

# Co-management of Laughing Bird Caye National Park

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## ABSTRACT

Laughing Bird Caye national Park is an ideal one-day excursion for tourists visiting Placencia, a Belizean village booming with tourism. Nearly every tourist visits the Park, and visitors' impacts are becoming evident. Degradation would severely damage the tourism industry that, along with large-scale shrimp aquaculture, is replacing fishing as major local economic activities. In 1996, a group of community members formed the Friends of Laughing Bird Caye committee (FOLBC) and registered the NGO aimed at protecting and promoting the sustainability of the natural resources off the coast of Placencia. However, management of the park continued to be voluntary and minimal due to the NGO's lack of capacity. Yet they installed buoys, replaced trees, established a voluntary no-fishing zone, and engaged in environmental education. Also in 1996, the National Park was declared a World Heritage Site along with six other protected areas known as the Belize Barrier Reef System. In June 2001 FOLBC signed an agreement with the Forestry Department for co-management of Laughing Bird Caye. The Marine Protected Area (MPA) is now formally under community-based management. The Coastal Zone Management Authority and Institute assisted to build FOLBC capacity, and in March 2001 provided a Reserve Manager, Ranger and boat. FOLBC acquired another ranger and has vigorously sought ties with a wide community of interested stakeholders, including other NGOs and donor agencies, to continue the process of building capacity for managing the MPA. The impacts of Hurricane Iris on the caye and NGO resulted in serious setbacks.

KEY WORDS: Belize, co-management, Laughing Bird Caye

## INTRODUCTION

Belize is the location of the world's second largest and very diverse barrier reef ecosystem. It lies on the rim of a continental shelf approximately 257 km (160 miles) long and 15 - 40 km wide. Laughing Bird Caye is a 0.56 hectare island in the Belize Barrier Reef System lying halfway between Placencia village and the barrier reef at latitude 16° 26.59' n longitude 88° 11.85' W. The caye has a sandy beach on the leeward side that slopes slowly to moderate depth. In shallow water several patch reefs that are covered with rich undersea life including corals, sponges, anemones and fish surround the caye.

Laughing Bird Caye is a popular one-day excursion for tourists. Degradation would severely damage the tourism industry. Friends of Laughing Bird Caye is focused on preserving this area. The group includes the Placencia Audubon chapter, Placencia Village Council, Tour Guide Association, Belize Tourism Industry and

Association, Placencia Fishermen's Cooperative and residents of surrounding villages such as Siene Bight, Independence, Hopkins and Monkey River. Their lobbying led to the declaration of the caye as a National Park in 1991 by a Government of Belize statutory instrument (S.I.167) under the jurisdiction of the Forestry Department. In 1996, Statutory Instrument 94 expanded the Park to 4,048 hectares and included the surrounding faro, a unique geologic formation. Between these dates, and for a while afterwards, the park had no proper management. The communities concerned about impacts on the Caye saw stronger management was essential and urgent. In 1996 the IUCN designated seven protected areas representing the Belize Barrier Reef System as a collective World Heritage Site, Laughing Bird Caye being one of the seven. It must be noted that over forty percent of the country is under protection. Due to the country's effort toward conservation through sustainable management of its natural resources it is seen as taking a leading role in conservation of the environment. Unlike other countries, designation of protected areas in Belize is not reactive, due primarily to threats to the areas, but proactive mostly because of appreciation for environmental values.

#### FRIENDS OF LAUGHING BIRD CAYE (FOLBC)

Friends of Laughing Bird Caye is a non-governmental organization that is dedicated to the sustainable development of the Placencia Peninsula for the use and benefit of the surrounding communities. Their principal concern is the Laughing Bird Caye National Park. However, they are seeking to broaden their scope to include Gladden Spit Marine Reserve. Gladden is well known for its spawning aggregation site and whale shark sightings. The national park falls under the jurisdiction of the Forest Department. On 5<sup>th</sup> July 2001, Friends of Laughing Bird Caye was given permission to co-manage the park, which is in keeping to the Forestry Department's goal of community participation in the management of, and support for, national parks. A new management plan was formulated which included updating the previous management plan, starting environmental education, and hiring and training two rangers, a biologist, a park manager/reserve manager, and an administrative assistant. The project will allow for purchasing equipment to be used by the rangers, installation of mooring and marker buoys, placing necessary infrastructure on the island and basic environmental monitoring.

FOLBC receives help for institutional strengthening from various donor agencies such as the Global Environment Facility (GEF), World Wildlife Fund (WWF), The Nature Conservancy (TNC), and local Coastal Zone Management Authority and Institute (CZMAI). They also receive technical support from CZMAI and the Fisheries Department.

#### CO-MANAGEMENT

Co-management is a relatively new concept to Belize that has become very popular. There are several co-management agreements between Government

departments and community-based organizations, usually NGOs. The Fisheries and Forestry Departments have both signed co-management agreements with various NGOs, but they have different criteria, rules, and policies governing their respective agreements. The Department of Forestry has an agreement with Friends of Laughing Bird Caye since Laughing Bird Caye National Park falls under its jurisdiction. The signed Memorandum of Understanding delegates the majority of management responsibility to Friends of Laughing Bird Caye. Hence, responsibilities lie with the FOLBC to formulate, implement, and enforce management measures. However, Forestry still has the right to intercede within such responsibilities.

### MANAGING LAUGHING BIRD CAYE

There are three main reasons for the protection of the area. One is that it is known to be a popular nesting area for birds, especially the Laughing Gulls (*Larus atricilla*). Secondly, it is a popular tourist destination. The park receives approximately 100 visitors per day in the peak tourist season and approximately 60 visitors daily in the low season. The third reason is because of its uniqueness. Laughing Bird Caye National Park is a faro. The faro superficially resembles an oceanic atoll, but the origin of faro atolls is obscure, although some scientists believe that they are former calcium carbonate plateaus that have been severely eroded. The park area was being stressed primarily by two major factors: heavy tourism and illegal fishing activities. Fishermen and tourists are the two major user groups whose activities need effective management and control.

The rangers, whose jobs are to safeguard the natural resources, monitor the flow of tourists to the National Park. They have started recording the number of boats and visitors to the cayes every day. These data have been put in a database. The data have been recorded only for the past five months and are inaccurate since many events have hindered data gathering. Such events that are beyond staff control are weather, loss of utilities such as water and electricity, and limitations on fuel supplies for boats. A ticketing system was to have been put into place in November 2001 for the opening of the tourist season. The tickets and fees would have helped achieve management plan goals and assist the park in becoming more financially independent and self-sustainable.

Facilities and infrastructure for the National Park are progressing, including compost toilets, a multi-purpose building, mooring and marker buoys and the preparation for the set up of the biology laboratory. Dive shops will have to purchase the tickets at the park office in Placencia before going to the park. However, the ranger will have limited number of tickets for sale on the cayes. It is very important to note that not only do the rangers monitor the national park, but so do the tour guides. FOLBC has had consultations with the tour guides, fishermen, and hotels. All of these stakeholders have supported FOLBC.

Due to the multi-purpose use of the cayes, a zoning scheme was essential in order to facilitate sustainability. The island was zoned into five sections. The preservation

zone is a no-entry, restricted area. This is due to the nesting area at the north end of the island. There is a no-swimming channel/zone that boats should use in order to get to the island. The recreational zone is the area that will house the picnic area, the restrooms and the information centre. The buffer zone is between the preservation zone and the recreation area. The last zone is the marine recreational zone, which is where moorings will be installed or dive boats will be able to anchor. It is important to mention the one-mile no-fishing zone around the caye that was suggested by the fishermen themselves. As mentioned previously, FOLBC is being strongly supported by all stakeholders

Environmental programs are also being carried out with primary schools. Workshops have been conducted with teachers from all the neighbouring communities. This was to investigate the level at which the children are taught about conservation and nature. The goal of the FOLBC's environmental educator was to find a way to incorporate a conservation course into the curriculum. Unfortunately, this was not accomplished due to many obstacles including a natural disaster.

### HURRICANE IRIS

On 8 October 2001, Hurricane Iris, a category four hurricane, devastated parts of southern Belize. It came packing 149 mph winds, gusting to 200 mph. It slammed into the southern coast of Belize just north of Monkey River early on a Monday night with a storm surge of up to almost five metres. Laughing Bird Caye National Park was in the path of Hurricane Iris. Friends of Laughing Bird Caye staff conducted an assessment of the park on 23 October 2001. The delay in the assessment was out of FOLBC's hands. The reason was that the National Emergency Management Organization (NEMO) appropriated FOLBC's boat, and it was impossible to get out to the caye before then. The results of the assessments are striking.

#### **Damage Overview**

The caye was severely damaged by the winds, waves and surge that Hurricane Iris brought. There is a new channel of water separating the north end from the rest of the island, and two crater-like holes on the southern part that are filled with water. The south end of the caye has only 17.7% of the coconut trees standing, of which 39.3% will need some form of restoration. All of the mangroves on the north end were washed out and the area is now bare of any kind of vegetation.

Laughing Bird Caye has changed in size and shape. Its geographical features do not match those recorded on maps and with GIS points of reference. The north end was reduced to one third of its original size, and now resembles an island on its own. The south end was extended a few metres further to the south, reduced on the western side and increased on the east. Actual measurements will be recorded and compared to past data.

The marine and terrestrial life in the National Park was also extensively affected. The creatures of the park that one could once find in the sea were put on land. Table 1 shows the list of the most common dead organisms found in abundance on the island as a result of the wave and surge of this hurricane.

**Table 1.** List of dead organisms on Laughing Bird Caye after Hurricane Iris

Organism	Organism
Pelican	Measled cowries
Giant tube sponge	Pink conch
Sea rods	Stone crabs
Van Hyning's cockle	Hermit crabs
Zigzag scallop	Brittle stars
Common dove shell	Coquina clam

Due to the dead organisms found on the island, the area acquired a putrid odor. Conchs were strewn all over the island with the animals dead inside their shells. One could only find pieces of more fragile shells and crab claws. The place resembled cemetery rather than a beautiful island. The white sand beach was no longer enticing. The shoreline, up to five metres inland, was covered with green algae also seen floating near shore on the water.

### Reef Assessment

Coastal Zone Management Authority and Institute with the collaboration of Laughing Bird Caye, other protected areas, and the Fisheries Department conducted an assessment of the damage caused to southern reefs. The assessment was carried out on 16-17<sup>th</sup> October 2001. The final report is entitled "Ecological Status of Belize's Southern Reef Systems — Impacts of Hurricane Iris". The paper reports impacts from minor to severe damages, varying between sites. It states:

"Discernible mechanical reef damage appears to be positively correlated to the narrow path traveled by Hurricane Iris...the greatest damage was observed at Laughing Bird Caye National Park, with over 60% of assessed colonies displaying mechanical damage along the fore reef of this faro... Damage incurred includes complete defoliation and uproot of its mangrove trees, moderate to severe land erosion, and the emergence of a channel (approximately 15ft in width) that completely intersects the island... The impact from Hurricane Iris is expected to have long term ecological consequences for the Laughing Bird Caye National Park" (Bood 2001).

A rapid assessment of hard corals colonies at selected sites was carried out during this field assessment. The selection of the sites was based on the path traveled by Hurricane Iris. Observations of noticeable impacts on hard corals such

as mechanical damage were recorded. The survey only examined hard corals and does not reflect damages to benthic invertebrates or fish populations.

A finding of the assessment is that the forereef near Laughing Bird Caye received the greatest impact “with an average recent mortality of 19.6% and hurricane (mechanical) damage of 70.1% among assessed coral colonies” (Bood 2001). The *Acropora cervicornis* (Staghorn coral), *Porites asteroides* (Mustard Hill coral), *Montastraea annularis* complex (Boulder Star coral), and *Siderastrea siderea* (Massive Starlet coral) received the greatest mechanical damage due to the hurricane. It was observed that gorgonians were also severely impacted, but they were not assessed. A month previously, this site exhibited a mortality of 2.8%, bleaching of 43.75% and mechanical damage of <1% (Mcfield et al. unpublished data from 2001 Mesoamerican Reef Survey). After Hurricane Iris there was an observable difference with mortality of 19.6%, mechanical damage of 70.69% and bleaching of 44.83%. Table 2 compares the status of Laughing Bird Caye a month before and a week after Hurricane Iris.

**Table 2.** Comparison of coral reef status before and after the impact of Hurricane Iris on the Laughing Bird Caye National Park. Source: Mesoamerican Reef Survey

Month	Mechanical Damage	Bleaching	Mortality
September 2001	<1%	43.7%	2.8%
October 2001	70.69%	44.8%	19.6

### Impact on FOLBC and Recovery

Friends of Laughing Bird Caye was also affected in Placencia village where its office is based. The village was 95% destroyed when Hurricane Iris swept over Placencia. FOLBC's office is located at the point of the peninsula along the shoreline. The office received moderate damage to the building as well as loss of equipment and supplies. Damage to the building was due to the slamming of the waves and the almost five metre surge that came over land. It destroyed the conference room (walls, roof and ceiling) and front desk area. The west side of the building received damage due to settling of water. The amount of water that settled throughout the office measured only 30 cm deep, unlike other buildings that had high water marks of up to 1.5 m above ground on them. The loss of equipment such as computers was due to water damage.

FOLBC will be replanting mangroves on the island as well as resistant coconut trees. This will help prevent the further erosion of the island since it is subject to strong currents and heavy wave action. It is an effort to get the island back to normal as well as to get wildlife back on the island. There will be a monitoring program set up to observe the pace of recovery of the coral colonies. FOLBC is seeking funding for the renovation of the office and purchase of replacement equipment.

### CONCLUSION

Co-management of protected areas will go a long way to ensure that future generations will be able to enjoy the natural beauty of Belize. It is very important for the organization to try to get things back to their status before Hurricane Iris. This will take a lot of effort on behalf of the staff and lots of financial and technical support from various organizations. The damages brought about by Hurricane Iris will take a long time to recover. However, it is through the capacity for management acquired from networks of collaborating agencies that the recovery of FOLBC is almost certain, despite the adversity.

### ACKNOWLEDGEMENT

It is unfortunate that during the coral reef assessment Friends of Laughing Bird Caye lost their biologist, Luke D'Silva. He will be greatly missed by many. The "Ecological Status of Belize's Southern Reef System- Impacts of Hurricane Iris" was dedicated to Luke.

### LITERATURE CITED

Bood, N. [2001]. Ecological Status of Belize's Southern Reef – Impacts of Hurricane Iris. Coastal Zone Management Authority and Institute. Belize City, Belize. Unpubl. MS.