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Sharky Waters

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International Shark Attack File
University of Florida, www.floridamuseum.ufl.edu/shark-attacks

On 15 September, 26-year-old Arthur Medici was killed by a great white shark off Newcomb Hollow Beach in Cape Cod, Massachusetts. He was thirty yards from the shore, boogie boarding, when the shark attacked. A witness says that everything was calm until he saw 'a giant eruption of water' and then 'a tail and a lot of thrashing'. Medici was pulled from the water unconscious, and bled out on the beach. It was the second great white attack on Cape Cod this summer. In August, William Lytton, a 61-year-old neurologist, had his leg mauled by a great white when swimming ten feet from the shore; it took eight surgeries to repair the damage and remove the shark's teeth.

After decades away – before this summer, the last fatal shark attack in Cape Cod was in 1936 – the great whites are back. One team of marine biologists spotted 149 of them off Cape Cod in July alone; in July last year, they recorded 74. The sharks are back because, happily, the seals are back. The grey seals of New England were all but exterminated 150 years ago, but since the Marine Mammal Protection Act of 1972, their numbers have slowly rebounded. Today, tens of thousands of grey seals colonise the waters and beaches of Cape Cod as well as further afield – marine scientists have spotted them as far south as the coast of Virginia. (The grey seal breeding ground is north of Cape Cod, on Canada's Sable Island.) The return of the seals means the return of seal-predators, great whites most notable among them. Great whites have also benefited from shark-specific legislation, including the 1975 Convention on International Trade and Endangered Species, which outlaws trade in all white shark products, and the 2010 Shark Conservation Act, which prohibits shark-finning – slicing off a shark's fin and throwing the animal back into the sea, a practice largely driven by the Chinese demand for shark-fin soup.

Some Cape Cod residents have accepted the return of the great white, seeing sharky waters as part of what it means to have their coastline return to its wild, primordial state. Others have sworn off swimming, at least until some preventive measures are put in place: nets that would stop the sharks (and seals) from coming into shore, for example, or manned watch-towers from which warnings could be issued when sharks get too close. An app called 'Sharktivity' enables live crowdsourcing of great white sightings around Cape Cod; the developers of the app, the Atlantic White Shark Conservancy, say that it is a tool to 'help people and white sharks co-exist peacefully', though it also reminds its users that 'the only way to completely rule out a close encounter with a shark is to stay on shore.' (Shark conservationists prefer 'white sharks' to 'great whites', and 'shark encounter' to 'shark attack', for obvious reasons. They also dislike stories like this one, which flag up the association between sharks and death.) As I write, the Sharktivity map shows six great white sightings off Cape Cod, and a seventh off Martha's Vineyard, this week alone.

Accounts of shark attacks, including the recent ones in Cape Cod, invariably emphasise their rarity. According to the Florida Museum's International Shark Attack File, in 2017 there were only 88 confirmed unprovoked shark attacks worldwide, and only five of those were fatal. (That said, if you do get attacked, there's a good chance it will be by a

great white, the species-leader in attacks.) Many more sharks are killed by humans each year than the other way around. You are more likely to die from a fall, being poisoned, in a car accident or bad weather than from a shark attack. Americans are more likely to be killed by lightning or trampled to death by a cow than they are to die in a shark attack, despite the fact that there are more shark attacks in the US than anywhere else. Globally, sharks are responsible for just 0.00002 per cent of all deaths.

But these are averages, and they don't say much about the odds I care about. Most people spend no time at all in sharky waters, and most of those who do are beachgoers who enter the water for a brief dip a few days each summer. There are some people, though, a small minority, who spend an inordinate amount of time in sharky waters. In the last couple of years, I have joined them. I spend a large part of the summer months surfing off the coast of Southern California, a surfer's paradise that doubles as a nursery for juvenile great whites, which may be immature, but are nonetheless huge and lethal predators. (Indeed, their immaturity is part of the issue: they're deeply curious, and don't know yet that there is better prey than human beings.) I also sometimes surf in Northern California, at a reef break that is a known great white hunting ground. Great white sightings, and attacks, are on the rise in both locations. This summer, for the first time, I surfed off Martha's Vineyard, which was the location for the filming of *Jaws*. Last year, 59 per cent of shark attack victims were surfing or taking part in other board sports at the time. (Only 2 per cent were scuba diving.) I know that it's far more likely I'll be killed on the drive to the beach, or knocked unconscious by my own board, than it is I'll be attacked by a great white. And even if I am attacked, I'll probably live: few great white attacks are fatal. But sometimes, sitting out behind the break, unbroken waves lifting and lowering your board, pelicans flying along the horizon, you can get to wondering whether the numbers really are on your side.

There's also the question of *how* you would least like to die, something overlooked in all the calls to probabilistic rationality. A lightning strike sounds better to me than a confrontation with a great white: up to six metres long and 1900 kilos of thrashing muscle, lunging at you at more than 35 miles an hour, a gaping blood-stained maw revealing rows of huge, serrated teeth, perfectly adapted for tearing the meat off your bones while you're still alive. The low fatality rate in great white encounters is not evidence of the sharks' lack of character. Far from it: if a great white wanted you dead, you would be dead. But great whites are generally uninterested in killing humans; what we think of as attacks are usually just exploratory bumps and chomps, to see whether we are worth eating. (Unsurprisingly, great whites are better at brushing off other animals' casual nibbles than humans are. In South Africa's False Bay, a shark was observed accidentally biting the head of another shark during a group feeding, leaving two teeth behind. The bitten shark continued eating, undisturbed.)

Naturally, you do what you can to lower the odds of attracting a shark. The standard advice is to avoid wearing shiny objects (they look like fish scales) or bright, contrasting colours (sharks have excellent eyesight); to avoid being out at dawn or dusk (feeding time); to avoid places where the sea floor drops off (sharks like to hunt there); to avoid splashing around (like an injured seal); and to avoid emitting any bodily fluids, especially blood. The first two – not wearing shiny objects or contrasting colours – are easy enough. The rest are harder, at least for surfers. Dawn and dusk are often the nicest times to be out, when the wind is low and the water glassy, and the crowds are yet to arrive or have finally gone. Likewise, drop-offs often make for the nicest waves. It's also hard not to splash when you're paddling for a wave or wiping out, and hard to avoid peeing during a three or four-hour-long surf session. Of course, going out with a bleeding cut, however small, is folly: sharks can smell a single drop of blood in a hundred litres of water (not an Olympic-sized pool, as is often said), though some scientists suggest that human blood is not in fact particularly attractive to sharks. The question of whether menstrual blood attracts sharks has been a matter of popular controversy. Laird Hamilton, arguably the greatest of the world's big wave surfers (a group not immune to misogyny), claimed in an interview that 'the biggest, most common reason to be bitten is a woman with her period.' Scientists disagree: there is no evidence to suggest that menstruating is a risk factor, and there are probably fewer amino acids (the real shark bait) in an average day's period blood than there are in the sweat, tears or urine produced by a surfer in the same interval.

But what do you do if the unthinkable happens, and you spot a shark coming for you, or worse, if it has already taken a chunk out of your leg? Here, the standard advice – stay calm and don't swim away – is again hard to follow, but for different reasons. Stay calm? Really? It is true that there is little point trying to out-paddle a great white. But I find it

difficult to imagine doing what the experts say I am supposed to do: use my surfboard as a shield, drive my hands into the shark's delicate eyes or gills, or punch it on the nose, all the while avoiding the teeth. William Lytton, the neurologist who survived the great white attack in Cape Cod, broke two tendons and lacerated his hand while smashing the shark's gills: 'delicate' is a relative measure. The pro surfer Mick Fanning, during the televised finals of a 2015 World Surf League competition in Jeffreys Bay, South Africa, successfully punched and then escaped a great white that attacked his board. He was praised by shark scientists for staying calm and 'doing everything right'. In answer to what some may see as the obvious question – why not bring a knife out surfing? – the answer is that (a) most great white attacks come as a surprise, so there's no time to grab a knife from its holster, and (b) the smell of the shark's own blood might just turn an exploratory taste into a feeding frenzy. (I'm guessing statisticians will also tell us that (c) you're more likely to die from a self-inflicted knife wound than a shark attack.) If you are dragged under, you are supposed to get aggressive rather than play dead: sharks' extraordinary sensitivity to electromagnetic fields means that they can detect the heartbeats even of immobile animals. Once – fingers crossed – the shark lets go, paddle furiously back to shore, and hope there is someone there to staunch your wounds and call for help. Which brings up another rule: don't surf alone. That one, at least, I find easy to follow.

The truth is that surfing – the sense of perfect communion with the sea, the feel of the board underfoot, skimming the surface of the water – is worth the risk of a shark encounter, and would continue to be worth it even if the risk were greater than it actually is. It is on land, and not when I am waiting on my board for a wave, that the fear grips. The irrationality encouraged by surfing isn't the disproportionate fear of a shark attack, but the conviction that out there, on the water, nothing really bad could ever happen. I haven't seen a great white while surfing – much less had an 'encounter' with one. That said, I have twice seen large, dark shapes in the water that could have been small juveniles, once on Martha's Vineyard, and once at Doheny Beach, an hour south of Los Angeles, at dusk. Maybe it was a bunch of kelp, or a seal, or a trick of the light. I have not seen the tell of a jagged-edged, triangular fin. But the numbers say that I am out there with them all the time, and that, with rare exceptions, we are all perfectly at peace.

Letters

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After reading Amia Srinivasan's article about great white sharks, I consulted my experienced surfer friend Doug on the matter of how to remain safe from attacks (*LRB*, 11 October). While Doug agrees with most of Srinivasan's advice, especially about not surfing alone, he disagrees that surfers shouldn't carry a knife. Doug believes the best way to optimise your personal safety in the presence of a great white is to quickly jab a knife into your surfing partner's leg then retreat as fast as possible to the beach.

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