REEF CURRENTS

NEWLETTER FOR THE NORTHERN MARINE RESERVE MANAGEMENT UNIT

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Editor's Note: Marine Protected Areas Species Management

Overfishing, habitat loss and pollution are threats that many of our marine species are facing. In this issue of Reef Currents Newsletter we present two important species that we study in our environmental monitoring program.

The spiny lobster is of great commercial value to the country generating millions in income every year. Sea turtles, on the other hand, do not contribute to the local fishery since it's illegal to catch or have in possession any marine turtle. Nevertheless, they represent a flag ship species for marine conservation and can be a measure of success of management efforts.

At the Hol Chan Marine Reserve viewing sea turtle have become a daily experience since there are several resident turtles at Hol Chan Cut and Shark Ray Alley. The value of having those resident turtles is just priceless and enforces the importance of marine conservation for the benefit of sustainable tourism. At Bacalar Chico Marine Reserve we have Robles Point, the only nesting beach for sea turtles in Ambergris Caye.

Specific management actions to conserve these species is not enough. Also important is protecting habitat essential for reproduction, feeding and survival.

INSIDE THIS ISSUE

Submit all comments, article, letters and other general correspondence to:

The Editor: Miguel Alamilla MSc.

Hol Chan Marine Reserve Office

Caribena Street

San Pedro Town Email: hcmr@btl.net

Phone: 226-2247 email: mikeobze@yahoo.com

Coral Reef Ed-ventures: Summer Education Program

By Smith College Interns

For the past eleven years students from Smith College in Northampton, Massachusetts, USA have been working in close collaboration with staff at the Hol Chan Marine Reserve office to bring an environmental education program called Coral Reef Ed-Ventures to the children of San Pedro. This free program serves children ages seven through about sixteen and its mission is to teach children to be stewards of their environment.

A team of six student teachers visits San Pedro from early June to mid-July each year and conducts educational summer camps, teaching coral reef ecology and safe practices when using the reef as a resource. Each summer the Hol Chan office sends a speaker, usually the office's educator, Mariela Archer, to visit with the children. She teaches them about the zones at Hol Chan and what the rules of each zone are. The children get to share their knowledge with each other and learn new things through these visits. It is the hope of the student teachers that the children will learn at a young age that it is up to them to make positive choices that will benefit or preserve the reef environment, and that there are many ways to make a difference.

On Friday, July 9th our advanced campers (ages 12 and up) will be displaying original photos and creative writing pieces at the central park in San Pedro beginning at 7:00 p.m. On Monday, July 5th our youth program will begin at 9:00 a.m. at the Roman Catholic Elementary School in San Pedro for children ages 7 to 11.

Caye Caulker Marine Reserve: Mangrove Monitoring Program

By Nidia Chacon, Marine Biologist

Mangrove forest serves as an integral entity which is interconnected to the barrier reef system. The fine line between mangrove clearing for development and conservation make mangrove monitoring an important component of our coastal protection efforts.

In June 2009, the staff of the Caye Caulker Marine Reserve, together with volunteers from FAMRACC and the Ocean Academy, set up two sites for mangrove monitoring; each site contained three plots, with each plot containing five subplots.

The baseline data gathered indicated that there was a total of nineteen (19) mature trees and a total of two hundred and forty-two (242) seedlings in the first site, while the second site contained a total of One Hundred and fifty seedlings (150). At the first site the mature trees measured from 2.75 meters high to 7.85 meters high; with base circumference as thin as 10 cm to as thick as 30 cm. The seedlings measured an average height of 21.5 cm in height. The second site an average height of the seedlings measured 24.1 cm.

In June 2010 the staff returned to conduct its mangrove survey, so as to calculate the survival rate, the growth rate and if any new recruits were present. The mature trees all survived the year with an average growth of 0.3 meters in height and a base circumference of 2.8 cm. At the first site, of the 242 seedlings initially encountered, only 27 survived showing only an 11.2% survival rate. The surviving seedlings average an annual growth of 3.65cm. There were no new recruits recorded in the first site. In the second site only 17 of the 150 seedlings survived showing an 11.3% survival rate, similar to the previous site. Also of the surviving seedlings there was an annual growth of 3.28cm, which again is similar to the previous site. The second site did show a total of 25 new recruits with an average height of 21.5 cm.

Hol Chan Marine Reserve: Education Program Quarterly News

By Mariela Archer, Environmental Educator

Marine Litter Program

Marine litter is any solid manufactured material found in the marine or coastal environment that doesn't naturally belong there. The debris can consist of plastics, glass, ropes, medical waste, beverage cans, Styrofoam, fishing lines and fishing nets.

Studies have shown that over eighty percent of marine debris is plastic, which has been rapidly accumulating. This is because plastics do not biodegrade as many other substances do, therefore it has become a huge problem.

Marine litter has detrimental effect to humans and marine wildlife. animals can ingest them thinking its food, while others might get entangled in them. Furthermore, it could also affect our health and affect the aesthetics of our island that depend on the tourism industry.

The Hol Chan and Bacalar Chico Marine Reserve are working on a marine litter program, which is sponsored by GCFI (Gulf and Caribbean Fisheries Institute) and CaMPAM (Caribbean Marine Protected Area Managers) network. As part of this project we held a beach clean up on Saturday May 15th where we took 18 students to the turtle nesting beach for a beach cleanup. At the beginning of the cleanup the students were given a briefing on the importance of keeping the marine environment clean, and threats caused by marine litter. A total of 30 bags of trash was collected from the beach which were brought to town and properly disposed of at the San Pedro dump site.

To help reduce marine litter you can get involved in any of our programs and support us, and pick up trash that you see and dispose of it properly in order to help keep our community clean.

Turtle Rehabilitation at Hol Chan

By Kirah Forman, Marine Biologist

On June 1, 2010, biologist Ms. Kirah Forman along with her assistant Mr. Grimaldo Acosta responded to a report of a loggerhead turtle being kept at St. George's Caye that was weak and needed medical attention. Upon arriving they found a very weak and emaciated female loggerhead. She also appeared to be suffering from an eye infection. The persons who found her nicknamed her "Bebe".

She was transported to the Hol Chan office where she underwent treatment for her eye infection and was given fluids to get her rehydrated. BeBe was also taken to the Saga Human Society to be weighed. When she was brought to Hol Chan she weighed 21lbs and measured 2ft (61cm). After treatment and two weeks later she now ways 27.5lbs. Her eye infection has fully cleared up and she is slowly regaining her strength. Bebe eats approximately 1lb of sardines per day.

The Hol Chan staff is currently preparing to move her to Bacalar Chico Marine Reserve to continue her treatment within an enclosure. She is no longer on antibiotics but needs to regain more strength before she can be released.

BeBe is a success story of how humans can assist the turtle population by rehabilitating sick, weak, and injured sea turtles. Any one finding turtles that appear to be sick or need help are encouraged to call the Hol Chan office at 226-2247.

Sea Turtle Nest Monitoring: Robles Point Ambergris Caye, Bacalar Chico National Park & Marine Reserve

By Kirah Forman, Marine Biologist

Robles Point at Bacalar Chico is a known turtle nesting beach. Each year from June to September turtles visit the beach at Robles to lay their eggs. The HCMR staff monitors the beach twice per week during the months of June to September looking for nests that have been laid. When a possible nest is located it is dug up to confirm that there were eggs laid and that it was not a false crawl. The date found, along with an estimate of when the nest was laid and when it is estimated to hatch is recorded on data sheets. Each nest is given an identification code that is written on the data sheet as well as on a bottle. The bottle is placed in the hole just above the nest and the entire nest is covered back up.

After hatching the nest is revisited and dug up to calculate how many had emerged from the nest, and count how many eggs were undeveloped or developed and did not hatch, count egg shells, and how many hatchlings died in the nest. All these are recorded on data sheets.

Loggerhead *(Caretta caretta)* turtles are the most predominant species that lay on the beach, but there are also a few Green Turtles (*Chelonia mydas)* that nest there.

For this nesting season so far we have found 14 confirmed nests which were laid in June and early July. There has been over 42 false crawls recorded already for this nesting season indicating that we should have a busy nesting season. The Hol Chan staff in collaboration with the staff of Bacalar Chico will be monitoring the beach several times per week during the months of June to October.

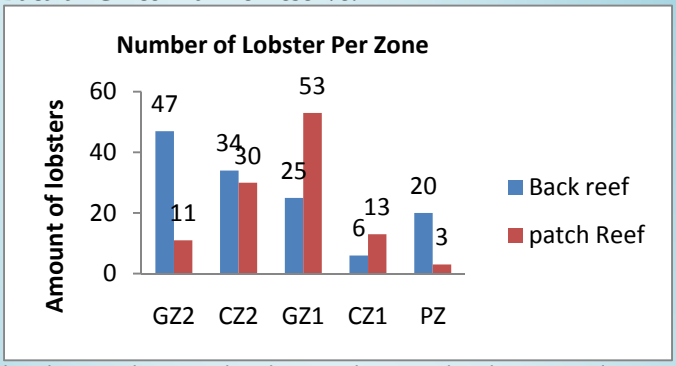
One of the issues facing the beach at Bacalar Chico is erosion. One nest has had to be relocated because the turtle had laid it right at the high tide mark. There was one other nest that we feel may not hatch because it has been inundated by water during a high tide event.

Lobster season Opens: Synopsis of Lobster Populations

June 15th marked the opening of the lobster season and people are reminded that there are certain laws which govern the harvesting of lobsters within the waters of Belize. The open season for lobster is from **June 15th to February 14th**. Lobsters' must have a **minimum carapace length of 3 inches and minimum tail weight of four ounces.** In addition no one is allowed to harvest lobsters with eggs, tar spot or during the moulting stage.

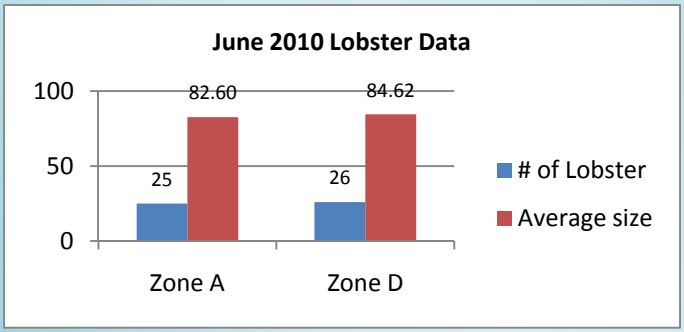
Before the opening of the lobster season, the three northern protected areas conducted surveys to get a snapshot of current lobster populations. Below is a synopsis of the results.

Bacalar Chico Marine Reserve:



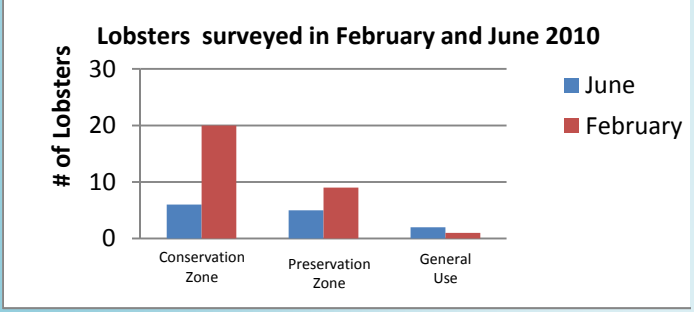
(GZ1) General Zone 1, (GZ2) General Zone 2, (CZ1) Conservation Zone 1, (CZ2) Conservation Zone 2, (PZ) Preservation Zone.

Hol Chan Marine Reserve:



The results of Zone D are interesting because this area was previously open to fishing and the lobster surveys within this area were low. Since October 2008 this area has been closed off to fishing.

Caye Caulker Marine Reserve



Reef Facts: Nesting Marine Turtles of Ambergris Caye

By Miguel Alamilla

Last year we started monitoring the turtle nesting beach of Robles Point in Bacalar Chico Marine Reserve. Loggerheads and Green turtles use this one kilometre beach in northern Ambergris Caye every year to nest.

Sea turtle are reptiles that have adopted to live in the ocean. As reptiles they have lungs and require air to breath but they are accomplished divers and can reach depth of up to 4000 ft. The only time sea turtles leave the ocean is to lay their eggs on sandy beaches. Sea turtles are known to migrate hundreds of kilometre to breeding grounds and nesting sites.

Females usually lay 80 to 200 eggs per nest and may lay 2 to 6 clutches per year. They return to the same nesting ground every 2 to 5 years. Incubation period last between 50-56 days upon which gender is determined by nest temperature. Low temperature produces males and high temperatures produces females.

When hatchlings emerge from the sand they orient themselves towards the sea in a frantic effort to swim toward the oceanic convergence zone where they will find food and shelter during their juvenile live stage. Inshore waters pose one of the greatest survival threats to juvenile sea turtles and a high number of hatchlings are eaten by bony fish, sharks and birds.

Young juveniles eventually return to coastal waters to feed and shelter travelling thousands of miles throughout their lifetime. At sexual maturity females instinctively return to the beach where they were born to complete the breeding and nesting cycle.

Throughout their lifetime a mature female turtle may produce thousands of eggs but not all will hatch. Some will be infertile, some will be lost by erosion or eaten by predators, while others will be taken illegally for human consumption.