Research on Foraging Turtles in Tobago

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Prepared for WIDECAST Annual Meeting 2018

Photo by Ryan Mannette
Photo by Lee Ann Beddoe
Local scenario

- Research, tourism and conservation efforts largely focussed on nesting leatherbacks
- Extensive nearshore foraging habitat but no studies conducted
- Greens and hawksbills exploited at sea in an unregulated fishery (5 month open season prior to 2011)
- Data on the sea turtle fishery is scarce
- No specific information available on regional linkages

Inadequate information to understand the local and regional context, and therefore for effective management and conservation

Photos by Ryan Mannette
PhD research - Objective #1

Assess the distribution and abundance of turtles at dive sites around the island of Tobago

– In-water study using SCUBA
– Training from Barbados Sea Turtle Project and Bermuda Sea Turtle Project in 2006

Photo by Ryan Mannette
DOMINANT HABITAT TYPES AT DIVE SITES AROUND TOBAGO

- 235 dives (187.5 hours)
- 41 dive sites
  - 17 sites on leeward, 24 on windward
  - 7 rock, 13 sponge, 21 coral
- 130 encounters on 93 dives
Turtle distribution and abundance

- A total of 130 turtle encounters (sightings) were recorded on 40% of dives (111 hawksbills and 19 greens)
- The encounter rate was 0.55 turtles per dive or 0.69 turtles per hour
- Hawksbills were widely distributed - encountered at 31 dive sites, and on 36% of all dives, and were more abundant at sponge sites
- Greens were encountered at only 9 dive sites, and on 7% of all dives
SAMPLE DIVE SITES AROUND TOBAGO SHOWING NUMBER OF TURTLES ENCOUNTERED PER HOUR
Conclusions

- Important developmental habitat; presence of mature turtles may be related to mating activity, prior to and during the nesting season.
- Hawksbills most abundant at sponge dominated sites; suitable foraging habitat for hawksbills extends far beyond fringing reefs.
- Site with greatest hawksbill abundance had numerous rock ledges which may offer abundant assisted resting places and/or refuges from predators at a shallow depth.
- Greens not restricted to seagrass, but found on coral reefs – they may play an important role by grazing on algae.

Photo by Sebastian Schmidt-Roach

Photo by Rochelle Ramlal
PhD Research - Objective #2

Identify linkages among Tobago’s hawksbill rookery and foraging ground and regional populations/aggregations

– Mitochondrial DNA (mtDNA) control region survey and mixed stock analysis (MSA)
Other studies on foraging turtles
Turtle Village Trust

- 6 month pilot project in 2009 (during my time as Turtle Conservation Officer)
  - In-water study using SCUBA – tagging and collection of tissue samples that were contributed to my PhD research
  - Kayak surveys at seagrass beds
- ERIC (Environmental Research Institute Charlottesville) was engaged in 2017 – in-water study using SCUBA – some new dive sites captured
- GRNTGA (Grande Riviere Nature Tour Guide Association) engaged in kayak surveys
- Some attempts at netting
Side Scan Sonar – Ryan Mannette

- SSS is capable of detecting marine turtles
- Not reliable with model used under these test conditions
- Better suited for deeper water and calm conditions
- A higher resolution SSS or different type of Sonar may be more effective
Sammy the loggerhead

Day 1:
Stranded... June 30th, 2017
McGyvering it... Work with what ya got!
10 weeks later-
Completely submerged and resting comfortably at full depth...
September 6, 2017
10th September 2017 – 23rd January 2018

www.turtlevillagetrust.org/map
What next?
Citizen science – dive shops

• A lot of resources required to monitor turtles at sea and a lot of dives required to gather enough data to be useful
• Dive shops each engage in hundreds of dives per year – this adds up and could be a great source of data
• Important to gather data on effort - Ideally dive shops should report ALL dives, and ALL turtle encounters (maybe other rare species too)

How can we get dive shops to participate:
• Make it easy to participate
• Target their customers to complete the data logs
• Incentives – branded programme with materials for their shop; recommend participating dive shops to SOS’ followers
Citizen science: Photo ID and TURT mobile app

- Divers and others can use “TURT” mobile app to submit photos that can be used to ID individual turtles (“Individual Identification System (I3S)” Software)
TURT
Turtles Uniting Researchers and Tourists

Report A Turtle

Sponsored by ProTECTORS Inc.
Created by Dustin Baumbach
Netting and acoustic tracking

- Target juvenile greens in shallow seagrass habitat
- Monitor movements to examine habitat use and home range
- Allow for tracking growth and collecting samples to monitor health, conduct genetic analysis to identify regional linkages
Fibropapilloma

- Cases on west, east and south coasts of Trinidad
- Since then, one case in Tobago (photo evidence)
THANK YOU!

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