

Saba Bank: Sharks

Want to know the best place to see sharks in the Netherlands? Recent studies would seem to indicate that it's the Saba Bank!

Researchers on early expeditions to the Saba Bank recorded seeing sharks on every dive and even cases of researchers being chased out of the water by sharks. In today's world, where about a quarter of sharks and rays are considered globally endangered ⁽¹⁾, this is very good news and has prompted the Netherlands to declare the Yarari Marine Mammal and Shark Sanctuary in Dutch Caribbean waters as well as developing a policy document protecting sharks ("Shark Protection Plan").

Monitoring sharks

To find out more about sharks, a technique involving the use of simple, non-invasive, Baited Remote Underwater Videos (**BRUVs**), has been used to gather information on species composition and length frequency distribution. BRUVs have been deployed on Saba since 2013 and on the Saba Bank since 2014 across a variety of habitats in depths of 15 – 100m water for between 50min and 70 minutes per drop. This work has shown that sharks are most common along the shallow eastern and southern edge of the Saba Bank and that the most common species are Caribbean reef sharks (*Carcharhinus perezi*) and nurse sharks (*Ginglymostoma cirratum*). On average BRUV studies record 0.23 reef shark sightings per hour, which is higher than sightings at study sites on Belize and the Bahamas and 50% higher than around the adjacent island of Saba. (See BioNews 30 for an in depth article on the BRUV work in the Dutch Caribbean on page 4.

<http://www.dcnanature.org/wp-content/uploads/2017/01/BioNews-30.pdf>

Fishing effort on the Saba Bank does not target sharks, but there is an unwanted by-catch of nurse sharks estimated at up to 900 sharks annually. These are caught in lobster traps and are not landed but discarded.

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Without historical information on the Saba Bank or reference points from other locations in the Caribbean it is difficult to assess whether or not shark densities on the Saba Bank are "reasonable". GlobalFinprint is a worldwide initiative, which aims to create reference points by using available BRUV data to assess reef shark abundance around the world. Researchers from the Wageningen Marine Research are also participating in this initiative.

Figure 1: Species composition of sharks on the Saba Bank, Saba and St. Eustatius (BRUV results). Mainly Caribbean Reef sharks (*C. perezi*) and Nurse sharks (*G. cirratum*) were recorded. n= no. sharks

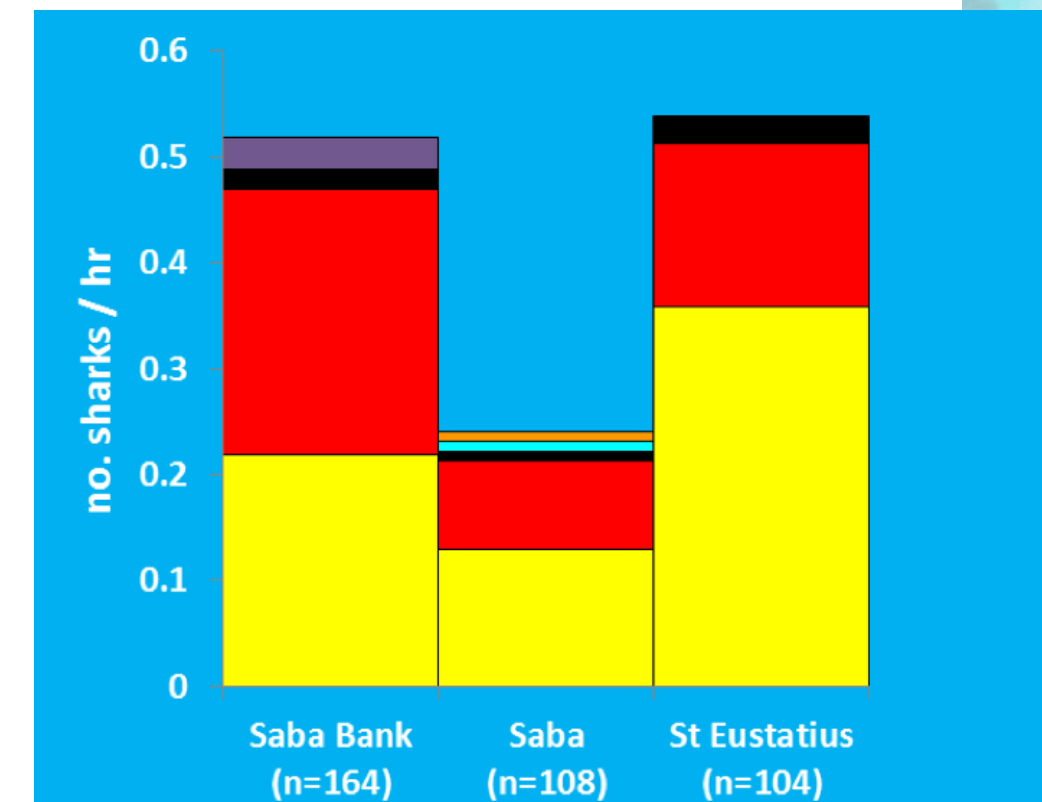


Figure 2: Number of sharks observed per hour on the Saba Bank, Saba and St. Eustatius (BRUV results). This number was about 50% higher on the Saba Bank and St. Eustatius than on Saba. (n=no. drops)

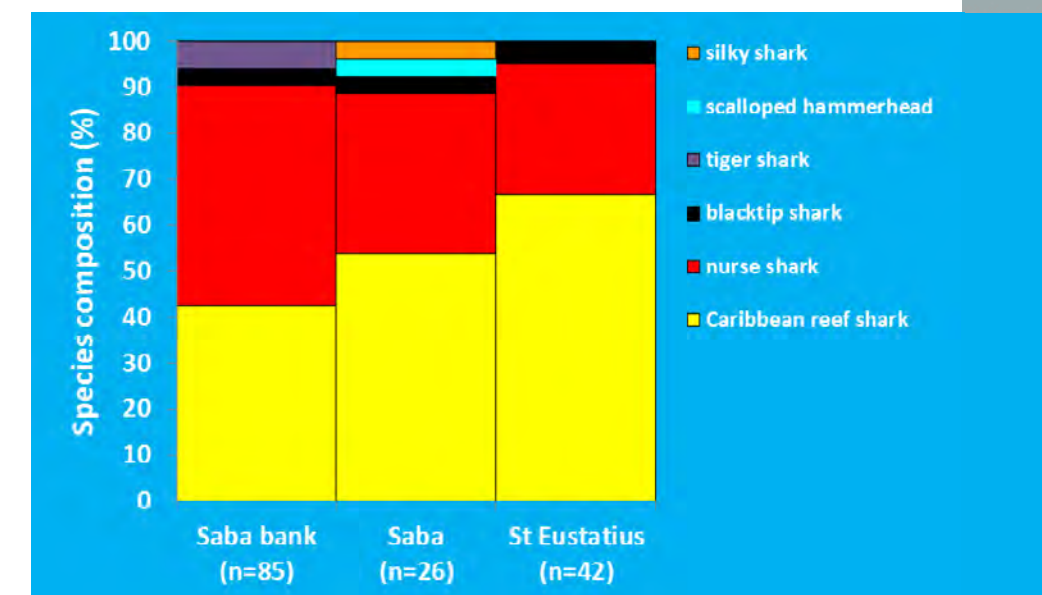


Figure 3: Length of sharks recorded around Saba, St. Eustatius and the Saba Bank (BRUV results). Mainly neonates (<0.8m), y-o-y (<1m) and juveniles (<1.5-2m) of Caribbean reef shark (*C. perezii*) were recorded. Mostly juveniles (<2m) of nurse shark (*G. cirratum*) on St Eustatius and Saba were filmed.

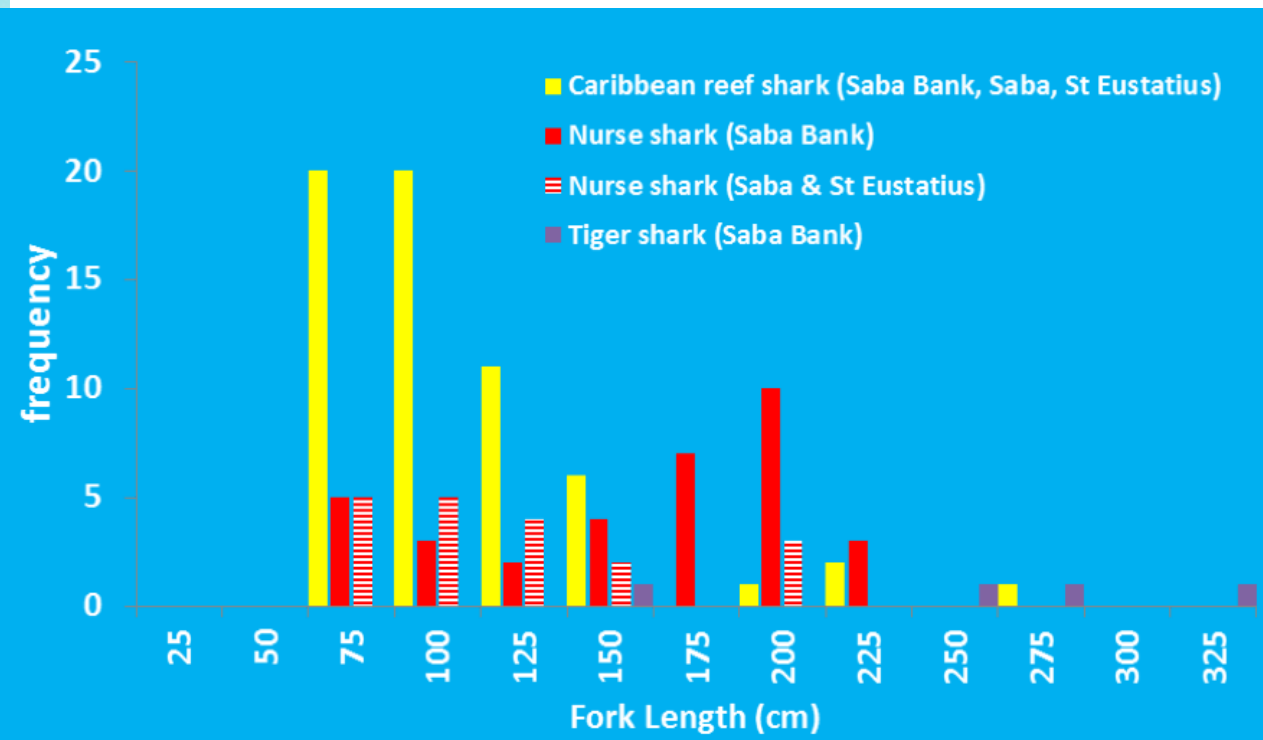


Table 1: BRUV data from the Saba Bank compared to other areas.

| Area | Species | Latin name | Shark hr ⁻¹ |
|-----------------------------|-------------|--------------------|------------------------|
| Saba Bank | Reef shark | <i>C. perezii</i> | 0.23 (0.13 - 0.36) |
| Saba Bank | Nurse shark | <i>G. cirratum</i> | 0.18 (0.08 - 0.25) |
| Bahamas (Brooks et al 2011) | Reef shark | <i>C. perezii</i> | 0.08 (0 - 0.23) |
| Bahamas (Brooks et al 2011) | Nurse shark | <i>G. cirratum</i> | 0.21 (0.12 - 0.35) |
| Belize (Bond et al. 2012) | Reef shark | <i>C. perezii</i> | 0.16 (0.03 - 0.29) |

Tracking shark movements

VEMCO acoustic telemetry equipment has been deployed to track shark movements. In total a network of 32 acoustic receivers has been set up, eight of them on the Saba Bank and the remainder on Saba, St. Eustatius and St. Maarten. Receivers have a detection range of 450-850m and a battery life of up to 4.5 years. Pilot studies on Saba started in 2014 and expanded to the Saba Bank in 2015. (See BioNews 30 for an in depth article on the acoustic telemetry work on Saba on page 3. <http://www.dcnanature.org/wp-content/uploads/2017/01/BioNews-30.pdf>)

So far 11 sharks caught on the Saba Bank have been fitted with acoustic transmitters and data collected so far from the individual movement patterns of two Caribbean reef sharks (*C. perezii*) seems to indicate that they may have a relatively small home range. One 1.63m long male Caribbean reef shark (*C. perezii*) has been detected by acoustic receivers on the north, south and east of the Saba Bank.

The scientific data collected so far, does not show whether or not the Saba Bank is important for particular life stages of sharks, such as a mating ground or as a nursery area, but it does indicate that the Saba Bank supports healthy populations of Caribbean reef and nurse sharks. Local conservation efforts and the establishment of shark-protected areas may be a very good management option for this species.

This article is based on the presentation by Erwin Winter's (WUR) given at the Saba Bank Symposium: www.wur.nl/en/download/Erwin-Winter-Shark-Habitat-Use.htm

What have we learned from the past 5 years:

Sharks

Caribbean reef sharks, nurse sharks and tiger sharks were observed during the 155 baited video (BRUV) deployments across the Saba Bank. The relative abundance of reef sharks on the Saba Bank appeared to be higher compared to similar standardised BRUV surveys in the wider Caribbean region. Saba Bank appears to have relatively healthy reef shark populations. Results further suggest that the Saba Bank is an important nursery and adult habitat for Caribbean Reef and Nurse Sharks (possibly also for the Tiger Shark). Individual movement patterns based on tracking data point to small home ranges of the Reef and Nurse sharks which show that reserves and marine parks offer good opportunities to protect these shark species.

Wageningen University & Research
(Becking & Meesters, 2017)



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