



When Sharks Really Attack

Text and images
by Ila France Porcher

Anyone who has faced an agitated shark has felt the power of communication through body language. The response is so immediate and so physical, that emotion, expressing through body language, is revealed as an important medium of pre-vocal communication among animals.

I had some curious experiences with blackfin reef sharks (*Carcharhinus melanopterus*) while observing them in Tahiti's lagoons, where they were easy to watch in two meters of water, and sneaked for years through the lagoons and depths off the island to learn what they do when no one is looking. Finally, I conducted a seven-year ethological study. Of all of the startling things that happened, one of the strangest began to unfold after three years had passed.

Shark encounters

The resident sharks had always met my kayak, and when I slid underwater, three of the females—Martha, Madonna and Bratworst—would glide up to my face one after another, turning away just before touching me.

Then one evening, they all did it!

Underwater, I found the entire community of three dozen sharks converging on me at high speed and was instantly in a mass of flying torpedoes that whipped around my body. To distract them, I finned hard to push some fish scraps out of the kayak and felt my instep slam one of them with all of my force.

Expecting her to turn and slash, I peered underwater to scrutinize the situation. Martha was curving down to the food, showing no reaction to having been kicked. She had glided between my legs, as I finned upward. Carrellina shot up to my face and away again, and I pushed in the rest of their scraps.

Yet, in spite of the initial excitement, the sharks only picked and circled through the area, departing as night fell. No others came to the food left lying on the sand.

Carrellina was an exceptionally bold shark who visited annually from December to April—she had just rejoined us. It was her influence, along with the heightening excitement of the breeding season, that seemed to have triggered the unprecedented rush by the sharks.

A week later, they shot up to me again in high excitement when I appeared underwater. They fed, then began darting up to my face, and going to the boat to sniff it. Holes in the well of the hollow craft where their food was kept were plugged on the way out, but when

the scraps went overboard the plugs loosened, so if I held any back, they could smell it.

As night fell, the sharks patrolled watchfully instead of leaving and often rose behind the kayak to sniff it.

The seed of change had been planted when one of them had fallen ill. I had waited each evening in a whirl of sharks with the sick one's medication hidden in a chunk of food. Though the others had had their weekly feeding session, they began to behave, with increasing conviction, as if they thought I had food

I was not giving them—as if I was being tricky.

Finding patterns

I had wanted to find out what they were like, not only as animals, but as individuals. Yet, until I had begun the weekly feeding sessions, I had remained the suspicious alien in their world. This gesture of benevolence had gained their trust and allowed me to see what I had been unable to observe before—what they were doing when no one was watching. Because around me

they began to behave as if no one was watching!

Yet, never had a pattern been established in which they had a regular meal at my weekly sessions. They often missed sessions or came too late to eat, and sometimes the scraps, which contained little real nourishment, were not even eaten. By the time of this story, I had identified most of the sharks who used the lagoon, and could recognize 300 individuals on sight.

Weeks passed while I watched the sharks' evolving behaviour with





puzzlement. Infrequent visitors joined the resident sharks in swarming up to me, and then made repeated charges by themselves. Fast charges by the shy older female visitors were unprecedented. Carrellina was joined in her bad behaviour by several females who, like her, were in their first year of reproduction—I began thinking of them as “the juvenile delinquents”.

Then one night, the sharks' relentless circling reached new heights of tension. They repeatedly charged while Carrellina orbited my head, and her buddy Chevron passed me again and again. I dared not move a muscle for fear of triggering a mass charge, and faced each shark, scarcely breathing, as she swam up to my face. Finally, when they circled away, I flew to the kayak, leaped in and tossed in the tuna heads I had brought for the nurse sharks. The lagoon boiled, as the sharks pounced in darkened waters that obscured the wild melee beneath.

Just three days later, I was unexpectedly given some fish scraps and returned, accompanied by a young seabird I had rescued. Carrellina and her gang undulated around the boat, as I prepared. The bird alighted on the shark-food, stared down at the sharks and flew. She glided low over the surface, and the sea actually quivered, as the fish startled. So I failed to see how it happened, that just at that moment, the sharks attacked the boat!

The heavy weight of the loaded kayak with me on it was bashed with shocking force first one way and then the other, as they slammed it from multiple directions. Somehow, they had acted in synchrony. The surface was solid with sharks emerging at high speed, twisting and bashing the kayak, while more replaced



those shooting away. Then, they leaped out of the water to snatch at the food behind me. All around me in the air, their jaws were loudly snapping shut, and one got a good bite of a scrap that overhung the water.

The heavy blows came mostly from beneath, and it was hard to turn in the narrow craft to see behind me, where the sharks surged out to snatch at the scraps. Carrellina passed repeatedly at high speed. She had been the instigator, and among those I was able to identify were the juvenile delinquents.

Instead of sliding in, I began throwing the food to them, hoping they would calm down and feed. But even after I finished, Chevron shot up to slam the kayak over and over again.

When she went into search mode, I slid underwater. Golden sunlight flickered over the coral, and the graceful sharks soaring through. Each snatched up a scrap and accelerated to shake out a bite, while the falling piece was caught up by one in pursuit. Several visitors were among them, adding to the excitement, and none paid attention to me, as I drifted, writing down their names.

Shark rage

Their attack confirmed that I had been

right about their subjective state when they had circled me so tensely three days before. The way Chevron had repeatedly torpedoed the kayak after I had fed them suggested that she was finally venting intense feelings of shark-anger or rage. The desire for food was not the motivation for slamming the kayak; it was their anger toward me.

At home I found that some of the kayak's straps had been cut, punctured and sliced by their sharp little teeth.

I went with dread to the next shark session. There was a slight bump, as I prepared, then silence. But before I could feed them, Carrellina slammed the kayak hard, and the rest joined in.

They began to leap out of the sea while I twisted in the narrow craft to grasp the slippery scraps from behind me, and throw them. Watching and listening to their jaws snapping shut with loud clapping sounds, it was obvious that in a kayak, it was not easy to keep all of one's body out of the edible zones. I had thrown in quite a bit of food when Martha suddenly broke through

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the surface beside my right elbow and snapped her jaws closed on a trailing scrap. The power of the movement was shocking. She had come so close to catching my arm in her teeth.

For the very first time, I didn't want to get into the water, roiling with blood and sharks. But eventually I slid in. The same sharks I had known for so long were whirling, feeding in the site, and I began to wonder whether their actions were due more to impatience to get the food by themselves, than rage this time.

Indeed, I theorized, they were like excited children helping themselves to birthday cake without waiting to be served. Once their spontaneous attack had begun on the boat, they had found that their food was right there, so on the next leap, they targeted it. Could this latest incident be the confirmation of a new foraging method? The species normally does not breach, look above

the surface, nor feed above the surface, so their behaviour was all the more remarkable, and actually reminiscent of a cultural development!

New foraging methods

To be sure, I verified that the behaviour of the sharks attending the commercial shark feeding dives had not changed—only among my sharks had the change in behaviour occurred.

By the next session I had decided that they would no longer be rewarded for their bad behaviour with food raining down. Instead, I would photograph their new foraging behaviour and time it. When they stopped their bashing and leaping, I would feed them.

But no sharks met me, and underwater I found a peaceful gathering of mostly juveniles and males. As night fell, I was floating a treat to Martha when Madonna zoomed around a coral, and





they collided, hard, head-on, within arm's length. Madonna turned to me, I put a gentle hand on her head, and she soared over my shoulder. It was a good example of how absolutely unpredictable things could happen.

Each session was different, but Carrellina and the juvenile delinquents were usually in attendance, leading ragged lines of sharks up to me and orbiting my head. Formerly shy sharks began to charge me at unacceptable velocities. There seemed to be no escaping the conclusion that the next step in the long, long string of events leading up to the present moment, was that it would be me, instead of the kayak, that was attacked. Carrellina or Chevron would make the first move and be instantly joined by everyone else.

Emotional nature

The news reports "shark attacks" whenever an incident occurs, yet these attacks involve biting, usually in an act of sensing, or eating behaviour in sharks. Eating is not the same as attacking, which implies aggression. Never had

I heard of a group of sharks knocking someone senseless in an unanimous, angry attack.

I had reported cognitive behaviour by sharks and learned that such an ancient line of animals was considered incapable of cognition, so knew that no one would believe that sharks could feel as well as think. Yet, I was seeing evidence that sharks did feel emotions—they shared them and they acted on them. Their emotions had been dictating much of what had happened at our sessions for several weeks.

Further, though my species is far removed in evolutionary time from theirs, I could understand the sharks' body language. The intimacy that had developed during hundreds of hours spent alone with them, involved feelings. I was still two years from the moment when Carrellina slammed the boat, and the juvenile delinquents undulated against it and raised their heads from the water to be caressed, rather than joining her. But the sharks' emotional nature had shown itself.

Sharks observe us

Weeks passed, and the mating season drew to a close. The times that they had attacked the boat began to seem incidental. I clung to the hope that things would soon be back to normal, but at each session there was some reason not to return, at that moment, to my earlier routine of pushing the food into the water with the sharks all around me.

Then one evening, Carrellina and her gang were coiling around the kayak as I threw in the food and suddenly came straight up through the water toward me and began slamming the boat with the same power as before and leaping out, though their food was in the water!

Underwater, Carrellina flew to meet me. She did not leave me alone throughout the session, and her repeated charges made it difficult to watch or follow any other shark. When she came to the end of her repertoire, she just circled around my head. She came at me from different directions, and since she was smaller than the large females I had always been closest to, her speed was alarming. I tried holding the kayak between us and banging on it, but that had no effect on her, nor did it make much sense now that the sharks had begun attacking it. Splashing my hand on the surface in front of her nose had no effect. I was afraid to push her away physically because she was so swift, and she dodged faster than the eye could follow.

April ended and Martha left to mate. I brought a treat for her to a feeding session when she was due back, and when the excitement faded she came to me.

So I decided to get her treat, as she circled away. But at that moment, she came shooting back. So, I waited. A few minutes later, however, the same thing happened. When she accelerated back four times in 15 minutes when I decided to get her treat, I was mystified. So the next time I decided to go, I watched what happened closely. First, I looked

around and moved my hands. Then I glanced above the surface to see where the kayak was—it shifted constantly in the wind and current, so I checked for the direction in which to swim. And these subtle signals brought Martha back. She was observing me!

I got the plastic bag and opened it. The water pressed the plastic tightly against the food, so I had to hold it open while blood and fluids poured out, and shake it to waft the food out for the shark. Martha came in without accelerating, and coiled through the water in front of me, taking the pieces one after another and paying no attention to the plastic nor the movements of my hands.



Shark intelligence

Many such incidents demonstrated the sharks' ability to concentrate on something if they cognited (thought) that it could benefit them. Their intelligence is the theme of the book I wrote about

them when they were fanned, entitled *My Sunset Rendezvous : Crisis in Tahiti*.

Martha had mated, and the reproductive season was over. The waters had cooled, and the sharks' behaviour would settle down, I was sure. Yet, one evening I was cruising around with my escort of fish, and found that a tuna head had been swept under a coral. So, I moved it 30 centimetres back out.

A big blackfin who had left long before soared in, grabbed it, and shook it. Instantaneously, several tons of nurse sharks converged on this tiny scrap, while my forty blackfins shot into the site and dove onto the fish head. Then they orbited at top speed as the nurse sharks rose vertically, tails thrashing the surface

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The shadowy green waters were shot through with speeding blackfins, orbiting the nurse sharks like stars around a black hole. There were so many present that there was not enough space; multitudes were zooming by as if I weren't there. I retreated and watched in awe, as the shadows of night obscured the scene.

Escalation

Not long after that, I arrived with difficulty in high winds for the Saturday feeding session, and threw the food into wild waters that rushed over the kayak. Then, I slid in.

As I fell through the water, several sharks appeared at my side with more coming beyond, obviously assuming that

I was food descending. But when they saw it was me, they adjusted their trajectory.

I found myself in a fairly deep region where two three-meter nurse sharks undulated in midwater, and the soaring blackfins appeared and vanished in the cloudy light. A large nurse shark was vertical, presenting a weird centrepiece as it flung its enormous tail around and flailed its fins. In most places, the water was not deep enough for such a huge fish to balance vertically. Everyone was unnaturally excited.

I drifted, watching, beginning to manoeuvre for a photograph as several sharks tore a large scrap apart.

Suddenly, Bratworst, Madonna, and Martha left the feeding area and swept up toward me. The gesture was so swift, so full of conviction, that I instinctively lowered the camera. They came in triangular formation, as they had in our

first moment of meeting more than three years before. Bratworst was in front. Normally, I faced the shark until she turned away, but Bratworst didn't turn. And the approach was far too fast. As she flew under my hands, I hit her on the back of her head. It was amazingly hard!

Like lightning she turned at right angles and shot away, and Madonna was soaring in. I raised my knees between her and my chest, and finned water into her nose, but she just dodged slightly and kept coming! I finned harder, and finally she turned away. Martha was beside her, and I pushed her away—she continued in the new direction in which I had pointed her. Back in triangle formation, tails waving, the three disappeared into the whirling sharks.

I swam away, realizing that I couldn't leave in the boat because of the wind! But when I came sneaking back, Martha zoomed up to me and Bratworst circled. Many residents joined her. The large nurse sharks were still vertical at the vortex of a tornado of blackfins.

Trembling, as one shark after another flew up to my face or tightly circled, I wrote down all of their names. Most such excited sessions concerned many visitors, but this time, I had only 38 names, the names of all of my sharks.

They could not have been upset because there was not enough food—there had been plenty; my three favourites would have caught it as it fell through the surface. So why had those sharks, the most familiar with me, spontaneously left the feeding in triangular formation to assault me?

While I was sure that they had not intended to bite me, it did appear that they would have rammed me if I had not defended myself. Bratworst, a large, high-powered missile driving straight into my solar plexus would have been crippling. With Madonna and Martha right behind, their action could have



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become a general attack like the one made on my kayak, given the mood of the sharks and the speed at which they can suddenly move.

The sharks' behaviour was not returning to normal. The breeding season had ended more than a month before, and the water was markedly colder, but at this session, more sharks than ever had been charging and harassing me at a level of excitement that was higher than I had ever seen it. The problem had not been restricted to the incidental gesture of Martha, Madonna and Bratworst.

Like a tangle of string too big to trace all the strands, I could not unravel the different influences, the many events involving different individuals that had precipitated the situation. Nor could I discern why my favourite three sharks had acted as they had. But because of their gesture, I changed the location of my feeding sessions, and restricted future visits to unexpected ones without food.

Communication without harm

Yet in spite of my long-term intimacy with the sharks, never had I been bitten. *C. melanopterus* was the only species I had intimately known that had never hurt me, either through accident or a fit

of pique, no matter what had happened; even my dog sometimes took my hand in her teeth along with a cookie. The sharks did not bite each other and seemed to have an inhibition against biting companion animals, while mammalian behaviour is so often the opposite.

While studying the sharks alone, I was always trying to understand their behaviour. There was no one to ask, only the sharks to look to for understanding. In the end, what was remarkable was that understanding was possible across the species barrier. That I could sense their subjective states and predict that their behaviour was evolving in a particular direction indicated that they had communicated across the species barrier. Emotion, via its expression as body language, appears to be an important form of communication in multi-species communities. ■

A native of British Columbia, Canada, Ila France Porcher spent much of her life as a wildlife artist. While in Polynesia, Porcher formed connections with sharks and witnessed the atrocities happening to them. These experiences inspired her to write the book, My Sunset Rendezvous.



Edited by
Scott Bennett



WIKIMEDIA COMMONS

French Polynesia bans shark fishing

In a decision hailed by environmental groups, the government of French Polynesia has banned shark fishing in its waters, creating the world's largest shark sanctuary. Especially significant is the inclusion of the mako, the last shark not protected in its waters, on the list of fish banned from capture or trade in its vast territorial zone in the South Pacific.

The proposal was announced at the annual meeting of the Western and Central Pacific Fisheries Commission meeting in Manila, where nations also agreed to take steps to protect whale sharks from tuna nets.

"At more than 4.7m km² of ocean, this designation doubles the size of the area already protected by all six existing shark sanctuaries," said Josh Reichert, head of the Pew Environment Group. But, he said,

"Sharks are threatened throughout much of the world's oceans, and there is a great need to protect them before they slip below levels from which they may never recover."

According to the conservation group of the World Wildlife Fund (WWF), about 73 million sharks are killed every year. The majority is killed only for their fins, a practice that has threatened a third of all shark species with extinction.

The United States banned finning in its waters in 2000, with several states banning the trade in shark fins. The European Union (EU) has had a finning ban since 2003, but

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has endorsed even tighter shark fishing rules obliging fishermen to bring sharks to port intact. The total ban on endangered deepwater shark fishing would be maintained for an additional two years applying to both E.U. waters and E.U. boats in international waters. ■

SOURCE: PEWENVIRONMENT.ORG

Healthy natural river systems help keep bull sharks away from man-made canals

In Queensland, Australia, a tracking project of the Nerang River and the Gold Coast canal system it feeds has shown that sharks have a preference for natural waterways. Twenty-four newborn and juvenile sharks were tracked over three years by researchers from Griffith University who discovered that the sharks were more inclined to remain in the river, with only some making excursions into adjoining canals.

The larger sharks tracked in the study ranged a bit further and occasionally ventured into canals closer to the river mouth.

The study suggests that maintaining the Nerang River system will ensure the shark population isn't forced into the canals in greater numbers.

"These findings—that

juvenile bull sharks have a significant preference for less modified river habitats over the residential canals—points to a strong imperative for conserving those natural habitats," said Joe Lee, deputy director, Australian Rivers Institute. ■



WIKIMEDIA COMMONS

World's largest shark sanctuary created

Cook Islands declared a 1.9 million sq km sanctuary, contiguous with one established last week by neighbouring French Polynesia. Shark fishing and possession or sale of shark products is now banned in an area totalling 6.7 million sq km—almost the size of Australia. The sanctuary is the result of a partnership between the Pew Environment Group and the Pacific Islands Conservation Initiative and the support of many local community and political leaders.

"This is hopeful news for the world's sharks and our efforts to protect them. We are thrilled to see the Cook Islands become part of this global movement during a time when so many shark populations are threatened," said Jill Hepp, director of shark conservation for the Pew Environment Group.

Hundreds of signatures were collected on a local petition, and students submitted letters and drawings



WOLFGANG LEANDER

bearing the message "Akono Te Mango" (Protect Our Sharks).

The Cook Islands joins Palau, the Maldives, Tokelau, Honduras, the Bahamas, the Marshall Islands and now

French Polynesia in establishing shark sanctuaries. They cover a combined area of more than 11.4 million square kilometers (4.4 million square miles) of ocean. ■

SOURCE: PEWENVIRONMENT.ORG





SCOTT BENNETT

Tourism has no effect on Ningaloo Reef whale sharks, study says

A five-year study has concluded that tourism is not affecting Ningaloo Reef whale sharks. Since 1993, tourist numbers participating in whale shark activities have increased from 1,000 to 17,000, generating about US\$6 million per season.

The first multi-year study on the effects of ecotourism on whale shark populations determined that sharks which frequently encounter tourists are just as likely to return to the reef as sharks that have little interaction with humans.

"Our research shows that the code of conduct used by the Department of Environment and Conservation to protect whale sharks is very effective with no

detectable impacts of tourists on their aggregation behaviour at Ningaloo across years," said Rob Sanzogni, the report's lead author.

Conservation organization WWF's marine spokesman Paul Gamblin said the report was encouraging and showed the industry was receiving appropriate attention. However, he stressed more had to be done to assist Coral Triangle neighbours such as Indonesia and the Philippines.

"Australia has played an important role but needs to up the ante to protect the whale sharks when they leave our waters," he said. "We need to help support local community tourism projects up there because the whale sharks

enter more dangerous waters when they leave Australia," he added.

Despite the positive findings, Gamblin was still concerned about the impact of resources projects in waters near Ningaloo Reef. "It increases our concern about the increasing development of the oil and gas industry which is getting ever closer to Ningaloo, including areas where the whale sharks migrate through," he said.

Researchers hope the report will provide a blueprint for similar work on the impact of ecotourism on other marine megafauna such as manta rays and whales. ■



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