

= Blacktip shark =

Not to be confused with the blacktip reef shark , *Carcharhinus melanopterus* .

The blacktip shark (*Carcharhinus limbatus*) is a species of requiem shark , and part of the family Carcharhinidae . It is common to coastal tropical and subtropical waters around the world , including brackish habitats . Genetic analyses have revealed substantial variation within this species , with populations from the western Atlantic Ocean isolated and distinct from those in the rest of its range . The blacktip shark has a stout , fusiform body with a pointed snout , long gill slits , and no ridge between the dorsal fins . Most individuals have black tips or edges on the pectoral , dorsal , pelvic , and caudal fins . It usually attains a length of 1 @. @ 5 m (4 @. @ 9 ft) .

Swift , energetic piscivores , blacktip sharks are known to make spinning leaps out of the water while attacking schools of small fish . Their demeanor has been described as " timid " compared to other large requiem sharks . Both juveniles and adults form groups of varying size . Like other members of its family , the blacktip shark is viviparous ; females bear one to 10 pups every other year . Young blacktip sharks spend the first months of their lives in shallow nurseries , and grown females return to the nurseries where they were born to give birth themselves . In the absence of males , females are also capable of asexual reproduction .

Normally wary of humans , blacktip sharks can become aggressive in the presence of food and have been responsible for a number of attacks on people . This species is of importance to both commercial and recreational fisheries across many parts of its range , with its meat , skin , fins , and liver oil used . It has been assessed as Near Threatened by the IUCN , on the basis of its low reproductive rate and high value to fishers .

= = Taxonomy = =

The blacktip shark was first described by French zoologist Achille Valenciennes as *Carcharias* (*Prionodon*) *limbatus* in Johannes Müller and Friedrich Henle 's 1839 *Systematische Beschreibung der Plagiostomen* . The type specimens were two individuals caught off Martinique , both of which have since been lost . Later authors moved this species to the genus *Carcharhinus* . The specific epithet *limbatus* is Latin for " bordered " , referring to the black edges of this shark 's fins . Other common names used for the blacktip shark include blackfin shark , blacktip whaler , common or small blacktip shark , grey shark , and spotfin ground shark .

= = Phylogeny and evolution = =

The closest relatives of the blacktip shark were originally thought to be the graceful shark (*C. amblyrhynchoides*) and the spinner shark (*C. brevipinna*) , due to similarities in morphology and behavior . However , this interpretation has not been borne out by studies of mitochondrial and ribosomal DNA , which instead suggest affinity with the blacknose shark (*C. acronotus*) . More work is required to fully resolve the relationship between the blacktip shark and other *Carcharhinus* species .

Analysis of mitochondrial DNA has also revealed two distinct lineages within this species , one occupying the western Atlantic and the other occupying the eastern Atlantic , Indian , and Pacific Oceans . This suggests that Indo @-@ Pacific blacktip sharks are descended from those in the eastern Atlantic , while the western Atlantic sharks became isolated by the widening Atlantic Ocean on one side and the formation of the Isthmus of Panama on the other . Blacktip sharks from these two regions differ in morphology , coloration , and life history characteristics , and the eastern Atlantic lineage may merit species status . Fossil teeth belonging to this species have been found in Early Miocene (23 ? 16 Ma) deposits in Delaware and Florida .

= = Description = =

The blacktip shark has a robust , streamlined body with a long , pointed snout and relatively small

eyes . The five pairs of gill slits are longer than those of similar requiem shark species . The jaws contain 15 tooth rows on either side , with two symphysial teeth (at the jaw midline) in the upper jaw and one symphysial tooth in the lower jaw . The teeth are broad @-@ based with a high , narrow cusp and serrated edges . The first dorsal fin is tall and falcate (sickle @-@ shaped) with a short free rear tip ; no ridge runs between the first and second dorsal fins . The large pectoral fins are falcate and pointed .

The coloration is gray to brown above and white below , with a conspicuous white stripe running along the sides . The pectoral fins , second dorsal fin , and the lower lobe of the caudal fin usually have black tips . The pelvic fins and rarely the anal fin may also be black @-@ tipped . The first dorsal fin and the upper lobe of the caudal fin typically have black edges . Some larger individuals have unmarked or nearly unmarked fins . Blacktip sharks can temporarily lose almost all their colors during blooms , or " whittings " , of coccolithophores . This species attains a maximum known length of 2 @. @ 8 m (9 @. @ 2 ft) , though 1 @. @ 5 m (4 @. @ 9 ft) is more typical , and a maximum known weight of 123 kg (271 lb) .

= = Distribution and habitat = =

The blacktip shark has a worldwide distribution in tropical and subtropical waters . In the Atlantic , it is found from Massachusetts to Brazil , including the Gulf of Mexico and the Caribbean Sea , and from the Mediterranean Sea , Madeira , and the Canary Islands to the Democratic Republic of the Congo . It occurs all around the periphery of the Indian Ocean , from South Africa and Madagascar to the Arabian Peninsula and the Indian subcontinent , to Southeast Asia . In the western Pacific , it is found from southern China to northern Australia , including the Philippines and Indonesia . In the eastern Pacific , it occurs from Baja California to Peru . It has also been reported at a number of Pacific islands , including New Caledonia , Tahiti , the Marquesas , Hawaii , Revillagigedo , and the Galápagos .

Most blacktip sharks are found in water less than 30 m (98 ft) deep over continental and insular shelves , though they may dive to 64 m (210 ft) . Favored habitats are muddy bays , island lagoons , and the drop @-@ offs near coral reefs ; they are also tolerant of low salinity and enter estuaries and mangrove swamps . Although an individual may be found some distance offshore , blacktip sharks do not inhabit oceanic waters . Seasonal migration has been documented for the population off the east coast of the United States , moving north to North Carolina in the summer and south to Florida in the winter .

= = Biology and ecology = =

The blacktip shark is an extremely fast , energetic predator that is usually found in groups of varying size . Segregation by sex and age does not occur ; adult males and nonpregnant females are found apart from pregnant females , and both are separated from juveniles . In Terra Ceia Bay , Florida , a nursery area for this species , juvenile blacktips form aggregations during the day and disperse at night . They aggregate most strongly in the early summer when the sharks are youngest , suggesting that they are seeking refuge from predators (mostly larger sharks) in numbers . Predator avoidance may also be the reason why juvenile blacktips do not congregate in the areas of highest prey density in the bay . Adults have no known predators . Known parasites of the blacktip shark include the copepods *Pandarus sinuatus* and *P. smithii* , and the monogeneans *Dermophthirius penneri* and *Dionchus* spp . , which attach the shark 's skin . This species is also parasitized by nematodes in the family *Philometridae* , which infest the ovaries .

= = Behavior = =

Like the spinner shark , the blacktip shark is known to leap out of the water and spin three or four times about its axis before landing . Some of these jumps are the end product of feeding runs , in which the shark corkscrews vertically through schools of small fish and its momentum launches it

into the air . Observations in the Bahamas suggest that blacktip sharks may also jump out of the water to dislodge attached sharksuckers (*Echeneis naucrates*) , which irritate the shark 's skin and compromise its hydrodynamic shape . The speed attained by the shark during these jumps has been estimated to average 6 @. @ 3 m / s (21 ft / s) .

Blacktip sharks have a timid disposition and consistently lose out to Galapagos sharks (*C. galapagensis*) and silvertip sharks (*C. albimarginatus*) of equal size when competing for food . If threatened or challenged , they may perform an agonistic display : the shark swims towards the threat and then turns away , while rolling from side to side , lowering its pectoral fins , tilting its head and tail upwards , and making sideways biting motions . The entire sequence lasts around 25 seconds . This behavior is similar to the actions of a shark attempting to move a sharksucker ; one of these behaviors possibly is derived from the other .

= = = Feeding = = =

Fish make up some 90 % of the blacktip shark 's diet . A wide variety of fish have been recorded as prey for this species : sardines , herring , anchovies , ladyfish , sea catfish , cornetfish , flatfish , threadfins , mullet , mackerel , jacks , groupers , snook , porgies , mojarras , emperors , grunts , butterfish , tilapia , triggerfish , boxfish , and porcupinefish . They also feed on rays and skates , as well as smaller sharks such as smoothhounds and sharpnose sharks . Crustaceans and cephalopods are occasionally taken . In the Gulf of Mexico , the most important prey of the blacktip shark is the Gulf menhaden (*Brevoortia patronus*) , followed by the Atlantic croaker (*Micropogonias undulatus*) . Off South Africa , jacks and herring are the most important prey . Hunting peaks at dawn and dusk . The excitability and sociability of blacktip sharks makes them prone to feeding frenzies when large quantities of food are suddenly available , such as when fishing vessels dump their refuse overboard .

= = = Life history = = =

As with other requiem sharks , the blacktip shark exhibits vivipary . Females typically give birth to four to seven (range one to 10) pups every other year , making use of shallow coastal nurseries that offer plentiful food and fewer predators . Known nurseries include Pine Island Sound , Terra Ceia Bay , and Yankeetown along the Gulf Coast of Florida , Bulls Bay on the coast of South Carolina , and Pontal do Paraná on the coast of Brazil . Although adult blacktip sharks are highly mobile and disperse over long distances , they are philopatric and return to their original nursery areas to give birth . This results in a series of genetically distinct breeding stocks that overlap in geographic range .

Mating occurs from spring to early summer , and the young are born around the same time the following year after a gestation period of 10 ? 12 months . Females have one functional ovary and two functional uteri ; each uterus is separated into compartments with a single embryo inside each . The embryos are initially sustained by a yolk sac ; in the 10th or 11th week of gestation , when the embryo measures 18 ? 19 cm long (7 @. @ 1 ? 7 @. @ 5 in) , the supply of yolk is exhausted and the yolk sac develops into a placental connection that sustains the embryo until birth . The length at birth is 55 ? 60 cm (22 ? 24 in) off the eastern United States and 61 ? 65 cm (24 ? 26 in) off North Africa . The mortality rate in the first 15 months of life is 61 ? 91 % , with major threats being predation and starvation . The young remain in the nurseries until their first fall , when they migrate to their wintering grounds .

The growth rate of this species slows with age : 25 ? 30 cm (9 @. @ 8 ? 11 @. @ 8 in) in the first six months , then 20 cm (7 @. @ 9 in) a year until the second year , then 10 cm (3 @. @ 9 in) a year until maturation , then 5 cm (2 @. @ 0 in) a year for adults . The size at maturity varies geographically : males and females mature at 1 @. @ 4 ? 1 @. @ 5 m (4 @. @ 6 ? 4 @. @ 9 ft) and 1 @. @ 6 m (5 @. @ 2 ft) , respectively , in the northeastern Atlantic , 1 @. @ 3 ? 1 @. @ 4 m (4 @. @ 3 ? 4 @. @ 6 ft) and 1 @. @ 5 ? 1 @. @ 6 m (4 @. @ 9 ? 5 @. @ 2 ft) , respectively , in the Gulf of Mexico , 1 @. @ 5 and 1 @. @ 6 m (4 @. @ 9 and 5 @. @ 2 ft) respectively off South Africa ,

and 1 @. @ 7 and 1 @. @ 8 m (5 @. @ 6 and 5 @. @ 9 ft) , respectively , off North Africa . The age at maturation is 4 ? 5 years for males and 7 ? 8 years for females . The lifespan is at least 12 years .

In 2007 , a 9 @- @ year @- @ old female blacktip shark at the Virginia Aquarium and Marine Science Center was found to be pregnant with a single near @- @ term female pup , despite having never mated with a male . Genetic analysis confirmed that her offspring was the product of automictic parthenogenesis , a form of asexual reproduction in which an ovum merges with a polar body to form a zygote without fertilization . Along with an earlier case of parthenogenesis in the bonnethead (*Sphyrna tiburo*) , this event suggests that asexual reproduction may be more widespread in sharks than previously thought .

= = Human interactions = =

Blacktip sharks showing curiosity towards divers has been reported , but they remain at a safe distance . Under most circumstances , these timid sharks are not regarded as highly dangerous to humans . However , they may become aggressive in the presence of food , and their size and speed invite respect . As of 2008 , the International Shark Attack File lists 28 unprovoked attacks (one fatal) and 13 provoked attacks by this species . Blacktip sharks are responsible annually for 16 % of the shark attacks around Florida . Most attacks by this species result in only minor wounds .

As one of the most common large sharks in coastal waters , the blacktip shark is caught in large numbers by commercial fisheries throughout the world , using longlines , fixed @- @ bottom nets , bottom trawls , and hook @- @ and @- @ line . The meat is of high quality and marketed fresh , frozen , or dried and salted . In addition , the fins are used for shark fin soup , the skin for leather , the liver oil for vitamins , and the carcasses for fishmeal . Blacktip sharks are one of the most important species to the northwestern Atlantic shark fishery , second only to the sandbar shark (*C. plumbeus*) . The flesh is considered superior to that of the sandbar shark , resulting in the sandbar and other requiem shark species being sold under the name " blacktip shark " in the United States . The blacktip shark is also very significant to Indian and Mexican fisheries , and is caught in varying numbers by fisheries in the Mediterranean and South China Seas , and off northern Australia .

The blacktip shark is popular with recreational anglers in Florida , the Caribbean , and South Africa . It is listed as a game fish by the International Game Fish Association . Once hooked , this species is a strong , steady fighter that sometimes jumps out of the water . Since 1995 , the number of blacktip sharks taken by recreational anglers in the United States has approached or surpassed the number taken by commercial fishing . The International Union for Conservation of Nature has assessed the blacktip shark as Near Threatened , as its low reproductive rate renders it vulnerable to overfishing . The United States and Australia are the only two countries that manage fisheries catching blacktip sharks . In both cases , regulation occurs under umbrella management schemes for multiple shark species , such as that for the large coastal sharks category of the US National Marine Fisheries Service Atlantic shark Fisheries Management Plan . No conservation plans specifically for this species have been implemented .