FINAL REPORT

THE RUFFORD FOUNDATION

PROJECT NAME

MAIN INVESTIGATOR:
Alexander Gómez Lépiz

E-MAIL:
gmanatusl@gmail.com

AFFILIATION:
International Institute in Wildlife Conservation and Management,
Universidad Nacional de Costa Rica
www.icomvis.una.ac.cr

PERIOD:
March 2005- August 2006
APRIL

Manatee (Trichechus manatus) Floating and Emergent PlantsSelection. An Evaluation of Baiting as a Save Technique to Capturethis species in Tortuguero National Park, Limón, Costa Rica.

Table 1. Chronological order of the thesis activities.

PERIOD I (2005)	PERIOD II (2005)	PERIOD III (2005)	PERIOD IV (2006)
February 1. Training of the recognition of manatee sights over different aquatic plants (floating and emergent). 2. Recognition and sector division of the study area. **March** 2. Recognition and sector division of the study area. 3. Data collection for the preliminary sample. April 3. Data collection for the preliminary sample. **May** 3. Data collection for the preliminary sample. 4. Compilation of the environmental history of the main towns that have lived with manatees. 5. Attempt to capture manatees (for this activity, no Rufford Foundation's funds were used but it was an important point to define my thesis theme).	**June** 6. Thesis project change. **July** 7. Request to change the use of the funds of the Rufford Foundation.	**August** 8. Evaluation of the bait of manatees. 9. Evaluation of the selection of food resources and manatee diet in the Tortuguero National Park. **September** 8. Evaluation of the bait of manatees. 9. Evaluation of the selection of food resources and manatee diet in the Tortuguero National Park. **October** 8. Evaluation of the bait of manatees. 9. Evaluation of the selection of food resources and manatee diet in the Tortuguero National Park. **November** 8. Evaluation of the bait of manatees. 9. Evaluation of the selection of food resources and manatee diet in the Tortuguero National Park. **December**	**January** 8. Evaluation of the bait of manatees. **February** 4. Compilation of the environmental history of the main towns that have lived with manatees. 8. Evaluation of the bait of manatees. **March** 8. Evaluación del cebado con manatíes. 10. Análisis nutricional de las plantas que constituyen la dieta básica de los manatíes. **April** 8. Evaluation of the bait of manatees. 10. Nutritional analysis of the plants that constitute the basic manatee diet. **May** 8. Evaluation of the bait of manatees.

		8. Evaluation of the bait of manatees.	10. Nutritional analysis of the plants that constitute the basic manatee diet.
		9. Evaluation of the selection of food resources and manatee diet in the Tortuguero National Park.	**June** 4. Compilation of the environmental history of the main towns that have lived with manatees. 8. Evaluation of the bait of manatees. **July** 4. Compilation of the environmental history of the main towns that have lived with manatees. **August** 11. Diagnóstico sobre necesidades de guardaparques del Área de Conservación Tortuguero.

Table 2. Final information of the thesis: Activities, objectives, activities justification, results and conclusions y recommendations.

Activity /Period	Objective	Justification	Resulted	Conclusions y Recommendations
7. Request to change the use of the funds of the Rufford Foundation. PERIOD II	•Consolidate the financial sources to carry out the new project of intending to develop a new methodology to capture manatees in Costa Rica. •Consolidate the financial sources to carry out an investigation to compile the environmental history of the main towns that have existed inside of the same manatee habitat in the territory of Costa Rica.	Because of the lack of a manatee with radio collar to develop a study of telemetry about the species in the zone, after two failed manatee capture processes inside of the Tortuguero National Park, it was decided to carry out a methodology for trying a new capture of this species in Costa Rica. The similar financial resources would be required like for the study of telemetry considered before, if a manatee would have had a radio collar.	✔ Affirmative answer of the Rufford Foundation for using the sources in the new thesis project.	The sources offered by the Rufford Foundation would be used in similar ways like these were given. It a new activity perhaps there would be more transcendental information about the manatees in the zone of the original telemetry activity, since only few investigations evaluate the manatee free feeding behaviour.
8. Evaluation of the bait of manatees. PERIOD III-IV	•Try to capture manatees with different kinds of plants that constitute the manatee diet in the zone and carry out the same test with plants harvested by humans.	This activity probably constituted the main action in this investigation. It was necessary to make tests to choose the plant species that could be used to keep the manatees eating in a place, to start later with the evaluation of the manatee's reaction with preliminary structures to realize a confinement, which would be used to try to capture them later.	✔ After the manatee baiting evaluation with four plant species that constitute the basic diet of the species in the zone, three (plant) species were discarded and only one was used. Paspalum repens is an aquatic grass that the manatees ate the most in the times of approach to the baiting evaluation site. ✔ During nine months, the manatees consumed all the Paspalum repens in the evaluation site. ✔ In the last two months of the evaluation, the manatees ate inside the preliminary structure of the	The Manatees prefer Paspalum repens, which was consumed in a significantly higher number of occasions than the rest of evaluated species. Therefore, it is the ideal species to try capturing manatees with the confinement trap. It is needed to complement the information generated in this evaluation with the information of the feeding ground to propose conservation actions to give a special protection for the places that the manatees used frequently to feed, because they would be in danger while

			confinement and consumed Paspalum reopens. ✔ The manatees never consumed plants harvested by humans (mangos, lettuce, carrots, apples).	they mobilize towards or feed in those places.
9. Evaluation of the selection of food resources and manatee diet in the Tortuguero National Park. PERIOD III	•Determine the way how the manatees use the different naturally available food sources in their habitat in order to identify feed patterns of these resources.	The necessity to recognize patterns in the form of the natural use of food resources by the manatees; it would be helpful to define their diet in the zone and recognize important plants for being evaluated with this species during the baiting. It permits finding the location of the sites which the manatees could be using for feeding and propose regulations for these sites for trying to conserve this species in the area.	✔ From this activity, a classification of the species that constituted the manatee diet was produced. Two species were preferred, by their availability and/or the use the manatee made of these plants inside of the Tortuguero National Park.	The information generated from this investigation, it was completed with the findings through the bait's test to demonstrate the importance of some species of plants in the manatee's diet inside the study area. The plants defined in this activity as food resources selected by the manatees have permitted the creation of maps from different sectors of the national park where manatees could found eating, which turns them into sensible sectors for the manatee conservation, because the species spends 8 – 10 hours daily in the feeding activity. Therefore, it is very probable to find the manatees in the sites where those species are presents.
10. Nutritional analysis of the plants that constitute the basic manatee diet. PERIOD IV	•Differentiate the species of plants by nutritionalcharacteristics to relate these to the manatee digestive system.	As herbivores, the manatees have not the same reaction for different species of plants that are available inside their habitat. Precisely, the selection of the determined species of plants on over others in the manatee diet is influenced directly by the nutritional characteristics of the same plant. This is the reason why the manatees select those	✔ The plants that the manatee ate morefrequently were those plants that showed characteristics related with the manateedigestive system. Those plants were the ones with high fibre and low protein contents.	Precisely the grasses found in the basic manatee diet were those that presented the highest fibre values and lowest in protein, which is characteristic for plants that form the manatee's diet. This is directly related to the so slow digestive system that this species presents. Precisely, the two aquatic grasses were the plants considered

		more functional plants for their kind of digestive system. Therefore, it was important to know the nutritional characteristics of those plants that the manatees ate most frequently and the evaluation of the relation between each plant in the basic manatee diet with the kind of digestive system of this herbivore.		the species preferred by the manatees, in opposition to the two other species that showed low fibre and high protein contents.
11. Diagnosis of the requirements the rangers of TortugueroConservation have. PERIOD IV	Elaborate a document including the requirements presented by the rangers, this document will be useful when searching for financial resources that could help solve the area needs.	After developing a diagnosis about the necessities of the area, followed the recognition of the main priorities, so the rangers could developed primary activities to improve the conditions of this conservation area and therefore the manatee's habitat.	✔ A total amount of 12 rangers participated in the meeting. ✔ A list of requirements were defined and hierarchized according to the way it affects the conservation area and to the need solving it. ✔ A strategical plan was developed to approach these problems, the main objective to define strategical solving activities and in charged people to develop them.	Excelled serious difficulties in the administrative structure, specifically in the communication between the rangers and their head masters, which at the same time hampers the performance of activities seeking to improve the conditions of the area. In the other hand the necessities of the people working at this areas limit the development and fulfillment of their jobs (patrollings, control of activities, and monitoring). It is common to find a lack of basic supplies in most of Costa Rica's conservation areas, these limitations cause the minimal development of activities, which at the same time is hindering the conservation of resources from these protected areas. It was expected that by this kind of diagnostic activity many deficiencies of the area were going

				to be exposed. In general terms, this area is considered one of the greater biodiversity conservation areas in Costa Rica, whereas a territory which present a big amount of problems needing to be solve. Therefore one of the main problems that the rangers mentioned is the lack of basic supplies for working, such as: fuel, motors, adequate boats, infrastructure, etc.