Protecting Saba Bank's Red Hind and Queen Triggerfish Populations

Wageningen Marine Research and the Saba Bank Management Unit (SMBU) recently published an evaluation of the effectiveness of the seasonal fishing bans within Moonfish Bank based on the first five years of fish catch data. These closures were intended to help Red Hind and Queen Triggerfish populations, both of which use this area for mating. Similar closures have been credited with improving reef populations and could be the key to protecting these species in the future.

Each year, many species of fish migrate to specific areas to spawn. These areas are known as spawning aggregation (SPAG) sites. Such sites are often vulnerable to overfishing since spawning events occur at predictable times and locations each year. In fact, in the Caribbean, there are over 100 known SPAG sites, most of which are unprotected and most of which have been overfished. For most of these sites, little is known about them, and scientists must rely on knowledge of local fishermen.

One such site is located within the Moonfish Bank of Saba Bank. This area is a known spawning aggregation area for the Red Hind (*Epinephelus guttatus*) and the Queen Triggerfish (*Balistes vetula*). In 2013, in an effort to protect these species, the Saban government issued a 5-year moratorium on fishing within Moonfish Bank between the months of December and February. This closure was based on local fishermen's general knowledge and research done by Nemeth et al. of when Red Hinds tend to aggregate within this area.

Red Hind and Queen Triggerfish

Although fishermen are not often targeting either of these fish, they do represent two of the three most commonly caught bycatch species in both redfish (deep-water snapper) and lobster traps. Red Hinds are reef fish known to travel along predictable migration routes and can therefore influence a variety of different areas. Within the Western Atlantic, recent studies all indicate an overall decline in Red Hind populations which has led to an increase in fishing regulations for this species around Bermuda, the US Caribbean and Mexico and a complete ban within US waters.

The Queen Triggerfish is also a reef fish which can be found throughout the Atlantic from Canada to the south-eastern coast of Brazil. This species exhibits a rather unique mating strategy, where the male will establish and defend a nesting area and wait for a female to approach. This species too has dramatically declined in abundance over the last decades in many areas such as on the reefs of Curacao and Bonaire.

The Study

Funded by the Ministry of Agriculture, Nature and Food Quality, Wageningen Marine Research collaborated with the SMBU to conduct a study to provide a preliminary evaluation for the effectiveness of these seasonal closures. The main data source were catch records and length measurements of fish brought back to port by fishermen. Between the years of 2012 and 2018, researchers looked

Queen Triggerfish. Photo by: © zsispeo

for annual differences in the number of Landings Per Trip (LPT, the number of fish brought back after each fishing trip) and the number of fish caught as bycatch in both shallow lobster traps and deeper snapper traps.

The Results

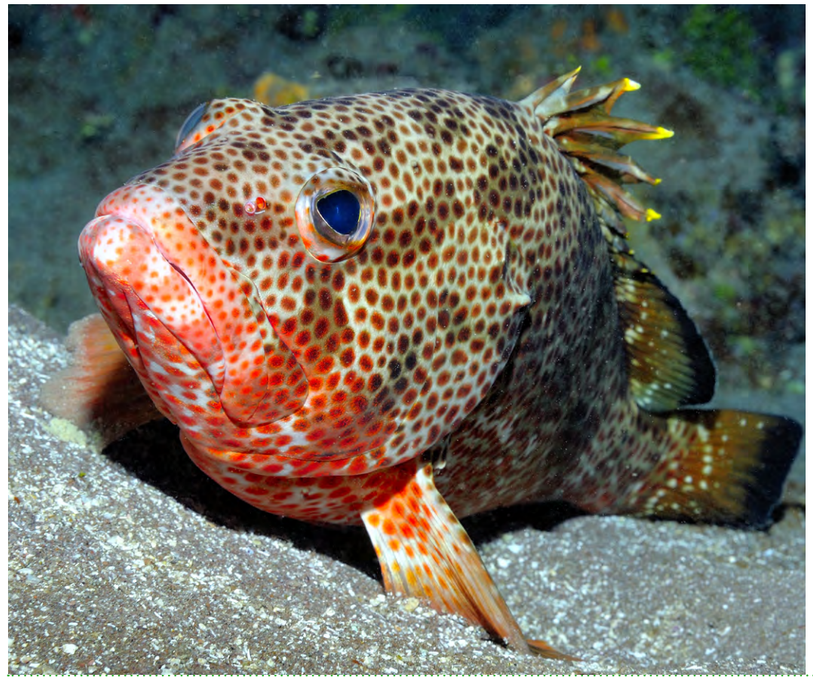
In the end, there was no indication that overall LPT or mean size caught in either of the two traps improved over the course of the study. In fact, results showed a small but significant decrease in the size of Red Hinds caught as bycatch in the lobster traps. It was thought that by limiting the number of fish caught, average size should increase as more fish are able to reach maturity. For fish, fertility increases exponentially with size, so this decrease in the average size of fish could dramatically impact future fish populations.

No expected improvement in the Red Hind population was apparent from the results. However, the study did bring to light some questions regarding the current fishing regulations. It is quite possible that the protected area was not large enough to fully protect the Moonfish Bank SPAG. It may also be that there are additional SPAGs on the Bank that also require protection. Additional research will need to be conducted to better characterize the local fish spawning areas to better protect them in the future. One significant issue highlighted was the actual lack of good data documenting the exact timing and location of the spawning and aggregation season for these species on Saba Bank. Although local fishermen were able to provide historical insight, being able to quantify these events through scientific surveys would help policy makers draft more effective management plans and make sure the closed season is set for the same period as in which spawning aggregation takes place. It is highly likely that there are additional SPAGs located around Saba and Saba Bank which will need to be protected as well, but these remain undocumented. A local story, from February 2015, recalls a single fishing boat returning to port with 313 Red Hinds caught in a single day using 12 traps and a hand line. It is likely this fisherman stumbled upon an additional unprotected SPAG.

Importance of SPAGs

There are a variety of examples of the benefits of protecting SPAGs within the Caribbean. In 1987, the island of St. Thomas enacted a 12-year seasonal closure to protect their Red Hind fisheries. Afterwards, a permanent fishing closure was enacted and after five years they found that the average male Red Hind total length increased by 7cm.

There is no question that an effective and sustainable fishery management plan will require protection for important SPAGs. Even though this study was unable to demonstrate an immediate improvement in fish population or size, continuation of these seasonal closures is highly recommended. In the future, more intensive and consistent data collection is needed be completed to better understand these local fish populations. Perhaps a Bank-wide seasonal closure for these fish could be a more effective way of protecting this fishery. This would simplify local enforcement and would have limited economic effect as these fish are not important targeted species for local fishermen. Other limitations, such as enacting annual quotas, size limits or gear restrictions, could further protect these, and other commercially important fisheries in the area.



Red Hind. Photo by: © Hans Leijnse

For more information, you can find the full report here:
Debrot, A.O., Brunel, T., Schop, J., Kuramae, A., Bakkers, Y. 2020. Assessing effectiveness of the seasonal closure of the Moonfish Bank of the Saba Bank for two species of concern, the Red Hind and the Queen Triggerfish: the first five years. Wageningen University & Research report C040/20. https://doi.org/10.18174/520362

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