# ECO-FRIENDLY shark barrier technology from SOUTH AFRICA installed in the Bahamas

*The world's only eco-friendly alternative to shark nets, developed by marine biologists at Stellenbosch University (SU) and their collaborators, and manufactured in the Western Cape, has now been installed at a private island in the Bahamas. It has been designed to remain in the water for at least 20 years with minimal maintenance required.*

The innovative, proudly South African SharkSafe Barrier™ combines biomimicry of a kelp forest and magnetic fields to keep humans and sharks apart from one other without harming the sharks or large marine species.

According to Dr Sara Andreotti, marine biologist at SU and co-founder of SharkSafe Barrier™, this nature-inspired technology is currently the only eco-friendly alternative to shark nets, which result in the death of thousands of sharks and other marine life every year.

The installation of a 30-metre-long SharkSafe Barrier™ at the Berry Islands in August this year will further strengthen marine conservation efforts in the Bahamas. In 2011 the Bahamas proclaimed the first shark sanctuary in the Atlantic Ocean, and, in 2018, a Marine Action Partnership (MAP) for Sustainable Fisheries. Shark tourism currently contributes approximately US$100 million per year to the local economy.

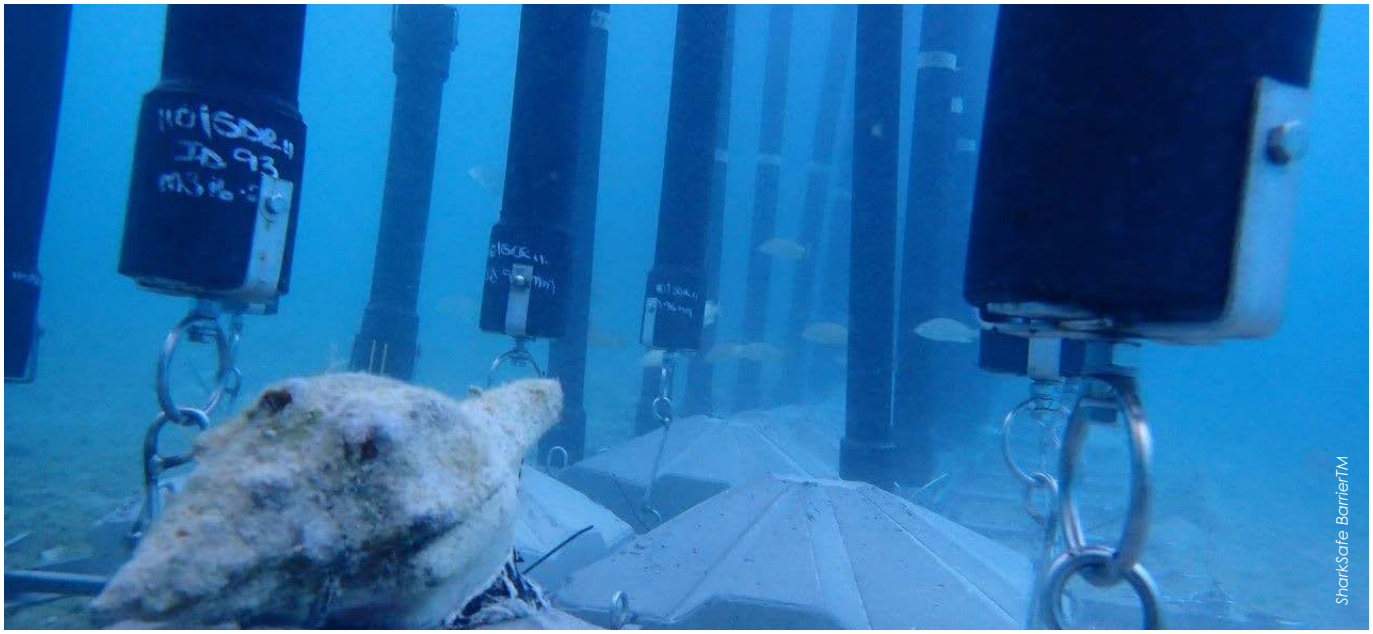
## More about the technology

Andreotti says since 2012 the technology has undergone rigorous testing in the turbulent ocean waters along the South African coast, as well as in the tropical waters of Réunion island and the Bahamas. The results from several of these case studies have been published in peer reviewed scientific journals.

The thinking behind the development of the SharkSafe Barrier™ concept is a combination of practical experience with sharks and marine biologists' understanding of their behaviour, she explains.

Firstly, fish and other marine animals such as seals have been observed to use kelp forests as a hiding place from predatory sharks. By bio-mimicking a natural kelp forest, created by overlapping rows of plastic pipes anchored to the seabed, the SharkSafe Barrier™ has provedn to be an effective deterrent for predatory sharks.

Secondly, marine biologists know that most shark species are sensitive to strong permanent magnetic fields because of the presence of electro-magnetic receptors at the tip of their heads. These small gel-filled pores – called 'Ampullae of Lorenzini' – are connected directly to sharks' brains and allows them to register faint bioelectrical impulses dispersed in the water from their prey.




**A conch exploring the limpet-shaped cement blocks anchoring the new SharkSafe Barrier™ installation at an island in the Bahamas. This eco-friendly installation mimics the visual effect of a kelp forest, and generates a strong magnetic field by means of ceramic magnets. This forms a double barrier (both visual and magnetic) that keeps sharks at bay.**


**The SharkSafe Barrier team at KND Fabrications in Maitland, Cape Town, shortly after the parts for the 30-metre-long installation were packed, ready to be shipped to the Bahamas. In the front, from the left, are Laurie Barwell, Errol Bourne, Dr Sara Andreotti, Ronnie Adams, Kezia Bowmaker, and Nina Sirba. At the back are Louie Miggel, Anthony Mederer, Matthew Mtshabe, Lincoln Calbert, Dirk Zimri, Nicolo Farmer, and Ricus du Toit. The factory owner, Rory Bruins, was travelling internationally when the photo was taken.**

Using this knowledge, the developers of the SharkSafe Barrier™ created a strong magnetic field by inserting magnets into the kelp-like pipes. But instead of attracting the attention of a shark, the very strong magnetic field over-stimulates the Ampullae of Lorenzini and thus acts as another repellent. In other words, by inserting strong magnets into the kelp-like pipes of the barrier, it further strengthens the ability of the design to repel sharks, Andreotti explains.

Today, the SharkSafe Barrier™ consists of high-density polyethylene pipes manufactured locally by KND Fabrications in Maitland, Cape Town. During installation in the ocean, the buoyant pipes are anchored on a grid-like structure one metre apart from one another, with large ceramic magnets staggered in the ocean-facing row. The grid is then weighted by limpet-shaped 200-kilogram cement blocks and secured by rock anchors and sand.

Apart from the fact that the SharkSafe Barrierr™ combines two proven shark-repellent strategies, it has also been designed to remain in the water for at least 20 years with minimal maintenance required. This offers an opportunity for marine life to settle on the cement blocks that anchor the barriers to the seabed, forming an artificial reef.

## Revolutionising the concept of shark management

For Andreotti, the first commercial installation of the SharkSafe Barrier™ is the breakthrough that the team has been working towards for the past 15 years.

"We now have the technology to allow the rightful inhabitants of the oceans to survive and thrive, and for sea-loving humans to enjoy their time in the water safely," she says.

This is a win–win situation, especially for areas that rely on ocean recreation as a main source of revenue, such as beach towns in South Africa, Brazil, New Caledonia, the Bahamas and Réunion, she concludes.

*Article compiled from press materials provided by Stellenbosch University. For more information contact Dr Sara Andreotti at andreottisara@gmail.com.*

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