

The Nassau Grouper: A Cautionary Tale of Discovery, Science and Management*

At the beginning of the twentieth century, the Nassau grouper was one of the most important commercially harvested fishes of the insular Caribbean and tropical western Atlantic. By the 1990s its numbers had become so severely reduced that it was included in the IUCN (World Conservation Union) Red List of threatened species as ‘endangered’ and was a candidate for the United States Endangered Species List. It took about a decade from discovering problems with Nassau grouper populations to taking important steps towards placing this species on the road to recovery. This is the story of the Nassau grouper, a reef fish vulnerable to fishing, and the long slow ride to international attention and conservation action. Yet it is just the beginning of its journey to recovery.



The Nassau grouper, *Epinephelus striatus*, is a coral reef associated fish and among the largest of the groupers (family Serranidae) in the tropical western Atlantic: it is also one of the most threatened. The species can grow to at least 800 mm long and live for more than 20 years. Its former commercial significance can be gauged by early fishery reports. In Puerto Rico prior to 1900, for example, it was “a common and very

important food fish, reaching a weight of 50 lbs or more”, and in 1970 was the fourth most commonly landed species. By the 1990s, landings had plummeted, not only in Puerto Rico but also throughout much of its range. Many of the landed fish were now small, often taken before sexual maturation (50 cm). Even more alarming were the gradual but indisputable reductions in catches from its spawning aggregations.

The massive and marvelous reproductive gatherings of this species are one reason why it is so famous, and are also an important factor in its decline. Their remarkable scale was first hinted at in reports of Nassau grouper runs (‘corridas’) from Cuba in the 1800s. The first aggregation of this species ever reported in the scientific literature was one in the Bahamas, noted in 1972 to contain upwards of 30,000 fish. Just 2 decades later, a talk at the Gulf and Caribbean Fisheries Institute annual meeting in Mexico identified a worrying pattern of losses and declines of aggregations, largely from fishermen’s accounts of this species. Progress during the 1990s documented this trend more formally and established a body of biological and fishery information. With few notable exceptions (among them Bermuda and the Cayman Is.), however,



Nassau grouper gathered at a spawning site just prior to the dusk spawning period

it took yet another decade to realize significant protective action; legislation has just been signed in Belize, following a strong collaborative effort among many interested groups, while tougher regulation begins in January 2003 in the Cayman Islands. The Bahamas government is also considering some form of management. In sum, it has taken ten years, millions of words, thousands of field survey hours, dozens of papers, reports and presentations, a great many dedicated people and considerable public relations work to document the fishery, study the biology and then convey the resulting message to those who could, and should, do something to protect this species.



It is disturbing, in hindsight, how serious the situation became before significant action was taken; I estimate that over half of all known spawning aggregations of this species (and we probably know of a good many of all those that exist) have declined or no longer form. In the Bahamas, several aggregations are now reduced to a handful of fish compared to former times. Landings in Cuba (which likewise took most of its annual Nassau grouper landings during the spawning season) have been declining since the 1950s and are now at an all-time low. In Belize, landings have dropped by an order of magnitude since records were first kept, and recent surveys indicate that only two-thirds of known aggregations formed in 2000-2001 with most of those considered threatened by fishing, before legislation was introduced. Nassau grouper aggregations are no longer known from Puerto Rico, Bermuda or the United States Virgin Islands, among other countries.

Landings of Nassau grouper from one aggregation day in the Bahamas in the early 1990s

The unfolding story of the Nassau grouper is an encouraging and instructive, albeit cautionary, tale, important at many levels for what it reveals of the problems and possibilities of managing vulnerable reef fish species. It demonstrates how the knowledge of fishermen can reveal phenomena or trends and then how fishery and biological sciences formalize and document these in a standardized way to enable informed initiatives for conservation and management. It also shows how coordinated and collaborative action and consultation, supported by good science, can begin to pave the way to population recovery.



Geographic distribution of the Nassau grouper and indications of the status of known spawning aggregations.

I consider this tale to be cautionary because legislation is but one step; implementation must follow. More importantly, we cannot only focus on aggregations to solve the overall problem of declines in vulnerable aggregating reef fish species, like the Nassau grouper. As for any fishery a holistic approach is needed. Reef fish fisheries are typically multi-species affairs, notoriously difficult to monitor or to

control. Experience shows that if one component of a fishery is effectively managed then effort will almost invariably shift to another; another time, another place, another species or another gear. In the case of the Nassau grouper, while we know that aggregations are often heavily fished and that populations have declined, we cannot say that aggregation fishing is the sole cause of declines. It is almost certainly a critical factor but what about non-aggregation fishing. What about the condition of inshore nursery areas? And what about total fishing effort? Aggregation protection is certainly a necessary first step, but the only long-term solution for vulnerable species that are commercially exploited, like the Nassau grouper and many other reef fishes, is to reduce fishing effort. This, then, is the ultimate goal and the toughest challenge. If we are unsuccessful in addressing fishing effort in general, then there will be no more fish, no more fishery and certainly no more aggregations.

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