



# Prediction of seasonal availability of the African manatee (*Trichechus senegalensis* link, 1795) in response to water chemo-physical's parameters: Case of Lake Ossa, Cameroon.

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## Introduction

The West African manatee is one of the many threatened marine mammal in Africa with an estimated wild population of less than 10,000 individuals. The wide distribution of the African manatee along the west coast of Africa from Mauritania to Cuanza River in Angola contrasts with the low level of information about the biology and ecology of the species, particularly in Cameroon. Manatee is reported to be abundant in Cameroon and Lake Ossa is an important key site for manatee.

This study aimed to determine the effect of season, station, time of day and water physical characteristics on the detectability of manatee presence in Lake Ossa, Littoral region of Cameroon, and to improve available knowledge for west african manatee by conducting boat based point scan in 2 selected sites in Lake Ossa.

The ecological information obtained through this study are vital for conserving and understanding *T. senegalensis* and also recommending the establishment of Lake Ossa as manatee sanctuary during dry season.

## Study area and Methods

- **The study area** was located in Lake Ossa Wildlife Reserve in the littoral region of Cameroon
- Two sampling sites were selected within the Lake Ossa: **Mevia and Plantation**
- **Data collection on the Weather** : Information on the weather at the beginning and at the end of each Visual scan were collected and included: time, the direction of the wind and cloud cover (cloud), air and water temperature and water surface state.
- **Data collection on Physical and chemical parameters** : During each scan, the physical parameters of the water including **pH, depth, bottom type, conductivity, water sea state, water temperature and turbidity** were collected using several pieces of equipment at our disposal.
- **30-minute Visual point scan at each point** by two observers standing inside the boat and, each covering an angle of 180 ° for a distance of 300 m (maximum) from the boat to detect any manatee direct and indirect sign. Between 30 repetitions per site at two different seasons and 3 periods of the day.
- **Data analysis** was done through the Generalized Linear Model (GLM) using R software to predict manatee occurrence.

## Results

Thirty 30-minutes points-scan surveys conducted at each of 2 samples sites per season

- The average air temperature in the rainy season ( $27.35 \pm 0.41$  ° C) is less than that of the dry season ( $29.90 \pm 1.13$  ° C) in the Lake Ossa.
- There was a positive significant effect of the pH on the detectability of manatee indices in lake Ossa (estimated regression coefficient = 0.97635,  $P = 0.0964$ , while there was a negative significant effect of the depth (estimated regression coefficient = - 3.56348,  $P = 0.0977$ ).
- The probability of sighting a manatee was higher at Mevia with (53%,  $n = 30$  scans) than in Plantation (30%,  $n = 30$  scans). It is more likely to encounter manatee in lake Ossa during dry season (56%,  $n = 30$  scans) than rainy season (26%,  $n = 30$  scans).
- Manatee sighting signs included water bubbles, mud plume and manatee body sighting.
- The probability of observing a manatee sighting signs decreases as time of the day goes from morning to evening ( $= - 0.09174$ ,  $P = 0.0991$  estimated regression coefficient).
- Manatee presence signs were mostly encounter during the day period 0500-0800 during wet season and 1100-1400 during dry season.

## African Manatee

The least studied marine mammal in Africa<sup>1</sup>

Occur in 22 countries in Africa from Mauritania to Angola<sup>2</sup>

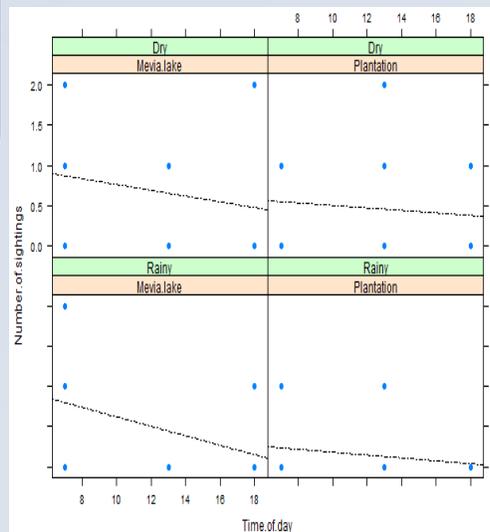


Economically valuable + Low reproductive capacity + Illegal hunting and habitat loss = **VULNERABLE**<sup>3</sup>

The wild population of African manatee is estimate of less than 10,000 individuals<sup>4</sup>



Map of the study area with sampling sites Surveying manatee using point scan method



Site, season and time effect on manatee detection probability

## Acknowledgments

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Data collection on weather and water physical and chemical parameters



Torn net by a manatee at Mevia site



Chinese bamboo sticks place by fishermen underwater, which renders difficult navigation for manatees at Plantation site.

## Conclusions

Detection of Manatee indices in the Lake Ossa is mainly linked to the observation period in the day, at the depth of water, and the variation of the pH of the water. The station and the season not playing sensitive role in the detection of the presence of Manatee indices in the wildlife of the Lake Ossa. Mevia could be considered a manatee hot spot in Lake Ossa. Also we suggest the establishment of Lake Ossa as manatee sanctuary during dry season.