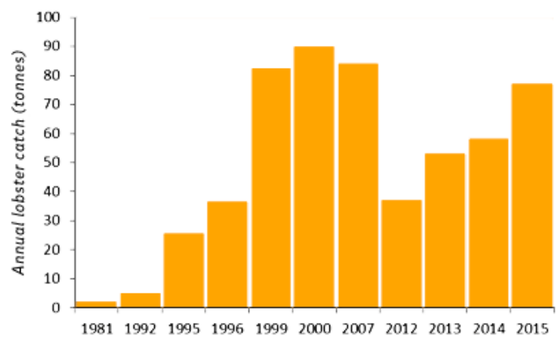
Saba Bank: Fisheries

The Saba Bank supports a vibrant local fishing industry. Fishing effort focuses mainly on a trap fishery, targeting lobster and deep water red fish (snapper) (Dilrosun 2000, Toller 2008, van Gerwen 2013, Boonstra 2014), as well as bottom drop lining for red fish (snapper). Other common fishing activities include hand lining and trap fishing for red hind (grouper) as well as trolling for pelagic species.

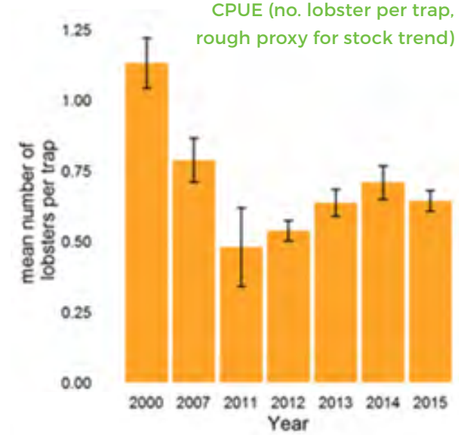
Studies of fishing effort from 2000 – 2007 indicate that the fishery on the Saba Bank was relatively stable at that time, supporting 50 active fishermen from Saba and generating around Euro 1 million annually, or 8% of the total economic activity on the island of Saba (Dilrosun 2000, Toller and Lundvall 2008). Fishing currently accounts for an estimated US$ 1.38 million income annually (Lely, 2014).

Fishing activities on the Saba Bank have been regulated since 1996 but it is only since 2012 that researchers from the Wageningen Marine Research institute have been involved with fishermen and Saba Bank Management Unit staff in the structural monitoring of fishing activities.

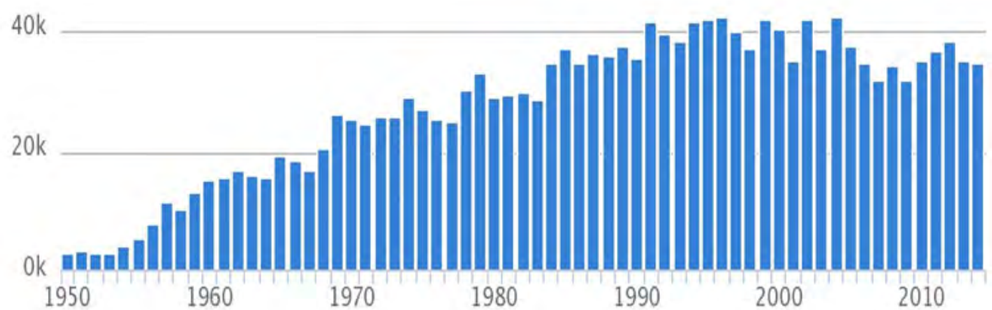
Estimated annual landings of lobster on the Saba Bank



CPUE (no. lobster per trap, rough proxy for stock trend)



Estimated annual landings of lobster in the Caribbean



Lobster

Caribbean spiny lobsters *(Panulirus argus)* are caught on the Saba Bank using traps. Only ten Saban fishermen currently have licenses to fish for lobster on the Saba Bank and their annual catch (Fig. 1) is believed to account for approximately 0.1% of the total lobster landed in the Caribbean annually. In common with other places in the Caribbean, lobster catches from the Saba Bank declined after 2000. Despite the lower lobster stock abundance (expressed as CPUE), recent annual landings are comparable to the annual landing in 2000 due to an increase in the number of fishing trips.

Lobster throughout the Caribbean, are currently thought to be part of one metapopulation and the management of lobster stocks therefore requires international collaboration and co-ordination. The current recommended is to follow management proposals of Caribbean Regional Fisheries Mechanism **(CRFM)** (Headley, 2014).

Mixed reef fish

Whilst fishermen do not actively target reef fish, they are caught in lobster traps. Since 2000 the landings of mixed reef fish caught in lobster traps has remained rather stable. Assuming that the mixed fish are harvested from 100-400 km2 of coral reef on the Saba Bank, only 0.12-0.3 tonnes of reef fish are harvested per km2 of coral reef. This is significantly lower than the 2 tonnes per km2 of mixed reef fish harvested on Bonaire's reefs (de Graaf et al, 2016).

In addition to reef fish, which are landed, a similar amount of mixed reef fish are discarded annually by fishermen (see Table 1 and 2).

Bycatch is a potentially important issue for the lobster fishery with an estimated 500-950 nurse sharks caught in lobster traps annually (de Graaf, personal communication). Under a recent agreement, signed in 2016, Saban fishermen have pledged to return trap caught sharks to the reef alive.

Ghost traps

On average 0.6 traps are lost per fishing trip. This amounts to between 400-600 lobster traps lost annually, which can trap sea life as 'ghost traps'. Work is underway to refine the trap design to make them more sustainable. Current recommendations include increasing the mesh size to over 38mm and making sure traps are made with biodegradable material and include a biodegradable panel to prevent ghost fishing.

"The Saba bank is a unique area, invaluable for neighboring Saba, but also for the region as a whole as a source of coral, fish, lobster, and queen conch larvae. I'd say it is the richest biodiversity area of the entire Kingdom"

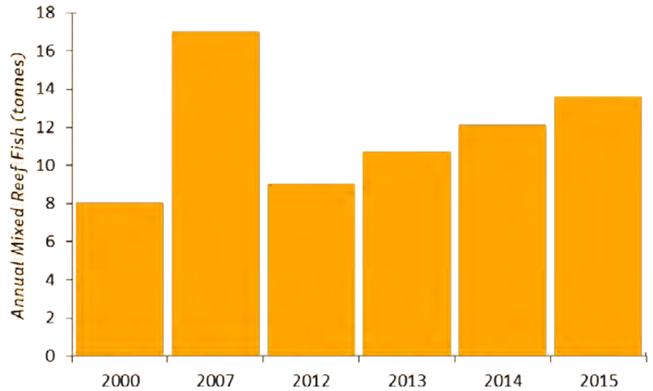
Paul Hoetjes (RCN)

Common name	Latin name	% Catch
White grunt	*Haemulon plumierii*	27
Red hind	*Epinephelus guttatus*	11
Cottonwick grunt	*Haemulon melaanurum*	8
Queen trigger fish	*Balistes vetula*	6
Doctorfish	*Acanthurus chirurgus*	6
Honeycomb cowfish	*Acanthostracion polygonia*	6
Spotted goatfish	*Pseudopeneus maculatus*	3
Coney	*Cephalopholis fulva*	3
Blue tang	*Acanthurus coeruleus*	3
	Other	24

Table 1: Species composition of the landed mixed reef fish from lobster traps on the Saba Bank (van Gerwen 2013)

Common name	Latin name	% Catch
White grunt	*Haemulon melanurum*	27
Red hind	*Haemulon plumierii*	11
Cottonwick grunt	*Acanthostracion polygonia*	8
Queen trigger fish	*Acanthostracion quadricornis*	6
Doctorfish	*Acanthurus bahianus*	6
Honeycomb cowfish	*Cheatodon striatus*	6
Spotted goatfish	*Chilomycterus antillarum*	3
Coney	*Acanthurus chirurgus*	3
Blue tang	*Acanthurus coeruleus*	3
	Other	24

Table 2: Species composition of the discarded mixed reef fish from the lobster traps on the Saba Bank (van Gerwen 2013).



Estimated annual catch of mixed reef fish on the Saba Bank (de Graaf et al., in prep).

Fisheries

Red fish

The red fish fishery targets mostly silk snapper *(Lutjanus vivanus)*, blackfin snapper *(Lutjanus buccanella)* and vermilion snapper *(Rhomboplites aurorubens)*, with silk snapper accounting for approximately ¾ of the total landings.

Since 2007, annual landings of red fish have remained relatively stable. The CPUE (kg per trap which is a proxy for the stock) has even showed a modest increase since 2011. A drop in red fish landings recorded in 2015 is the result of a decline in redfish fishing trips.

Despite evidence from landings that fish populations are stable, there is concern amongst local fishermen about the status of red fish populations. This has resulted in a local fishermen agreement, brokered by Saban fishermen themselves in 2016, which introduces a number of self-imposed restrictions aimed at protecting red fish populations from over-exploitation. These measures include a 6 month closure for red fish beginning in April 2017. Once the site closure ends licensed fishermen have agreed to deploy only 25 traps and to use large mesh sizes. These restrictions are being regulated through the existing fishing license system, which does not extend to the EEZ (Exclusive Economic Zone). Fishermen also expressed the intention to set up a fishermens' organisation.

Red hind

There is an emerging fishery on the Saba Bank for red hind *(Epinephelus guttatus)*, which has developed over the past five years. Fishing activity focuses on red hind spawning aggregation sites. These fish group together at spawning aggregation sites annually to breed. Targeting spawning aggregation sites makes the red hind extremely vulnerable to overfishing and population collapse.

The danger of targeting spawning aggregations has been highlighted by work on Nassau groupers *(Epinephelus striatus)* for which more than 60% of spawning aggregation sites have been overfished to the point of collapse. Most of the remaining Nassau grouper aggregations are severely depleted (Whaylen 2007, Sadovy de Mitcheson 2008).

As a response to this, the first fisheries related closure of a fishing ground was introduced in December 2013 to protect known red hind spawning aggregations. Annually from December to February all fishing for red hind, whether by traps or lines, is now prohibited on the Moonfish Bank.

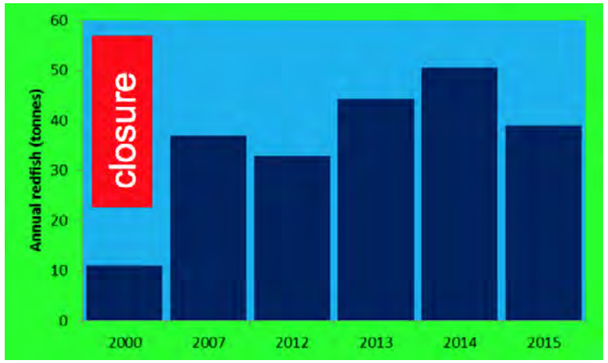
Conch

Whilst no local conch fishery exists, until 1996 Queen conch *(Strombus gigas)* were the target of intensive and unsustainable fishing activities by foreign vessels on the Saba Bank.

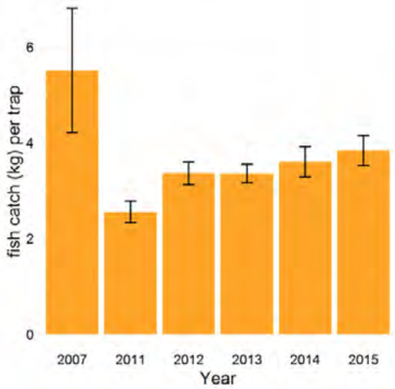
Recent monitoring indicates that Queen conch populations appear to be recovering (Boman, unpublished results). Their size at maturity is around 10mm lip thickness and their spawning season lasts from June to September (Boman et al, in preparation).

This makes the Saba Bank not only an important potential source of larval recruitment for large areas downstream, but also, with good management, the Saba Bank could potentially support a sustainable local conch fishery.

This news item is based on a presentation given by Martin de Graaf (WUR) at the Saba Bank Symposium.
https://www.wur.nl/en/download/Martin-de-Graaf-Fish-and-fisheries-at-Saba-Bank.htm



Estimated annual landings of the red fish trap fishery on the Saba Bank



CPUE (kg of red fish per trap, rough proxy for stock trend) (de Graaf et al., in prep).

Saba Bank 2016/ Chizzilala

Short documentary produced for broadcast on Saba local TV about the Saba Bank.Commissioned by the Ministry of Economic Affairs (EZ) of The Netherlands can be watched here:

https://vimeo.com/195774102

Photo by: © Hans Leijnse

What have we learned from the past 5 years:

Fisheries

Most fishermen are positive towards working on regulations and working together with management. During 2012-2015 the West-Indian spiny lobster stock remained stable and total annual landings increased yearly due to increasing effort (number of fishing trips). The peak and subsequent gradual decline in annual in lobster landings as witnessed in recent years, mirror catch trends for the wider Caribbean region. A potentially healthy sign is the consistently large size of harvested lobsters between 2000 and 2015. The rules and regulations of both the lobster and deep-water snapper trap fisheries will need to be updated in the near future to provide the responsible management authorities with the appropriate tools to ensure a sustainable fisheries.

Wageningen University & Research
(Becking & Meesters, 2017)

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