

= Smalltail shark =

The smalltail shark ( *Carcharhinus porosus* ) is a species of requiem shark , and part of the family Carcharhinidae . It is found in the western Atlantic Ocean , from the northern Gulf of Mexico to southern Brazil . It inhabits shallow waters close to shore , particularly over muddy bottoms around estuaries . It tends to swim low in the water column and forms large aggregations segregated by sex . A slim species generally not exceeding 1 @. @ 1 m ( 3 @. @ 6 ft ) in length , the smalltail shark has a rather long , pointed snout , a broad , triangular first dorsal fin , and a second dorsal fin that originates over the midpoint of the anal fin base . It is plain gray in color , without prominent markings on its fins .

The diet of the smalltail shark consists mainly of bony fishes such as croakers , while crustaceans , cephalopods , and smaller sharks and rays may also be consumed . It is viviparous , meaning the developing embryos are sustained by a placental connection . Females bear litters of two to nine young on a biennial cycle , following an approximately 12 @- @ month gestation period . The smalltail shark is often caught as bycatch and may be used for meat , fins , liver oil , cartilage , and fishmeal . The impact of fishing on its population is largely unknown except off northern Brazil , where it seems to have declined significantly since the 1980s . Therefore , the International Union for Conservation of Nature has listed it as Data Deficient overall and as Vulnerable in Brazil .

= = Taxonomy and phylogeny = =

Italian naturalist Camillo Ranzani published the first scientific description of the smalltail shark , in an 1839 volume of *Novi Commentarii Academiae Scientiarum Instituti Bononiensis* . He named the new shark *Carcharias porosus* from the Greek *porus* ( " pore " ) , referring to the prominent pores behind its eyes . The type specimen , a 1 @. @ 2 m ( 3 @. @ 9 ft ) -long male from Brazil , has since been lost . This species was moved to the genus *Carcharhinus* by later authors . Its Trinidadian name is puppy shark .

The evolutionary relationships of the smalltail shark are uncertain . Based on morphology , Jack Garrick in 1982 and Leonard Compagno in 1988 tentatively placed it in a group defined by the whitecheek shark ( *C. dussumieri* ) and the blackspot shark ( *C. sealei* ) . This grouping was equivocally supported by Gavin Naylor 's 1992 allozyme @- @ based phylogenetic analysis . Alternately , a 2011 phylogenetic study by Ximena Vélez @- @ Zuazoa and Ingi Agnarsson , based on nuclear and mitochondrial genes , found close relationships between the smalltail shark , the daggernose shark ( *Isogomphodon oxyrinchus* ) , the blacknose shark ( *C. acronotus* ) , and the finetooth shark ( *C. isodon* ) . The Pacific smalltail shark ( *C. cerdale* ) was once mistakenly synonymized with *C. porosus* , until 2011 when José Castro resurrected it as a distinct taxon . An undescribed species closely similar to *C. porosus* is known from Southeast Asia .

= = Description = =

The smalltail shark is a slender @- @ bodied species with a fairly long , pointed snout . The leading margin of each nostril is enlarged into a narrow , pointed lobe . The large , circular eyes are equipped with nictitating membranes , and behind them are a series of prominent pores . The mouth bears short furrows at the corners and contains 13 ? 15 tooth rows on either side of both jaws ( usually 14 upper and 13 lower ) . The upper teeth are tall and triangular with strong serrations , becoming increasing oblique towards the sides . The lower teeth are comparatively narrower and more upright , with finer serrations . The five pairs of gill slits are short .

The small pectoral fins are falcate ( sickle @- @ shaped ) with relatively pointed tips . The first dorsal fin is broad , forming nearly an equilateral triangle in adults , with a blunt apex ; it originates over the pectoral fin rear tips . The second dorsal fin is small and originates over the midpoint of the anal fin base . There is no ridge between the dorsal fins . The pelvic fins are small with pointed to narrowly rounded tips , and the anal fin has a deep notch in its trailing margin . The asymmetrical caudal fin has a strong lower lobe and a longer upper lobe with a ventral notch near the tip . The

dermal denticles are mostly non overlapping ; each has 3 ? 5 horizontal ridges leading to posterior teeth , with the central one the longest . This shark is plain gray to slate above and whitish below , with a faint lighter stripe on the flanks . The pectoral , dorsal , and caudal fins may darken toward the tips . The smalltail shark reaches a maximum known length of 1 @. @ 5 m ( 4 @. @ 9 ft ) , though 0 @. @ 9 ? 1 @. @ 1 m ( 3 @. @ 0 ? 3 @. @ 6 ft ) is typical . Females grow larger than males .

#### = = Distribution and habitat = =

The known range of the smalltail shark extends from the northern Gulf of Mexico to southern Brazil , excluding the Caribbean islands ( aside from Trinidad and Tobago ) . Its center of abundance is along the northern Brazilian coast , off Pará and Maranhão , where it is the most common shark . This species has not been reported east of the Mississippi River in the past 50 years , despite historical evidence of a nursery area off Louisiana . The smalltail shark can usually be found close to the bottom in inshore waters no deeper than 36 m ( 118 ft ) . Off northern Brazil , its environment is characterized by tides up to 7 m ( 23 ft ) high and reaching 7 @. @ 5 knots ; the salinity fluctuates between 14 ppt in the rainy season and 34 ppt in the dry season , and the temperature ranges from 25 to 32 ° C ( 77 to 90 ° F ) . It favors estuarine areas with muddy bottoms .

#### = = Biology and ecology = =

The smalltail shark forms large aggregations segregated by sex , with the males generally found deeper than the females . It feeds mainly on bony fishes , including sea catfish , croakers , jacks , and grunts . Shrimp , crabs , and squid are secondary food sources , while adults are also capable of taking young sharpnose sharks ( Rhizoprionodon ) , hammerhead sharks ( Sphyrna ) , and stingrays ( Dasyatis ) . Opportunistic in habits , the dietary composition of this shark generally reflects what is most available in its environment ; off northern Brazil , the most important prey species are the croakers *Macrodon ancylodon* and *Stellifer naso* . Juveniles consume a wider variety of prey than adults . In turn , the smalltail shark may potentially be preyed upon by larger sharks .

Like other members of its family , the smalltail shark is viviparous : once the developing embryos exhaust their supply of yolk , the yolk sac develops into a placental connection through which the mother delivers nourishment . Females produce litters of two to nine ( typically four to six ) young every other year ; litter size increases with the size of the female . The gestation period lasts approximately 12 months . Reproduction occurs throughout the year , with a peak in birthing from September to November . There are known nursery areas in shallow , murky waters off northern Brazil and Trinidad , where many bays and estuaries provide shelter and food . The newborns measure 30 ? 33 cm ( 12 ? 13 in ) long and grow an average of 7 cm ( 2 @. @ 8 in ) per year in their first four years of life . Males and females mature sexually at 70 ? 93 cm ( 28 ? 37 in ) and 71 ? 85 cm ( 28 ? 33 in ) long respectively , corresponding to six years of age for both sexes . The average growth rate slows to 4 cm ( 1 @. @ 6 in ) per year after maturation . The maximum lifespan is at least 12 years .

#### = = Human interactions = =

Harmless to humans , the smalltail shark is caught incidentally by gillnet and longline fisheries throughout its range . The meat is sold fresh , frozen , or dried and salted . In addition , the dried fins are exported for use in shark fin soup , the liver oil and cartilage are used medicinally , and the carcass is processed into fishmeal . In 2006 , the IUCN assessed this species , including Pacific populations now separated as *C. cerdale* , as Data Deficient due to a lack of fishery data . In Trinidad , its abundance makes it the most economically important shark . Off northern Brazil , substantial numbers are caught by gillnet fisheries targeting the Serra Spanish mackerel ( *Scomberomorus brasiliensis* ) . In the 1980s , this species constituted roughly 43 % of the shark and

ray catch , but has since declined to around 17 % . This apparent decline is thought to have resulted from increasing fishing effort , the large proportion of juveniles captured , and the shark 's low reproductive rate . Consequently , the IUCN has assessed the smalltail shark in Brazil as Vulnerable , and noted the urgent need for conservation measures given that northern Brazil represents the center of the species ' range . Although the smalltail shark was ostensibly given protection by inclusion on the 2004 Official List of Endangered Animals in Brazil , fishing remains effectively unmanaged .