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Great white shark deterrent almost 100 per cent effective

BY NATSUMI PENBERTHY | JULY 04, 2016

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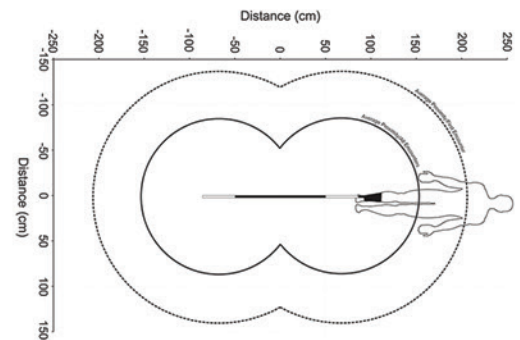
A COMMERCIAL SHARK deterrent called Shark Shield™ Freedom7 may be almost 100 per cent effective, according to a study of 322 tests.

The study found that great whites turned away from a baited canister attached to an active Shark Shield™ on every first-time encounter at an average distance of 1.3m. Only one encounter out of 43 active Shark Shield™ encounters featured a great white touching the canister after several approaches.

Shark Shield™ is a wearable electric shark deterrent, attached to users at the ankle like a surfboard leash, and trails a 2.2m-long antenna in the water. It generates an electric field thought to over-stimulate the shark's electrosensory system, a system used by sharks to sense the vibrations of their prey and other objects in the ocean.

Testing of the device was carried in 2014 at a great white shark hotspot, South Africa's Mossel Bay, by researchers from the University of Western Australia (UWA), Macquarie University, Flinders University and Oceans Research in South Africa.

"The fact that [great] white sharks are implicated in the majority of fatal incidents globally suggests that a deterrent that effectively deters this species should be an important safety consideration for ocean users," Dr Ryan Kempster, lead researcher on the paper.



The sharks do get used to Shark Shield

The researchers did find that sharks became used to the Shield. On subsequent encounters the same shark would come roughly 12cm closer on average each time, with some individuals approaching up to seven times.

However almost none came closer than 0.9m said sensory behaviour expert Prof Shaun Collin. Only one shark was daring enough to nudge an active Shark Shield™ after multiple approaches, which, Shaun said may be down to the **individual nature of the shark**.

Shaun added that if there was a much longer period in between encounters he thinks sharks would go back to the 1.3m distance. "I don't think over time they will habituate... they would start again."

The research also found no evidence that the Shark Shield™ attracted sharks from a greater distance, which is a common belief shared by surfers. The results showed that sharks approached much less frequently at all when the Shark Shield™ was on.

Some research has previously demonstrated that sharks can be attracted to electrical fields, but also show they can be repelled when an electric stimulus differs in frequency or strength from the bioelectric fields produced by the sharks' prey.

The Shark Shield study: lingering questions?

As always, questions linger. The researchers were working in an area frequented by sharks because there is a hearty food supply from a local seal colony. These are not hungry sharks. Would a hungry shark react differently? It's a good question, says Shaun.

"They are, you would expect, relatively well-fed," he says. But he argues they are still attracted to the olfactory bait [ie. The smell of the fish bait], which the team used to draw the sharks in. "We had to attract them to repel them, ironically", said Shaun.

But he admits the surf beaches nearby haven't had an attack for nearly 25 years, so there's no way to know whether hungrier leaner sharks would react differently.

"This device is no guarantee of 100 per cent protection from any species of shark but at present, under the conditions under which we tested it, the Shark Shield™ is the most effective shark deterrent device currently on the market," he said.

He adds that more science must be done on other models of Shark Shield™ that differ in intensity and other commercial devices have rarely been rigorously scientifically tested. "We have grave doubts. Many have never been tested and a lot of the studies haven't been robust enough," he said.

The research paper involved scientists from UWA, Macquarie University, Flinders University and Oceans Research in South Africa and has been published in [PLOS ONE](#).