Final Report to the Florida Cooperative Fish and Wildlife Research Unit

Project Title: Marine Turtle Conservation on the Caribbean Coast of Nicaragua (RWO #171)

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Introduction

The purpose of this initial phase was to expand our previous work on marine turtles on the Caribbean coast of Nicaragua. This was done through the establishment of a collaborative program with the Miskitu Indians to reduce the uncontrolled take of marine turtles in this region. We initiated activities for a multi-year program that will include research, training, and educational activities involving three Miskitu Indian Communities located in the Indigenous Communities and Miskito Cays Biosphere Reserve (ICMCBR).

The primary objectives of the initial phase were:

A) to initiate a study on the population structure of marine turtles in the ICMCBR using mark/recapture techniques and to train and educate Miskitu turtlers in tagging, measuring, weighting and collecting blood samples;

B) to conduct workshops on the current status of the fishery and marine turtle conservation from a regional and global perspective; and

C) to conduct meetings with Miskitu communities located within the ICMCBR to discuss marine turtle conservation and identify specific activities to be implemented.

Activities

A field trip to Nicaragua was conducted from 1 September - 7 October 1997. Government permits were obtained, supplies were purchased, and entanglement nets were constructed from 2 - 17 September 1997. A national workshop on marine turtle conservation was conducted on 18 - 19 September. C. Lagueux, C. Campbell, and D. Castro attended this

workshop and each gave presentations on marine turtles and the Miskitu Indian community involvement in managing the marine turtle fishery. From 20-23 September, we visited three communities (Awastara, Dakra, Sandy Bay) to discuss our planned in-water work and a collaborative agreement with them. We subsequently conducted a trip to the Miskito Cays to initiate our in-water study on juvenile green turtles (*Chelonia mydas*) with our collaborators. These activities were completed on 4 October. We departed for Managua on 5 October and departed for Florida on 7 October.

Community Meetings

Three turtling communities were visited to discuss our research plans and to request their approval and collaboration. The elders of each community met prior to our arrival and selected a representative from their community to accompany us and receive training during our research activities. This resulted in meetings with only a few community members (including the selected representatives), consequently objectives B and C were only partially met. Our meetings consisted of discussions on marine turtle conservation and our research plans. Once we reached an agreement regarding the research and their involvement we made plans for a field trip to conduct in-water research. One community (Sandy Bay) declined to participate in our research and training activities at this time because they did not feel there was a need for their involvement, although they are in aggreement with our project.

In-water Research Field Trip

On 25 September, C. Lagueux and C. Campbell departed Puerto Cabezas in a sailing dory with a turtle crew of five (Victor Renales and four sons), two community representatives (Robert

Morris and Mario Grant), and Denis Castro (a Miskitu colleague). We arrived at Miskito Cay the following afternoon. We set turtle nets on the south side of the cay (Jamaica Well Hole) the following morning. After 2.5 days of netting and searching the immediate area for turtles without success, we began a more thorough search of the entire circumference of Miskito Cay for turtles. In addition, we conducted in-water searches (using mask and snorkel) at two coral reefs to the east and south of Miskito Cay (The Reef and Leimarka). One day was spent searching Sukra Cay to the north of Miskito Cay. During these searches, we observed one hawksbill (*Eretmochelys imbricata*) and one loggerhead (*Caretta caretta*) turtle, neither of which was captured. Contrary to our expectations from previous trips to the area, no juvenile green turtles were observed.

We questioned other turtlers as to the possible location of the small turtles that can usually be seen in this area and why we were unable to find them. Many turtlers confirmed that juvenile green turtles were usually in Jamaica Well Hole and suggested other sites where they had previously been observed, but others acknowledged that the juvenile turtles had not been around recently and didn't know why. A few possible explanations for the absence of these juvenile turtles were suggested: 1) there may be some seasonality to the occurrence of juveniles around Miskito Cay, 2) the turtles only use the area during bad weather months (November and July were suggested) and the rest of the time the turtles are dispersed throughout the area, 3) the turtles have moved away from Miskito Cay because of increased human activity on the south and east sides of Miskito Cay, and 4) the unusually calm summer months in the Caribbean caused by El Niño may have had an affect on their movements and dispersal.

With the initiation of the in-water research, we learned that the small juvenile green turtles of this area may not be resident around Miskito Cay as is the case in many other areas where they are studied. More questions about the habits of juvenile greens in this area were generated as a result of this trip, such as: Where were the juvenile greens that we know occur around Miskito Cay and was their absence unusual or is there some pattern? Why aren't juvenile green turtles using the shallow sea grass beds of Miskito Cay throughout the year? If there is seasonality in their use of Miskito Cay, why and where are they the rest of the time? If they are dispersed in the area why didn't we see any green turtles around the sea grass beds adjacent to the reefs that we surveyed? Are they using deeper waters where they might be at increased risk from predators and possibly have more difficulty foraging? Some of these questions will be answered with the continued in-water work that is scheduled for the next two years.

Research on green turtles using the shallow seagrass beds of the coastal waters of Nicaragua is important for determining population characteristics and life history traits. These data are invaluable for population modeling which is necessary to understand how Caribbean green turtle populations are likely to respond to the current exploitation of more than 10,000 large juvenile and adult animals that are taken annually from the Nicaragua foraging ground. This information is also necessary to develop appropriate management strategies for a currently uncontrolled harvest of an endangered species. Although the initial phase did not produce quantitative data, it was successful in accomplishing a most important objective, that of establishing a cooperative agreement with the people who have the power to allow this research to be conducted and who have the most to lose if the Caribbean green turtle disappears.