**Basking shark**

The basking shark is the second-largest living shark and fish, after the whale shark. It is one of three plankton-eating shark species, along with the whale shark and megamouth shark. Typically, basking sharks reach 7.9 m (26 ft) in length. Their mouths can stretch almost 1 metre across. Thousands of gallons of water filter through their gills per hour. They are able to withstand great pressures and have been found at depths of over 3,000 feet. The basking shark is a cosmopolitan migratory species found in all the world's temperate oceans. A slow-moving filter feeder, its common name derives from its habit of feeding at the surface, appearing to be basking in the warmer water there. It has anatomical adaptations for filter-feeding, such as a greatly enlarged mouth and highly developed gill rakers. Its snout is conical, and the gill slits extend around the top and bottom of its head. The gill rakers, dark and bristle-like, are used to catch plankton as water filters through the mouth and over the gills. The teeth are numerous and very small and often number 100 per row. The teeth have a single conical cusp, are curved backwards and are the same on both the upper and lower jaws. This species has the smallest weight-for-weight brain size of any shark, reflecting its relatively passive lifestyle. Basking sharks have few predators. White sharks have been reported to scavenge on the remains of these sharks. Killer whales have been observed feeding on basking sharks off California in the US and New Zealand. Lampreys are often seen attached to them, although they are unlikely to be able to cut through the shark's thick skin.

The basking shark is a ram feeder, utilizing its gill rakers to filter zooplankton, small fish, and invertebrates from the water while swimming forward with its mouth open. A 5-meter-long basking shark has been estimated to filter up to 500 short tons of water per hour, moving at a speed of 0.85 meters per second. They exhibit selectivity in their feeding habits, with zooplankton densities observed to be 75% higher in areas where they are actively feeding.

These sharks preferentially feed in patches of zooplankton, particularly favoring small planktonic crustaceans known as calanoid copepods, which can reach densities of about 1,700 individuals per cubic meter of water. Additionally, they may consume copepods from the genera Pseudocalanus and Oithona. At times, basking sharks gather in groups, with congregations of up to 1,400 individuals spotted along the northeastern U.S. coast.

Unlike some other filter-feeding sharks like the megamouth shark and whale shark, which can actively suck or pump water through their gills, the basking shark relies solely on the water it passes through its gills while swimming. Samples taken from areas near feeding basking sharks revealed higher concentrations of Calanus helgolandicus individuals, which were also found to be 50% longer on average.

**Blacktip shark**

The blacktip shark (Carcharhinus limbatus) belongs to the family Carcharhinidae and is a common species found in coastal tropical and subtropical waters worldwide, including brackish habitats. Genetic studies have shown significant variation within the species, particularly isolating populations in the western Atlantic Ocean from others in its range. These sharks have a stout, streamlined body with a pointed snout, long gill slits, and distinctive black tips or edges on their pectoral, dorsal, pelvic, and caudal fins. Typically reaching lengths of around 1.5 meters, they are known for their swift and energetic feeding behavior, often leaping out of the water while hunting small fish. Despite their agility, they are considered relatively timid compared to other large requiem sharks. Blacktip sharks are viviparous, with females giving birth to one to ten pups every other year. Juveniles spend their early months in shallow nurseries, with adult females returning to their birth nurseries to give birth themselves. Interestingly, females can reproduce asexually in the absence of males.

While normally shy around humans, blacktip sharks can become aggressive when food is present, leading to occasional attacks on people. They are commercially and recreationally important, with their meat, skin, fins, and liver oil being utilized. Due to their low reproductive rate and high fishing pressure, they have been classified as Vulnerable by the IUCN.The blacktip shark is a species of requiem shark. It is common to coastal tropical and subtropical waters around the world, including brackish habitats. 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). They have an excellent sense of smell and can detect one part of fish flesh in 10 billion parts of seawater. 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.

**Blue shark**

The blue shark (Prionace glauca), also referred to as the great blue shark, is a requiem shark species belonging to the family Carcharhinidae. Found in deep waters of temperate and tropical oceans worldwide, they typically reach an average length of about 3.1 meters (10 feet) and favor cooler waters. These sharks undertake extensive migrations, with notable journeys such as from New England to South America. Their conservation status is categorized as Near Threatened by the IUCN.

Despite their generally sluggish demeanor, blue sharks are capable of sudden bursts of speed. They give birth to live young and are known for producing large litters, often ranging from 25 to over 100 pups. Their diet mainly consists of small fish and squid, although they are capable of consuming larger prey as well. The maximum lifespan of blue sharks is still uncertain, but it's believed that they can live up to 20 years. Maximum lifespan is still unknown, but it is believed that they can live up to 20 years. They seem to be “sleep swimming,” with parts of their brain being less active, or "resting," while the shark remains swimming.

Blue sharks are relatively manageable to feed and maintain in captivity, with the main challenges revolving around transportation, vulnerability to predation by larger sharks, and difficulties navigating smooth surfaces within tanks. Smaller blue sharks, up to 1 meter (3.3 feet) in length, can be transported to aquariums with relative ease. However, transporting larger individuals presents more complex logistical hurdles. Their smaller size upon introduction to aquariums makes them susceptible to predation by other resident sharks, such as bull, grey reef, sandbar, and sand tiger sharks. For instance, at Sea World San Diego, several blue sharks initially thrived but were later consumed when bull sharks were introduced to their exhibit.

Efforts to house blue sharks in tanks of various sizes, shapes, and depths have revealed their struggle to navigate around walls, aquarium windows, and other smooth surfaces. This difficulty can lead to abrasions on their fins or snouts, potentially resulting in serious infections. To successfully keep blue sharks, it's essential to provide tanks that offer elongated, optimal swimming paths to minimize contact with smooth surfaces. Some suggestions include incorporating prominent rockwork, which may be easier for blue sharks to avoid compared to smooth surfaces, as observed in captive tiger sharks.

**Bull shark**

The bull shark (Carcharhinus leucas), also known as the Zambezi shark in Africa and the Lake Nicaragua shark in Nicaragua, is a species of requiem shark found worldwide in warm, shallow waters along coastlines and in rivers. It is notorious for its aggressive behavior and is commonly present in warm, shallow brackish and freshwater environments, including estuaries and lower river reaches. Due to its aggressive nature and habitat preferences, the bull shark is listed as vulnerable on the IUCN Red List. Population declines are exacerbated by shark culling near beaches, implemented to protect beachgoers.

Bull sharks are adaptable to varying salinity levels and can thrive in both saltwater and freshwater habitats. They are capable of venturing far upstream in rivers, with documented sightings up the Mississippi River as far as Alton, Illinois, approximately 1,100 kilometers (700 miles) from the ocean. Although bull sharks have access to freshwater environments, interactions with humans in such settings are infrequently recorded. Larger individuals of this species are often implicated in nearshore shark attacks, including incidents attributed to other shark species.

It's important to note that while bull sharks can survive in freshwater, they are not true freshwater sharks like those of the Glyphis genus. The bull shark featured on the 2000 colones bill from Costa Rica is the same species as described above.

The maximum size of 3.5 m (11 ft) is commonly reported, a single record exists of a female specimen of exactly 4.0 m (13 ft). With up to 1,350psi (pounds per square inch) the average bite strength of Bull Sharks ranks among the top 10 of the most powerful bites among animals. The bull shark exhibits diadromous behavior, meaning it can easily navigate between saltwater and freshwater environments due to its status as a euryhaline fish, capable of adapting swiftly to various salinities. This adaptability allows bull sharks to inhabit freshwater systems, distinguishing them from many other cartilaginous fishes, such as salmon or tilapia, which are primarily bony fishes and not closely related to bull sharks. Evolutionary theories suggest that a population bottleneck during the last ice age may have separated bull sharks from the rest of the Elasmobranchii subclass, favoring genetic adaptations for osmoregulation.

Typically, elasmobranchs face limitations in freshwater environments due to their blood having a higher osmotic strength than freshwater, resulting from the accumulation of urea and trimethylamine oxide. However, bull sharks inhabiting freshwater exhibit reduced urea concentration in their blood. Despite this, the osmolarity of a bull shark in freshwater remains higher than that of the external environment, leading to water influx across the gills via osmosis and loss of sodium and chloride from the body. To maintain salt and water balance, bull sharks possess specialized organs, including the rectal gland, kidneys, liver, and gills.

The rectal gland of elasmobranchs functions in salt excretion, with bull sharks in freshwater reducing salt-excretory activity to conserve sodium and chloride. The kidneys produce dilute urine while actively reabsorbing solutes into the blood. Gills likely play a role in sodium and chloride uptake from freshwater, while urea production in the liver adjusts with changes in salinity. Recent studies also highlight the increased negative buoyancy of bull sharks in freshwater due to differences in water density, leading to lower liver densities in freshwater-dwelling sharks, potentially reducing the cost of living in freshwater environments.

**Hammerhead shark**

Hammerhead sharks belong to the family Sphyrnidae and are characterized by their unique and distinctive heads, which are flattened and laterally extended into a cephalofoil, resembling a T-shape or "hammer." The eyes of these sharks are positioned at the ends of this structure, while their small mouths are located centrally underneath. The cephalofoil serves various potential functions, including sensory reception, maneuvering, and prey manipulation, granting hammerheads superior binocular vision and depth perception.

These sharks are globally distributed, favoring warmer waters along coastlines and continental shelves. Unlike many other shark species, some hammerhead species exhibit schooling behavior during the day, transitioning to solitary hunting at night.

Hammerhead sharks vary in size, ranging from 0.9 to 6.0 meters (2 ft 11 in to 19 ft 8 in) in length and weighing between 3 and 580 kilograms (6.6–1,300 lb). Exceptionally large specimens have been recorded, such as one caught off the Florida coast in 1906 weighing over 680 kilograms (1,500 lb). They typically have a light gray coloration with a greenish tint, complemented by white bellies that aid in blending with the background when viewed from below, allowing them to stealthily approach prey.

Their hammer-shaped heads exhibit some variation across species: the great hammerhead possesses a distinct T-shape, the scalloped hammerhead features a rounded head with a central notch, and the smooth hammerhead has an unnotched rounded head. Despite these differences, all hammerheads share disproportionately small mouths compared to other shark species. Some species are known to form schools, particularly during the day, while they typically hunt individually in the evening. During the summer, hammerheads engage in a mass migration to seek cooler waters. Hammerhead sharks exhibit a diverse diet that includes various prey such as fish (including other sharks), squid, octopus, and crustaceans. They have a particular fondness for stingrays, which they hunt skillfully due to the positioning of their smaller, crescent-shaped mouths beneath their T-shaped heads. This unique anatomy allows them to efficiently hunt skates, rays, and flounders, among other bottom-dwelling creatures. Hammerhead sharks are often observed swimming above the sand along the ocean floor, where they stalk their prey.

Their distinctive heads serve as a tool or weapon during hunting, especially when targeting rays and flatfish. The shark uses its head to pin down and momentarily stun the prey, seizing the opportunity to consume it once it's weakened and in shock. The great hammerhead, known for its larger size and more aggressive nature compared to other hammerhead species, occasionally engages in cannibalism, consuming other hammerhead sharks, including young individuals and even mothers eating their own offspring.

In addition to animal prey, bonnethead sharks have been documented feeding on seagrass, which can make up a significant portion of their stomach contents. While they may ingest seagrass unintentionally, they are capable of partially digesting it. This behavior was initially considered unique among sharks, suggesting a potentially omnivorous diet. However, subsequent research has revealed similar omnivorous behavior in whale sharks.

**Lemon shark**

The lemon shark (Negaprion brevirostris) is a member of the shark family Carcharhinidae and is categorized as a Vulnerable species by the International Union for Conservation of Nature (IUCN). These sharks can reach lengths of up to 3.4 meters (11 feet). They predominantly inhabit shallow subtropical waters and exhibit a tendency to return to specific nursery sites for breeding purposes. Lemon sharks are primarily nocturnal feeders, utilizing electroreceptors to detect their main prey, which consists of fish.

Group living provides lemon sharks with various advantages, including improved communication, courtship rituals, hunting strategies, and protection from predators. Females of this species are polyandrous, mating with multiple males, and follow a biennial reproductive cycle. Lemon sharks give birth to live young, and although their exact lifespan remains unknown, the average individual is estimated to live between 25 to 30 years.

Despite occasional encounters, lemon sharks are generally not considered a significant threat to humans. Only ten recorded incidents of bites have been documented, none of which resulted in life-threatening injuries.

Understanding a species' behavioral ecology relies heavily on information about its activity patterns and spatial utilization. Lemon sharks, for example, demonstrate a preference for warm and shallow waters with rocky or sandy bottoms, likely because these habitats offer suitable foraging sites and predator-safe locations.

Environmental temperature plays a crucial role in lemon shark behavior, influencing their body temperature and thus affecting physiological processes like growth and metabolism. They tend to select warm-water habitats to maintain optimal metabolic levels and avoid areas with dense sea grasses, which can hinder prey detection.

Lemon sharks are commonly found in or near shallow-water mangroves, which serve as nursery areas for various fish species. The abundance of prey in these habitats and the potential protection from adult lemon sharks, which occasionally prey on juveniles, are thought to attract lemon sharks to mangroves. As lemon sharks grow, they undergo ontogenetic niche shifts, moving to deeper waters where the risk of predation decreases.

These nursery areas, referred to as nursery sites, are essential for lemon sharks' development and survival. They represent locations where sharks are frequently encountered, where they are born or return to regularly, and where groups of sharks congregate repeatedly over several years.

Lemon sharks challenge the notion that all sharks are asynchronous opportunistic predators, as they exhibit well-defined home ranges and prolonged use of nursery areas. Studying lemon shark feeding behaviors in these habitats provides valuable insights into their dietary preferences and ecological role.

**Shortfin mako shark**

The shortfin mako shark, a member of the lamnid family, is known for its relatively rapid growth rates compared to other species. On average, adults measure between 2.5 to 3.2 meters (8.2 to 10.5 feet) in length and weigh around 60 to 140 kilograms (130 to 310 pounds). Females typically outsize males, and some mature females have been recorded exceeding lengths of 3.8 meters (12 feet) and weights of 550 kilograms (1,210 pounds). Exceptionally large individuals have been documented, such as one caught off California in 2013 weighing 600 kilograms (1,300 pounds) and another off the coast of France in 1973 measuring 4.45 meters (14.6 feet) in length. An extraordinary specimen reportedly weighed 1,000 kilograms (2,200 pounds) and measured 4 meters (13 feet) in length, caught in Italy in 1881. Another potentially larger individual estimated between 5.7 and 6.19 meters (18.7 and 20.3 feet) was captured off Turkey in the late 1950s, although this estimate is based on photographs taken after capture.

The shortfin mako shark is characterized by its cylindrical body shape and elongated tail. It displays countershading, with a vibrant metallic blue hue on its dorsal side and white on its ventral side, sharply delineated along the body. The snout and mouth area are white, while larger individuals may exhibit darker coloration extending onto areas that would be white in smaller sharks. Juveniles have a distinct blackish stain on the tip of the snout. While similar in appearance to the shortfin mako, the longfin mako shark can be distinguished by its larger pectoral fins, darker coloration around the mouth, and larger eyes. Additionally, the shortfin mako can be identified by its single lateral keel on the tail and the absence of lateral cusps on its teeth, distinguishing it from closely related porbeagle sharks of the Lamna genus. The shortfin mako shark primarily preys on cephalopods and bony fish such as mackerels, tunas, bonitos, and swordfish. However, they may also consume other sharks, porpoises, sea turtles, and seabirds. Their hunting strategy involves lunging vertically up to tear off chunks of their prey's flanks and fins. Makos typically position themselves below their prey, allowing them to remain unseen while having a high chance of reaching their target before it detects them. In some cases, shortfin makos have been found with swordfish bills embedded in their head and gills, suggesting encounters where the swordfish may seriously injure or kill them. These incidents often coincide with the swordfish's spawning cycle, indicating that makos may target them when they are most vulnerable.

Shortfin mako sharks have a voracious appetite, consuming about 3% of their body weight daily and taking approximately 1.5 to 2 days to digest a typical meal. This contrasts with less active species like the sandbar shark, which consumes only 0.6% of its body weight daily and takes 3 to 4 days to digest it. Studies analyzing stomach contents of shortfin makos indicate a preference for bluefish, comprising a significant portion (77.5%) of their diet by volume in certain regions. Larger makos over 3 meters (9.8 feet) possess wider and flatter interior teeth, enabling them to effectively prey on larger animals such as dolphins, swordfish, and other sharks. There have been observations of makos scavenging on long-lined and netted fish as well.

The shortfin mako shark is known for its exceptionally strong bite, with the current record for the strongest measured bite belonging to a mako recorded in New Zealand in 2020. During an experiment using a custom-made "bite meter," the mako's bite force was measured at roughly 3,000 pounds of force or approximately 13,000 newtons.

**Nurse shark**

The nurse shark (Ginglymostoma cirratum) is a species of elasmobranch fish belonging to the family Ginglymostomatidae. Its conservation status is assessed as Vulnerable on the IUCN List of Threatened Species. While considered a species of least concern in the United States and The Bahamas, nurse sharks are nearing threatened status in the western Atlantic Ocean due to their vulnerable status in South America and reported threats across Central America and the Caribbean. They face direct targeting in some fisheries and are often caught incidentally in others.

Nurse sharks play a crucial role in shark research due to their robust nature and ability to tolerate capture, handling, and tagging exceptionally well. Despite their seemingly docile nature, nurse sharks rank fourth in documented shark bites on humans. This is likely attributable to divers' careless behavior around them, given the nurse shark's calm and sedentary disposition. Nurse sharks are opportunistic predators primarily feeding on small fish like stingrays and some invertebrates such as crustaceans, mollusks, and tunicates. They are typically solitary and nocturnal, foraging through bottom sediments for food at night. However, during the day, they often form large sedentary groups. Nurse sharks are obligate suction feeders, capable of generating suction forces that rank among the highest recorded for any aquatic vertebrate. Despite their small mouths, they can employ a suck-and-spit behavior or vigorously shake their heads to reduce the size of food items.

Unlike many other shark species, nurse sharks are exceptionally sedentary. They exhibit strong site fidelity, typical of reef sharks, and are known to return to the same breeding grounds repeatedly, demonstrating mating site fidelity.

In some coastal habitats, American alligators (Alligator mississippiensis) and American crocodiles may occasionally prey on nurse sharks. Photographic evidence and historical accounts suggest that encounters between these species are not uncommon in their shared habitats. Nurse sharks are ovoviviparous, meaning their fertilized eggs develop and hatch internally within the female's body. The mating cycle of nurse sharks occurs biennially, with females taking up to 18 months to produce a new batch of eggs. Mating typically takes place from late June to the end of July, and females have a gestation period of approximately six months, resulting in a typical litter size ranging from 21 to 29 pups. The newborn nurse sharks are fully developed at birth, measuring about 30 cm long.

During the mating season, nurse sharks engage in multiple paternity, where more than one male fertilizes the eggs of a single female. A study conducted over a ten-year period found evidence of multiple paternity within nurse shark broods. The examination of one brood revealed 14 separate genotypes, indicating the involvement of multiple fathers in fertilizing the mother's eggs. This practice promotes genetic variation within the population.

The nurse shark is characterized by its two rounded dorsal fins, rounded pectoral fins, elongated caudal fin, and broad head. While past reports have claimed lengths of up to 4.5 meters (15 feet) and weights of up to 330 kilograms (730 pounds), the maximum documented adult length is currently recorded as 3.08 meters (10 feet 1+1⁄2 inches). Adult nurse sharks typically have a brownish coloration, while newly born individuals exhibit a spotted pattern that diminishes with age. When born, nurse sharks are approximately 30 centimeters in length.

**Sand tiger shark**

The sand tiger shark (Carcharias taurus), also known as the gray nurse shark, spotted ragged-tooth shark, or blue-nurse sand tiger, is a species inhabiting subtropical and temperate waters globally. Found along the continental shelf, it resides in diverse environments, from sandy shorelines to submerged reefs, typically at depths up to around 191 meters (627 feet). Its range includes waters off Japan, Australia, South Africa, and the eastern coasts of North and South America. Previously present in the Mediterranean, the sand tiger shark hasn't been sighted there since 2003 and is presumed extinct in the region. Despite its common names, it's not closely related to either the tiger shark (Galeocerdo cuvier) or the nurse shark (Ginglymostoma cirratum).

Despite its intimidating appearance and strong swimming capabilities, the sand tiger shark is relatively docile and slow-moving, with no confirmed human fatalities attributed to it. It possesses a distinctive sharp, pointy head and a robust body, reaching lengths of up to 3.2 meters (10.5 feet), although typically measuring between 2.2 to 2.5 meters. Their coloration is grey with reddish-brown spots on their backs. Shivers (groups) of sand tiger sharks have been observed hunting large schools of fish. Their diet consists of bony fish, crustaceans, squid, skates, and occasionally other sharks.

One notable reproductive behavior of the sand tiger shark is intrauterine cannibalism, where the most developed embryo consumes its siblings in the womb, a phenomenon known as embryophagy or adelphophagy. Despite its predatory prowess, the sand tiger shark is critically endangered according to the International Union for Conservation of Nature Red List. However, it remains one of the most commonly kept large sharks in public aquariums due to its adaptability to captivity.

Adult sand tiger sharks typically range from 2 meters (6.6 feet) to 3.2 meters (10.5 feet) in length, with most individuals measuring around 2.2 to 2.5 meters in length and weighing between 91 kilograms (201 pounds) to 159 kilograms (351 pounds). They have a distinctive appearance, characterized by a pointy head and flattened, conical snout. Their stout and bulky bodies feature a mouth that extends beyond the eyes, with small eyes lacking eyelids.

Sand tiger sharks are known for their unique dental structure, with three rows of protruding, smooth-edged, sharp-pointed teeth displayed when their mouths are open. Males possess grey claspers with white tips located on the underside of their bodies. Their caudal fin is elongated with a long upper lobe, giving it a strongly heterocercal shape. They also have two large, broad-based grey dorsal fins set back beyond the pectoral fins.

The coloration of the sand tiger shark is typically grey-brown on the back and pale on the underside, with adults often displaying reddish-brown spots scattered primarily on the hind part of the body. An albino specimen was photographed off South West Rocks, Australia, in August 2007. Their teeth lack transverse serrations common in many other shark species but feature a large, smooth main cusp with tiny cusplets on each side. Additionally, the upper front teeth are separated from the teeth on the side of the mouth by small intermediate teeth.

**Thresher shark**

Thresher sharks, belonging to the family Alopiidae, are large mackerel sharks found in temperate and tropical oceans worldwide. The family consists of three extant species, all falling under the genus Alopias. Since 2007, all three species of thresher sharks have been classified as vulnerable by the World Conservation Union (IUCN). They are prized as big-game sport fish and are also commercially hunted for various purposes, including their meat, livers (for shark liver oil), skin (used in shagreen), and fins (for delicacies like shark-fin soup).

Despite being active predators, thresher sharks do not pose a significant threat to humans. While occasionally spotted in shallow, inshore waters, thresher sharks primarily inhabit the pelagic zone, favoring the open ocean. They are known to prefer depths of 500 meters (1,600 feet) or less, although this preference may vary among species. Common threshers are often found in coastal waters over continental shelves, particularly along the continental shelves of North America and Asia in the North Pacific. In the warmer waters of the Central and Western Pacific, bigeye and pelagic thresher sharks are more commonly observed.

Despite their typical habitat preferences, there have been notable sightings of thresher sharks in unexpected locations. For instance, a thresher shark was observed on live video feed from a remotely operated vehicle (ROV) monitoring BP's Macondo oil well blowout in the Gulf of Mexico, indicating their presence in significantly deeper waters than previously assumed. Additionally, a bigeye thresher shark has been found in the western Mediterranean, suggesting that their distribution may be wider than previously believed or that environmental factors may be prompting sharks to explore new territories. Thresher sharks are named for their distinctive thresher-like heterocercal tail or caudal fins, which can be as long as their total body length. These tails are used as weapons to stun prey, making thresher sharks active predators. They possess short heads and cone-shaped noses, with generally small mouths containing teeth of varying sizes.

The largest species among the three is the common thresher, Alopias vulpinus, which can grow up to 6.1 meters (20 feet) in length and weigh over 500 kilograms (1,100 pounds). The bigeye thresher, A. superciliosus, follows in size, reaching lengths of 4.9 meters (16 feet). The smallest species is the pelagic thresher, A. pelagicus, measuring just 3 meters (10 feet) in length.

Thresher sharks have a fairly slender body shape, featuring small dorsal fins and large, recurved pectoral fins. Except for the bigeye thresher, their eyes are relatively small and positioned forward on the head. Their coloration varies, ranging from brownish, bluish, or purplish-gray dorsally to lighter shades ventrally. The three species can be roughly distinguished by the primary color of their dorsal surface, with common threshers appearing dark green, bigeye threshers brown, and pelagic threshers generally blue. However, lighting conditions and water clarity may affect their appearance, so additional features are usually examined to confirm their species identification. Thresher sharks do not exhibit a distinct breeding season. Instead, fertilization and embryonic development occur internally, following an ovoviviparous or live-bearing mode of reproduction. This reproductive strategy typically results in a small litter of well-developed pups, usually numbering between two to four individuals. Thin tail threshers, for example, can give birth to pups up to 150 centimeters (59 inches) in length.

**Tiger shark**

The tiger shark (Galeocerdo cuvier) is a species of ground shark and is the sole extant member of the genus Galeocerdo and family Galeocerdonidae. It is a large macropredator, with females capable of reaching lengths exceeding 5 meters (16 feet 5 inches). These sharks inhabit various tropical and temperate waters, particularly around central Pacific islands. Their name is derived from the dark stripes along their body, resembling a tiger's pattern, which tend to fade as the shark matures.

Tiger sharks are solitary and primarily nocturnal hunters. They are notable for having the broadest food spectrum among all shark species, preying on crustaceans, fish, seals, birds, squid, turtles, sea snakes, dolphins, and even other smaller sharks. Additionally, they have earned a reputation as "garbage eaters," consuming various inedible, man-made objects that accumulate in their stomachs. Tiger sharks have only one recorded natural predator, the orca. Due to finning and overfishing by humans, they are classified as near-threatened species.

While the tiger shark ranks second only to the great white shark in recorded fatal attacks on humans, such incidents are still exceptionally rare. The tiger shark typically reaches an adult length of 3.5 to 4.7 meters (11 feet 6 inches to 15 feet 5 inches) and weighs between 300 and 900 kilograms (700 and 2,000 pounds). Exceptionally large individuals have been reported, with females commonly exceeding 3.7 meters (12 feet 2 inches) in length and occasionally reaching over 5 meters (16 feet 5 inches), while mature males are generally smaller. There are reports of particularly large female tiger sharks weighing over 1,300 kilograms (2,900 pounds), with records of pregnant females measuring 5.5 meters (18 feet 1 inch) in length and weighing 1,524 kilograms (3,360 pounds). However, claims of larger specimens, such as a 7.4-meter (24 feet 3 inches) tiger shark, remain unverified.

Tiger sharks are among the largest extant sharks, ranking in average size behind only the whale shark, basking shark, and great white shark. They are considered the second-largest predatory shark after the great white. While other species like the megamouth shark, Pacific sleeper shark, Greenland shark, and bluntnose sixgill shark may broadly overlap in size with the tiger shark, comparative studies on their typical mature size are lacking.

Tiger shark teeth are distinctive, featuring very sharp serrations and a sideways-pointing tip, which enables them to slice through flesh, bone, and tough substances like turtle shells. These teeth are continually replaced throughout the shark's life. Although tiger shark teeth are shorter than those of the great white shark, they are nearly as broad at the root and are well-suited for slicing through hard-surfaced prey.

In terms of locomotion, tiger sharks have long fins for lift and a long upper tail for bursts of speed. They typically use small body movements for swimming through water.

**Whale shark**

The whale shark (Rhincodon typus) is a slow-moving filter-feeding carpet shark and holds the title of being the largest known extant fish species. The largest confirmed individual recorded measured an impressive 18.8 meters (61.7 feet) in length. This remarkable species boasts several size-related records in the animal kingdom, notably as the most massive living non-cetacean animal. It stands as the sole member of the genus Rhincodon and the only extant representative of the family Rhincodontidae, which falls under the subclass Elasmobranchii in the class Chondrichthyes. Prior to 1984, it was classified as Rhiniodon within the family Rhinodontidae.

Whale sharks are primarily found inhabiting the open waters of all tropical oceans, with rare sightings in waters below 21°C (70°F). Their lifespans are estimated to range between 80 and 130 years, based on studies of their vertebral growth bands and growth rates observed in free-swimming sharks. Featuring remarkably large mouths, whale sharks are filter feeders, a feeding mode shared only with two other shark species: the megamouth shark and the basking shark. They predominantly feed on plankton and small fishes and are considered harmless to humans. Whale sharks have a broad, flattened head housing a large mouth and two small eyes situated at the front corners, unlike many other shark species where the mouth is located underneath the head.

There have been reports of whale sharks with mouths as wide as 1.55 meters (5.1 feet), containing over 300 rows of tiny teeth and 20 filter pads used for filter feeding. Spiracles are positioned just behind their eyes, and they possess five pairs of large gills. Their skin is dark grey with a white belly marked by unique arrangements of pale grey or white spots and stripes. The skin, which can be up to 15 centimeters (5.9 inches) thick, is tough and rough to the touch. Along their sides, three prominent ridges begin above and behind the head and extend to the caudal peduncle. Whale sharks have two dorsal fins set relatively far back on their bodies, as well as a pair of pectoral fins, pelvic fins, and a single medial anal fin. Their caudal fin has a larger upper lobe than the lower lobe, a characteristic known as heterocercal.

Whale sharks have dermal denticles on the surface of their eyeballs, distinct from those on their bodies, which protect their eyes from damage. Additionally, they can retract their eyes deep into their sockets for further protection.

Studies suggest that whale sharks can recover from significant injuries and may have the ability to regenerate small sections of their fins. Furthermore, their spot markings have been observed to reform over previously wounded areas.

In 2017, the complete and annotated genome of the whale shark was published, offering valuable insights into their genetic makeup and biology.

**White shark**

The great white shark, scientifically known as Carcharodon carcharias, is a large mackerel shark found in the coastal surface waters of all major oceans. It is the sole surviving species of its genus, Carcharodon. Known for its impressive size, the largest recorded female specimen reached a length of 5.83 meters (19.1 feet) and a weight of around 2,000 kilograms (4,410 pounds) upon reaching maturity. However, most individuals are smaller, with males averaging between 3.4 to 4.0 meters (11 to 13 feet) and females measuring between 4.6 to 4.9 meters (15 to 16 feet) on average. Recent research suggests that great white sharks can live as long as 70 years or more, making them one of the longest-lived cartilaginous fishes known. Sexual maturity is reached at around 26 years for males and 33 years for females.

Great white sharks are known for their impressive swimming capabilities, reaching speeds of up to 25 km/h (16 mph) for short bursts and diving to depths of 1,200 meters (3,900 feet). As one of the largest known macropredatory fish, they are apex predators and feed on marine mammals such as pinnipeds and dolphins, as well as other animals including fish, sharks, and seabirds. Their only natural predator is the orca.

Facing ecological challenges, the great white shark is classified as a vulnerable species by the International Union for Conservation of Nature and is protected by various international agreements and national governments. Due to their migratory behavior and specific dietary needs, keeping great white sharks in captivity is not feasible, and there are no known aquariums housing live specimens.

The portrayal of great white sharks in popular culture, particularly as ferocious man-eaters, has been influenced by works such as the novel "Jaws" by Peter Benchley and its film adaptation by Steven Spielberg. While humans are not their preferred prey, great white sharks are responsible for the largest number of reported and identified fatal unprovoked shark attacks on humans, though such incidents are rare, occurring fewer than 10 times per year globally. Great white sharks inhabit a wide range of coastal and offshore waters with temperatures ranging from 12 to 24 °C (54 to 75 °F). They are commonly found in regions such as the United States (Northeast and California), South Africa, Japan, Oceania, Chile, and the Mediterranean, including the Sea of Marmara and Bosphorus. Particularly dense populations have been observed around Dyer Island, South Africa. Juvenile great white sharks typically inhabit shallow coastal nurseries with temperatures between 14 and 24 °C (57 and 75 °F). However, there are indications that climate change may be affecting the range of juvenile sharks, potentially shifting it towards the poles.

Although traditionally considered a coastal species, great white sharks have been found in open ocean environments at depths of up to 1,200 meters (3,900 feet). Recent studies have challenged the notion of them being solely coastal predators. For instance, California great whites have been observed migrating to an area known as the White Shark Café between the Baja California Peninsula and Hawaii, spending about 100 days there before returning to Baja. Similarly, sharks tagged off the South African coast have undertaken long migrations to locations such as Australia, indicating a more extensive range and potential interactions between populations previously thought to be separate.

In the Northwest Atlantic, great white shark populations off the New England coast were severely depleted due to overfishing but have since rebounded, partly due to increased seal populations following protective measures. Research efforts are underway to understand the hunting and movement patterns of these sharks, particularly off Cape Cod, Massachusetts, where ongoing studies seek to provide insights into the behavior of this growing shark population.

Additionally, a 2018 study revealed that white sharks exhibit preferences for congregating in deep anticyclonic eddies in the North Atlantic Ocean, where they spend daytime hours at depths of 450 meters and surface at night, highlighting their complex behavior and habitat preferences.

**Whitetip shark**

The oceanic whitetip shark (Carcharhinus longimanus) is a species found worldwide between 45°N and 43°S latitude. It primarily inhabits deep, open oceans with temperatures greater than 18 °C (64 °F), preferring temperatures above 20 °C (68 °F) and up to 28 °C (82 °F). However, it can also tolerate cooler temperatures down to 15 °C (59 °F) but avoids colder waters. While once common and widely distributed, recent studies indicate a significant decline in its population.

This shark typically resides in the upper layer of the ocean, usually not deeper than 150 m (490 ft). It tends to favor off-shore, deep-ocean areas, with longline capture data showing a higher population density farther from land. Despite its preference for deep waters, it can occasionally be found closer to shore, even in waters as shallow as 37 m (120 ft), particularly around oceanic islands and narrow continental shelves.

One of the most distinctive features of the oceanic whitetip shark is its long, wing-like pectoral and dorsal fins, which are notably larger and more rounded compared to those of most other shark species. It has a rounded snout and circular eyes equipped with nictitating membranes, which are translucent eyelids that protect the eyes while still allowing some visibility. The oceanic whitetip shark is characterized by its robust, large-bodied build. While the largest specimen ever caught measured over 4 m (13 ft) in length, the typical size ranges up to 3 m (10 ft) in length and 150 kg (330 lb) in weight. However, the International Game Fish Association (IGFA) lists the all-tackle record at 167 kg (368 lb) for a 2.2-metre (7.2 ft) individual, suggesting larger individuals may weigh considerably more. Females are generally larger than males by about 10 cm (3.9 in). In the past, specimens from the Gulf of Mexico averaged around 86.4 kg (190 lb) in the 1950s but decreased to about 56.1 kg (124 lb) in the 1990s.

Its coloration is gray-bronze dorsally and white ventrally, with most fins exhibiting white tips as the name suggests. The fins may also have mottled patterns, and young sharks can display black marks. A distinct saddle-like patch may be visible between the first and second dorsal fins. The shark has two types of teeth: those in the lower jaw are thinner with serrated tips, while those in the upper jaw are larger, triangular, and entirely serrated along the edges.

The oceanic whitetip shark is typically solitary but may gather in areas with abundant food. It is known to be both diurnal and nocturnal, cruising near the surface of the water in open ocean habitats. During summer, it may swim faster and at deeper depths when surface waters are warmer. This species has been observed breaching out of the water.

Its diet primarily consists of pelagic cephalopods like squid and various bony fish species. However, it can also consume a wide range of other prey, including threadfins, stingrays, sea turtles, seabirds, crustaceans, and marine mammal carcasses. Oceanic whitetips are known for their scavenging behavior, particularly around floating carcasses from whaling activities. They often compete for food with silky sharks and have been observed trailing pilot whales, as both species feed on squid.