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Grey nurse shark.

Fact sheet: Sizing up Australia's eastern Grey Nurse Shark population Abstract:A new estimate of adult population size for Australia's eastern Grey Nurse Shark drew on widespread genetic sampling and forensic exploration of family trees. Grey nurse sharks are found across tropical and temperate regions of the North and South Atlantic, Indian and western Pacific oceans, to depths of at least 230 metres. Internationally, they are listed as Vulnerable on the International Union for Conservation of Nature Red List of Threatened Species. Australia has distinct eastern and western populations, each inhabiting an approximate 2700 kilometre stretch of coastal waters. The eastern population ranges from central Queensland to at least the New South Wales/Victoria border and the western population ranges from Western Australia's North West Shelf to at least Cocklebidy in the Great Australian Bight. The eastern population is listed as Critically Endangered under the Australian Environment Protection and Biodiversity Conservation Act 1999. Objective 1 of the 2014 national recovery plan for the Grey Nurse Shark is to: Develop and apply quantitative monitoring of the population status (distribution and abundance) and potential recovery of the Grey Nurse Shark in Australian waters. Previous population estimates for Grey Nurse Shark in 2009 and 2010 relied on photo identification, but this technique can have challenges relating to covering the full geographic range of the population, and the accuracy of matching the sharks' spot markings. This CSIRO-led project, funded by the National Environmental Science Program Marine Biodiversity Hub, built on data collections and analytical techniques developed in a suite of related projects completed under this partnership. Scientific name: *Carcharias taurus* Alternative name/s: Spotted Ragged-Tooth Similar species: The family Odontaspidae contains two genera, *Carcharias* and *Odontaspis*. Two species (both genera) occur in Australian waters: the Grey nurse Shark and Sandtiger Shark *Odontaspis ferox*. Click to enlarge image A Grey nurse Shark at a depth of 17 m, off Sydney, New South Wales, February 2001. Image: Erik Schlägl © Erik Schlägl For many years, the Grey nurse Shark was accused of being a 'maneater'. This is far from the truth. The exciting new family exhibition, Sharks, is coming soon to the Australian Museum in Spring 2022. Find out more The Grey nurse Shark is a distinctive fish which is usually grey-brown on top and a dusky white underneath. Both dorsal fins and the anal fin are of a similar size. Juveniles have reddish or brownish spots on the posterior (back) half of the body and tail. These spots often fade as the shark ages, but are sometimes still visible on adults. A Grey nurse Shark off Sydney Image: Erik Schlägl © Erik Schlägl The Grey nurse Shark lives in shallow coastal waters from the surf zone down to 60 m, although it has been recorded from water as deep as 190 m. During the day, individuals are usually found in the vicinity of dropoffs, caves and ledges. Distribution The Grey nurse Shark occurs in tropical and temperate waters in the Atlantic, Indian and western Pacific Oceans, although the species is known by different common names in different regions. It is recorded from all states of Australia except Tasmania. The map below shows the Australian distribution of the species based on public sightings and specimens in Australian Museums. Click on the map for detailed information. Grey nurse Sharks feed on fishes, which are pierced with the sharp teeth. In some parts of the world, the species is known as the Spotted Ragged-Tooth. The reason for the this name is obvious. The species has fang-like teeth which are visible when the shark's mouth is closed. Grey nurse Sharks are not however the 'maneaters' that some people have considered them to be. The teeth of the Grey nurse Shark are constantly being replaced. Older, damaged or blunt teeth on the exterior surfaces of the jaws are replaced by new teeth. In the whaler sharks, family Carcharhinidae, each tooth is replaced every eight to fifteen days. The genus name *Carcharias* comes from the Greek *carcharo*, meaning sharp pointed or jagged, and refers to the impressive dentition. Tooth from a Grey nurse Shark. Note the small lateral cusplets. The tooth was found on the bottom of Manly Aquarium, Sydney, New South Wales, 2010. Image: Richard Vevers © Underwater Australia Heterocercal tail Many sharks have a tail with a long upper lobe and a shorter lower lobe. This type of tail is described as heterocercal. When such a shark swims, the large upper lobe tends to push the snout of the shark down. This is balanced by the lift produced by the pectoral fins and the ventral surface of the snout. The tail of the Grey nurse Shark is heterocercal and has a characteristic subterminal notch. Electroreception Sharks have the same five senses as humans; taste, touch, sight, hearing and smell, but in addition have a sixth sense; electroreception. The underside of the Grey Nurse Shark's snout is dotted with pores. Each of these leads to an organ (ampulla of Lorenzini) which can detect electricity. Sharks can detect very weak electrical currents. This extra sense gives sharks the ability to detect and attack prey at close range without needing to see the prey item. This can be advantageous in murky water or if the shark is a bottom feeder which relies on finding prey buried in the sediment. Some sharks, such as the Great White, roll their eyes back in the sockets immediately before attacking prey. At this time, the electroreception ability is most important because the shark cannot rely on sight. The electroreception capabilities of sharks also gives them the ability to navigate using the Earth's magnetic field. This is possible because an electrical conductor (the shark) moving through a magnetic field (the Earth's) generates an electrical field through the conductor. Sharks can navigate by responding to changes in this electrical field. Large Oily Liver Many bony fishes have a structure called a swim bladder which is used to control buoyancy. Sharks do not have swim bladders. Instead, they have different buoyancy regulating mechanisms that involve the liver and fins. The oily liver of the Grey Nurse Shark has been developed to a huge degree and occupies a large proportion of the body cavity. Shark oil is lighter than seawater and this gives the shark buoyancy. The Grey nurse Shark also swallows air at the surface, and holds it in the stomach. This provides buoyancy and enables the shark to hang almost motionless above the bottom. In the early 1900s, shark liver oil was used to light the street lamps of Sydney. Countershading Grey nurse Sharks are countershaded, the dorsal (upper) part is dark, mostly a grey to bronzy colour whereas the ventral (lower) part of the body is pale. Many fishes that swim in open water are countershaded. This adaptation results in the fish being difficult to see from above because the dark colour of the dorsal surface of the fish blends into the dark colour of the water below. It helps to make the fish also less visible from below because the light colour of the underside of the fish is less noticeable against the light shining from above. Life history cycle After fertilization, the developing young are enclosed in egg cases within each uterus of the female. They hatch from the egg cases at about 55 mm in length and then eat not only unfertilised eggs, but also their siblings. After about nine to twelve months two young are born, one from each uterus. Grey nurse Sharks are ovoviviparous. They produce eggs which hatch inside the female and have no placental connection. Other sharks such as the Port Jackson Shark lay eggs (oviparous sharks), or have a true placental attachment and give birth to live young (viviparous sharks), such as the Blue Shark. The Grey nurse Shark is not the only shark in which the young are ophagous (egg eaters). Others include the Shortfin Mako Shark and Porbeagle Shark. Breeding behaviours Internal fertilization occurs in all sharks. Sperm transfer occurs through the claspers of the male. Conservation status Pogonoski et al. (2002), list the conservation status of the species as endangered. Danger to humans It is generally a slow-moving species that is not considered dangerous to people, although it should never be provoked by divers. References Brown, R.W. 1956. Composition of Scientific Words. R. W. Brown. Pp. 882. 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