



Grey reef shark

Using state-of-the-art “internal tags” with a battery life of more than ten years, scientists in Palau are breaking new ground in studying the long-term behavior of individual sharks. Peter Verhoog and Georgina Wiersma went along to document exactly how sharks are caught, tagged, and released. And also discovered, how important divers can be in shark conservation.

Text and topside photography courtesy of Save Our Seas Foundation and Georgina Wiersma

Underwater photography courtesy of Save Our Seas Foundation and Peter Verhoog

The Micronesian Shark Foundation has now been tagging grey reef sharks for over two years. The Save Our Seas Foundation supported shark tagging program includes tagging of sharks with acoustic and satellite tags, deploying acoustic loggers around Palau's reefs

and collecting measurements and DNA samples from tagged sharks. Further information is obtained through DNA samples from confiscated shark fins. These samples are analyzed in the Save Our Seas Shark Centre in Florida.

### Speedy procedure

But how are sharks tagged? Save Our Seas Foundation CEOs Peter Verhoog and Georgina Wiersma had the privilege to board a ‘tagging boat’, together with Dr Mark Meekan and his research assistants. To be able to tag them, sharks

have to be caught with a line and blunt hook and taken aboard the boat. All sharks in Palau have ‘internal tags’. This means, that the tags are inserted in the shark’s body through a small cut after injection of an anaesthetic fluid. When the tag is inserted, the wound is

closed again and the shark is released. The whole process lasts around eight to nine minutes. Following the process is really exciting; the moment that the shark is caught, Peter jumps into the water to take pictures, while I stay on the boat. Dive master, Angelo, is our

# Tagging Sharks in Palau



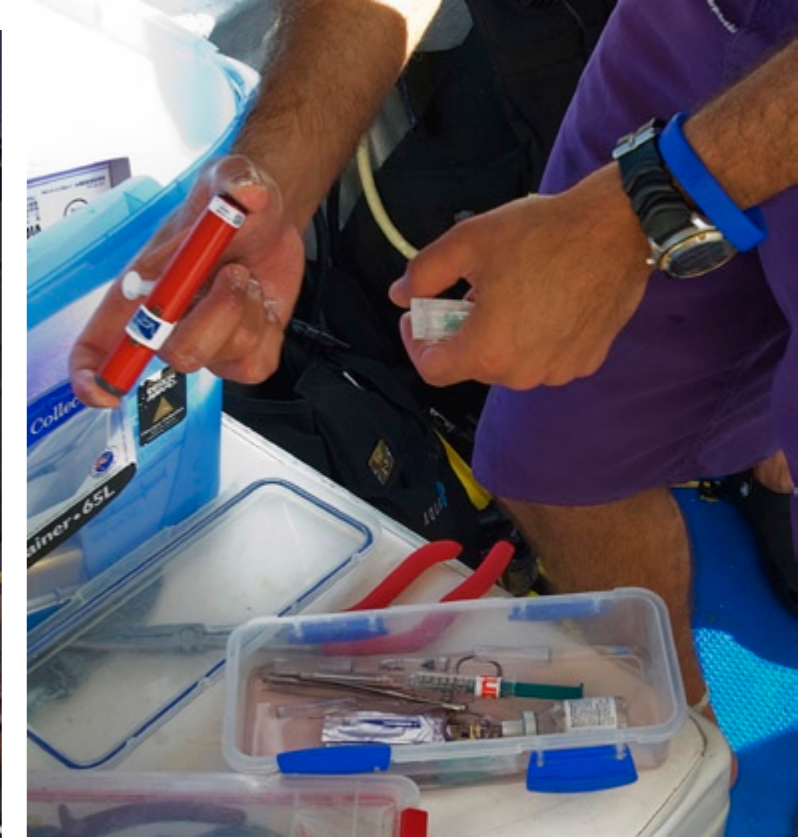
# shark tales



Whitetip reef sharks (below) are also tagged

The caught shark is carefully pulled onto the stretcher (bottom left)

Keeping the oxygen flowing (right)



official shark wrestler; he is the only one able to hold a grey reef shark down. The shark is obviously not too pleased with our actions, and the only way it can defend itself is of course by biting. The razor-sharp teeth get much too close for comfort. Once Angelo has turned the shark on its back, it calms down.

episode of ER, from pulling the shark onto the stretcher until the moment the patient is released into the water again!

The Micronesian Shark Foundation can now use state-of-the-art new tags, with a battery life of over ten years. A big improvement, as the old tags gave up after three years.



### Keeping the oxygen flowing

Another crew member inserts a tube with running seawater into the shark's mouth, to give it the essential oxygen through its gills. PhD student, Gabriel, makes the cut, and Meekan jots down all the data: size, sex, number of the tag. Nearly all caught sharks are female. While Peter does the job under the surface, I climb around the boat to document everything topside; I have been warned that I must use every opportunity. There will be no waiting until I have taken my shots. Everyone wants the shark back in the water at high speeds. It's all like watching a sharky

### The importance of the diving community

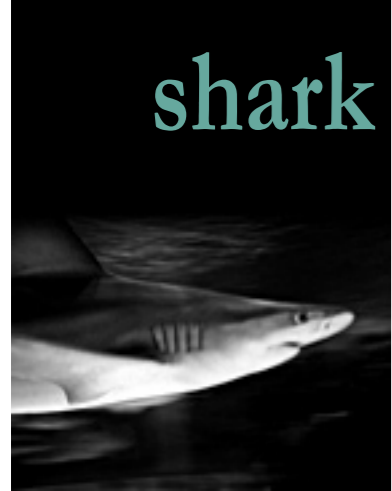
Project leader, Tova Harel of Fish 'n Fins in Palau, started this project a couple of years ago. Her boats go out every day—day after day—under all weather circumstances. Most scientists spend only a couple of weeks 'in the field', but the Palauan dive masters are there each and every day. Together with the guests, they fill out forms—how many sharks, depth, water temperature, male or female? The 'receivers' on the reefs supply data on the moving patterns of the grey reef sharks. All



TOP TO BOTTOM: Preparing the tag and inserting the tag into the shark; Writing down all data (left)



# shark tales



## My, what big fins you have!

Text by Mark Meekan, scientist  
Save Our Seas Foundation

Accurate estimates of body size are essential for determining the health of shark populations. In the past, this usually involved capturing and restraining animals in order to measure them, with the attendant risk of injury to both researchers and the sharks.

Fortunately, new technology has overcome this problem, and we are now able to measure, with great accuracy, the body proportions and size of free-swimming sharks. This is done using a stereo-camera system operated by a diver (diver-operated video or "DOV").

In Palau, a project funded by Save Our Seas Foundation and led by Dr Mark Meekan of the Australian Institute of Marine Science and Gabriel Vianna of the University of Western Australia has been using this approach to measure sharks at popular dive sites. Paired video cameras in housings film the sharks and a diode (light) in the front of the cameras allows the researchers to synchronize frames of the video.

Using principals originally developed for aerial photography, these researchers are then able to calculate the length of any body part and total size of the animal with a precision of a few millimeters. The technique is so accurate that the researchers can recognize individual animals by their body proportions. By repeatedly filming the same animals over a number of years, they will be able to measure growth rate of these sharks. ■

these data are of immense value for the research project.

The Micronesian Shark Foundation has made project presentations to the Honorable Johnson Toribiong—Palau's current president—the Counsel of Traditional Chiefs, board members from the Palau Visitor's Authority (PVA), Belau Tourism Association (BTA) board members and general membership, the Explorers Club and Oceanic Society Groups, also emphasizing the importance of sharks for a healthy

ecosystem and reefs and their value for the flourishing Palauan tourist industry. All this came with success; Palau became the first official Shark Sanctuary in the world!

Later this year, the Micronesian Shark Foundation and Save Our Seas will start an educational programme on the other islands of Micronesia. ■

[www.saveourseas.com](http://www.saveourseas.com)  
[www.msfpalau.org](http://www.msfpalau.org)



CLOCKWISE FROM TOP LEFT: Back onto the stretcher; Back into the water—some sharks are held by the tail until the researchers are convinced it is fully recovered; Accurate measuring of sharks free-swimming in the water by using new technology—a DOV (Diver-Operated Video) stereo camera system; Shark-watching in Palau

