SHARK RESEARCH INSTITUTE NEWSLETTER

Vol. 2, No. 1 - January 1993

TIGER SHARK - Galeocerdo cuvier

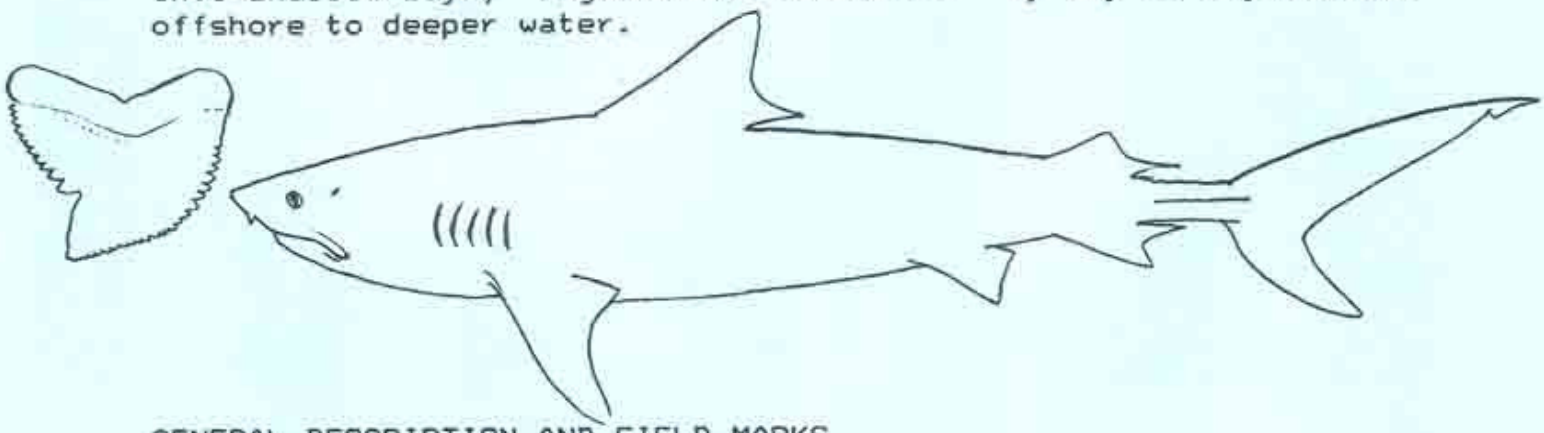
The tiger shark, like its jungle namesake, is considered extremely dangerous; its toll of victims throughout the world is second only to that of the great white shark; it has the worst reputation among tropical sharks and has been blamed for the majority of attacks in Australia. First described for science in 1822 by Peron and Lesueur the shark has been given 12 different names by taxonomists but the shark is generally regarded as a single wide-ranging species.

DISTRIBUTION AND HABITAT

The tiger shark is found worldwide in warm temperate and tropical seas. Along the American coast it is found from Cape Cod to Florida, the Gulf of Mexico, and from southern California southwards. Most of the tiger sharks tagged through the Cooperative Shark Tagging Program which have been recaptured travelled less than 500 miles, but one shark tagged east of New Jersey was recaptured 2.2 years later 1,039 miles away, east of Andros Island in the Bahamas,

Although the shark occurs off oceanic islands and has been photographed by a submersible vehicle at a depth of more than 300 meters, it is regarded as a coastal shark with a wide tolerance for a variety of marine habitats and is often found in turbid waters. The shark is usually solitary but may be found in small groups of fewer than six individuals.

The shark is thought to be primarily nocturnal; it is believed to remain near the surface at night and move inshore into shallow bays, lagoons and estuaries. By day it may retreat offshore to deeper water.



GENERAL DESCRIPTION AND FIELD MARKS

The extremely wide, blunt snout is the most distinctive feature of the tiger shark. It has a large flat head, ridged back, large slitlike spiracle, caudal keels and long labial furrows which extend from the corners of the mouth to just below the eyes. The colour pattern of the young shark is distinctive: vertical black spots and bars. As it grows the marks fade and they are usually absent in the adult.

SIZE

French researcher Pierre Fourmanoir wrote in 1961 that he had seen a photograph of a 25' [estimated weight in excess of three tons] female tiger shark from Indo-China. Most tiger sharks, however, are less than 16' in length.

At birth a tiger shark is 20" to 35" in length but its growth is rapid; within a year the young shark will double in length and continue to grow rapidly until it reaches a length of 5'10" or more. The rate of growth slows as the shark matures, nevertheless, it has one of the fastest growth rates currently known among sharks. Growth rates and maturity vary with different populations but it is thought that most reach sexual maturity in seven to ten years: males mature when they are between 7'5" and 9'6"; females mature between 8'2" and 11'6" - somewhat later and they tend to be larger than males. Scientists disagree on the life span of the tiger shark: taxonomist Dr Leonard Compagno believes that the shark has a life span of about 12 years while Dr Samuel Gruber has suggested the shark may live 25 to 40 years after it reaches maturity.

REPRODUCTION

Reproduction is ovoviparous. The young 'hatch' from a thin egg case while still inside the uterus of the mother and are nourished there until parturition; they lack a placental connection with their mother and some will be larger at birth than others. The female gives birth every two years after a 13 to 16-month gestation and the pups measure 51 to 76 centimeters at birth. In the southern hemisphere she drops her pups from November to January. Litter size ranges from 10 to 84, but the pups are subject to high predation.

TEETH AND DIET

The teeth of this shark are distinctive; it has heavy cockscomb-shaped cutting teeth - resembling diagonally positioned blades - in both its upper and lower jaws and the coarse serrations of the teeth have fine secondary serrations.

The guillotine-like teeth and wide jaws of the tiger shark appear formidable but, in the late 1980s it was observed that in specimens caught along the Natal coast only the functional row of teeth were strong; the replacement teeth were brittle and filled with blood. (This may not be the case with tiger sharks elsewhere in the world; it may well be that it is a temporary condition peculiar to this population.)

The shark is omnivorous; it may attempt to consume virtually anything that can fit between its jaws. It feeds on bony fishes, sharks, rays, marine turtles, marine mammals, sea birds, crustaceans, octopi and squid, jellyfish and carrion. Stomach contents have also included plastic bags, coal and wood, tin cans and a wide variety of garbage. The tooth formula is 10/11-1-10/11.
11-1-11

BITE PATTERN

Because both jaws possess identically shaped teeth the bite pattern produced by each jaw is the same. The bite of the shark results in a very wide, clean-edged wound.

A tiger shark feeding on a large stingray was filmed pushing the ray's body into the sand or between rocks - apparently to gain leverage in order to tear off a mouthful of flesh. This behaviour was also recorded on film by Stan Waterman during a television shoot with Peter Benchley, the author of Jaws.

In 1980 Natal Sharks Board scientist Walter Pople observed that post-mortem examinations of bodies which had been scavenged by tiger sharks indicated that the species apparently preferred to remove flesh from bones rather than bite into a long bone. Despite tiger sharks' obvious taste for mammalian food, there are instances which suggest they have difficulty ingesting large bones: the shark kept 119 days in captivity in the Durban Aquarium died when a tibia of mutton resulted in blockage, bruising, and ulceration of the mucosa of the thoracic inlet to the stomach. In another case a 7'6" tiger shark died in the Durban Aquarium seven days after capture; it was discovered a humerus of a cow had occluded the lumen of its stomach.

CAPTIVE SHARKS AND FIELD OBSERVATIONS

It is difficult to keep large tiger sharks alive in an aquarium for very long. Although the Durban Oceanographic Research Institute kept a 6'7" tiger shark alive in their tank for 119 days, most live about a month in captivity. No captive shark has ever stirred as much public interest as the tiger shark in the Coogee Aquarium. In April 1935 the 13'9" shark was caught in a fishing net and placed in the aquarium in Sydney, Australia. Eight days after its capture the shark achieved notoriety when it regurgitated its stomach contents: a cloud of brown fluid, a rat, a seabird, and a human arm with a rope tied round the wrist. Forensic examination disclosed that the arm had not been severed by the shark; it had been removed at the shoulder by a knife, but it was not the work of surgeon. The still-undigested arm bore a tatoo of two boxers and belonged to a well-known member of the Sydney underworld, James Smith, who had mysteriously disappeared. The shark died a few days later and was dissected to see if it contained any more grisly evidence of the gangland murder, but the stomach was empty.

It was eventually revealed that Smith, a former amateur boxer, had been involved with Patrick Brady and Reginald Holmes in a conspiracy to defraud an insurance company by sinking Holmes' luxury yacht, the Pathfinder. Their scheme miscarried, the thieves fell out, and Smith 'disappeared'. Apparently his body was dismembered and packed in a tin trunk and dropped at sea - all except the arm; the trunk was too small so a rope was tied round the wrist, a weight attached, then it was tossed overboard and soon became a snack for the tiger shark. Holmes agreed to testify for the prosecution but he was murdered on the morning of the coroner's inquest. As a result the crown's case collapsed and Brady was acquitted. Two men were later tried for the murder of Holmes but they too were acquitted. Somebody got away with murder.

CONCLUSION

The tiger shark is often inquisitive and sometimes aggressive. Although it may approach humans very closely an encounter does not necessarily result in an attack. However, its

size, inquisitive and often aggressive nature, combined with large cutting teeth and indiscriminate feeding habits, dictates that the tiger shark should always be regarded with extreme caution.

.....

SRI IS GRANTED TAX-EXEMPT STATUS

On Christmas Eve 1992 the Shark Research Institute was notified that it was granted tax-exempt status under section 501(a) of the Internal Revenue Code as an organization described in section 501 (c) (3). We are now a publicly supported organization described in sections 509 (a) (1) and 170 (b) (1) (A) (vi). Donors may deduct contributions to SRI as provided in section 170 of the Internal Revenue Code. Bequests, legacies, devises, transfers, or gifts to SRI or for SRI's use are deductible for Federal estate and gift tax purposes if they meet the applicable provisions of sections 2055, 2106, and 2522 of the Code.

To date, SRI's operating funds have been provided by the membership; with tax-exempt status we can solicit corporate donations. If you are able to make a contribution and need a copy of the IRS determination letter please contact SRI, PO Box 40, Princeton, NJ 08540, or FAX: (609) 921-1505.

* * *

SHARK RESEARCH INSTITUTE
PO Box 40
PRINCETON, NJ 08540
U.S.A.