

# Shark Attack Training

*Can we teach sharks to not attack humans?*



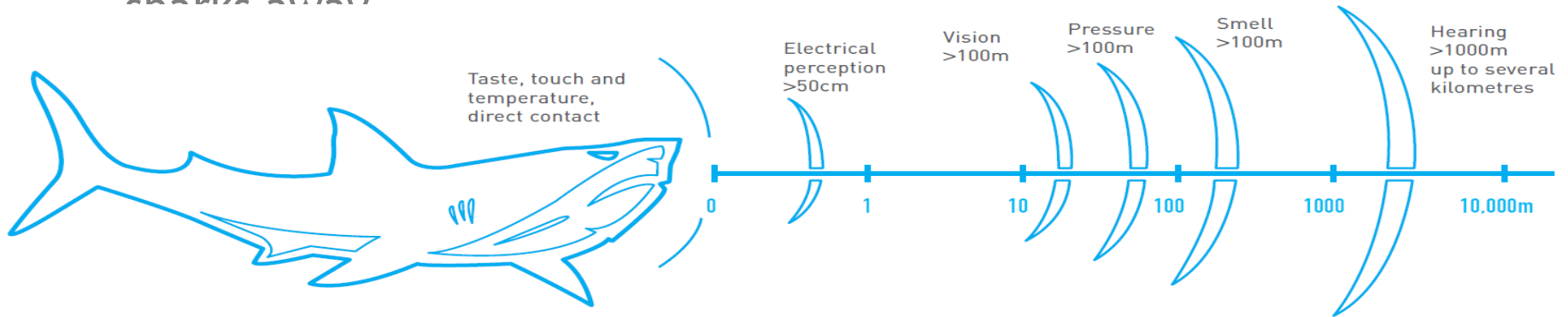
# What is an electrical shark deterrent?

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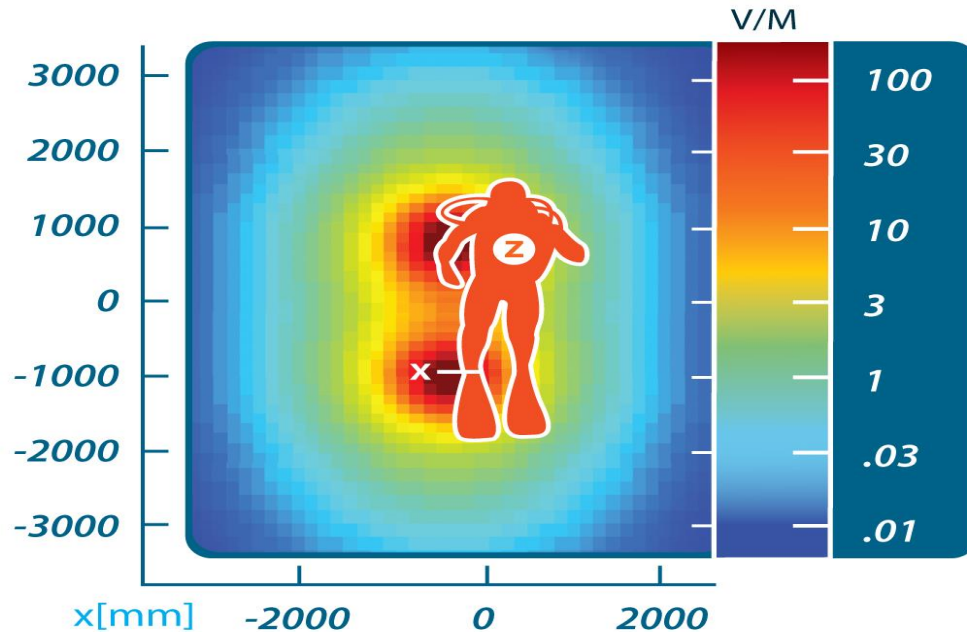
# How do electrical deterrents work?

- Sharks have small short range electrical receptors in their snouts used for feeding.
- Shark Shield's unique three dimensional electrical waveform causes unbearable spasms in these sensitive sensors which turn sharks away.



# How do electrical deterrents work?

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*Estimated magnitude of the E-field surrounding a model of a diver wearing Shark Shield as provided by the South African National Space Agency*

# How effective is a Shark Shield?

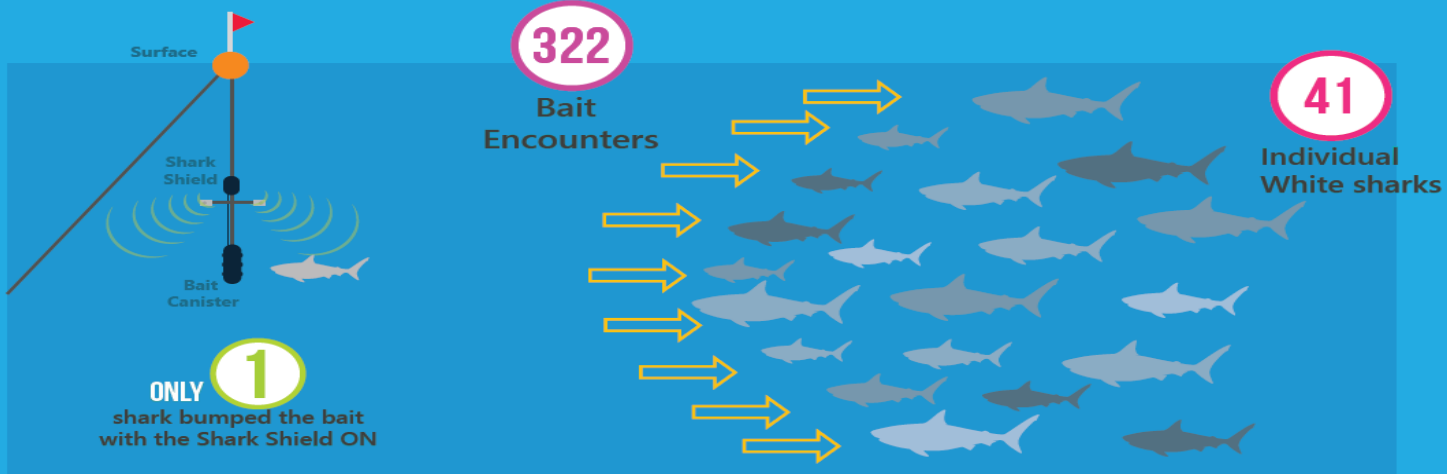
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- **How Close is too Close? The Effect of a Non-Lethal Electric Shark Deterrent on White Shark Behaviour.** University of Western Australia Ocean Institute, Flinders University and Ocean Research South Africa. The study analyzed 322 encounters involving 41 individual white sharks, ranging from 2m to 4m long. Upon first encounter with a Shark Shield, all approaching great white sharks were effectively deterred, staying an average of 1.3m away from a baited canister with the device attached. Only one great white shark came into contact with the bait in the presence of an active Shark Shield, and only after multiple approaches. The interaction in question simply involved a bump of the bait canister rather than a full bite. In contrast, bites were common during control trials.
- **Effects of the Shark Shield electric deterrent on the behaviour of white sharks.** The South Australian & Research Development Institute (SARDI). During the static bait test, the proportion of baits taken were not affected by the deterrent, however, the deterrent doubled the time it took for sharks to take the static bait, as well the number of interactions per approach, indicating that the sharks investigated how to approach the bait with minimal affect by the field. During the dynamic seal decoy, no breaches and only two surface interactions were observed when the deterrent was activated, compared to 16 breaches and 27 surface interactions, when the deterrent was not activated.
- **Estimating the Probability of a Shark Attack when using an Electric Repellent:** University of Pretoria, South Africa and University of Durban-Westville, South Africa. The research concluded that the probability of an attack in sharks allowed access to bait for a 5 minute period was reduced from about 0.70 when the SharkPOD was in power-off mode, to about 0.08 when the SharkPOD was in power-on mode. When sharks were allowed access to bait for a 10 minute period, the probability of an attack was reduced from 0.90 when the SharkPOD was in power-off mode, to 0.16 when the SharkPOD was in power-on mode.

**Great white shark deterrent almost 100 per cent effective; Australian Geographic**



# University of Western Australia - 2016

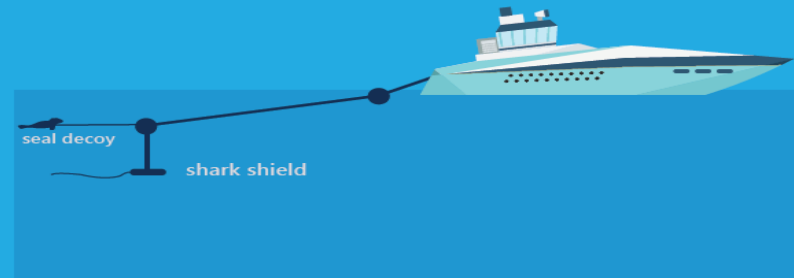
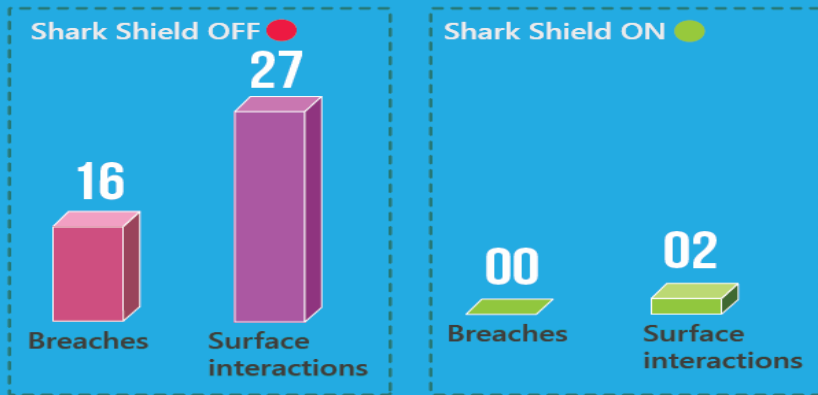


**How Close is too Close? The Effect of a Non-Lethal Electric Shark Deterrent on White Shark Behaviour.**

**Shark Shield effectively deterred sharks from interacting with the bait**

**Shark Shield does not attract sharks**

# The South Australian Research Development Institute (SARDI) - 2012



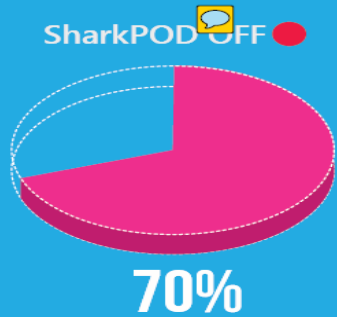
## Effects of the Shark Shield electric deterrent on the behaviour of white sharks

Shark Shield deterred sharks attacking a seal decoy.

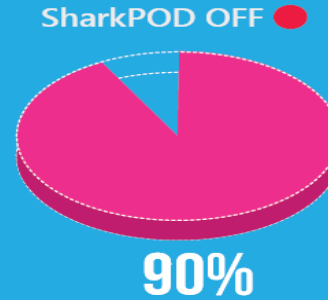
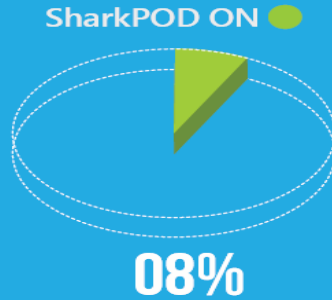
Shark Shield significantly increased the time it took the sharks to take the bait.

Shark Shield does not attract sharks.

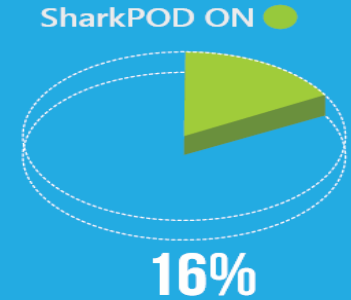
# University of Pretoria, South Africa - 2003



5 minute access to bait



10 minute access to bait



## Estimating the Probability of a Shark Attack when using an Electric Repellent

The probability of an attack was reduced from 70% to about 8%

Shark Shield prevented the sharks from feeding off the bait



# What is classical conditioning?

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- **Classical conditioning** (also known as **Pavlovian** or **respondent conditioning**) refers to a learning procedure in which a biologically potent stimulus (e.g. food) is paired with a neutral stimulus (e.g. a bell).



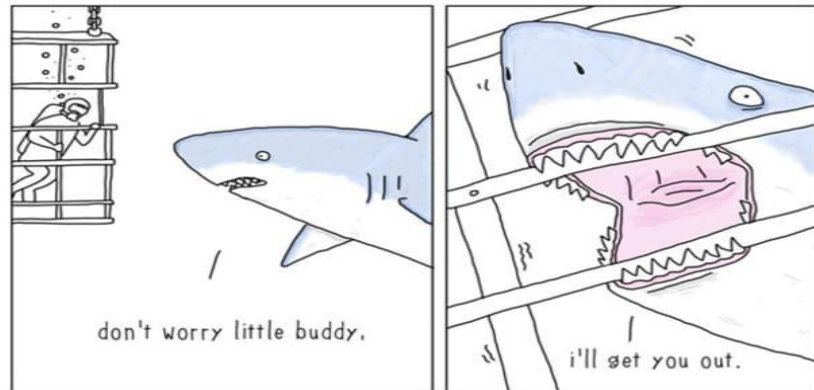
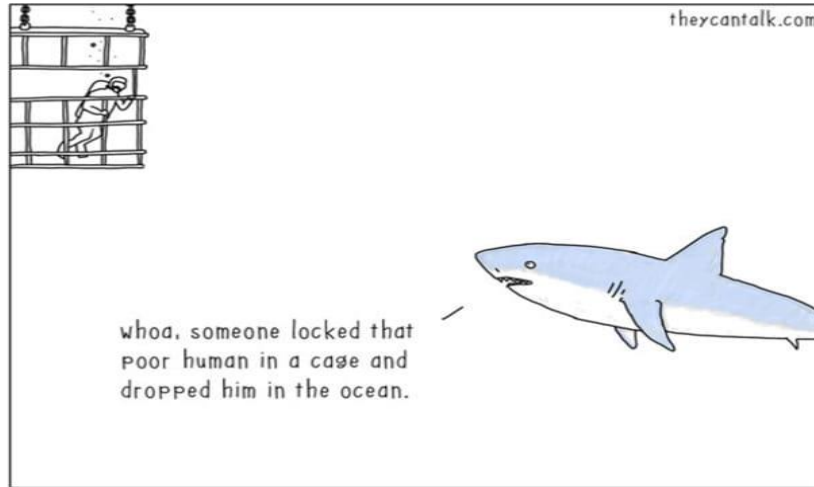
# Does classical conditioning apply to sharks?

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- If individuals and/or many surfers create a larger protective electrical field, and every time a shark comes to that place they get an headache, will Classical Conditioning in animals e.g. Pavlov's Dog or Pavlov's Dogs apply to sharks?



# Is the top of the food chain stupid?



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