

**Policy Recommendation Statement**  
**Spawning Aggregation Site Protection in the**  
**Wider Caribbean**

**Presented at the Gulf and Caribbean Fisheries Institute, 55th Annual Meeting,  
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### **Background**

Most of the groupers and snappers found on Caribbean coral reefs are amongst the most important commercial species taken in the region. They also play an important ecological role as high level carnivores in the feeding web of coral reef ecosystems. The majority of these species form spawning aggregations (SPAGs) at predictable times and places which makes them highly vulnerable to fishing pressure. When fishermen locate these sites, they are able to greatly enhance their catch rates of these species due to the greater density of fish present. Large reductions in the biomass of these species as a result of aggregation fishing will likely result in significant changes in the ecosystem, thus not only impacting on the current population, but also jeopardizing future generations. These changes may lead to ecological imbalances with consequent impacts on biodiversity. As the spawning which occurs at SPAGs often represents most or all of the total annual reproductive output of the population, the reduction in population abundance caused by heavy fishing pressure can have both ecological and socio-economic consequences.

As fishers' harvest levels decline with continued fishing at SPAG sites over time, the reduction in the biomass of the populations will translate into reduced earnings. From the eco-tourism perspective, the decrease in abundance of large predatory fish for divers to observe and photograph in the reef environment will also be detrimental to the overall quality of their diving experience.

### **Historical Perspective**

The best known aggregating species in the region is the Nassau grouper. There are a number of documented cases of the disappearance of spawning aggregations of Nassau grouper due to intense fishing pressure. It has been estimated recently that one-third of all known Nassau grouper SPAG sites in the region have disappeared. The complex life history of groupers incorporating SPAGs helps to explain why conventional fishery management measures have largely failed to adequately address the problem of overfishing of these species. The available information suggests that grouper aggregations rarely re-appear once they have been fished down. Thus, they often represent a permanent loss to the ecosystem.

A dramatic example of such a decline has been documented in Belize. One researcher reported in 1988 that, in Belize alone, catches from Nassau grouper spawning aggregations declined by 81% over a 10-year period. Another recent study estimated that under present management conditions, Nassau Grouper will disappear from Belize by the year 2010. Historically, the Caye Glory SPAG site in Belize has seen a 4,000 fold decrease in Nassau Grouper landings between 1968 and 2001. As a result of ongoing field studies in Belize, it has been determined that many of the Nassau grouper SPAG sites also attract a number of other species of groupers and snappers which spawn at the same site. In addition, species such as jacks and grunts also frequent these same sites. Thus, there appears to be a number of multi-species SPAG sites which are used sequentially throughout the year by different species. At some sites, up to 20 different species of reef fishes have been documented. A key finding of this research is the role that reef “promontories” appear to play as multi-species spawning aggregation sites. Many of these sites are close to a drop-off to deep water. This pattern has recently been confirmed for Belize, and preliminary data indicates that it may hold for other countries in the region as well.

With reef fish stocks rapidly declining in many countries, there is an urgent need to create a representative network of marine protected areas designed to ensure the protection of these SPAG sites, which are vital to the ecological integrity of the reef system. In order for commercial and artisanal fisheries to survive in countries throughout the wider Caribbean, there is a need to identify, verify and ultimately protect all viable reef fish spawning aggregations. The implications for fisheries management are clear: if these key sites are protected, numerous species would be able to recover from over-exploitation as well as maintaining the ecological integrity of the reef ecosystem.

The recommendations presented here provide a strategy or course of action to help mitigate the impacts of fishing on spawning aggregations in the greater Caribbean and in Latin America. These recommendations are general in nature and should be adapted to the country and specific conditions found at each site.

**Recommendations:**

- 1) Reduce or eliminate fishing mortality at vulnerable SPAG sites. A sense of urgency should be invoked for management /conservation action.
- 2) Incorporate known SPAG sites into planning programs for Marine Protected Areas (MPAs) to provide permanent protection for SPAG sites.
- 3) Develop and implement monitoring programs involving scientists and user groups within the community to evaluate the effect of management /conservation measures.
- 4) Develop community-based management programs for SPAG sites to the fullest extent possible. Full participation in the management process by all of the user groups affected by management measures will greatly increase the probability of success.
- 5) Provide viable economic alternatives to those user groups who are displaced from SPAG sites as a result of management action.

An implementation plan for this regional strategy should use the electronic media and the Internet to disseminate information about SPAGs as well as the collection of information from veteran SPAG fishermen to establish an historical perspective on changes. The involvement of marine resource managers with MPA design (and siting with respect to SPAGs) and the use of remote sensing images to predict the location of SPAGs in the region is also recommended.

**DECLARATION**

WE, THE UNDERSIGNED, HAVING DUE REGARD FOR THE CURRENT STATUS OF REEF FISH SPAWNING AGGREGATIONS IN THE WIDER CARIBBEAN REGION, SUPPORT THE RECOMMENDATIONS IN THIS DOCUMENT AND URGE TIMELY ACTION ON THE PART OF ALL PARTIES CONCERNED TO IMPLEMENT THESE RECOMMENDATIONS IN THE MANNER MOST APPROPRIATE FOR EACH COUNTRY.

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