

Field report to
Belize Marine Program, Wildlife Conservation Society

In-water Surveys of Marine Turtles at Glover's Reef Marine Reserve, September 2007

by

Cathi L. Campbell, Ph.D.

Nicaragua Sea Turtle Conservation Program, Wildlife Conservation Society

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Principal Objective

Conduct follow-up training and in-water surveys and captures of marine turtles at Glover's Reef Marine Reserve (GRMR).

In-water Surveys

The in-water survey team was comprised of up to five WCS staff, six Belize Fisheries staff, and a local resident assisted during one afternoon (see Participants listed at end of report). The weather, particularly high wind, and resulting water conditions provided some challenges to the September survey effort. In addition, some invertebrates that sting/bite and cause irritation to snorkellers were abundant in some areas. Despite these conditions in-water surveys were conducted from 24 – 27 September 2007. New participants were trained in measuring, weighing, and collecting tissue samples, and for repeat participants methods presented in April 2007 were reinforced.

The survey team conducted a total of 14 in-water surveys at 10 different sites (Table 1). The surveys varied in duration from 20 to 90 minutes for a total of 10.5 hours of surveys, and varied from approximately 0.31 to 1.23 km in length for a total of 10.12 km of in-water habitat surveyed. We conducted surveys at four new sites (NE Elbow, NE Lighthouse, Lighthouse, and a No Name site) as well as repeated some previously surveyed sites (see field report for April 2007). The greatest number of turtle sightings in a survey occurred at Lighthouse on the northeast side of the atoll and near South West Cay on the south side of the atoll, with five turtles sighted during each approximately 1.0 km survey. The Middle Caye site had the second greatest number (and highest density) of sightings with four turtles sighted in a 0.50 km length survey. During these surveys we sighted a total of 26 sea turtles (Figure 1), an overall sighting rate of 2.5 turtles/survey hour. Of these 26 turtles, 23 were hawksbills (88.5%) and 3 were green turtles (11.5%). The in-water survey team captured 12 of the 26 turtles sighted, 10 of these were hawksbills and 2 were green turtles. This effort resulted in a high capture rate of 0.46, almost one turtle captured out of every two turtles sighted. Sightings relative to survey length averaged 2.56 turtles/km.

All captured turtles were measured, weighed, tagged, and a tissue sample extracted prior to release at the capture site. Mean size for captured hawksbills was 39.0 cm minimum straight carapace length (SCL), SD= 8.4, range = 26.9-51.4 cm, n=10. The two captured green turtles were 29.9 and 34.7 cm SCL. All captured turtles were juveniles, however, larger hawksbills were observed during the surveys and may have been subadults or adults. All methods for collecting biometric data were the same as described in the field report for the April 2007 monitoring effort.

Table 1. In-water survey results for 14 surveys conducted at Glover's Reef Marine Reserve from 24 to 27 September 2007.

Date	Location	# of snorkelers	Duration (minutes)	Survey Length (km)	Ei sighted	Cc sighted	Cm sighted	Spec Unk	Total Sighted	# Captured
24 Sep	NE Elbow (north of Lighthouse)	8	60	0.96	3	0	0	0	3	1
25 Sep	NE Lighthouse (westward)	7	30	0.50	1	0	0	0	1	0
25 Sep	Lighthouse	8	60	0.98	5	0	0	0	5	0
25 Sep	No Name (NW area)	9	30	0.57	0	0	0	0	0	0
25 Sep	Fisherman Camp 2 (south)	6	30	0.38	0	0	1	0	1	1
25 Sep	Middle Caye - South	8	30	0.31	0	0	0	0	0	0
25 Sep	SW Caye - South	7	60	1.24	1	0	1	0	2	2
26 Sep	Rockhead	7	60	0.88	3	0	0	0	3	2
26 Sep	Rockhead - South	8	50	0.83	1	0	0	0	1	0
26 Sep	South West Caye	8	90	1.07	4	0	1	0	5	4
27 Sep	Long Caye	5	30	0.85	1	0	0	0	1	0
27 Sep	Middle Caye	5	50	0.52	4	0	0	0	4	2
27 Sep	South West Caye	7	20	0.34	0	0	0	0	0	0
27 Sep	South West Caye	7	30	0.66	0	0	0	0	0	0
	Total		630	10.12	23	0	3	0	26	12

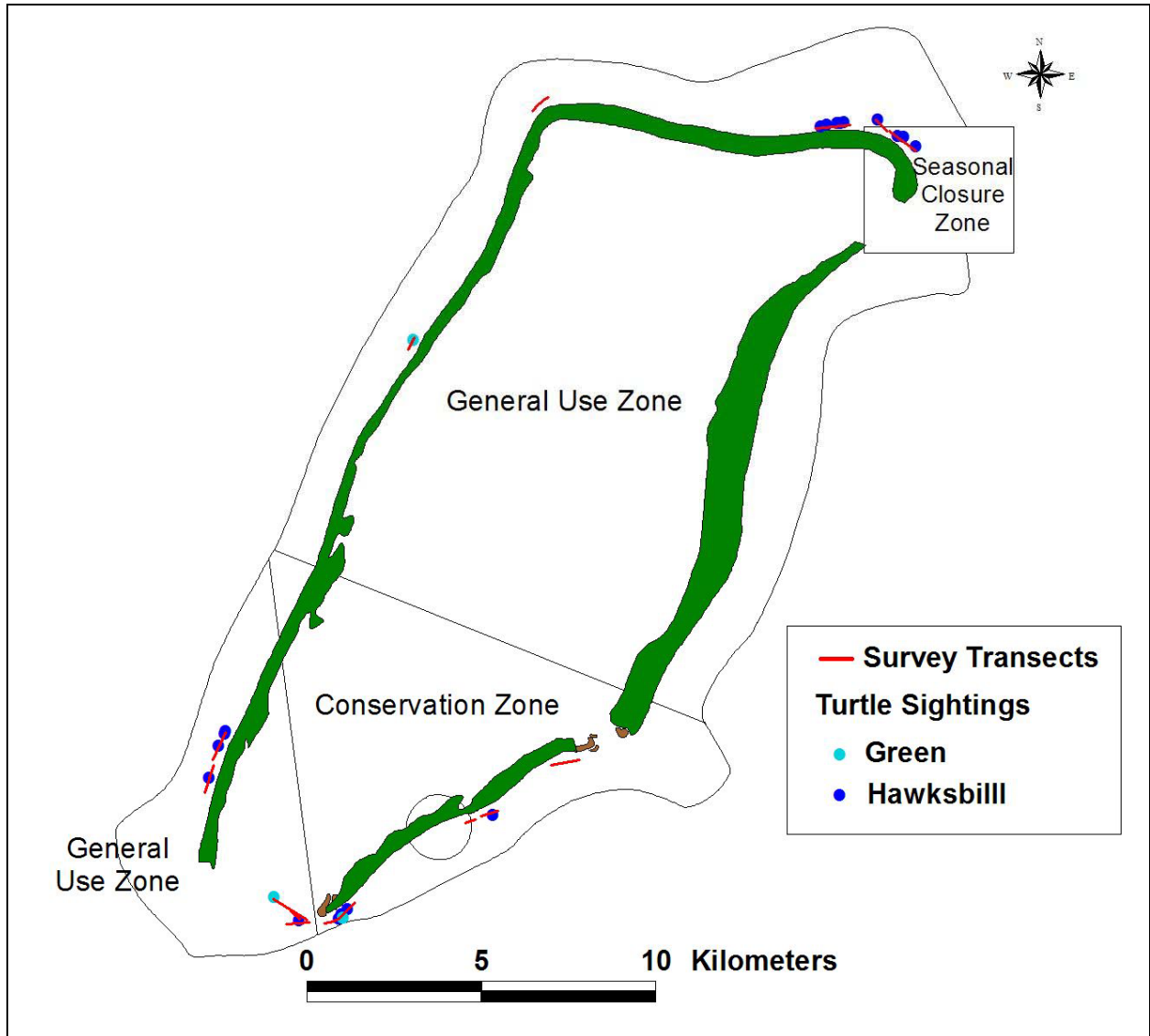


Figure 1. Map of Glover's Reef Marine Reserve with survey transects and sightings of sea turtles during in-water monitoring 24-27 September 2007.

Beach Monitoring

The participants also visited Long Caye and discussed the nesting events that occurred during the summer nesting season. It was reported that a loggerhead nested three times on Long Caye. The eggs were deposited in a low lying area of the caye, and this was likely the direct result of the northern beach access being blocked by the placement of a cement wall earlier in the year. I was informed of the nesting shortly after they occurred and recommended that the clutches be relocated. Unfortunately the clutches were not relocated and little to no hatching resulted, i.e., the reproductive effort of the only confirmed sea turtle nesting on Glover's in 2007 was diminished due to a lack of taking appropriate steps to relocate her three clutches. The group had a discussion about the cement wall that blocks access to one of few appropriate sea turtle nesting habitats on the Glover's Atoll and it was suggested that they receive some training in nest relocation procedures. I also suggested that efforts to have the wall removed continue until the wall is dismantled and no longer obstructs access to critical sea turtle nesting habitat.

Discussion & Summary

The September survey effort was successful, although weather conditions presented some challenges. When comparing to the April 2007 in-water survey effort, more turtles were captured in September 2007 (1.14 turtles/survey hour) than in April 2007 (0.87 turtles/survey hour), but fewer were sighted in September 2007 (2.5 turtles/survey hour) than in April 2007 (3.3 turtles/survey hour). Thus, our capture rate has increased from 0.26 to 0.46, but poor weather conditions likely hampered our sighting ability. Also, many more turtles were sighted on the west side of the atoll in April than in September. This may reflect differential seasonal use of habitat, or more likely, the conditions were less conducive to sighting turtles in September. Loggerheads were not sighted during the September survey effort, which coincides with reports from local divers that loggerheads are not in the area during the fall. Since the two sightings of loggerheads in April were both adult males and the nesting season for loggerheads in the area is early summer, it is not surprising that the male loggerheads might not reside in the Glover's area outside of the reproductive season.

The size of hawksbill turtles captured in September (mean = 39.0cm SCL, range = 26.9 – 51.4 cm) was generally the same as April (mean = 39.9 cm SCL, range = 32.7 – 49.6 cm), suggesting that juvenile hawksbills may reside in the area year around, although we have not yet sampled during the winter season. We did not observe or recapture any of the hawksbills tagged in April, this is likely due to the small number of hawksbills tagged (n=8) and suggests that there may be a reasonably sized aggregation of juvenile hawksbills in the area.

Participants were able to collect biometric data and performed turtle handling skills well, however, handling turtles at Glover's should continue to be supervised by an experienced sea turtle scientist until additional experience is obtained either by local WCS staff or Belize Fisheries staff. On the other hand, in-water surveys can be conducted by the current survey group made up of WCS field staff and Fisheries staff involved in previous in-water surveys at Glover's, however, capturing turtles should not be conducted without a sea turtle scientist. An additional issue for this project to continue is the interest of participants to conduct the in-water surveys and captures. There were a couple of participants that were either not interested in the survey work or felt conflicted about the potential for harassing sea turtles when they were captured and data collected. The capture of sea turtles at GRMR provides an excellent opportunity to gain valuable information on the foraging aggregation at this site and every effort is made to minimize stress on the animals, including keeping them cool and hydrated, as well as

getting them back in the water as soon as possible. The data collection methods used in this study are consistent with methods used at numerous sites across the world where sea turtles are being studied by experienced scientists. My recommendation to continue this valuable project is to identify individuals that are interested and willing to conduct the in-water surveys and captures under the appropriate guidance without reservation, and that this will form the core group that will continue this monitoring effort. In addition, it is important that all participants in this monitoring effort are well informed about the activities they will be involved in during each survey period.

The in-water monitoring project at Glover's Reef provides the opportunity to gain valuable insight into sea turtle aggregations at the atoll, which would otherwise not be possible. For example, growth rates, habitat use, spatial and temporal distribution, and genetic stock assessment to determine the origin of turtles in the GRMR aggregation, among others, are important for managing the recovery of sea turtles at GRMR.

Recommended Next Steps

- Complete the in-water protocol for the in-water monitoring study, including development of a schedule for the in-water surveys.
- Archive and manage turtle capture data in Access. Collaborate with Fisheries Department to develop methods for in-water and beach monitoring, and standardize data management.
- Continue training Belize Fisheries Biologists and other appropriate institutions in sea turtle biology and handling methods at GRMR as deemed possible. Acquire training materials such as DVDs, books etc to use and distribute as needed.
- Purchase PIT tags and Reader for use on sea turtles captured at GRMR to improve long-term identification of individuals.

Participants – In-water Monitoring (Everyone listed except the local resident received training in turtle handling and data collection)

Name	Organization
Warren Cabral	Local Resident
Elias Cantun	Belize Fisheries Department
Roberto Carballo	Belize Fisheries Department
Robin Coleman	Wildlife Conservation Society
Alicia Eck	Belize Fisheries Department
Sergio Hoare	Wildlife Conservation Society
Godwin Humes	Belize Fisheries Department
Carlos Martinez	Belize Fisheries Department
Luis Novelo	Belize Fisheries Department
Alex Tilley	Wildlife Conservation Society
Faygon Villanueva	Wildlife Conservation Society

Addendum - Sea Turtle Nest Monitoring and Management Workshop

Following the in-water surveys at GRMR, a workshop on sea turtles was given in Gales Point on 28-29 September to biologists, local institution staff and local residents (see Participants list below). The primary objective was to educate local residents of Gales Point and Belize Fisheries Department biologists about sea turtles and beach monitoring methods. Presentations on sea turtle biology, species identification, threats, monitoring nesting beaches, and data collection were given. Handouts on sea turtle identification were provided to participants. A brief field trip to the sea turtle nesting beach at Manatee Bar (the most important remaining sea turtle nesting beach in Belize) was also made to show participants examples of some topics presented in the workshop, such as nest excavation. Participants also requested additional handouts from the presentations which we hope to provide in the near future. Following the presentations given by WCS listed above, a presentation on sea turtle health issues was given by Dr. Alonso Aguirre of Wildlife Trust, and a presentation on Belize fisheries laws pertaining to sea turtles was given by Mr. Isaias Majil of Belize Fisheries Department.

Participants – Sea Turtle Nest Monitoring and Management Workshop

Name	Organization	Contact
Kevin Andrewin	Wildlife Trust and LMT Gales Point Vice Chairperson	660-4447
Orsel Andrewin	Gales Point, Manatee	663-0129 209-8031
Sharlene Andrewin	Gales Point, Manatee	Gales Point Village Council 220-8066
Nicole Auil	Wildlife Trust	223-5172 auil@wildlifetrust.org
Roberto Carballo	Belize Fisheries Dept.	recarballo@yahoo.com
Robin Coleman	Wildlife Conservation Society	rcoleman@wcs.org
Alicia Eck	Bacalar Chico Marine Reserve Belize Fisheries Dept.	605-0337 P.O. Box 60, San Pedro Town 608-2704 (w) bacalarchicomr@gmail.com
Kirah Forman	Hol Chan Marine Reserve	kirahforman@yahoo.com P.O. Box 60 San Pedro Town, Belize Phone 226-2247
Kenneth Gale	Belize Audubon Society	605-5887
Jamal Galves	Wildlife Trust	galves@wildlifetrust.org
Sergio Hoare	Wildlife Conservation Society	shoare@wcs.org
Godwin Humes Jr.	Fisheries Department	gads22@yahoo.com
Leonard Myers	Gales Point, Manatee	Gales Point Village
Trevor Samuels	Gales Point, Manatee	Gales Point Village 220-8066 663-0129
Grace Welch	Domestic Worker Gales Pt. Village	
Kenneth Welch	University of Belize (student)	602-5461 kenman220@yahoo.com

Photographs



C. Campbell instructing participants.
Photo: A. Tilley/WCS.



Participants E. Cantun and G. Humes measuring hawksbill turtle. Photo: A. Tilley/WCS.



Hawksbill turtle showing flipper tag in anterior left flipper. Photo: C. Campbell/WCS



A. Eck releasing juvenile green turtle. Photo: A. Tilley/WCS.



G. Humes with juvenile green turtle.
Photo: A. Tilley/WCS.