

MINISTRY OF ENVIRONMENT, DIGEPESCA, HONDURAS

LZ-853



ACTIVITIES OF THE PROTECTIVE TURTLE
ECOLOGY CENTER FOR TRAINING, OUTREACH,
AND RESEARCH, INC. (ProTECTOR) IN PUNTA
RATON, HONDURAS

2008 - 2009 ANNUAL REPORT
JULY 15, 2010

ACTIVITIES OF THE PROTECTIVE TURTLE ECOLOGY CENTER FOR TRAINING, OUTREACH, AND RESEARCH, INC (ProTECTOR) IN PUNTA RATON, HONDURAS *ANNUAL REPORT OF THE 2008 - 2009 SEASON*

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PREFACE

This report represents the ongoing work of the Protective Turtle Ecology center for Training, Outreach, and Research, Inc. (ProTECTOR) in Punta Raton, Honduras. The report covers activities of ProTECTOR during the 2009 calendar year, and is provided in partial fulfillment of the interim permit agreement provided to ProTECTOR for 2009 by DIGEPESCA.

ACKNOWLEDGEMENTS

ProTECTOR recognizes that without the financial assistance of the Department of Earth and Biological sciences (Loma Linda University), this project could not have taken place. We are grateful to Samaria Castellano and Cecilia Calidonio, students at UNAH that were involved in the collection of the data provided in this report as part of their practical requirements for graduation. This project was facilitated, in large part, by the community of Punta Raton and the Municipality of Marcovia. We thank the Municipality for the purchase of materials to improve the turtle research center at Punta Raton. We are grateful to Snr. Henrique Vihil for his willingness to enter into discussions with ProTECTOR to increase opportunities for investigations in the community of El Venado in the coming nesting season. We are indebted to both the communities of Punta raton and El venado for their participation in these sea turtle conservation efforts. We thank the multi-disciplinary team of Jesse Bliss, Dr. Joycelyn Malari, Sandra Suarez, and Carizma Chapman for their work on an initial community assessment at Punta Raton. For Submission to: The Secretariat for Agriculture and Ranching (SAG), the Ministry of Environment (SERNA), Fisheries (DIGEPESCA), and the Department of Biodiversity (DiBio).

July 15, 2010

TABLE OF CONTENTS

INTRODUCTION AND BACKGROUND4

Research Assistants Training5

Local Community Attitude to Tagging6

Measuring and Tagging6

DETAILED METHODS.....8

Research Assistants Training8

Measuring and Tagging8

Local Community Attitude to Tagging10

RESULTS.....12

Research Assistants Training12

Local Community Attitude to Tagging12

Measuring and Tagging15

DISCUSSION.....35

Research Assistants Training35

Local Community Attitude to Tagging35

Measuring and Tagging36

RECOMMENDATIONS37

LITERATURE CITED.....39

APPENDIX IA – Data Collection Sheet (Nesting Female)39

APPENDIX IB - Data Collection Sheet (Nesting Female) (Español)41

INTRODUCTION AND BACKGROUND

A comprehensive background regarding the previous status of the Olive Ridley (*Lepidochelys olivacea*) sea turtle, and the need for continuing research on their status and plight in Honduran waters, has been provided in a previous report to SAG, SERNA, DIGEPESCA, and DiBio (Dunbar and Salinas, 2008). That report provided details on methods carried out by the ProTECTOR under SAG permits # **DGPA/5428/2007**, and provided study results obtained up to November, 2008.

The following is an annual report on the activities of ProTECTOR carried out between March, 2000 and October, 2009. These studies continue with the aim of tagging and tracking nesting Olive Ridley sea turtles, as well as assessing the health, population dynamics, and population genetics of turtles nesting on the beaches at Punta Raton. The study site is located on the south coast of Honduras (N13°16'4.62", W87°30'50.07") (Figure 1).

This report provides details on data collected prior to the “*la veda*” (August 26 – 30, 2009), during the “*la veda*” (from September 1 – 25, 2009), and after the “*la veda*” (from September 26 – October 25, 2009). Detailed methods, results and discussions for the project are provided in the following report. At the conclusion of the report, a series of recommendations is provided for consideration by decision-makers in the various Ministries of the Government of Honduras to which the report has been provided.

This report has been furnished to all appropriate Secretariats, Ministries, and Departments of the Honduran Government, including SAG, DIGEPESCA, SERNA, and DiBio, in both Spanish and English languages. Data from this report may be included in the annual report of Honduras to the Inter- American Convention for the Protection and conservation of Sea Turtles (IAC).



Figure 1. Regional map of Honduras, showing the area of Punta Raton, with inset showing close view of nesting beach and the Punta Raton Turtle Center.

Research Assistants Training

During the period of August 25 – 30, Dr. Stephen G. Dunbar was accompanied by Ms. Samaria Castellanos, a senior undergraduate Biology student from the Universidad Nacional Autónoma de Honduras (UNAH), on a training session to Punta Raton. At this time, the nesting season was already underway. On arriving at the Punta Raton Turtle Center (PRTC), we were informed by local community members that the number of nesting turtles appeared to be much lower than during the same period in the previous season (2008).

On the night of August 25, we began monitoring the beach for nesting turtles. We followed the procedures outlined in the 2008 Annual Report (Dunbar and Salinas, 2008). During the first and second nights of monitoring, we did not come in contact with any nesting turtles.

On August 27, we were able to tag the first female we had seen for the 2009 season. We used this tagging instance as a training session for Samaria Castellanos, in which she was instructed on how to measure the turtles (CCL, CCW, SCL, SCW), how to measure nest depth, distance from the water, and nest habitat, as well as how to apply the flipper tags, and record the appropriate information. This training continued over the following two nights, in which one turtle was tagged in each night, respectively.

Local Community Attitude to Tagging

Egg harvesting in Punta Raton has been a regular activity during the nesting season for at least four decades. Initial reports of *L. olivacea* along the Gulf of Fonseca, were provided by Carr in 1947 (Carr, 1986), followed by Prichard in 1967 (Pritchard, 1969) . In 1975, the first beach hatcheries, along with the first “veda” for egg collection was established on the Pacific coast of Honduras (Minarik, 1985).

We previously reported in the ProTECTOR 2008 Annual Report that the research efforts at Punta Raton were initially met with some resistance to tagging, but that resistance diminished as we spent more time among the community. In the 2009 season, we again met with some resistance to tagging nesting turtles.

Measuring and Tagging

The collection of data on measures and tag recovery in sea turtle research are recognized as of great value in determining aspects of life history, growth, habitat sufficiency, population dynamics, population genetics, and ecology.

Measurements of individuals over time (mark-recapture studies) provide important information about return rates and fecundity in individual animals. Flipper tags provide a primary means by which to identify individuals. For adult turtles, tag returns from captured turtles may provide

critical information regarding distant foraging or nesting grounds, as well as migration pathways, especially if saturation tagging can be achieved.

Environmental Education and Outreach

We carried out two forms of community environmental education over the research season in Punta Raton. One method was to meet with individuals from house to house. This method used an informal, interview approach asking their thoughts on:

- whether they had noticed declines in nesting turtle numbers now compared with 10, 15, 20 years previous
- why they thought turtles were declining
- if they thought tagging had any impact on turtle numbers
- if they thought egg removal had an impact on turtle numbers
- the impacts of local, artisanal fisheries

In addition to asking questions and providing an opportunity for discussion, we also explained what we were trying to accomplish with the tagging and research efforts in the community.

The second type of environmental education was provided through a workshop presented to the community at the start of the “veda.” This workshop was presented by UNAH student, Samaria Castellanos, and provided data collected by ProTECTOR in previous years at Punta Raton, as shown in the 2008 ProTECTOR Punta Raton Report. The objective of this workshop was to continue fostering awareness of the research and conservation efforts conducted by ProTECTOR, as well as to seek input from the community on how best to increase involvement in the projects taking place in the community. The presentation focused on reasons why the research was critical to understanding the population dynamics of the Olive Ridleys nesting along the beach area of Punta Raton.

Multi-Disciplinary Team Visit

There is growing recognition of the need to engage numerous disciplines in efforts of conservation in the context of sustainable community development. Understanding the human aspects of turtle use is critical in developing realistic management strategies for species conservation and community development efforts (Campbell, 2007). Multi-disciplinary teams

can provide insights into social, educational, environmental, economic, and health issues that can then be integrated into a more holistic approach to community development and ecosystem conservation. In light of this, a multi-disciplinary approach to sustainable development at Punta Raton is needed. ProTECTOR seeks to foster and develop such an approach, together with disciplines at Loma Linda University, as well as disciplines at universities from within Honduras.

DETAILED METHODS

Research Assistants Training

From August 25 – 30, 2010, Stephen Dunbar provided training to Ms. Samaria Castellanos. Ms. Castellanos is a senior Biology student at UNAH, and accompanied Dunbar to Punta Raton for the initial stages of her field practicum to complete her BSc degree from UNAH. As part of the training, Samaria learned to correctly fill out the data collection sheets (Appendix IA and IB), measure the CCL_{min} , CCL_{max} , CCW , SCL_{min} , SCL_{max} , SCW for nesting turtles (Figure 2), apply flipper tags (Figure 3), and enter the collected data into the project database. This training was conducted over a four night period, and continued upon returning to Tegucigalpa, where Samaria was further trained in how to enter data into the database. It was important for Samaria to understand how to enter the data, as the database is cumulative and continues from year to year. Therefore, mistakes in either collecting data in the field, or entering it into the database would result in errors in analyses and in identification of individual turtles.

During the “veda” period, Samaria went on to provide training to Cecilia Calidonio, who is also a Biology student at UNAH, and who continued to work with Samaria from September 1 to October 30, 2010. Both of these students collected field data for the project at Punta Raton until October 30.

Measuring and Tagging

Methods as outlined in the ProTECTOR 2008 Report were followed for the measuring and tagging of turtles at the research site.



Figure 2. Dr. Stephen Dunbar training Samaria Castellanos on how to measure the straight carapace length of a nesting Olive Ridley (*L. olivacea*).



Figure 3. A photograph of a flipper tag showing the unique tag identification number and the correct placement of the tag on the anterior, left flipper.

Each turtle was restrained by hand during measurements and tagging. Measurements of carapace length were taken from the nuchal notch to both the notch at the base of the two supracaudal scutes, and the tip of the longer supra caudal scute. We measured carapace width from the marginal scute on one side to the marginal scute on the other side, at the widest point. We measured straight carapace lengths and widths with a Haglöf Mantax tree caliper, and curved carapace lengths and widths with a flexible vinyl tape measure. Tags were again placed in the proximal scale on the front, left flipper of each turtle (Figure 3). In preparation for tagging, we cleaned the sand from the scale and applied Betadine to both the dorsal and ventral surfaces of the flipper. The piercing tooth of the tag was covered in Polysporin to reduce the potential for introducing infections into the tissue of the turtle. Once tagged, the turtle was no longer restrained, and we ensured that it returned to the water safely.

We also collected data on nest depth and nest habitat. Methods used were the same as those provided in the 2008 report of ProTECTOR activities at Punta Raton.

Environmental Education and Outreach

Samaria Castellanos held a workshop with the community at Punta Raton on September 13, 2009, explaining to the community the importance of the research work ProTECTOR was undertaking in the area. She also explained some reasons why sea turtle populations decline, including the harvesting of eggs at unsustainable rates. An important aspect of the outreach was to provide examples from around the world of communities that are involved with conservation efforts, and that are benefitting from their sea turtle conservation efforts.

Multi-Disciplinary Team Visit

A multi-disciplinary team from Loma Linda University was formed in early February, and visited Punta Raton from March 8 – 11. The team consisted of Dr. Stephen Dunbar (Biology), Dr. Joycelyn Mallari (Pharmacy), Ms. Sandra Suarez (Social Work), Mr. Jesse Bliss (Public Health), and Ms. Carizma Chapman (Marriage and Family Therapy). All members of the team were from Loma Linda University.

We spent four days among the community, mapping community assets, conducting informal interviews with families, and meeting with groups of fishermen and “patrinatos” in the community.

RESULTS

Research Assistants Training

As a result of training Samaria Castellanos to measure and tag turtles, and properly collect and record data, she was then able to train Cecilia Calidonio to assist in the data collection and recording (Figure 4). Additional training of local community members served to increase interest in the research and cooperation from the community (Figure 5).

Unfortunately, there were still a few data entry errors in the database. However, these were mostly minor errors that were corrected on reviewing the database at the end of the season. In at least two instances, information in the database had been corrected post-season, but these were incorporated into the database on the computer that was stolen before the database could be backed up.

Local Community Attitude to Tagging

We were somewhat surprised at the number of individuals that were resistant to the tagging process during the pre-*veda* period. Initially, there were approximately six or seven individuals that did not want us to tag the turtles, and carried the turtles back into the water after they had nested. We talked with these individuals and asked them to help us understand their reasons for not allowing us to tag. Reasons given were similar to those reported last year (Dunbar and Salinas, 2008), and were again based on the idea that pain inflicted on the turtle due to the tagging process would inhibit the turtle from returning the following year. Community members did not have any verifiable mechanisms for identifying turtles from one night to the next. When asked how they knew if a turtle did, or did not come back once it had been tagged, they stated that they “did not see them come back.” We continued to work with resistant community members to help them understand the importance of the tagging to elucidate the dynamics of this population of *L. olivacea*.



Figure 4. Cecilia Calidonio (second from right) and Santiago Viera (far right) work with visitors monitoring the nesting beach after receiving training on how to collect the data and tag the turtles.. Photo – Samaria Castellanos.



Figure 5. Local community members assist in the research by helping to measure and record data on each turtle. Such community involvement, especially by the young, fosters a good working relationship with the community.

In most cases, personal discussions with resistant egg harvesters resulted in reduced concern about tagging and eventual cooperation during tagging events.

This year, we were introduced to another community to the south of Punta Raton. The community of El Venado (N13°8'8.29", W87°25'34.36") has begun construction of a turtle conservation center. The construction and development of this center has been under the direction of Mr. Henrique Vihil. Discussions between Mr. Vihil and Dr. Dunbar (Figure 6) resulted in the suggestion that ProTECTOR collaborate with the community in both research and community development. This community appears to have a very progressive attitude toward conservation, recycling of plastic, and community development. The community at El Venado has the desire to develop systems that will allow community members to learn skills, be involved in research, and introduce eco-tourism into the community in a systematic fashion.

Measuring and Tagging

We measured and tagged greater than 125 nesting turtles this season. However, as a result of the robbery of our computer and all data sheets, the data on only 55 newly tagged turtles, and 14 turtle remigrations is provided in the current report. The loss of information is a setback, because the data sheets that were stolen along with the updated copy of the database had not been backed up on any additional memory device.

Not all measurements for all turtles were collected. It is unclear why this was the case. In addition, it can be seen that some individuals were not recognized from the database, although they carried our flipper tags from previous years. These individuals were designated as ???-??, or 0??-??. These individuals could not be identified as a result of errors in the data collection by field assistants. We continue to make efforts to identify these individuals from their tag numbers and from past records in the database.



Figure 6. Mr. Henrique Vihil and Dr. Stephen Dunbar discuss the potential for a future partnership between the community of El Venado and ProTECTOR for research, conservation of sea turtles, and continued community development.

Measurements of CCL_{n-n} for all turtles measured are shown in Figure 7. The mean minimum CCL of the 63 turtles measured was 66.1 ± 0.51 cm, with a range of 58 - 86 cm. In Figure 8, the SCL_{n-n} is shown for each of the 62 turtles measured over the 2009 season. We found that turtles ranged in SCL from 55 - 70 cm, with a mean of 61.9 ± 0.38 cm. We found no significant differences in CCL_{n-n} among years of measurements (2007 – 2009: $F_{(2,208)} = 0.934$, $P = 0.395$; Figure 9). However, there was a difference in SCL_{n-n} among years, with 2007 measurements being significantly less than measurements from 2008 and 2009 (2007 – 2009: $F_{(2,208)} = 7.96$, $P = ,0.001$; Figure 10), but no difference between 2008 and 2009 (Figure 10).

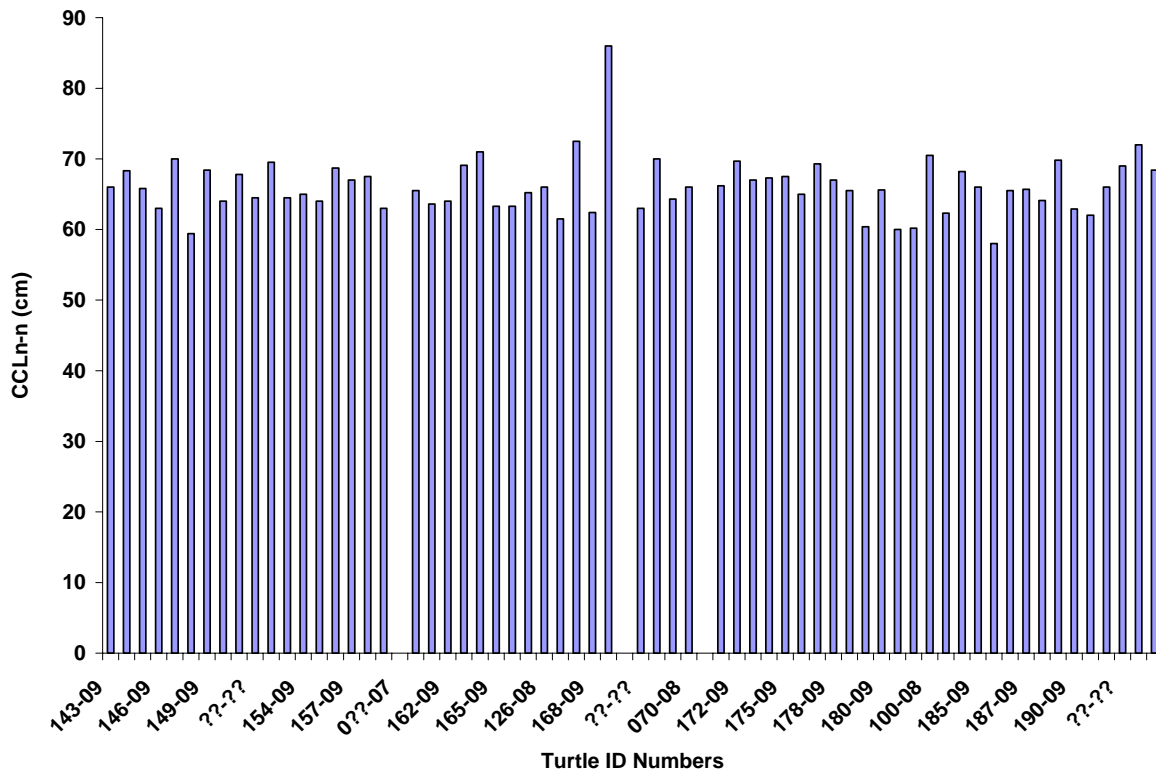


Figure 7. Curved carapace length (minimum) for nesting *L. olivacea* measured during the 2009 nesting season. Some individuals have not been fully identified and are indicated as ??-??, or 0??-??.

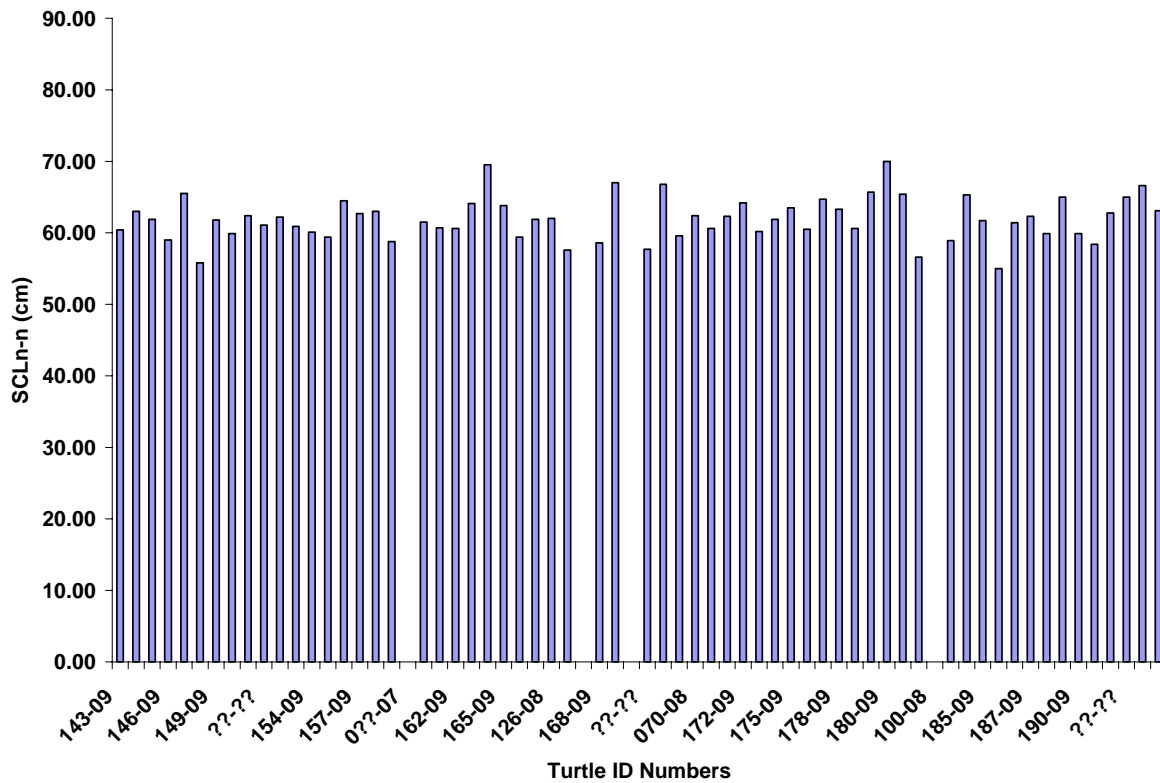


Figure 8. Straight carapace length (minimum) for nesting *L. olivacea* measured during the 2009 nesting season. Note that some individuals are not fully identified and are designated as ??-??, or 0??-??.

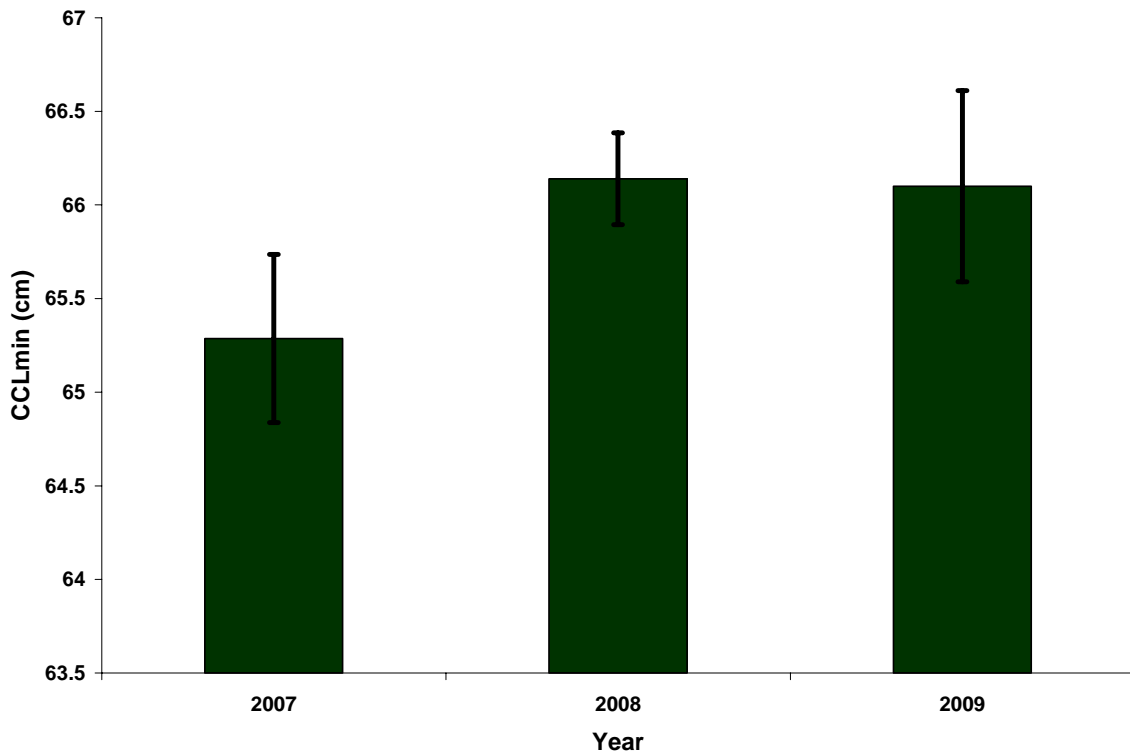


Figure 9. Comparison of Curved Carapace Length (CCL_{min}) of turtles measured during the 2007, 2008, and 2009 nesting seasons.

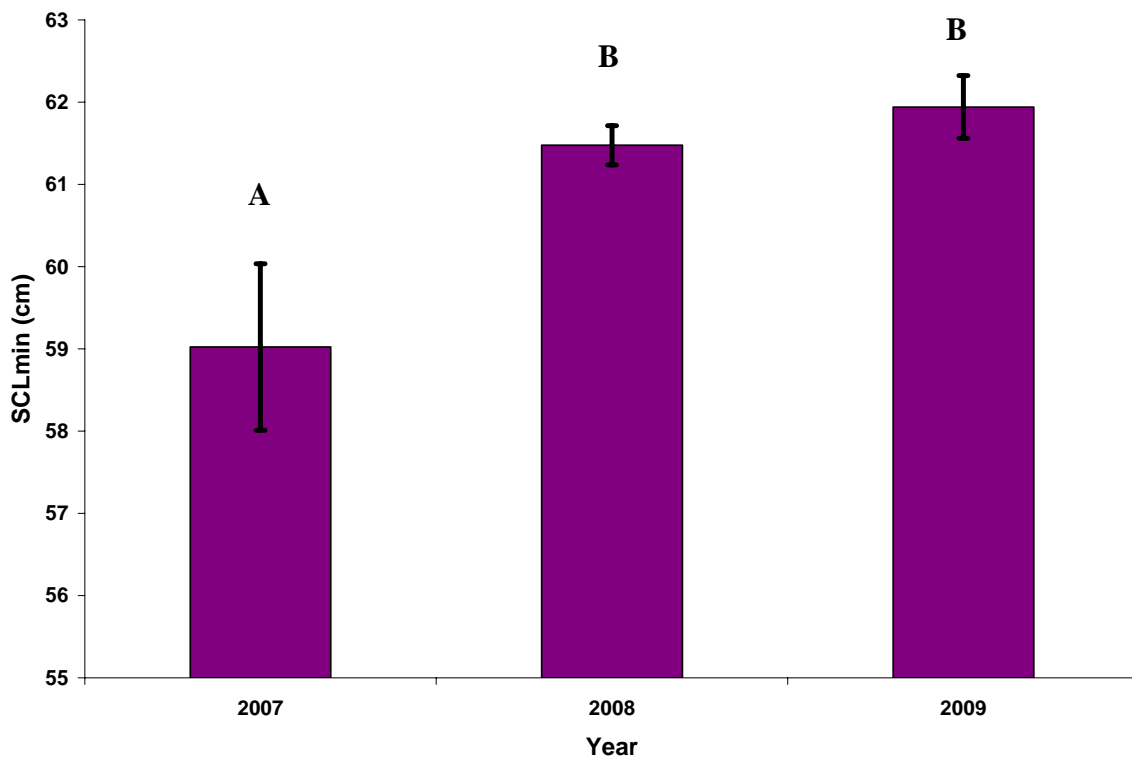


Figure 10. Comparison of Straight Carapace Length (SCL_{min}) of turtles measured during the 2007, 2008, and 2009 nesting seasons. Different letters represent significantly different groups.

In Figure 11, we show the nest depth of each nest dug by females prior to egg deposition during the 2009 season, although not all nests were measured. Mean nest depth for 2009 was 36.47 ± 0.39 cm.

When we compared nest depth among years, we found there to be a significant difference ($F_{(2,104)} = 13.16, P < 0.001$; Figure 12). Nest depths in 2007 (40.43 ± 0.98 cm) were significantly deeper than depths in either 2008 (35.13 ± 0.88 cm), or in 2009 (36.47 ± 0.39 cm). However, there was no difference in depths between the 2008 and 2009 nesting seasons (Figure 12).

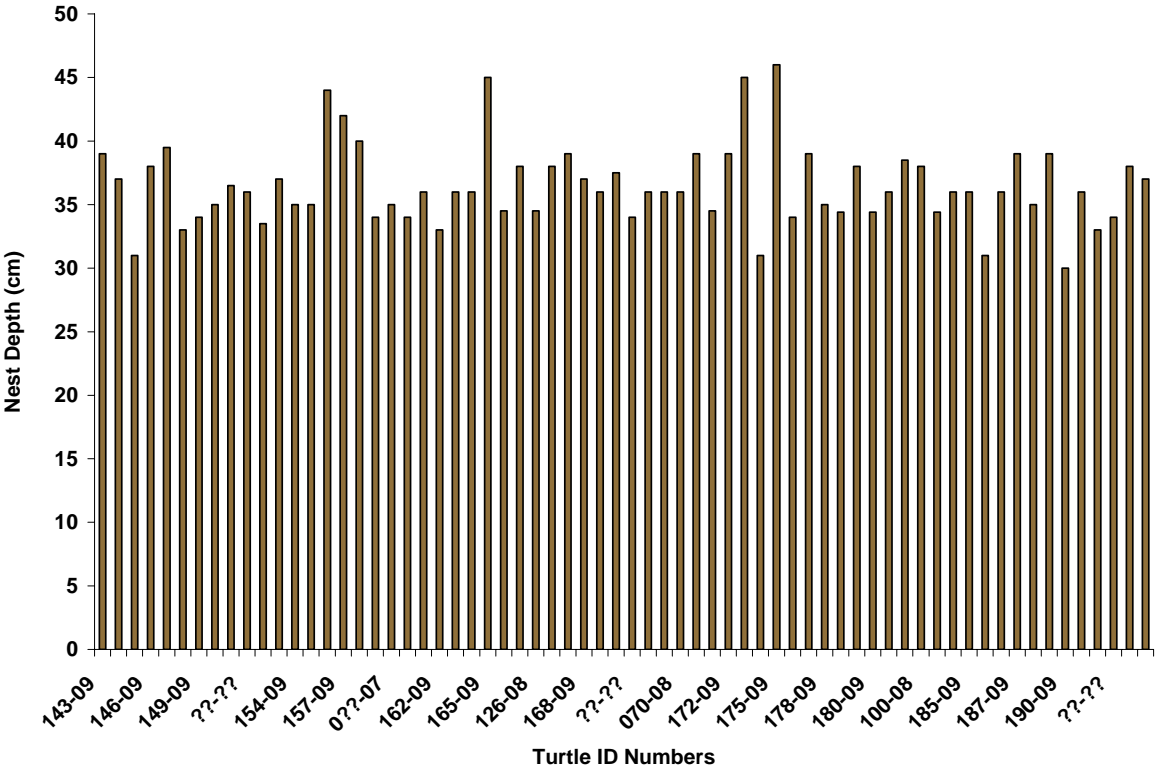


Figure 11. Depth (cm) of nests created by females prior to egg deposition during the 2009 nesting season.

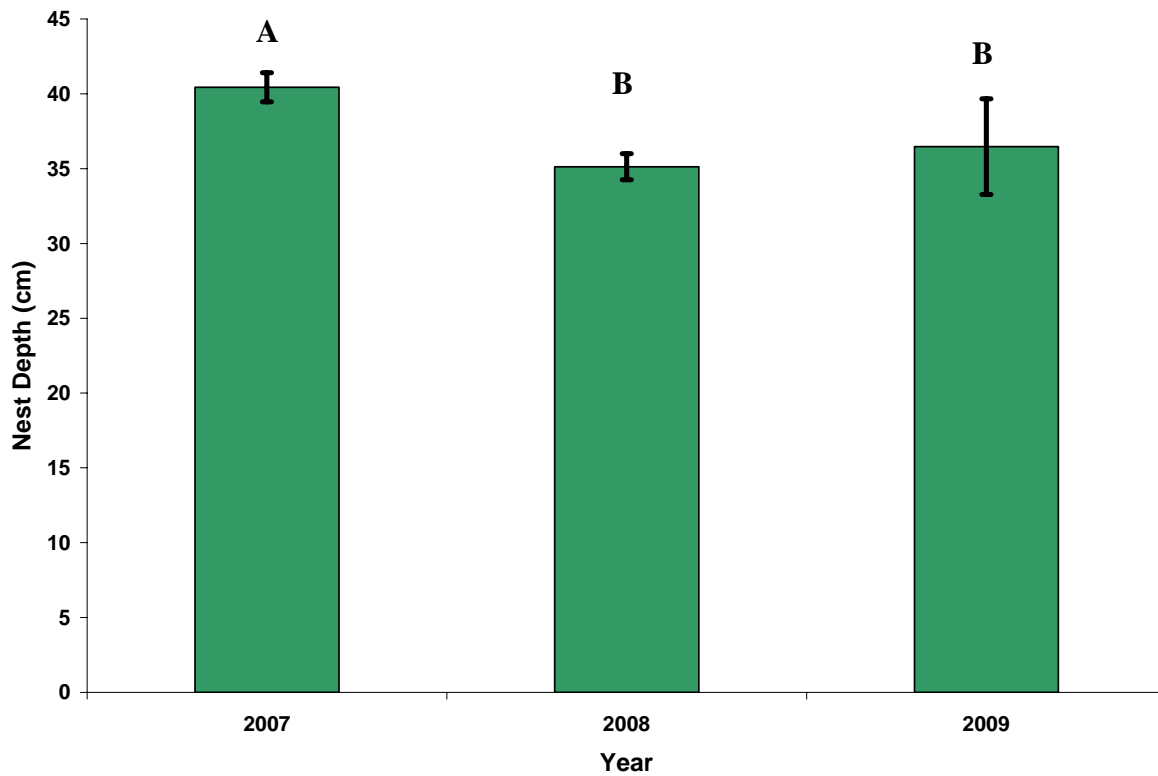


Figure 12. Nest depth (cm) of Olive Ridley nests recorded over the 2007, 2008, and 2009 nesting seasons at Punta Raton. Different letters represent significant differences ($P < 0.05$).

Figure 13 represents the egg clutch size for each nest counted during the 2009 season. We found the mean egg count for 2009 to be 89.28 ± 2.96 ($N=65$). When we compared mean egg counts over all three nesting seasons, we found no significant difference among seasons ($F_{(2,209)} = 2.16$, $P = 0.12$), with egg counts in 2007 and 2008 being 76.92 ± 4.73 ($N=24$), and 82.21 ± 2.80 ($N=121$), respectively (Figure 14).

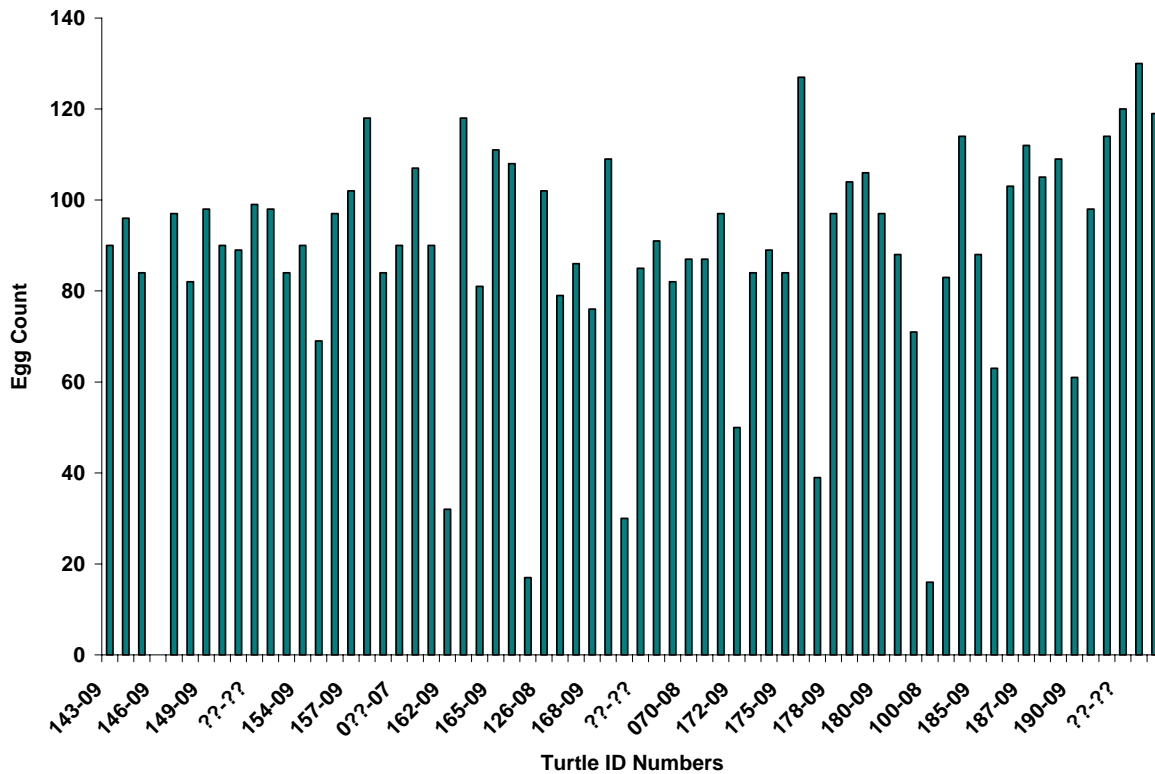


Figure 13. Individual egg counts for each clutch laid by females during the 2009 nesting season. Note, missing data indicate no egg count achieved.

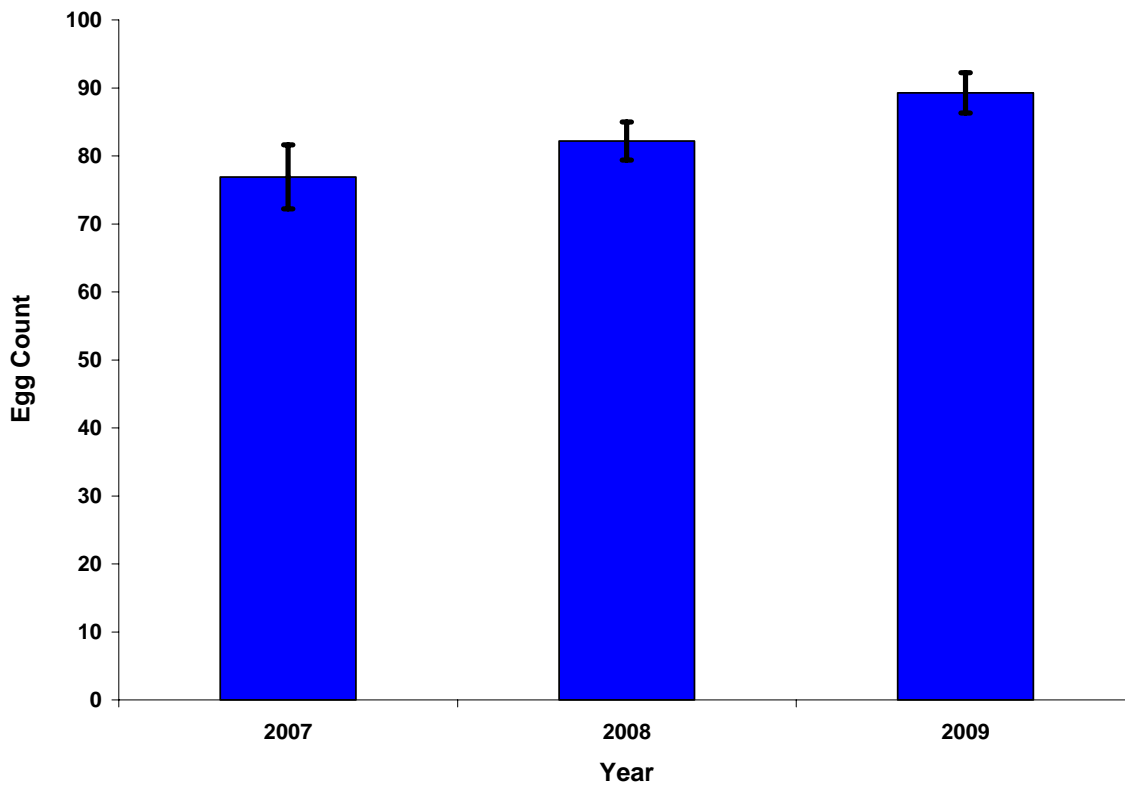


Figure 14. Mean egg counts for Olive Ridley clutches recorded during the 2007, 2008, and 2009 nesting season at Punta Raton.

Table 1. Number of nesting *L. olivacea* tagged and returning during or between seasons during the 2010 nesting season. * indicates missing data due to robbery of database and data sheets.

Season	Tagged	Remigrants
2007	31	0
2008	110	34
2009	55 (125)*	5 (16)*

In Table 1, the number of nesting Olive Ridleys that were tagged in each of the past three seasons is presented with the number of turtles returning with tags both among and within nesting seasons. In the 2010 season, we tagged approximately 125 nesting turtles and recall that approximately 16 turtles were seen nesting with tags, representing turtles that had been tagged either among years, or within the 2010 nesting season.

Environmental Education and Outreach

As a result of the workshop by Samaria and Cecilia, the team encountered less resistance to carrying out the project than during the pre-veda period. The workshops presented data from this project collected in the previous two years on the number of nesting turtles tagged, as well as the number of turtles that returned from 2007 and 2008 nesting seasons (Figure 15).

The workshops presented by both Samaria and Cecilia also encompassed educational outreach to the children in the local community, and included conservation-focused games (Figure 16), brief talks and discussions, and a clean-up activity around the turtle research center (Figure 17). These activities facilitated opportunities to discuss sea turtle conservation, and the importance of sea turtles to the community in an easy-to-understand context, and demonstrated the importance of collaboration with local communities in developing mechanisms through which all members in the community can grasp the importance of ecological conservation efforts.

We found that when community members were actively engaged, their assistance sought, and their traditional knowledge valued, there was an overall better sense of cooperation and community ownership of the conservation efforts and research endeavors. Members of the

Punta Raton community were very willing to participate in the workshops lead by Samaria and Cecilia previous to the “*veda*” period. These and other workshops emphasizing sea turtle research, community assistance, development of skills (such as handy-crafts), and further community development in preparation for eco-tourism, will be planned for the following year (2010). Funds for these workshops are currently being sought.

These workshops are a critically important component of working with the communities of both Punta Raton, and in the future, El Venado. In providing skills training, and information on the importance of research and conservation efforts on behalf of sea turtles, these workshops provide several forms of educational outreach to the community at all levels, and can greatly influence the receptivity of the community to participate in community development and research efforts.



Figure 15. Samaria Castellanos presents ProTECTOR data collected at Punta Raton during the 2007 and 2008 nesting seasons, explaining the importance for research to continue on the sea turtle population nesting in this community.



Figure 16. As part of the educational outreach at Punta Raton, children are invited to become involved, learning about the value of sea turtles as part of well-functioning ecosystems, with which the community can live in sustainable balance.



Figure 17. Keeping beach areas clean for nesting turtles is part of good environmental management. Here, Punta Raton community members take part in a clean-up of the turtle research center and the adjoining beach in preparation for the start of “*la veda*” season.

Multi-Disciplinary Team Visit

The team first met with Vice Mayor for the Municipality of Marcovia, community leaders, representatives of the Honduras military, the Aquaculture Association, and the non-governmental organization PROGOLFO on March 9, 2009 (Figure 18). Although the team had been assured that the turtle research center had been supplied with basic equipment for the arrival of the team, including new bed mattresses, a refrigerator, stove, fans for the rooms, and a water cooler, when the team arrived, the materials had not yet been purchased, or delivered to the center. The final decision by the Municipality to purchase and deliver the equipment to the turtle research center was made at this initial meeting, and the materials were purchased and delivered to the center immediately following the meeting at the Municipality. The purchase and delivery of a new stove, refrigerator, water cooler, and approximately 20 new bed mattresses, was a very encouraging sign that the Municipal office had a real interest in the success of the turtle research center. While the refrigerator and water cooler were immediately hooked up and made available for use by the team, the stove was not hooked up prior to the team leaving the site. On subsequent visits (up to March, 2010), the stove has remained unusable, since it has not been wired into the electrical system at the center.

Throughout the remainder of their time in Punta Raton, the multi-disciplinary team carried on informal surveys with community members (Figure 19), and mapped community resources, including schools, stores, restaurants, health clinics, and roads (Figures 20 and 21). The group was also able to meet with the both “Patrinatos” groups which people in the community termed the “Old Group” (Figure 22) and the “New Group” (Figure 23). We discussed the various felt needs and assets in the community with both groups, resulting in a better understanding of community dynamics by the Loma Linda University team.



Figure 18 A meeting of the Loma Linda University multi-disciplinary team with personnel from the military, the aquaculture industry, and the local municipal government at the office of the Municipality of Marcovia.



Figure 19. Part of the LLU multi-disciplinary team visited with community members as part of a preliminary community assessment. The team discussed perceived strengths, needs, and conditions from perspective of the community members.



Figure 20. A local community member assists in collecting geo-spatial data to map the roads throughout the community of Punta Raton.



Figure 21. Jesse Bliss (LLU School of Public Health) and Stephen Dunbar (LLU Department of Earth and Biological Sciences) map businesses, schools, roads, health clinics, and other facilities throughout the community of Punta Raton.



Figure 22. Discussions with the “Old Group” of *Patrimatos*, provided opportunities for the multi-disciplinary team to explore possibilities of alternative livelihoods for Punta Raton community members.



Figure 23. Meeting with the “New Group” of *Patrinatos*, the multi-disciplinary team was able to assess some of the community’s perceived strengths and weaknesses.

DISCUSSION

Research Assistants Training

The effort to train Samaria Castellanos was valuable to the efforts of ProTECTOR, and was of benefit on a wider scale. As a result of training Samaria, Cecilia Calidoni was subsequently trained by Samaria. Thus, we facilitated the training of two UNAH students who developed practical skills and experience in conservation ecology that they would not otherwise have received. This is an important aspect of ProTECTOR's outreach in expanding awareness and education related to sea turtle biology and conservation within Honduras. The ramifications of training young biologists in fieldwork and sea turtle conservation are far reaching, in that native Hondurans will ultimately be responsible for the care and conservation of their own resources. Assisting in the training of young conservationists within Honduras will ensure that as they take positions of responsibility in communities and government, their decision-making will be guided by knowledge, skills, and experiences gained while working with ProTECTOR.

Local Community Attitude to Tagging

The belief that the tagging process causes harm to the turtle, and results in reduced returns of nesting females in subsequent years, persists in the minds of some community members. It appears that the concern is not necessarily for the population of turtles, but for the loss of income through reduced egg harvesting opportunities. When challenged to provide evidence for this belief, proponents simply stated that they did not "see the tagged turtles come back." This reasoning demonstrates the need for more exposure to, and better understanding of the research we are undertaking in the area. There is therefore real need for increased opportunities for the community to be more aware of the goals and objectives of the research, as well as to become more involved in the research on a continual basis.

We were also able to locate another community that has begun a conservation project in the community of El Venado. We have discussed the potential for working with this community with the Director of the turtle conservation center, Mr. Henrique Vihil. The community of El Venado appears to ready to collaborate with ProTECTOR on research throughout the nesting season, as well as developing the community as a center for conservation and eco-tourism around nesting *L. olivacea*.

Measuring and Tagging

We collected information on an estimated 125 turtles this season between September 1 and October 30, 2010. Unfortunately, some of the data were lost during a robbery of the project computer, as well as both the original and copied data sheets. Therefore, we have reported on only the 65 turtles that were in the saved database at the time of the robbery. From these data, one of the most important results was the number of remigrants both among years and within the 2010 nesting season. The remigration of nesting turtles with tags is providing us with information to begin estimating the population size of nesters that consistently utilize the beach at Punta Raton. Without a consistent tagging effort, it will not be possible to estimate the population size of the turtles nesting at this location. Therefore, it will be important to both continue and expand the tagging effort along this nesting beach.

Environmental Education and Outreach

Efforts made toward environmental education and outreach in the community of Punta Raton are critical for the integration of the project into the community. Some misconceptions regarding tagging persist in the community, although with continued educational outreach regarding sea turtles and the importance of tagging, research, and conservation efforts, we have seen noticeable reductions in misconceptions and resistance to the research efforts undertaken.

It will be critically important to continue to hold information sessions, environmental workshops, and training in the community, and to encourage cooperation and involvement of community members in the conservation efforts. This will require funding to compensate community members that become involved with the projects. We are currently seeking funding for these efforts.

Multi-Disciplinary Team Visit

The multi-disciplinary team was only able to reside in the community for three nights. The conditions of the research center were not conducive to having groups of people stay at the center. This is a situation that requires direction and change. There is great potential for eco-tourism in the community if both basic infrastructure and local capacity-building could be improved.

The team was able to conduct community surveys and collect information on the resources that are currently available in the community. Although these resources are somewhat limited, there is enormous potential for further community development at educational, health, social, economic, and environmental levels. These should be further investigated by multi-disciplinary teams in the near future, if funding can be secured to both undertake more detailed assessments, and begin training of community members for alternative incomes that are seen as important and opportune.

RECOMMENDATIONS

The previously described studies represent significant advancement in our knowledge of the activities and distributions of nesting *L. olivacea* at Punta Raton to date. Although the data provided in the current report represents only a portion of the nesting season of this turtle species, and only on one beach along the south coast of Honduras, it represents the only effort to collect data on the nesting population of *L. olivacea* on the south coast of Honduras. For these reasons we provide the following brief recommendations to SAG, SERNA, DiBio, and DIGEPESCA:

1. Whereas each of the reported activities has been limited in data collection and in application of the data to the population of nesting *L. olivacea* at Punta Raton, **we recommend** that these studies be continued on an ongoing basis to collect further data on the status of Olive Ridley sea turtles nesting on the beaches in the community of Punta Raton.
2. Whereas the reported studies were conducted only in a limited area of the south coast of Honduras, **we recommend** that the study be expanded to include other communities along the south coast, such as Cedeno, and El Vanado, providing a standard methodology for data collection and estimation of current population numbers of nesting *L. olivacea* found in the Gulf of Fonseca, Honduras.
3. Whereas the projects were limited by funding support from the central government of Honduras, **we recommend** that funds be earmarked for the continuance and expansion of these studies, and furthermore, that the government agencies involved in the

conservation and protection of endangered sea turtles in the waters of Honduras (SERNA, DIGEPESCA, DiBio), provide both actual funding support, as well as in-kind support to the project.

4. Whereas there is currently limited opportunities to facilitate the sharing of data and information regarding the sea turtles of the Gulf of Fonseca, **we recommend** that an annual meeting be scheduled for the area of Punta Raton and El Venado in which all agencies and individuals interested in the conservation and protection of marine turtles on the south coast of Honduras may have the opportunity to present updated data, and discuss the direction of sea turtle research and conservation in the south coast area.

5. Whereas Honduras is a signatory to the Inter-American Convention for the Conservation of Sea Turtles (IAC), and is required to provide annual reports on the activities of the country on behalf of sea turtles throughout the waters of Honduras; and whereas previous national reports to the IAC have provided little significant information regarding sea turtle research and conservation in Honduras, **we recommend** that the work by ProTECTOR be included annually in the IAC Reports, increasing the awareness of research and conservation work taking place in Honduras by ProTECTOR on behalf of Honduras.

6. Whereas the permitting for these studies has expired (June, 2009), **we recommend** that by actions of SAG, SERNA, DiBio, and DIGEPESCA, the renewal of a substantially longer-term permit (10 years) be granted, and that the permit provide for the expansion of these studies to all areas of Honduras and to all species of sea turtles in the waters of Honduras.

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APPENDIX IA – Data Collection Sheet (Nesting Female)



Nesting Beach Data Collection Sheet (Nesting Female Data)

Date _____

Time of Laying _____

Beach Name _____

Lat/Long (GPS) _____

Turtle ID # **FN** - **09**

Turtle Species _____

Front Left Tag Number _____

Rear Left Tag # _____

Names of Data Recorder and Partner _____

Nest Tag # and Color	
Nest Depth (cm) - Bottom	
Nest Distance from Water (meters)	
Nest Location Habitat (bare sand, grass, in/under vegetation)	
Egg Count (# laid)	
Eggs Damaged (# broken during laying)	
Egg Diameter (cm) (10 normal eggs)	
Egg Weights (g) (same 10 eggs as measured above)	
CCL n-n ¹ (cm)	
CCL n-t ² (cm)	
CCW ³ (cm)	
SCL n-n (cm) ⁴	
SCL n-t (cm)	

¹ Curved Carapace Length, notch to notch

² Notch to tip

³ Curved Carapace Width. Measure all animals at the widest position.

⁴ Straight Carapace Length, notch to notch.

SCW (cm)	
Additional Comments, Markings, Health, etc.	

Project Director: Dr. Stephen G. Dunbar (ProTECTOR)

Project Coordinator: Lidia Salinas (ProTECTOR)

APPENDIX IB - Data Collection Sheet (Nesting Female) (Español)



Hoja de Datos de Playas de Anidamiento (Datos de Hembras Anidando)

Fecha _____ Hora de Postura _____

Nombre de la Playa _____ Lat/Long
(GPS) _____

Numero de Tortuga **FN** _____ - **09** _____ Especie de
Tortuga _____

Numero de Marca Frontal Izquierda _____

Nombres del Apuntador y Asistente _____

Nido # y Color	
Profundidad del Nido (cm.) – Fondo	
Distancia del Nido de la Línea de Marea (metros)	
Hábitat de Ubicación del Nido (pura arena, grama, en o sobre vegetación)	
Numero de Huevos (# puestos)	
Huevos Dañados (# rotos durante la puesta)	
Diámetro de Huevos (cm.) (10 huevos normales)	
Peso de los Huevos (g) (mismos 10 huevos medidos arriba)	
MCC h-h ⁵ (cm)	
MCC h-p ⁶ (cm)	
ACC ⁷ (cm)	
SCL n-n (cm) ⁸	
SCL n-t (cm)	
SCW (cm)	

⁵ Medida del Carapacho en Curva, de hendidura a hendidura.

⁶ Hendidura a Punta

⁷ Ancho del Carapacho en Curva. Medir al espécimen en la posición mas ancha.

⁸ Medida Recta del Carapacho., Hendidura frontal a hendidura caudal.

Observaciones Adicionales, Marcas, Estado de Salud. etc.	
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Director de Proyecto: Dr. Stephen G. Dunbar (ProTECTOR)

Coordinador de Proyecto: Lidia Salinas (ProTECTOR)