

## **Shark Deterrent Research at the HIMB Shark Lab**

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### **General Background of the Shark Lab**

The HIMB Shark Lab was founded in 1980's to investigate shark movements and physiology. Starting in early 2000's , experiments were initiated to investigate possible shark deterrents using magnetic and electrical stimuli.

In 2021/2, the Shark Lab received significant 7-year private philanthropic funding to recommence shark deterrent research.

### **Guiding principles**

Biology first - Explore whether there are any stimuli that are aversive to sharks regardless of the engineering challenges (e.g., power requirements) associated with subsequent development of usable devices. We are not in the business of producing a commercialized end product

Conduct rigorous research that must be peer-reviewed before release of results. This requires considerations such as appropriate sample sizes, avoiding pseudoreplication, autocorrelation, etc.

Protection of sharks is as important as protecting people – we respect for the animals we study and use in our experiments.

There are three basic interwoven deterrent scenarios – improving human safety, reducing shark depredation (e.g., bottom fishing), reducing shark bycatch (e.g. on longlines).

### **Experimental approach**

Acquire appropriate infrastructure to allow rigorous research both in captivity and in the field – especially regarding obtaining sufficient sample sizes.

Basic approach is to test existing commercially available devices and then transition to prototypes designed in house or by colleagues. Existing devices being tested include products designed to protect swimmers, surfers and divers and devices designed to deter shark depredation.

In the case of bottom fish depredation, we are conducting extensive experiments that replicate typical Pacific island-style bottom fishing techniques

Emphasis is being placed on the evaluation of electromagnetic stimuli - electricity, magnetism and light.

Particular attention is being placed on evaluating the influence of habituation on the effectiveness of putative deterrents.

### **Specific Experiments**

We will describe/demonstrate some of the types of experiments we are conducting or plan to conduct in the future.