

Collaboration Aids Nassau Grouper Recovery in Cayman Islands

Part of the Taking Stock series

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This story is part of our “Taking Stock,” series, which looks back at past research supported by the Lenfest Ocean Program and asks how it has informed marine policy and management. To see the full series, visit the [Cross Currents homepage](#).

When writing about a species that reproduces in a massive annual gathering, in which thousands of frenzied, 20-pound fish jostle in the swift ocean current, clouding the water with sperm and eggs, it is tempting to use sex to catch your reader’s attention.

But we are not going to do that. Instead, we want to tell you about something we think is even more exciting: government and science cooperating to help both fishermen and an imperiled species. Still more exciting, this is the first in a new series showing how the Lenfest Ocean Program works to increase the impact of its research projects.

OK, wait, that's not nearly as exciting as the mating ritual of the Nassau grouper. Every winter, during a full moon, these normally solitary fish gather at the same spot for just a few nights. They change to a darker color pattern to signal readiness and then, around sunset, consummate the process in a series of sprints toward the ocean surface.

But these spectacular "spawning aggregations" also make Nassau grouper spectacularly vulnerable to overfishing. For example, when a new aggregation was discovered off Little Cayman in 2001, it took a few fishermen just two seasons to catch 5,000 of the 7,000 fish that were there. The species cannot easily bounce back from that rate of removal.

Yet today, instead of being wiped out like so many others, that aggregation is one of the few in the world that is still healthy. And the Nassau grouper is rebounding more broadly in the Cayman Islands. One reason for this impact is a remarkably close partnership between government and science.

The decline and rebound of Nassau grouper

Nassau grouper began declining in the 1950s throughout the Caribbean, South Florida, Bermuda, and the Bahamas. The trend included the Cayman Islands, where, by the 1980s, concerned fishermen asked their nation's Department of Environment (DoE) to investigate. DoE scientists conducted research that revealed the demography of the species, but the fishery collapsed by the early 1990s.

In 2001, a Nassau grouper aggregation on Little Cayman, thought to be long defunct, was unexpectedly thronged with fish. Fishermen quickly capitalized on the discovery, many believing that the groupers at this aggregation were visitors from all over the Caribbean, and therefore the catch would have minimal impact on the local resident population.

But scientists were unsure. A group of them—at DoE and the non-profit organization Reef Environmental Education Foundation (REEF)— began a research partnership called the [Grouper Moon Project](#).

The Lenfest Ocean Program began supporting it several years later, in 2008. It has since produced numerous studies, informed major changes in the conservation of Nassau grouper, and set an example of what a true collaboration between scientists and managers can accomplish.

Connecting science to managers' needs

The initial reason for the partnership was that DoE, despite the expertise of its scientists, did not have the resources for a deep investigation of a single species. The project augmented their capacity with academic scientists—from REEF, the Scripps Institution of Oceanography at UC San Diego, and Oregon State University.

But the partnership produced a more important benefit: it created a research project tuned to the needs of users—both DoE and the fishermen and other citizens it represents.

This meant the agency considered its needs, as well as what it was hearing from fishermen, in setting the overarching research question: What measures are most likely to lead to recovery of Nassau grouper and the restoration of a sustainable fishery? Academic scientists took that question and chose the methods and study design to answer it, turning frequently to the government scientists to confirm that their choices would fit the agency's needs.

In other words, they listened to each other, and they weren't afraid to change based on what they learned. The best example of such a change was the decision to expand the research beyond Little Cayman.

Had the academics been calling the shots, they might have been content to stay on that island, because a larger aggregation is more likely to yield interesting results. Plus, research is harder on the other islands: there are fewer groupers, and the aggregations are deeper and harder to observe.

But DoE scientists pushed to expand to those other islands, Grand Cayman and Cayman Brac. More people live on these islands than on Little Cayman, so a grouper recovery there would restore a more accessible fishery and prove far more useful to citizens.

Results inform a new conservation law

After several years of tagging and tracking adults, snorkeling in search of larvae, and [measuring fish with lasers](#), the researchers produced several important results. And, in surprisingly short order, these became the evidence base for a sweeping Caymanian conservation law that passed in 2016. Fishermen largely supported the law, seeing its stringent restrictions as necessary for an eventual return to fishing.

Here are some of the main findings, along with the policies enacted in response:

- All of Little Cayman's spawning Nassau grouper are local to that island (the same is true for all the islands), meaning that local conservation efforts would produce local benefits.

Furthermore, all resident Nassau grouper visit their local aggregation every year. In response, in 2003 the government banned grouper fishing at aggregation sites during spawning season for eight years.

- Age at maturity was established, as were reproductive rates. In 2016, parliament used this information to set a minimum size limit to allow fish to grow to maturity, and a maximum size limit to retain old fish, which produce more and larger eggs. It also banned fishing for Nassau grouper everywhere in Cayman waters during the spawning season, not just at aggregation sites.
- Successful reproduction is sparse in most years, with aggregations yielding only occasional bumper crops of juveniles. The 2003 fishing ban had an eight-year sunset period, but in recognition that this span would not guarantee a good year for young fish, the Cayman Islands Government did not put an expiration date on its 2016 conservation measures.

As of this writing, the grouper recovery on Little Cayman continues to be remarkable. The population has grown from as few as 1,000 fish in 2003 to as many as 8,000 in 2018. And on Cayman Brac, it has grown from as few as 300 groupers to as many as 1,000. The researchers have still not detected any recovery on Grand Cayman, but they hold out hope for some banner years to restart that population.

Some aspects of this situation opened the door for the research to have an impact. The Cayman Islands is a small nation, which can make it easier for scientists to join the policy dialogue. Furthermore, the Nassau grouper crash gave this team a level of freedom to experiment that comes only when you have nothing left to lose.

But this example is not unique. Other scientists and managers can replicate its success—if they listen to each other.

Image: <https://flic.kr/p/C7kZ83>

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