



MID-SUMMER 2014
SHARK RESEARCH INSTITUTE
Newsletter

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Shark Detecting Buoy to Alert Lifeguards

Researchers in Australia have developed a device that can detect a nearby shark in the water and alert lifeguards to its presence.

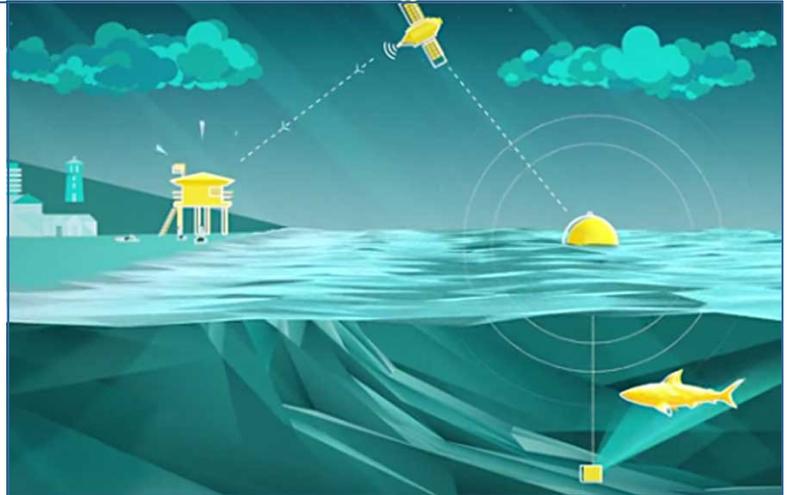
Australian tech company, Shark Mitigation Systems, teamed up with communications firm Optus and together they've come up with the Clever Buoy - a buoy anchored to a box on the sea floor that emits sonar signals into the surrounding water to detect incoming sharks.

A processor inside the buoy analyses the reflections picked up by the sonar signals and can figure out if they came from a shark-sized object nearby. The buoy is so clever that it can tell a signal from a shark apart from that of a dolphin or a seal.

Clever Buoy has been tested at the Sydney Aquarium and off the coast of the Abrolhos Islands in Western Australia and have identified nearby sharks successfully. It is hoped a number of these buoys will be lined up offshore at popular beaches in Australia. If one of them picks up on a signal of something shark-sized moving in a shark-like manner, it will alert the local lifeguards by sending an update to their smartphone. Then it's everyone out of the water until the shark signal has faded.

It is hoped that Clever Buoys will be available for deployment on Australia's beaches midway through 2015.

This technology is important because it could eliminate the need for shark nets in Australia as well as South Africa, since sharks can and do swim over the nets. It would also eliminate the need for drumlines because it would enable lifeguards to call swimmers and surfers out of the water when a shark enters the area and supports a policy against the culling of sharks.



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Shark Fin Vendors in China report 82% drop In Sales after Anti-Corruption Campaign

In 2013, import of shark fin products into Hong Kong dropped by 35%, export of processed fins out of Hong Kong dropped by 18%, and re-export to China from Hong dropped by nearly 90%.

Interviews of 15 wholesale and retailers in Guangzho, the center of China's shark fin trade, cited an 82% decline in sales and a 47% in retail prices over the past two years.

Angelo Villagomez, of Pew Charitable Trusts, credits the decline to Xi Jinping's anti corruption campaign, which forced a decline in shark fin soup at banquets. "It's related to a Chinese government anti-graft crackdown, which has cut back on dinners where shark fin soup was featured on the menu," he told Agence France-Presse. "The culture is [also] changing in Asia among younger people. They aren't eating shark fin soup as much."



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The anti-corruption campaign was also cited as a reason for a drop in Hong Kong's re-export market for shark fin. According to WWF-Hong Kong, the trade in shark fins from Hong Kong to mainland China dropped by almost 90% in 2014.

In an online poll of 1,568 people from Beijing, Shanghai, Guangzhou and Chengdu conducted by WildAid, respondents cited mercury levels and the prevalence of potentially dangerous fake shark as a reason for not consuming shark fin soup, as well as campaigns by high-profile celebrities such as actor Jackie Chan and former NBA star Yao Ming.

Kid Power!



Sean Lesniak, a nine-year-old boy who loves sharks, inspired Massachusetts state lawmakers to ban shark fins!

Sean wrote State Representative David Nangle (D-Lowell), asking asked him to protect sharks. Nangle filed a bill on Sean's behalf. Last year, Sean testified in front of the Joint Committee on the Judiciary in favor of the ban. "I am glad that the Representatives, Senators and the Governor realized how important this bill is to the preservation and conservation of sharks," he said. "Sharks are needed to keep our oceans balanced and healthy."

On Thursday July 24th, Massachusetts Governor Deval Patrick signed a bill banning possession or distribution of shark fins in Massachusetts. The law also outlaws shark fin soup, a delicacy served at about a dozen restaurants in Massachusetts. The bill primarily affects distributors and retailers of imported shark fins, including markets and restaurants; it will have a "minimal impact" on commercial fishing and processing due to the exemption of locally caught species including skates, smoothhound sharks and spiny dogfish sharks.

Owners of a restaurant caught violating the new ban, the owners could face a \$500 to \$1,000 fine for each fin they have in their possession, as well as up to 60 days in jail. Fishermen who violate the law also face suspension or revocation of their fishing licenses.

Eight states other states have already outlawed the sale and possession of shark fins: California, Delaware, Hawaii, Illinois, New York, Maryland, Oregon and Washington.

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More Good News!



● On July 3, the US government gave key populations of scalloped hammerhead sharks federal protection under the Endangered Species Act. NOAA Fisheries listed scalloped hammerhead sharks inhabiting the Eastern Atlantic Ocean and Eastern Pacific Ocean as "endangered." The agency listed scalloped hammerhead sharks in the Central and Southwest Atlantic and Indo-West Pacific as the less-serious status of "threatened." However, the agency declined to list scalloped hammerhead sharks that inhabit the Northwest Atlantic or Central Pacific.



● On July 8, 2014, the Philippines' leading carrier, Cebu Pacific (PSE: CEB) announced that the airline no longer accepts carriage of shark fin. The airline formalized a freight policy for immediate implementation and strict compliance across Cebu Pacific stations. Singapore Airlines, Asiana and Korean Airlines, have also banned shark fin.



● On September 1, a resolution to combat shark finning in UAE waters will come into effect in the UAE. Sharks may no longer be fished within five nautical miles of shore, or within three nautical miles of UAE islands, with the following exception: Fishermen who run boats with lynch, a tool with several hooks on its edges, may catch sharks from July 1st to January 31st, as long as they use no more than 100 hooks per lynch, and the hooks are curved, biodegradable and no larger than 0/14. Species of sharks listed by CITES must be released. Exportation of sharks in any form is prohibited, however importation of shark products into the UAE, with permission of the UAW Ministry of Environment and Water, is still allowed.

The 6th Annual Shark Celebrity Auction

You've seen them on Discovery Channel's Shark Week, Animal Planet, Nat Geo and the BBC – they are the top shark experts in the world! Now meet them in person for lunch or dinner, learn why they love sharks too!

More than 50 of the world's top shark experts are allowing themselves to be auctioned to raise funds for the shark research and conservation programs. On the auction block are dinners (or lunches) with the world's foremost shark experts & celebrities. Each winning bidder has the unique opportunity to "talk shark" face-to-face, one-on-one, with a real authority on sharks..

Everyone in the auction has a wealth of expertise and stories to share with their highest bidder! Here are just a few of the faces you may recognize!



How it works: Bid on a shark expert or celebrity that lives or works nearby, unless you are willing to drive or fly to their location. The winning bidder pays for the celebrity's meal, and may bring guests. Shark Research Institute will introduce each winning bidder to his or her shark celebrity. The two of you then set a mutually convenient date, time and place to get together within 365 days of the close of the auction. The auction is open and will run throughout Shark Week, and close on August 20th. The easiest way to enter the auction is through the link Shark Research Institute's home page at www.sharks.org or go to: <http://www.auctiva.com/stores/viewstore2.aspx?id=1585048&styleid=12>

Six years ago The Annual Shark Celebrity Auction was created by SRI's Carolyn Nickels, and it is still our most enjoyable fundraiser. Funds generated by the auction are used for research and conservation programs. Winning bids are deductible as charitable contributions from US Federal 2014 income taxes.

Fin-Ished?

Between 73 and 100 million sharks are brutally killed each year solely for their fins – tasteless ingredients in a luxury soup. As result, some species of sharks have declined by more than 90% during the past 15 years.

Artist Hillary Palmer first encountered a shark while diving in Egypt with her brother, a marine biologist, and developed a sense of kinship with sharks. In 2008, she adopted 4.5-male whale shark named Arch, one of the sharks put up for adoption which had been tagged that year by the Shark Research Institute at Mafia Island, Tanzania. Arch returned to Mafia Island in 2010 but hasn't been spotted since that time, and may have been slaughtered by poachers for his fins.

To call attention to the plight of sharks, Palmer created an exhibit of 15 ceramic shark fins: *Fin-Ished?* Each fin represents 500,000 sharks slaughtered each year. Each fin serves as a silent gravestone for these iconic animals that have no voice.

Palmer donated *Fin-Ished?* to SRI, and it is now on exhibit at Jenkinson's Aquarium in Point Pleasant Beach, NJ. Palmer hopes the sale of the exhibit will help SRI to educate more people about the magnificence of sharks and end the cruel, wasteful and senseless slaughter of sharks. For more information, contact SRI at (609) 921-3522 or Cindy Claus at Jenkinson's Aquarium: cindy_claus@jenkinsons.com



Field Expedition Planned



TIGER & LEMON SHARKS — Tiger Beach, West End, Bahamas

November 23 to 29, 2014

Jupp Baron Kerckerinck will be leading the expedition. Boat: *Dolphin Dream*. Cost per diver: \$2,500.

Only four spaces are still available. A \$1,250 non-refundable deposit required to a space. To reserve your spot, call (609) 921-3522 or contact Jupp directly at juppca@gmail.com

Upcoming Events

September 3–6, 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 19-22, 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

2015: CITES. Venue: Cape Town, South Africa. *Dates to be published.*

Summer Fun



July 19th was a sweltering summer day, but several dozen SRI members and friends from the American Littoral Society kept cool as they hunted for fossils in Big Brook. Everyone found fossils: shark teeth, squid pens, and oysters, and a lone eel was spotted. It was a very enjoyable and relaxing morning. In fact, it was so much fun that a second fossil shark hunt is being planned for late August.



And families visiting the Jersey Shore Boardwalk joined in the fun with craft projects, contests to win shark adoptions & books, and learned about ocean safety and the importance of sharks.

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SHARK WEEK
AUGUST 4TH THROUGH 8TH



Epic Diving Providing Continuing Education Scholarships For Cat Island High School Students

Debra and Vincent Canabal, owner/operators of Epic Diving, have set up an Epic Diving scholarship which will allow high school seniors to have the opportunity for an all expense paid education at The Bahamas Technical and Vocational Institute (BTVI) in Nassau, Bahamas. The scholarship leads to certification in a trade at BTVI. The scholarship will cover tuition, books and on-campus housing.

Some of the trades students are encouraged to explore are:

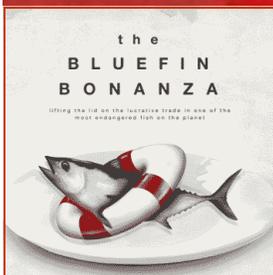
- Plumbing
- Carpentry
- Construction
- Electrical installation
- Cosmetology
- Interior decoration

With Cat Island being one of the out Island of the Bahamas and many families not having the funds to send their children away to school, Epic Diving decided to set up a scholarship fund so that shark diving eco-tourism can give back to the communities of Cat Island. The grants will guarantee that the young people residing on Cat will be able to find meaningful employment once they have professional skills. The two requirements of applying for the grants are a minimum cumulative grade point average for previous academic work and applicants must be a citizen of the Bahamas and a resident of Cat Island, graduating in the current year.

“We are thrilled to announce seniors Renaldo Butler and Arley Merzius from Old Bight high school were the two recipients of the 2014 Epic Diving scholarship for continuing education.” said the Canabals. “Both of the students will be enrolling in the Bahamas Technical and Vocational Institute for electronic installation this fall for a two year program. We would like to thank those who have generously donated to the scholarship. The families and students send their gratitude and appreciation.”

When dive ecotourism, particularly liveaboard diving, provides little or no benefit to citizens of a nation, there is less incentive for that country to protect the marine environment. Since SRI's founding, one of our conservation strategies has been to create value for sharks as sustainable natural resources, particularly in a developing country by assisting development of land-based shark ecotourism that provides an alternative revenue stream for local fishers who might otherwise slaughter the sharks for immediate gain. Epic Diving's initiative demonstrates another great way to give back to a country that protects its marine environment!

Members' Bookshelf

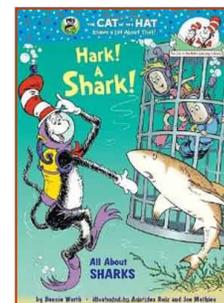


Bluefin Bonanza, 82 pages, paperback, € 17.50 at <http://theblackfish.org/shop/11-books> The Black Fish published this new edition, originally written by Wietse van der Werf in 2010, with updated statistics and information on the troubled bluefin tuna. The book illuminates the corruption, criminality, politics, and science surrounding the tuna fishing industry. It offers an intriguing look inside the lucrative – and often illegal – trade in bluefin tuna, one of the most endangered fish on the planet. The Mediterranean Sea used to be abundant with life, yet in the last 50 years industrial fishing, in particular trawling and purse seine fishing for bluefin tuna, has decimated

the populations of marine wildlife. This booklet is a starting point for people interested in the Mediterranean, what industrial fishing is doing to the region and in particular with regard to the bluefin tuna. Download a free copy of the version published by Sea Shepherd Conservation Society (44 pages) at

http://wwerf.com/prt/bluefin_bonanza.pdf

Hark! A Shark! \$8.09 on Amazon.com. In this latest installment of the Cat in the Hat's Learning Library, the Cat introduces beginning readers to all kinds of sharks! From the smallest (the dwarf lantern) to the largest (the whale shark), the well-known to the obscure (the goblin), the Cat explains why sharks have lots of teeth but no bones; that they have more to fear from us than we do from them, and much, much more!



Juvenile Whale Sharks in the Red Sea

Berumen ML, Braun CD, Cochran JEM, Skomal GB, Thorrold SR (2014) **Movement Patterns of Juvenile Whale Sharks Tagged at an Aggregation Site in the Red Sea.** PLoS ONE 9(7): e103536. doi:10.1371/journal.pone.0103536

Conservation efforts aimed at the whale shark, *Rhincodon typus*, remain limited by a lack of basic information on most aspects of its ecology, including global population structure, population sizes and movement patterns. This article reports on the movements of 47 whale sharks in the Red Sea that were fitted with three types of satellite transmitting tags from 2009–2011. Most of the sharks were tagged at a single aggregation site near Al-Lith, on the central coast of the Saudi Arabian Red Sea.

Individuals encountered at this site were all juveniles based on size estimates ranging from 2.5–7 m total length with a sex ratio of approximately 1:1. All other known aggregation sites for juvenile whale sharks are dominated by males. Results from tagging efforts showed that most individuals remained in the southern Red Sea and that some sharks returned to the same location in subsequent years. Diving data were recorded by 37 tags, revealing frequent deep dives to at least 500 m and as deep as 1360 m. The unique temperature-depth profiles of the Red Sea confirmed that several whale sharks moved out of the Red Sea while tagged. The wide-ranging horizontal movements of these individuals highlight the need for multinational, cooperative efforts to conserve whale shark populations in the Red Sea and Indian Ocean.



Sawsharks Born in Aquarium

Sawsharks are notoriously difficult to breed in captivity, but on May 7, 2014, twelve sawsharks were born in the Okinawa Churaumi Aquarium. When the aquarium staff noticed that a female sawshark's belly was enlarged, they took a sonogram to confirm the pregnancy, then isolated her from other fish. Four of the pups are on view in the aquarium's deep-sea tank.

The sawshark and sawfish are often confused; sawsharks are generally less than 5 feet (1.5) in length and inhabit deep offshore waters while sawfish live in shallow coastal waters, and may grow to a length of 23 feet (7 m) while. Although both are elasmobranches, the sawfish is a type of ray and its gill openings are on the underside of its body, but like all sharks, the sawshark's gill openings are on the side of its body. Both also have a long, toothy, sword-like snout but the teeth on the snout of a sawfish are all the same size whereas a sawshark has both large and small teeth on its snout. And, unlike the sawfish, the sawshark has long nasal barbells that look like a mustache extending from the middle of its long snout.



So many sawfish were killed for their saws, which were sold as curiosities, that they were listed on Appendix I of the Convention on International Trade in Endangered Species (CITES). All international trade of sawfishes and their saws is now prohibited.

Downside to Use of Circle Hooks

Adams DH, Borucinska JD, Maillott K, Whitburn K, Sander TE (2014) **Mortality due to a retained circle hook in a longfin mako shark *Isurus paucus* (Guitart-Manday).** *J Fish Dis.* Jun 30. doi:10.1111/jfc.12277 [Epub ahead of print]

A female longfin mako shark *Isurus paucus* (Guitart-Manday, 1966) was found moribund on the Atlantic Ocean beach near Canaveral National Seashore, Florida; the shark died shortly after stranding. Macroscopic lesions included a partially healed bite mark on the left pectoral fin, a clefted snout, pericardial effusion and a pericardial mass surrounding a 12/0 circle fishing hook. The heart, pericardial mass, gills, ovary, oviduct, shell gland, epigonal organ, liver, kidney and intrarenal and interrenal glands were processed for histopathology and examined by brightfield microscopy.

Microscopic examination revealed chronic proliferative and pyogranulomatous pericarditis and myocarditis with rhabdomyolysis, fibrosis and thrombosis; scant bacteria and multifocal granular deposits of iron were found intralesionally. In addition, acute, multifocal infarcts within the epigonal organ and gill filaments were found in association with emboli formed by necrocellular material. The ovary had high numbers of atretic follicles, and the liver had diffuse, severe hepatocellular degeneration, multifocal spongiosis and moderate numbers of melanomacrophage cells.

This report provides evidence of direct mortality due to systemic lesions associated with retained fishing gear in a prohibited shark species. Due to the large numbers of sharks released from both recreational and commercial fisheries worldwide, impact of delayed post-release mortality on shark populations is an important consideration. 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.

Fish Intelligence, Sentience and Ethics

Brown, C. (2014). **Fish Intelligence, Sentience and Ethics.** *Animal Cognition.* DOI 10.1007/s10071-014-0761-0.

Fish are one of the most highly utilised vertebrate taxa by humans; they are harvested from wild stocks as part of global fishing industries, grown under intensive aquaculture conditions, are the most common pet and are widely used for scientific research. But fish are seldom afforded the same level of compassion or welfare as warm-blooded vertebrates.

Part of the problem is the large gap between people's perception of fish intelligence and the scientific reality. This is an important issue because public perception guides government policy. The perception of an animal's intelligence often drives our decision whether or not to include them in our moral circle. From a welfare perspective, most researchers would suggest that if an animal is sentient, then it can most likely suffer and should therefore be offered some form of formal protection. There has been a debate about fish welfare for decades which centres on the question of whether they are sentient or conscious. The implications for affording the same level of protection to fish as other vertebrates are great, not least because of fishing-related industries.

The author reviews the current state of knowledge of fish cognition starting with their sensory perception and moving on to cognition. The review reveals that fish perception and cognitive abilities often match or exceed other vertebrates. A review of the evidence for pain perception strongly suggests that fish experience pain in a manner similar to the rest of the vertebrates.

Although scientists cannot provide a definitive answer on the level of consciousness for any non-human vertebrate, the extensive evidence of fish behavioural and cognitive sophistication and pain perception suggests that best practice would be to lend fish the same level of protection as any other vertebrate.

Tagged White Shark Strands

Photo by Tash Tapper



A four-metre male white shark that was fitted with an acoustic tag in January off Neptune Island, South Australia, by Australia's Department of Fisheries, washed up on a beach at Coronation Beach, Western Australia, July 12, 2014.

Principal research scientist Dr Rory McAuley said "Confirmation of when and where this shark was tagged demonstrates the extraordinarily mobile nature of this species".

The shark was filmed by a number of bystanders as it swam into the shallows of Coronation Beach, beaching itself at times and thrashing about a few metres from the shore.

Dr McAuley said the shark had no visible signs of injury or disease, however it appeared to have a large Australian sea lion stuck in its throat. "This could explain why the shark was exhibiting such unusual behaviour in shallow waters, it's possible that the shark was trying to dislodge the blockage," he said. "Such a large object may have damaged the shark's internal organs or impeded water flow into his gills, contributing to his death. Alternatively, the shark may have accidentally become stranded in his attempts to get rid of the obstruction."

A video of the stranding was uploaded to YouTube, <https://www.youtube.com/watch?v=as9W6VADit4>

Illegal Catch of Whale Shark in China

August 1, 2014: A fisherman in Xiangzhi, Fujian province caught a 4.5-meter-long, two-ton whale shark. The shark died in its struggle to escape the net. The fisherman planned to sell the shark for 10,000 to 20,000 yuan (US\$1,200 to \$2,400) and was transporting the shark to the wholesale market in Xiangzh, however, fisheries officials intervened; it is illegal to purchase or sell whale sharks in China.

