Turneffe Atoll

Dra. Nataly Castelblanco Martínez
Investigadora Cátedras CONACyT
Turneffe Atoll is the largest and most biologically rich coral atoll in the Western Hemisphere.
- Depth between 2 and 4m
- Surrounded by deeper oceanic water on all sides (>300m)
- Transparency variable
- Salinity of 36‰ (Between 34.2 – 37.4‰)
- Broad ecosystems: Caribbean mangrove, seagrass, coral reef, sand, saline lakes and open seas
1995 – First population estimate of 11 manatees (Morales-Vela et al. 2000)
2001 – Need of data to support the creation of a MPA → manatee monitoring begins by OS et al.
2012 – TA is declared MPA
2013 – Sirenian Symposium, Castelblanco – Martínez et al.
2013 – Manatee Monitoring Plan for TA
The observations are collected during aerial surveys, boat-based surveys or opportunistically. The data is collected in collaboration with several researchers, stakeholders and organizations.
Boat-based surveys
Results

- Since 2015, **167** sightings have been recorded in our database, by boat-based surveys (24), aerial surveys (68) and opportunistic encounters (74). Only one dead animal has been reported (2014).

Aerial survey photo credits: © 2012 Tony Rath, LightHawk
Aerial surveys

- The major center of activities (kernel densities = 50%) are located in Western and Northwestern areas.
• Opportunistic and boat-based methods may be biased. Sightings obtained by aerial surveys showed a preference by Western zones.
Tagged animals

- The individuals were tracked during 39 d (male) and 130 d (female)
- Manatees remained in TA during 55% (female) and 70% (male) of the tracking days, with strong site fidelity for a particular spot.
- Consistent pattern of traveling between Turneffe Atoll and mainland.
- Strategy of habitat use in order to satisfy freshwater and food needs

1. Effect of the environment type on manatee detection when using side-scan sonars (Nine areas including Turneffe, Belize River)

2. Behavioral reaction of manatees to side-scan sonar (Twelve captive manatees including Wildtracks)
Use of drones for behavioral observations & Photo-ID

Eric Angel Ramos, Hunter College & The Graduate Center, CUNY
Photo-ID

TA05

TA01

TA03

TA02
Photo-ID

TA07

TA09

TA17

TA10
Conservation problems

• Due to the lack of development infrastructure at Turneffe, human impacts are still relatively low at present in comparison with the coastal area of Belize; making the Atoll an ideal refuge for manatees.
• Only one dead manatee reported during the last decade. Death causes are unknown.
• Potential/future threats: Oil exploration, uncontrolled infrastructure development.
Challenges for manatee research and conservation in Turneffe Atoll

- Extensive area: 30 miles (48 km) long and 10 miles (16 km) wide. Monitoring and research is costly.
- Relatively low density of manatees.
- Difficulty to access most of the areas for control and law enforcement.
Acknowledgments

Alton Jeffords
Vailli Müller
Eric Ramos
Katherine Arévalo
Carlos Niño
Holly Edwards
Birgit Winning
Ellen Hines
Nicole Auil
Jamal Galves
Suzanne Stone
Buddy Powell
Bob Bonde
Cathy Beck
Barbara Bilgre
Laura Eirman
Dori Dick
Zoe Walker
Kleon Colleman
... and many others!