

shark tales



Blacktip reef sharks know each other as individuals and often travel with favoured companions.

Text by Ila France Porcher

The first time I met a shark, I was struck by silence. Having observed the wildlife of the Canadian mountains all my life, my knowledge of sharks was limited to the information gained from watching the movie *Jaws* many years before. All that remained from that brief education was that they bit—and badly. Very badly. Essentially, if you met one, you died.

But now I was living in Tahiti. I had been told that there were no sharks in the lagoon, and they were far from my mind as I roamed one morning upon the barrier reef. The sunshine ran in golden lines across the coral and flashed upon the fish. It was mesmerising.

When I raised my eyes, a grey shark of about my size was moving languidly towards me and all my lights went on. Everything about her was just right—her curves, her fins, her face—nothing had prepared me for the sight of that splendid creature gliding forth through the rushing landscape, as graceful as a snake.

Expecting her to fly into attack mode at the sight of me, I held my breath and drifted behind a coral. But she paid me not the slightest attention as she passed just a metre away. Her smug little face actually looked bored. I moved to

keep the coral between us, and when I peeked out to see her again, she was gone as if she never had been there.

Not brainless

After a few more sightings, I found that if I remained very quiet in the water, the blackfin reef sharks would come to look

at me, and I began to seek them out each day on my underwater forays. They were the first wild animals I had met that came, instead of fleeing.

It was soon clear that their complex and flexible behaviour was very different from the other wild animals I had known. I was especially intrigued by their intelligence,

having learnt in university that they, as well as other animals of the “low” and “cold” variety, were practically brainless.

Individuals and social animals

So, I launched an intensive study of the local blackfins, identifying each one by its markings, and keeping track of sub-

sequent sightings. I wanted to find out what they were like, not only as animals, but as individuals, and visited them several times a week, whenever I could. The ability to recognize them as individuals revealed a whole new dimension of their lives, and I had the feeling of a window opening onto another world, one so sep-

Sharks: Still Misunderstood

PIXABAY





LAURA WOLF / FLICKR / CC BY 2.0

THIS PAGE: Blacktip reef sharks are social and emotional animals that seek the companionship of others and display complex behaviours, including anger, affection and attachment.

Misunderstood

face and slid against the boat, the paddle, and oscillated from one to the other.

They revealed this emotional attachment on another occasion too. Instead of staying for an hour and a half as I usually did, I just came to give them some treats, and then had to rush home. As soon as I approached the kayak, and they understood that I was about to get into it, they all soared over and began to circle me. Then, as I paddled home, they followed. Thirty-six sharks accompanied me out of the lagoon and some distance down the deep bay towards my house before they began to turn back, one after another, circling back towards the lagoon, returning, then finally returning to the shallow turquoise waters where they lived.

Deserving of protection

The difference between true shark behaviour, and their awful reputation, is very exaggerated, but sharks are ordi-

nary animals with high intelligence and a repertoire of behaviours that is still misunderstood and mostly unknown.

Divers, being the only people to meet them in their own environment, need to take the lead in insisting that they be protected from further depletion through overfishing, and especially from the shark fin market that is driving them towards extinction. ■

Illa France Porcher, author of The Shark Sessions and The True Nature of Sharks, is an ethologist who focused on the study of reef sharks after she moved to Tahiti in 1995. Her observations, which are the first of their kind, have yielded valuable details about their lives, including their reproductive cycle, social biology, population structure, daily behaviour patterns, roaming tendencies and cognitive abilities. For more information, please visit: ilafranceporcher.wixsite.com/author

arate from human life that it might just as well have been on another planet.

Soon the resident sharks, often accompanied by visitors, were waiting for me to arrive; they could recognize the sound of my kayak from far away. They were social animals and those in the lagoon were the females, each spending much of her time in a region about 500m across—her home range. They knew each other as individuals and often travelled with a favoured companion when they left home. Some roamed away often, for weeks or months at a time, while others were stay-at-home creatures and were only absent twice a year, once to mate, and once to have pups. There were a few males who regularly passed through that part of the lagoon but mostly they remained in the ocean on the other side of the barrier reef.

Display of emotion

The blackfins were emotional animals. During one episode, the entire group got mad at me, and for several weeks, they would slam my kayak hard, from multiple

directions, when I arrived. Yet, I never saw them fighting, and speculated that this was because they were not territorial, so greeted visitors to their region with friendliness instead of hostility.

Then a company from Singapore got set up throughout the far-flung archipelagoes of that island nation and began slaughtering the sharks for their fins. My sharks fled at first, and when some returned, their society was in disruption. It was two years before the divers, with the help of international pressure, were able to convince the government to protect them; French Polynesia is now the largest shark sanctuary in the world.

Affection and attachment

During the period in which they were being fanned, because of personal difficulties, I was unable to get out to see them, and when I finally made it back, two months had passed. As I crossed into the sharks' lagoon, I paused to drink some water and suddenly, there was a blackfin drifting past the boat, with more coming beyond, and they began to undulate

against it. One slid against the paddle, and all around me they placidly glided, dorsal fins above the surface, pushing the curves of their bodies against my boat, moving beneath and pressing against it, again and again. I reached down and stroked them as they passed, instinctively responding to what could only be interpreted as an affectionate gesture.

The sharks did this each time they met me after that. One was always first to swim slowly beneath my hand as I sat in the low kayak and I would stroke her. She would spend some time drifting back and forth while being caressed, then undulate against the kayak and disappear below.

On one evening of perfect calm, through the flawless clarity of the water, I saw the group of sharks shoot straight upwards from two metres beneath, undulate against the boat, and go straight down again, so that their tails flashed above the surface around me momentarily like the wings of birds, droplets flying. There were several of them on each side. Then they returned to the sur-



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Queensland ordered to suspend controversial shark control program

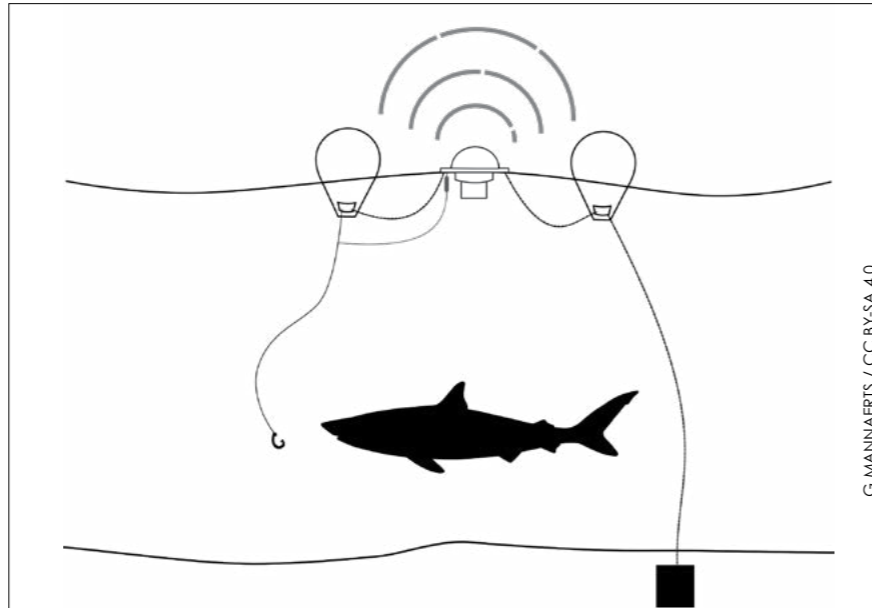
The Great Barrier Reef shark control program has been suspended after a tribunal ruled sharks found alive on drum lines must be released.

The decision has come after Humane Society International (HSI) earlier this year launched a challenge to the shark control program run by the Queensland Department of Agriculture and Fisheries.

It is ineffective

In its decision, the Administrative Appeals Tribunal said the scientific evidence about "the lethal component" of the shark control program "overwhelmingly" showed it does not reduce the risk of unprovoked shark attacks. Humane Society International campaigner Lawrence Chlebeck said non-lethal technology was the way forward for shark control in the Great Barrier Reef. "This is a massive victory for sharks and marine wildlife," he said in a statement.

The Great Barrier Reef Marine Park will now only be permitted to authorise the euthanasia of sharks caught on drum lines on animal welfare grounds, "specifically when a shark is unlikely to survive release due to its condition or an injury, or which cannot be safely removed alive due to weather conditions or hooking location". Furthermore, contractors must attend to caught sharks within 24 hours, and all tiger, bull and white sharks to be tagged before release. ■



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Drum lines have been deployed with the intent of preventing shark attacks in Queensland, Australia, since 1962. In January 2014, drum lines were introduced in Western Australia to catch potentially hazardous sharks. The topic of shark culling became a nationwide controversy and sparked public demonstrations and vocal opposition, particularly from environmentalists, animal welfare advocates and ocean activists.

A drum line is an unmanned aquatic trap used to lure and capture large sharks using baited hooks. They are typically deployed near popular

swimming beaches with the intention of reducing the number of sharks in the vicinity, and therefore, the probability of shark attacks.

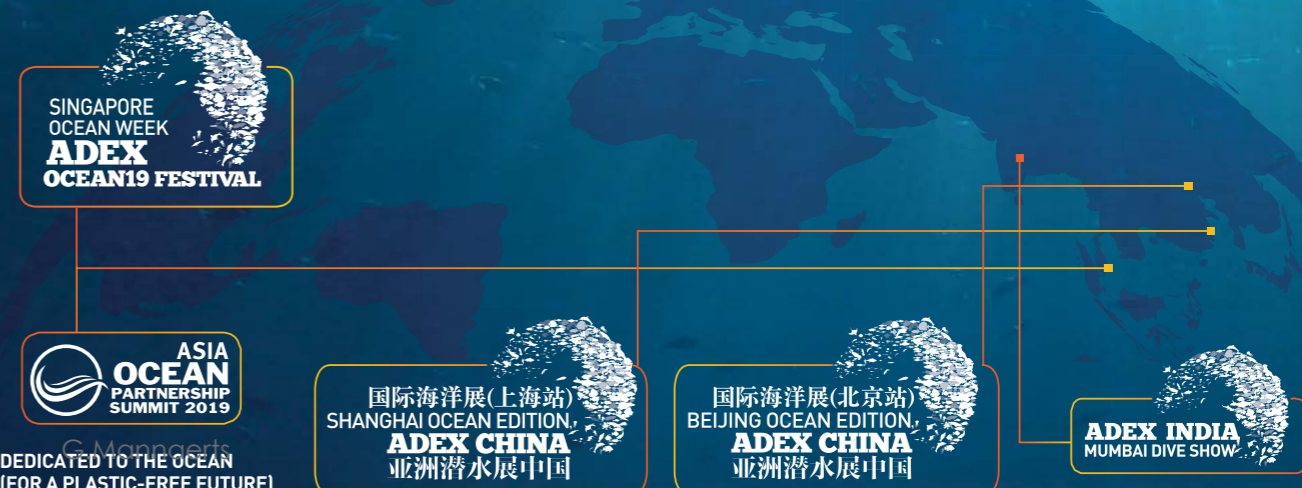
Since the objective of the drum line is to prevent sharks from approaching popular beaches (and not to attract them) only about 500 grams of bait are added to each hook. Thus, sharks are only attracted to the baits from the immediate vicinity.

Drum lines have been cited as not being an effective strategy to keep people safe, while simultaneously killing thousands of sharks and other wildlife in the marine ecosystem.

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Photo courtesy of Matthew Smith





(File photo) Can electrical deterrents make sharks back off when they are getting too close for comfort?



PETER SYMES

How effective are commercial electric anklet shark deterrents really?

Shark researchers from The University of Western Australia tested the effectiveness of the Electronic Shark Defence System (ESDSTM) and found it unlikely that the device would significantly reduce the risk of a negative interaction with a white shark.

Personal shark deterrents offer the potential of a nonlethal solution to protect individuals from negative interactions with sharks, but the claims of effectiveness of most deterrents are based on theory rather than robust testing of the devices themselves.

Whether or not these kinds of devices actually do anything is the subject of a new study published in *PLOS One*, and unfortunately, it seems that there are some pretty huge differences, depending on which brand you choose. To determine just how effective the device is, the researchers tested it against a large population of white sharks (*C. carcharias*) in a shark hotspot in South Africa. The device tested was a commercially available anklet called the Electronic Shark Defence System, or ESDS, which produces an electrical field that the manufacturer claims drives sharks away.

The team recorded 395 encounters with 44 individual white sharks. The researchers found the ESDS had limited meaningful effect on the behaviour of white sharks.

Barely any effect

An active ESDS was no more capable of keeping sharks at a “safe” distance than an inactive ESDS. Sharks would routinely approach within 20 to 30cm of the device, whether it was active or not. There was no significant reduction in the proportion of sharks interacting with the bait in the presence of the active device.

Only very close up (< 15.5cm), did the active ESDS show a significant reduction in the number of sharks biting the bait, but this was countered by an increase in other, less aggressive, interactions. By comparison, an active Shark Shield deterrent (which was previously tested by the team using the same methodology), effectively deterred white sharks by an average of 1.3m from the device.

Shark’s electrical sense is finely tuned to detect prey

It has been known for many years that rays and sharks are able to detect minute changes in electric fields, much like the way our ears react to sounds, as they swim and use this sense to detect prey.

A network of organs, called ampullae of Lorenzini, constantly survey the electric fields sharks swim through. Electricity enters the organs through pores that surround the animals’ mouths and form intricate patterns on the bottom of their snouts. Once inside, it is carried via a special gel through a grapevine of canals, ending in bunches of spherical cells that can sense the fields, called electroreceptors.

But as the electrical fields emanating from nearby prey are very weak, how do they pick up these tiny changes against the backdrop?

Much like humans can pick out certain specific sounds or voices in an otherwise noisy environment, a shark’s electrosensing organ is finely tuned to react to the minute changes in electrical fields emanating from nearby prey in a sudden, all-or-none manner, as if to say, “attack now.” ■

“Although the effectiveness of the ESDSTM may vary between species, due to species-specific differences in electroreceptive ability, the fact that white sharks are implicated in the majority of fatal incidents globally suggests that a device that cannot effectively deter this species should not be considered an effective shark deterrent,” said Dr Ryan Kempster, lead researcher of the study. ■

SOURCE: PLOS ONE

The **TRUE NATURE** of **SHARKS**
ILA FRANCE PORCHER

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Great whites have high tolerance to heavy metals

Great white sharks off South Africa have been found to contain quantities of heavy metals that would be dangerously toxic to other forms of marine life, according to a newly published study in which researchers screened the blood samples for concentrations of 12 trace elements and 14 heavy metals.

The results showed high concentrations of the metals, including mercury and arsenic, which did not correlate to a shark’s sex, body size or condition. The results suggest that the apex predators have a built-in ability to tolerate the negative effects of the heavy metals. ■

