Galeocerdo cuvier (Tiger Shark)

Family: Carcharhinidae (Requiem Sharks)
Order: Carcharhiniformes (Ground Sharks)
Class: Chondrichthyes (Carlilaginous Fish)

Fig. 1. Tiger shark, *Galeocerdo cuvier*.

[https://worldsbestdives.com/critter-feature-tiger-shark/, downloaded 1 April 2015]

TRAITS. Tiger sharks are massive, blunt nosed predators identified as such due to their grey to black tiger-like stripes (Fig. 1). Young tiger sharks exhibit spots thus were previously termed leopard sharks. Large dark eyes. Tiger sharks have distinct tooth shape (Fig. 2), their serrated teeth have finely saw-like ends and thus are sharp with its teeth size being equal on both of its jaws (Castro, 2011). Upper lobe of caudal fin is longer than its lower. Broad based first dorsal fin is bigger than second dorsal. Flaps over its nostrils. The complexion of the upper surface of the shark ranges from blueish to greenish grey to brown or black and the lower surface is white or light grey to a yellow hue. The lighter hue underbelly camouflages due to countershading. Tiger sharks are documented to reach up to 5.5m (Heithaus, 2001; Anderson et al., 2014), and is the fourth largest shark in the world.

DISTRIBUTION. Located mainly 45°N to 32°S in warm and temperate waters. Found in Caribbean Sea, the coasts of Atlantic Ocean, Indian Ocean and Pacific Ocean (Fig. 3) (Serena 2005; Mathea, 2011).

HABITAT AND ACTIVITY. Saltwater species generally found in coastal or pelagic waters in depths of approximately 2-145m in shallow coastline habitats, river estuaries, habours, jetties, seagrass ecosystems, near continental and insular shelves. They thrive where there is high prey availability (Buhleier et al., 2002). They are nocturnal predators (majority of activity takes place at night) (Cullen, 200), found in deep waters offshore in the daytime and feed in shallow waters at nightfall however will hunt in the day if the chance arises (Carwardine and Watterson, 2002).

FOOD AND FEEDING. Unspecialized feeders, they consume everything that is in their path from live to dead animals and garbage (Prevost, 1995). Prey includes teleost fishes, other elasmobranchs, marine mammals, crustaceans, cephalopods, stingrays, conch, turtles, sea snakes, sea birds, and scavenge on dead animals (Goodreid et al., 2001). They have great senses of vision and smell and can go weeks without food. Predation is based on stealth instead of rapidity and strength. They utilize their appearance to camouflage themselves thus can sneak up on their prey. They do not partake in long chases but can accomplish short distances of high speed to capture prey (Draper, 2011). They are likely to eat humans that are already dead but may also attack man. Since they can feed on various food sources, food shortages do not arise.

POPULATION ECOLOGY. Widely distributed predator. Average lifespan in wild 27 years and captivity from 17-20 years. Solitary excluding when feeding on hefty carcasses and in the mating season. Social hierarchy is displayed during communal feeding where the physically bigger sharks eat initially. Tiger sharks display violence during this feeding (Draper 2011). Tiger sharks have massive home ranges commonly associated with huge predators (Heithaus, 2001).

REPRODUCTION. Polygynandrous meaning female tiger sharks can mate with more than one male tiger shark during breeding seasons, thus no pair bonding. Mating transpires once every three years. Breeding seasons vary in different locations; northern hemisphere is March or May and southern hemisphere is November or January. Gestation period is 16 months (Castro, 2011). Male tiger sharks contain testes that can create copious amounts of sperm and females have ovaries that are found on a main lymphoid tissue in elasmobranchs called the epigonal organ. Females are ovoviviparous thus there is internal fertilization, and hence after fertilization, embryos develop in the uterus and are fed from a yolk pouch however there is no placental connection, so the mother's body is equipped for gas exchange to the unborn shark. When this sac is nutrient deprived, the unborn sharks gain nutrients from secretions made by the womb of the shark. Tiger sharks release their young at 15-100m and not shallow waters. Broods are large approximately 10-80 young. Offspring relatively small and lean, 80-85cm long and weigh 3-6kg at delivery. Nurseries are widespread. Many will not live to maturation. They grow slowly. Male sharks mature at 310 cm and females at 315-320cm (Draper, 2011).

BEHAVIOUR. Aggressive. Recorded to have the second most attacks on humans. Curious, and will taste anything in their path. They have electromagnetic receptors to distinguish their surroundings and hunt. At the end of their nose, there are sensing organs; ampullae of Lorenzini occupied with a gelatinous matter that can read electromagnetic waves. These electromagnetic indicators are delivered from the minute openings of the skin to the sensory nerve, to the brain. This feat is utilized during hunting to identify electromagnetic signals given off by fish. These organs are used to perceive environmental changes; water pressure and temperature (Buhleier et al., 2006). Tiger sharks have a lateral line that can interpret vibrations from movement, it is

located on both sides of their body that is present from the gill line to the base of the shark's tail. Tiger sharks give out signals during feeding sessions to indicate dominance. Great sense of smell to detect tiniest traces of blood (Mathea, 2011).

APPLIED ECOLOGY. Registered as near threatened on IUCN Red List. Even though it's not specific to tiger sharks, preservation groups including Save Our Seas Foundation, Shark Research Institute, The Shark Trust and Bite-back are geared towards safeguarding *Galeocerdo cuvier* globally. Initiatives taken to limit the number of sharks taken by fishermen. Tiger sharks are a control for prey species (Dill et al., 2006). They are a host for remoras where they utilize the shark for protection, transportation and scraps. Caught by recreational fishers as game fish which are captured and released, and sometimes taken as trophies. This can account for mortality rates of the tiger sharks in some regions (Goodreid et al., 2001). Tiger sharks are sought after by humans more than they attack humans, as they are hunted for their fleshy tissue, fins, outer skin, liver oil and its flexible bone (Nuzzolo, 2009). Globally there is demand for high quality shark fins and the skin and liver can be expensive. Tiger sharks are viewed as a risk in tropical areas because of their size, and ability to pose a threat to humans thus there are shark control programmes in some areas (Wetherbee et al., 1994).

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Fig. 3. Tiger shark displaying teeth.

[http://animal-kid.com/tiger-shark-bite.html, downloaded 1 April 2015]

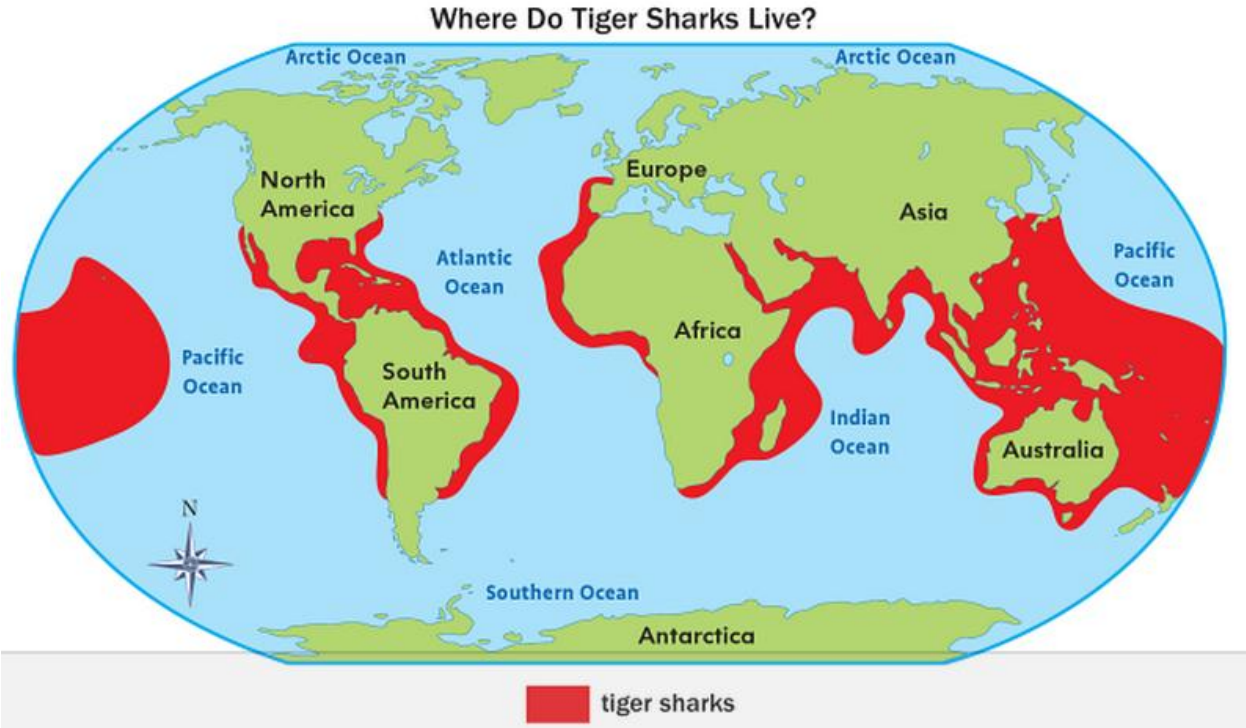

Fig. 4. Tiger shark geographical location (Mathea, 2011).