

The Belize Spawning Aggregation Working Group



ANNUAL REPORT

May 2012-June 2013

Goal: *To determine the success of management measures in enhancing Nassau grouper spawning aggregations for Belize*

In 2012-13, the Belize Spawning Aggregation (SPAG) Working Group successfully completed its work plan. There were several major achievements in this year based on the annual work objectives. The Working Group is a volunteer-based group made up of a network of organizations that are involved in managing the Nassau Grouper SPAG sites protected since 2003.

Members

University of Belize -Environmental Research Institute (UB-ERI) - Chair
Wildlife Conservation Society (WCS) - Secretary
Fisheries Department
Sarteneja Fishermen Association
Belize Audubon Society (BAS)
Placencia Fishermen Co-operative
Belize Federation of Fishers
The Nature Conservancy
Hopkins Fishermen Association
Belize Fishermen Cooperative Association (BFCA)
Southern Environmental Association (SEA)
Toledo Institute for Development and Environment (TIDE)
Coastal Zone Management Authority and Institute

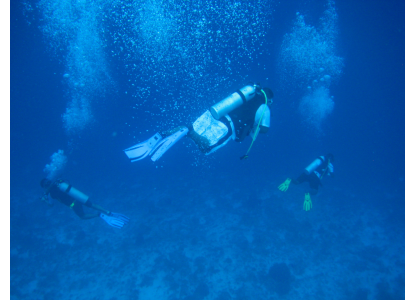
Monitoring

The Working Group through the support of WCS, SEA and Dr. Yvonne Sadovy, of the University of Hong Kong and Society for the Conservation of Reef Fish Aggregations, held a training Workshop and Refresher on Reef Fish Spawning Aggregation Monitoring from October 30th – November 2nd 2012 at the Gladden Spit Marine Reserve.

The main objectives of the workshop were:

- To provide a refresher/update in all aspects of monitoring fish aggregations and an opportunity for participants to gain knowledge from each other as well as share experiences in the monitoring, management and conservation of reef fish spawning aggregations.
- To discuss with lead members of the spawning aggregation monitoring teams in Belize the principles and science of fish counts, and enable them to act as trainers for the other members of their team.
- To demonstrate a simple GPS-based mapping protocol for spatial description of aggregation sites.

This training provided the Working Group members with a hands-on review of the fish count methodology, which was subsequently used in the 2012-13 SPAG season. The training session also touched on tips and techniques for using video in monitoring SPAGS.



Belize SPAG Working Group members receiving training in SPAG sampling protocol

In regards to monitoring, all seven Nassau Grouper SPAG sites were surveyed for the December 2012-March 2013 season by the various organizations tasked with monitoring. The sites monitored were: Rocky Point, Sandbore, Dog Flea Caye, Emily, Gladden Spit, Northeast Caye, Nicholas Caye were surveyed during 3-8 days after the full moon in each month. UB-ERI discovered spawning at the Maugre Caye SPAG site for the first time since 2003 when monitoring and management efforts began. This will make 8 sites being monitored annually. The results of this year's SPAG monitoring are summarized in the table below. No data was entered for Rocky Point and Emily for the 2012-13 SPAG season.

Table 1 Nassau grouper counts for Dec 2012 to Feb 2013 SPAG season

Month	Full moon	Org.	Site	Sampling Date	Max Count	Max Avg. Count	# of Surveys
Dec-12	Dec 28, 2012	SEA	Gladden Spit	Jan 2nd - 4th 2013	200		2
	Dec 28, 2012	BFD	Nicholas Caye	Jan 2nd 2013		3.3	1
Jan-13	Jan 26, 2013	BFD	Nicholas Caye	Jan 30th- 31st 2013		122.5	4
	Jan 26, 2013	BAS	Sandbore	Jan 29th- 31st 2013	1203		4
	Jan 26, 2013	UB	Mauger Caye	Jan 29th- 31st 2013	390		4
	Jan 26, 2013	WCS	Northeast Point Glovers	Feb 1st - 2nd 2013		1725	3
Feb-13	Feb 25, 2013	WCS	Northeast Point Glovers	Mar 2nd-4th 2013		1000	5
	Feb 25, 2013	UB	Mauger Caye	Mar 3rd-4th 2013		102	2
SEASON COUNTS:					1203	1725	

There are eight sites being monitored by the Belize SPAG Working Group identified as Nassau grouper sites. Below is a map showing these eight SPAG sites, which are fully protected, no-take SPAG sites.

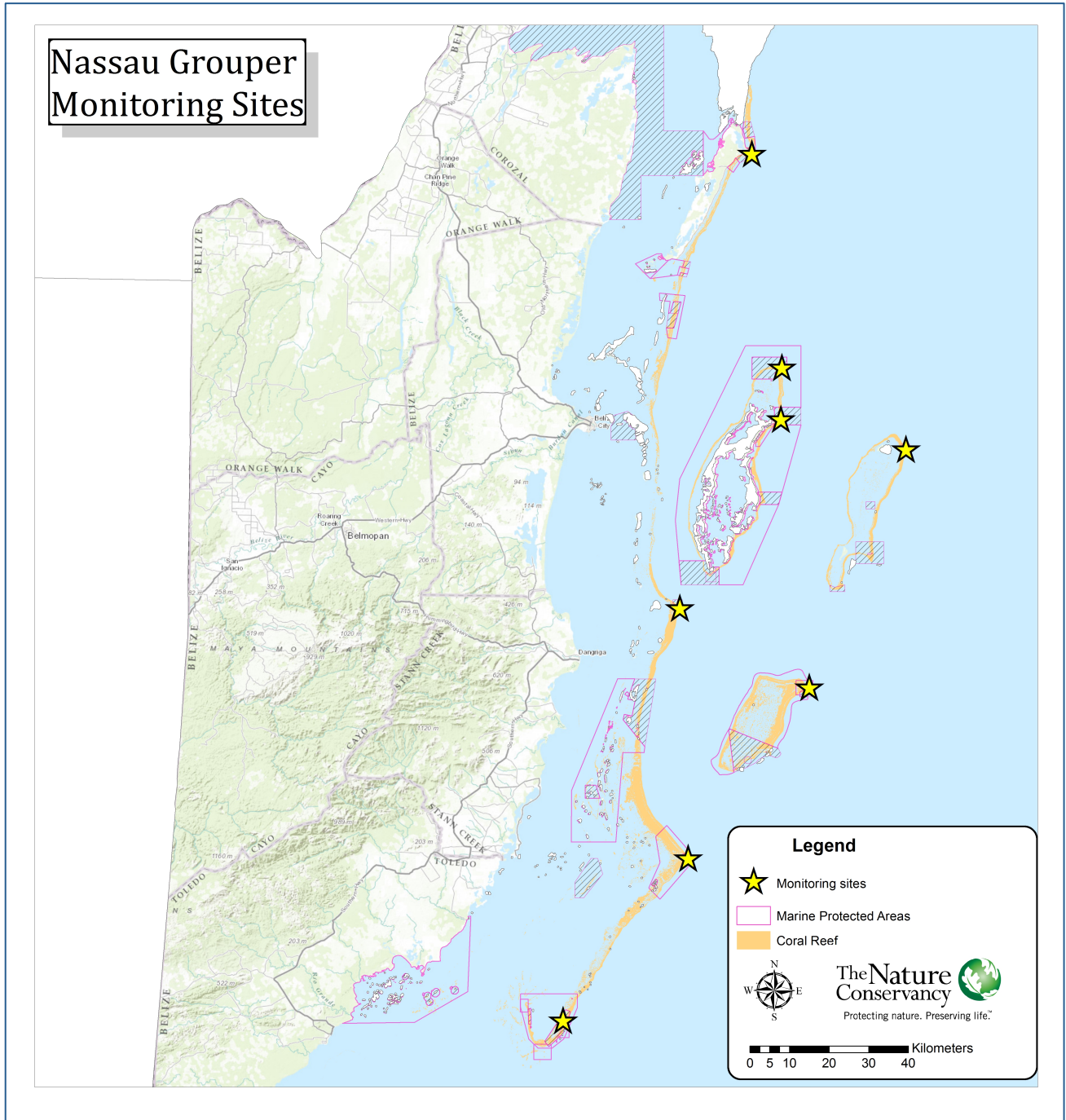


Figure 1 Map of the eight Nassau grouper SPAG sites monitored annually

Meetings

The Belize SPAG Working Group held four regular meetings during July 2012-June 2013 to work on implementation of our annual work plan. Elections for Chair and Secretary were held with both UB-ERI and WCS elected, respectively, for another 2-year term. The Working Group also reviewed membership and reached out to the fishing sector to have more active engagement by them. Through this means we have been fortunate to have the participation of the Hopkins Fishermen Association, the Belize Federation of Fishers, and the Sarteneja Fishermen Association joining the ranks of the Placencia Fishermen Cooperative and the BFCA on the Working Group. These members have expressed interest and volunteered time and expertise to assist with SPAG monitoring and public awareness in the coming season.



Database/Data Analysis

The SPAG Database continued to be maintained and updated by ERI to reflect changes in the methodology, troubleshooting any data entry problems and developing interactive reports to display the summary results by season on the database website. The ERI also went through a process of quality control to correct errors and inconsistencies in the data and campaigned to have members enter backlogged data up to 2012. All the data from previous years have been entered but only 3 sites had data entered for 2012-13 up to July 2013.

Education and Public Awareness

Education and Public Awareness activities completed this year included updating and uploading of news items and articles to the website and the Facebook page and the production of the annual newsletter. WCS produced the last version of the hard copy of a series of 10 newsletters, which was distributed to members and the fishing community. A decision was taken to produce an electronic newsletter through BAS. Copies will still be printed for fishers as needed and the fishing representatives will distribute these to their membership. The Nassau grouper TV spots were aired on local TV and cable networks during the December-March SPAG season through support from WCS. For the year, the Working Group Facebook Account received 219 likes, the majority of visitors were from Belize, with the US having the next abundant group of visitors. In total, visitors to the Facebook page were from 18 countries with a lot of regional viewers.

Enforcement Monitoring

Finally under Enforcement Monitoring, the Fisheries Department regularly collaborated with the Coast Guard to conduct enforcement monitoring at the SPAG sites during this year's season. This was in the form of regular day patrols and special night patrols in areas in the south such as Glover's Reef.

Monitoring Costs

Working Group members were asked to provide summaries of what their monitoring efforts cost. Based on feedback from all members, direct monitoring costs varied based on the site but ranged between \$1346-\$6007 monthly. This includes stipends, accommodations, meals and fuel for boat. There are other in-kind costs such as equipment, boat support and maintenance, full-time salaries and technical support (e.g training by Dr. Sadovy) that were not included.

The total approximate cost to monitor all SPAG sites for the season (December 2012–March 2013) was approximately \$71, 479.50. This represents a substantial amount of resources and time invested by the Working Group to ensure monitoring of SPAG activities and to assist with management of the sites. There were also special patrols supported by WCS at the Glover's Reef site for \$9,070, which included fuel for the boat, accommodation and meals, and overtime.

Table 2 Monthly SPAG monitoring costs

SPAG Site	Direct costs (monthly)
Rocky Point	\$2670.00
Sandbore	\$4236.50
Maugre Caye & Dog Flea Caye	\$4155.00
Emily	\$3384.00
Northeast Point	\$6007.00
Gladden Spit	\$1346.00
Nicholas Caye	\$2028.00
TOTAL MONTHLY	\$23,826.50
ANNUAL COST	\$23,826.50 x 3 = \$71,479.50

Acknowledgements

The Belize SPAG Working Group would like to thank all the organizations, staff, students, fishers and media houses that helped make 2012-13 a successful monitoring period and for providing support for the management of the Nassau Grouper SPAGS sites.