



Distribution and Conservation of the Antillean Manatee (*Trichechus manatus*) in NE Brazil

PARTIAL REPORT

1. Introduction

The Antillean manatee, *Trichechus manatus manatus*, is the most endangered marine mammal in Brazil, with an estimated population of less than 200 individuals in the whole Brazilian coast (IUCN, 2009). In NE Brazil, the bordering area between Ceará and Rio Grande do Norte states corresponds to the most critical area for manatee conservation, since it holds the record of strandings of neonates, representing the most significant population loss in the country. Twelve years ago, Lima (1997) indicated the east coast of Ceará State and the west coast of neighbouring Rio Grande do Norte as the main areas of neonate strandings. A more recent work (Parente et al., 2004) reviewed stranding data on Antillean manatee in Brazil, and concluded that neonate stranding events in the same area are the main threats to the conservation of the species. In this sense, the project “Distribution and Conservation of the Antillean Manatee (*Trichechus manatus*) in NE Brazil” aims to conduct field research and interviews in fishing communities in the study area. An extensive assessment has been done since January 2009 in order to identify major threats and describe the main manatee habitats; and to determine the distribution of the manatees and obtain information on habitat use, with the purpose of supporting future conservation actions.

This report aims to present the results of six surveys conducted by Aquasis in the east coast of Ceará state and west coast of Rio Grande do Norte state between January and June of 2009.

2. Data collection

The first six surveys had the objective to determine the manatee distribution, and coastal fishing communities along the east coast of Ceará and west coast of Rio Grande do Norte (Fig. 01). Communities were visited in fieldtrips between January and June of 2009, in order to conduct direct observations and interviews. The fieldwork was conducted by two researchers using a questionnaire, which consisted of questions about the community and the person’s knowledge on manatee.

The team conducted 678 semi-structured interviews with fishermen from the 77 fishing communities (Fig 02), which represent 10% of fishermen from each coastal community located in the study area. The question “When was the last time you saw a manatee in this beach?” was used to determinate the distribution of the Antillean Manatee. There were occasions when the information needed to be confirmed, and a guide with marine vertebrates’ photographs was used to assure that the interviewer was actually talking about a manatee.

3. Data analysis

Information analysis to determine manatee occurrence was strictly qualitative, and was done through the interpretation of fishermen answers. The answers were divided in four categories, according to the most recent record of manatee observation

in the area: affirmative answers of manatee observation less than two years were considered as **current occurrence** of the species in the local; those communities where the most recent manatee observations were from two to five years were considered areas of **recent occurrence**; regions where the observations were older than five years are in the category of **historical occurrence** of the species, and; locals where never were manatee observations were not considered as part of the species occurrence area (Table 01).

Table 01. Manatee occurrence categories according to the period of the most recent observation record of the species in the area.

Recent record of manatee observation in the area	Occurrence category
From 0 to 2 years	Current occurrence
From 2 to 5 years	Recent occurrence
Older than 5 years	Historical occurrence
No observations	No occurrence

The information used to determine the Antillean manatee distribution and occurrence was obtained primarily from interviews, and data was analyzed according to ethnobiological principles, which consider local population experience, and are accepted and used in several studies (Posey, 1987; Begossi, 1993; Marques, 1995; Diegues, 1999; Adams, 2000; Begossi et al., 2002). All answers were judged trustable and regarded in data analysis. If only one fisherman had observed a manatee, his answer was considered enough to determine the occurrence of the species in the region. In summary, to determine manatee occurrence areas, the most recent observations of animals were considered, even though they were not quantitatively representative in that community sampling universe.

All answers were inserted into an Excel database and related to each occurrence category for each coastal community.

4. Distribution

The follow concepts were used to determinate Antillean manatee distribution:

- Occurrence area: specifics occurrence locals of manatees;
- Distribution: current occurrence areas unified in a unique polygon, where the distance between these areas may be used as a corridor by the manatees.

From the obtained data, Antillean Manatee Occurrence map was elaborated (Fig. 03), with areas of current, recent and historical occurrence. However, it is important to discuss that three current occurrence areas (Beberibe, Fortim and Guamaré cities) resulted from the interviews, were not considered, since they are related to isolated and recent events of a calf with his mother, and are the only records of manatee in these areas. It was decided not to include them in the occurrence and distribution area of the species, and the events must be investigated.

Analyzing the occurrence map, it's possible to observe that manatee distribution has small gaps, that must be due to a few use of the area by the animals. The biggest distance between these areas is 25km (Caçara do Norte city), and should not be consider as a geographic discontinuity for a species that has a moving capacity of 40km per day (Bengston, 1981; USGS/BRD, 1993) and where there are no geographic barriers.

Based on the occurrence map, the distribution of the Antillean Manatee was established between Canoa Quebrada beach (Aracati city, CE) and Perobas beach (Touros city, RN) (Fig. 04).

Manatee occurrence is strongly influenced by deep (Hartman, 1979; Lefebvre et al., 2001; Olivera-Gómez & Mellinck, 2005), and studies suggest a minimum deep of 0,4m (Paludo, 1998) and a maximum of 10m (Nowak, 1999). Using this information, the maps were limited in one of its face by 10m isobath.

5. Local community involvement

Besides conducting the research, the team identified community members to become volunteers that received an educational folder containing information about protective laws, life history and biology of the manatee and how to act in case of strandings, especially of calves (Fig. 05).

6. Next steps

According to the survey results, the field team are now making direct observations in selected areas to determine the presence and availability of sea grass beds and freshwater resources (underwater springs). These are being performed by exploratory snorkeling dives. The inner and outer boundaries of the subaquatic flora will be plotted to determine the total coverage area of the potential food supplies. Location of potential water supplies (underwater freshwater springs) and reproductive and nursery areas will also be determined with the help of local knowledge in the next surveys.

7. Figures

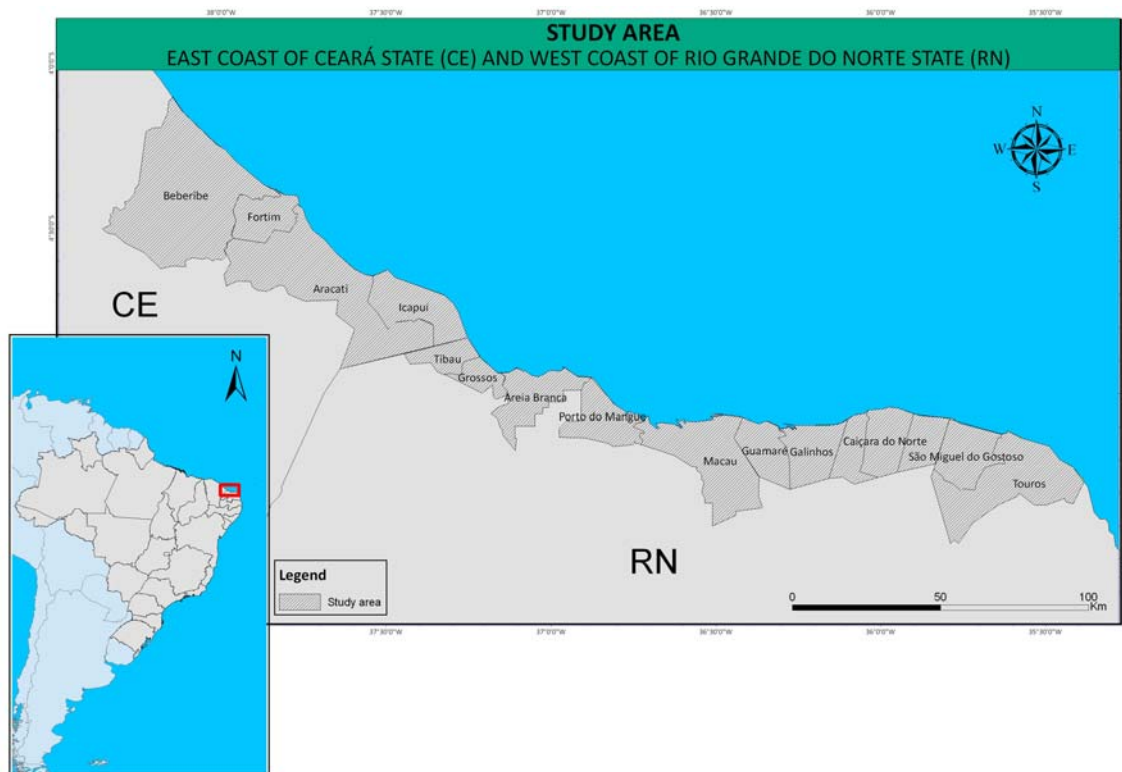


Figure 01. Study area, located between Beberibe city, in Ceará state, and Touros city, in Rio Grande do Norte state.



Figure 02. Aquasis team interviewing fishermen.

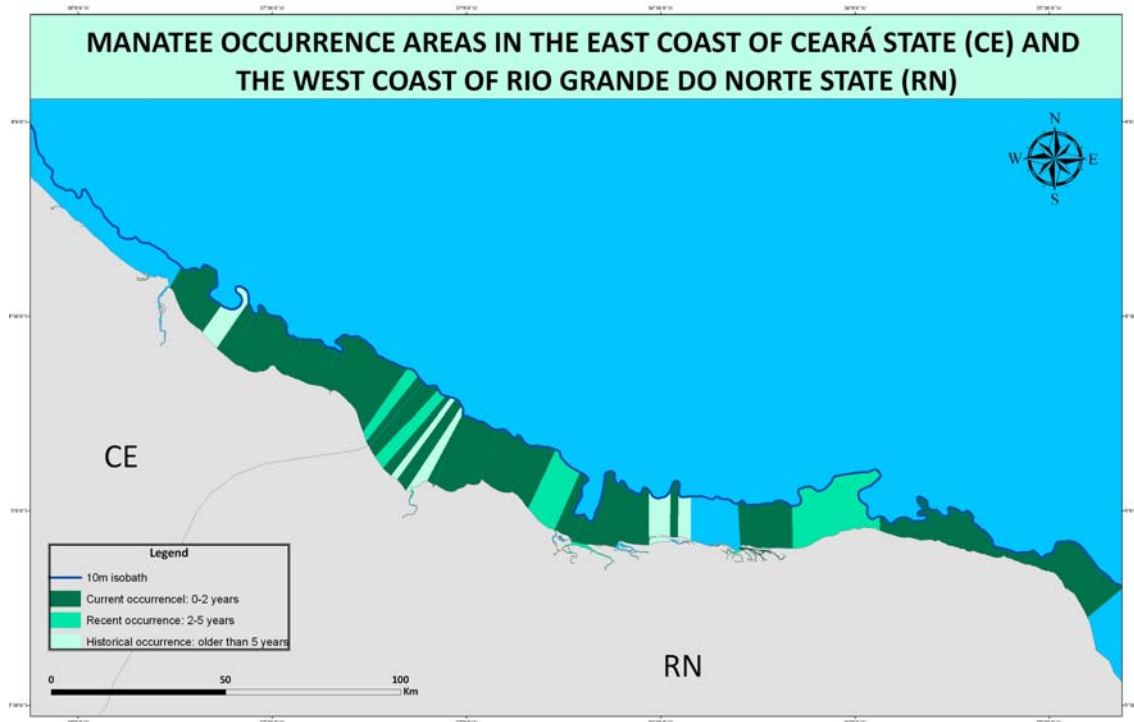


Figure 03. Manatee occurrence areas in the east coast of Ceará state (CE) and the west coast of Rio Grande do Norte state (RN).

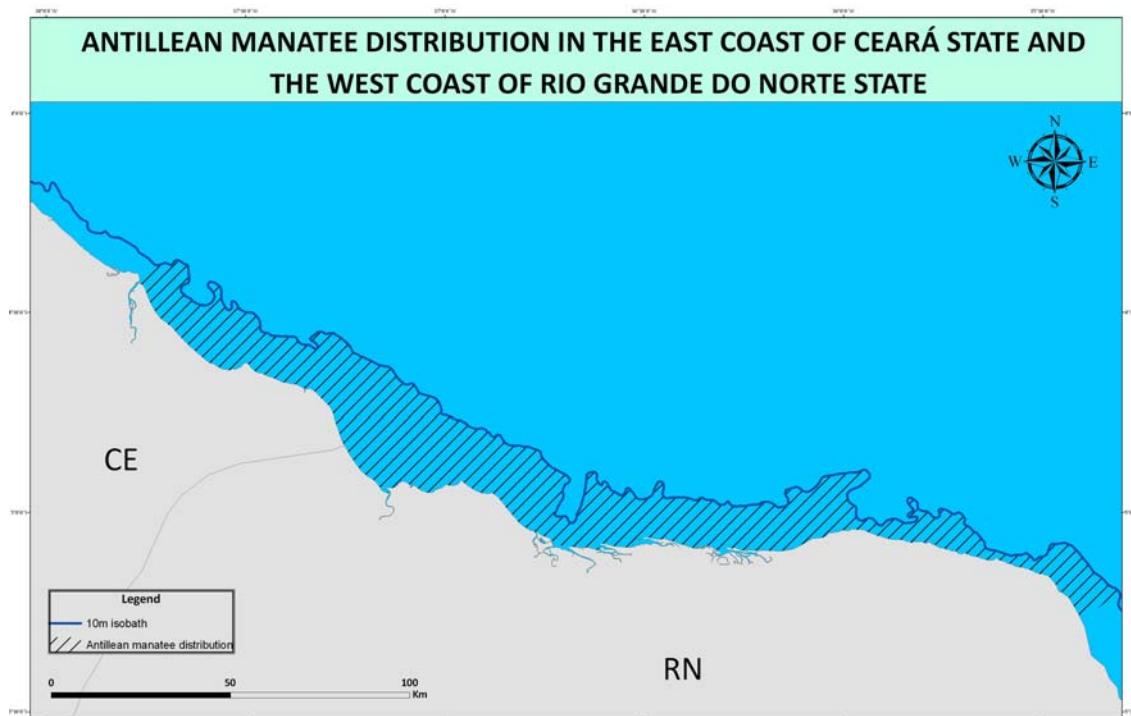


Figure 04. Antillean Manatee distribution in the east coast of Ceará state and the west coast of Rio Grande do Norte state.



Figure 05. Fisherman looking at educational folder about manatee.

8. References

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