MEMORANDUM

DRAFT COPY

TO: Frederick H. Berry
FROM: Roderic B. Mast
DATE: 3-18-86
RE: Preliminary report on findings of WATS II Sea Turtle Research Survey of Colombia's Caribbean Coast

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Species

I obtained reports of nesting and copulation for four species in Colombian waters (Loggerhead, Green, Hawksbill, and Leatherback). Though Ridleys are known, they are seldom distinguished as a separate species by the local people. Earlier reports of Kemp's Ridleys in Colombia are not well substantiated, and it is likely that all Ridleys seen there are Olives. One Ridley carapace was turned up as a result of this study, and it was an Olive.

Causes of Sea Turtle Mortality

There are numerous causes of intentional and unintentional mortality to the sea turtles which occur offshore and on the beaches of Colombia's Caribbean coast. My study indicates that international marketing of sea turtle products is slight, and that by far the major consumers of Colombian sea turtle products are Colombians. All parts of the turtle are utilized commercially and many are consumed on a subsistence basis, as well. All species which occur in Colombia have market value, some more than others, of course. Listed below are the major causes of sea turtle mortality in decreasing order of magnitude, based on my qualitative assessment of their severity:

1) Artisenal Fisheries Turtles are caught on a regular basis by coastal fishermen, predominantly in the upper reaches of the Guajira peninsula, but also in the area from Punta Canoas to Taganga, in the Golfo de Moroscillo, and in the islands of San Andres and Providencia. Years ago the fishing of turtles was done with spears, but at present most use large mesh nets which they set out for days at a time. The change in method is doubtless a result of fishermen wanting to catch turtles live and uninjured in order to facilitate delivery of fresh meat, and also because the reduced abundance of turtles over the years has made it increasingly difficult to come home with a good catch by harpooning. Fishermen in San Andres and Providencia have devised some rather ingenious turtle capture methods which will be discussed in later reports.

2) Spearfishing using SCUBA Lobster and snapper fisheries have become big business in Colombia, and reef fishing is done with

SCUBA in and around the Islas Del Rosario, the Gulfo de Moroscillo, and the San Andres Archipelago and surrounding cays. Divers often run across turtles while fishing the reefs, and though it appears that they seldom are marketed on a large scale, they are frequently eaten by the fishermen and their families. This is a particularly dangerous fishery as is pointed out by Archie Carr (pers. comm.), because the turtles will merely be fished in this manner until they are gone. Since the turtles are extra benefits for the divers who are really there for snapper and lobster, the likelihood that they will stop fishing when turtles become scarce is low.

3) Commercial Shrimping There are somewhere in the neighborhood of 80 shrimping boats operating out of Cartagena, Colombia. I had the opportunity to interview the Marine Biologist from the largest fishing company, Vikingos. He was unable to provide me with any estimate of the number of turtles captured by the fleet, but indicated that turtles were indeed captured on a fairly regular basis. News of the captures seldom makes it back to the company, however. No records are taken of turtle capture, and they are usually eaten by the crew while at sea. Based upon available data regarding number of ships, size of nets, length of tow, etc., it may perhaps be possible to assess the severity of this sort of incidental capture, as has been done in the past for US shrimpers.

4) Killing of Nesting Females This type of harvest occurs on the beaches from the eastern edge of Parque Nacional Tayrona to approximately the mouth of the Rio Don Diego, and also in the outer cays of the San Andres Archipelago. In the former, it is my understanding that every turtle that is seen is killed. Eggs are also poached. The cays of the San Andres Archipelago have the advantage of being isolated, and therefore the majority of turtles nest unnoticed. Nevertheless, on some of these cays there reside groups of Colombian marines which reportedly shoot at nesting turtles for the sport of it.

Another less direct threat to the sea turtles in Colombia is the destruction of suitable nesting sites. Habitat destruction plays a major role in the reduction of usable nesting beaches. Sand mining in Providencia has reduced a once-active nesting beach to a useless rocky strip, and poor planning has ruined a long stretch of beach between Barranquilla and Santa Marta. Tourist coated beaches in San Andres and in Cartagena also make nesting impossible.

Utilization of Turtle Products

Turtle Meat The preferred meat comes from the green turtle, there are those who will eat hawksbill or loggerhead, and only the heartiest and hungriest will indulge in leatherback. Olive ridley is eaten, but this species occurs so infrequently that most fishermen consider it nothing more than a small, funny-shaped green turtle. Turtle meat is served in restaurants around

the country, but is predominantly a coastal dish. I saw it on the menu in Cartagena and in Barranquilla, but it is not extremely common. In Riohacha, however, turtle is "plato tipico", and is a daily part of many people's diet. The turtles, mostly greens and a few hawksbills, are captured in the nets of Guajira indians from Laraya and east, and sold to the slaughter operations in Riohacha. I witnessed the slaughter of three green turtles one night, and documented the procedure of preparing the turtle for market. This will be discussed in depth in future reports.

Turtle Oil Oil from the turtle can be found all along the coast and is used for many purposes. It can be drunk as a cure for chest colds and asthma, spread over the skin as a tanning oil or a cure for age spots, and can be mixed with paint to give ones home a glossy shine. It appears that most oil which is sold on the street comes from loggerhead or hawksbill turtles, as the fat of green turtles is seldom rendered, but rather sold along with the meat.

Hawksbill shell The hawksbill is the only turtle which possesses a shell with any commercial value. I became intrigued with the commerce in hawksbill shell in Colombia, and will be detailing this in a future report. Basically, shell is used for two things in Colombia, jewelry/trinkets, and spurs for fighting roosters, the latter being the industry which requires the greater amount of shell on a yearly basis. I was able to locate the first family of hawksbill jewelry in Colombia, and was provided with much valuable information regarding origin of the shell, amount per turtle, who buys, who sells, and how much is used in a years time. It does not appear that there is any major exportation of hawksbill shell, though I was told in Providencia that a group of Japanese business men show up each year in search of shell, and will pay a high price for as much as they can lay hands on. I learned that in order to support Colombia's own jewelry and spur industry, trips are often made to obtain shell from the nearby Margarita Islands in Venezuela.

Turtle Leather There is presently no trade that I know of in sea turtle leather in Colombia. Historically, an Italian living in Riohacha shipped skins to Italy. It is even said that he provided turtle skins to a factory in Bogota where they were made into padded chairs and then shipped to Europe. At one point, the Mendal Brothers, famous for their dealings in illegal crocodilian skins, had tried to add turtle leather to their line. Their specifications for the hides, however, required that flippers and all be skinned, and this did not sit well with the Guajirans who like the flippers whole in order to boil the meat off for "arroz con tortuga". The now non-existant leather trade was, therefore, never a booming business anyway.

Other Uses No part of the turtle goes unused. At the slaughter operations in Riohacha, all edible parts of the turtle are sold before it has been dead for two hours. The shells are shipped to Barranquilla to be ground into pet food. The blood is allowed to

coagulate and is used in the production of turtle sausage. The gall bladder is even a valuable item, as its bile is drained and mixed with rum to produce a medicine that is "good for what ails you". Stuffed turtle heads, and entire turtles can be seen at bars and fancy restaurants alike. Cleaned carapaces become lamp shades and conversation pieces, even pig troughs. Perhaps the most interesting and valuable turtle product in Colombia is the tail, which is dried and used as an aphrodisiac so powerful that if misused "it can keep a man up for months".

Extent of Mortality

It is very diffucult to come up with an overall accurate figure for turtles killed each year in Colombia. At the main slaughter house in Riohacha, they kill perhaps five turtles/day during off season, and reportedly up to 26/day peak. There are three other slaughter operations which are much smaller scale. All together they kill less than half the turtles of the big operation. From December 15 to January 15, about 65 turtles were killed by the big slaughter house (approximately 2/3 greens, 1/3 hawksbills), and this is reportedly one of the poorest months for turtle abundance. Extrapolation of these figures indicates an annual kill of over 1000 turtles for the one slaughter operation only. Maybe one out of five turtles purchased by the slaughter house are sold live to be killed at fiestas or other events, thus increasing the previous figure by 20%, and this is just greens and hawksbills. The indians who fish the turtles know that loggerheads bring a very low price at the slaughter house, and they therefore eat them in the village. Inspection of garbage dumps in several fishing settlements turned up many loggerhead bones and carapaces, but seldom any other species. No signs of leatherbacks being eaten were turned up anywhere, though one family living near the Guachaca River claimed to eat one now and again.

Estimations of hawksbill mortality can be made from data regarding the amounts of shell purchased. I guess that there is in the neighborhood of 300-400 kilos of hawksbill shell being sold each year in Colombia, from Colombian turtles. This is a fairly well-researched guess, though there a couple of what may be major buyers whom I have not interviewed. Though there are those who claim to get as much as 8 kilos of shell from a big hawksbill, the standard amount is 1.5-2.0 kilos/turtle. This would indicate that anywhere from 150-266 large hawksbills are killed each year in Colombia.

Numerous other factors cannot be quantified without further research, such as incidental take by shrimpers, loggerhead take by artisenal fisherman in the eastern Guajira, and nesting female mortality on the beaches. Nevertheless, If forced to provide an overll figure, I would break it down as follows:

Species	Estimated Kill

Green Turtle	2500-3500/year
Hawksbill Turtle	300-1000/year
Loggerhead	300-1000/year
Leatherback Turtle	< 100/year
Ridley Turtle	< 10/year

These figures are based on very preliminary analysis of the data. I hope to be able to state relative mortality figures with more confidence upon further analysis of the data, and the addition of a few critical interviews which are presently being attempted by mail.

Reproduction

Nesting occurs in The Golfo de Uraba (predominantly leatherback, though hawksbill reported), in the San Bernardo Islands (hawksbill), on the beaches between Taganga and the mouth of the Rio Don Diego (predominantly loggerhead), and north of Cabo de la Vela in the Guajira (species unknown). There is also some nesting in the Islas Rosarios and probably slight nesting on San Andres and Providencia. Nesting occurs in the outlying cays of the San Andres Archipelago, but the extent is unknown. There are also numerous reports of historic nesting beaches for which current observations do not exist. The area of highest nesting is in general from Taganga to Palomino, and more specifically from the mouth of the Guachaca to the Mouth of the Don Diego. The next largest aggregations probably are those of the leatherbacks in the Golfo de Uraba, which I was unable to visit due to logistic problems. There may be considerable nesting on the beaches of the far eastern Guajira peninsula, but this still remains unexplored. Further analysis of my data, plus records from this years tagging efforts should allow me to make relatively accurate statements about numbers of nesting turtles within the coming months.

The mainland nesting season begins in late February with the leatherbacks. They are followed in late April and early June by the loggerheads, with the greens and hawksbills emerging from May through July, and sometimes into August. The peak nesting period I would estimate to be mid-June through the end of July. The loggerhead is by far the most common, followed by the leatherback, hawksbill and green turtles in this area.

Current Conservation Efforts

There is little being done to prevent exploitation of sea turtles in Colombia. Sea Turtles, like all wildlife, are protected by law, though this law is seldom enforced. There is actually a specific law regarding the capture of hawksbill turtle. Where turtle restrictions are enforced, it usually comes in the form of confiscation and release. Turtles which arrive to san andres on banana boats from Costa Rica, for example, are not allowed to be off-loaded and are released into the sea. There is

nevertheless a number of individuals, both government and non-government, who possess an interest in beginning stronger conservation programs for marine turtles. With a little exterior funding and guidance, I believe that the Colombians could pull off a very successful program of beach protection and research. This could be augmented with TED implementation and a strong education campaign to solve both immediate and future conservation needs for sea turtles.

Contacts for Future Cooperation

In addition to the hundreds of fishermen, restaurant owners, farmers, and students whom were interviewed as part of this study, there were a number of key sources of information and assistance, without whom things would have been much more difficult. The following INDERENA personnel provided invaluable assistance, and can be expected to provide support for any future conservation and survey efforts: Vicente Rodriguez, Jose Vicente Rueda, Jairo Barreto, and Fernando Duque Tobon. Personnel from the Centro de Investigaciones Oceanograficas y Hidrograficas in Cartagena were also quite interested in participating in any way possible: Rafael Steer, Francisco Arias, and Ricardo Alvarez. The Director of INVEMAR, an oceanographic research station in Santa Marta is strongly interested in sea turtle conservation efforts. I met a number of sport SCUBA divers from Cartagena who indicated an interest in participating in Conservation Education efforts centering around sea turtles. I encountered numerous students of the natural sciences throughout the country who would gladly participate in information gathering efforts, as well. I am in the process of preparing a complete mailing list of all the people whom I met as a result of this study, on which I will indicate their interests and abilities as regards future conservation efforts.