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## Do Sharks Really Smell Blood?

**Carley Lerner**  
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Sensitive cells and an enlarged olfactory bulb allow sharks to detect a small amount of blood in the water, but not in a supernatural sense.



If we all close our eyes and imagine a shark encounter, we'd likely picture the exact same scene: it begins with a drop of blood leaking from your finger and diffusing into the salty water. Within a matter of seconds, a sharp fin slices through the midnight blue waves, following the scent of blood. As the fin moves in a jagged and terrifying trail toward you, the *Jaws* theme song quickens in your ears. Though you desperately try to swim away, you're just not fast enough and—okay, enough. Sound about right? While it may seem as though the contents of your brain have been projected onto this computer screen, rest assured that *Reader's Digest* is not psychic. This is simply a common shark stereotype, built on the notion that sharks have a supernatural ability to sniff out even the smallest drop of blood and find their "prey." In reality, however, this is not an accurate representation, and is one of the [reasons why sharks are so misunderstood](#).

In an age where many species of shark have become endangered due to human activities, it's important to understand the facts about these animals—before it's too late. So, do sharks really smell blood in the ocean? And what does their presence mean for humans?

### Do sharks really smell blood?

While the extent of their smelling abilities is often exaggerated, sharks *can* smell blood in the ocean. Maddalena Bearzi, marine biologist and President of the LA-based nonprofit Ocean Conservation Society, told *Reader's Digest* that most sharks "have a keen sense of smell, which is used—among other things—in detecting dead or wounded prey." Wondering how these animals smell underwater? "The nostrils of sharks have specialized, sensitive cells located on the underside of the snout and these cells are used exclusively for smelling," says Bearzi. "When water flows through the nostrils of a shark, the chemicals react with the receptors in these sensory cells, sending signals to the brain. Thanks to these sensitive cells and an enlarged olfactory bulb, these animals can detect even tiny amounts of specific chemicals present in the water," Bearzi explains.

For less biologically minded people, this means that sharks do have a strong sense of smell, can detect small amounts of chemicals (including blood) in the water, and often rely on their sniffing powers to hunt prey. That being said, this does *not* mean that sharks can smell blood *everywhere* in the ocean.



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### How far can they smell blood?

Most people believe that sharks can smell a drop of blood in the ocean from a mile away. This is thanks to "shark attack" movies, which dramatically portray the animals crossing great distances to follow the scent of a splash of human blood. In reality, however, one of the [fascinating and reassuring facts about sharks](#) is that "sharks can't smell blood across an ocean with a sort of 'supernatural' sense," clarifies Bearzi. While all species of sharks are different, some "can detect smells at about one part per 10 billion, depending on the chemical," Bearzi explains. For context, one part per 10 billion is "basically about one drop of blood in a swimming pool," the marine biologist explains. This means that, if there were only a *single* drop of blood spilled in the ocean, the shark would have to be within relatively close proximity to be able to smell it.

At the same time, when sharks *do* come into contact with a smell, they "are extremely good at picking up on the smallest molecules to direct them to prey sources," says Mike Price, Curator at SeaWorld San Diego. On land, when "something is concentrated enough that humans can smell it miles away (think of driving near a fire or a city dump)," it is usually because the wind carries molecules of the smell across distances, says Price. Similarly, in the sea, "as a 'smell' dilutes across ocean currents, sharks only need to bump into one or two molecules of a particular prey and they are able to track that prey source down over long distances," says Price. So, while sharks can't *smell* blood from extremely far away, they are very good at *finding* the source of the blood after coming in contact with the scent.

### Do sharks seek out human blood?

The notion that all sharks seek out human blood is perhaps the biggest misconception surrounding the animals. "When talking about sharks and humans, it's extremely important to remember that only a handful of sharks (there are several hundreds of shark species in the world) are considered dangerous to humans," says Bearzi. The truth is that "in the States, the risk of dying from a lightning strike is 30 times greater than that of dying from a shark attack," and further, "sharks have more to fear from humans than we do of them," says Bearzi. Surprisingly, humans are actually one of [the animals that are deadlier than sharks](#). While sharks kill [less than 20 people](#) each year, *humans* kill about 20 to 100 million sharks through fishing activities annually. Put simply, when a fishing boat comes into contact with a shark, it is often the shark that should be afraid. Plus, "even if a shark can smell human blood, this doesn't mean it is 'dinner time.' These predators usually look for their favorite prey, and we are not among them!" exclaims Bearzi.

Still don't believe that all sharks don't crave the scent of human blood? We should also consider the fact that smell is not the only way that sharks can find their prey. According to Dr. Gisele Montano, a SeaWorld Research Associate, there are "many pores located in their snouts filled with a gel-like substance capable of perceiving electric fields in the water (generated by living animals)." These pores, called ampullae of Lorenzini, help sharks identify where they might find prey. Additionally, sharks have a "lateral line" of cells that help them sense water movement, powerful hearing that helps them detect sounds "below the range of human hearing" and "over many miles," and an impressive vision that often operates well in the darkness, says Dr. Montano. The irony here is that most of us swim, splash, and kick around the ocean without a care in the world, but the moment blood is involved we fear a shark will find us. In truth, if all sharks were *looking* for humans to prey on, they would employ their other extraordinary senses to help them do so—rather than simply relying on their sense of smell.

Bottom line? While shark attack movies can be entertaining, they are not usually representative of the sensing and tracking abilities—or prey preferences—of most species of sharks. If humans don't need to fear these animals, but their preferences are most species featured in aquariums? [There is a reason aquariums never have great white sharks](#), but it has nothing to do with the danger they'd pose to us humans.

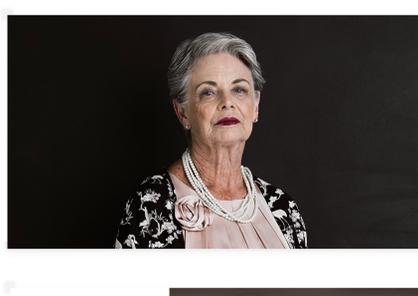
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Carley Lerner

Carley Lerner is a freelance writer and former editorial intern for Reader's Digest. She is a member of the Class of 2021 at Duke University, where she writes for the school newspaper, The Chronicle.



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