

# 6

## Diving with Sharks



David Kirshner, Adam Stow, Bill Magnusson and Anthony Stimson in 2008 about to look for sharks in one of Adam's favorite spots. Photo by Albertina Lima.

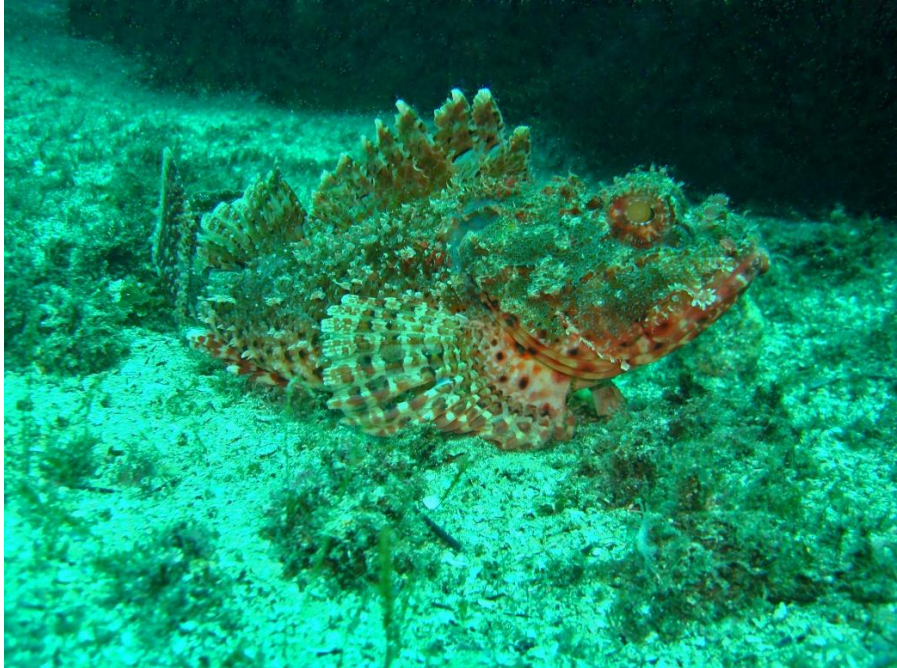
One of the reasons we have so little regard for sharks and their allies is that we generally see so little of them. They are just an abstract concept hidden in murky water. Many spectacular films are starting to change that, but I had little personal contact with sharks or rays in their natural habitat. I had done a course in scuba diving while still an undergraduate. Certification for scuba was exacting in those days. I remember having to ditch all my equipment, including the face mask, in three meters of water, swim to the surface, then free dive down and put it on again while holding my breath. Nevertheless, I used my certificate only a few times, and did not have any close encounters with sharks in the water until I was in my late fifties.

My daughter, Jeni, likes diving and she got her scuba certificate when she was 12 years old. She liked it so much that my wife convinced me that I should renew my diving certificate so that I could accompany her. Scuba diving had changed a lot in the intervening decades. Certification didn't require any strenuous physical activities, but I had to learn to manipulate flotation vests and other safety equipment that didn't exist in the 1960s. It was worthwhile, and we did some nice dives, but we saw only a few bottom dwelling sharks and rays.

Graeme Wells introduced me to Adam Stow, a geneticist with an incongruous love of deserts and seas. He studies the distribution and demographics of several shark species, and when he is not working, likes to snorkel around the headlands off Sydney. Because of my phobia of sharks, that would not be very relaxing for me, but Adam does it whenever he can, winter or summer. I asked Adam where we could dive to see some nice sharks.

Adam suggested that we dive to see grey nurse sharks. The species is now considered threatened and strictly protected in Australia, but when I was young it was often erroneously reported as being responsible for shark attacks on swimmers even though it is strictly a fish eater. Youths would frequently show their manhood by diving into the gutters where the sharks rested during the day

and kill them with explosive-head harpoons. The long spiky teeth, which are specialized for holding fish, look impressive in the excised jaws hung on bar walls.



**Photo 6.1** Below a few meters, the color of the red rock cod, *Scorpaena papillosa*, can only be appreciated with artificial light. Photo by Bill Magnusson.

We saw the sharks in a few places Adam suggested, but the encounters did not last long, and the shark was generally just a dark shape disappearing into the murky water. As the species poses no danger to man, the encounters also did not produce much adrenaline. That is not as irrelevant as it sounds. Studies have shown that memories formed when you are hyped up are more accurate and long-lasting than memories formed when you are relaxed<sup>25</sup>. Finally, Adam suggested an excursion which proved to be the best scuba dive I have ever done.

The dive to Fish Rock Cave was run by a family operation out of South West Rocks on the central coast of NSW. It is rated as one of the best dives in the

country. Fish Rock Cave runs under an island about two kilometers off the coast. The grey nurse sharks sit in the mouth of the cave during the day in about 10 m of water. You can dive down to the entrance, sit on the bottom at about 14 m and look up at them. That is spectacular, but does not release a lot of adrenalin. The best way to see them is to swim through the cave from the other side of the island.

The entrance to the cave is 24 m down, and fish watching at that depth is usually not very enthralling because the little light that gets that deep has had the reds filtered out by the water, and everything has a dull grey or bluish color, independent of how it would look at the surface. However, when we got to the entrance to the cave and turned on our lights a whole new world opened up. There was a red rock cod near the entrance. Built like a bullrout, it might have passed for one under natural light at that depth, but our torches showed it to be brilliant red with delicate marbling of lighter colors.

The cave is narrow and almost vertical for the first ten meters. Only one diver can pass at a time and your face is close to the rock wall, which is covered in small crevices. I am somewhat claustrophobic, so my heart was pounding and the adrenalin was making me super sensitive. I soon forgot my fear, however, because the wall was a virtual shop window of marine life. Every crevice was inhabited by something.

Wobbegong sharks occupied many nooks. There are several species of wobbegongs, and some can grow to more than 2.5 m and two hand spans across the head, though these were a lot smaller. Sometimes called carpet sharks, wobbegongs look more like a giant catfish than a typical shark. The skin appears to be too big for them and they are plump rather than sleek. Outgrowths of skin around the mouth look like fronds of kelp, as does their “carpet” color pattern. We passed dozens of them as we ascended the chimney, giving the impression of being in a glass fronted elevator and passing the inhabitants of an apartment building.





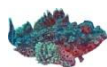
**Photo 6.2** Wobbegong shark in Fish Rock Cave. Photo by Bill Magnusson.

There were also many species of fish and painted crays in the crevices. Painted crays are tropical lobsters with intricate white patterns on a dark background. I was fascinated by their delicate antennae and protruding eyes that stared out of the cracks, but I am sure that many of the divers were thinking of what they would look like on a plate. In some places they were almost as dense as the lobsters you sometimes see in an aquarium waiting to be selected by a customer of a fancy restaurant.

Sharks are said to be able to see in the dark better than cats, smell 10,000 times better than humans and have a highly developed sense of taste. They can also sense even slight differences in water pressure, and can detect the electrical fields of their prey even in total darkness<sup>26</sup>. The bony fish and the lobsters also must not have needed sight to find their prey and avoid their enemies because light reaches only a few meters into the cave. There was a wonderland of life in a world of perpetual darkness.

We carried powerful lights and were in a group, but it was easy to imagine how you would feel if the lights went out and you were trapped in darkness in the middle of hundreds of thousands of tons of rock. My heart was racing as the angle of the tunnel eased and we started to move along the horizontal part of the cave. We were in total darkness for about another 60 meters before light started to filter in from the shallow end of the cave. I was on an adrenalin high as I swam out under the grey nurse sharks swimming in a cloud of fish. Their long teeth gleamed even though they were backlit from above and I could imagine that similar majestic scenes had been a feature of the oceans for hundreds of millions of years.

I could only watch them gliding above me for a few minutes, but they became living majestic figures and no longer just vague shapes that I saw from the surface or disappearing into murk when I was diving. Never again would I be able to kill a shark, and those that I used as croc bait still return to haunt my dreams<sup>27</sup>.



Perhaps we put too much emphasis on adrenalin when talking about sharks. Most species are completely inoffensive to humans and we give a false impression when we emphasize the large species that sometimes eat people. It's a bit like using tigers to represent typical mammals instead of mice or rabbits. I went to the Yucatan Peninsula in Mexico in 2016 and, although I had been there 30 years before, there were still many new things to do. Jeni and I went wreck diving, dove in underground rivers and investigated the coral reefs off Cozumel that are said to have been Jacques Cousteau's favorite spots for scuba diving. However, the principal objective of the trip was to snorkel with whale sharks, which, despite being the largest sharks in the World, feed on tiny plankton that they filter out of the water with specialized gill rakers.

In the boat with us were a mix of tourists, mainly middle-class Mexicans. I

looked them over and wondered if they knew how to snorkel, which was pure prejudice on my part because most could swim like fish. However, one man said that he was nervous to be swimming with sharks even though he had been told that these were inoffensive.



**Photo 6.3** Grey Nurse Shark, *Carcharias taurus*. Photo by Adam Stow.

It was nice bouncing along in the open boat and I enjoyed the salt spray on my face. Although we were 100 m off shore, I could see the tracks left by turtles when they had crawled up the isolated beach to lay their eggs the night before. When we turned seaward I imagined that we were in for a wilderness experience, but we soon came up on ten boats circling something in the water that was surrounded by a dozen swimmers in orange life jackets.

We joined the circle of boats and the captain prepared us to jump into the water in pairs as the whale shark swam towards us. It was not full grown, but it was still longer than our seven-meter boat. Its dorsal fin and the top of its tail were breaking water and it kept its upper lip just above the surface, apparently

scooping up something that was just a few centimeters below. Two of the tourists from our boat jumped in front of it and, as the captain backed the boat away, I could see the rows of white spots that ornamented its back - its huge tail propelling it forward in seemingly effortless sweeps.

I was preparing to join the mass of life jackets bobbing around the shark when the captain sighted some isolated boats and headed off towards another whale shark, only slightly larger than the first. The tourists in the two boats that were accompanying it were already leaving the water, so we essentially had the shark to ourselves.

The captain put the boat in the shark's course and told us to jump in, Jeni on one side of the shark and I on the other. The water was not that clear and at first I couldn't see the shark, but I swam towards the mass of silvery fish that accompanied it and its head appeared out of the murk, its huge mouth skimming the surface. I filmed as its small eyes passed and then the powerful body covered in white spots. I tried to swim with it, but the sweeps of its enormous tail soon took it too far for me to see. It was a short but very special experience.

We dived again, entered the shark's world for less than a minute, then let it wander off to feed undisturbed. It was not alone. Giant manta rays, wider than our boat were feeding with the whale shark, and I marveled as one swam under our boat, its black fins making it glide through the water with its white mouth agape as it filtered tiny animals from the water.

I couldn't see what the giant animals were eating when I was in the water, but some of the tiny crustaceans got caught in Jeni's hair and I photographed one. It was thinner than a matchstick and completely transparent. In fact, it looked more like a series of elongated water droplets than a crustacean. Each shark and ray must be eating millions a day.

Whale sharks migrate thousands of kilometers after the plankton blooms they



feed on. They are born at only a few hand spans long, but the guide did not know where they give birth or how long they take to get to full size. The beautiful patterns of white dots on their backs make each one unique. When they are small, the spots probably camouflage them against the light flecks of the sea surface. However, camouflage seems an unlikely reason to maintain the patterns into adulthood. Most very large animals that have camouflaged young lose their colors and become dull grey when adult. Could it be that the sharks use the patterns to identify each other? Do they have complex social relationships that include teaching each other about migration routes?



**Photo 6.4** Tourists around a whale shark off the Yucatan Peninsula. Inset – one of the crustaceans the shark was feeding on. Photo by Bill Magnusson.

It is extremely difficult to imagine what a fish knows<sup>52</sup>. The whale sharks have no knowledge of our world out of water. Do they imagine that these funny orange bobbing things that get in their way are also feeding on plankton? I

suspect that they would have much to tell us if we knew how to communicate with them. Their complex life style and enormous migrations indicate that they are very intelligent, but I doubt that most tourists appreciate that. For them, they are just peaceful giants that are great ambassadors for sharks. Hundreds of tourists see the whale sharks every day during the seven-month season, and each of them probably relates the story to dozens of friends. The more people who experience sharks in their natural environment, the fewer who will want to kill them.



**Photo 6.5** *A whale shark Rhincodon typus off the Yucatan Peninsula in July 2016.*  
*Photo by Bill Magnusson.*