

## ***Report of Summer Activities for TCD Research Grant***

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### ***Research and conservation of Antillean manatee in the east of Cuba.***

The research activities developed during May-August, 2016 were developed with the goal to strengthen the research project developed to understand the conservation status of Antillean manatees in Cuba. Some of the research effort were implemented in the east of Cuba with the purpose of gather new samples, data and information about manatees and its interaction with fisherman in this part of the country.

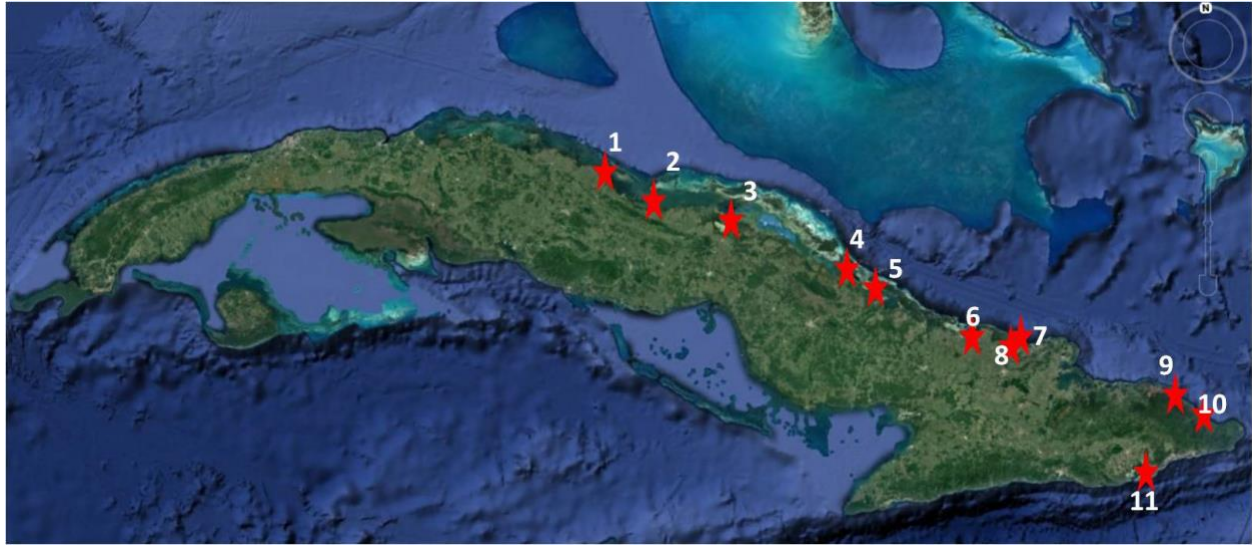
We separated our work in two phases. The first was a scoping trip to the east of Cuba with the purpose of meet and talk with coast guards, forest guards, fishermen, and key persons in these coastal communities in order to get them involved with the stranding and sighting network in Cuba. During the second phase we continued a monitoring program started in the Isle of Youth in 2010 with the goal of understand important ecological aspects of manatees. During this trip we developed boat surveys, habitat assessments and the manatee captures and tagging program.

#### **Phase 1: Scoping trip, May 2016**

During the trip we collected information about manatee presence and interaction with fisheries in the north east part of Cuban archipelago and also collected samples for genetic studies. During the trip we visited fishing ports and protected areas in Villa Clara, Sancti Spiritus, Ciego de Avila, Camaguey, Las Tunas, Holguin, Baracoa and Santiago de Cuba.

The visited institutions and areas were (Figure 1):

1. Nazabal Bay, Villa Clara. Biological station of the Fauna Refuge and private fishery port.
2. Playa Vitoria private fishery port and biological station of National Park Caguanes, Sancti Spiritus.
3. Turiguano commercial fishery port, Ciego de Avila.
4. Nuevitas commercial fishery port, Camaguey.
5. Biological station of Fauna Refuge La Isleta in Manati community, Las Tunas.
6. Commercial fishery port in Puerto Padre, Las Tunas.
7. Private fishery port in Gibara, Holguin.
8. Museum of Natural history in Gibara, Holguin.
9. AHNP, Biological station in Taco Bay, Baracoa.
10. Private fishery port, Baracoa.
11. Research center and biological station, Santiago de Cuba.



**Figure 1: Places visited during the scoping trip to the east of Cuba in 2016.**

*Information obtained during the visit*

1. Nazabal Bay, Villa Clara. Biological station of the Fauna Refuge and private fishery port.

During this visit we collect samples from one manatee carcass that was detected in the protected area. The samples are skin, bones, feces and the skull. We collect information about a manatee cemetery found inside the boundaries of the protected area (22 45 679 N and 079 43 244 W). The specialists from the area recovered from this site more than 200 ribs that probably came from approximately six different manatees (Figure 2).



**Figure 2: Manatee cemetery found in Playa Jacate, Fauna Refuge "Lanzanillo-Pajonal-Fragoso", Villa Clara province.**

We also talked with fishermen from the private fishery base located in Nazabal bay. Some of these private fishermen has contract with the government and therefore are considered private commercial fishermen. This contract allow them to use nets and long lines and also to stay a longer period in the sea (4 days per field campaign). These fishermen

fish mostly in the coastal platform, meaning that for this they use nets. It is mandatory to use only 200 meters of nets per boats but due to the lack of enforcement illegalities occurs and sometimes they use more nets that the required number.

A fishermen referred that he capture a saw fish 7 years ago in the north of "Cayo Fragoso".

2. Playa Vitoria private fishery port and biological station of National Park Caguanes, Sancti Spiritus.



Fishermen from the private fishing (Figure 3) port referred that manatees are sometimes observed in "Bahia de Buena Vista". They are more common when rain is abundant.

Fishermen in this port does not fish shark. They fish mostly with nets. But they are not allow to use nets inside the "Caguanes" National Park.

**Figure 3: Private fishing port in "Playa Vitoria", Sancti Spiritus.**

The specialists from the biological station of "Caguanes" National Park, reported a mortality event in 2010 inside the protected area. The cause of death was unknown.

3. Turiguano commercial fishery port, Ciego de Avila.

Fishermen from this port use mostly nets for fisheries (Figure 4). They fish inside Bahia de Perros and Bahia de Jigüey. They referred that manatees are not usually observed in these bays, probably because of changes in the ecosystem that produced significant raise of salinity and reduction of fresh water sources.

**Figure 4: Conversation with commercial fishermen in "Turiguano" fishing port, Ciego de Avila province.**



Sightings of this animal are more common in the east of the last bay. The mentioned that they haven't seen a manatee in more than 25 years in the area.

4. "Nuevitas" commercial and private fishery port, Camaguey.

The majority of private fishermen (more than 30 out of 40) has contract with the government and develop a private commercial fishery. These fishermen fish inside the "Bahia de Nuevitas", and they referred that manatees are not common in this area, these animals used to be abundant in the past but populations has been depleted.

These fishermen fish also in the areas "Carabeli" and "Canon", especially those that develop private commercial fisheries. They are allowed to fish during 36 hours to 7 days a week.

They have not report any mortality event but the commercial fisheries also inside the Bahia de Nuevitas use trawl nets. These fishermen also fish in the area Carabela-Puerto Piloto and Cayo Cruz-Megano. They have 13 fishing boats. Fishermen use stationary nets (tranques) during the "cojinua" fishing season. This season is from July to September.

These fishermen also referred that manatees are not very abundant in the bay.

5. Biological station of Fauna Refuge "La Isleta" in Manati community, Las Tunas.

Specialists from the protected area mentioned that manatees are frequently observed in the "Bahia de Nuevas Grandes" and "Bahia Manati".

They referred the report of a mortality event occurred in 2015, but the cause of death was undetermined. This protected area has a Manatee monitoring program implemented mainly with reports from the park rangers.

6. Commercial fishery port in Puerto Padre, Las Tunas.

We had a conversation with the director of the fishery port. They have 4 boats that fish in the north of Camaguey, mostly with nets. Manatees in the "Bahia de Puerto Padre" are not abundant. The bay have significant contamination problems. Specially produced by two hospitals and a sugar factory.

These fishing port use mostly nest since the use of long lines gears for shark and other pelagic fishes is more expensive.

Puerto Padre private port has 20 boats, 17 of them does private commercial fisheries.

7. Private fishery port in Gibara, Holguin.

Private fishermen use mostly long lines for pelagic fishes. There are 22 boats, all with contract and 37 boats without engine (small boats).

Four commercial boats from the commercial fishing boats fish in Nuevitas. Manatees have been seen in the area. Other areas with frequency of manatee sightings are Banai and Gululu.

#### 8. Museum of Natural history in Gibara, Holguin.



We collected tissue from a dry carcass in the museum (Figure 5). The manatee was captured by fishermen from the town and the meat was used and the carcass prepared for the museum. The event occurred in 1979.

Recently in 2010, another manatee was found in Gibara bay. The cause of death was unknown and no samples were collected from this animal. The carcass was decomposed.

**Figure 5: Dry carcass in a museum at Gibara.**

#### 9. AHNP, Biological station in Taco Bay, Baracoa.

We delivered some instruments in the AHNP administration office to support the manatee monitoring program in Taco Bay. We delivered binoculars, data sheets, YSI for environmental parameters, batteries, insect repellent, sunblock, underwater camera. We explain how to do the survey and how to collect the information.

#### 10. Private fishery port, Baracoa.

We visited the private fishing port of Baracoa and interviewed some fishermen. No sample was collected. We talk about our project, the status of manatees and the need for protect the species.

#### 11. Research center and biological station, Santiago de Cuba.

We had a meeting with the director of the Siboney-Jutici Fauna Refuge in Santiago de Cuba. From this area we collected bone samples from a butchered manatee. The carcass was placed in a sac and hidden in the bottom of the sea.

During our visit we collected information from potential collaborators of our project.

At the end of this scoping trip we had collected 11 samples: 5 bones, 2 soft tissue, 2 fecals and 2 manatee skull.

## **Phase 2: Survey, habitat evaluation and captures, May, June, July 2016**

### *Tag retrieve expedition and habitat characterization in San Felipe National Park:*

In June 2015 we satellite tagged one male manatee named Eckerd. This marks the first time the team has captured and tagged a male manatee in Cuba.

Eckerd was monitored for almost a year and some of the areas used by him are within the limits of national MPAs (Figure 6). He has primarily remained within an area of the Cayos de San Felipe National Park on the west coast of the Isle of Youth (northern part of its movement range). As this region has not been explored by previously, we implemented a habitat characterization in 18 sites within the area actively used by the tagged manatee (Figure 7). The goal is to understand the resources that make these regions suitable as manatee habitat, such as fresh water and underwater vegetation.



**Figure 6: Movement range of the male manatee tagged in 2015 in Cuba.**

The main concern is that some of these areas are also heavily used for national fisheries. Some of the areas used by the manatees needs to be evaluated in order to understand the food availability and freshwater presence so important for manatee survival.

### **Figure 7: Underwater characterization of the area actively used by the tagged manatee.**

During this expedition we retrieved Eckerd's tag. The tag was recovered and the complete information of Eckerd's movement downloaded for future analysis (Figure 8).





**Figure 8: Team involved in the recovery of the satellite tag and the characterization of manatee habitats.**

*Manatee boat-base survey, habitat characterization and capture program in Siguanea Gulf, Isle of Youth, Cuba:*

During June, July and August we spent around 40 hours in boat surveys searching for manatee presence, direct as indirect evidences (fecal samples). In addition approximately 10 hours of net effort with the purpose of capture the manatees present in the study area.

Boat surveys were implemented along the southwest lagoon system at the Isle of Youth, during which we determined environmental parameter, manatee relative occurrence and human impacts.

For the manatee capture we use a funnel-shaped net stretched across the river (Figure 9), so that it captures the manatee as it swims down the waterway. Once in the net, the crew pulls the end of the net across the river, blocking the manatee's escape. The manatee is lifted into the boat or "decked" after which the team conducts a health assessment, takes morphological measurements, and collects blood samples. A

satellite tag is then attached and the manatee is safely returned to the water. Unfortunately no manatees were captured during this season.

In addition we interviewed fishermen and local inhabitants. Due to the information collected from these individuals, we are able to record the presence of manatees in the absence of boat surveys.



**Figure 9: Funnel-shape net used to capture manatees in Cuba.**

For the future we plan to develop new captures and health assessment attempts possibly in December. At this moment we have three satellite tags ready to be deploy in three new manatees in Cuba.

**Contact Information for future collaboration:**

- Norgel, Director Caguanes National Park, 5352860345, 41531275, 41531834.
- Osiris, fishermen at Turiguano Commercial Fishery port, 54042634.
- Izaida del Toro, 55244785.
- Loydi casa, 032283793, cell 52924807.
- Norbel Moreira, private fishermen, 54247991, 032414452.
- Director Puerto Padre Commercial Fishery port, Yuniel Avila, 031515126, 52791791.
- Private Fishermen from Gibara, Alberto Hernández, 24844186, 24845525, Francisco Catala, 24 844231.