FISHTEK MARINE

SharkGuard 5

Project update – Key Traceability

February 2024

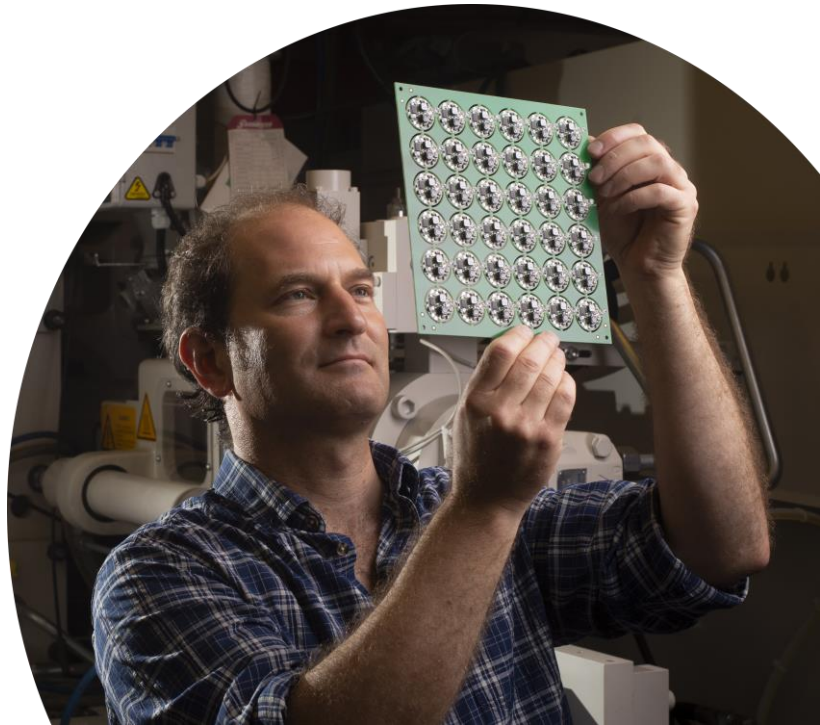
WHO ARE FISHTEK MARINE?

"An **outcome focussed**, marine technology company that design and manufacture technologies to mitigate environmental issues in commercial fishing."

Fisheries Scientists
Working with fishermen, fishing representatives, governments, NGOs & universities across the globe

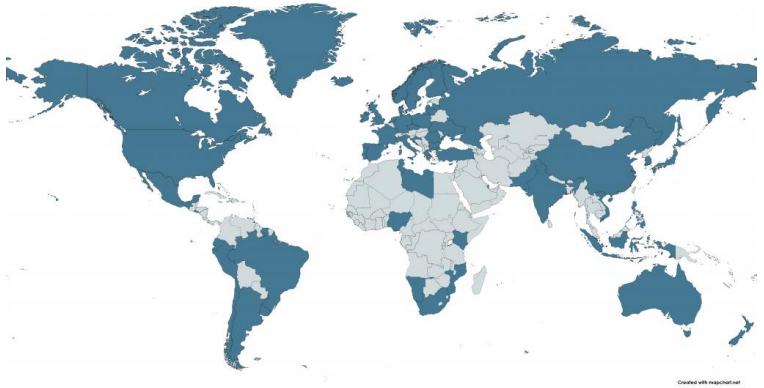
Engineering
Mechanical/electrical engineering
CAD design
Tooling and Injection moulding

Manufacturing & Sales
Production and assembly
Sales and marketing



MADE IN BRITAIN

WHERE WE WORK



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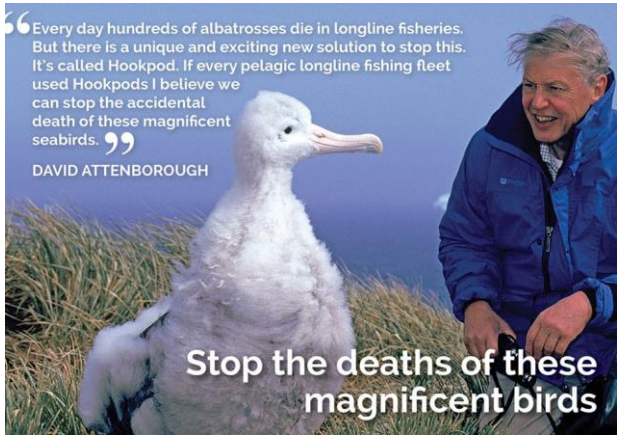
FISHING INDUSTRY & MANAGEMENT

NGO & RESEARCH

ENDORSED



AWARD WINNERS

EUROPEAN INVENTOR AWARD

The OCEAN AWARDS 2018 WINNER BOAT International Media

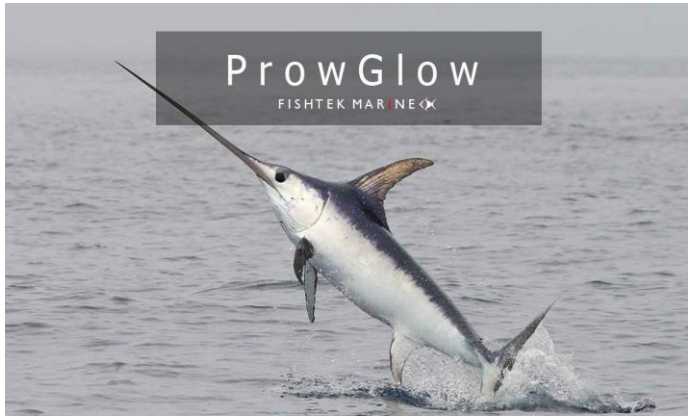
BTO Looking out for birds

FISHTEKS PRINCIPLES OF PRODUCT DESIGN

"A VERY difficult set of criteria to meet……."

- Tough
- Durable
- Low cost
- No impact
  - Target catch
  - Operationally
  - Ideally, offers the fishers an economic advantage

- To deliver a product that delivers an environmental outcome



www.fishtekmarine.com


SharkGuard MKII
FISHTEK MARINE

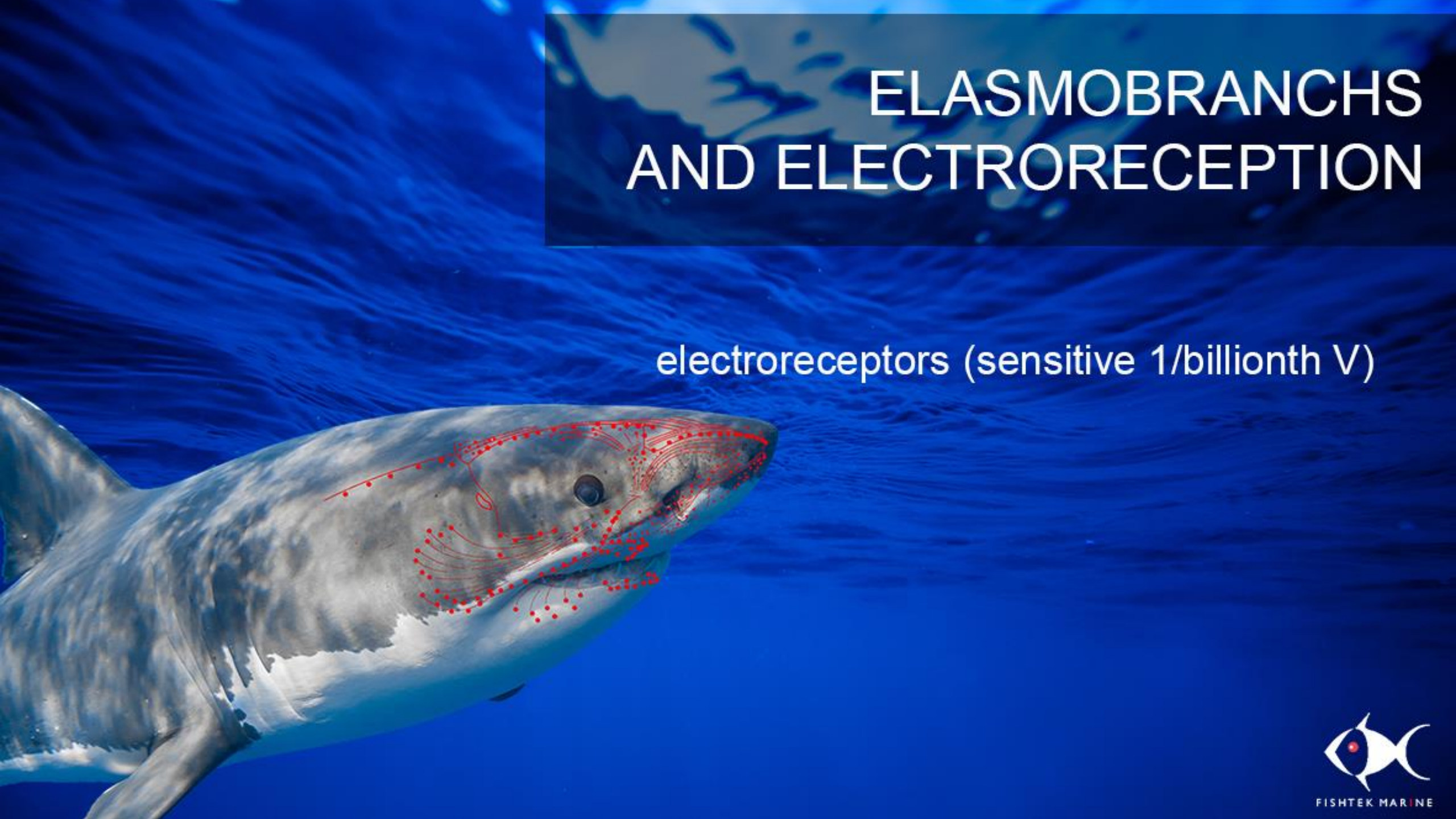
The Problem

THREE BILLION
HOOKS SET ANNUALLY

FISHTEK MARINE

ELASMOBRANCHS AND ELECTRORECEPTION

electroreceptors (sensitive 1/billionth V)

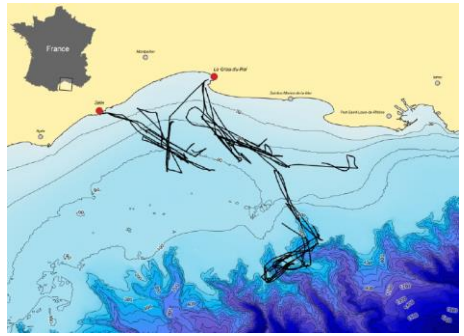


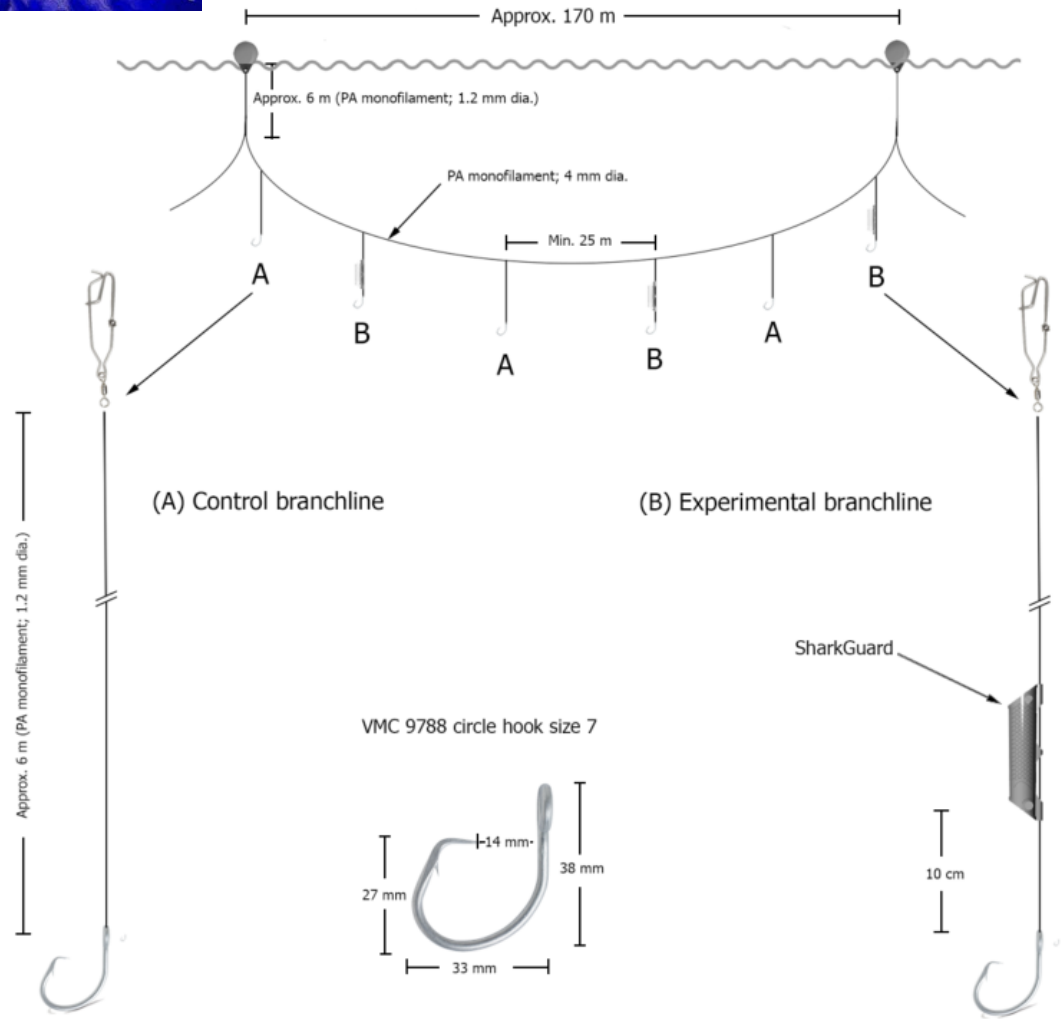
FISHTEK MARINE

A

B

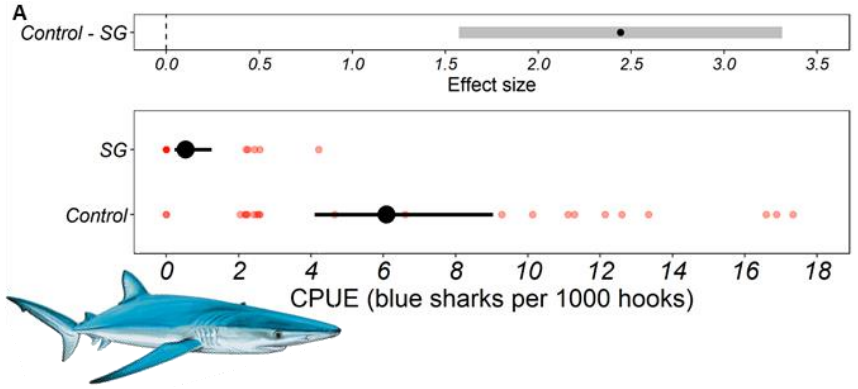
FISHTEK MARINE


France

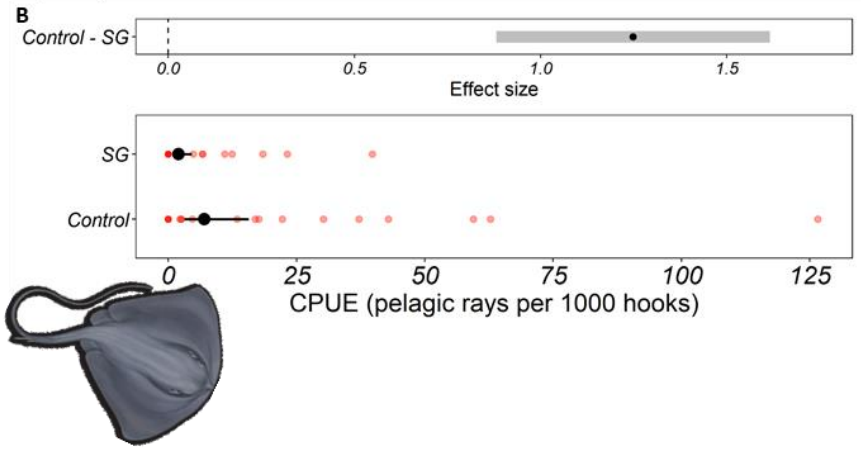

Approx. 170 m
Approx. 6 m (PA monofilament; 1.2 mm dia.)
PA monofilament; 4 mm dia.
Min. 25 m
A
B
A
B
A
B
(A) Control branchline
(B) Experimental branchline
Approx. 6 m (PA monofilament; 1.2 mm dia.)
SharkGuard
VMC 9788 circle hook size 7
14 mm
38 mm
27 mm
33 mm
10 cm

Assessing the efficacy of a novel shark bycatch mitigation device in a tuna longline fishery.

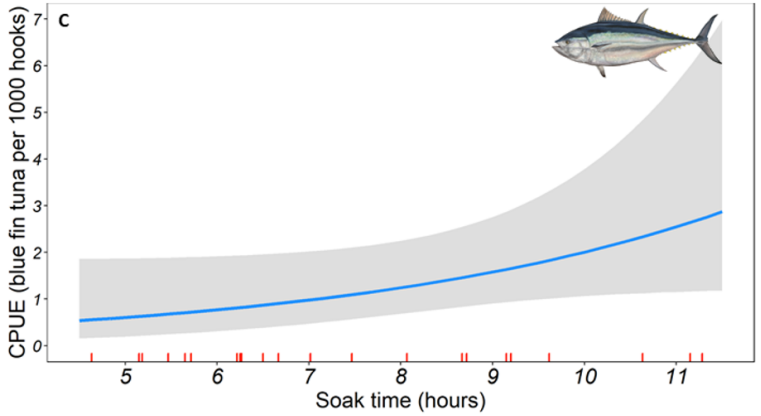
-91% (n=75)**



-72% (n=270)**

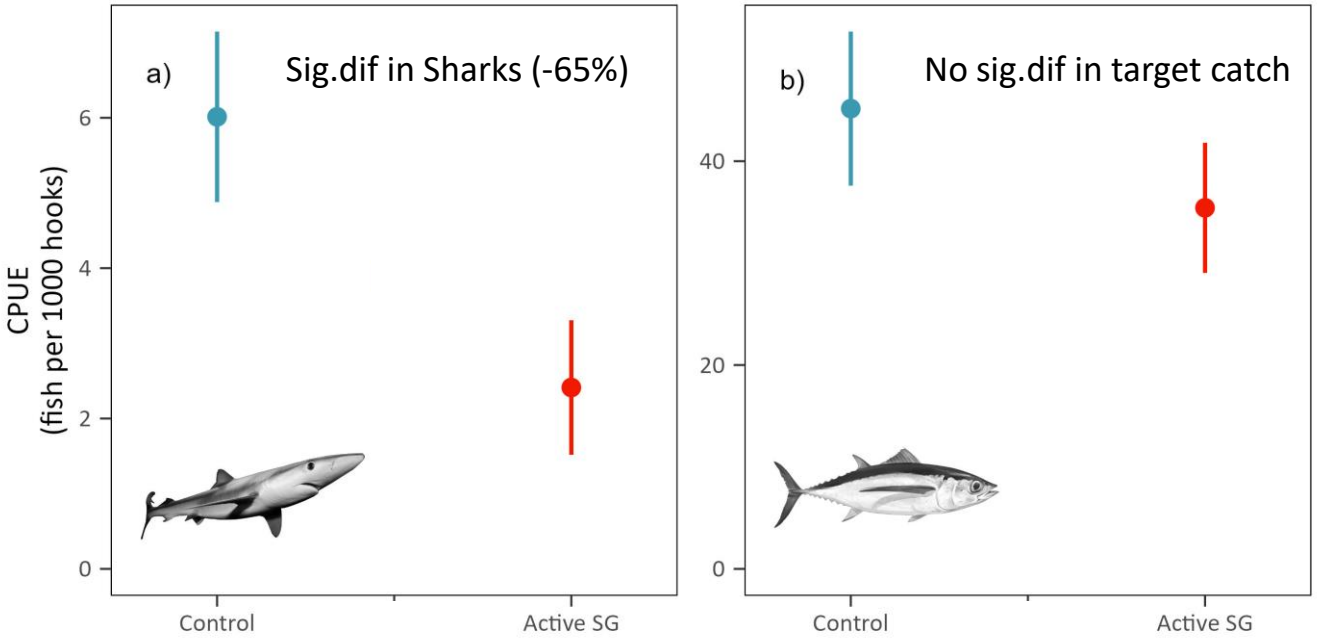


-40% (n=28)



Citation: Philip D. Doherty, Robert Enever, Lucy C.M. Omeyer, Lydia Tivenan, Grant Course, Guy Pasco, David Thomas, Ben Sullivan, Ben Kibel, Pete Kibel, Brendan J. Godley, Efficacy of a novel shark bycatch mitigation device in a tuna longline fishery, Current Biology, Volume 32, Issue 22, 2022, Pages R1260-R1261,ISSN 0960-9822, https://doi.org/10.1016/j.cub.2022.09.003.

WP 3 (from 2021/22) & WP1.2 Sea trials



Key findings:

- New Caledonia perfect test ground (result from lit.review)
- Sharks (all species) deterred by SharkGuard (as per France)
- No significant impact of SharkGuard on target species**
- Visually deterred at close proximity to hook (move 80-100cm)
- Potentially reduced depredation**
- In prep. (see WP2)

WP 1.1 SharkGuard design

SharkGuard 5	~130 x 13.8 mm	~40 g

WP 1.1 SharkGuard design

Electrode design

Indicator

2-colour LED
(Visible in daylight)

Low battery
Quick orange flashes on removal from water

Charging in progress
Slow green blinking whilst in charging bay

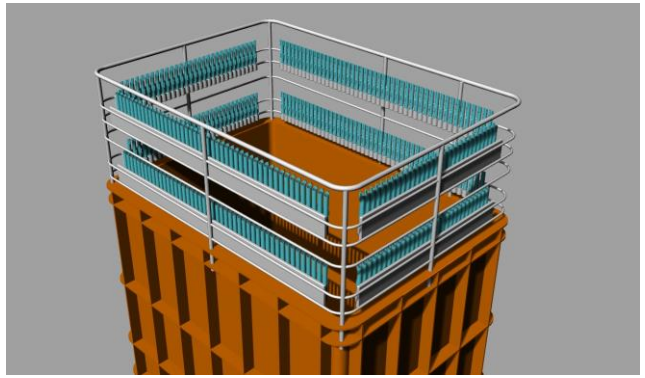
Fully charged
Constant green in charging bay

Durations to be decided

WP 1.1 Bin development

Current development

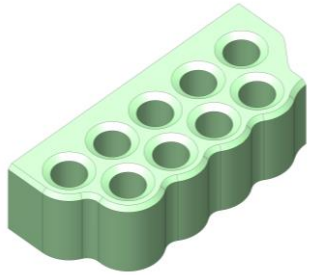
Key features of the charging bin include the following:



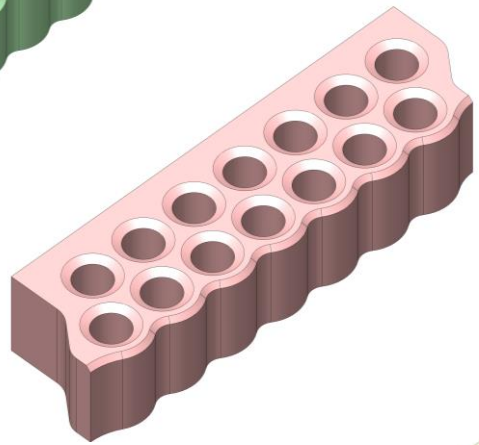
WP 1.1 Bin configuration

There are multiple ways to divide the rows into discrete modules based on common factors. Outlined below is one route to balance module length with the number of variants required. This can be used as a starting point for optimisation.

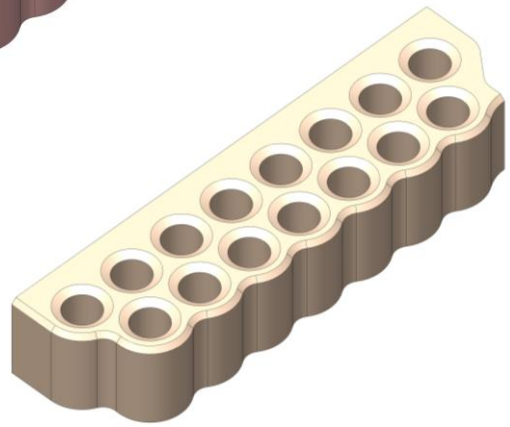
9 bay module
(4off required)

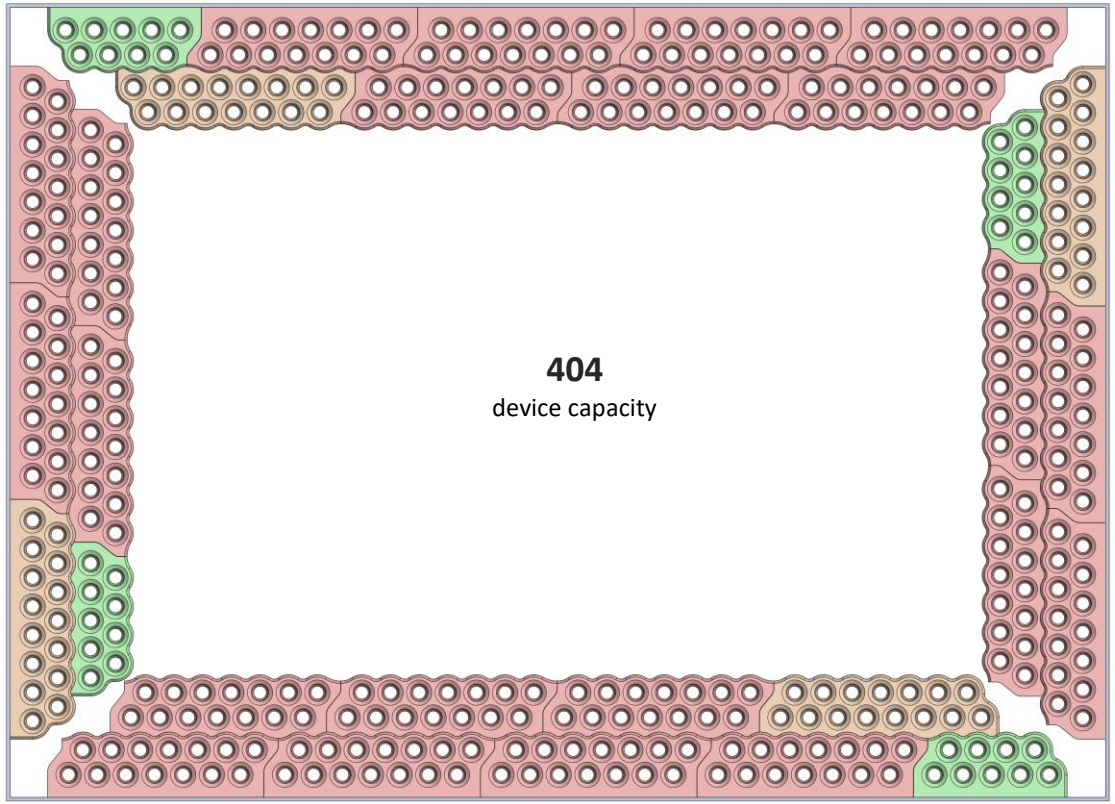


14 bay module
(22off required)

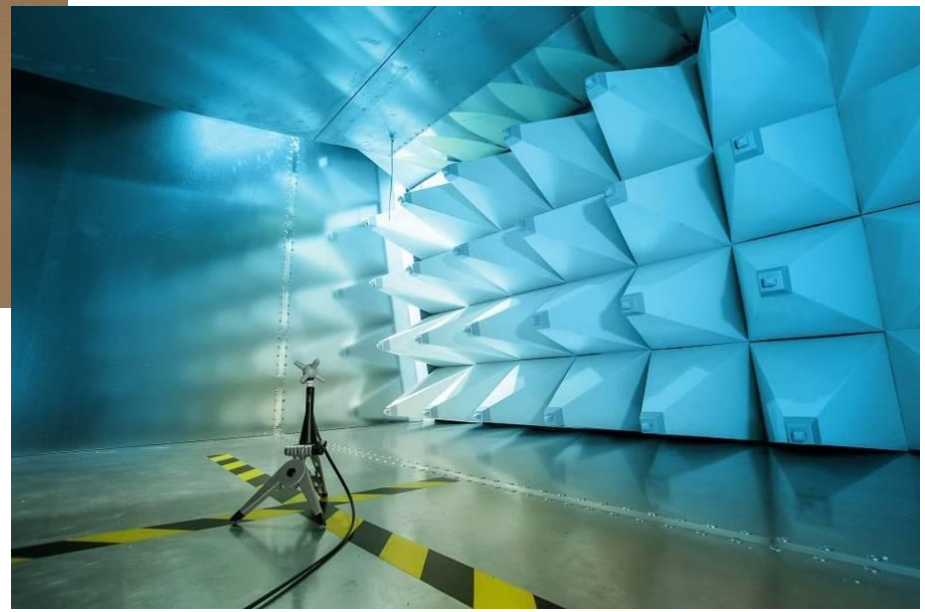


15 bay module
(4off required)





WP 1.1 EMC testing



WP 1.1 Induction Charging

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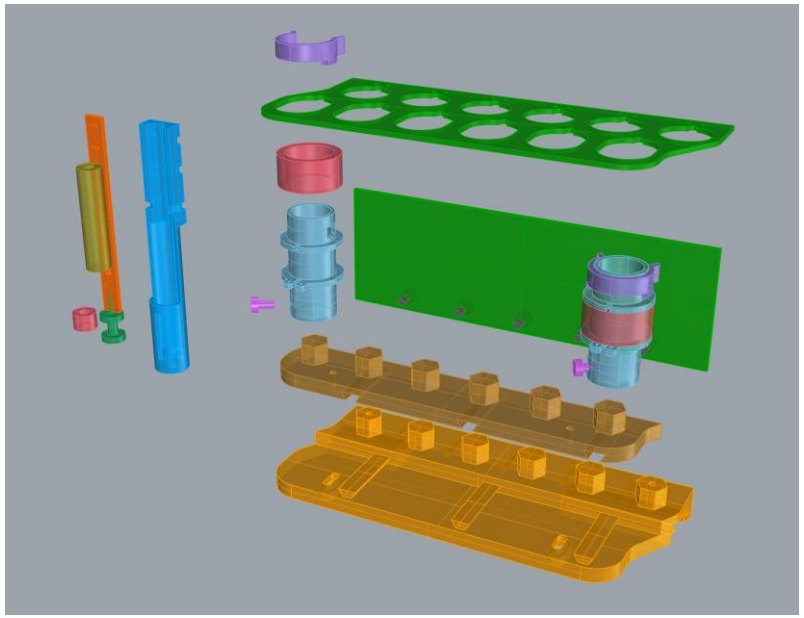
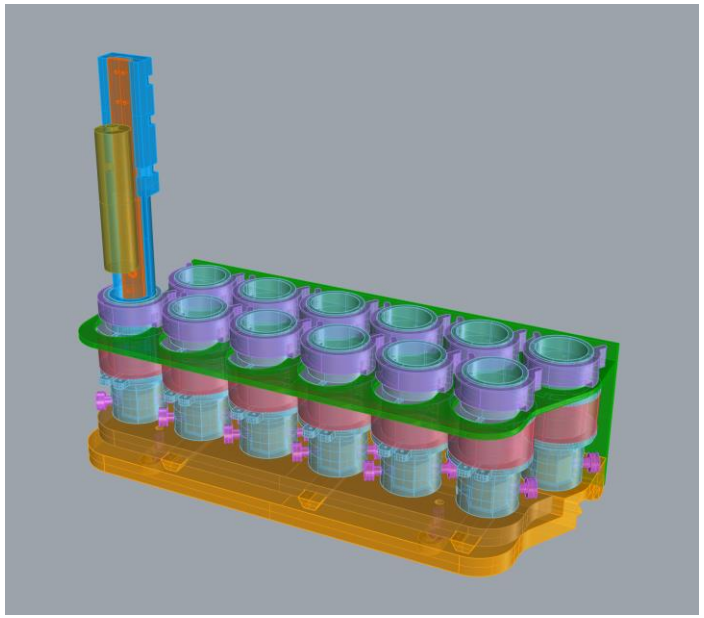
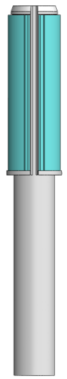


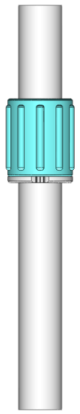


WP 1.1 Line attachment

Swivel collar

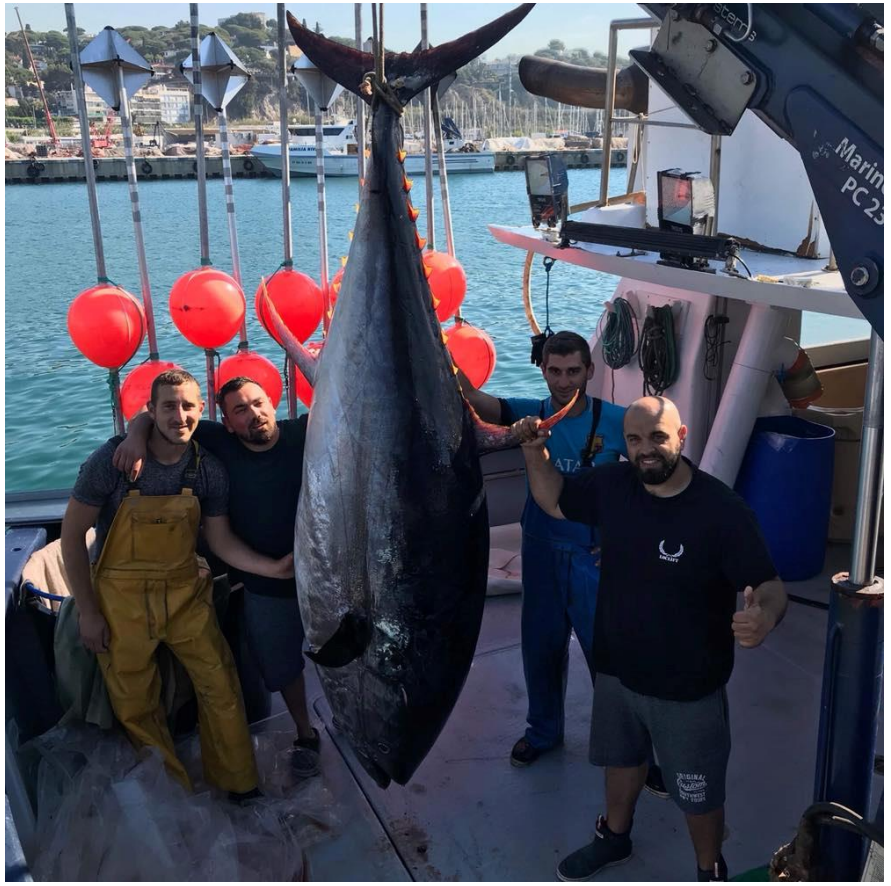


Threaded collar



Pull collar

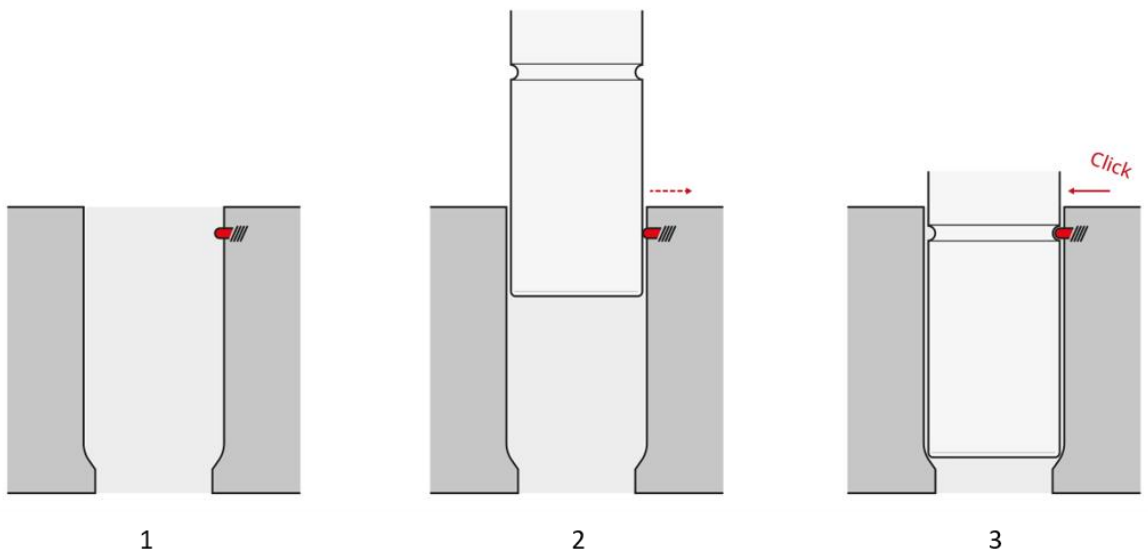
Consultation before commitment!



WP 1.1 Bin function

Current development

The chosen charging configuration can be seen in the images below. The charging bays include through-holes and flush surfaces to minimise dirt traps and allow for easy cleaning.



Each bay will include a retention feature to secure the SharkGuard during charging. It's retention force will be less than the grip force of the device on the line, so that on removing a clip and hook from the rail, the device will lift out of the bay rather than requiring the user to manually remove it. The design of the mechanism will also respect the charging coil and thus avoid metal components.

WP2 PDRA support for technology uptake

FISHTEK MARINE

University of Exeter

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Bycatch reduction technologies that work for fishermen and the environment