Using Satellite Telemetry to Identify Foraging Grounds

WIDECAST AGM March 2018 – Matura, Trinidad
Belize Country Coordinator
Linda Searle
Developing a WIDECAST Satellite Telemetry Database

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Belize Country Coordinator
Linda Searle
OVERVIEW

- Background
- Pros & Cons
- Mapping Methods
- Attributes
- Data Sharing
- Benefits
- Next steps
BACKGROUND

- Fish markets surveyed 2000-2001
- Measured & identified turtles harvested
- Fishermen reported area where there were a lot of turtles = Robinson Point
1st green turtle sat tracked to Belize

5 weeks migration from nesting beach in Costa Rica to foraging ground in Belize at Robinson Point
Robinson Point is the area south of English Caye Channel where there is dense sea grass and patch reefs.
IN THE FIELD

Setting Nets

Measuring Turtles
TURTLES TRACKED TO ROBINSON POINT

2009

San Lorenzo
Campeche, Mexico
LUCILLA
Hawksbill Turtle
Flipper Tagged JUN 15 ‘08
Captured & Released in Belize FEB 8 ‘09

Robinson Point
Foraging Ground
Belize

Grand Cayman
Cayman Islands
CAY TRAVELER
Green Turtle
Satellite Tagged JUL 24 ‘05
Arrived in Belize on AUG 31 ‘05

ZENIT
Green Turtle
Satellite Tagged JUL 20 ‘00
Arrived Belize AUG 30 ‘00

Tortuguero
Costa Rica

Image © 2009 TerraMetrics
Image © 2009 DigitalGlobe
Data U.S. Navy

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2011  SEA TURTLE FORAGING GROUNDS IN BELIZE IDENTIFIED BY TAGGED SEA TURTLES

LEGEND
- Myles Satellite Track
- Shelby Satellite Track
- Zenit Satellite Track
- SaveASeaTurtle & Noely Track
- Lucilla
- Hach Satellite Track
- Caytraveler Satellite Track

Miles
0  50  100  200  300  400
Quick Summary

- 2009 – 3 turtles tracked to Robinson Point
- 2011 – 7 turtle tracked to Belize
- 2017 - 42 turtles tracked to/from Belize by 14 different organizations, from 7 different countries
  - Honduras
  - Mexico
  - Cayman
  - Jamaica
  - Costa Rica
  - Nicaragua
  - Barbados
Hawksbill
Moochula 2013

• Nests at Gales Point
• Forage in Honduras
Hawksbill
Carenato 2015

• Nests at Gales Point
• Forages near Port Honduras
Hawksbill

Tide of Hope 2014

- Hawksbill turtle nests on the Port Honduras Marine Reserve
- Forages in Honduras
Hawksbill
Tide of Hope II
2015

- Nests in Port Honduras Marine Reserve
- Forages in Robinson Point
LOGGERHEAD
110815 2011

- Juvenile loggerhead
- Inwater capture at Punta Allen, Mexico
- Migrated to Belize
- 2 years 12 days
LOGGERHEAD

Hope 4 Freya 2015

- Loggerhead attacked by shark
- Immediate veterinary care
- Released w/in one week
- Tracked for almost 2 years and showed returning
- Longest of the HHMU tags
LONGEST MIGRATION

GREEN Turtle Sam 2014

• Subadult green forage in Glovers
• Travelled to Columbia
• Last transmission Nicaragua
Green- Esperanza 2014

- Tour de Turtles
- Nests in Costa Rica
- Forages in Belize near Colson Point (Gales Point area) in the Victoria Channel
Green– Reefie 2017

- Tour de Turtles
- Green turtle nests in Costa Rica
- Forages at Robinson Point
Potential Issues?

**PROS**
- Foraging grounds identified
- If outside MPA maybe protection can be afforded
- Further studies on habitat

**CONS**
- Fishermen learn of the foraging grounds
- Tourist visit and start feeding
Foraging Areas
Inside Main Barrier Reef
Outside MPA boundaries

- Bacalar Chico
- Robinson Point
- Near Port Honduras Marine Reserve
- Near Laughing Bird Caye
Mapping Methods

• Arc GIS/ESRI
• Seaturtle.org Data Explorer
• Movebank (Max Planck Institute for Ornithology)
• Google Maps - Leaflet
• Google Earth Engine
• Others...?
Ideal Attributes

• Vectors vs points
• Select paths to display
  – country, species, year, age class, nesting, inwater, rehab, etc...
• Easy to upload
• Easy to share
  – With communities
  – Embed on websites
Google Maps

Belize Satellite Telemetry...

- Sea turtles tracked to Belize!
- 31 views

SHARE  EDIT

171274 Milky Way Hope
- All items

Shiloh 130824a.csv
- All items
BENEFITS

• Identify foraging grounds
• Identify migration paths
• Comprehensive database compiling all WIDECAST member tracks
• Alert when turtles approach your country
• Better management
NEXT STEPS

ACTIVITY

1. Identify interested members
2. Identify best map method
   - GIS/ESRI
   - Google product
   - Other?
3. Prepare & Adopt Data Sharing Agreement
   - Belize Coral Reef & Sea Turtle Conservation Networks
4. Identify Data Manager
5. Compile data - CSV files
6. Provide embed codes for partners to share on their websites and WIDECAST website

TIMELINE

APR 2018
SEP 2018
FEB 2019
FEB 2019
MAY 2019
SEP 2019
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