

# Satellites and Sharks: Latest in Saba Bank Shark Research

The Saba Bank is an important habitat within the Yarari Shark Sanctuary. Visited by a variety of different species, little is known about the life cycles of the sharks within these waters. A recent research expedition worked to gain new insight by using newly designed satellite tags and an underwater camera system to study local sharks. This research continues to build off of recent momentum to protect these critical species, an important priority for local conservation efforts.

## The Expedition

Between July 15 – 25, a research survey took place in Saba Bank to gain new information on the local shark populations. This was collaborative effort between The Dutch Elasmobranch Society (NEV), the Saba Conservation Foundation (SCF) and the Nature Foundation Sint Maarten (NFSM). A variety of sharks have been known to inhabit these waters, including tiger sharks, silky sharks, nurse sharks and Caribbean reef sharks, but the specific role Saba Bank plays within the life cycle of each of these sharks is still not fully understood.

The goal of the expedition was to gain more information in how these sharks are utilizing this region. This information will help in the development of new methods for protecting these important species. Irene Kingma, expedition leader from

the NEV, stated “We brought scientists from six countries together to help solving the big questions we still have about sharks in this unique area, and to develop partnerships for future research.”

## Connection Between Sharks and Their Habitats

During a previous study, which took place between 2015 and 2018, silky sharks, Caribbean reef sharks and nurse sharks were monitored using acoustic tags. These tags allowed the movements of these sharks to be tracked throughout the testing area. This gave scientists a new look to where the sharks were spending most of their time. An additional study used tissue samples from Caribbean reef sharks and Silky sharks to better understand the age and diets of each shark. This tissue analysis paired with the acoustic tag information gives a more encompassing view of how these sharks are utilizing their environment.

During the most recent expedition, new blood samples were taken to record the level of stress hormones within each shark. Understanding shark’s stress levels will help researchers better understand the impact of these experiments on the overall health and well-being of the sharks. The goal is to maximize the efficiency of the catch and release program while minimizing the impact on each of the individuals.



Photo by: © Peter de Maagt

### Tiger Sharks

Advances in satellite technology have led to an innovative way of tagging tiger sharks which allows the movement of these sharks to be tracked over much longer spatial and temporal scales. Designed by the European Space Agency (ESA) these cutting-edge tags are meant to be smaller, more robust, cheaper and less invasive to the shark (ESA, 2019). The new device has been engineered to last up to 5 times longer than tags previously used. In addition to being physically smaller and lighter, the new tags can also hold more information. "With this revolutionary new tag, we are able to better determine the migratory patterns of these critically important yet threatened apex predators and enact management solutions throughout their migratory range within the Caribbean basin" stated Tadzio Bervoets, director of the Nature Foundation Sint Maarten.

During the expedition 4 tiger sharks were tagged with the first round of data hopefully available as early as early September.

### Nurse Sharks

Lobster traps can cause issues for local nurse shark populations as they can easily be caught as by-catch serving as a risk to the fishermen handling the traps, and trapped lobsters and the sharks themselves. The Caribbean spiny lobster is an important fishery species for Saba; however, these lobster traps catch hundreds of nurse sharks each year (Kettle, 2018). One of the goals of this study was to continue off the work of a study from July 2018 to increase awareness of this issue with local fishermen, along with better understanding nurse shark behavior in and around these traps. Using a camera system, Dr. Robert Nowicki from the Mote Marine Lab, was able to record nurse sharks' behavior to better understand how the traps can be modified or deployed differently to minimize the threat of by-catch.

Camera footage from last year proved very insightful. It was previously thought that the sharks were intentionally entering the traps to hunt the confined lobsters. However, after viewing the

footage, researchers now believe that sharks initially attempt to escape the traps, but when they are unsuccessful, they eventually eat their lobster cellmates. This has now driven the focus towards designing lobster traps where sharks can easily escape. This latest voyage will help provide insight to the success of this project.

### Future of Shark Conservation

Research campaigns such as the July expedition, give us a deeper look into the lives of local shark species. This new information will help mold the future of shark conservation, which will be critical in maintaining a healthy ocean. Understanding how various species of sharks are entering and using the sanctuary space will allow researchers, conservationists and policy makers to work together to maximize the effectiveness of conservation efforts. Environmental stressors for these sharks will continue to increase, further emphasizing the importance of these conservation efforts.



Lobster cage being checked and cleared of trapped nurse sharks.

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