# SHARK RESEARCH INSTITUTE



# Newsletter

Shark Research Institute Global Headquarters PO Box 40 • Princeton, NJ 08540 • USA • Phone: 609-921-3522 • Fax: 609-921-1505 • www.sharks.org

# Whale Shark Strandings



Indonesia: Villagers attempt to help a stranded whale shark

On April 4, 2014, volunteers and a local rescue crew from South Africa's National Sea Rescue Institute (NSRI) responded to the scene of a five to six-metre whale shark that appeared to be in distress in shallow water near the Stompneus Bay harbour, in the Western Cape. After unsuccessful attempts to coax the shark out to sea, NSRI rescue craft and ropes were used to gently pull the shark into deeper water. "Once in open water, the whale shark appeared to respond more positively and it was released," said Craig Lambinon of NSRI. Locals were asked to monitor the shoreline in case the whale shark came into the shallow waters again.

Whale shark strandings occur almost every year along the coast of South Africa, often due to the undersea topography. In many areas,

rock channels extend from the shoreline to deep water and the sharks, unable to swim backwards or turn around, become trapped in the channels and strand in the shallows. It has been hypothesized that the sharks may encounter a sudden change in water temperature resulting in a reduced metabolic rate. However, that seems unlikely, because several sharks we implanted with satellite tags made dives from surface waters to 2500 feet, often several times a day.

Although most tend to think of whale sharks as preferring tropical and subtropical seas, they also occur in warm temperate seas. In 1997, a whale shark was observed in the Bay of Fundy, and the sea temperature in Stompneus Bay when the shark stranded was reported to be 52°F. In fact, the first record of whale shark was a 4.5-metre (15-foot) shark harpooned in 1828 at Table Bay, Cape Town, South Africa — where the sea is also cold, 46° to 54°F. Dr. Andrew Smith, a Scottish surgeon with the British troops in South Africa, examined that very shark, forwarded its skin to the Museum Nationale d'Histoire Naturelle in Paris, and published the first description of the species in *The South African Commercial Advertiser*. A year later, Smith published a more lengthy formal description of the same specimen in *Zoology Journal*.

While whale sharks occasionaly strand along South Africa's Cape coast, most strandings occur on the west coast north of Cape Point and KwaZulu-Natal during the Austral summer and autumn. In 1991, when three

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whale sharks stranded together at Leven Point on the north coast of KwaZulu-Natal, we were able to examine the carcasses and determine optimum depths at which to implant tracking tags in the sharks without causing any harm. In addition to tagging the sharks, SRI-South Africa initiated an aerial survey of whale sharks along the KwaZulu-Natal coast. In 1994, the survey and tracking studies

xinhuanet.com

expanded to the Seychelles, and then to other areas along the east coast of Africa. In following years, the tracking study continued into the Arabian Sea, Pacific Ocean, Gulf of Mexico and the Caribbean. When funding permitted, satellite tags were also deployed on whale sharks. (A number of reports from the whale shark study are available on the publications page of our website.) SRI was the first to establish microsatellite loci in the whale shark and use the loci to analyze population structure across a panel of whale shark DNA from different ocean basins. This was critically important because it established that whale sharks cross geographic and political boundaries, and



that international protection is necessary to ensure the continued survival of this species.

Most whale sharks that strand along the South African coast range from 3 to 11 m, most are immature, and the sex ratios are about even. By comparison, strandings of whale sharks in Australia are less frequent; only seven strandings were recorded between 1963 and 2007, four off New South Wales and two off Western Australia.

Whale sharks strandings have also been recorded from Indonesia, The Philippines and the USA. Other species of sharks sometimes strand including white sharks, basking sharks, porbeagle sharks, Greenland sharks and there have been recent reports salmon shark strandings on the west coast of the USA.

# See Something, Say Something

From time to time, those of us who work or travel spot illegal or questionable trade in wildlife. Now we can stop muttering to ourselves and pass along information to relevant authorities. **Wildleaks** offers an online platform to anonymously report tips. When sufficient evidence is assembled, the case is turned over to authorities for enforcement. Go to: https://wildleaks.org/



And if you are traveling in Southeast Asia, download the **Wildlife Witness** app developed by the Taronga Conservation Society Australia in partnership with TRAFFIC. It enables users to report suspected illegal wildlife in trade in the region easily and quickly by taking a photo, pinning the exact location of an incident and sending these details to TRAFFIC. Reports by app users will be analyzed by a Wildlife Crime Data Analyst and over time, the information will help build data and enrich understanding of illegal wildlife trade across the region, help prioritize response action and highlight areas in need of increased enforcement resources. The app also features information on species threatened by trade, how they are often traded, as well as tips for reporting wildlife crime safely. It is hoped app users will include the growing number of tourists to South-East Asia as well as the region's own smartphone users and over time will expand on what is known about illegal trade, learn how their purchasing decisions influence the illegal trade that threatens wildlife and contribute reports that will help build a more informed picture of this threat," said Chris R. Shepherd, TRAFFIC's Regional Director-South-East Asia. Wildlife Witness is now free to download from the App Store. It is expected to be available for Android smartphones in the near future. Download at: itunes.apple.com/us/app/wildlife-witness/id738897823?mt=8

## Thank You to Our Sponsors

### We are very grateful for the continued support of:

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## !!!!!!! SRI 's ANNUAL SPRING AUCTION !!!!!!!!

Due to an unprecedented number of donations from our very generous members and sponsors, the SRI Spring Auction has to run on two online sites: Charity Buzz & Bidding For Good — which also offers the convenience of Mobile Bidding. **The Auction starts Thursday May 15th.** Links to the auctions are on the home page of our website: www.sharks.org. Registration at both sites is completely free, so you can go ahead and try to win some great items!

Up for auction are more than 70 items including amazing vacation packages (some would make terrific Honeymoon destinations, Graduation gifts and dive vacations) to the Bahamas, Curaçao, Honduras, Mexico, Micronesia and the Philippines. Up for auction is art by Pascal Lecocq, Rogest and Bonnielynn Branky, museum-quality photograph by Amos Nachoum, folk art, glass sculpture by Jeremy Smikus, and sculpture by Hillary Palmer, hand-crafted silver jewelry by Ricardo Vera of Nautilus Jewelry, collectibles and memorabilia, shark books, gear from Patagonia and Tektite, clothing from Bottom Crawlers, T-shirts from Dive Dawg and collectible T-shirts from our members, even a fossil shark tooth and a mechanical shark. There are loads of cool items for Fathers' Day, Birthdays, gifts for family and friends, and for yourself!



**SharkByte:** The app created by SRI member Eric Knox, for iPhones, is now also available for Android phones from Google Play. The app allows users to locate beaches where shark attacks have taken place by country, area or location. It also includes info about various shark species, how to avoid attacks and how to protect sharks, and provides some cool shark wallpapers. The app is free, or you can buy it for 99 cents. Eric is donating 5% of the proceeds of his sales to SRI.

## **Every Kid Can Make A Difference!**

Kudos to Anusha, a Grade 4 student, for her project showcasing sharks and their need for protection. Concerned about the plummeting shark populations, she decided she could do something about it by educating her friends and their parents about the problem.

Anusha says, "EVERY KID CAN MAKE A DIFFERENCE!" and we agree. Anusha not only educated many kids and parents in her area, she created a petition on Avaaz and garnered 113 signatures, She also gathered dozens of signatures on SRI's Ban the Sharkfin Trade sheets too. Great work, Anusha! And special thanks to Sheetal, Anusha's very supportive mom.



To add your signature to Anusha's petition, go to:

https://secure.avaaz.org/en/petition/President\_Barack\_Obama\_Create\_education\_and\_awareness\_on\_endangered\_sharks\_in\_schools/?loIrthb&pv=11

And to download SRI's Ban the Sharkfin Trade sheets, go to: http://www.sharks.org/education/ban-

# Malaysian Cabbies Helping to Stop Wildlife Crime

Taxi drivers are helping to stop wildlife crime in Malaysia by featuring specially designed car stickers that call on passengers to report cases of suspicious trade in wild animals and plants to a hotline.

The stickers are being distributed to drivers by MyTeksi, the largest automated smartphone taxi booking platform available in Malaysia, Singapore, Thailand, Viet Nam and The Philippines. More than 20,000 taxi drivers in the region are registered with the network and the MyTeksi booking app has been downloaded onto more than one million mobile devices.

Malaysia is home to a long list of species threatened by illegal wildlife trade. It is a hub for trade in species from other parts of the world, from nearby Indonesia, to as far away as Africa and South America. "Everyone has a role to play in cracking down on the illegal wildlife trade" said Chris R. Shepherd, TRAFFIC's Regional Director in South-East Asia. "The participation of the



public is absolutely essential. After all, it is our wildlife, our heritage, and our future that the criminals involved in the illegal wildlife trade are stealing and profiting from."

While putting a sticker on a window is a simple act, it helps carry the message and provides a hotline number. The sticker features a photograph of a Slow Loris, which are among a number of endangered species trafficked throughout the region for the pet and traditional medicine trades. All Slow Loris species are listed in Appendix I of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), which means commercial international trade in them is prohibited.

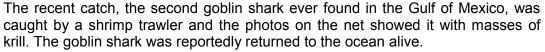
Wildlife crime is a serious crime, as this joint EIA-WWF-TRAFFIC video demonstrates: https://www.youtube.com/watch?v=RB2ZpUvfTek&feature=youtu.be

#### Strange Beauties by Marie Levine

The Internet is buzzing with the news that a goblin shark, *Mitsukurina owstoni*, was hauled up from the depths by a shrimp trawler off the coast of Florida. This little-known shark looks very unshark-like; for starters it is pinkish-white! And then there is that long, flat snout, looking like a spade protruding from its forehead.

I've only seen one goblin shark. It was caught off Durban, South Africa, and brought to the Oceanographic Research Institute in Durban, South Africa, where Dr. Dave. Ebert and I had an opportunity to examine and photograph it. Like the

Florida specimen, it had been caught in deep water. It was about 5.5 feet in length with a long, somewhat flabby, body and a long tail. Its body form suggested the shark was a poor swimmer, and we thought its snout might be used to detect prey. The available literature on the species indicates that goblin sharks grow to a maximum length of 16.4 feet [5 metres] and usually remain at depths of around 885 to 3,150 feet [270 to 960 metres]. Their slender front teeth suggest a diet of small, soft-bodied fishes and squid, but its back teeth are modified to crush food.







Giant isopod

Later on, a marine biologist, Andrew Thaler, examined photographs of the shark and noticed that the catch also included dozens of giant deep-sea isopods, insect-like creatures closely related to shrimps and crabs. "Image a pill bug the size of a house cat," said Thaler. These deep-sea giants can grow up to lengths of more than 16 inches. They survive by scavenging for food on the ocean floor, including the decomposing bodies of dead whales, fish, and squid. Thaler believes that both the isopods and the shark were feeding



The Megamouth Shark caught off Japan

on the carcass of a whale decaying at the bottom of the ocean when the trawl passed over the carcass of the whale. The last time I visited the Coney Island Aquarium, they had giant deep-sea isopods on display.

A rare, deep-water megamouth shark was hauled from a depth of 2,600 ft in the waters near Shizuoka in Japan recently. It was only in 1976 that the first megamouth shark was recognized, causing science to create an entirely new family and genus of sharks. To date, only 58 megamouth sharks have been caught and three have been filmed. Some 13 sightings have been recorded off the coast of Japan, with other sightings in the Pacific, Atlantic and Indian Oceans. The shark's name refers to its huge head, which is not in proportion to its body, and it has light organs in its mouth — thought to entice prey into range in the darkness of the depths. Like the much larger whale shark and basking shark, megamouth is a filter feeder and it is believed the species could reach a length of 17 feet. The megamouth shark caught in Japan, a female, was only 13-feet long and weighed 1,500 pounds. The Marine Science Museum in Shizuoka, Japan dissected the animal caught in front of 1,500 curious onlookers. The remains of the shark can now be viewed at the museum.

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# Field Expeditions

#### WHALE SHARKS — Cancun, Mexico

#### July 27-31, 2014

At present, this is the only open SRI expedition. Dr. Jennifer V. Schmidt, Director of SRI's DNA study and the project leader, will once again be taking swimmers and snorkelers to the Afuera Whale Shark Aggregation. (Note: no scuba; bubbles frighten the sharks). Cost is \$1,400 per person (double occupancy). One space is still available.

#### **SARDINE RUN** — South Africa

#### **June & July 2014**

The Sardine Run along the eastern coast of South Africa is one of the ocean's great spectacles! Huge humpback and Brydes whales, hundreds of sharks, great pods of dolphins, and clouds of ocean birds follow and feed on the massive shoals of sardines as they migrate through the warm waters of the Indian Ocean! Spaces are filling up If you are interested in witnessing and/or diving this incredible marine event, contact us for space availability. Cost for 5 days/6 nights double occupancy is ZAR17,500 (currently US\$1,882) or ZAR19,250 (US\$2,070) single supplement.



Hundreds of whale sharks gather at the surface in the Afuera



If you'd like to come along on any of these expeditions, call SRI HQ

#### Calendar of Events

May 15 to 29, 2014: SRI Spring Auction. Enter the auction on the homepage of our website www.sharks.org. The auction is both Charity Buzz and Bidding for Good, so be sure to register with both online auction sites.

**June 2 to 6, 2014:** *The Second Sharks International Symposium.* Venue: KwaZulu-Natal Sharks Board, Durban, South Africa <a href="http://www.sharksinternational.org">http://www.sharksinternational.org</a>. *Likely to have some interesting presentations, but SRI scientists refuse to attend due to the venue. SRI has strongly advocated against their shark nets and drumlines for many years.* 

**July 19, 2014:** Fossil Shark Hunt in New Jersey. \$5 adults, free to SRI members and kids. Call 609-921-3522 for details

July 30 to August 8, 2014: American Elasmobranch Society Meeting. Venue: Chattangooga, Tennessee. http://elasmo.org.

August 10 to 20, 2014: The SRI's Sixth Annual Shark Celebrity Auction

**September 3 to 6, 2014:** *Surf Expo.* Venue: Orange County Convention Center, South Hall, Orlando, Florida. *This show is a lot of fun and a chance to reach out to surfers. Originally open only to the trade, at least one of the days is now open to the general public.* **www.surfexpo.com** 

**November 19 to 22, 2014, DEMA Show** (Dive Equipment Marketing Association). Venue: Las Vegas, Nevada. *Open only to the trade but sharks & shark conservation are serious topics here.* **www.demashow.org** 

## New Campaign Slams South Africa's Drumlines & Shark Nets

Lesley Rochat of AfriOceans and head of SRI Media Productions is known for her hard-hitting documentary shorts, and very effective media campaigns about sharks. In partnership with Walter Bernardis of African Watersports, creative director of the campaign, they launched a new shark awareness campaign on Earth Day: **Get Hooked on Sharks, Ban Drumlines.** 

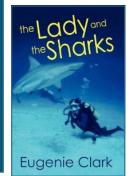
"The shoot was challenging," says Les. "Naked, hanging on a hook and surrounded by sharks, but extreme times call for extreme measures. In light of the international outcry by conservationists and scientists against the culling of sharks in Western Australia, we decided to turn the spotlight back home at South Africa and the drumlins and gill nets of the KwaZulu-Natal Sharks Board."

You can view the campaign on Facebook and the Shark Warrior website: http://www.lesleyrochat.com/



#### Members Bookshelf

**Eugenie Clark: Marine Biologist** (Ferguson Career Biographies) by Ronald A. Reis \$24.35 Hardcover, and used copies available at Amazon.com.

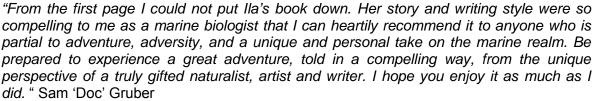


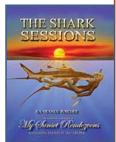
RONALD A. REIS

**The Lady and the Sharks,** *by Eugenie Clark.* By now most members probably have a copy of Dr. Clark's book that inspired many to enter the field of marine biology. It is now available in paperback from *Amazon.com* from \$13 to \$17.

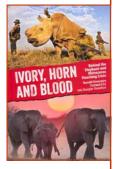
Filled with tales of the adventures of a remarkable woman, and her joy in exploring the world beneath the sea. Here are tales about the pleasure and power of curiosity. This updated 4th edition details some of her exciting discoveries about the behavior and physiology of sharks, fish and marine life.

**The Shark Sessions,** by Ila France Porcher. This is an updated and revised edition of Porcher's landmark book on shark cognition \$33.99 (paperback) Pre-order from Tate Publishing at https://www.tatepublishing.com





Ivory, Horn and Blood, by Ronald Orenstein. \$29.95, available through Amazon.com Zoologist, lawyer and wildlife conservationist, Orenstein has been at the heart of the fight since the worldwide ban on commercial ivory trade was passed in 1989, yet today eight of every ten African elephants die at the hands of poachers. Rhinoceros, too, are being slaughtered throughout their ranges. Two species have become extinct within the last decade, and the Northern White Rhinoceros, the largest of them all, barely survives in captivity. SRI has worked with Orenstein on conservation issues at CITES and Species Survival Network for more than a dozen years. We recommend this book to anyone concerned about the loss of our planet's iconic species.



"Meticulous research, chilling facts...an important and much needed book," Dr. Jane Goodall.

## A \$22 Million-Dollar Scam

The recent cull of sharks in Western Australia, its "Shark Mitigation Program", resulted in 172 sharks caught on drum lines, but not a single white shark — the targeted species — was caught. Further, the drum lines caught 163 tiger sharks, even though 1929 was the last time a tiger shark was responsible for a fatal attack in Western Australia. The program also included helicopter patrols which failed to see sharks roughly 83% of the time, and the program didn't even include a community education component. Education can reduce the risk of a shark bite simply because not all water carry the same degree of risk and depend on what the individual is doing and the distance he or she is from shore. The program had also ignored the advice of more than 100 scientists who opposed the program, not only because of its negative environmental impact but because nets and drumlines cannot and do not reduce the risk of shark bites. Instead, the Western Australia government has asked federal environment minister Greg Hunt for a three-year extension of the program.

The entire program has cost taxpayers \$22 million and it is a fraud. Like the gill nets and drum lines of the KwaZulu-Natal Sharks Board in South Africa, it simply gave a license to the local tourist industry to falsely claim that swimmers at their beaches are not at risk of a shark bite.

# **Conservation Updates**

In December 2012, Hilton Worldwide removed shark fin from menus across all restaurants and food and beverage (F&B) facilities operated by its properties in China and Southeast Asia, only serving it on request. On February 21, 2014, Hilton announced it was ending all new orders for shark fin dishes effective April 1, 2014. The ban covers all restaurants and F&B facilities operated by its 96 owned and managed properties across Asia Pacific. "In placing a global ban on shark fin, we take action in support of environmental conservation efforts worldwide, and progress our efforts in responsible business operations," said Martin Rinck, president, Asia Pacific, Hilton Worldwide.

On March 25, 2014, a federal court upheld California's ban on shark fins. The judge ruled that the impact on the Chinese American community in California is not akin to discrimination, and that the state law does not conflict with federal fisheries management. Lawyers for the law's opponents may appeal the ruling.

On March 31, 2014, the UN International Court of Justice ruled against Japan's fraudulent 'scientific' whaling in the Antarctic. Less than a week later, internet retail giant Rakuten announced termination of sales of whale products through its Japanese marketplace and gave merchants 30 days to remove them, however, the directive did not cover whale meat sales in Japan. Rakuten's website had carried more than 1,200 ads for whale products. Rakuten also owns Buy.com (now Rakuten Shopping) in the USA, Play.com in the UK, the Canadian e-book reader Kobo, and it is a major shareholder in Pinterest. Japan remains a major market for elephant ivory and Rakuten, which carries 28,000 ads for elephant ivory, has not yet published a decision about those products.

In April, Starwood Hotels & Resorts Worldwide, Inc. (NYSE:HOT), which owns Westin, Sheraton, Four Points by Sheraton, St. Regis, W Hotels and The Luxury Collection hotel chains, announced that as of July 2014, it will no longer procure shark fin for any of its nearly 1,200 hotels or 1,300 restaurants around the world. The company has committed to completely eliminating the consumption of shark fin, without exception, in all restaurants and food and beverage services across its global portfolio by year-end. Starwood also banned whale and sea turtle products globally. Starwood's company-wide ban on shark fin in all of its properties sends a powerful message that businesses can be positive agents for change to ensure the responsible use of our planet's natural capital.

Marriott International, which in 2012 removed shark fins from its menus, will also institute a complete ban on July 1, 2014.

## Risk of Shark Bite in Western Australia

Sprivulis, P. (2014), Western Australia coastal shark bites: A risk assessment. Australasian Medical Journal. 7(2): 137–142. Available online at http://www.ncbi.nlm.nih.gov/pubmed/24611078

As Western Australia's (WA) government enacts 'shark bite mitigation', the personal risk of shark bite in WA has not been studied. The objective of the research was to model the risk of large (>3m) white shark bite, *Carcharodon carcharias*, in southwest WA.

Using data from the Global Shark Attack File from January 1, 1974 through December 31, 2013, prey abundance, location, water temperature and water activity participation was analyzed. Shark bite risk was benchmarked against serious or fatal recreational cycling crash risk in WA. The study found that total and fatal shark bites have grown exponentially over 40 years, correlated with the 10 percent annual growth in WA humpback whale abundance but not water activity participation. Large white sharks were implicated in 10 of 12 fatalities. Metropolitan Perth beach summer/autumn bathing less than 25m from shore in water less than 5m deep is estimated to be at least 50 times safer than bicycling. Offshore diving and surf sports off Perth, during winter/spring have a similar risk to cycling. Winter/spring offshore diving south of Perth has between 3 and 11 times the cycling risk.

The study concluded that WA's shark bite risk is likely to increase as whale abundance continues to increase off the WA coast. However, the risk to bathers less than 25 metres from shore in shallow water during the WA summer is likely to remain very low, and well below the risk of other recreational activities undertaken in WA.

# Environmental influences on white sharks in Gansbaai, S.A.

Towner A.V., Underhill L.G, Jewell O.J., Smale, M.J. (2013) Environmental influences on the abundance and sexual composition of white sharks *Carcharodon carcharias* in Gansbaai, South Africa. Available online at http://www.ncbi.nlm.nih.gov/pubmed/23951111

The seasonal occurrence of white sharks visiting Gansbaai, South Africa was investigated from 2007 to 2011 using sightings from white shark cage diving boats. Generalized linear models were used to investigate the number of great white sharks sighted per trip in relation to sex, month, sea surface temperature and Multivariate El Niño/Southern Oscillation (ENSO) Indices (MEI).

Water conditions are more variable in summer than winter due to wind-driven cold water upwelling and thermocline displacement, culminating in colder water temperatures, and shark sightings of both sexes were higher during the autumn and winter months (March-August). MEI, an index to quantify the strength of Southern Oscillation, differed in its effect on the recorded numbers of male and female white sharks, with highly significant interannual trends. This data suggests that water temperature and climatic phenomena influence the abundance of white sharks at this coastal site.

In this study, more females were seen in Gansbaai overall in warmer water/positive MEI years. Conversely, the opposite trend was observed for males. In cool water years (2010 to 2011) sightings of male sharks were significantly higher than in previous years. The influence of environmental factors on the physiology of sharks in terms of their size and sex is discussed.

The findings of this study could contribute to bather safety programmes because the incorporation of environmental parameters into predictive models may help identify times and localities of higher risk to bathers and help mitigate human-white shark interactions.

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#### Meet the Newest Members of the SRI Team

Captain Chris Wade, Ocean Ark Angels and Captain of the Sea Watch Shark Boat.

In addition to SRI's Facebook page, Melissa and Sara also run the White Shark Advocacy Group, and closely monitor legislation pertaining to sharks.

If you've been following SRI on Facebook, you're already knowledgeable about the newest members of the SRI team: Melissa Michaelson, Sara Mucha and

Sea Watch is a long-range research vessel that Chris purchased from USC when she was decomissioned from their service fleet. Based in Los Angeles, Chris and Sea Watch follow the sharks from the Farallon Islands to Guadalupe Island and beyond. The vessel is a tremendous asset to the Ocean Ark Angels, a team of advocates that protects sharks by enforcing fishing laws internationally. Please

consider making a donation to this project on our website. It is a long overdue and very important project.

Melissa Michaelson







Sara Mucha

Captain Chris Wade & Sea Watch

#### Sandtiger Shark Study



SRI, Jenkinson's Aquarium and Olympus Diving in Morehead City, North Carolina, are conducting a joint study of sandtiger sharks (Carcharias taurus). Sandtiger sharks have been under increasing threat worldwide and more data is needed to determine the population structure along the east coast of the USA. The shark is also known as a grey nurse shark or raggedtooth shark due to its protruding teeth. Although the shark appears fearsome, it is generally very docile.

Sandtigers inhabit subtropical and temperate waters from the continental shelf to the shoreline and are found from 627 feet to shallow waters. The sharks are brownish-gray with rust-colored

spots on top and white underneath. They have a flattened, cone-shaped snout and a distinctive, oblong tail with a notched, upper lobe that is significantly longer than the lobe below, and both dorsal fins are almost the same size. The sharks range in length from 5.6 to 10.5 feet (1.7 to 3.2 metres) in length. Sandtigers feed on bony fish, crustaceans, squid, skates and other sharks and are most active after dark. Unlike other sharks, the sandtiger gulps air from the surface, which allows it to be suspended in the water column with little effort. Its reproductive strategy is also unusual; during pregnancy the embryo which develops fastest will feed upon its siblings — intrauterine cannibalism. Since sharks have two uteri, sandtiger litters consist of only two shark pups. Sandtigers are an intriguing species.

Photo by J. Arch McNamara