Research finds some shark deterrents don't work as well

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Shark researchers from The University of Western Australia have found that one of the personal shark deterrents commercially available in WA is not effective in deterring sharks.

The WA State Government-funded research team travelled to Mossel Bay in South Africa to test the effectiveness of the Electronic Shark Defense System (ESDSTM) with the large population of white sharks (Carcharodon carcharias) found in these waters. The team recorded 395 encounters with 44 individual white sharks.

Lead researcher Dr. Ryan Kempster said the findings, published in *PLOS One*, represented the most robust assessment of the effectiveness of the ESDSTM in deterring white sharks. Personal shark deterrents offer the potential of a non-lethal solution to protect individuals from sharks, but the effectiveness claims of most deterrents are based on theory rather than robust testing of the devices.

"There is therefore a clear need for thorough testing of commercially available shark deterrents to provide the public with information about their effectiveness," Dr. Kempster said.

The researchers found an active ESDSTM was no more capable of keeping sharks at a 'safe' distance than an inactive ESDSTM. Sharks would routinely approach within 20-30 cm of the device, whether it was active or not.

By comparison, an active Shark ShieldTM deterrent (which was previously tested by the team using the same methodology), effectively deterred white sharks by an average of 1.3m from the device.

However, when in the presence of an active ESDSTM, sharks did show a reduction in biting, but, this was countered by an increase in other, less aggressive forms of interaction, such as bumping.

The researchers concluded that the ESDSTM showed limited meaningful effect on the behaviour of white sharks, as any effect of the active device was at such a short range that sharks would likely have only

experienced it if they were close enough to bite the device itself. Given the device is designed to be worn on the person's ankle; it would leave most of their body completely unprotected.

"Although the effectiveness of the ESDSTM may vary between species, due to species-specific differences in electroreceptive ability, the fact that white sharks are implicated in the majority of fatal incidents globally suggests that a device that cannot effectively deter this species should not be considered an effective shark deterrent," Dr. Kempster said.

"Given the very short effective range of the ESDSTM and its unreliable deterrent effect, combined with the fact that shark-bite incidents are very rare, it is unlikely that the device would significantly reduce the risk of a negative interaction with a white shark."

More information: Channing A. Egeberg et al. Not all electric shark deterrents are made equal: Effects of a commercial electric anklet deterrent on white shark behaviour, *PLOS ONE* (2019). DOI: 10.1371/journal.pone.0212851

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