

shark tales



The Lemon shark's yellow colouring serves as a perfect camouflage when swimming over the sandy seafloor in its coastal habitat.

Text by Ila France Porcher
Photos by Peter Symes

Though sharks have gained a mythical reputation for being biters, their behavior in nature is the opposite of what we would expect from the vicious animals depicted in the media. I had many opportunities to observe sharks under circumstances in which I expected them to bite, as a dog, cat, horse or bird would tend to do. Yet they did not.

All other species, wild and tame, with which I had the intimacy I shared with sharks, had bitten me sooner or later, either by accident or in a fit of pique; even my pet dog sometimes grabs my hand in her teeth along with the offered cookie.

Further, while the blacktip reef sharks I knew enjoyed roaming with favorite companions, I never saw them fighting with each other. They had friends but no enemies!

For years people had told me—and I half believed myself—that one evening, I would be bitten and would bleed to death, or faint and drown. Since I was

alone far from shore as night was falling, I could expect no one to save me, and these circumstances enhanced a tendency to react with darkening consciousness and soaring terror at times.

The graceful creatures were the color of the twilight waters, and as night fell, they became just motions in

the shadows. As if they knew they had an advantage, it was then that they became emboldened, and would suddenly shoot forward faster than my eyes could follow them—the speed at which a shark can suddenly move, is one of the startling things about them.

So I had long acquaintance with the

phenomenon of fear. Often it took all my psychological force to compose my mind in order to overcome it.

Occasionally, things went wrong—the boat overturned in high winds, or my camera fell overboard, for example—and I would find myself in tossing waters opaque with blood and excited sharks,

in a situation for which I was unprepared. Yet, no matter what happened, no shark bit me, time after time.

Why?

Why had none of those hundreds of sharks of four different species, some many times my size, ever bitten me? I



Sharks don't bite like we do





THIS PAGE: Lemon sharks feed selectively on species that are slower and more easily captured by using a stalking technique.

would watch my favorite, Martha, coil through the sea in front of my face, snapping up the treats I was freeing for her while ignoring my hands and the little plastic bag I had brought them in, and be convinced that it could not be a random coincidence.

There had to be a reason.

Mammals vs sharks

One night I accidentally kicked a shark with all my force, not realizing that the six foot animal was between my legs as I finned upward to reach into my kayak. Expecting her to turn and slash, I peered underwater to scrutinize the situation, but neither her speed nor her trajectory changed as she curvetted on to circle me.

It was then I realized that I was expecting a reaction from a shark that was based on my

knowledge of mammals. Like the other species we know well, we readily bite in fear. Anyone who has been seriously assaulted knows that the instinct to bite in self defense is very thinly veiled beneath our civilized daily lives. Birds too, readily bite in aggression and fear. It is a reaction that we take for granted—it is an important part of our personal defense system, which is instinctive at its root, and reinforced by countless learning incidents, beginning in infancy, and continuing throughout our lives.

But that night, I realized that these

requiem sharks must not share this strong tendency to bite, either from fear or aggression. Separated from us evolutionarily by a gulf of time spanning half a billion years, and having evolved in an oceanic environment, sharks are not territorial, and do not seem to have developed the same tendency that mammals have, to bite in fear or aggression.

It seemed possible that our fear of sharks is based on the intrinsic knowledge that we, and animals like us,

readily bite, and we assume that sharks do too. With their big mouths and shocking sets of teeth, our imaginations are undone as we consider them opening to bite us.

But they don't.

They even seem to have an inhibition against biting companion animals.

They don't regard us as prey, and apparently view us as other creatures who share their ecological community. This is apparent, for example, during shark dives.

Rare aggression

Dr Samuel "Doc" Gruber of the Bimini Sharklab in the Bahamas wrote back with these comments when I asked him about this subject :

"After years and years of observing sharks in competitive feeding situations, I have become impressed by how little aggression is shown by these animals. I often read in books when I was young that sharks can go into a frenzy and will attack and kill one another. I find this to be

exactly opposite of what occurs. What I see is that sharks, when competitively feeding, are almost gentle and balletic. For example, if two sharks rush at a piece of bait and one clamps onto the other's head they will carefully unclamp, back up, and move off. They do not bite or hurt one another.

"Aggression between sharks of the same species seems to me to be very low; they are very tolerant of each other. White sharks might be the exception, but at a big whale carcass, they do not seem aggressive.

"When being handled, some species will definitely bite and others won't bite no matter how much you try. The lemon shark and blacktip shark

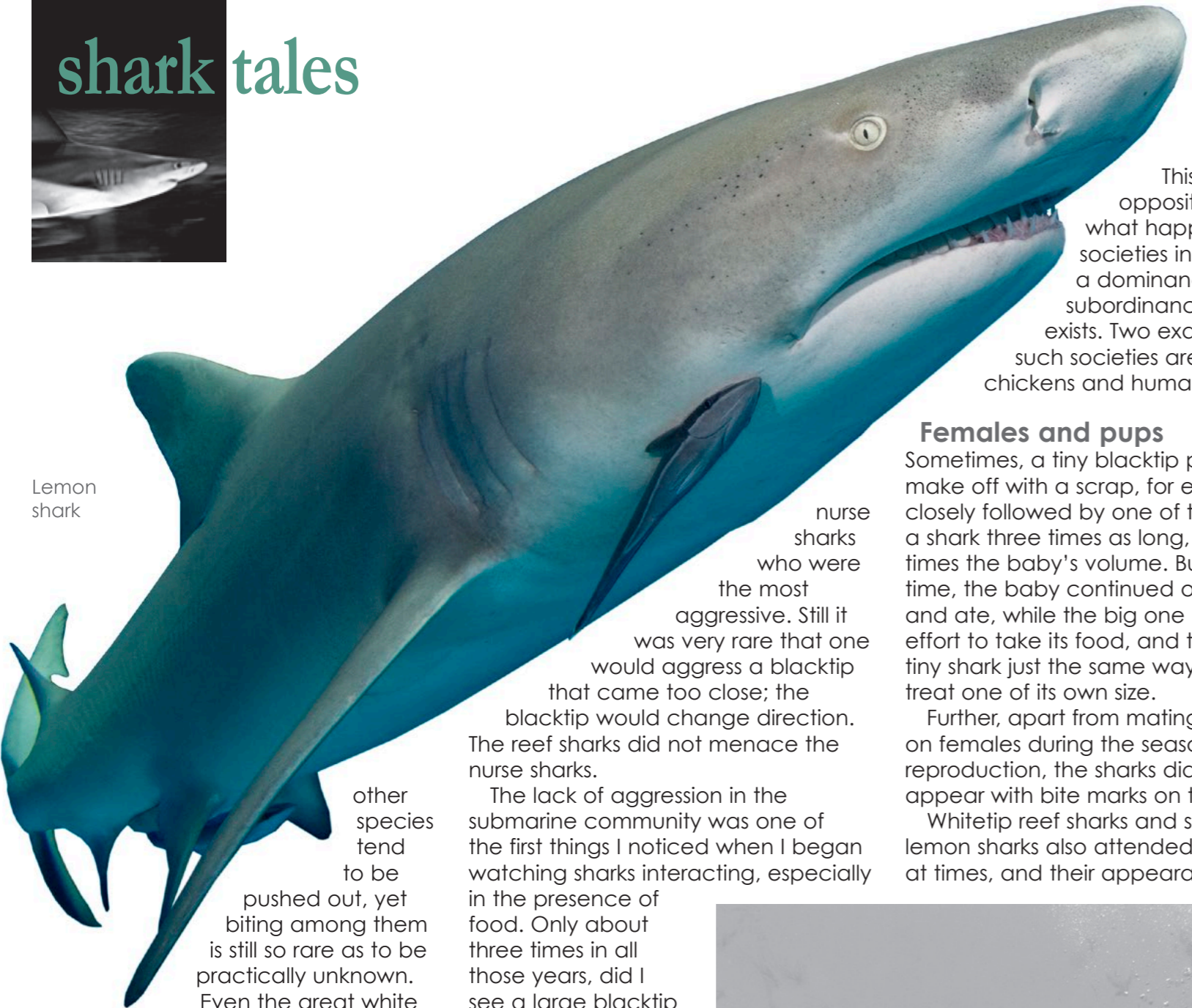
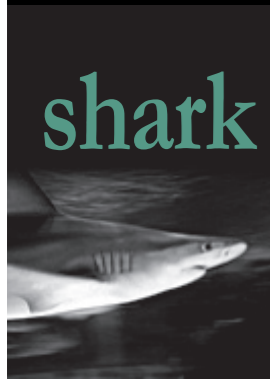
are two examples of sharks that will definitely bite if you manhandle them. Bull sharks and hammerheads will not bite no matter what, and the same goes for tiger sharks. With tiger sharks, young ones will try to bite, older ones will not."

Feeding sharks

Dive club owners, who work with sharks daily, year after year, report the same phenomenon of non-aggression among feeding sharks. A possible exception has been noted at certain multi-species commercial shark feedings, where over long periods of time, and intensive daily provisioning, certain species of sharks—those that are larger and more pushy—become more numerous, while



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Lemon shark

nurse sharks who were the most aggressive. Still it was very rare that one would aggress a blacktip that came too close; the blacktip would change direction.

The reef sharks did not menace the nurse sharks.

The lack of aggression in the submarine community was one of the first things I noticed when I began watching sharks interacting, especially in the presence of food. Only about three times in all those years, did I see a large blacktip appear to make a snapping motion toward a smaller one. But in each case, I was able to see that the small one did not suffer a bite as a result. At each session, the sharks swooped around together, often touching, with never a sign that the smaller ones were afraid of the bigger ones or avoided them.

other species tend to be

pushed out, yet biting among them is still so rare as to be practically unknown.

shark has been shown by Dr Peter Klimley to ritualize conflict when ownership of a seal prey comes into question. Through a remarkable series of videos taken of feeding great white sharks, he documented how the shark who splashes water farthest, with a slash of its tail, wins the seal. Thus, a physical battle for the seal is avoided. Given their dentition, a battle between great whites would gravely harm both sharks. (See Klimley's wonderful book, *The Secret Life of Sharks*.)

Differences among species

Within the community of sharks I studied in a lagoon in Tahiti, it was the

This is the opposite of what happens in societies in which a dominance-subordinance hierarchy exists. Two examples of such societies are those of chickens and humans.

Females and pups

Sometimes, a tiny blacktip pup would make off with a scrap, for example, closely followed by one of the biggest, a shark three times as long, and many times the baby's volume. But, each time, the baby continued on its way and ate, while the big one made no effort to take its food, and treated the tiny shark just the same way it would treat one of its own size.

Further, apart from mating wounds on females during the season of reproduction, the sharks did not appear with bite marks on them.

Whitetip reef sharks and sicklefin lemon sharks also attended my sessions at times, and their appearance had

no effect on the harmony in the site. Once I watched a lemon shark the size of a horse slowly come up behind a nurse shark pup who was lying on the sand munching on a little scrap. The pup was the size and color of a human baby with long fins, and the lemon shark could just about have inhaled it whole—yet, it passed on. The huge animal did not even take the baby's scrap!

Nurse sharks

My sessions ended as darkness enveloped the scene, and only the nurse sharks remained, languidly writhing around the site amid the flitting fish, until it was carpeted in nurse sharks. They would scrape and suck out the contents of the fish heads, wriggling about in clouds of sand, wrasses and yellow perch.

When it was almost too dark to see them, a massive, pale form would appear off in the coral, weaving in and out of view as she floated cloud-like through the shadows, waving an unbelievable tail. In slow motion, she



Reef shark

Shark bites

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would waltz through the site, her fins spread wide, as she pressed the water left, then right, as if to an unheard rhapsody. She was the biggest nurse shark—with a body as massive as a draft horse—a magnificent creature that would undulate with her beautiful, lazy ballet through the twilight surroundings until I left.

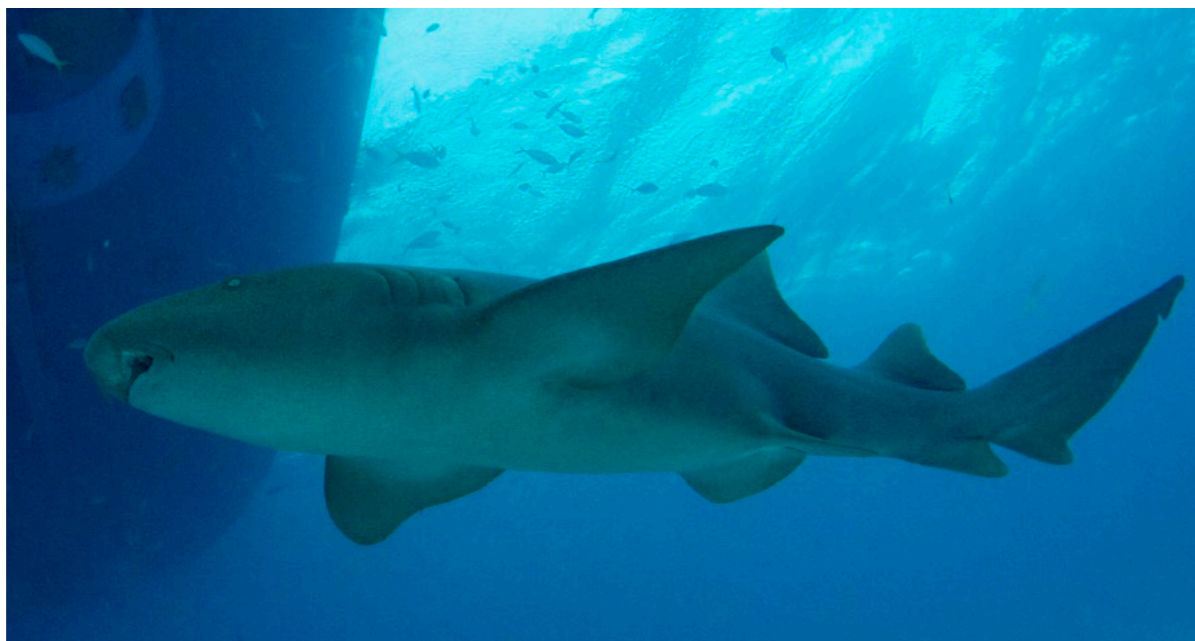
One night, a two-meter nurse shark was lying nearby under a coral formation, close beside a Javanese moray eel of about the same length. The two of them were touching all along their sides, the nurse shark eating, the eel looking calmly out at me. For two species renowned for their aggression and even for being dangerous, the sight was counter-intuitive, enhancing the feeling of being in a community in which a certain camaraderie existed, one whose true

qualities no human mind could conceive.

The unusual behavior of the sharks points to the way their societies are dramatically different from those of the animals that we know best, a subject I will be writing more about, in time. ■

Illa France Porcher, author of The Shark Sessions, 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 behavior patterns, roaming tendencies and cognitive abilities. Her next book, On the Ethology of Reef Sharks, will soon be released.



THIS PAGE: Nurse sharks

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Do sharks form social bonds?

PETER SYMES

Many species of sharks, including the lemon shark, are known to actively prefer to be social and live in groups or loose aggregations. Social interaction is thought to be important for the survival and success of juvenile lemon sharks.

Although scientists have long considered sharks to be loners, new research shows that sand tiger sharks exhibit behaviors typically seen in mammals and only rarely observed in fish.

Sand tiger sharks, top predators that live in coastal waters off the Eastern United States, have experienced drastic population declines over the past several decades. Understanding how these sharks move and interact could help biologists better conserve this species and determine how vulnerable they are to human activities. During summer, the sharks congregate in the shallow waters of the

Delaware Bay but are highly migratory, traveling as far south as the Carolinas and Florida during the winter and early spring.

Finding out

Using acoustic tracking devices to trace the movements of over 200 individual animals in the open ocean for over a year, researchers found that sand tiger sharks form complex social

networks. Initial data from two individual sharks showed they encountered nearly 200 other sand tigers throughout the year, as well as several individuals from other shark species.

Best friends

The researchers even identified a number of "best friends". This status was afforded to those sharks that met the animals in question more than 20 times over a 12-month period. While this finding is quite surprising in itself, the researchers were even more intrigued by the seasonal variation of the sharks' social behavior, which seemed to peak in

the summer before dropping off in late winter and early spring.

These sharks exhibit what is known as *fission-fusion social behavior*, meaning that the number of sharks in a group and the individuals that are part of the group change by location and time of year. Groups would stay together for certain times of the year and fall apart during other times.

The researchers also found that sand tiger sharks re-encounter the same sharks throughout the year. Another surprise was a sudden lack of encounters with other sand tiger sharks in the late winter and early spring. ■

Be quiet near breeding bull sharks



ANDY MURCH | ELASMODIVER.COM

Bull shark diving is becoming a popular tourist activity in the waters around Cancun, Playa del Carmen and Cozumel. Although bull sharks have been implicated in many attacks on bathers, divers are normally not harassed unless they are spearfishing.

Divers and tourists are being asked to refrain from using noise-generating instruments underwater as female bull sharks are returning to breed in the warm, shallow waters of the Riviera Maya on the Caribbean Sea.

Luis Lombardo Cifuentes, director of Saving Our Sharks, told *Riviera Maya News* that they have noticed the sharks displaying a fearful behavior this year and are asking divers to use extreme caution when approaching them by being very quiet and not making noise in the water.

Bull sharks have been known to be aggressive towards humans. They have a very sensitive ears and find noise annoying, which may cause unwanted aggressive behavior. The sharks are very territorial and will attack anything that gets into their environment and is perceived as a risk. Bull sharks

are listed as the third largest risk to humans when it comes to sharks, only behind the great white shark and the tiger shark.

Also lives in fresh water

The bull shark is found in tropical and subtropical coastal waters worldwide as well as in many river systems and some freshwater lakes. It commonly enters estuaries, bays, harbors, lagoons and river mouths. It is the only known shark species that is found in fresh water, and can spend long periods of time in such environments. It is not likely that the bull shark's entire life cycle is within a fresh-water system, however. ■

