

= Whale shark =

The whale shark ( *Rhincodon typus* ) is a slow moving filter feeding shark and the largest known extant fish species . The largest confirmed individual had a length of 12 @. @ 65 m ( 41 @. @ 5 ft ) and a weight of about 21 @. @ 5 t ( 47 @, @ 000 lb ) . Unconfirmed claims of considerably larger individuals , over 14 m ( 46 ft ) long and weighing at least 30 t ( 66 @, @ 000 lb ) , are not uncommon . It holds many records for sheer size in the animal kingdom , most notably being by far the largest living nonmammalian vertebrate . It is the sole member of the genus *Rhincodon* and the only extant member of the family , *Rhincodontidae* ( called *Rhiniodon* and *Rhinodontidae* before 1984 ) , which belongs to the subclass *Elasmobranchii* in the class *Chondrichthyes* . The species originated about 60 million years ago .

The whale shark is found in open waters of the tropical oceans and is rarely found in water below 22 ° C ( 72 ° F ) . Modeling suggests a lifespan of about 70 years , but measurements have proven difficult . They have very large mouths and are filter feeders , which is a feeding mode that occurs in only two other sharks , the megamouth shark and the basking shark . They feed almost exclusively on plankton and , therefore , are completely harmless to humans .

The species was distinguished in April 1828 after the harpooning of a 4 @. @ 6 m ( 15 ft ) specimen in Table Bay , South Africa . Andrew Smith , a military doctor associated with British troops stationed in Cape Town , described it the following year . The name " whale shark " directly refers to the fish 's size , being as large as some species of whales and also that it is a filter feeder like baleen whales .

= = Distribution and habitat = =

The whale shark inhabits all tropical and warm @-@ temperate seas . The fish is primarily pelagic , living in the open sea but not in the greater depths of the ocean . Seasonal feeding aggregations occur at several coastal sites such as the southern and eastern parts of South Africa ; Saint Helena Island in the South Atlantic Ocean ; Gulf of Tadjoura in Djibouti , Gladden Spit in Belize ; Ningaloo Reef in Western Australia ; Lakshadweep , Gulf of Kutch and Saurashtra coast of Gujarat in India ; Útila in Honduras ; Southern Leyte ; Donsol , Pasacao and Batangas in the Philippines ; off Isla Mujeres and Isla Holbox in Yucatan and Bahía de los Ángeles in Baja California , México ; Ujung Kulon National Park in Indonesia ; Cenderawasih Bay National Park in Nabire , Papua , Indonesia ; Nosy Be in Madagascar Off Tofo Reef near Inhambane in Mozambique ; the Tanzanian islands of Mafia , Pemba , Zanzibar ; Gulf of Tadjoura in Djibouti , the Ad Dimaniyat Islands in the Gulf of Oman and Al Hallaniyat islands in the Arabian Sea ; and , very rarely , Eilat , Israel and Aqaba , Jordan . Although typically seen offshore , it has been found closer to land , entering lagoons or coral atolls , and near the mouths of estuaries and rivers . Its range is generally restricted to about 30 ° latitude . It is capable of diving to depths of at least 1 @, @ 286 m ( 4 @, @ 219 ft ) , and is migratory . On 7 February 2012 , a large whale shark was found floating 150 kilometres ( 93 mi ) off the coast of Karachi , Pakistan . The length of the specimen was said to be between 11 and 12 m ( 36 and 39 ft ) , with a weight of around 15 @, @ 000 kg ( 33 @, @ 000 lb ) .

In 2011 , more than 400 whale sharks gathered off the Yucatan Coast . It was one of the largest gatherings of whale sharks recorded . Aggregations in that area are among the most reliable seasonal gatherings known for whale sharks , with large numbers occurring in most years between May and September . Associated ecotourism has grown rapidly to unsustainable levels .

= = Description = =

Whale sharks have a mouth that can be 1 @. @ 5 m ( 4 @. @ 9 ft ) wide , containing 300 to 350 rows of tiny teeth and 10 filter pads which it uses to filter feed . Whale sharks have five large pairs of gills . The head is wide and flat with two small eyes at the front . Whale sharks are grey with a white belly . Their skin is marked with pale yellow spots and stripes which are unique to each individual . The whale shark has three prominent ridges along its sides . Its skin can be up to 10 cm ( 3 @. @ 9 in ) thick . The shark has a pair of dorsal fins and pectoral fins . Juveniles ' tails have a larger upper

fin than lower fin , while the adult tail becomes semilunate . The whale shark 's spiracles are just behind its eyes .

The whale shark is the largest non @-@ cetacean animal in the world . The average size of adult whale sharks is estimated at 9 @.@ 7 m ( 31 @.@ 82 ft ) and 9 t ( 20 @,@ 000 lb ) . Several specimens over 18 m in length have been reported The largest verified specimen was caught on 11 November 1947 , near Baba Island , in Karachi , Pakistan . It was 12 @.@ 65 m ( 41 @.@ 50 ft ) long , weighed about 21 @.@ 5 t ( 47 @,@ 000 lb ) , and had a girth of 7 m ( 23 @.@ 0 ft ) . Stories exist of vastly larger specimens ? quoted lengths of 18 m ( 59 ft ) and 45 @.@ 5 t ( 100 @,@ 000 lb ) are common in the popular literature , but no scientific records support their existence . In 1868 , the Irish natural scientist Edward Perceval Wright obtained several small whale shark specimens in the Seychelles , but claimed to have observed specimens in excess of 15 m ( 49 @.@ 2 ft ) , and tells of shark specimens surpassing 21 m ( 68 @.@ 9 ft ) .

In a 1925 publication , Hugh M. Smith described a huge animal caught in a bamboo fish trap in Thailand in 1919 . The shark was too heavy to pull ashore , but Smith estimated the shark was at least 17 m ( 56 ft ) long , and weighed around 37 t . These measurements have been exaggerated to 43 t ( 95 @,@ 000 lb ) and a more precise 17 @.@ 98 m ( 59 @.@ 0 ft ) in recent years . A shark caught in 1994 off Tainan County , southern Taiwan , reportedly weighed 35 @.@ 8 t ( 79 @,@ 000 lb ) . There have even been unverified claims of whale sharks of up to 23 metres ( 75 ft ) and 100 tonnes ( 220 @,@ 000 lb ) . In 1934 , a ship named the Maurguani came across a whale shark in the southern Pacific Ocean , rammed it , and the shark became stuck on the prow of the ship , supposedly with 4 @.@ 6 m ( 15 ft ) on one side and 12 @.@ 2 m ( 40 ft ) on the other . No reliable documentation exists for these claims and they remain " fish stories " .

= = Diet = =

The whale shark is a filter feeder ? one of only three known filter feeding shark species ( along with the basking shark and the megamouth shark ) . It feeds on plankton including copepods , krill , fish eggs , Christmas Island red crab larvae and small nektonic life , such as small squid or fish . It also feeds on clouds of eggs during mass spawning of fish and corals . The many rows of vestigial teeth play no role in feeding . Feeding occurs either by ram filtration , in which the animal opens its mouth and swims forward , pushing water and food into the mouth , or by active suction feeding , in which the animal opens and closes its mouth , sucking in volumes of water that are then expelled through the gills . In both cases , the filter pads serve to separate food from water . These unique , black sieve @-@ like structures are presumed to be modified gill rakers . Food separation in whale sharks is by cross @-@ flow filtration , in which the water travels nearly parallel to the filter pad surface , not perpendicularly through it , before passing to the outside , while denser food particles continue to the back of the throat . This is an extremely efficient filtration method that minimises fouling of the filter pad surface . Whale sharks have been observed " coughing " , presumably to clear a build @-@ up of particles from the filter pads . Whale sharks migrate to feed and possibly to breed .

The whale shark is an active feeder , targeting concentrations of plankton or fish . It is able to ram filter feed or can gulp in a stationary position . This is in contrast to the passive feeding basking shark , which does not pump water . Instead , it swims to force water across its gills .

A juvenile whale shark is estimated to eat 21 kg ( 46 pounds ) of plankton per day .

The BBC program Planet Earth filmed a whale shark feeding on a school of small fish . The same documentary showed footage of a whale shark timing its arrival to coincide with the mass spawning of fish shoals and feeding on the resultant clouds of eggs and sperm .

= = Behavior toward divers = =

Despite its size , the whale shark does not pose significant danger to humans . Whale sharks are docile fish and sometimes allow swimmers to catch a ride , although this practice is discouraged by shark scientists and conservationists because of the disturbance to the sharks . Younger whale sharks are gentle and can play with divers . Underwater photographers such as Fiona Ayerst have

photographed them swimming close to humans without any danger .

The shark is seen by divers in many places , including the Bay Islands in Honduras , Thailand , the Philippines , the Maldives , the Red Sea , Western Australia ( Ningaloo Reef , Christmas Island ) , Taiwan , Panama ( Coiba Island ) , Belize , Tofo Beach in Mozambique , Sodwana Bay ( Greater St. Lucia Wetland Park ) in South Africa , the Galapagos Islands , Saint Helena , Isla Mujeres , La Paz , Baja California Sur and Bahía de los Ángeles in Mexico , the Seychelles , West Malaysia , islands off eastern peninsular Malaysia , India , Sri Lanka , Oman , Fujairah , and Puerto Rico . Juveniles can be found near the shore in the Gulf of Tadjoura , near Djibouti .

= = In captivity = =

Two whale sharks were featured as the main attraction of Osaka Aquarium Kaiyukan and as of 2005 , three whale sharks were in captivity at the Okinawa Churaumi Aquarium in Japan . The loworld Aquarium in Kagoshima , Japan , also features a single adult whale shark as a major attraction . One was also on display in the Taiwan , Kenting National Museum of Biology and Aquarium and 5 are on display at the Yantai Aquarium in China . Four whale sharks , two males , Taroko and Yushan , and two females , Alice and Trixie , live in the Georgia Aquarium , in Atlanta , USA . Two male whale sharks , Ralph and Norton , died in captivity at the Georgia Aquarium on 11 January 2007 , and 13 June 2007 , respectively . The two females were added on 3 June 2006 and two more males in 2007 . All six whale sharks were imported from Taiwan , where whale sharks are called tofu sharks because of the taste and texture of the flesh ; the fishery from which they came has since closed . Two whale sharks live at Polar Ocean World in Qingdao , China . One whale shark was at the Atlantis Hotel in Dubai , but was released in March 2010 @.@ there are also 2 whale sharks in the Inbursa aquarium in Mexico City .

= = Reproduction = =

Neither mating nor pupping of whale sharks has been observed .

The capture of a female in July 1996 that was pregnant with 300 pups indicated whale sharks are ovoviviparous . The eggs remain in the body and the females give birth to live young which are 40 to 60 cm ( 16 to 24 in ) long . Evidence indicates the pups are not all born at once , but rather the female retains sperm from one mating and produces a steady stream of pups over a prolonged period . They reach sexual maturity at around 30 years and their lifespan is an estimated 70 to 100 years .

On 7 March 2009 , marine scientists in the Philippines discovered what is believed to be the smallest living specimen of the whale shark . The young shark , measuring only 38 cm ( 15 in ) , was found with its tail tied to a stake at a beach in Pilar , Sorsogon , Philippines , and was released into the wild . Based on this discovery , some scientists no longer believe this area is just a feeding ground ; this site may be a birthing ground , as well . Both young whale sharks and pregnant females have been seen in the waters of Saint Helena in the South Atlantic Ocean , where numerous whale sharks can be spotted during the summer .

= = Conservation status = =

There is currently no robust estimate of the global whale shark population . The species is considered vulnerable by the IUCN due to its long life span and late maturation . It is listed , along with six other species of sharks , under the CMS Memorandum of Understanding on the Conservation of Migratory Sharks . In 1998 , the Philippines banned all fishing , selling , importing , and exporting of whale sharks for commercial purposes , followed by India in May 2001 , and Taiwan in May 2007 . They are currently listed as a vulnerable species , but continue to be hunted in parts of Asia , such as Taiwan and China . In 2016 they are now listed as endangered .

In 2006 , Resorts World Sentosa announced its plans to bring in whale sharks for their marine life park . This was met with opposition from seven notable conservation societies . In 2009 , the plan

was shelved in favour of a search for other alternatives .

In 2010 , the Gulf of Mexico oil spill resulted in 4 @, @ 900 @, @ 000 barrels ( 780 @, @ 000 m<sup>3</sup> ) of oil flowing into an area south of the Mississippi River Delta , where one @-@ third of all whale shark sightings in the northern part of the gulf have occurred in recent years . Sightings confirmed that the whale sharks were unable to avoid the oil slick , which was situated on the surface of the sea where the whale sharks feed for several hours at a time . No dead whale sharks were found .

This species was also added to Appendix II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora ( CITES ) in 2003 to regulate the international trade of live specimens and its parts .

= = Human culture = =

In Vietnamese culture , the whale shark is revered as a deity called Cá Ông , which literally translates as " Lord Fish " .

In the Philippines , it is called butanding and balilan . The whale shark is featured on the reverse of the Philippine 100 @-@ peso bill . By law snorkelers must maintain a distance of four feet from the sharks and there is a fine and possible jail time for anyone who touches the animals .