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10 Myths About Sharks

By Valerie Taylor | February 6, 2018

Evil or misunderstood? Ocean legend Valerie Taylor separates truth from tall tales.



I'M OFTEN REFERRED TO as a scientist. I'm not. I write from 65 years of experience. The oceans have been very good to my husband Ron and me. They've given us a life of excitement and adventure. The marine world is my teacher, my workplace, and my love, yet Ron and I have but dabbled in what it offers—unknown depths and their mysterious creatures, covering 72 per cent of our planet's surface.

Ron and I learnt very early that footage of sharks would sell more readily than that of any other marine animal. In the 1950s Movietone News (an international cinema-shown newsreel covering the years 1929–79) bought Ron's 16 mm footage, blew it up to 35 mm and showed it in theatres around the world. Then came television (in 1956 in Australia) and the public's lust for any images of sharks had us searching offshore waters for these "dangerous" predators. For us, filming sharks in their natural environment became a way of life. Much of my first-hand knowledge was acquired in the 1980s when using the mesh suit.

There's no easy way to describe sharks. There are hundreds of species, all with different characteristics, but few of them are potentially dangerous to humans.

The most threatening species cruising our coastline is the white shark. The largest recorded white was caught in 1978

off the Azores, a Portuguese archipelago in the Atlantic Ocean roughly 1500 km from Lisbon. It was measured by an observer at 8.8 m and was estimated to weigh more than 4.5 tons. Claims of much larger white sharks being caught are unsubstantiated. In fact, I'm not even sure I believe the size of the Azores specimen, but the ocean is full of surprises and a super-sized shark could well be one of them.

Other potentially dangerous sharks along our [Australian] coast are mostly of the genus *Carcharhinus*: bull sharks, bronze whalers, Galapagos and, in the tropics, the grey reef, silvertip and the tiger. Several other species of shark can become excited when there's food in the water, and spear fishermen have

even been bitten by meter-long whitetips when handling a struggling, bleeding fish. I've been bitten several times and always when there was food in the water. I never blamed the shark, only myself for being careless.

In the 1950s and early 1960s we believed what the media said—that the only good shark is a dead

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one and when you see a shark, it's either you or it. But now is the time to separate the fact from this fiction.

1. TRUE: Sharks can be stared down While filming *Blue Water, White Death* in 1969, 200 km off the South African coast, we left the safety of our cages, which we tied to a dead whale, and fought off hundreds of large sharks, eventually making a place for ourselves in the midst of the pack. We taught those sharks, all of them extremely dangerous, respect in a few frantic minutes.

The first sharks to approach us were hit by my shark billy (a 1.2-m long wooden club with a blunt end), bashed by Ron's metal camera housing, or punched in the gills by fellow cameramen Stan Waterman and Peter Gimbel. When they bumped us, we bumped them back harder. Not one of us backed off. I waited to be bitten, torn apart, or to see my companions torn apart, and wondered what I would do when it happened. There was no fear, just a feeling of excitement and aggression.

It was like rewinding time. We had entered a primeval world, unchanged in millions of years, and made a place for ourselves at the banquet. Somehow the knowledge spread throughout the shark pack that if confronted, these four bubble-blowing, clumsy creatures would fight. Apex predators are used to their prey trying to escape, not standing their ground and fighting back.

But we fought back and became accepted as part of the pack. Surrounded by dangerous sharks, we swam with them, even to where they were feeding on the whale and although we were sometimes pushed aside, we did not again feel threatened. If a swimmer or diver should confront a shark and see no fast route of escape, my advice is to look the fish straight in the eye, scream, swim towards it, show extreme aggression and—if contact is made—fight like hell. Most shark attack victims never see the shark before being bitten. Once you've seen the shark, you're unlikely to have any problems—except confronting your own fear.

2. TRUE: Sharks are attracted to swimming dogs. Sharks' curiosity attracts them to any unusual creature in their environment. A small animal like a dog splashing around on the surface is more likely to be considered prey than a big animal.

3. PLAUSIBLE: Sharks are attracted by blood. It has been said that human blood will attract a shark from kilometers away. This hasn't been our experience, but perhaps we've never bled enough to be attractive. We know that a harpooned whale bleeding its life into the open ocean as it cries in agony can attract hundreds of large, very dangerous sharks.

Much to the horror of sailors in the water after vessels have sunk, oceanic whitetip, blue, and silky sharks can appear like magic from the depths. The former two have no instinctive fear of humans; they have evolved to eat large, wounded or thrashing animals in the water and are responsible for more human deaths than all the other so-called dangerous sharks worldwide. Like many other sharks, however, they can be trained, and quickly.

4. FALSE: Sharks must turn on their side to bite. Sharks do not have to be on their side or back when feeding; they can bite from any angle.

5. TRUE: Sharks can be trained. Sharks are easily taught a simple action. I once trained a whitetip reef shark to swim towards me over a piece of pink coral. When she did it correctly I rewarded her with a piece of fish. When she swam towards me any other way I hit her on the head. Within 45 minutes I had that shark performing exactly as I wanted.

Several hours later I returned to the same place with my camera. I now had three whitetips swimming over the pink coral. Somehow my trained shark had let her companions know that if they behaved in a

certain way they would be given a treat. This isn't an isolated case but something we've done many times, not only with sharks but fish as well. Sharks have a very small brain but, unlike humans, they probably use all of it. We've found they can learn a food-related trick much faster than a dog, bird or cat.

6. FALSE: Sharks swim backwards. The answer is no, although there are a few species, including the epaulette shark, found in tropical Australian waters from northern New South Wales to Shark Bay, Western Australia that can "walk" backwards.

7. PLAUSIBLE: Attacks are more likely at dusk. Bull sharks have bitten and killed people wading or standing in water. They come into the shallows on a rising tide looking for anything edible that may float off the shore. Wading or swimming near a channel where fish are frequently cleaned, or where the water is murky, is not advisable, particularly at dusk when some sharks (for example the bull) are conditioned to feed.

8. FALSE: Sharks cannot survive in fresh water. Bull sharks will swim up rivers into brackish or even fresh water, especially females when they are ready to pup. Although most sharks have sharp eyesight, rivers can be murky. In low visibility conditions, sharks investigate anything unusual with their teeth. A gentle nibble of a shark's razor-sharp teeth can be fatal, however, for a thin-skinned human.

9. FALSE: Sharks must keep moving in order to survive. This was once widely thought to be true, but it isn't. Most sharks can rest on the bottom and pump water over their gills. The lovely and endangered Australian grey nurse shark* can hang almost stationary in the water. They're often seen resting in groups, waiting to go out and forage under the cover of darkness.

10. TRUE: Sharks have a natural hierarchy. With sharks, as with most animals, if you are larger and better-armed than your companions you'll generally have right of way. At Shark Reef off Pacific Harbor in Fiji, we've witnessed a big tiger shark scatter a group of feeding bull sharks despite the latter being very large themselves. On one occasion, however, the bulls joined forces and out-muscled the tiger. Shark Reef is the only place we know of where continual professional research into shark behavior is carried out in their natural environment. On any given day a diver can see between five and seven species of shark, each one trained by locals to feed in certain ways at different depths. For instance, the reef whitetip will not approach the baits where the bull sharks are feeding. The blacktip, whitetip and grey reef species are all fed in shallow water along the reef's edge. The larger sharks are fed tuna heads at a depth of about 15 m. To see 20 or more bull sharks waiting in line for a tuna head while scientists record their gender, behavior and any distinctive markings is truly an amazing experience.

Sharks are wonderful. To me they're nature's perfect creation. They inhabited this planet long before us, yet people are harvesting them worldwide in increasing numbers (approximately 100 million a year). The popularity of sharkfin soup has caused shark numbers to fall rapidly.

Shark finning—the brutal but lucrative practice of cutting fins off live sharks and throwing them back into the ocean to slowly drown—is banned in this country but Australia imports 10 tons of dried shark fins every year from countries that have not banned finning, including China and the Philippines, which equates to an estimated 26,000 sharks. Dried shark fins are widely available in Sydney's Chinatown for up to \$1400 a kilogram. A bowl of sharkfin soup costs more than \$150.

The harvesting of these wonderful animals won't stop until it's too late. As with all top predators, sharks are slow breeders; it can take up to 12 years for a female white shark to reach sexual maturity and, once she does, she usually gives birth to one pup only once every three years. Sharks are already hard to come by and, tragically, I can foresee a day in the not-too-distant future when divers and snorkelers won't encounter them at all.

* Known as the sandtiger shark in the USA and raggedtooth shark in South Africa

CITES: A Critical Weapon for Conservation

The single most powerful tool to protect endangered species is the United Nations treaty known as The Convention on International Trade in Endangered Species of Flora and Fauna (CITES). The listing of a species on a CITES Appendix carries teeth; CITES decisions are enforceable by its member nations. The delegates to CITES, scientific authorities from 183 nations, will meet May 23 to June 2, 2019 in Colombo, Sri Lanka to decide the fate of many species currently threatened with extinction. CITES is where the future of African elephants, rhinos, pangolins, birds, trees, and many other species will be decided.

CITES meets once every three years. SRI has sent scientists to CITES every year since 2002. This year we are sending three of our scientists to the meeting in Sri Lanka to present delegates with peer-reviewed scientific evidence in support of additional shark species being considered for CITES protection. Since 2002, protection has extended to the whale shark, basking shark, white shark, seven species of sawfishes, oceanic whitetip shark, porbeagle shark, scalloped hammerhead shark, great hammerhead shark, smooth hammerhead shark, silky shark, all three species of thresher sharks, all manta rays, and all devil rays.



We anticipate the proposals listing shortfin and longfin mako sharks on CITES Appendices will be hard fights at the upcoming meeting and have been working behind the scenes gathering support for these and other marine species under consideration, including six species of giant guitarfish and 10 species of white-spotted wedgetfish. We also will be working to prevent the removal of existing protection for other threatened and endangered species.

For more than two decades, Japan has pushed for a resumption of commercial whaling in the Caribbean and has come under criticism for alleged vote-buying by withholding overseas aid from nations who do not support its agenda.

“When the Japanese government selects the countries to which it provides fisheries grants, criteria include that the recipient country must have a fisheries agreement with Japan and it must take a supportive position to Japan in various international organizations.”*

Caribbean nations receiving aid from Japan (Antigua, Dominica, Grenada, St. Lucia, St. Vincent and the Grenadines, and St. Kitts and Nevis, countries having no whaling fleet, no tradition of whaling, no market for whale meat and no apparent national interest in whaling), have supported Japan's efforts to hunt whales in the Caribbean at the International Whaling Commission, appallingly.

Japan has also continued to be a formidable adversary concerning protection for marine species at CITES. Antigua and Barbuda are now calling for *“a halt to the adoption of new listings of marine species, until such time as the current listings have been determined to provide conservation benefits, and proper processes for implementing the listings are put in place.”* The statement suggests Japan's involvement; the three years since the last Conference of Parties (CoP) has been ample time to establish protocols for implementing all previous CITES listings.

Now you know why it is so important that SRI attends CITES. Our delegates are registered to attend the upcoming meeting, but attendance at CITES is expensive (airfares, hotel, required documents for every delegate and UN fees). If you are able to provide *any* financial assistance we'd be most grateful.

<https://www.sharks.org/support/shark-research-institute-donations>

We wish every one of you could be with us as we head into battle to advocate for sharks and other endangered species. But in our hearts and minds, we will take every one of you with us when we deploy to CITES. Consider us your foot soldiers; with your support, whether emotional, financial, or both, we are wildly hopeful of making the world safe for sharks and winning the war against greed, ignorance and cruelty. To learn more about CITES, visit: **www.cites.org**

***Overseas Fisheries Cooperation Foundation. (1987). Conference Report: Symposium on South Pacific Fisheries Development. (Tokyo). 93.**

H. David Baldrige

October 17, 1924 – January 4, 2019

by Ralph S. Collier

Capt. Henry David Baldrige, Jr., U. S. Navy Retired), Ph.D., died January 4th in Sarasota, Florida at the age of 94. A physical scientist (physical and organic chemistry), his interest in sharks and shark attacks very likely resulted in part when as a young Navy ensign in 1945, he came very close to being assigned to the *USS Indianapolis* on her final voyage. In the early 1960s, his research focused on a search for chemical shark deterrents. He became coordinator for testing these deterrents for the Office of Naval Research (ONR), and a member of the Shark Research Panel, then collecting data on shark/human interactions. David analyzed data from 2000 incidents and subsequently published his book, *Shark Attack*, which contained descriptions of 1156 such incidents. In addition, he authored about 100 scientific papers and government reports. He retired from the Navy in 1971 after 27 years of military service.



David was a close friend, mentor, and a true inspiration.

2018 Shark/Human Incidents

The Global Shark Attack File (GSAF) reported 116 shark incidents worldwide during 2018. Of this number, 24 were considered provoked, special circumstances, or doubtful shark involvement. The remaining 92 incidents are authenticated, unprovoked shark/human incidents.

There were 6 fatalities, one each from Australia, Brazil, Egypt, Jamaica, Mexico and the United States. Of the 92 unprovoked incidents reported in 2018, 20 resulted in no injury to the human.

Activities of the 92 individuals were: surfing; boogie, body and paddle boarding; kite surfing (40); swimming, standing, wading, walking and fishing (27); diving, snorkeling, engaging underwater photography and spearfishing (21); outrigger (1); kayak (1); and undetermined activities (2).

The country and number of incidents were distributed as follows; USA (30), Australia (30), Bahamas (8), South Africa (5), Brazil (3), Egypt (3), New Zealand (3), New Caledonia (2), Thailand (2), Costa Rica (1), Ecuador (1), Italy (1), Maldives (1), Jamaica (1), and Mexico (1).

The number of authenticated unprovoked shark incidents reported from the United States was 30. The locations and number were: Florida (11), California (5), South Carolina (3), Hawaii (3), North Carolina (2), New York (2), Massachusetts (2), Texas (1), and Georgia (1).

The GSAF is the world's largest database relating to these events. Incidents are documented by GSAF investigators, medical professionals, and media sources.

The GSAF is online at www.sharkattackfile.net. The Incident Log page contains 2 spreadsheets. The PDF of any incident report in the Chronological File spreadsheet may be viewed by clicking on its case number in Column A.

US Lawmakers Propose to End the Shark Fin Trade.

The Shark Fin Sales Elimination Act of 2019 (H.R. 737) was introduced in the U.S. House of Representatives with 118 bipartisan sponsors on January 23rd. <https://trackbill.com/bill/us-congress-house-bill-737-shark-fin-sales-elimination-act-of-2019/1650273/> If enacted into law it will be illegal to buy or sell shark fins in the USA, and further crack down on shark finning, a practice in which fishermen remove fins and release the rest of the animal into the ocean to die. Finning is already illegal in U.S. waters, but eliminating the trade of fins would cut down on finning elsewhere and squash the market in the USA.

Conservation groups cheer the new bill. "A national fin ban is something that both sides of the aisle agree is good for our oceans, tourism jobs, and businesses that depend on healthy shark populations," said Whitney Webber, campaign director for responsible fishing at Oceana.

To date, 12 states have banned the sale and trade of shark fins, as have 40 airlines, 20 major shipping companies, some 500 businesses, seven large corporations, and 8 in 10 Americans support the ban. "The strong, bipartisan support for this legislation sends a clear message that we have to pay more attention to protecting the Earth's oceans and the life within those oceans," said Gregorio Sablan (D-Northern Mariana Islands), one of the sponsors of the bill. "Banning the sale of shark fins is important, but just a small step towards giving the oceans the full respect they must have in federal law," he added. "It is time we leverage our economic might against shark-finning and work to counter the larger issue of animal poaching and the illicit trafficking of animal parts," said Michael McCaul (R-Texas), the top Republican on the House Foreign Affairs Committee.

Florida will be the 13th state to take a stand against the global shark fin trade if bills currently before the Florida legislature (SB352 and HB99) are passed. This is important because Florida is currently the number one focal point of the fin trade in the U.S. Both SB352 and HB99 are aimed at ending the flow of fins coming through Florida ports of entry and crippling the global trade in fins. Penalties for violations involve suspension or revoking license privileges, and the fines are considerable: \$4,500 per fin for the first violation, \$9,500 per fin for the second violation, and \$25,000 per fin for the third violation.

The text and PDF of SB 352 can be found at

<https://www.flsenate.gov/Session/Bill/2019/00352>

and HB99 is at <https://www.flsenate.gov/Session/Bill/2019/00099>



Miami Herald

New Shark Fishing Regulations in Florida

There have been numerous cases in which people have been bitten by sharks at beaches where shark fishing was allowed. Since 2015, GSAF has petitioned municipalities in the Carolinas and Florida to prohibit chumming along surfing and swimming beaches, and relocate swimming and surfing beaches at least a quarter mile from fishing piers. Thanks to Florida Fish and Wildlife Commission, chumming from the state's beaches, fishing piers, jetties, and bridges will be banned as of July 1, 2019. The new regulations prohibit fishermen from placing chum in the water and defines chum as fish, fish parts, or animal products intended to attract marine life. The commission also passed regulations that require shore-based shark anglers to release protected species while the gills are still in the water. Shore-based anglers in tag-and-release programs who do not take the sharks out of the water and use non-stainless steel circle hooks will require a new no-cost annual permit. Shore-based anglers 16 years and older may be required to complete an education course before getting a no-cost permit.

Where are Air Jaws? And What is Happening to the White Shark Capital of the World?

by Enrico Gennari, Director, Oceans Research South Africa

Fact: False Bay, home of the famous flying white sharks of Air Jaws, has not had a reliable white shark season for at least two to three years.

Fact: The waters off Gansbaai are known as the White Shark Capital of the world, but in the past two years there are more bronze whaler sharks than white sharks.

Can it all be because of a couple of orcas which, by the way, have been seen roaming from Namibia all the way to Port Elizabeth quite regularly? I personally believe orcas are playing a role, in particular in Gansbaai, but then why not so much in Mossel Bay and Plettenberg Bay?

What is going on? In the last few years, climate changes are unfolding in our oceans; orcas are roaming more and more in Southern Africa's coastal waters and the distribution of small pelagic fish, such as sardines and anchovies, is shifting east to west and vice versa. What does all this have in common? The fact is that we can't do too much about it as a single nation. However, in the last five to six years an experimental small fishery, the demersal shark longline industry, has been given the go ahead by the Department of Agriculture Forestry and Fisheries (DAFF).

Why do I call it experimental? Because it did not go through any environmental impact assessment or even a proper study before being approved. I was told by a high ranking DAFF official that proving the impact of this fishery is up to non-government researchers and the lack of such a study is not reason enough to prevent an industry to develop. Even though I don't like that statement, I could agree with it ONLY IF there were checks and balances in place to make sure, as we go ahead, that the negative impact doesn't exceed the advantages.

A recent article on pelagic shark longline industry, published in *PeerJ* by Gareth Jordaan of the Oceanographic Research Institute in Durban (<https://peerj.com/articles/5726/>), outlined that one of the main issues, if not the biggest, in evaluating the impact of such fishery was the inconsistency in reporting what is landed at a port and what is caught on a boat are usually quite different.

To my delight, I was told that one of the main permit conditions of the demersal shark longline fishery is to have independent observers on board for proper control of the industry. "Great!" I said. However, since the inception there has not been a single observer on those boats.

Is the lack of observers a real issue? Without independent observers, we need to trust that what the fishing companies declare in their landings at harbour is their true catch. Do you think the South African Revenue Service (SARS) would trust that what a rich company declares, is what it really makes? Sometimes yes, now and then SARS would surely do some checking. However, in this case, there isn't such control, forcing us to trust those fishing companies. From a research, management, and conservation point of view, we know catches and landings are always different, not just because the fishing companies might lie, but also because of by-catch.

What is by-catch? Every time a fishing boat targets specific species, different species are also caught: animals that were not targeted. They are then thrown back into the water, sometimes highly stressed but still alive, yet more often already dead. In the case of unsupervised baited longlines, a shark caught would fight for hours (yet often after only 15 or 20 minutes in the case of a hammerhead shark), until it eventually reaches a level of stress which results in its death. Thus, few animals live whilst many dead ones are thrown back into the water. Those thrown back are not part of the counts related to that day's fishing. This is UNLESS an independent observer on that boat includes those animals in the count. So this industry, even though well-regulated by permit conditions is effectively not managed at all. DAFF states there is not enough money to pay for the observers, which is fair as we are a developing country. However, since this kind of fishing is a commercial avenue, why not have the fishing companies pay for the administration and

support of observers, although managed independently? Of course, the companies will protest, but then DAFF could explain that it is in their long-term interest. The presence of observers will mean DAFF scientists would have much better data about the real catches. Thus, they would be better equipped to manage quotas, restrictions, or even shift target species to more sustainable ones. In return, this would mean those fishing companies will be able to carry on their business for decades to come. The long-term advantage is a better choice than the unsustainable quick bucks option.

If everyone would win, why is it so difficult? Other fisheries (even larger than this one) have observers on boats. Observers are not needed on board all the time on every ship. Something that science is getting better at is obtaining data from small sample sizes (few observers every now and then) and being able to extrapolate this to a larger situation (inferring catch data almost as if observers were on board all the time). Can we monitor what is caught, whether protected species are caught (intentionally or accidentally), and whether the areas of operations are the ones allowed by the permit conditions?

Where is the political will? Going back to the geographical shift of white sharks, the demersal shark longline industry has been operating along the South African coastline for the last few years. It does target (again keep in mind the difference between targeting and catching) several species of sharks including soupfin, bronze whaler and smooth-hound sharks. These sharks are an integral part of the white shark's diet. Unpublished data shows the collapse of soupfin and smooth-hound shark populations in the Western Cape. The South African Sustainable Seafood Initiative has put these species in their RED category and considers these fisheries to be unsustainable.

So why do these species remain the top target species for the demersal shark longline fishery authorised by DAFF? Ask any recreational angler how difficult it is to catch these sharks, even professional anglers. Many national competitions rely almost entirely on sand sharks nowadays. These species are disappearing under our very eyes. When a top predator faces the disappearance of some of its main prey items, it is naturally forced to move where those items are more abundant, thus shifting the geographical distribution.

Isn't this what we are seeing, west to east? A collaborative effort led by colleagues of the Dyer Island Conservation Trust in Gansbaai recently submitted an article in relation to the impact orcas are having on white sharks in that area. We at Oceans Research provided the data related to the contemporary presence or absence of white sharks in Mossel Bay. It seems quite clear there is a shift from Cape Town and Gansbaai toward Mossel Bay and Plettenberg Bay.

Can I pinpoint the reason to be either orcas or longliners? Neither! Causation is one of the most difficult things to prove in science. I could easily say something such as the trend in white shark presence is dropping at the exact same rate as the increase in orca sightings or longlining effort, but I cannot prove that one is the cause of the other, as there could be more causes or more complex relationships.

Do we really need to prove it? Or is the doubt enough to put a few observers on those boats? How can five or six boats have such a large impact on the entire country and on so many different species? I'll give you an anecdote: a researcher friend of mine externally tagged 30 smoothhound sharks with spaghetti tags in Port Elizabeth a couple of years ago. Within one month, 27 of those 30 were caught by a single longline boat (90%). Extrapolate that ratio to five to six boats that constantly roam our coastline and within a few years a devastating impact would be realized. Within a decade or two, those half dozen boats specifically targeting sharks could remove all coastal sharks along the once-rich-in-shark-biodiversity South African coast.

Earlier this year I was invited to a meeting organised by the Department of Environmental Affairs (DEA) in Cape Town to discuss plans to maintain South Africa's incredible shark biodiversity. Most of those attending were specialists and scientists working on sharks. It is usually difficult to agree about anything at

these types of meetings, yet we all agreed the demersal shark longline industry could represent the number ONE THREAT to the conservation of sharks in South Africa. That is a strong statement. We are now waiting for a follow-up meeting that the Department of Environmental Affairs agreed to organise, asking DAFF managers to be part of the discussion.

Nevertheless, I want to be clear: nobody is *a priori* against DAFF. Nobody is *a priori* against fishing. We would like to be able to discuss and support DAFF in its difficult task to find a balance between supporting our economy while protecting the natural resources of South Africa. Failing a serious monitoring system, I would like to see DAFF using a precautionary approach.

I was ecstatic when, as a young researcher in Italy, I found out that South Africa was the first country in the world to adopt a precautionary approach when it declared the white shark protected. They did not have a great deal of data at that stage on the status of the white shark population in South Africa. However they realised it was an incredible resource in terms of tourism, job creation and overall economy, plus the obvious importance of protecting a top predator from an ecological point of view. Thinking ahead was worth it and not waiting until it might be too late.

Thus why can't DAFF put their minds in the same pro-active framework? Let's have a deeper look into it, by comparing the demersal shark longline industry with the white shark cage diving industry (as an example of ecotourism, a non-consumptive utilisation of the natural resources).

- **Does the demersal shark longline industry, as it is run and managed at the moment, make sense from an ecological point of view?** NO, as already discussed earlier.
- **Does the industry make sense in terms of supporting South Africa's food security?** NO, as all products are exported mainly to Australia to be sold as fish 'n' chips.
- **Does it make sense in terms of job creation?** Those 5-6 companies employ maybe 200 people? That is nothing compared to the thousands if not millions of South African people who benefit from shark ecotourism. And I am not just talking about the rich owners of cage diving companies but also the people employed in the hospitality industry, which greatly benefit from such forms of tourism. Similarly, the few million Rand per year contribution of the longline industry to the South Africa's economy, pales in comparison to the 20 Billion Rand per year overall contribution of shark ecotourism.

So why does this industry exist in its present form? I am not suggesting that industry be closed; what I would like is for DAFF to apply its mind, maybe accepting help from outside, and at least enforce the good regulations they have already put in place. What I would like is to have a sustainable fishing industry that benefits long term, without putting entire ecosystems at risk.

If DAFF is not willing to apply such logic, then I would rather use a precautionary approach, as the Department of Environmental Affairs did with white sharks in the past, and work with those fishing companies to identify alternative businesses to keep employing the people they have and making a more long-term sustainable business, for their own good to. That is exactly what DAFF actually did around 10 years ago in regard to the offshore shark longline industry: it set up stricter regulations, observers on board, and pushed an effort toward transformation of that industry when permits for shark-directed longliners were abolished in 2005, and formerly shark-directed vessels were allocated permits to catch swordfish and tuna, within a stricter regulatory framework (Da Silva et al., 2015: a study led by DAFF researchers). This sounds in completely the opposite direction with the demersal shark longline industry.

We need to keep in mind, nature is not ours, but we are borrowing it from future generations!

Letter to SRI from Chris Fallows

My colleagues would rather I shut up as it affects our bottom line when tourists find out what is happening to our resources in South Africa. To shut up though is to hammer the final nail in the coffin.

As I sit typing this email along the European coastline, which no longer has any real marine resources to speak of, I sadly reflect on what until very recently we had along South Africa's coastline, and where we are rapidly heading.

It is truly tragic that South Africa's coastline is in large part being laid to waste by this small demersal fishery and associated apathy by DAFF and the Department of Environmental Affairs. There is so much at stake, and in the case of the white sharks and associated cage-diving industry, we are seeing the complete collapse of what was the world's most successful shark ecotourism industry that brought South Africa unprecedented exposure by sustainably celebrating a magnificent predator. This, in an industry that was sustainable in perpetuity, was non consumptive and was fully developed.

Our globally unique marine ecosystems which have been largely intact for millennia are being laid to waste in the space of less than five years.

They say you can't compare marine with terrestrial, but in some cases, I disagree. I liken what is happening along our coastline to taking down the national parks' fences and allowing gin traps to be set all along the boundaries of the Kruger National Park, The Kgalagadi, and Addo to kill all the lions, leopards and cheetahs, to be sold for hamburger patties in first-world countries. It would not take long to catch them and the effects would be catastrophic.

Can you imagine the outcry and can you imagine the effect of such an industrial level of exploitation, all done under an experimental banner? The exact equivalent is exactly what is happening to our coastline. It is that simple. We are allowing the industrial massacre of our oceans' apex predators for the sale of fish and chips in Australia and sharkfin soup in Asia. Whilst nothing can conclusively be proven, anybody with experience on, or in, our oceans will tell you that wherever these boats have worked there quite simply are no longer any decent populations of sharks.

For 25+ years I have watched, dived with, and lived in the company of sharks. I don't need to do any research to tell you the sharks are nearly all gone. My eyes, and those of many other experienced people, don't lie when we look under the water.

The tragedy is that data *does* already exist. Inconceivably, the DAFF scientists who have that data, that they themselves have collected. It shows the various species that are being directly targeted by the longliners to be in collapse, unbelievable but true. It is under the current staff at DAFF and DEA's watch, management, scientists, compliance and enforcement alike, that we are truly seeing the end of our coastline.

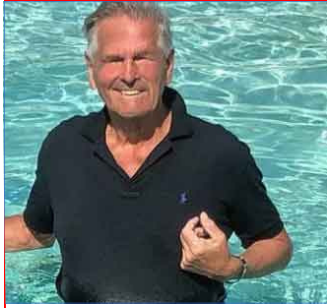
This is not a dramatic statement. It is the truth that needs to be told.

Chris Fallows, *CEO of Apex Predators*

<https://www.apexpredators.com/>



Upcoming Events



March 16, 2019: At 8:15 p.m. Die Retter der Hai (*The Saviours of the Sharks*) airs on German TV SWR. This is SRI's CEO Jupp Kerckerinck's film, part of the "Elstner Reisen" series.

March 29-31, 2019: Beneath The Sea. Venue: Meadowlands Exposition Center, Secaucus, New Jersey. This is the largest consumer dive and travel show in the USA. Features workshops and seminars, imaging competition, film festival, scholarships. Stop by Booth #359 to "talk shark" with SRI staff.

<http://www.beneaththesea.org/>



April 2019: Sharkwater Extinction, the film by Rob Stewart, SRI trustee who died while shooting footage for this documentary, is scheduled to start streaming on Amazon Prime.



April 11-14, 2019 ADEX Ocean Festival: Venue: Suntec Convention Centre, Singapore. The largest dive expo in Asia with an estimated 62,000 attendees. Features dive sports goods and accessories, dive travel, presentations from the world-renowned photographers, ocean artists, marine conservationists, scientists, technical divers, freedivers, plus hands-on educational activities for children. <https://10times.com/adex>

May 23-June 3, 2019: CITES CoP. Colombo, Sri Lanka. www.cites.org (See pg 4)

May 28-31, 2019: Fifth International Whale Shark Conference. Exmouth, Western Australia. The focus of IWSC5 will be bringing together the world's leading whale shark scientists, conservationists, natural resource managers and tourism managers to develop collaborations, explore all aspects of whale shark biology and ecology, and decide how this can translate to direct conservation efforts. It is timed to showcase Ningaloo's world's best whale shark management program and will follow the Ningaloo Whaleshark Festival, an annual community event that celebrates these magnificent animals.

<https://www.facebook.com/iwscq/>



New Shark Species

Etmopterus lillae is a new species of bioluminescent lantern shark, found in waters approximately 1000 ft deep. University of Rhode Island shark researcher, Dr Bradley Wetherbee named the species after his daughter, Laila Mostello-Wetherbee. The three-foot long shark is brown with black T-shaped flank marking, spines coming from its dorsal fin, and a longer snout than other lantern sharks.

Death of a Young Whale Shark Due to Plastic Bag

KOTA KINABALU: The body of this young whale shark washed up on a beach near Kota Kinabalu, Borneo on February 5t, 2019. Authorities believed it died of starvation due to a large plastic bag measuring 46cm by 32cm, obstructing its gastrointestinal tract. After being alerted, Sabah Wildlife Department director Augustine Tuuga summoned a team from the department's Wildlife Rescue Unit (WRU) to investigate the incident.

A team from Sabah Fisheries Department, led by the Marine Resource Management Office head Lawrence Kissol, also visited the site. Kissol said whale sharks are not allowed to be exploited (caught, eaten, sold or exported). The species is listed under the Fisheries Act 1985 and has been protected by CITES 2002. In Peninsula Malaysia, he added, there were several recorded cases of marine mammals dying due to eating plastic.

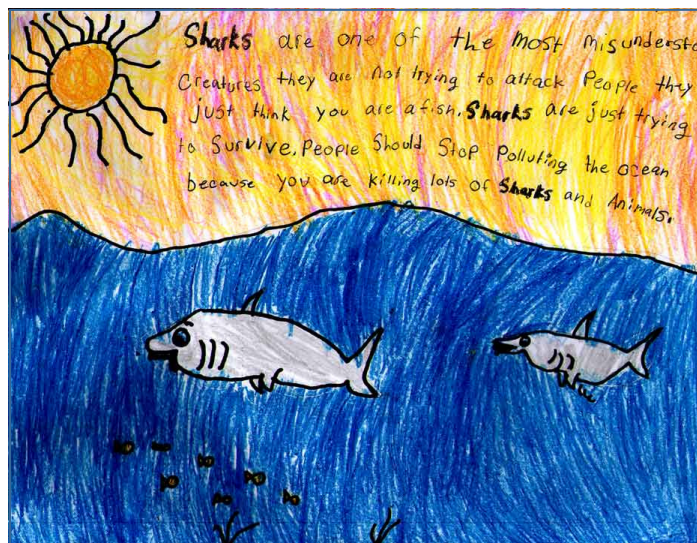


Kids' Corner

Spring Art Contest

Sharks have been named for many other animals. There are bull sharks, catsharks, cow and dogfish sharks, tiger and zebra sharks, crocodile sharks and goblin sharks. Some sharks are named for their colors: blue, copper, lemon, blacktip, whitetip and silver tip. The names of other sharks are sometimes descriptive. For example, the snaggletooth and raggedtooth sharks have crooked teeth, the whale shark is BIG and the basking shark often basks on the ocean surface. *Can you draw one of these sharks?*

Perhaps you can illustrate why sharks need protection. Sharks are essential for a healthy ocean, but the numbers of some kinds of sharks have declined by more than 90% in the past 50 years and are on a fast track to extinction. Most sharks are killed because people want their fins to make shark fin soup. Finning—the practice in which someone catches a shark, cuts off its fins (often while it is still alive) and then tosses the mutilated animal back into the sea—is illegal in our country. But the law still allows shark fins, even those from endangered species, to be sold in the U.S.A., regardless of where or how the fins were obtained. If sharks are to be saved from extinction, selling their fins must end.



SRI invites all kids to enter the Spring Art Contest by sending us a drawing showing why sharks are important and maybe calling attention to their plight with a catchy phrase like “Keep shark fins on sharks” or “FINish the Shark Fin Trade.” Color your drawing with markers, crayons or colored pencils. Put your name and address on the back and mail your drawing to:

**Shark Research Institute
PO Box 40
Princeton, NJ 08542**

Entries must be received by April 20, 2019.

All entries will receive a Ban the Sharkfin Trade sticker. The winner of the contest will be awarded a lifetime whale shark adoption. Your drawing might even be printed on postcards like the one above by Chelsea Cahall, winner of our 2018 Spring Art Contest.

Kids Using Their Power to Effect Change

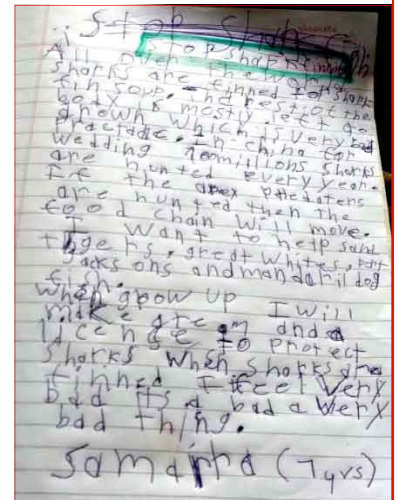


Hi! My name is Brody. I just turned 11 years old. Sharks have been my favorite creature for the longest time. I was writing an article at school about sharks and my research taught me more about sharks and how close they are to extinction because of shark finning, which made me want to do something about it. I showed my mom a website called Sharks.org for Shark Research Institute and asked her if I could donate or adopt a shark. She offered to raise money on her Facebook page for my 11th birthday to help and I raised \$250, including \$40 of my own birthday money. I hope my donation will help SRI protect sharks and raise awareness to stop shark finning."

...Brody, February 2019



Seven-year-old Samaira lives in Gurugram, India. She is a "mini-encyclopedia" about sharks, says her mother. She is passionate about sharks and has created a diorama of a coral reef, the deep sea, a pretend aquarium, shark and megalodon puppets, and written a book on sharks. As you may see in the photos attached she loves sharks. Samaira and her mother have been giving out Let Sharks Live and Year of the Shark flyers at their local mall to educate people about the necessity of protecting sharks. "When sharks are finned I feel very bad. It's a bad a very bad thing," she says. In her letter at right, Samaira says that when she grows up she will form a team to protect sharks.



Bookshelf

Water Rising is a unique collaboration between writer, Leila Philip and sculptor, Garth Evans. It combines stunning watercolors and haunting poems, bound together in a beautiful art book. It has evolved and expanded as a project to include music, spoken word, video installation, and staged many events across the U.S.A. and around the world. The project has an environmental mission, and 100% of net proceeds are being donated to generate support for environmental stewardship through groups like 1000 Friends of Oregon, CT Audubon, Scenic Hudson and Shark Research Institute. *This book is available on AmazonSmile for \$25*

WATER RISING

Have you renewed your 2019 SRI Membership?

If you haven't done so already, don't miss this special offer. Board Member Michael Aw, publisher of Ocean Geographic, will send **all 2019 SRI members** a digital edition of Ocean Geographic, a \$20 value.

Those who renew as Education, Conservation or Research Patrons receive a Premier Membership to Ocean Geographic that includes:

- One year print edition delivered to your door
- One year E-edition of Ocean Geographic – advance download.
- \$200 voucher for use with any Ocean Geographic expedition.

The AFUERA

The Great Massing of Whale Sharks in the Caribbean

July 24 to July 28, 2019

and July 30 to August 3, 2019

The largest gathering of whale sharks in the world occurs each June through August in the Caribbean off Mexico's Yucatan Peninsula. Known as the Afuera, more than 600 whale sharks have been observed during a single aerial survey. The sharks mass in a patch of ocean about the size of several football fields where the water is 20 to 60 feet deep to feed on dense patches of fish eggs, a rare place where you can observe and photograph whale sharks in blue water.



The expedition dates coincide with the peak of the Afuera. Each expedition is five days in length, including three days snorkeling with the sharks (weather and sea permitting) and a travel day on either end.

The expeditions are led by Dr. Jennifer Schmidt, Director of Science and Research at the Shark Research Institute, who has worked with whale sharks for nearly 20 years. By Mexico's regulations, all expeditions and whale shark ecotourism trips are snorkel only because scuba bubbles disturb the sharks when they are feeding. But excellent diving and many other activities are available before and after the expedition.

The cost includes four nights double occupancy hotel in Cancun, three days of whale shark interactions, lectures on whale sharks by Dr. Schmidt, snorkeling at Isla Mujeres, and lunch on whale shark days. It does not include airfare to Cancun, airport transfers, or dinners.

The share per person is \$1,400 if paid by check in USD (\$1,450 if paid online via Paypal) based on double occupancy. A single supplement is \$200. A \$500 deposit is required to hold your space. All payments are non-refundable. Dive and travel insurance are required. Maximum of nine participants per expedition.

These expeditions fill very fast, so reserve your space now!
For more information or to reserve a spot, contact jennifer@sharks.org

Optional side trips are available and can be arranged in Cancun. After the expedition you could dive Manchones Reef, visit the Cave of the Sleeping Sharks of Isla Mujeres, dive one of Mexico's crystal clear cenotes, or visit some of the world-famous Mayan ruins of the Yucatan such as Tulum or Chichen Itza.

DJIBOUTI WHALE SHARK EXPEDITION

Join a Shark Research Institute expedition to assist with research on this fascinating population of the world's largest shark

December 6th — December 14, 2019

Join this expedition led by SRI Director of Science and Research, Dr. Jennifer Schmidt, to study the whale sharks that aggregate in the Gulf of Tadjoura, Djibouti, Africa. Djibouti hosts an aggregation of the youngest whale sharks found anywhere. Most sharks are between three and five meters with two-meter animals occasionally seen. Participants will act as research assistants, documenting whale sharks by photo identification, collecting and analyzing plankton samples and hopefully observing night-feeding behavior. Research goals are to understand where these animals come from, why young sharks congregate in the area, and where they go when they leave.

Our home for this liveaboard expedition is the *M/V Deli*, a Turkish gulet that accommodates 12 people in shared rooms with private baths. The chef prepares a daily menu of local and continental cuisine. Whale shark interactions are snorkel only, but excellent diving is available from the boat at sites such as Ras Korali, Turtle Point, Moucha Island, and La Faille, a convergence of tectonic plates. Whale shark interactions and diving are available each day, and participants may choose any combination of activities.

Cost: \$2,200* includes shared accommodation on the boat, double occupancy hotel for the nights of December 6th and December 14th, all meals on the ship, hotel and port transfers, and a tax-deductible donation to the Shark Research Institute. Not included are airfare, Djibouti visa, soda and beer, and meals off the ship. Post-trip excursions are available to explore the geologic formations and vast salt lakes of the East African rift valley.

The site is remote, and accommodations basic, but the experience is unmatched. Share this unique wildlife expedition to a stark and beautiful corner of the world.

A \$500 deposit is required to hold your space. All payments are non-refundable. Dive and travel insurance are required. For more details, contact the expedition leader at Jennifer@sharks.org

*Payments made through PayPal will incur an additional \$50 per person processing fee.



How Hagfish Slime Clogs a Shark's Jaw in Seconds

Chaudhary G, Fudge DS, Macias-Rodriguez B, Ewoldt RH (2018) **Concentration-independent mechanics and structure of hagfish slime.** *Acta Biomater.* doi: [10.1016/j.actbio.2018.08.022](https://doi.org/10.1016/j.actbio.2018.08.022).

The defense mechanism of hagfish slime is remarkable considering that hagfish cannot control the concentration of the resulting gel directly; they simply exude a concentrated material into a comparably "infinite" sea of water to form a dilute, sticky, cohesive elastic gel. This raises questions about the robustness of gel formation and rheological properties across a range of concentrations, which we study here for the first time. Across a nearly 100-fold change in concentration, we discover that the gel has similar viscoelastic time-dependent properties with constant power-law exponent ($\alpha=0.18\pm0.01$), constant relative damping $\tan\delta=G''/G'\approx0.2-0.3$, and varying overall stiffness that scales linearly with the concentration ($\sim c^{0.99\pm0.05}$). The power-law viscoelasticity (fit by a fractional Kelvin-Voigt model) is persistent at all concentrations with nearly constant fractal dimension. This is unlike other materials and suggests that the underlying material structure of slime remains self-similar irrespective of concentration. This interpretation is consistent with our microscopy studies of the fiber network. We derive a structure-rheology model to test the hypothesis that the origins of ultra-soft elasticity are based on bending of the fibers. The model predictions show an excellent agreement with the experiments. Our findings illustrate the unusual and robust properties of slime which may be vital in its physiological use and provide inspiration for the design of new engineered materials.

STATEMENT OF SIGNIFICANCE: Hagfish produce a unique gel-like material to defend themselves against predator attacks. The successful use of the defense gel is remarkable considering that hagfish cannot control the concentration of the resulting gel directly; they simply exude a small quantity of biomaterial which then expands by a factor of 10,000 (by volume) into an "infinite" sea of water. This raises questions about the robustness of gel formation and properties across a range of concentrations. This study provides the first ever understanding of the mechanics of hagfish slime over a very wide range of concentration. We discover that some viscoelastic properties of slime are remarkably constant regardless of its concentration. Such a characteristic is uncommon in most known materials.

Using Trace DNA to Identify Shark Species

Fotedar S, Lukehurst S, Jackson G and Snow M (2019) **Molecular tools for identification of shark species involved in depredation incidents in Western Australian fisheries.** <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0210500>

Shark depredation is an issue of concern in some Western Australian recreational and commercial fisheries where it can have economic, social and ecological consequences. Knowledge of the shark species involved is fundamental to developing effective management strategies to mitigate the impacts of depredation. Identification of the species responsible is difficult as direct observation of depredation events is uncommon and evaluating bite marks on fish has a high degree of uncertainty. The use of trace DNA techniques has provided an alternative method for species identification. We demonstrate proof of concept for a targeted DNA barcoding approach to identify shark species using trace DNA found at bite marks on recovered remains of hooked fish. Following laboratory validation, forensic analysis of swabs collected from samples of bitten demersal fish led to the definitive identification of shark species involved in 100% of the incidences of depredation (n = 16).

Late Cretaceous Shark Teeth

Ebersole JA, Ehret DJ. 2018. A new species of *Cretalamna sensu stricto* (Lamniformes, Otodontidae) from the Late Cretaceous (Santonian-Campanian) of Alabama, USA. PeerJ 6:e4229 <https://doi.org/10.7717/peerj.4229>

Decades of collecting from exposures of the Upper Cretaceous Tombigbee Sand Member of the Eutaw Formation and Mooreville Chalk in Alabama, USA has produced large numbers of isolated *Cretalamna (sensu stricto)* teeth. Many of these teeth had formerly been assigned to the extinct Late Cretaceous shark *Cretalamna appendiculata* (Agassiz, 1843), a taxon that is now considered largely restricted to the Turonian of Europe. Recent studies have shed light on the diversity of Late Cretaceous *Cretalamna (s.s.)* taxa, and here we recognize a new species from Alabama, *Cretalamna bryanti*. The teeth of *C. bryanti* sp. nov. appear aligned with the members of the *Cretalamna borealis* species group, but can be distinguished from these other species by a combination of the following: anterior teeth with a more pronounced and triangular lingual root protuberance, broader triangular cusp, and a taller root relative to the height of the crown; anteriorly situated lateroposterior teeth have a distally inclined or hooked main cusp and more than one pair of lateral cusplets; and lateroposterior teeth have a strong distally hooked main cusp and a root that is largely symmetrical in basal view. At present, *C. bryanti* sp. nov. is stratigraphically confined to the Santonian/Campanian *Dicarinella asymetrica* Sigal, 1952 and *Globotruncanita elevata* Brotzen, 1934 Planktonic Foraminiferal Zones within the Tombigbee Sand Member of the Eutaw Formation and Mooreville Chalk, and teeth have been collected from only four counties in central and western Alabama. The recognition of *C. bryanti* sp. nov. in Alabama adds to our knowledge on the diversity and distribution of Late Cretaceous otodontids in the region.

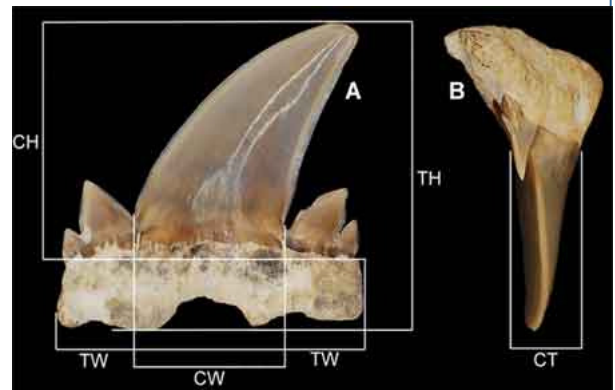


Diagram of tooth measurements taken as part of this study.

MSC 2984.1, holotype in (A) labial view and (B) mesial view. (CH) crown height. (CT) crown thickness. (CW) main cusp width. (TH) total height. (TW) total width.



Note: For those who are fortunate to live in NJ or PA, Dana J Ehret, Ph.D. is the new Assistant Director at the New Jersey State Museum. Before joining the museum, he was lead author of a University of Florida study on the origin of white sharks. In the photo at left, Dana, analyzes a 4.5-million-year-old fossil at Gordon Hubbell's private gallery in Gainesville, Florida. Researchers named the species *Carcharodon hubbelli* for Hubbell.

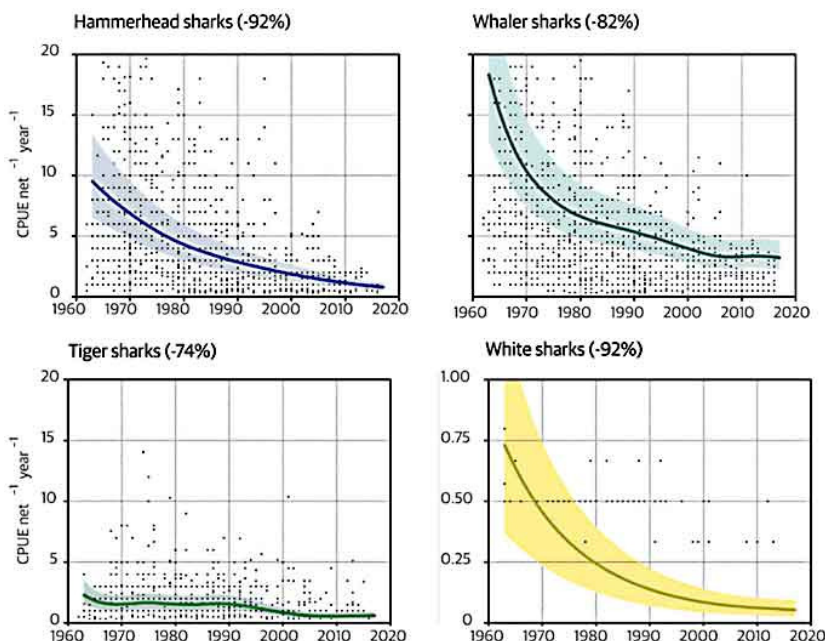
Dana's research includes paleontology, marine biology and paleobiology. His expertise includes biodiversity, conservation biology, ecology and evolution, evolutionary theory, macroevolution, taxonomy, systematics, nomenclature, vertebrates and vertebrate paleontology, ichnology, field paleontology, fossils, scientific digital photography, collection management, conservation and natural history.

Dana has offered to write some articles for our Newsletter and lead one of our Fossil Shark Tooth Hunts later this year.

Decline in Sharks Influencing Policy

Roff G, Brown CJ, Priest M.A. and Mumby PJ (2018) **Decline of coastal apex shark populations over the past half century.** *Communications Biology*. <https://www.nature.com/articles/s42003-018-0233-1>

Overexploitation of large apex marine predators is widespread in the world's oceans, yet the timing and extent of declines are poorly understood. Here we reconstruct a unique fisheries-independent dataset from a shark control programme spanning 1760 km of the Australian coastline over the past 55 years. We report substantial declines (74–92%) of catch per unit effort of hammerhead sharks (*Sphyrnidae*), whaler sharks (*Carcharhinidae*), tiger shark (*Galeocerdo cuvier*) and white sharks (*Carcharodon carcharias*). Following onset of the program in the 1960s, catch rates in new installations in subsequent decades occurred at a substantially lower rate, indicating



regional depletion of shark populations over the past half a century. Concurrent declines in body size and the probability of encountering mature individuals suggests that apex shark populations are more vulnerable to exploitation than previously thought. Ongoing declines and lack of recovery of vulnerable and protected shark species are a cause for concern.

Cookiecutter Sharks

Ribereau-Gayon A, Carter DO, Regan S. (2018) **New evidence of predation on humans by cookiecutter sharks in Kauai, Hawaii.** *Int J Legal Med*. doi: [10.1007/s00414-018-1786-8](https://doi.org/10.1007/s00414-018-1786-8).

The feeding patterns of species of large sharks on human corpses are well documented in the literature. However, that of smaller sharks are less known. This may introduce uncertainty in the medicolegal conclusions. For that reason, accurate identification of patterns of shark predation is very relevant, specifically in areas bordered by the sea. In the case described here, an unidentified lesion was noted on the body of a victim of a scuba diving accident off the island of Kauai, in Hawaii. The aim of this study was to identify the origin of the lesion and investigate its potential to inform on the context of death and/or decomposition. The original outline of the lesion was digitally reconstructed to enable the collection of measurements which were compared with the literature and interpreted with an interdisciplinary approach. This approach permitted us to determine that the macroscopic appearance and dimensions of the lesion (major axis = 3.53 cm) were consistent with a bite mark of a cookiecutter shark (*Isistius brasiliensis*). It was further determined that the bite mark was incomplete and that the specimen involved had a total length of about 24 cm and was likely to be a juvenile. This is the second report in the published literature of cookiecutter bite marks on humans in the Hawaiian waters. This study brings new evidence-based insights into the interactions between cookiecutter sharks and human remains in marine environments and provides a valuable contribution to the knowledge base on the topic.

Shark Shop



SRI shirts from Bonfire.com are available in a variety of colors and sizes (from youth to adult XL), more colors and new styles including tank tops, unisex, women's slouchy, women's slim fit, V-neck and pullover hoodies. You can order the *Infinity Sharks* logo shirts through our Facebook page or directly at

<https://www.bonfire.com/sharks/>

or the *Save Our Sharks* at

<https://www.bonfire.com/sharks-save/>

Order before midnight March 23, 2019. Shipping dates vary depending upon when your order is placed but your shirts usually arrive within three weeks.



Our **Café Press** store is open. Show your love of sharks and support of the Shark Research Institute with our cool new logo gear. Available are mugs, glasses, smartphone cases, hats, toys, clothing, blankets, pillows, and much more.

Shop now at: <https://www.cafepress.com/SharkResearchInstitute>

For a unique gift, consider our **Adopt a Whale Shark** program. Although our researchers have cataloged hundreds of whale sharks, only sharks that have been seen within the past year are put up for adoption. Guardians are notified as sharks are re-sighted. Annual Adoptions are \$50. Lifetime Adoptions never need to be renewed and are \$150. All adoptions include an adoption certificate, fact sheet on whale sharks and a photo of your shark.

<https://www.sharks.org/support/whale-shark-adoption>



With spring on its way, there will be soon be shark fishing and surf fishing from swimming and surfing beaches. These activities attract marine predators, possibly putting people at needless risk.

Recognizing that some municipalities still permit such activities, SRI member Jerry Taggart designed a series of **Warning Flags** to alert marine resource users when these hazards are present. For more information about how your local officials may order the flags, email: tagchum@gmail.com

And please remember that you can support SRI every time you shop at [Amazon.com](https://www.amazon.com). Just go to **AmazonSmile** and choose "**Shark Research Institute**" as your favorite charity. It doesn't add to the cost of your purchase and Amazon makes a donation to SRI.

Would you like a guest speaker at your company, restaurant, Rotary Club meeting, dive club, school, or scout group? Would you like one of our staff to talk with students about careers in marine science, lead a field trip for your class, or help organize a beach clean-up? Contact SRI at info@sharks.org

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