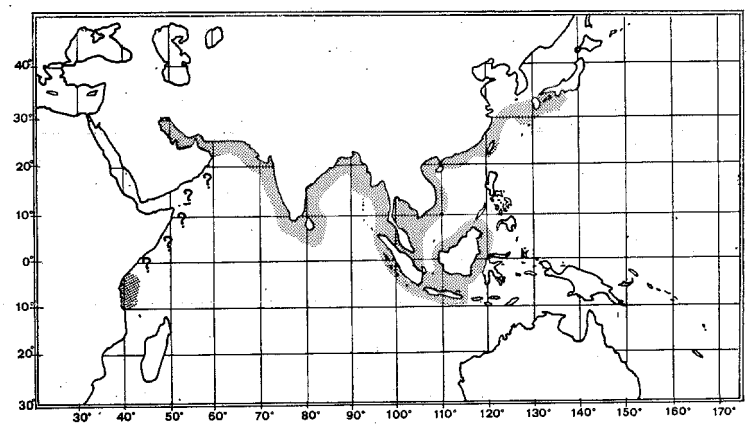
Field Marks : A small, unmistakable requiem shark, with a very long, flat, laterally expanded, spadelike snout, small eyes, small, smooth-edged bladelike teeth with oblique cusps, distal blades, and no cusplets, a stocky compressed body, short, broad triangular pectoral fins, the first dorsal fin well rearward on the back with its rear tip about over the pelvic midbases, the second dorsal fin much smaller than the first and with its origin well behind the anal origin, the anal fin much larger than the second dorsal and with a straight posterior margin and a base without long preanal ridges, and a caudal fin with its postventral margin only moderately concave, not deeply notched. It is bronzy grey above, white below, without conspicuous markings.

Diagnostic Features: See genus.

Geographical Distribution : Indo-West Pacific: Tanzania, Pakistan India, Sri Lanka, Malaysia, Singapore, Thailand, Java, Borneo, China, Taiwan Island, Japan. Apparently absent from Australasia and Oceania.



Habitat and Biology : A common tropical shark of continental and insular shelves close inshore, frequently in rocky areas. Often very abundant in its range and occurring in large schools. The spadenose shark is very common in the lower reaches of tropical rivers , of Malaysia, Sumatra and Borneo, but it is uncertain if the species can live in perfectly fresh water for extended periods like Carcharhinus leucas. Unfortunately, salinity data for riverine records of this species is not available.

Viviparous, with an unusual columnar placenta. Fertilized eggs are unusually small, 1 mm in diameter and with little yolk. Developing embryos apparently derive very little of their nutriment from yolk, have no yolk in their developed yolk sacs, and establish a placental connection with the maternal uterus extremely early in their development. Thus embryos and fetuses are nourished by the mother during the entire gestation period, through the placenta and numerous long appendiculae on the umbilical cord. Litter size varies from 1 to 14, and size at birth between 13 and 15 cm. In Malaysian waters these sharks apparently can breed all year; females have embryos of various sizes, and males have mature sperm throughout the year. From length frequency data collected from about 1900 individuals of this species landed in Bombay, Nair (1976) derived age classes and growth curves and estimated average sizes at ages from 1 to 5 years. His data indicates that both sexes mature between 1 and 2 years old and reach a maximum age of about 5 years for the largest known males and at least 6 for the largest females.

Eats small pelagic schooling and bottom-living bony fishes, including anchovies, codlets (Bregmacerotidae), burrowing gobies (Tripauchenidae) and Bombay ducks (Harpadontidae), as well as shrimp and cuttlefish. Harmless to people.

Size : Maximum about 74 cm, but most individuals smaller; still larger individuals up to 120 cm have been reported but need to be verified; males maturing at 24 to 36 cm and reaching 58 cm; adult females maturing at 33 to 35 cm and reaching at least 69 cm; size at birth 12 to 15 cm, averaging about 14 cm.

Interest to Fisheries : An abundant species in Indian and Pakistani waters, commonly taken in artisanal and commercial fisheries. Caught with hook-and-line, longlines, floating and bottom gillnets and set bottom nets, and traps. Utilized fresh for human consumption, processed into fishmeal, and used for bait for other sharks and bony fishes.

Literature : Thillayampalam (1928); Setna & Sarangdhar (1948); Springer (1964); Nair, Appukuttan & Rajapandian (1974); Nair (1976); Teshima, Ahmad & Mizue (1978); Taniuchi (1979); Compagno (1979).

Triaenodon Müller & Henle, 1837

CARCH Tria

Genus: Triaenodon Müller & Henle, 1837, Ber.Akad.Wiss.Berlin, 117.

Type Species : Triaenodon obesus Müller & Henle, 1837, by subsequent monotypy in Bonaparte (1838:212); also by subsequent designation of Gill 1862:401).

Synonymy : None.

Diagnostic Features : Body moderately slender. Head very broad and flattened but not trowel-shaped; snout broadly rounded or almost wedge-shaped in dorsoventral view and very short, with preoral length subequal to internarial space and much less than mouth width; eyes fairly small, usually with posterior notches; spiracles usually absent, or present as minute pore- or slitlike openings; no papillose gillrakers on internal gill openings; nostrils small, internarial space about 3 times the nostril width; anterior nasal flaps slightly elongated, distally truncated, and forming distinct tubes with the mesonarial flaps; labial furrows very short, essentially confined to mouth. corners, with uppers shorter than lowers and with their ends failing far behind eyes; teeth similar in upper and lower jaws; anteroposteriors in both jaws with erect to semioblique, narrow cusps, strong, high proximal and distal cusplets, but no blades or serrations; cusps of lower teeth not protruding when mouth is closed; 42 to 50/42 to 48 rows of teeth. Interdorsal ridge absent; no lateral keels on caudal peduncle; upper precaudal pit transverse

and crescentic. First dorsal origin well behind pectoral free rear tips, its midbase much closer to pelvic bases than pectorals and free rear tip slightly anterior, over, or slightly posterior to pelvic fin origins; second dorsal fin very large but distinctly smaller than first, its height 1/2 to 3/4 of first dorsal height; its origin about opposite or slightly anterior or posterior to anal origin; pectorals fin fairly broad and triangular, their lengths from origin to free rear tip between 3/5 to 2/3 of pectoral anterior margins; pectoral origins varying from under interspace between fourth and fifth gill slits to about under fifth gill slits; anal fin about as large as second dorsal, with short preanal ridges and a deeply notched posterior margin. Colour grey or brownish above, without a colour pattern other than variable dusky spots and brilliant white fin tips. Moderate-sized sharks, adults possibly reaching 2.2 m.

Remarks: This genus has often been placed in the Triakidae but is clearly referable to the Carcharhinidae (see Compagno, 1973c, 1979 for discussion). The genus is reviewed in Taniuchi (1975), Randall (1977) and Compagno (1979).

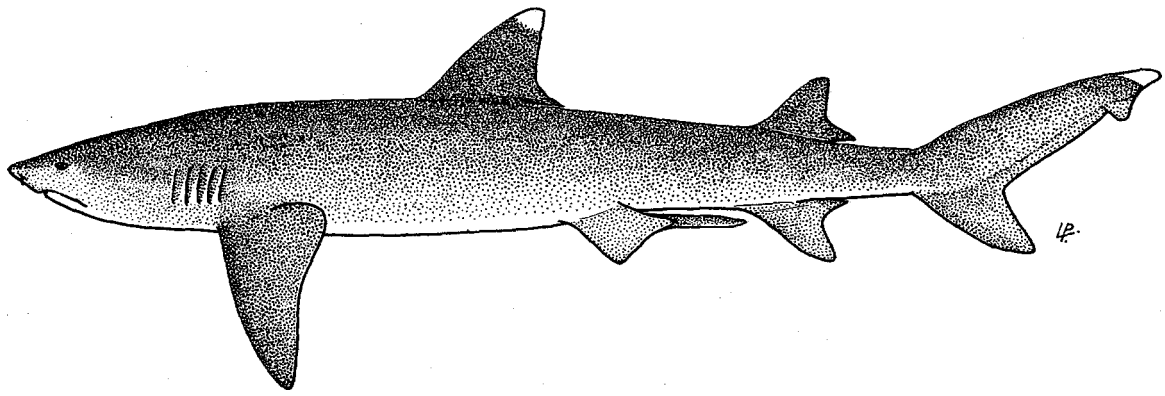
Previous workers have often recognized two species of Triaenodon, T. obesus (Rüppell, 1837) and T. obtusus Day, 1878. Both Randall (1977) and the writer (1979) tentatively accepted the validity of T. obtusus but were unable to examined its holotype at the time. In 1982 the writer studied the holotype and only specimen, ZSI 2277, 48 cm male, a skin in alcohol in the Zoological Survey of India, Calcutta. This proved to be a full-term fetus, with erupting denticles and an umbilical scar, that is probably referable to Carcharhinus amboinensis, but which had been confused with Triaenodon because its very first erupting series of teeth somewhat resemble Triaenodon teeth in having a simple cusp and a pair of cusplets. However, by peeling back the dental membrane in each jaw the writer observed the transition of this series to typical broad, triangular, heavily-serrated, amboinensis teeth along each tooth row. The tooth row count of this specimen is 27/25, well in the range of C. amboinensis, and its tooth morphology, very short, bluntly rounded snout, short, triangular, non-tubular anterior nasal flaps, lack of an interdorsal ridge, anteriorly situated first dorsal fin with origin over or slightly anterior to the pectoral insertions, very small second dorsal fin with nearly straight posterior margin, deeply notched anal fin, and small eyes fit that species. The writer was able to directly compare the holotype of Triaenodon obtusus with Indian specimens of Carcharhinus leucas and Glyphis gangeticus and found it to be not identical to these species. Hence Triaenodon obtusus is removed from this genus and placed in synonymy of Carcharhinus amboinensis.

Triaenodon obesus (Rüppell, 1837) | CARCH Tria 1

Carcharias obesus Rüppell, 1837, Neue Wirbel.Faun.Abyssinien.Fische Rothen Meeres, (11):64, pl. 18, fig. 2. Lectotype: Naturmuseurns Senckenberg, SMF 3149, 310 mm stuffed specimen, designated by Klausewitz (1960:291). Type Locality: Djedda, Saudi Arabia, Red Sea.

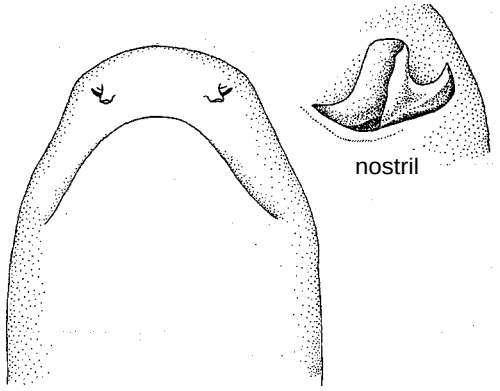
Synonymy : Triaenodon apicalis Whitley, 1939 (see remarks, below).

FAO Names: En - Whitetip reef shark; Fr - Requin corail; Sp - Tiburón coralero ñato.



Field Marks : A small, fairly slender grey requiem shark with brilliant, extremely conspicuous white tips (not entire posterior margins) on its first dorsal fin and upper caudal lobe (white tip sometimes present on the second dorsal, ventral caudal-lobe, and underside of the pectoral fins), lighter undersides shading gradually into

darker dorsal coloration, an extremely short, broad snout, horizontally oval eyes with posterior notches, downslanted mouth and prominent brow ridges that give its face a sardonic, disgusted look, prominent expanded, tubular anterior nasal flaps, a large second dorsal fin that is still considerably smaller than the first dorsal, and small smooth-edged teeth with strong cusplets in both jaws.



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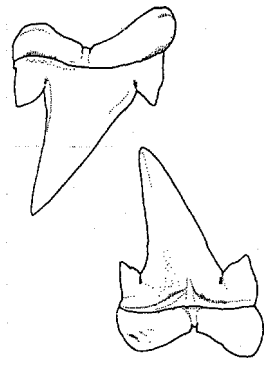
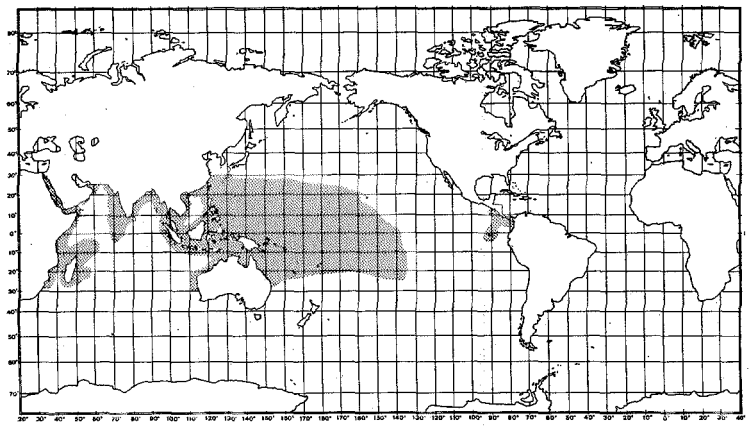


upper and lower tooth

Diagnostic Features : See genus.

Geographical Distribution : Wide-ranging in the Indo-Pacific. Indo-West and central Pacific: South Africa and Red Sea to Pakistan, India, Sri Lanka, Burma, Indonesia, Viet Nam, Taiwan Island, Riu Kiu Islands, The Philippines, Australia (Queensland, north and Western Australia), New Guinea; widespread in Polynesia, Melanesia and Micronesia northward to the Hawaiian Islands and southwest to the Pitcairn group (see Randall, 1977 for details of the range of this species in Oceania). Eastern Pacific: Cocos and Galapagos Islands, Panama to Costa Rica.



Habitat and Biology : A common tropical inshore shark of the continental shelves and island terraces, frequently found in shallow, clear water, on or near coral reefs; often at depths of 8 to 40 m but up to a metre or less or exceptionally down to 110 m or even 330 m; commonly occurring on or near the bottom, in crevices or caves in coral reefs, and in coral lagoons. It Is often seen resting on the bottom, in caves and under ledges in coral and on sand. In Oceania, it is one of the commonest reef sharks, along with the blacktip reef shark, Carcharhinus melanopterus and the grey reef shark, C. amblyrhynchos. It does not frequent extremely shallow reef and sandy areas like the blacktip reef shark, nor does it range well above the substrate and near outer dropoffs like the grey reef shark.

This is a bottom-oriented shark that superficially resembles the sharks of the genus Triakis in its active, undulating swimming pattern, and like some of these triakids seldom comes to the surface and is readily capable of sitting motionless on the bottom for long periods. Tagging studies (including sonic tagging) indicate that these sharks have a diel and tidal activity pattern, being most active at night and at slack tides where strong currents occur. They aggregate in caves during daytime but are often more active during slack tides. Their usual routine may be interrupted by learned behaviour in areas where much spearfishing occurs, as they tend to come out of their caves when spearfishing starts, and search for speared prey. Apparently the sound of spearfishing activities, or even a boat dropping anchor, cues the sharks and arouses them.

Individual whitetip reef sharks return to the same caves in the day for long periods, but preferences for caves change periodically with given individuals, so that they vacate a given cave and rest in another after some time. These sharks have a narrow home range for their daily activities and can remain in a given small area for months or even years, but eventually may quit an area and wander for a time before fixating on a new area. Apparently these sharks are not territorial, but share their home range with other members of their species and other sharks without conflict. Distances travelled by given individuals have been from 0.3 to about 3 km in periods up to about a year, and an estimation of the sizes of home ranges of these sharks has been given as several square kilometres.

Data on growth in this species are limited, but from estimations by Randall (1977) the reef whitetip may take at least 5 years to reach maturity, and reach a maximum age of at least 25 years.

Viviparous, with 1 to 5 young per litter (commonly two or three). In French Polynesia, this shark apparently gives birth in autumn or winter, May to August, while at Enewetak Atoll they may give birth in July. Data, from Randall (1977) from mature female sharks from Johnston Island and Enewetak Atoll suggests that this shark has a gestation period of at least 5 months, but this needs to be confirmed.

Unlike many carcharhinids, this shark is an inept pelagic predator, but is an efficient specialist in capturing bottom prey in crevices, holes and caves in coral heads and ledges. It apparently orients to olfactory and sonic cues but may have considerable difficulty finding cut baits. One or more whitetips may pursue a wounded,

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