

An experimental assessment of electric sensitivity in yellow rays and juvenile lemon sharks

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**CAPE ELEUTHERA
INSTITUTE**



SHARK RESEARCH & CONSERVATION PROGRAM
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**New England
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An aerial photograph of an offshore wind farm. Numerous wind turbines are visible, spaced out across the ocean. The water is a deep blue, and the sky is a lighter blue with some light clouds. The perspective is from a boat, as evidenced by the white wake in the foreground.

How do **new** ocean uses affect marine life?

Photo: Siemens Press

An aerial photograph showing a large group of sharks swimming in shallow, clear, greenish water. The sharks are scattered across the frame, with some appearing closer and larger than others. The water is very clear, allowing the sandy bottom and the sharks' shadows to be visible. The overall scene is a natural, undisturbed habitat for these animals.

**Why are we interested
in elasmobranchs?**

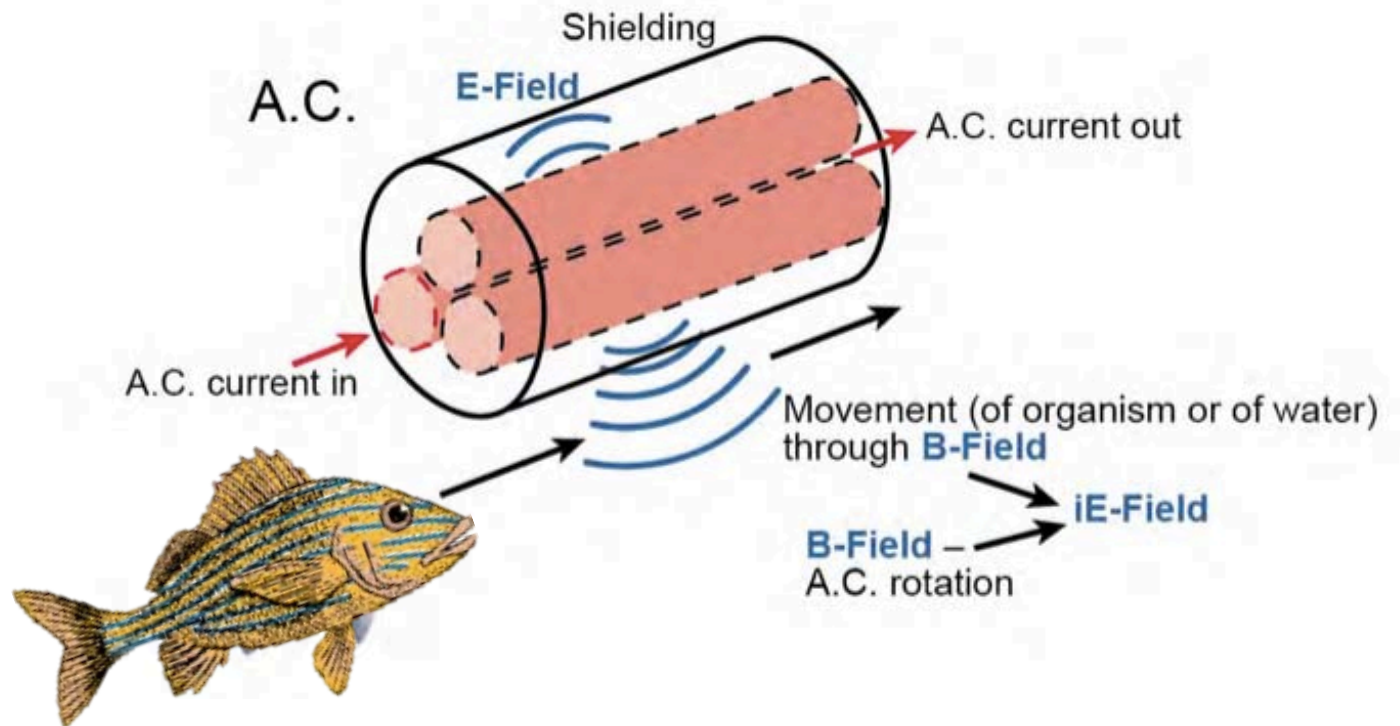
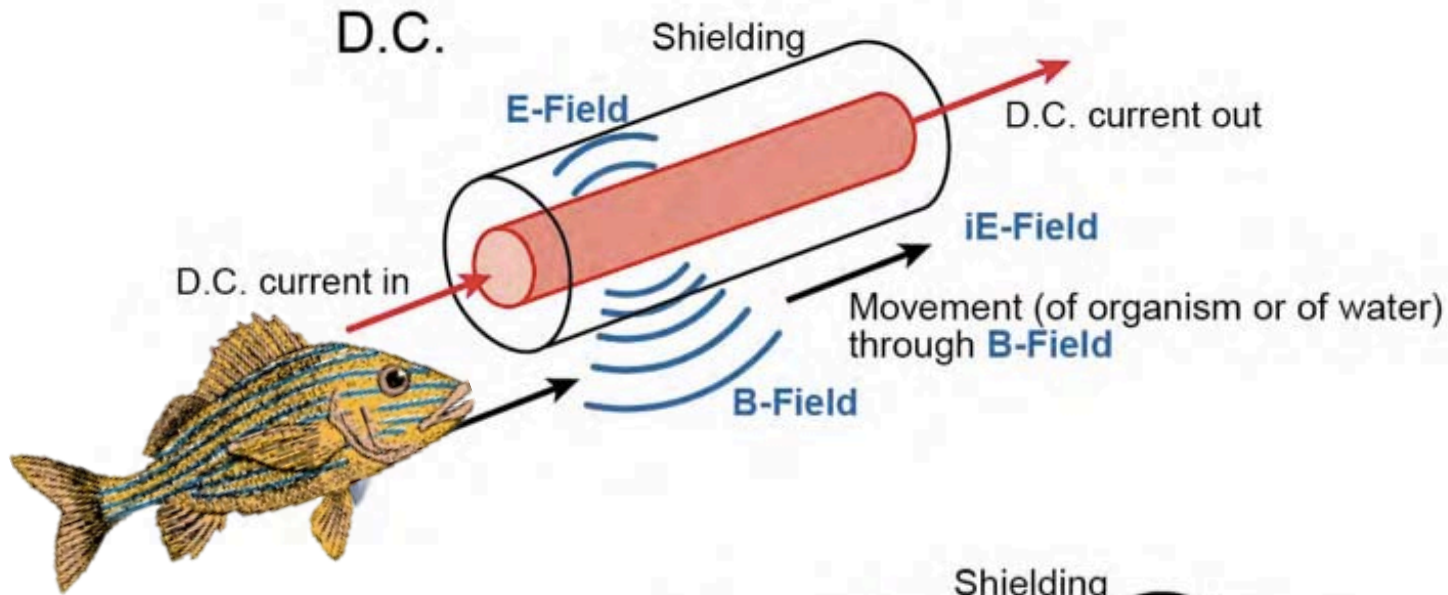
Photo: C J Crookes

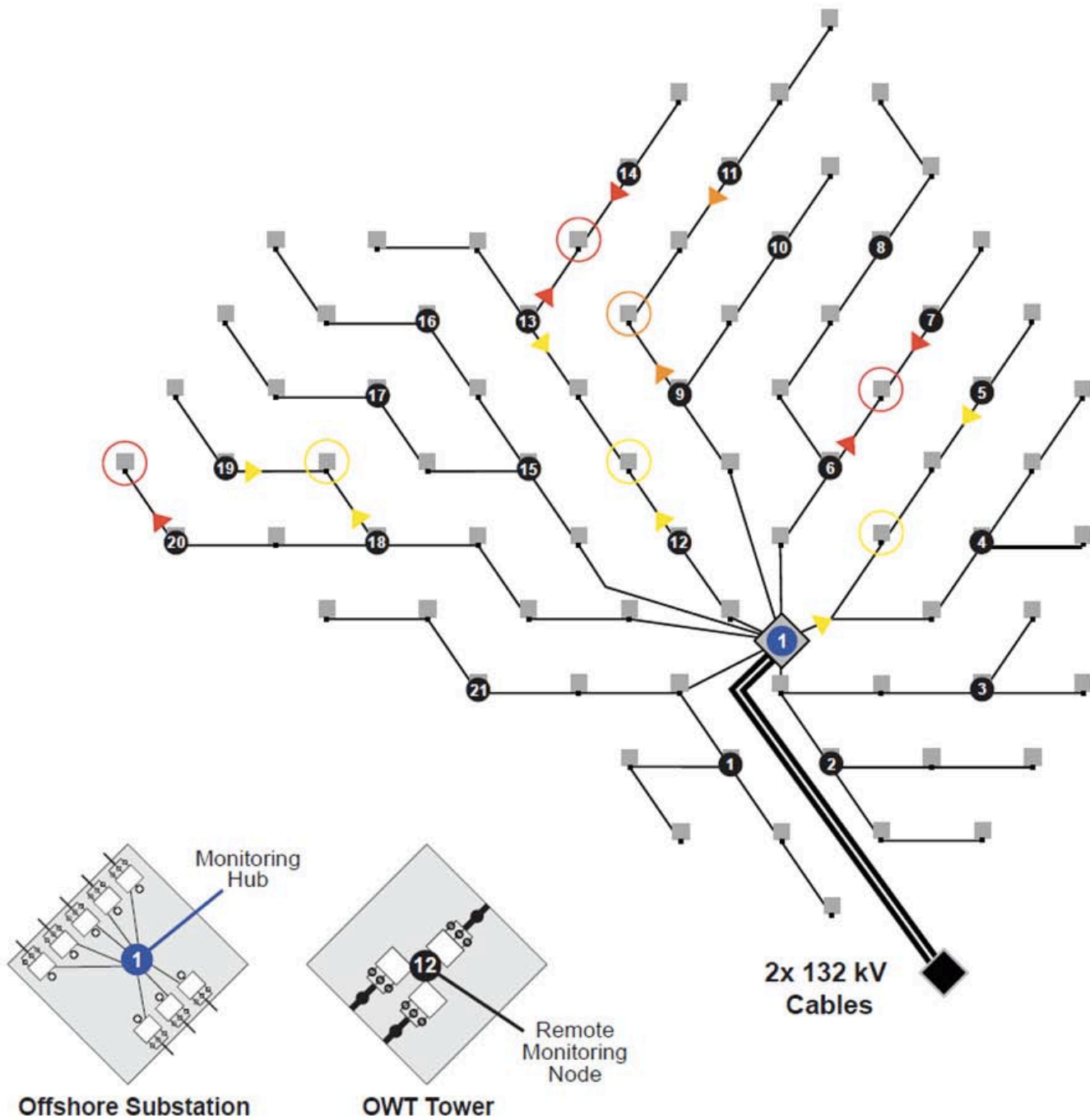


**How do we know
where our food is?**

**Ampullae
of
Lorenzini**







A photograph showing a shark swimming in clear, shallow water. A thick, dark cable is visible in the foreground, extending from the right side towards the center. The shark is positioned above the cable, appearing to be near it. The background is a light blue-green color, suggesting an underwater environment.

Shark attacks? Google now knows how to protect its underwater cables

By [Menchie Mendoza](#), Tech Times | August 18, 3:47 AM

[ROBERT MCMILLAN](#) BUSINESS 08.15.14 6:30 AM

SHARKS WANT TO BITE GOOGLE'S UNDERSEA CABLES

[Shark bites cable](#)



Lemon shark,
Negaprion brevirostris

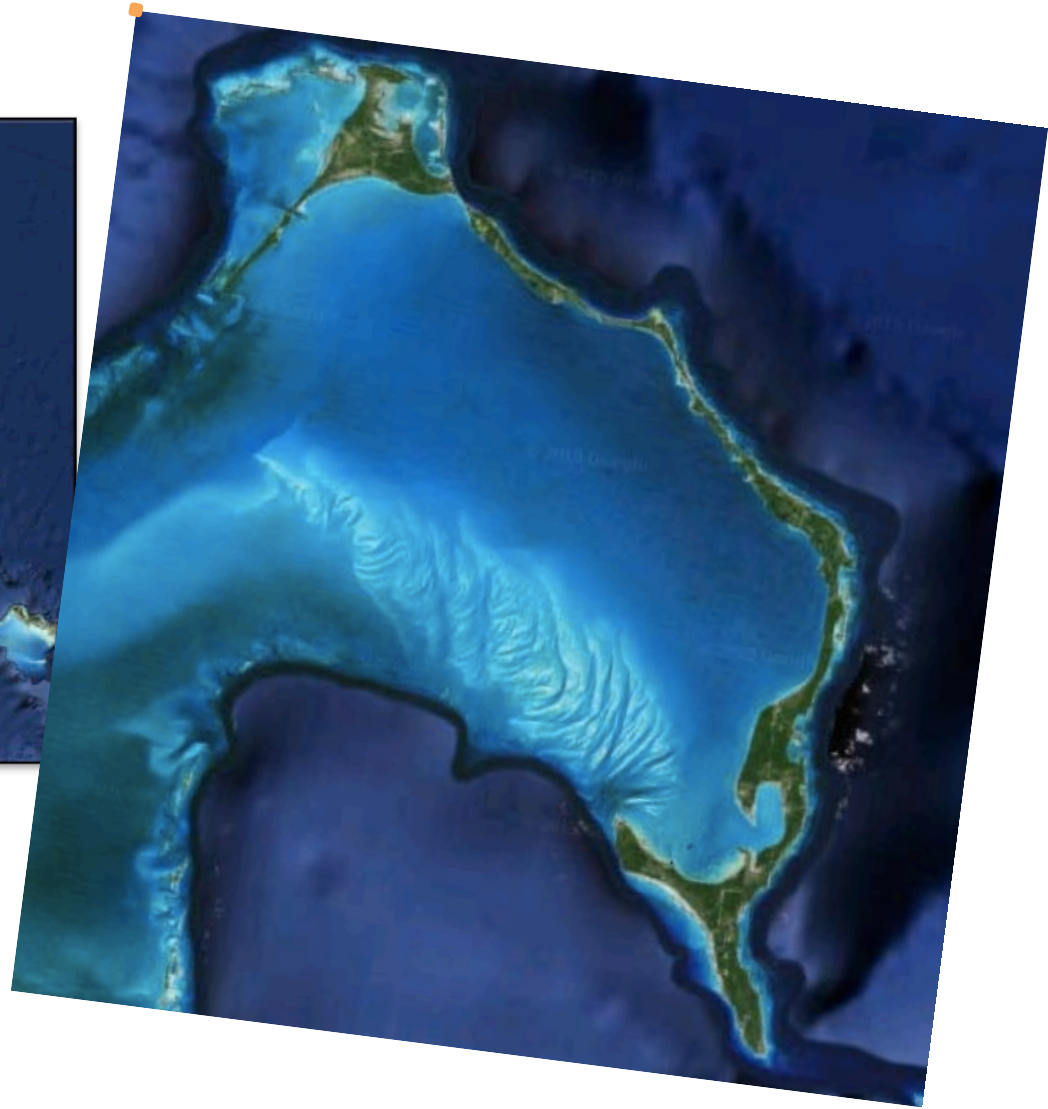
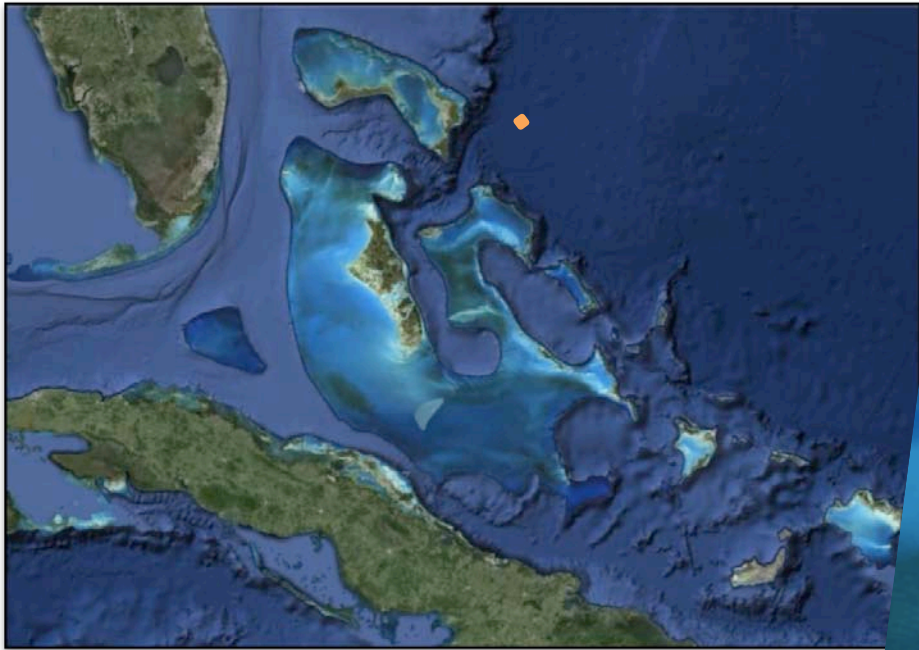


Yellow ray
Urobatis jamaicensis

QUESTIONS

- What are the sensory ranges of lemon sharks and yellow rays?
- How do artificial electric fields affect the behavior of lemon sharks and yellow rays?
- What is the transition threshold from attraction to repulsion of the two species?
- Are variations in individual behaviors within species due to morphology?

Cape Eleuthera Institute, Eleuthera, The Bahamas



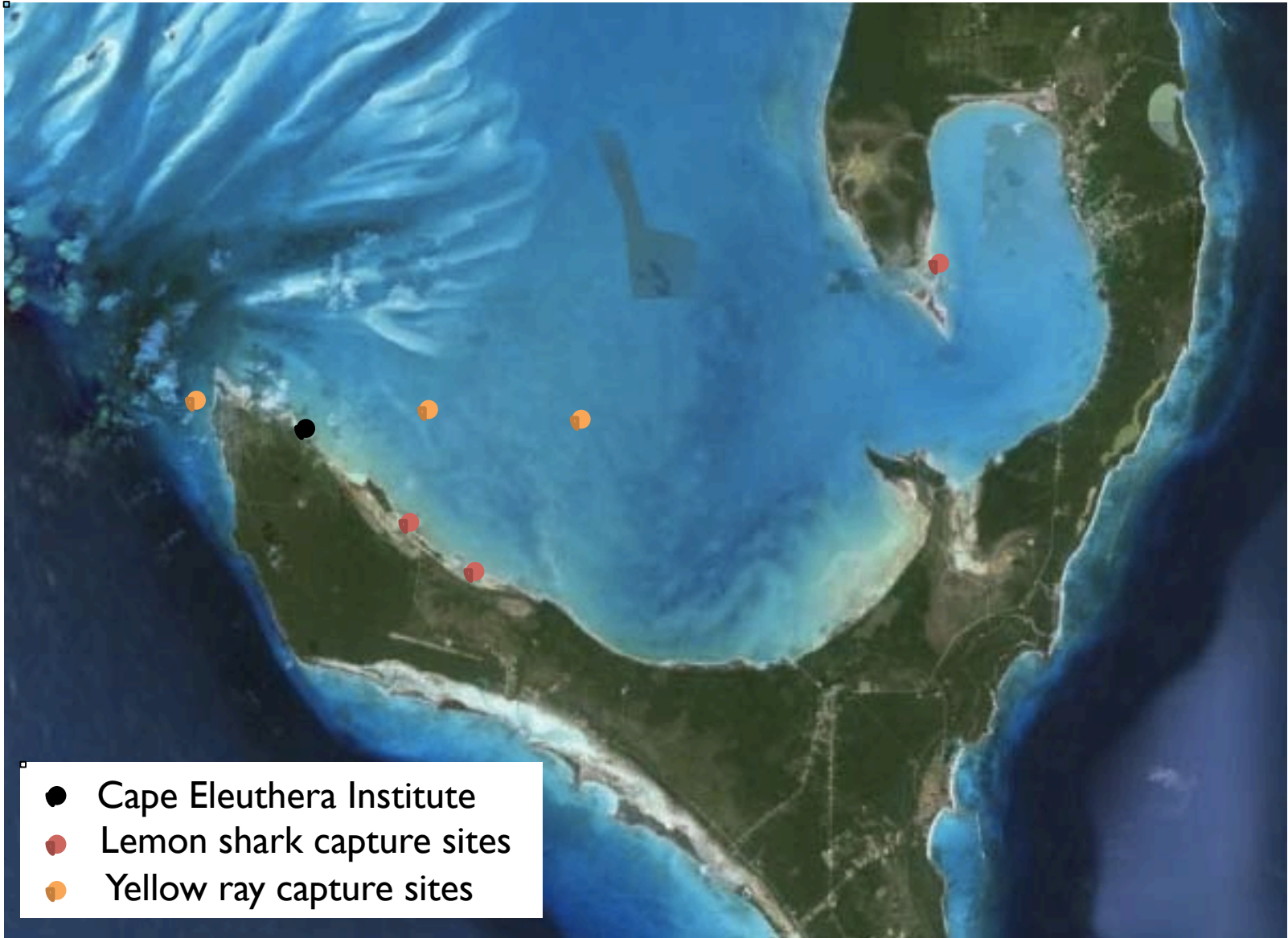


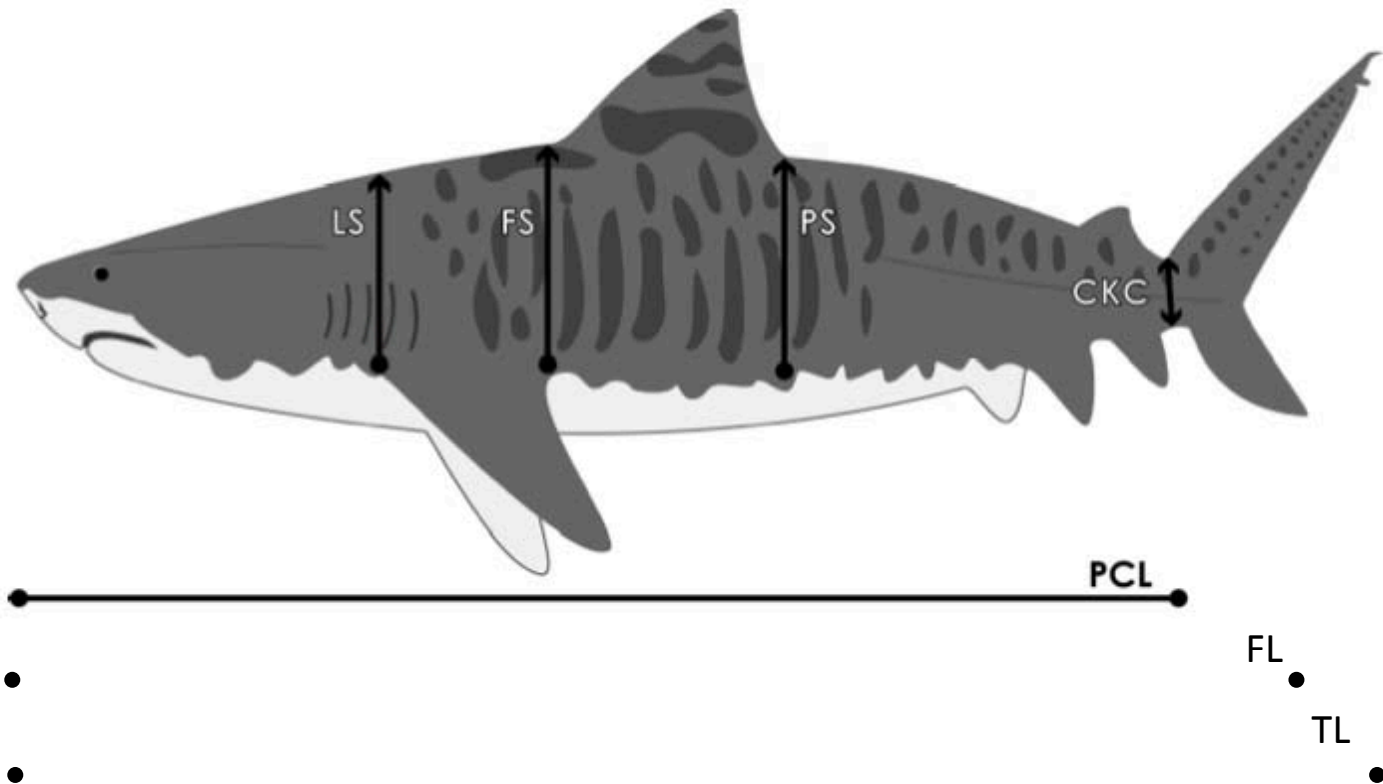


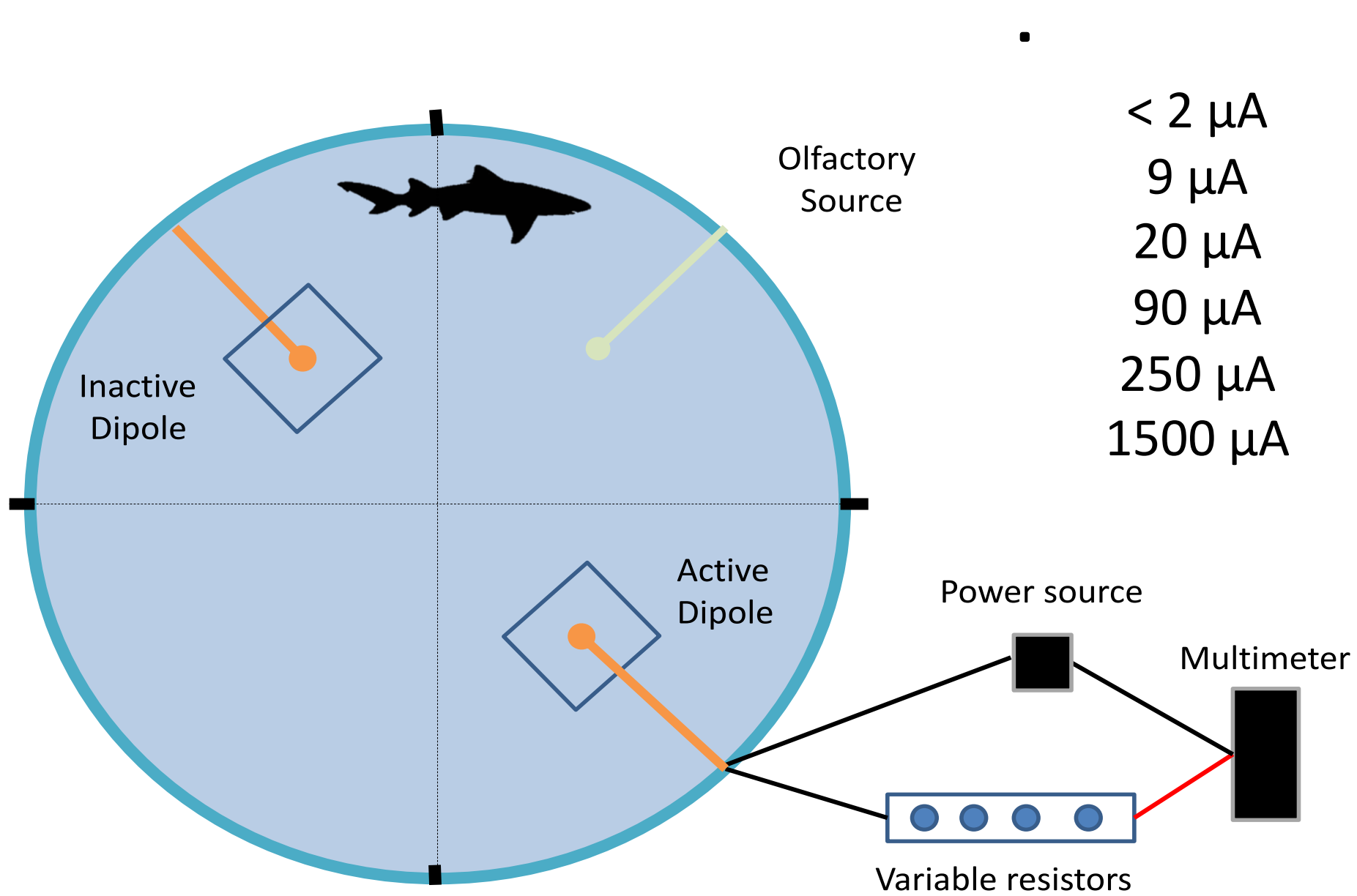
Photo Credit: Owen O'Shea



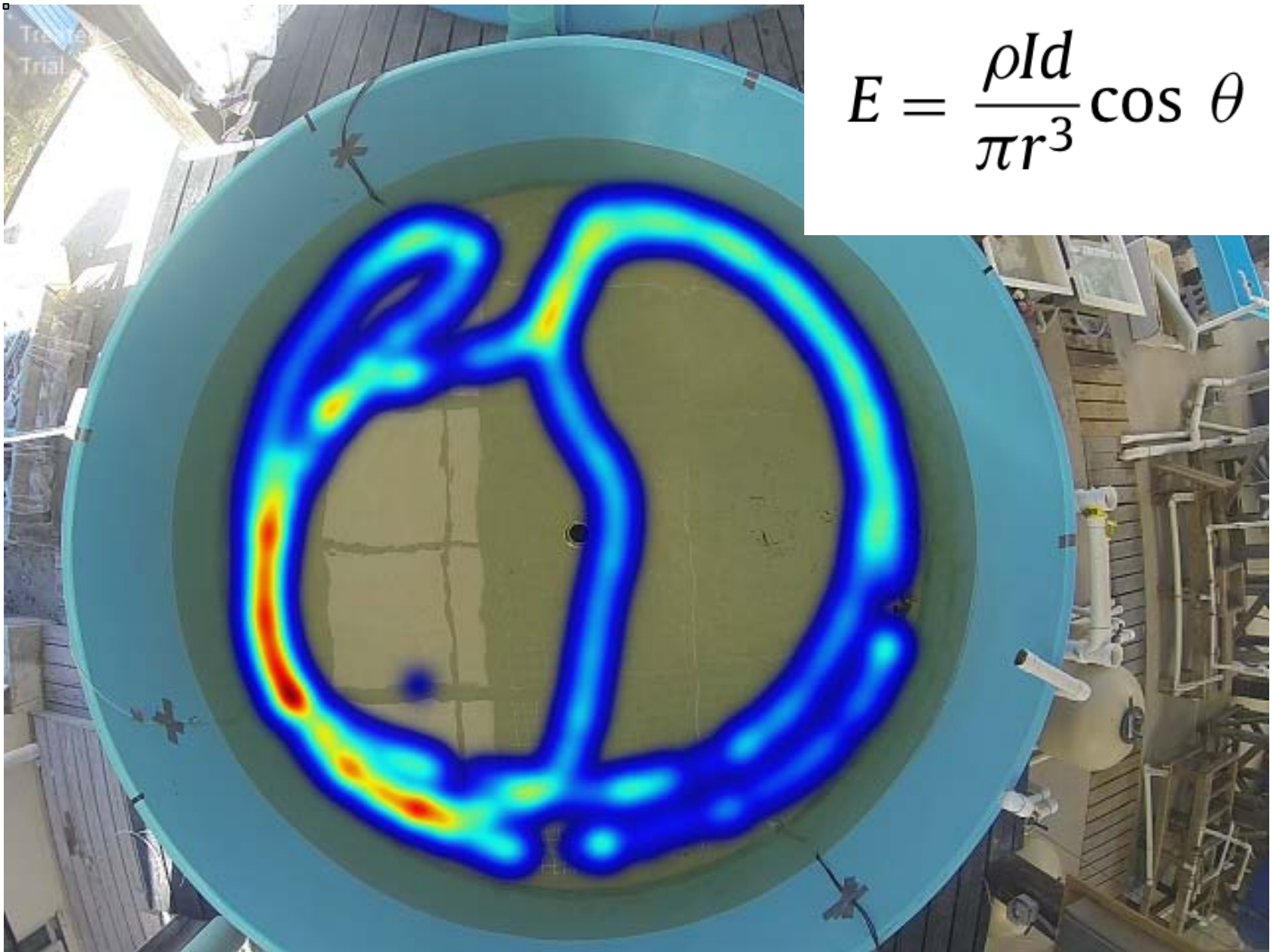
Photo Credit: Peter Aronson

Morphometrics









$$E = \frac{\rho l d}{\pi r^3} \cos \theta$$

Future Research



QUESTIONS?

