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Experiences of the Belize Spawning Aggregation Working Group

GIBSON, J.¹, R.F. POTT², G. PAZ³, I. MAJIL⁴ and N. REQUENA⁵

¹ *Wildlife Conservation Society, P.O. Box 2038, Belize City, Belize*

² *Belize Audubon Society, P.O. Box 1001, Belize City, Belize*

³ *Green Reef Environmental Institute, San Pedro, Ambergris Caye, Belize*

⁴ *Fisheries Department, P.O. Box 148, Belize City, Belize*

⁵ *The Nature Conservancy, Punta Gorda, Toledo District, Belize*

ABSTRACT

This paper chronicles the history of the Belize Spawning Aggregation Working Group from its inception following a national survey of many of Belize's Nassau grouper spawning sites conducted during the 2000 – 2001 aggregation period. It documents how the Group evolved and developed its objectives, and highlights its main achievements, one of which was the passage of legislation that provided full protection to 11 spawning sites and introduced a closed season for the Nassau grouper. The Group was formed in response to the drastic decline in numbers of spawning Nassau groupers, which was dramatically brought to the attention of many concerned organizations at a historic workshop held in July 2001 in Belize City. The Group assumed the responsibility of taking action to stem the decline. Its success has depended to a large extent on its diverse membership, which is drawn from government agencies, NGOs and the private sector. The invaluable contribution made by many fishers, who unselfishly shared their traditional knowledge of spawning banks with researchers and managers, was also a major factor in the Group's success and the protection of many spawning sites. Members are interested in sharing their experience with other similar groups that are being developed within the Mesoamerican reef region.

KEY WORDS: Spawning aggregation, Nassau grouper, Mesoamerican reef

Las experiencias de los Grupos de Trabajo en las Agregaciones Reproductivas de Belice

Este artículo relata la historia de los Grupos de Trabajo en las Agregaciones Reproductivas de Belice; desde sus principios, siguiendo una encuesta nacional de muchos de los sitios de proliferación reproductiva de los Meros de Nassau de Belice, que fue conducida durante el 2000 y el 2001 en la época de agregaciones. Documenta como el Grupo evolucionó y desarrolló sus objetivos, resaltando uno de sus principales, el cuál fue el paso de la legislación que proveyó la protección total de 11 sitios de proliferación reproductiva e introdujó una temporada cerrada para el Mero de Nassau. El Grupo se formó en respuesta a la drástica disminución en la reproducción de los Meros de Nassau, la que atrajo dramáticamente la atención de muchas organizaciones preocupadas en un histórico taller realizado en Julio de 2001 en la ciudad de Belice. El grupo asumió la responsabilidad de tomar acción para parar la disminución de meros. Su éxito ha dependido en parte, al gran número de sus miembros, los cuáles pertenecen a organizaciones gubernamentales, no gubernamentales y del sector privado. La invaluable contribución hecha por muchos pescadores, quiénes desinteresadamente compartieron su conocimiento tradicional sobre los bancos de desove, la ayuda de investigadores y directores, fue también un factor principal en el éxito del grupo y en la protección de muchos sitios de reproducción. Los miembros están interesados en compartir sus experiencias con otros grupos similares que se están desarrollando entre la región del Arrecife Mesoamericano.

PALABRAS CLAVES: Agregación de Desove, Meros de Nassau, Arrecife Mesoamericano.

INTRODUCTION

Over-fishing of spawning aggregations sites is the primary cause of the decline of the Nassau grouper (*Epinephelus striatus*) throughout the Caribbean region. Aggregations in Puerto Rico, the Cayman Islands, Bermuda, the U.S. Virgin Islands, Mexico and the Dominican Republic have experienced a near total collapse from over-fishing (Sadovy 1993).

During the 1950's, annual grouper catches in Belize were as high as 45,359 kg (McField *et al.*, 1996), and during the 1960's Nassau groupers were fished at a rate of about two tons per day from a single aggregation site at Caye Glory (Craig, 1969). As late as 1994, groupers comprised more than 30% (17,410 kg) of the total finfish exported from Belize, of which 65% (11,233 kg) consisted of Nassau grouper (J. Bradley, Northern Fishermen Co-operative, personal communication). More recently, a single aggregation site at Glovers Reef was surveyed and found to be comprised of just 3,100 adults, from which fishermen had removed 219 individuals during the same season (Sala *et al.* 2001).

The declining catch of the Nassau grouper led to the common belief that the species no longer aggregated at most of the historically known aggregation sites in Belize, and attempts to close the fishery were met with opposition. The few fishermen removing the remaining Nassau groupers from the sites argued that the aggregating population was not declining, but simply migrating to different sites from year to year. Recognizing the need for a national survey, a local conservation non-governmental organization (NGO), Green Reef Environmental Institute, secured project funds to identify the status of Nassau grouper aggregation sites in Belize, and to develop economic alternatives, community education and outreach programs, and legislation and an advocacy campaign.

NATIONAL SPAWNING AGGREGATION SURVEYS

In January of 2001 Green Reef, in collaboration with the Belize Fisheries Department and several local and international NGOs, conducted the first national survey of spawning aggregation sites in Belize. The survey teams assessed nine sites simultaneously for ten days during the grouper spawning moon that month. Several national NGOs (Green Reef, Toledo Institute for Development and Environment, and Belize Audubon Society), the Belize Fisheries Department (Bacalar Chico Marine Reserve and Hol Chan Marine Reserve), and four international groups (Scripps Institute of Oceanography, the Wildlife Conservation Society, University of York, and The Nature Conservancy) participated in the national survey. The survey focused on Nassau grouper aggregations, and entailed collection of maximum counts, catch and effort, life history and environmental data at nine of thirteen historically recognized aggregation sites.

The survey established that: only two sites remained functionally intact, with aggregations of more than 2,000 individuals; two sites had aggregations of less than 500 individuals and were classified as critically threatened by extinction; five sites had less than 50 individuals and were classified as functionally extinct; and of the nine Nassau grouper aggregation sites monitored, only four were in use by fishers and all four sites were being fished without restriction (Paz and Grimshaw 2001).

The survey was repeated in 2002 to address fishermen's claims that Nassau grouper stocks were not declining, but rather their occurrence at aggregation sites was capricious and varied from year to year. The second survey produced essentially the same findings as the 2001 survey, and thereby helped to demonstrate to fishers the critical need for conserving Belize's Nassau grouper stocks (Heyman and Requena 2002).

Green Reef, in collaboration with the Belize Fisheries Department, organized a national workshop entitled 'Working Towards Sustainable Management of Nassau Groupers in Belize' held in Belize City in July 2001. The purpose of this workshop was to bring together local and international experts, fishermen, fisheries managers, policy makers, tour operators and other concerned parties to develop consensus on a national Nassau grouper recovery plan and propose new conservation legislation for the improved management of the Nassau grouper fishery in Belize. At this workshop, historical and recent studies on Nassau grouper spawning aggregations were presented as well as policies, legislation and management options for the fisheries. There was general consensus for the urgent need to develop sound and sustainable management measures for the management of the spawning aggregations, particularly the Nassau grouper, which the recent studies confirmed to be in a threatened state. Additionally, in realizing that any effective management was going to need support from resource users, a consensus was reached by all that further time and consideration were needed in order to fully and equally explore all available options for management and economic alternatives for the traditional resources users of the fishery. At the concluding session of the workshop, the participants established a multi-sectorial Spawning Aggregation Working Group with representation from Green Reef, the Belize Fisheries Department, Toledo Institute for Development and Environment (TIDE), Coastal Zone Management Authority and Institute (CZMAI), National, Caribeña, Northern, and Placencia fishing co-operatives, The Nature Conservancy (TNC), independent fishermen from the village of Hopkins, Belize Tourism Board, and the Belize Tourism Industry Association. The purpose of the Spawning Aggregation Working Group was to formulate and make recommendations to the Minister of Agriculture, Fisheries and Cooperatives, through the Fisheries Department and the Fisheries Advisory Board, for the management of spawning aggregations in the waters of Belize, initially focusing on the Nassau grouper. Terms of Reference and a Time Frame for Action were proposed and accepted for the Spawning Aggregation Working Group in the expectation that clearly identifying the objectives would expedite the process. It was apparent to both conservationists and fishermen that it would be necessary to publicize a clear decision on the status of management of the Nassau grouper before the next spawning moons of December 2001 and January 2002. The Terms of Reference of the working group were to: provide recommendations for management of spawning aggregations; determine the economic impact of the recommendations; explore economic alternatives to fishing Nassau grouper aggregations; establish a monitoring program for spawning aggregations; prioritize future research objectives; and explore co-management options. The first meeting of the working group was held on August 27, 2001 where various management options were discussed including seasonal closures, size limits, reserve status and annual closures. It was finally agreed that total closure of spawning aggregation sites was the best management option because it would protect a variety of commercially important species using the same sites and would make enforcement more manageable. The Fisheries Department agreed to conduct an

economic survey of the affected fishermen. The group met two more times in September 12 and September 24, 2001 to discuss economic alternatives, the monitoring program, future research objectives, and co-management options. In December 2001, the working group organized a workshop in Belize City during which a special panel presented the findings and recommendations of the group to the public. The recommendations of the working group were: total closure to all activities of an area between 3 to 4 square miles for each known spawning site; in cases where the area was already part of an established protected area, the area was to be zoned as either a wilderness zone or conservation 1 zone; research monitoring should focus on the recovery of the spawning stocks, assessment of the impact of whale sharks on the spawning aggregations, and monitoring of the economic impact of the management measures; research priority options should include documenting of all the species that spawn in all the areas, and the carrying capacity of human activities for all the areas; co-management partners should include the Belize Fishermen Cooperative Association (BFCA), the fishing cooperatives, community-based organizations and other NGOs currently working in the coastal areas; there should be limited access in the conservation 1 zones of existing marine protected areas and no access, except for research, in all the other areas that are recommended for closure; and the Fisheries Department should be involved in all the research and monitoring. Unfortunately, these recommendations were not fully endorsed by the fishermen present, as it did not address their requirement of monetary compensation.

In December 2001 Green Reef in collaboration with TNC and TIDE conducted a SCUBA diving certification course and sport-fishing training courses for spawning aggregation fishers of Hopkins village. Green Reef was also involved in the deployment of a Fish Aggregation Device (FAD), as an alternative livelihood option for fishers that targeted the spawning aggregations in an effort to steer them from exploiting the grouper spawning aggregation sites.

Thus a national initiative to conserve Belize's Nassau groupers emerged from a project that was originally conceived by Green Reef to conduct a national survey of known and reputed Nassau grouper spawning aggregation sites. Execution of the survey required the coordination and support of a wide range of conservation NGOs that supplied the voluntary dive teams, and ultimately united all project participants to form the nucleus of the movement. Belize's collective body of marine conservation NGOs contributed a significant investment, in terms of human and financial resources, in pursuit of legislation to protect the Nassau grouper.

PROTECTION OF THE SPAWNING AGGREGATION SITES

Formation of Coalition of NGOs

Following the workshop convened by Green Reef in July 2001, the Working Group's workshop held in December 2001, the submission of the related reports of the results of the national surveys (Paz and Grimshaw 2001) to the relevant authorities along with the reports submitted by Dr. Enric Sala of the Scripps Institution of Oceanography (Sala *et al.* 2001; Sala 2002), all calling for urgent protection of the Nassau grouper spawning sites, no action towards protection was forthcoming.

During this period, TNC had also been advocating for the protection of the sites, and their officials had consulted with fishermen, the fisheries authorities and the Minister of Agriculture, Fisheries and Co-operatives. The consultations included a spawning aggregation monitoring workshops held on Half Moon Caye, Lighthouse Reef in March and April 2002 as well as meetings held in Belize City, during which TNC emphasized the importance of spawning aggregations and the urgent need for their management and conservation. In addition, TNC had played a lead role in developing the monitoring protocol for spawning aggregations (Heyman *et al.* 2004) and gaining support for and input to the protocol from the various organizations involved in monitoring in Belize and the region. In August of 2002, TNC published a report on the status of multi-species spawning aggregations in Belize (Heyman and Requena 2002), which further documented the plight of the Nassau grouper spawning sites and highlighted the importance of these areas for many other aggregating reef fish species.

In August 2002 the Wildlife Conservation Society (WCS) decided to organize a group of NGOs that would jointly work towards gaining some protection for these vulnerable sites. The science underpinning the move for protection had been well documented by Sala *et al.* (2002) and by the national surveys spearheaded by Green Reef and carried out by many contributing organizations (Paz and Grimshaw 2001).

Furthermore, during a courtesy visit to WCS' research station on Glover's Reef in late August 2002, the Minister met informally with representatives of TNC, CZMAI, Green Reef and WCS and discussed the need to provide protection for the Nassau grouper and its spawning aggregation sites. At this meeting the Minister agreed in principle that protective legislation was required.

On the 5th September 2002, WCS led a meeting of international and national NGOs at which it was agreed that a campaign would be launched to garner support from the fishermen, fishing co-operatives, and the government management authorities

to legally protect the known Nassau grouper spawning aggregation sites. Submissions offering options for action were received from Green Reef, Belize Audubon Society, WCS and TNC and discussed at this meeting. As a result of these discussions, the participating organizations agreed to prepare a joint submission to the Minister of Agriculture, Fisheries and Co-operatives. The submission, which went through several drafts, was finalized and signed by the representatives of the *ad hoc* coalition of NGOs, comprised of Belize Audubon Society, Friends of Nature, Green Reef, TIDE, TNC, WCS, and World Wildlife Fund. The submission, entitled 'Recommendations to Hon. Dan Silva concerning Urgently Needed Protection for Nassau Grouper', included details on the status of the stocks, the effects of fishing, the need for species and spawning site protection, the economic justification, and possible alternative livelihoods for the fishermen that would be affected by the protection of the sites. It also included a list of the sites that were recommended for closure to fishing; two of these sites were located within existing fully-protected marine protected areas. The submission was officially presented to the Minister on the 24th September 2002 by a delegation formed by Green Reef, TNC, WCS and the Chief Executive Officer of the Coastal Zone Management Authority. At this meeting the Minister stressed the need for fishermen to support the closure of the spawning sites. At the request of the Minister, copies of the submission were also distributed to members of the Fisheries Advisory Board that is composed of representatives from the fishing industry, Fisheries Department, Ministry of National Development, tourism and general private sector, and conservation NGOs, which advises the Minister on fisheries policy.

Garnering Support from Fishermen

The NGO coalition then embarked on a publicity campaign focused on gaining support from the fishing community for the year-round closure of the spawning sites and a four-month closed season for the Nassau grouper. Members of the coalition recognized that much of their knowledge of the aggregation sites was gained from the invaluable information that fishermen had supplied. During September and October 2002 the coalition, along with representatives from the Fisheries Department, met with the management committee members of the Belize Fishermen Co-operative Association and the Northern Fishermen Co-operative Society. At each of these consultations the coalition members showed a video on the Nassau grouper that had been produced by Green Reef, and then discussed the recommendations for the protection of the species and the spawning aggregation sites. Participants at all meetings were supportive of the need for protection. To ensure that fishermen who traditionally exploited the aggregation sites did not completely lose access to this resource, however, the fishing industry officials requested that a couple of the sites remain open to fishing. The coalition group also pledged to involve fishermen as much as possible in monitoring the recovery of the sites. Several of the organizations leading the monitoring teams ensured that at least two local fishermen were included in each field expedition. This allowed for greater interaction with the fishermen, many of whom had unselfishly shared their knowledge of the aggregation sites, and led to greater participation and buy-in for the protection of the sites by the fishing community.

The outreach program also involved broadcasting the Nassau grouper video on the two national television stations and several local stations. In addition, copies were made and distributed to several key organizations so that the video could be shown to their members and other interest groups. The coalition facilitated the media coverage of the special Fisheries Advisory Board meeting held to discuss the submission and recommendations that had been presented to the Minister of Fisheries. An interview with the Fisheries Administrator and the Chairman of the Board featured as an item on the television news. Several Board members supported the coalition's recommendations.

The seven members of the coalition prepared a colourful flyer and shared the costs of printing several hundred copies that were then widely distributed, particularly to fishermen. The flyer, entitled 'Urgent Actions Needed to Save Belize's Nassau Grouper Fishery' outlined in straightforward language the effects of fishing on the species, the proposed actions, the economics of the fishery, and the alternatives. Importantly, it also included a series of quotes from well-known spawning aggregation fishermen who described the large numbers of groupers caught at the banks from the 1940's to the 1980's compared to the sharp decline in numbers of fish that presently occur.

Passing of Protective Legislation

As discussions with the Minister had indicated his willingness to sign legislation that would protect many of the Nassau grouper spawning sites and also introduce a four-month closed season, in late October 2002 the coalition members, in consultation with the Fisheries Department, drafted the two Statutory Instruments that detailed the new regulations to that effect. In response to the request from the fishing community, two spawning aggregation sites were not included in the list of proposed protected areas; these were Mauge Caye on Turneffe Islands and Northern Two Caye on Lighthouse Reef.

At the 55th Gulf and Caribbean Fisheries Institute (GCFI) held on the 11th – 15th November 2002 at Xel Ha, Mexico a special symposium was included on the conservation and management of reef fish spawning aggregations, which was led by Dr. Will Heyman and sponsored by TNC, Environmental Defense and the Society for the Conservation of Reef Fish Aggregations (Heyman 2004) It created an opportunity for much needed attention to be given to these aggregations, specifically within the Mesoamerican region. Capitalizing on this opportunity, TNC and others organized and facilitated the participation of several

local fishermen and MPA managers from across the region (Mexico, Belize, Guatemala and Honduras) in an effort to gain broad consensus on the need for action to protect spawning aggregations. At the end of the formal GCFI session, a plenary meeting was held that was open to all interested in managing spawning aggregation fisheries in the Gulf of Mexico and the Caribbean. The development of a standard protocol for the entire region to monitor spawning aggregations was discussed during this meeting. A policy statement for spawning aggregation site protection in the wider Caribbean was developed, presented and signed by the participants, declaring recognition of the decline in fish spawning aggregations, supporting the recommendations in the document, and urging timely action by all parties concerned to implement the recommendations in the manner most appropriate for each country. This was an important step for Belize considering that the Minister of Agriculture, Fisheries and Co-operatives attended the conference and spoke of the efforts in Belize to protect spawning aggregations by working closely with local fishermen. He made a public call to all other fisheries officials in the region to follow with similar efforts.

Immediately following the GCFI meeting held in Xel Ha, Mexico, the Minister attended a Fisherman's Festival in Punta Gorda, the southernmost town in Belize, on the 16th November 2002. This event was organized by one of the coalition members, the Toledo Institute of Development and Environment. In the presence of the Fisheries Administrator, many members of the coalition, and many supportive fishermen, the Minister officially signed the Statutory Instruments into law at this festive occasion, a historic day for marine conservation in Belize. The first Statutory Instrument (Government of Belize 2003a) declared 11 sites as Marine Reserves, and closed to fishing all year round. Those sites that were wholly or partially located in marine reserves, but not included in any seasonal closure or conservation zone, could be used by traditional fishermen recommended by the respective co-managers of the reserve and with Special License granted by the Fisheries Administrator. The second Statutory Instrument (Government of Belize 2003b) established a four-month closed season for Nassau grouper, extending from December to March. Fishermen using the Mauge Caye and Northern Two Cayes sites, however, would be allowed to fish during this period but only under Special License granted by the Fisheries Administrator, and all their catch had to be verified by a Fisheries Officer.

The NGO coalition's press release on the signing of the new legislation concluded: "...commend Minister Silva for taking this bold step, a leading example in the region, and indeed the world, in the protection of fish spawning sites, which is well recognized as a critical step in the promotion of sustainable coral reef fisheries management and in the development of an ecologically functional marine protected areas network". The landmark occasion was also publicized by the New York Times.

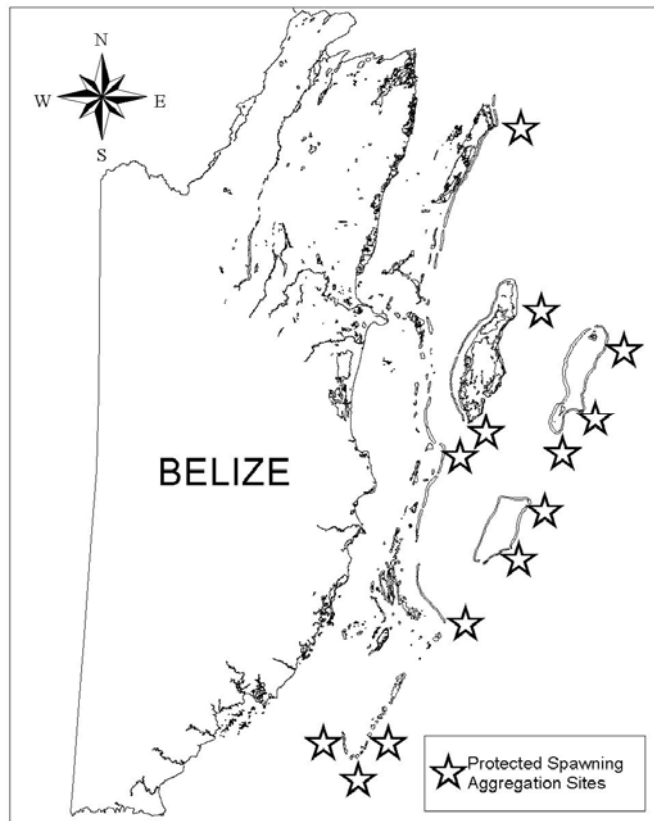


Fig. 1: Map showing location of the 13 protected spawning aggregation sites in Belize: 11 sites declared in 2002 as marine reserves specially for the protection of the spawning sites and two sites encompassed by fully-protected zones within previously-declared marine protected areas.

As the NGO coalition members were committed to the monitoring of the sites and documenting their recovery, their continued cooperation as a group led to the revitalization of the original National Spawning Aggregation Working Group that had been established in mid 2001. The Fisheries Department, Coastal Zone Management Authority and Institute, and other NGOs active in the monitoring of the sites joined the coalition members in re-forming the Working Group, which has been meeting regularly since the beginning of 2003. One of the first tasks of the Working Group was the development of an infomercial that was shown on national television informing fishermen and the general public of the new legislation.

SPAWNING AGGREGATION WORKING GROUP

Current Status and Achievements

While the initial efforts of the Spawning Aggregation Working Group focused on drafting policy and lobbying for legislation to protect the endangered Nassau grouper, the Group recognized that it needed to consolidate these policy changes with consistent and continuous management. In view of this, the Group agreed on the following objectives to govern its activities for the period 2003 – 2008:

- To manage, monitor and patrol spawning aggregation sites for the next five years, including monitoring the impact of use on sites
- To involve the stakeholders in monitoring, research, and patrolling of spawning aggregation sites
- To create, house and maintain a spawning aggregation database
- To analyze the data and provide recommendations for the conservation, protection and sustainable use of the sites
- To disseminate information for the education of all stakeholders
- To utilize the information to advocate for and build support for the management, conservation, protection and sustainable use of the spawning aggregation sites
- To support other initiatives that contribute to this general goal
- To promote alternatives for the traditional users of spawning aggregation sites.

An early priority for the Working Group was overcoming the challenge of monitoring the progress and recovery of the 13 protected spawning sites. As mentioned earlier, through a participatory approach and extensive consultation, stakeholders such as researchers, site managers and fishers assisted with the development of the Belize Spawning Aggregation Monitoring Protocol. This approach ensured that the protocol was pragmatic for local implementation and fostered greater ownership of the methodology. Initially, extensive training sessions for all field personnel were conducted, and the monitoring methodology is subsequently reinforced annually during refresher training courses organized by the Working Group. Coupled with this training, the Group has promoted dive safety by developing dive guidelines and emergency plans, and encouraging more advanced levels of dive and safety training for the monitoring team members. The Group also ensures that fishers continue to participate in management of the spawning sites and are directly employed for on-site monitoring. This promotes transparency and strengthens relations between marine protected area personnel and the fishing community, and also provides an alternative income for fishers.

Communication and information sharing among government agencies, site managers, research institutions and conservation NGOs remains crucial to conservation success of the spawning aggregations in Belize. An important tool in this regard is a database developed for the compilation and sharing of information gathered from the monitoring of the sites. This database standardizes data entry and systematizes the collection of information, ensuring quality in data collection by the Group. Currently, the Working Group is improving the database to a web-based design, which will enhance accessibility and facilitate the delivery of useful information for site managers. The database is also intended to facilitate further research. Furthermore, in relation to intellectual property rights, a data sharing agreement, developed and signed by members, ensures that the contribution of each member involved in data collection is recognized and respected.

Communication and decision making by the Working Group is also facilitated by bimonthly meetings, which have been a major contributor to the cohesion and commitment of the members.

Ensuring that the wider community remains involved and aware of management efforts is accomplished by keeping stakeholders informed of management progress and by maintaining awareness of the regulations that protect the spawning sites. This is achieved through biannual information circulars, posters, community presentations, and a radio and television campaign coordinated annually with particular focus on the Nassau grouper. The Group has assumed the responsibility of reporting to fishermen on the results of the monitoring program. To date, only two sites have demonstrated a sustained or slight increase in numbers of aggregating groupers. Fluctuations in natural systems, however, are normal and many more years of data will be required before any real trends can be detected. Through consistent sharing of information the Group has been able to maintain local support for the 13 protected sites in Belize.

Table 1: Chronology of Events

January 2001	First national survey of Nassau grouper spawning aggregation sites
July 2001	National workshop held in Belize City to present survey results Formation of original Spawning Aggregation Working Group
December 2001	Workshop held by Working Group to present recommendations to public
January 2002	Second national survey of Nassau grouper spawning aggregation sites
September 2002	NGO Coalition formed Meeting held with Minister of Agriculture, Fisheries and Co-operatives Public awareness campaign launched
October 2002	Public awareness campaign continued Fisheries Advisory Board special meeting held
November 2002	Spawning aggregation symposium held at GCFI meeting in Mexico Minister makes public call for protection of spawning sites in the region Belize at the Fisherman Festival in Punta Gorda
January 2003	Spawning aggregation working group re-established Working group initiates monitoring of the protected sites

Future Plans

In keeping with its work plan, the Working Group intends to develop a web site, finalize its web-based database, and share its experiences with others in the region who are interested in establishing similar spawning aggregation working groups. Members recently met with a Mexican counterpart to discuss the history of the Group and how it has evolved over the past five years. The Group hopes to continue such meetings with regional counterparts in the future.

The Group also intends to strengthen its representation of fishermen. When it was first established, the Working Group had members from the major fishing co-operatives as well as several independent fishermen who had formerly fished the spawning sites. The current membership, however, has only one fishing industry representative and the Group recognizes that this shortcoming must be addressed.

Other aspects of development for the future include more in-depth analysis of the monitoring data and further research in relation to fisheries catch data and recruitment of Nassau grouper, and the impacts of dive tourism on the aggregations.

CONCLUSION

Many factors have contributed to the success of the Belize Spawning Aggregation Working Group. The collaboration which characterized the original surveys of the spawning aggregation sites in 2001 and 2002 helped ensure that many organizations and fishermen were involved at the outset of the initiative. Belize being a small country also helped to facilitate the required close communication and personal contacts.

The NGO coalition reflected this spirit of collaboration and working as a group, as opposed to unilateral action and working individually, supporting the adage that there is 'greater strength (and thus greater chance of success) in numbers'. The coalition was also able to maintain the momentum of progress by acting in a timely fashion, seizing all opportunities, and using the media effectively; this led to the successful passing of protective legislation within only three months of starting its advocacy campaign.

The timing of the participation of the Minister and several Belizean fishermen at the GCFI meeting at Xel Ha was also critical in advancing the conservation initiative. They gained a regional perspective of the important leadership role that Belize could adopt, and this likely confirmed their respective decisions to pass and support the necessary protective legislation.

The Working Group has continued to meet on a regular basis by maintaining its strong sense of purpose and responsibility to monitor the status, and hopefully the recovery, of the sites and report the results to fishermen and the wider Belizean public. The Group continues to share information, resources, and collectively advocate for increased protection of the spawning aggregation sites of Belize.

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