

A white silhouette of a shark is positioned above the word 'Shark'. To the right of the shark, several white curved lines represent a barrier. The word 'Safe' is written in a large, white, sans-serif font, with a small 'TM' trademark symbol to its upper right. Below 'Safe', the word 'BARRIER' is written in a smaller, white, all-caps, sans-serif font. The entire graphic is set against a dark blue background with a lighter blue square in the top right corner.

# Shark Safe<sup>TM</sup> BARRIER

THE FIRST NATURE-INSPIRED ECO-FRIENDLY TECHNOLOGY  
TO PROTECT PEOPLE AND SHARKS

Dr Sara Andreotti

# Shark/Human Conflict (Crise Requin)



Human Safety



Loss of tourism revenue



Environmental Impact



# Shark Accidents Worldwide

- In 2021: 73 shark bites – 9 fatal
- On average: **6** shark related death globally per year





# Tourism damage in Reunion Island

- 40% reduction of tourism bookings after each shark attack
- Beaches closure and suspension of surfing events
- **2.4 Biln XPF (20 mil euro) loss per year** in tourism revenue\*







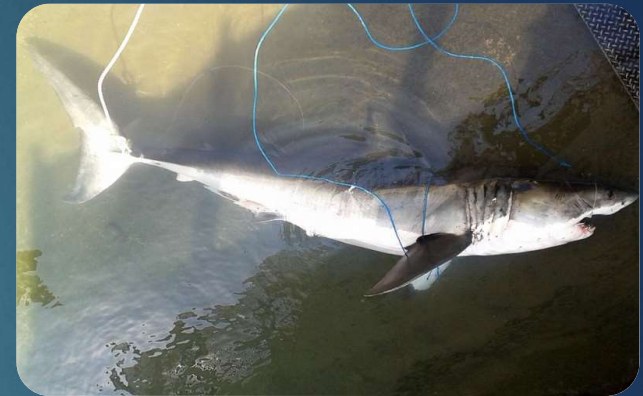
# Biodiversity Damage

- ▶ **66%** of the marine animals killed are not dangerous sharks

## BILAN DES CAPTURES\* DU PROGRAMME RÉUNIONNAIS DE PÊCHE DE «PRÉVENTION» ENTRE MARS 2018 ET DÉCEMBRE 2020

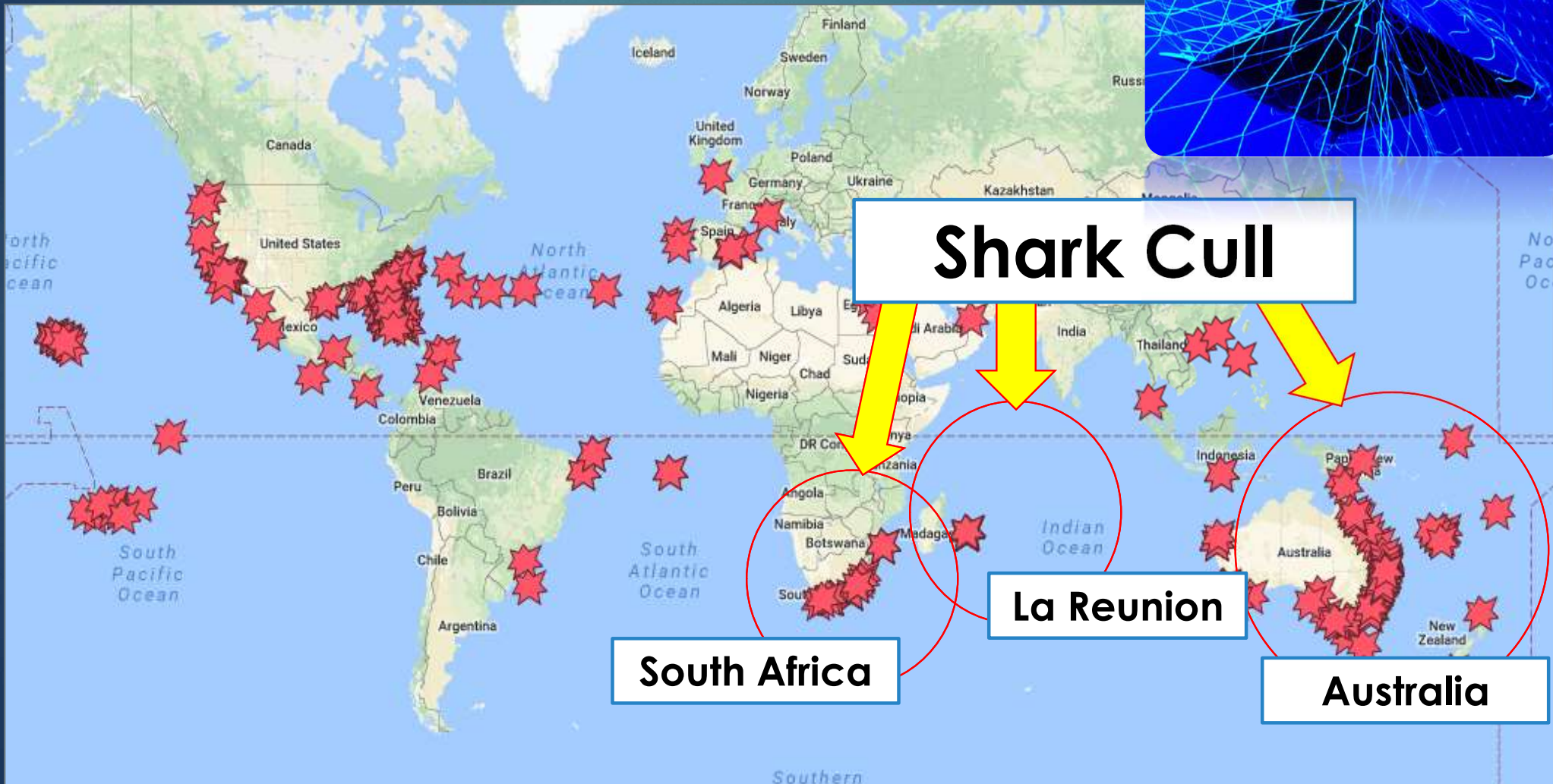
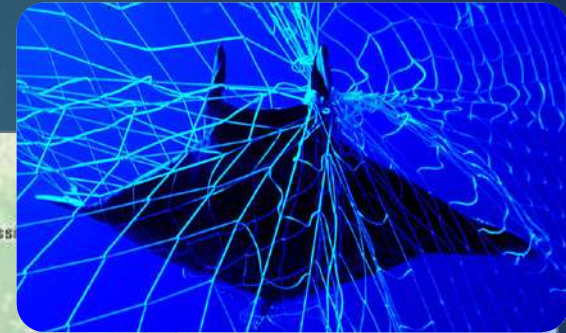


\*NOMBRE D'INDIVIDUS CAPTURÉS PAR LES DISPOSITIFS : FILAGES ET PALANGRES (PAVAC & PHF)  
SOURCES : LINFO.RE & RAPPORTS TRIMESTRIELS DU PROGRAMME RÉUNIONNAIS DE PÊCHE DE PRÉVENTION



# Shark Cull

- ▶ From 1997 to 2017: 4000 marine animals killed in NSW (Australia): (40% weren't sharks)



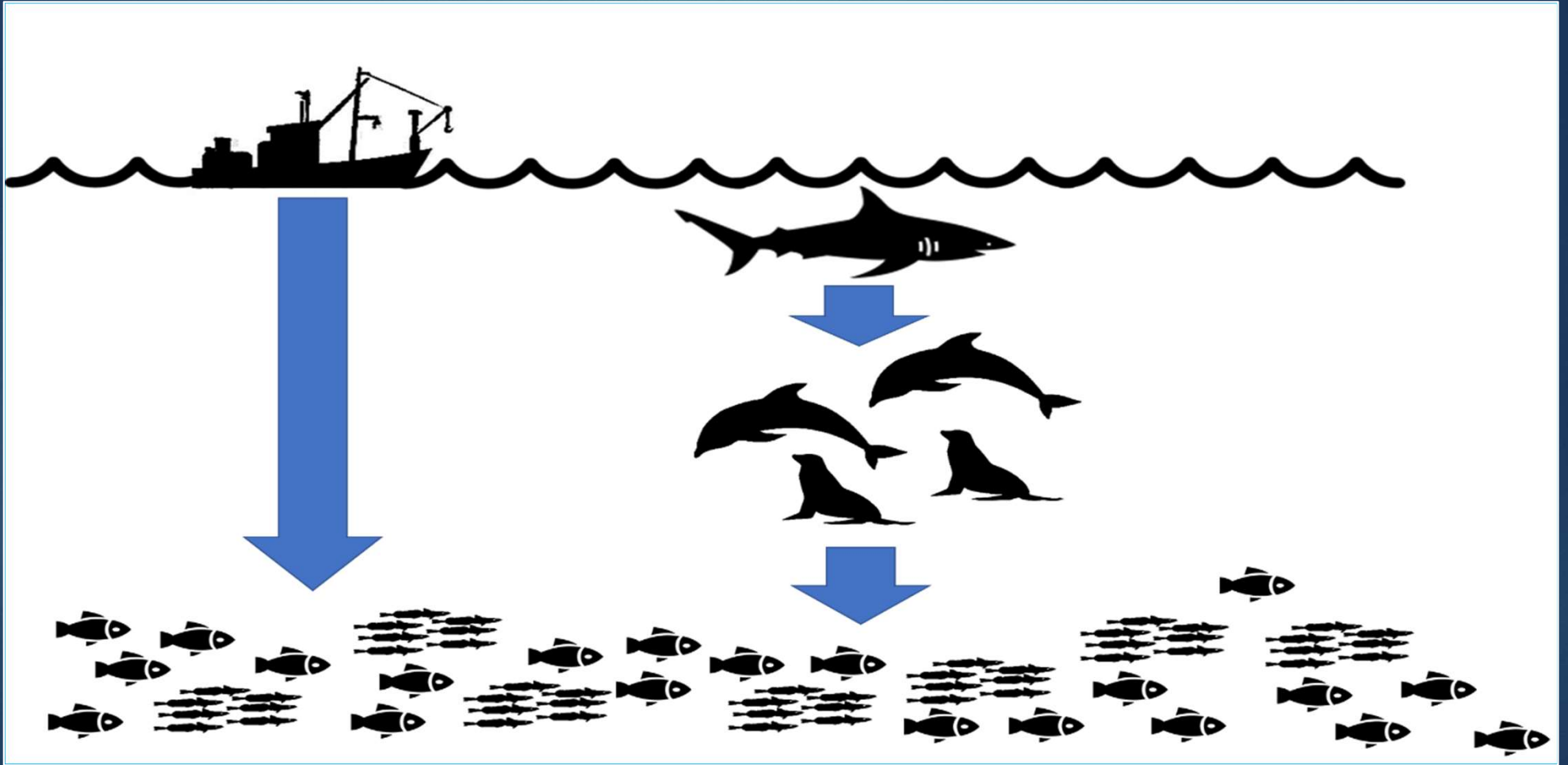


# SHARKS

- ▶ Umbrella species;
- ▶ Maintain the balance in the marine food chain;
- ▶ Eliminate weak individuals from the lower levels of the food chain;
- ▶ Restricts habitats of their preys;

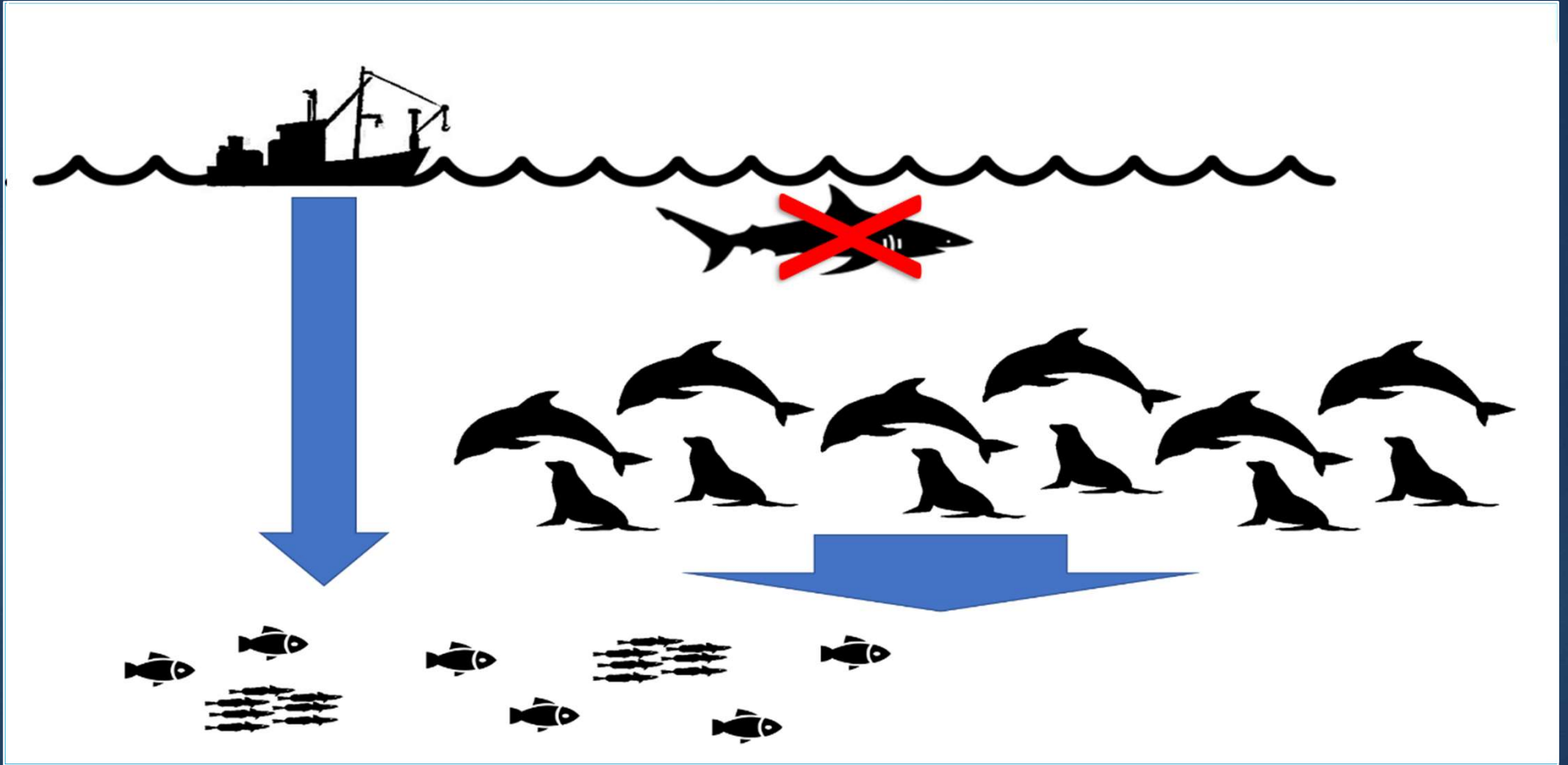


# Ecosystem Balance





# Ecosystem Balance



# Top predators management

1

KEEP PREDATORS  
SEPARATED FROM PEOPLE



2

IMPLEMENT A LONG TERM  
MONITOR AND  
MANAGEMENT SYSTEM







Solution: a physical barrier that protects humans and doesn't kill marine life



# SharkSafe Barrier™

## Patented Technology

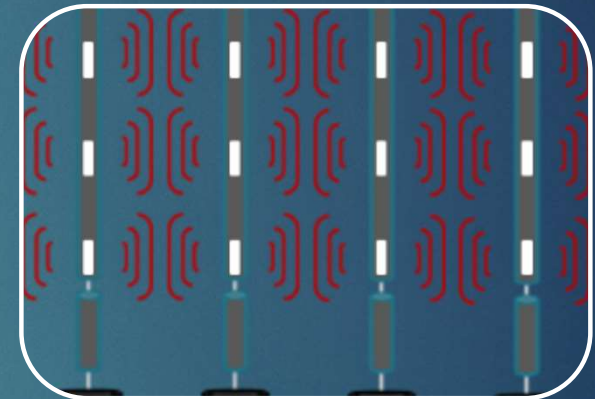


### Visual Barrier

- Biomimicry – Kelp Forest
- Nature inspired to be strong against waves



- Shark-specific and safe for marine life
- Robust & Eco-friendly design
- 100% successful bull sharks and white sharks!



### Magnetic Barrier

- Overwhelms the shark's electromagnetic sense
- Effective in low visibility
- Shark-specific











[www.sharksafesolution.com](http://www.sharksafesolution.com)

# Scientific Publications

## 1. Highly motivated white sharks can be excluded from an area by the Sharksafe Barrier:

O'Connell C.P., S. Andreotti, M. Rutzen, M. Meÿer, C.A. Matthee 2017. Testing the exclusion capabilities and durability of the Sharksafe Barrier to determine its viability as an eco-friendly alternative to current shark culling methodologies. *Aquatic Conserv: Mar Freshw Ecosyst.* 2017;0:1–7. <https://doi.org/10.1002/aqc.2803>

## 2. White sharks can be deterred by strong barium ferrite magnets and a visual barrier:

O'Connell, C. P., S. Andreotti, M. Rutzen, M. Meÿer, and P. He. 2012. The use of permanent magnets to reduce elasmobranch encounter with a simulated beach net. 2. The great white shark (*Carcharodon carcharias*). *Ocean & Coastal Management* 97:20–28.

## 3. Bull sharks can be deterred by strong barium ferrite magnets:

O'Connell, C. P., S.-Y. Hyun, S. H. Gruber, T. J. O'Connell, G. Johnson, K. Grudecki, and P. He. 2014. The use of permanent magnets to reduce elasmobranch encounter with a simulated beach net. 1. The bull shark (*Carcharhinus leucas*). *Ocean & Coastal Management*.

## 4. Highly motivated white sharks don't swim through the Sharksafe Barrier

O'Connell, C. P., S. Andreotti, M. Rutzen, M. Meÿer, C. A. Matthee, and P. He. 2014. Effects of the Sharksafe barrier on white shark (*Carcharodon carcharias*) behavior and its implications for future conservation technologies. *Journal of Experimental Marine Biology and Ecology* 460:37–46.

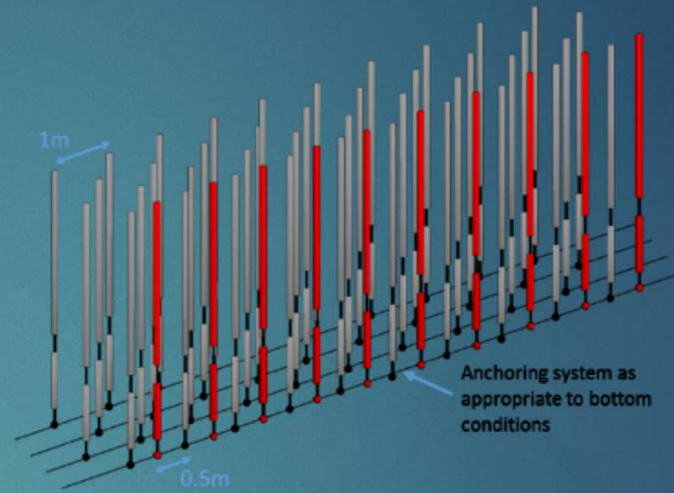
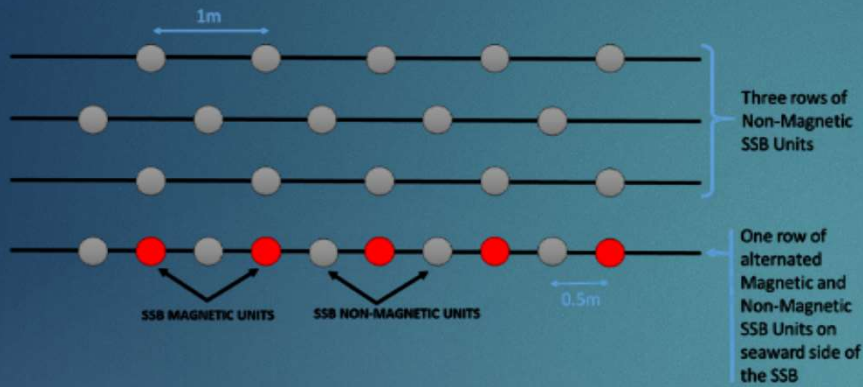
## 5. Highly motivated bull sharks can be excluded from an area by the Sharksafe Barrier

O'Connell, C. P., S.-Y. Hyun, C. B. Rillahan, and P. He. 2014. Bull shark (*Carcharhinus leucas*) exclusion properties of the sharksafe barrier and behavioral validation using the ARIS technology. *Global Ecology and Conservation* 2:300–314.

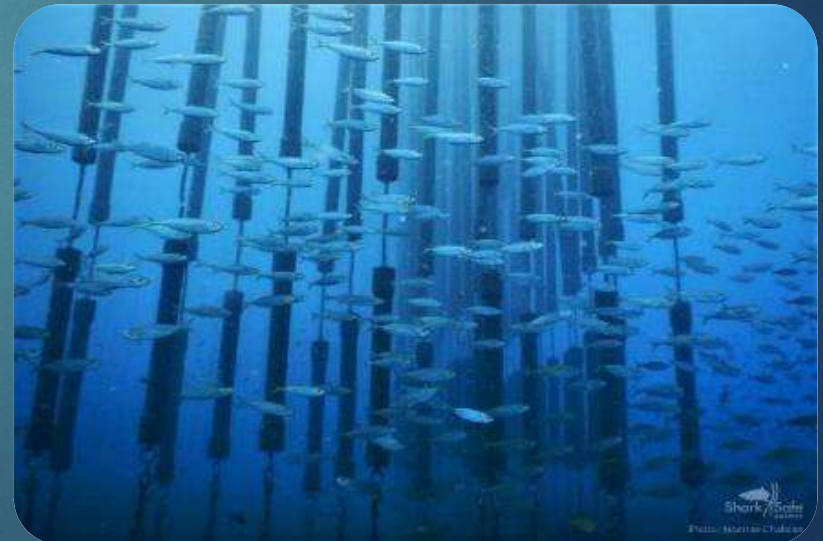


# Design for Deep Water

## SharkSafe Barrier™

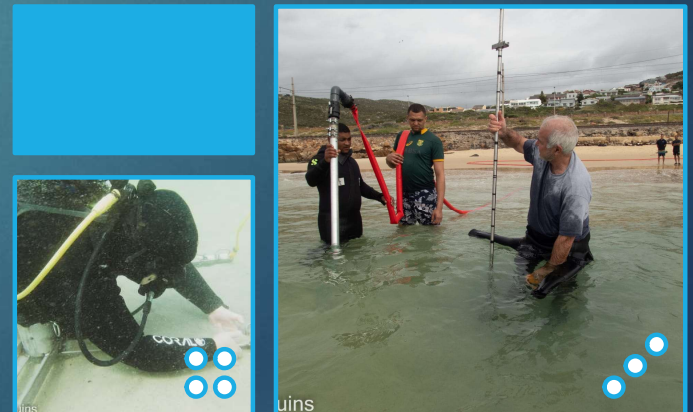
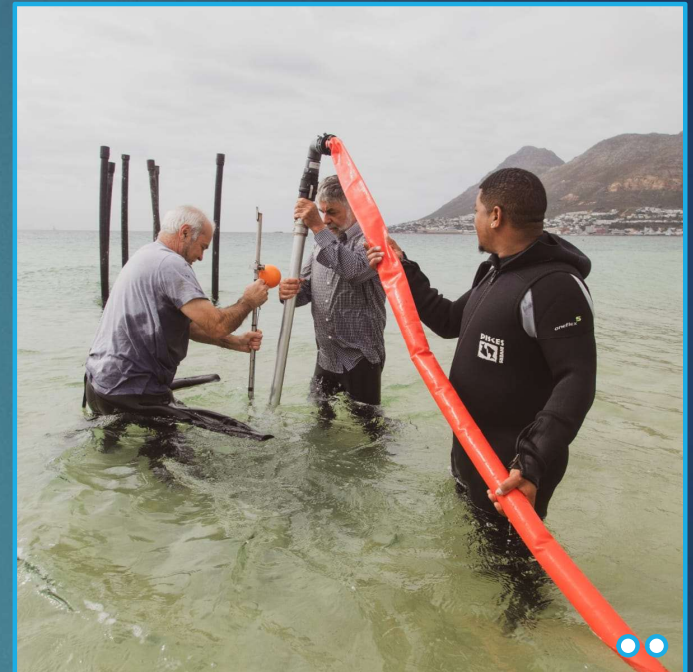


COPYRIGHT: SSB (PTY) LTD

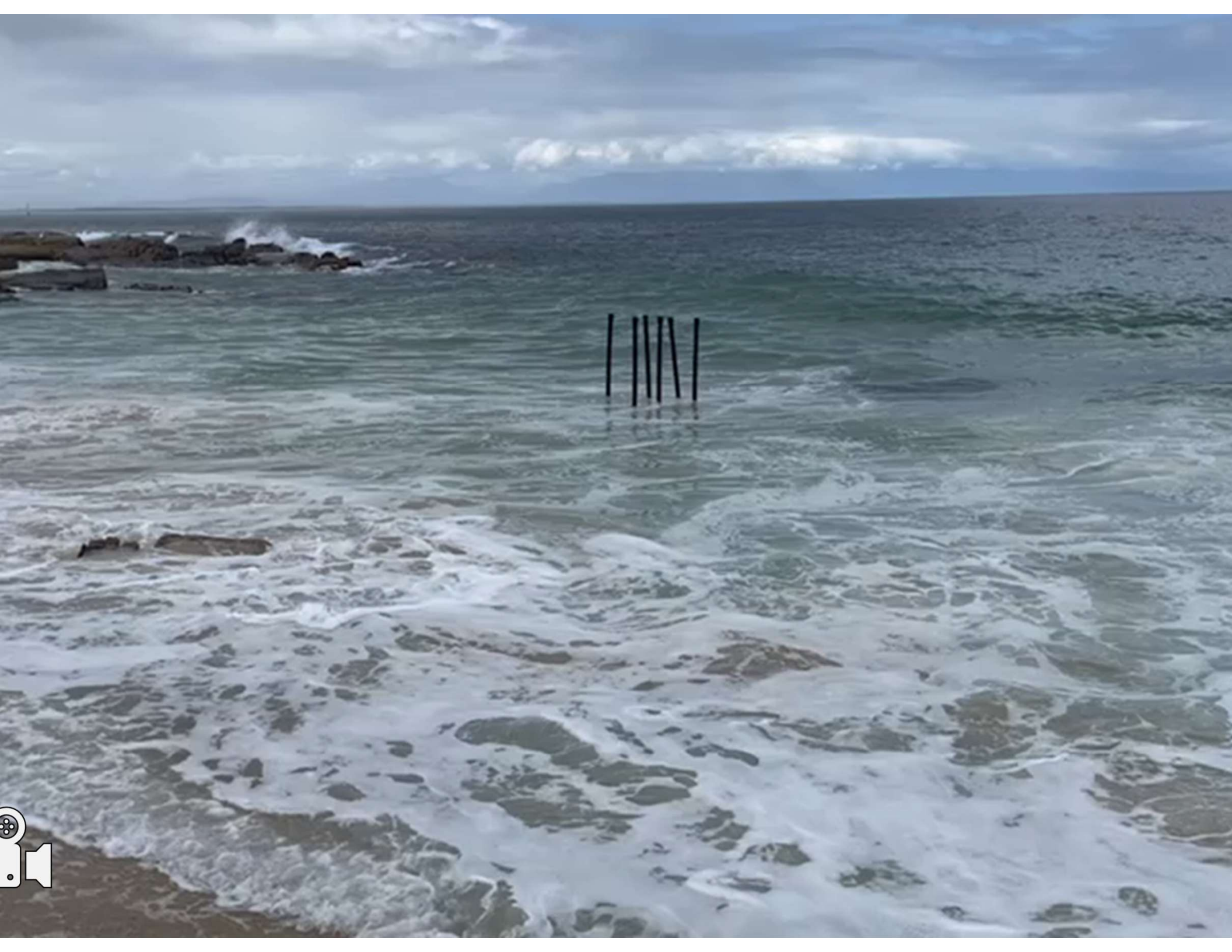


# Design for Shallow Water

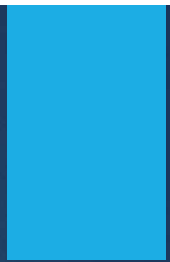
Two rows of SharkSafe Barrier fences all containing magnets







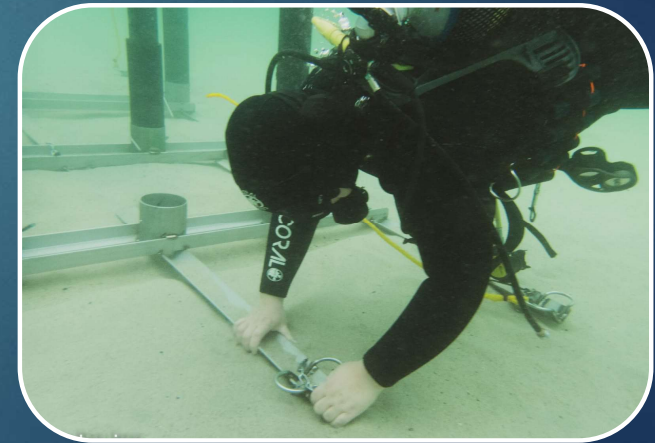
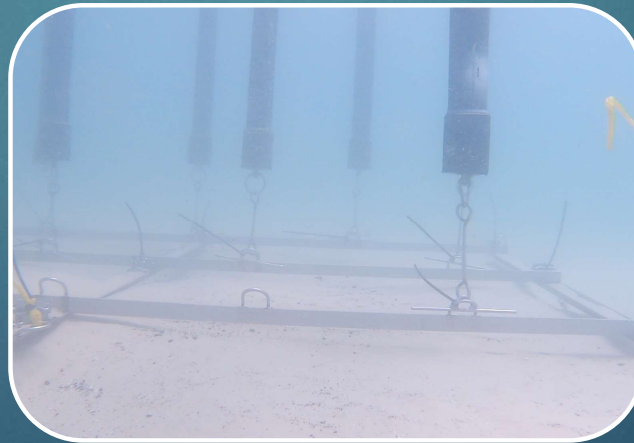
# Successful tests in South Africa (November 2021 – March 2022)





# Eco-Friendly Anchors Design

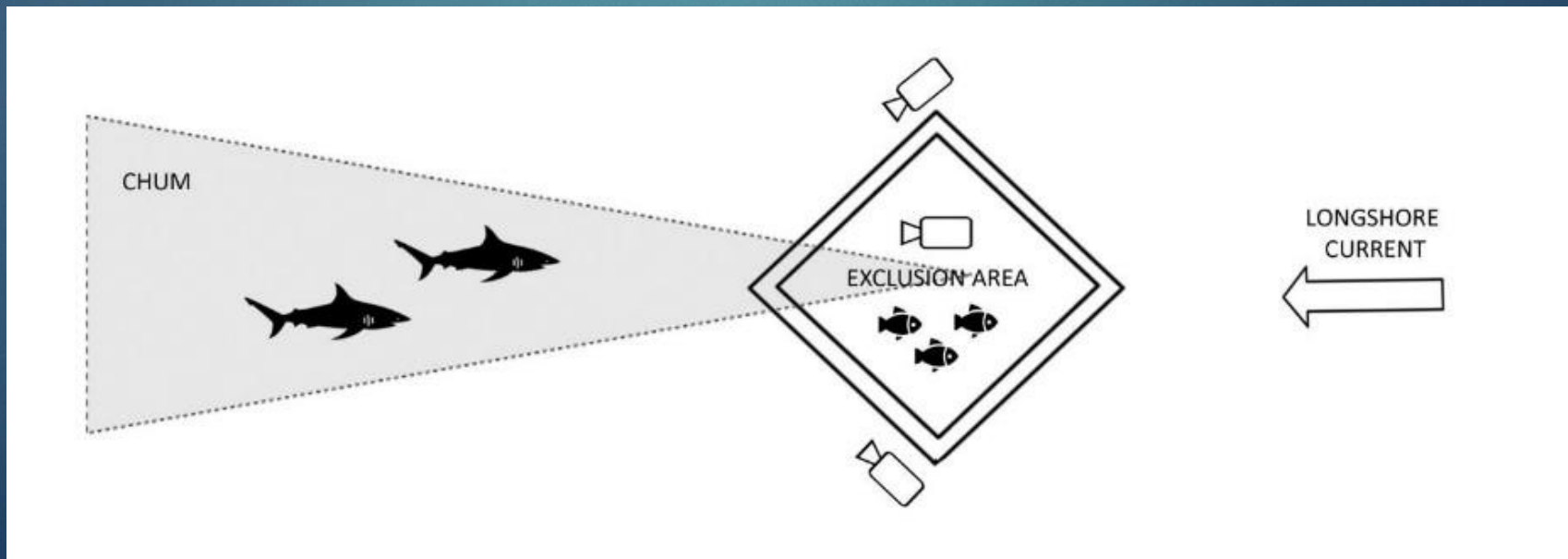
- Standard grid system for quick installation;
- Adaptable system for all substrates;
- Tested in high energy waters;
- Very durable.



# Example of SharkSafe Barrier Installation

200 Units for independent bull shark exclusion test in St Paul (Reunion Island)

- 2 years installation in collaboration with the Centre Securite Requin in Reunion **with removable blocks-anchorage**
- Product installed in January 2019 – removed in April 2021
- **No maintenance needed on SSB Units**











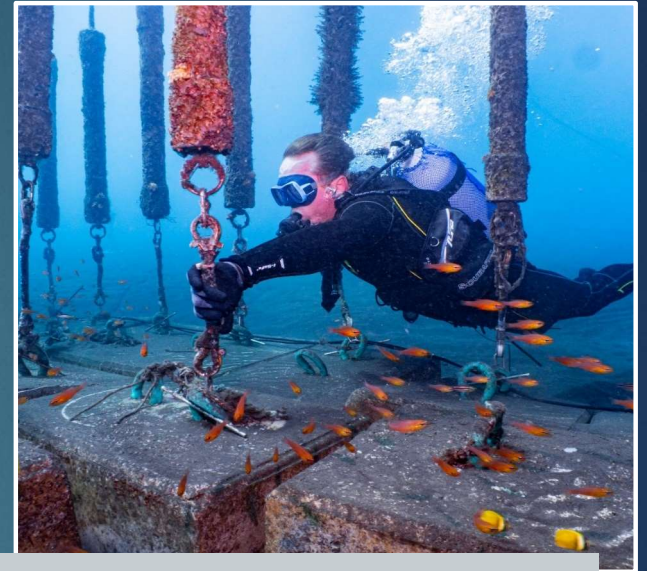
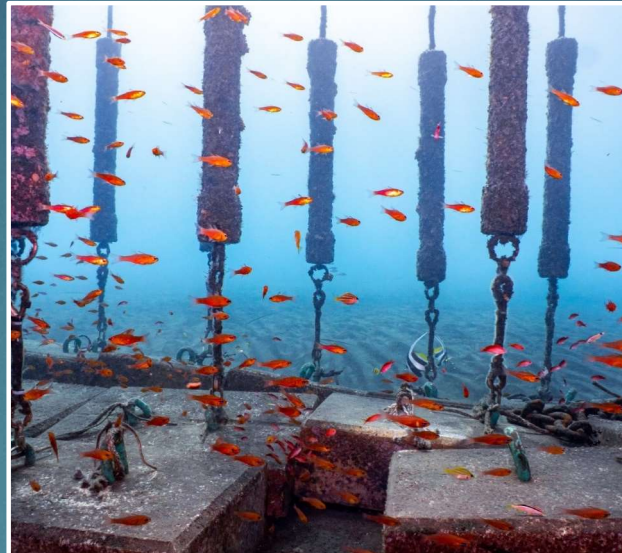
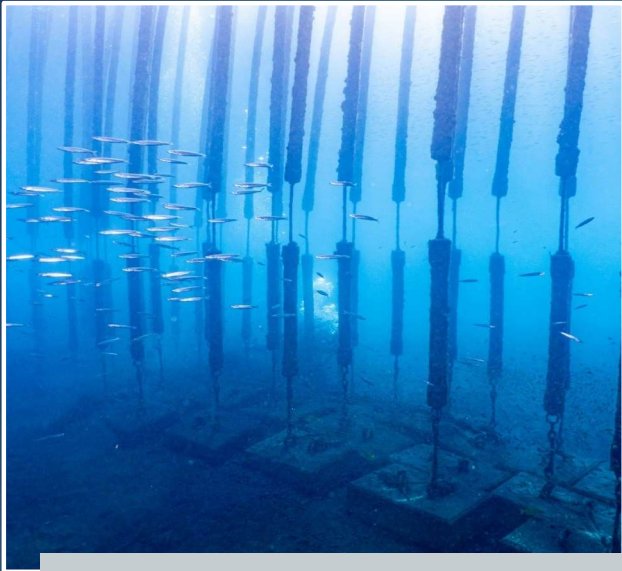
# Results of St Paul Experiment



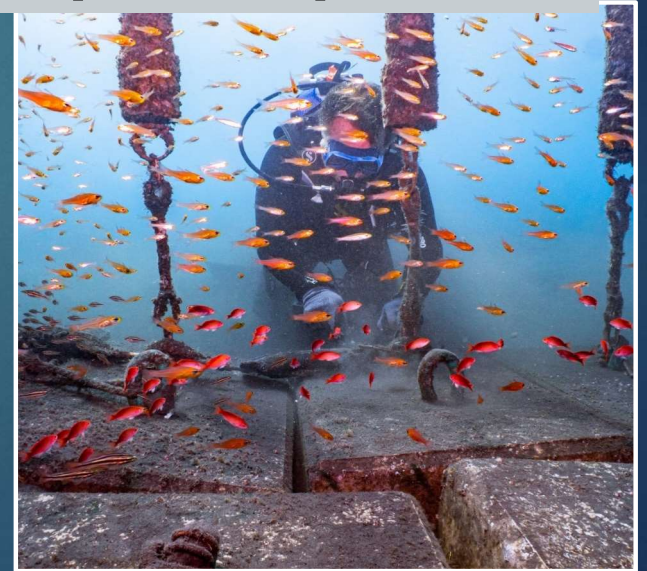
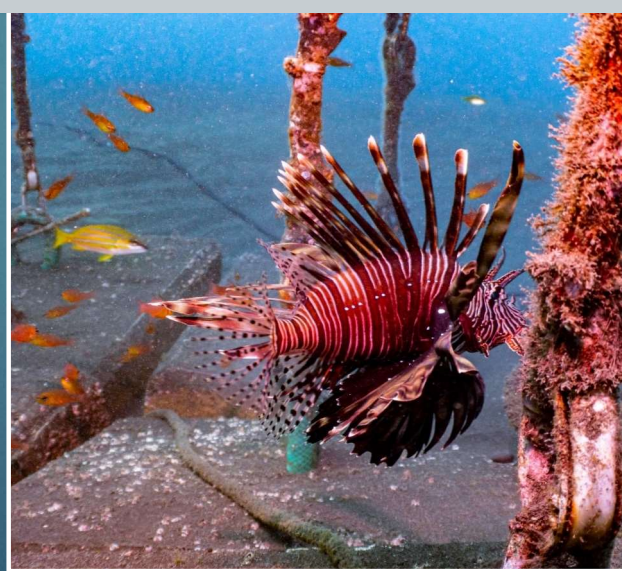
- 2 years deployment with no maintenance needed on the Units;
- **60 days** of camera deployments across the 2 years;
- **No sharks recorded** = no additional data on bull sharks.



# Potential dive-site attraction



## SharkSafe Barrier Installation in St Paul (Reunion)

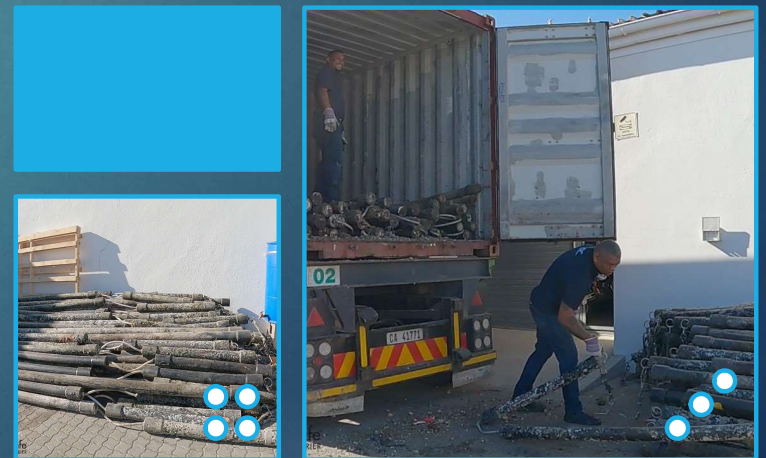




















# Material returned to South Africa After 2 years in the water





# Comparison with the alternatives

PRODUCTS	ECO-FRIENDLY 	SHARK SPECIFIC 	PHYSICAL BARRIER 	CHEAP MAINTENANCE 	BOAT FRIENDLY 
 SHARKSAFE BARRIER	✓	✓	✓	 ✓	✓
 EXCLUSION NET (Reunion / South Africa)	✓	✗	✓	 ✗	✗
 ECO-BARRIER (Australia)	✓	✗	✓	 ✗	✗
 SHARK NETS (South Africa / Australia)	✗	✗	✗	✗	✗

- The installation cost per linear meter of SharkSafe Barrier is ca 2 times more expensive than exclusion nets, but the maintenance cost is 20 times cheaper per year (\*calculated on existing exclusion net program in Reunion)

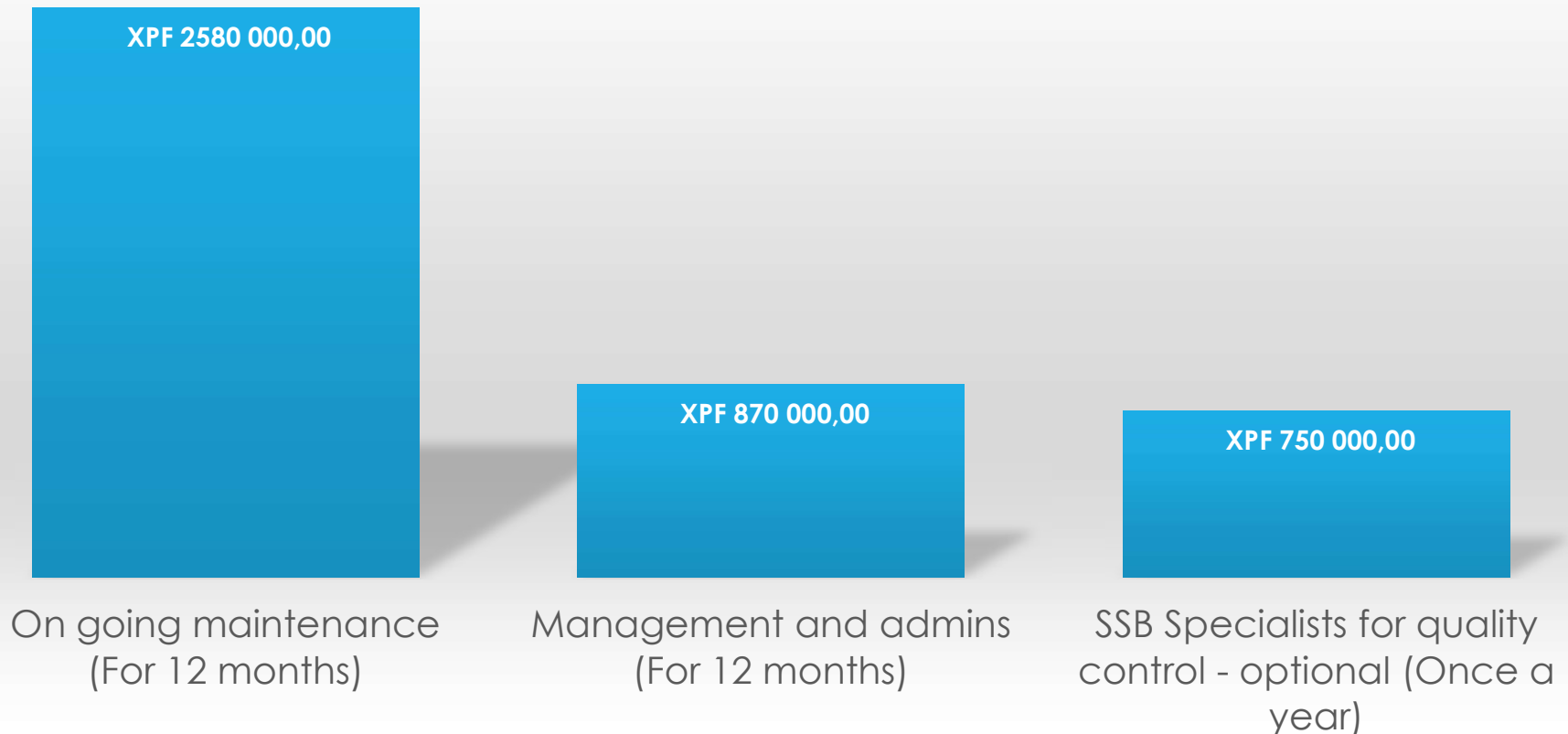




# Estimated Maintenance Cost

For average 500meter installation

TOT MAINTENANCE: XPF 4.2 Mil per year (35 K EUR)



## LOCAL BENEFITS



Installation cost goes directly to local service provider;

Jobs for logistics and installation + jobs for monitoring and maintenance;

Recovery of tourism;

Educational and research program spin off + pioneering position (more tourism)

## SOUTH AFRICA BENEFITS



### JOB CREATION

Support of South African Ocean Impact Company

Support South Africa manufacturers

### SKILL DEVELOPMENT



# The Shark Safe Barrier Team

Prof Conrad Matthee  
(CEO)



Director  
Scientific Advisor  
Funding Application  
Team Management

Dr Sara Andreotti  
(COO)



Director  
Marine Biologist  
Projects Manager  
Costumers Service  
PR and Marketing

Laurie Barwell  
(CTO)



Director  
Engineering  
Installation Manager  
Product Development

Anita Nel  
(IP Protection)



Director  
Funding Advisor  
Commercialization  
Legal Advisor

Marius Ungerer  
(Business Advisor)



Chair of the Board  
Business Strategy  
Advisor

Anthony Mederer  
(Business Advisor)



Director  
Management and  
Business Advisor  
PR Strategy

Lynton Burger  
(Ocean Impact)



Director  
Ocean Impact Advisor  
Australian Distribution  
Strategy

Michael Rutzen  
(Shark Advisor)



Shark Behaviour  
Advisor

# Strategic Partners



WILDLIFE MARINE AUSTRALIA





# In the media



The Guardian



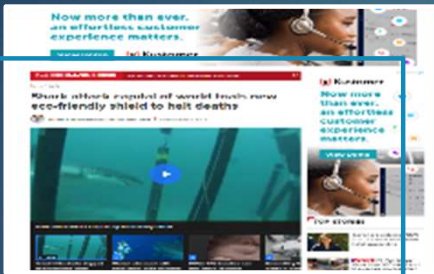
Business Insider



VentureBurn



The Citizen



Australia Ch 9



Business Insider



Sky News



Daily Maverik



Cape Talk



Independent Online



Mail and Guardian



Northern Star



# Awards



2021

**World Economic Forum  
Top Ocean Innovator**



2020

**Solar Impulse Foundation  
Efficient Solution Label**



2020

**Finalist at the Ocean Impact  
Pitchfest (Australia)**



2020

**National Science and  
Technology Forum**



2019

**Italian-South African Chamber  
of Trade and Industry Business  
Excellency Award**



2017

**Cleantech Open Business  
accelerator Program**

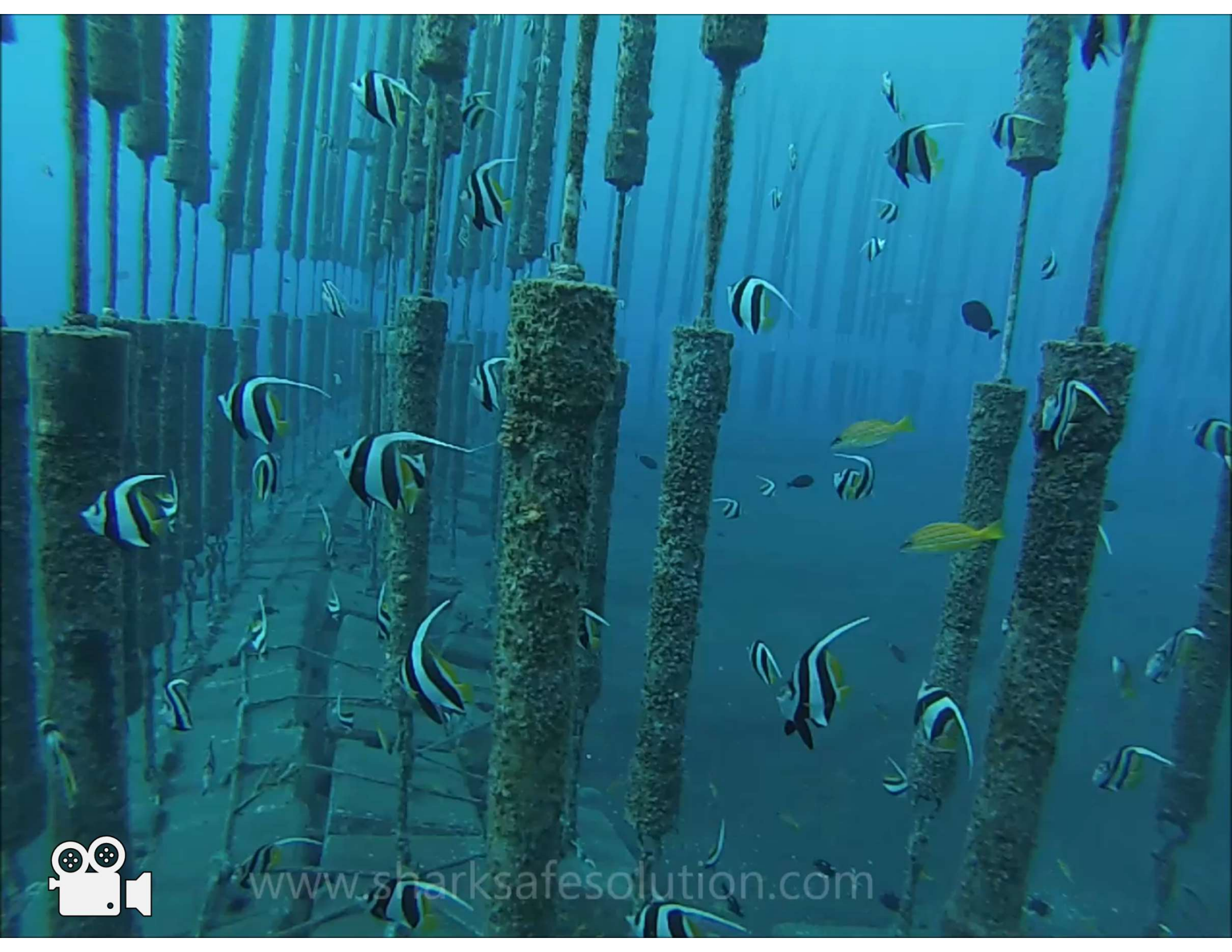


# ECO-FRIENDLY SHARK PROTECTION SYSTEM

- ONLY ECO-FRIENDLY & SHARK-SPECIFIC SOLUTION;
- ONLY SOLUTION SCIENTIFICALLY TESTED;
- CONTRIBUTES TO LOCAL BIODIVERSITY;
- PROMOTES ECO-TOURISM;
- BOAT-FRIENDLY;
- ECO-FRIENDLY ANCHORAGE;
- MINIMAL MAINTENANCE COST



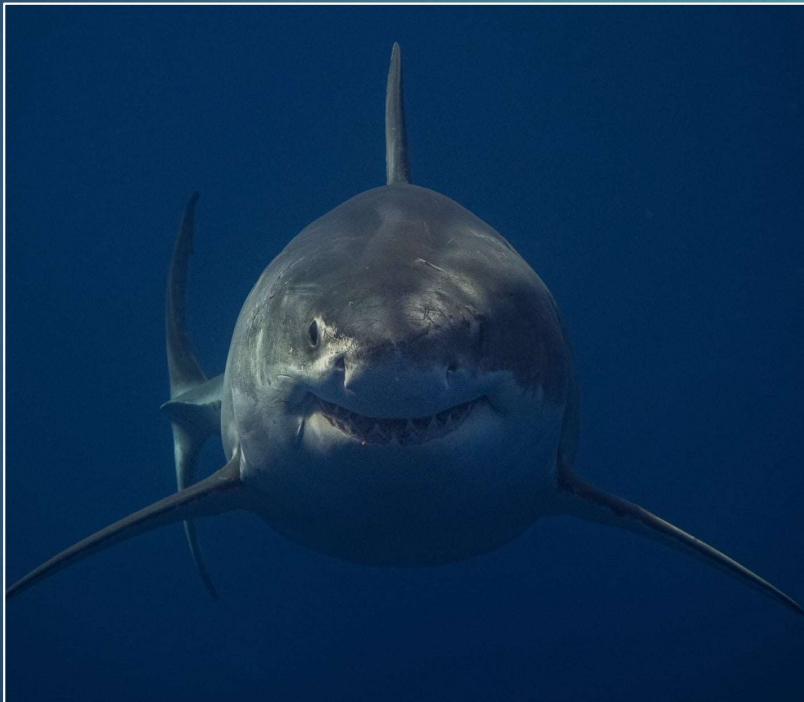




[www.sharksafesolution.com](http://www.sharksafesolution.com)



Thank you for your attention!



### Contact us

- Website: [www.sharksafesolution.com](http://www.sharksafesolution.com)
- Facebook: SharkSafe Barrier
- Instagram: @sharksafebarrier
- Twitter: @SharksafeB
- Email: [info@sharksafesolution.com](mailto:info@sharksafesolution.com)