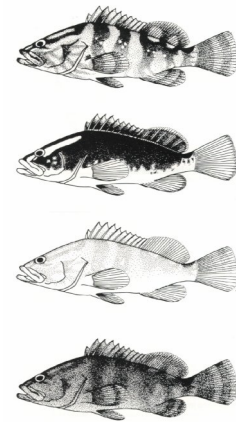


Information Circular No 10: The Belize Spawning Aggregation Working Group

Princess Margaret Drive, Belize City
Tel: 501-223-2623

Belize, Central America
email: species@btl.net



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Shown at right, from top to bottom: Four color-phase changes of the Nassau Grouper, *Epinephelus striatus* – Barred, Bicolor, White belly, Dark

Update for the 2012 Nassau Grouper Spawning Season

This year marks the tenth consecutive season that Working Group members monitored priority spawning aggregation sites, reporting on the maximum counts of Nassau grouper. The numbers remained very low for most sites. Only Sandbore, Lighthouse Reef and Northeast Pt, Glover's Reef, remained more or less the same, with viable numbers. Dogflea Caye, Turneffe again had no Nassau groupers present.

Maximum Nassau Grouper Counts for 2003 – 2012

Site	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Rocky Point	0	200	200	0 ¹	N/A	0	N/A	N/A	0	2
Dog Flea Caye, Turneffe	1,500	100 ³	-	2 ²	N/A	N/A	N/A	N/A	4	4
Sandbore, Lighthouse	1,800	2,500	1,800	1,205 ⁴	1,495	1,250	2,050	2,000	1,300	1,350
Caye Glory	1,000	1,000	350	7 ⁵	69	405	3,000	N/A	400	120
NE Pt., Glover's	2,400	1,700	2,240	3,000	800	1,190	1,100	3,328	1,800	1,050
Gladden Spit ⁵	250	450	360	700	500	1,106	260	238	375	164
Nicholas Caye	52	~50	80	48	80	100	25	30	45	85

¹ Only one dive; ² Site only monitored in February; ³ Site only monitored in January; ⁴ Probably missed peak spawning due to bad weather, ⁵ Numbers for Gladden Spit revised by SEA in 2011)

Dr. Yvonne Sadovy's Second Visit



Dr. Sadovy at Spawning Aggregation Working Group meeting (V. Burns/WCS)

The Northeast Pt, Glover's site was monitored in January 2012 with guidance from spawning aggregation expert, Dr. Yvonne Sadovy, a professor at the University of Hong Kong and Executive Director of the Society for the Conservation of Reef Fish Aggregations (SCRFA). The monitoring team successfully applied the newly revised protocol governing the counts, which involves careful mapping of the site and focusing on the fish counts. This protocol was developed by the Spawning Aggregation Working Group with the assistance of Dr. Sadovy. Dr. Sadovy also met with the Working Group and presented a seminar, hosted jointly by the Coastal Zone Management Authority and Institute and WCS, which was entitled *Aggregations from around the Globe: Responses to*

Management and Lessons Learned. The presentation was attended by 20 participants, including representatives from the Fisheries Department, fishing co-operatives, and the conservation NGO community.

The Dog Flea Caye Spawning Aggregation

by Dr. Leandra Cho-Ricketts, Environmental Research Institute, University of Belize

Dog Flea Caye, located in northeastern Turneffe Atoll, is a historic Nassau grouper spawning aggregation site. Anecdotal reports from fishermen indicate that this aggregation formed when the Maugre Caye aggregation moved to this area. Previous to 2001, up to 2,000 Nassau groupers had been seen at the site, with fish catches resulting in a CPUE equal to Sandbore Caye (Paz and Grimshaw, 2001). In 2003, 11 SPAG sites were established as no-take marine reserves to protect the significantly reduced Nassau grouper spawning aggregations along the Belize Barrier Reef, including Dog Flea Caye. Since its establishment, however, enforcement at the site has been opportunistic or periodic, with a lack of sustained management presence. The result of this is that, in practice, the site has essentially remained open to illegal fishing.

The Dog Flea Caye spawning aggregation site has shown a pattern of decline as a result of continued fishing, in contrast to other SPAG sites where closure has been fully enforced since 2003. Surveys in 2001 by The Nature Conservancy reported 100 Nassau groupers at the site, but by the following year, in 2002, no aggregation was found. However a year later in 2003, a sizable aggregation was encountered of 1500 fish, but in 2004 numbers at the site fell again to 100. Monitoring at the site was discontinued until 2006 when, through funding from WWF, some surveys were conducted. However, these surveys did not encounter any spawning aggregations of Nassau grouper either and no data were collected during 2007-2010. In 2011, the Environmental Research Institute revived the monitoring at the site, however, no aggregations have been found for the last two years, with only 4 Nassau groupers encountered during SPAG monitoring in 2011 and 2012 (Table 1).

This site is a case study demonstrating the need for complete protection and onsite management of SPAGs. The site has suffered from continued illegal fishing since 2003 without a sustained management presence. Attempts were made in enforcement in 2007-2008 and 2010, but these patrols were not maintained. The result is a collapse of the Nassau Grouper spawning site. When we compare other sites such as Northeast Point in Glovers Reef and Sandbore Caye in Lighthouse, both fully enforced marine reserves, these sites are still functional SPAG areas with hundreds to thousands of fish reported annually. If anything, Dog Flea Caye has shown us that it is important to maintain full protection of these SPAG sites if our goal of replenishing Belize's Nassau Grouper population is to be realized.

Year	Nassau grouper counts
2001	100
2002	9
2003	1500
2004	100
2006	2
2011	4
2012	4

Table 1 Data on maximum fish counts for Nassau grouper at Dog Flea Caye, Turneffe

If you would like more information about the Nassau Grouper, the Belize Spawning Aggregation Working Group, or anything mentioned in this newsletter, please contact Dr. Leandra Cho-Ricketts, Chairperson, Spawning Aggregation Working Group at the Environmental Research Institute, University of Belize.

Tel: (501) 822-3680 ext 185 Fax: (501) 822-3930

E-mail: lricketts@ub.edu.bz

Web site: www.spagbelize.org

