

TO FISH OR NOT TO FISH: SCIENCE, POLICY, PUBLIC OPINION, AND THE MANAGEMENT OF NASSAU GROUPERS

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“Closing the aggregation to fishing? That’s perfect! Keep it that way,” said a local fisherman from Little Cayman, Cayman Islands.

Another local fisherman, however, wanted the government to re-open the aggregation for fishing, but with a limit on the number of fish caught.

The debate is about whether people should be allowed to fish the Nassau Grouper when they aggregate to spawn near the west end of Little Cayman Island, at a spot locally known as the Grouper Hole.

Like all other natural resources management decisions, the establishment of a new Grouper Hole fishing regulation will depend on inputs from scientists, local residents, fishermen, businessmen and politicians. To better understand the diversity and strength of these opinions on Little Cayman, we interviewed three local fishermen, two marine park officers, one long-term fishing guide, and one research scientist. Because tourism contributes substantially to the island’s economy, we also

interviewed a group of fourteen diving tourists (Appendix I).

Nassau Grouper, *Epinephelus striatus*, is an IUCN-declared endangered species occurring naturally in the Caribbean basin. Although fish are not usually described as charismatic, the term seems appropriate for Nassau Groupers. Each fish appears to have distinct behavioral patterns¹, and individuals often gain the affection of divers and angler fishermen alike. However, because they are tasty, easy to catch, and aggregate predictably in the thousands to spawn every year at the same place and time, Nassau Groupers have suffered severely from intense fishing pressure throughout their range. The island of Little Cayman is home to one of the last few remaining large, healthy, and actively spawning aggregations in the world. This population has persisted because there has never been large-scale commercial fishing around the island.

Prior to 2001, the spawning aggregation was known to only a

¹ Long-term seasonal fishing guide from Wyoming.

few local fishermen, who never took more than 10 groupers per person per season². Unfortunately, in 2001, and again in 2002, a few fishermen from a nearby island found the spawning aggregation, and, using just two boats³, line-fished ca. 70% of the 7000 Nassau Grouper aggregation in just a couple of days⁴. Unable to sell their large catch rapidly, thousands of fish rotted in storage, prompting a public outcry. In response, the Caymanian government quickly passed legislation, banning the fishing of Nassau Grouper at the Grouper Hole, starting in 2003. As this legislative moratorium approaches its end in January 2011, decisions regarding future management of Grouper Hole become important once again.

Most of the tourists that come to Little Cayman are environmentally-conscious individuals looking for reefs in near-pristine condition, rather than luxurious beach resorts⁵. They expect good reef habitat--all of the

fourteen visitors we interviewed said that if fish populations were decimated, they would not come back again. These responses suggest that even if economic benefits were the only important factor in this management decision, the benefits of fishing and reef conservation need to be balanced. The tourists appreciate and support the efforts that the Caymanian government devotes to protecting the reefs. Some even said they would be happy to contribute funds to reef protection, perhaps by purchasing fishing licenses, or paying entrance fees to marine parks. According to a long-time fishing guide we interviewed, "if [visiting recreational angler fishermen] can afford the plane ticket to get down here, they won't mind paying a bit extra for a fishing license". It seems that visitors to Little Cayman are willing to contribute financially to conservation efforts.

Apart from the tourists, all seven of the other interviewees agreed that the Nassau Grouper aggregation should be protected to some extent. Six of the seven believe that the aggregation should be kept closed, because that would ensure the continued survival of Nassau Grouper in the future.

"If you don't take care of what you've got, you'll have it no more soon," said a born-and-raised Little Caymanian who is also a local

² Local fisherman from Little Cayman island.

³ Jon Clamp, manager of Little Cayman Research Institute.

⁴ Whaylen, L., P. Bush, B. Johnson, K.E. Luke, C. McCoy, S. Heppell, B. Semmens, and M. Boardman. Aggregation dynamics and lessons learned from five years of monitoring at a Nassau grouper (*Epinephelus striatus*) spawning aggregation in Little Cayman, Cayman Islands, BWI. Gulf and Caribbean Fisheries Institute Proceedings, 1.

⁵ Diving tourist group interview.

fisherman. "Of course you'll have to protect it."

One of the research scientists working on the Nassau project explained that "keeping the aggregation closed during the spawning season would protect the sexually mature adults, ensure a healthy sex-ratio, and maintain the reproductive potential of the population."

But not everybody believes that the Grouper Hole should be closed completely. One local fisherman who has fished the aggregation since the 1980s said that to some of the older people, "it matters a lot if the aggregation is closed." According to him, many people rely on the aggregation for a large and easy catch each year "...to help feed their family and make some extra pocket-money. As long as you put a limit [on the amount you can take from the aggregation], people will get used to it. Most people abide by the law."

Of course most fishing in the waters around Little Cayman has no direct impact on the Nassau Grouper aggregations that are so localized in space and time. Harvesting fish from the sea is a long-standing tradition amongst Caymanians. Many of the older generation started fishing when they were five or six years old. Fishing for meals was part of daily routine.

"When I was little, we ate fish everyday. Except Sundays. My

mother refused to cook fish on Sundays," said an older local fisherman.

"You'll never see a complete ban on fishing here. Never," he said, "people should be allowed to fish for food, and with the right limits, you can't destroy that."

"Our heritage is to use the waters," said another older fisherman. "They tell us that they're protecting our heritage. But if you take our fishing ground away, we can no longer practice our heritage. How's that protecting our heritage?"

Clearly, being able to fish is very important to the local community, and none of the people we interviewed suggested banning fishing around the island. However, as Marine Parks Officers Robert Walin and Hank Blagen told us, more and more people are beginning to understand the need to protect the Nassau aggregation.

"Most people fish them out of ignorance. They don't understand the mating system and how they aggregate," said Walin. "Sometimes, people don't know where the exact limits [of the Grouper Hole] are," said Blagen, "but once you tell them, they usually move right away."

While keeping the aggregation closed would allow the Nassau population to recover, opening it up would present the major challenges of determining the right harvest limits, and enforcing those limits.

Although scientists are busy studying the Nassau population, our knowledge is still limited. According to the scientist we interviewed, “we don’t know anything about the recruitment of this Nassau grouper population as of now.” And without knowing the number of larvae that settle on the reefs at Little Cayman, scientists cannot estimate the population growth rate, and therefore, the number of fish that can be harvested sustainably.

Even if a fishing limit can be determined accurately, it’s likely that scientists and fishery management officials may still perceive the risk of opening the Nassau Grouper aggregation to be too high. Experiences from 2001 and 2002 have shown that as few as two individuals fishing over a few days can severely damage the spawning population. To avoid a repetition of that huge setback, regulations will need to be extremely strict, which might demand more time and effort than Marine Parks Officers can manage. As Blagen puts it, “we simply can’t sit there and wait 24/7 to check every boat.”

Without the strong enforcement of a fishing limit, it could be too risky to open up the aggregation for fishing. This may force the government to keep it closed. Although a few older fishermen who believe strongly in their right to fish may oppose such a decision, all locals interviewed

appear to understand the importance of protecting the aggregation, and will likely accept strong regulations made to benefit Nassau Groupers.

In the world at large, traditional, scientific, industry and conservation interests often clash unproductively. Little Cayman provides an exceptional example of a community where perspectives and broad goals seem to be shared across people with different backgrounds and in different walks of life. These shared values should help build a broad consensus when the time comes to make this difficult decision: just how stringent will the regulations have to be if we are to keep the charismatic Nassau Groupers abundant in the reefs of Little Cayman?

APPENDIX I. DESCRIPTION OF INTERVIEWEES AND SUMMARY OF VIEWS EXPRESSED

Seven individuals and a group of fourteen diving tourists were interviewed between March 6th and March 10th, 2008. The seven individuals were recommended by Mr. John Clamp, manager of Little Cayman Research Institute, and consisted of three local fisherman, two Little Cayman Marine park officers, a seasonal fishing guide, and a scientist studying the Nassau grouper. The group of diving tourists was from the Southern Cross resort; they came to the research

station for a tour of the facilities. Interviews lasted between 30 and 60 minutes. We posed a set of core questions to all individuals, together with a few specialized questions to take advantage of the particular knowledge and experience of each individual. Our core questions included:

“What is your opinion on fishing laws and management on Little Cayman”?

“How much are fish populations affected by the amount of fishing that occurs on Little Cayman”?

“What influences do incoming tourists and expatriates, have on fish populations and management decisions”?

We asked individuals to discuss their opinions on the fishing of the Nassau Grouper aggregation in 2001 and 2002, as well as how they felt about the ban, and what they believed future management decisions should be. We asked if their opinion would change if scientists showed that larvae produced from the aggregation were not stocking the Cayman Islands. We asked what were some of the important things could be done to improve the situation with Nassau groupers, as well as general background questions about the interviewees and their experience. As we only interviewed seven out of the 150 people living on Little Cayman, our responses are not representative of the entire

population; however we did find some variation in opinions.

All individuals said that the ban that was placed upon the grouper aggregation in 2003 was positive and necessary. One out of seven individuals suggested that fishing of the aggregation should be reinstated at some point in the future with limits upon the amount of fish taken. Another stated that fishing with limits is likely to occur as the population recovers, though he personally thinks the aggregation should remain closed. Six out of seven interviewed stated that fishing in general should be allowed, as it is culturally important on Little Cayman. All individuals said that the aggregation should still be protected even if scientists found no local recruitment (though all local fishermen were skeptical of the possibility that there might be no local recruitment). All tourists, the long-term fishing guide from Wyoming, the research scientist from Oregon, and one local fisherman, said that the Caymanian government should use fishing licenses and marine park entrance fees to increase resources devoted to reef conservation, reef research, and marine law enforcement. All those interviewed agreed that the Nassau Grouper spawning aggregation should be protected, and that education and enforcement should be improved.