

= Pelagic thresher =

The pelagic thresher (*Alopias pelagicus*) is a species of thresher shark , family Alopiidae ; this group of sharks is characterized by the greatly elongated upper lobes of their caudal fins . The pelagic thresher occurs in the tropical and subtropical waters of the Indian and Pacific Oceans , usually far from shore but occasionally entering coastal habitats . It is often confused with the common thresher (*A. vulpinus*) , even in professional publications , but can be distinguished by the dark , rather than white , color over the bases of its pectoral fins . The smallest of the three thresher species , the pelagic thresher typically measures 3 m (10 ft) long .

The diet of the pelagic thresher consists mainly of small midwater fishes , which are stunned with whip @-@ like strikes of their tails . Along with all other mackerel sharks , the pelagic thresher exhibits ovoviviparity and usually gives birth to litters of two . The developing embryos are oophagous , feeding on unfertilized eggs produced by the mother . The young are born unusually large , up to 43 % the length of the mother . Pelagic threshers are valued by commercial fisheries for their meat , skin , liver oil , and fins , and are also pursued by sport fishers . The International Union for Conservation of Nature (IUCN) assessed this species as Vulnerable in 2007 .

= Taxonomy and phylogeny =

The pelagic thresher was originally described by Japanese ichthyologist Hiroshi Nakamura on the basis of three large specimens , none of which was designated a type specimen . He illustrated one of the three specimens in his paper , " On the two species of the thresher shark from Formosan waters " , published in August 1935 . Nakamura also separately illustrated and described a fetus , that Leonard Compagno later concluded was probably of a common thresher . Several authors , including Gohar and Mazhar (1964 , Red Sea) , Kato , Springer and Wagner (1967 , Eastern Pacific) , Fourmanoir and Laboute (1976 , New Caledonia) , Johnson (1978 , Tahiti) , and Faughnan (1980 , Hawaiian Islands) have published illustrations of " common threshers " that were in fact pelagic threshers .

An allozyme analysis conducted by Blaise Eitner in 1995 showed that the closest relative of the pelagic thresher is the bigeye thresher (*A. superciliosus*) , with which it forms a clade . The specific epithet *pelagicus* is from the Greek *pelagios* , meaning " of the sea " . Another common name is the smalltooth thresher .

= Distribution and habitat =

Due to confusion with the common thresher , the distribution of the pelagic thresher may be wider than is currently known . It ranges extensively in the Indo @-@ Pacific , with scattered records from South Africa , the Red Sea and the Arabian Sea (off Somalia , between Oman and India , and off Pakistan) , to China , southeastern Japan , northwestern Australia , New Caledonia , and Tahiti , to the Hawaiian Islands , the Gulf of California , and the Galapagos Islands . The North Pacific population shifts northward during warm El Nino years . Analysis of mitochondrial DNA has shown extensive gene flow within the eastern and western Pacific pelagic thresher populations , but little flow between them .

The pelagic thresher primarily inhabits the open ocean , occurring from the surface to a depth of at least 150 m (492 ft) . However , it occasionally comes close to shore in regions with a narrow continental shelf , and has been observed near coral reef dropoffs or seamounts in the Red Sea and the Gulf of California , and off Indonesia and Micronesia . It has also been known to enter large lagoons in the Tuamotu Islands .

= Description =

The pelagic thresher is the smallest of the thresher sharks , averaging 3 m (10 ft) in length and 69 @.@ 5 kg (153 @.@ 3 lb) in weight , and usually not exceeding 3 @.@ 3 m (10 @.@ 8 ft) and 88

@. @ 4 kg (194 @. @ 9 lb) . Males and females attain known maximum lengths of 3 @. @ 5 m (11 @. @ 5 ft) and 3 @. @ 8 m (12 @. @ 5 ft) , respectively . A record of 5 m (16 @. @ 4 ft) is dubious and may have resulted from confusion with other thresher species . This species has a fusiform body (wide in the middle and tapered at the ends) and a very slender upper caudal fin lobe nearly as long as the rest of the shark . The pectoral fins are long and straight with broad , rounded tips . The first dorsal fin is placed halfway between the pectoral and pelvic fins , and is of comparable size to the pelvic fins . The second dorsal and anal fins are tiny .

The head is narrow with a short , conical snout and a distinctive " pinched " profile when viewed from below . The eyes are very large in juveniles and decrease in relative size with age . No furrows occur at the corners of the mouth . The teeth are very small , numbering 21 ? 22 rows on each side with a symphysial (central) row in the upper jaw and 21 on each side without a symphysial row in the lower jaw . Five to 11 rows of posterior teeth are present . The teeth are smooth @-@ edged , with oblique cusps and lateral cusplets on the outside margins . The body is covered with very small , smooth dermal denticles with flat crowns and cusps with parallel ridges . The coloration is an intense dark blue above and white below ; the white does not extend to above the pectoral fins . The color rapidly fades to gray after death . The dark pigment above the pectoral fins , the rounded pectoral fin tips , and the absence of labial furrows separate this shark from the common thresher .

= = Biology and ecology = =

The pelagic thresher is an active , strong swimmer and has been known to leap clear of the water (five times in a row on one documented occasion) . Predators of the pelagic thresher include larger fishes (including other sharks) and toothed whales . Known parasites of this species include the tapeworms *Litobothrium amplifica* , *L. daileyi* , and *L. nickoli* , which inhabit the shark 's spiral valve intestine , and copepods of the genus *Echthrogaleus* , which infest the skin . At Malapascua Island in the Philippines , pelagic threshers have been observed regularly visiting cleaning stations occupied by cleaner wrasses (*Labroides dimidiatus* and *Thalassoma lunare*) , during which they exhibit characteristic behaviors to facilitate the cleaning interaction . These visits occur more frequently early in the morning , and may be why these normally oceanic sharks are sometimes encountered in shallow water .

= = = Feeding = = =

Little information is available on the feeding ecology of the pelagic thresher . Its very slender tail and fine dentition suggest an exclusive diet of small , pelagic prey . Analysis of stomach contents reveal that pelagic threshers feed mainly on barracudinas , lightfishes , and escolars , all inhabitants of the mesopelagic zone . Therefore , little competition occurs between the pelagic thresher and other large oceanic piscivores such as billfishes , tunas , and dolphinfishes , which tend to feed near the surface . As in other threshers , pelagic threshers may swim in circles to drive schooling prey into a compact mass , before striking them sharply with the upper lobe of their tails to stun them . Because of this behavior , pelagic threshers are often hooked on longlines by their tails .

= = = Life history = = =

Like the rest of the mackerel sharks , the pelagic thresher is ovoviviparous . It gives birth to two pups at a time (rarely just one) , one per uterus . With no defined breeding season , most adult females are pregnant throughout the year ; the gestation period is uncertain , but has been suggested to be less than one year as in the common thresher . The developing embryos are sustained by a yolk sac until they are 12 cm (4 @. @ 7 in) long , after which they are oophagous and feed on egg capsules produced by the mother . Each capsule measures about 55 mm (2 @. @ 2 in) long and 12 mm (0 @. @ 5 in) across , and contains 20 ? 30 ova . Early stage embryos have specialized teeth for opening the capsules , while later @-@ stage embryos have their teeth hidden and swallow the capsules whole , their teeth not becoming functional again until just after birth . No

evidence of sibling cannibalism has been found as in the sand tiger shark (*Carcharias taurus*) . Young pelagic threshers are born unusually large , up to 1 @. @ 6 m (5 @. @ 2 ft) long or 43 % the length of the mother , which likely reduces predation on the newborns .

The growth rate of pelagic threshers slows with age : 9 cm / year for ages 0 ? 1 , 8 cm / year for ages 2 ? 3 , 6 cm / year for ages 5 ? 6 , 4 cm / year for ages 7 ? 10 , 3 cm / year for ages 10 ? 12 , and 2 cm / year for ages 13 and greater . Females reach maturity at 2 @. @ 8 ? 2 @. @ 9 m (9 @. @ 2 ? 9 @. @ 5 ft) long and eight to nine years old , while males mature at 2 @. @ 7 ? 2 @. @ 8 m (8 @. @ 9 ? 9 @. @ 2 ft) long and seven to eight years old . The oldest confirmed ages for females and males are 16 and 14 years respectively . Extrapolating the growth curves to the largest known individuals suggests that females may have a lifespan exceeding 28 years , and males 17 years . A single female produces about 40 young over her entire life .

= = = Thermoregulation = = =

Anatomical examination indicates that the pelagic thresher is unlikely to be warm @-@ bodied like the common thresher . The pelagic thresher lacks a rete mirabile , a blood vessel countercurrent exchange system that prevents metabolic heat from being dissipated into the water , inside its trunk . Furthermore , its aerobic red muscles , responsible for generating heat in the common thresher , are positioned in two lateral strips just beneath the skin rather than at the core of the body . A rete system is present around the pelagic thresher 's brain and eyes , albeit less developed than in the bigeye thresher , which may serve to buffer those organs against temperature changes .

= = Human interactions = =

The pelagic thresher has never been implicated in an attack on humans ; it has small jaws and teeth for its size and tends to flee from divers . This shark is taken by commercial fisheries in the central Pacific and western Indian Oceans , as well as off California and Mexico . Abundant off northeastern Taiwan , it comprises over 12 % (about 3 @, @ 100 fish , 220 metric tons) of the annual Taiwanese shark landings . The meat is sold for human consumption , the skin is made into leather , and the fins are used for shark fin soup in Asia . The squalene oil in the liver of the pelagic thresher can comprise 10 % of its weight , and is used in the manufacture of cosmetics , health foods , and high @-@ grade machine oil .

Though rarely caught , pelagic threshers are also valued by sport fishers and are listed as game fish by the International Game Fish Association . The largest overall records are from New Zealand , while the light tackle records are from California . Pelagic threshers are frequently taken as bycatch on longlines and in driftnets meant for other species such as tuna , and also rarely in gillnets and antishark nets . All three thresher shark species were assessed as Vulnerable by the IUCN in 2007 , as their low fecundity cannot sustain high levels of exploitation .