

Sea Turtle Rescue – Nicaragua

Annual Report 2012

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Nicaragua

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Preface

There can be little doubt that our planet, our mother, is in serious jeopardy. We are bombarded by reports and facts of the insidious deterioration of the health and wellbeing of our environment and eco-systems that make up the incredible diversity and beauty of our world. In fact the information is so overwhelming that it reduces many of us to a state of apathy, thinking that the problems are so insurmountable we cannot make a difference. The truth is that if we attempt to individually attack the enormity and severity of the problems, we probably cannot make a difference. However, we must never forget that people are the cause of the problems. Therefore, people are correspondingly the solution. Each of us, as citizens of the world, has an obligation and the power to contribute to making the world a better place wherever we are. Each of us contributing our small part will collectively contribute to creating a huge and even global difference.

Sea Turtle Rescue – Nicaragua is a not for profit effort that is committed in making a difference in the declining numbers of sea turtles. On the beaches that we operate, in Northwest Nicaragua, the number of nesting sea turtles has declined by ninety-five percent over the last thirty years. Additionally, three species no longer nest here at all. Without immediate and direct intervention sea turtles will soon disappear entirely from this area. While we may not be able to solve all the world's issues, we are making a difference here. In the past four years we have hatched and released over fifteen thousand Olive Ridley hatchlings on a beach where no natural nests have hatched for many years. It may take time to resolve the problem. However, every journey begins with a single step.

Introduction

Sea Turtle Rescue – Nicaragua (STRN) is a grassroots not for profit conservation effort dedicated to preservation of sea turtles. Our primary goal is to sustainably release healthy hatchlings into the sea to contribute to the survival of the species that nest in our area of operation. While we engage in a wide spectrum of activities to accomplish our purpose, we can never lose sight of the central issue that each live hatchling we deliver to the ocean is a victory and the reason for our efforts. We recognize, however, that the long term success of the project relies on the education, recruitment and commitment of the local community to cease being part of the problem. Instead they must somehow become dedicated to accepting responsibility for actions resulting in the solution.

STRN operates within the boundaries of the Padre Ramos Natural Reserve. While technically a protected area there is virtually no enforcement of the existing conservation laws. The community consists mostly of subsistence fishermen and caretakers of vacation properties of people living elsewhere. Approximately Ninety-Five percent of the families living here survive on less, and sometimes much less, than Two hundred dollars per month. The non-enforcement of environmental law and the abject poverty, coupled with a culturally ingrained disregard for the environment, contribute greatly to problem of the declining numbers of sea turtle and other rare flora and fauna in the area.

STRN has gone through many changes and challenges in the 2012 season. However, our commitment to the conservation and preservation of sea turtles is unwavering. At the termination of the 2011 season we found it necessary to sever our association with the Global Preservation

Project. This was a painful and discouraging decision that was regrettably necessary to preserve the integrity of our efforts. Our partnership with MSV-Nicaragua (msv-nicaragua.de) has remained solid and productive. Without the funding, support and encouragement provided by them we could not have achieved the results we did this year. The end result is a project more dedicated and committed to our primary purpose of saving sea turtles.

In spite of the difficulties that the 2012 season presented, the overall result was successful. We released Six thousand Four hundred and Forty-Three healthy hatchlings into the Pacific Ocean. While we had hoped for more, each turtle released represents not only a success, but a hope for the future.

2012 Season

Since the inception of the project, each season has presented a unique set of challenges and problems to meet and overcome. We have discovered the most productive method to evaluate our efficiency and challenges are to segregate the project into its component activities. In part that is the purpose of this report – to evaluate our efforts and methodology for efficiency and flaws and solicit ideas to improve. To that end, we have identified the following areas as the fundamental and essential components of the project:

1. Administration
 - a. Fund raising
 - b. Volunteer recruitment
 - c. Interface with local environmental agencies
 - d. Community education

- e. Tourist education
 - f. Record keeping
 - g. Web site and social media
 - h. Ongoing research
2. Hatchery Management
 - a. Design, placement and construction
 - b. Egg acquisition and handling
 - c. Temperature monitoring and control
 - d. Hatchery security
 - e. Nest monitoring
 3. Research objectives
 - a. Data collection and evaluation
 4. Release methods
 5. Project evaluation

The above list is an exhaustive representation of the activities that we believe is absolutely necessary to accomplish our objectives. I will attempt in this report to accurately and honestly portray what we have done and the areas that we need to improve.

Administration

The administration of any activity, while very important and labor intensive is not a particularly exciting effort. STRN is very conscientious to keep our administrative costs at a minimum. For the 2012 season our costs associated with administration was zero. All

administrative staff donates their labor and absorbs all costs associated with their efforts directly out of their own pockets. We believe that by eliminating these types of expenses all funds that are donated for the operation and maintenance of the project can be used where they are needed most – saving sea turtles. The specific responsibilities of the administrative staff are employee supervision, fund raising, volunteer recruitment, interface with local environmental agencies, community education, tourist awareness, record keeping, management of web sites and social media, and ongoing research for the improvement of the techniques and outcomes of the project. We believe that each activity is critical not only for the day to day operation of the project, but for the long term sustainability of sea turtle conservation in this community.

Each year STRN hires two local employees; a hatchery manager and a security guard. In addition, use part time day labor, drawing upon the local labor pool whenever possible. These positions are necessary to demonstrate to the local community that there is gainful employment available in turtle conservation and there are a number of critical tasks that need to be done by locals. The hatchery manager is responsible for patrolling the beach and interfacing with local poachers during the nesting season for the purpose of securing nests for relocation to the hatchery. He is also charged with training the egg collectors in the proper methods of handling the eggs and transporting them to the hatchery. Since we consistently pay less than market rates for eggs, his task is challenging in that we are attempting to convert poachers into conservationists. This type of community education is vital to the long term sustainability of the effort to protect sea turtles in this area. The hatchery security guard is responsible for protecting the hatchery from dogs and other natural predators as well as from thieves. Additionally, he prepares the nests within the hatchery for internment of clutches of eggs.

Fund raising is an integral function of any conservation effort. This year approximately Ninety-Five percent of our operating budget was donated by MSV-Nicaragua (MSV-Nicaragua.de), a German based non-profit specifically established for the protection of sea turtles in Nicaragua. We do receive some cash donations from tourists and other interested parties. Additionally, this year we received a donation of printed shirts and tote bags to use as fund raising tools. While we are making improvement in this area, it is a task that we need to devote more time and effort.

There is no question that we need assistance to accomplish the wide spectrum of activities that we deem important. Keeping in mind that there is a fair amount of training involved in making any interested person useful to the project, the recruitment of long term volunteers is vital. This year we had four such individuals. The length of time that they volunteered ranged from one to three months. We had a number of other short term volunteers that helped out for brief periods. Without question, we need to attract more long term volunteers and devise a more efficient way to utilize short term volunteers. In the coming months of the off season the development of a volunteer plan will be near the top of our working agenda.

Interfacing with local environmental agencies has been a fruitless and frustrating experience. This year we have had three meetings with and two site visits by the local environmental agency. We have explained the problems thoroughly, presented them with documentation, and requested their assistance in enforcing their laws. What we have received in return is smiles, insincere expressions of gratitude, and quickly forgotten promises of help. However, we have not given up. This year we plan to take our requests for assistance to the Minister of Environment at the national level. While based on my experience, I am not overly optimistic of the outcomes; I remain hopeful that we can eventually convince the powers that be

in this country to begin to take responsibility for a problem that has been, in part, created by their inaction.

Community education at the local and national levels is quite likely the only long term solution to the problem of declining sea turtle populations in Nicaragua. To that end we have prepared and contributed curriculum to be integrated into the local schools. Additionally, we have opened our facilities to interested local visitors and offer educational seminars and demonstrations daily during nesting and hatching seasons. We also had a very competent volunteer, Jason Searing, who gave radio interviews and presentations this year. While this is an important beginning, it is far from enough. We need to develop the ability to reach not only the poachers, but also the consumers of turtle eggs on a national level. In order to accomplish this, we need to reach and educate national administrators and the national media.

The area in which the project operates is becoming increasingly a tourist destination. We have experienced a great deal of interest from these travelers. As a consequence, we have started a tourist awareness program. We give daily tours and lectures to tourists in an effort to raise international awareness and support. While this outreach has been successful in raising awareness, it has been very time consuming and fiscally unproductive. We are currently evaluating the possibility of charging admission for the tours and vending products, such as t-shirts, as a fund raising tool.

The bane of any legitimate effort is paperwork. However, record keeping is an important function of our project. We insist on complete transparency our expenses and accounting (see Appendix B). We also keep accurate records of the eggs, nests, and hatchlings that represent our primary and measurable product. With all of our record keeping we use redundant systems of

handwritten and digital entries. This is necessary because the majority of our data is collected in the field and later compiled in the office.

Web site development and social media updates is an area that we have failed at this year. Given the remoteness of our project and the unavailability of reliable internet connections these tasks have remained virtually undone this year. However, we have been offered help for the development and maintenance of the web site by a new and enthusiastic member of our team, Ari Sieberman. The web site that he is creating is looking very good and we expect that it will be online soon (www.seaturtlerescue-nicaragua.org). We are still searching for a solution to keep our Facebook page current and updated.

We learned early on that hatching sea turtle eggs is much more difficult than finding or buying eggs and putting them in the ground. It has been a continual learning process to discover effective and productive means by which to get viable hatchlings from the egg into the sea. We rely on ongoing research and a developing and expanding network of experts for the information and expertise necessary to continually improve our methods and correspondingly our hatch rate.

The administrative duties outlined and described above are probably the least interesting component of the project. However, they are critical for the operation and continuation of the project. In some ways, I miss the days when we were just starting and the only things that we needed to worry about were getting eggs and planting them. The scope of the problem requires a grander solution than two middle aged men can solve between beers. In that the numbers of mature turtles continue to decline annually, the solution is that we continue to grow and expand our operations. To accomplish this we must provide organization to accommodate and manage our efforts.

Hatchery Management

The hatchery is the keystone of the project. Many studies recommend that the ideal approach is to leave nests unmolested. However, on this beach even if we were able to eliminate poaching, we would still have to monitor and protect each individual nest from feral dogs, crabs, and other natural predators. Additionally, we would have to completely close the beach to all vehicle traffic and devise a system to protect emerging hatchlings from aerial predators as they enter the sea. Due to lack of enforcement, manpower, and funding, this approach is impractical here at this time. Therefore, given the realities of the conditions existing in this locality, we have determined that the centralized hatchery approach is the most cost effective and practical.

The season begins each year with the construction of the hatchery. The first consideration is placement. We know from our direct observation and data collection that nesting turtles place their clutches on the average within a range of five to fifteen meters above the extreme high tide level. In discussions with visiting marine biologists we have also learned that placing the hatchery within close proximity to high tide facilitates an advantageous exchange of gases. It is also important to change the sand from year to year because the sand retain bacterial residue that is potentially harmful to developing eggs. The final consideration to the hatchery placement is that it must be protected from erosion and storm surges. To protect the hatchery these dangers, we constructed a sea wall as a barrier in 2011.

The dimensions of the hatchery are four by twelve meters. Each year we reconstruct the hatchery using as many recycled materials from previous years as possible. We begin by determining the location and digging a one meter deep trench around what will be the perimeter

of the hatchery. We line the trench with fine mesh netting as a barrier for crabs and other burrowing animals. We then posts four to six meters apart and extending approximately two meters above the surface. With the posts and subterranean netting in place we back fill the trench. Once the trench is filled, we attach two more courses of netting and connect them with a running stitch around the entire hatchery. We construct and attach a portal for entering the hatchery and a support network of galvanized wire and twine for the shade cloth cover. Finally, using twine, we lay out a network of grids (50cm x 100cm) to mark the nest locations.

The next step is to populate the hatchery with viable eggs. Egg acquisition and handling is the most important component of this process. Our hatchery manager patrols the beach every night during the nesting season. He is a long term resident of the area and has relationships with the local poachers. In addition to acquiring eggs, he is responsible for educating the poachers on the importance of conserving the eggs for hatching instead of selling the eggs to the market for consumption. It is one of our goals to change the mindset of the poachers from thinking of themselves as poacher but as conservationists. Since we consistently pay less than market rates for eggs and each year the number of eggs that we acquire is increasing, I believe that we are making progress in this area.

We are very selective about the eggs that we purchase. We require that the eggs that we purchase have the best chance of hatching possible. To meet this goal our hatchery manager trains the poacher that we buy from in the proper methods of collecting eggs. We will not accept eggs that are touched by human hands or placed in unsanitary containers. To meet this condition we issue rubber gloves and new plastic bags to each of the collectors from whom we purchase eggs. We exchange clean gloves and bags for each nest that we purchase. We also will not buy eggs that have been out of the ground for more than one hour. Arturo, our hatchery

manager, has worked out a system with the poachers whereby they signal him by flashlight and he rushes by motorcycle pays for the eggs at gets them back to the hatchery as safely and quickly as possible.

Once the eggs are delivered to the hatchery artificial nests are prepared. We attempt to mimic natural nests as accurately as possible. A tube is dug in the sand approximately twelve centimeters in diameter to a depth of thirty-five centimeters. Then a bulbous cavity is carved out from fifteen centimeters to the bottom of the nest. This cavity is the space in which the eggs will rests throughout their incubation period. The eggs are then carefully placed in the nest. We attempt to place the eggs in the same order in which they were laid, with eggs from the bottom of the natural nest on the bottom of the hatchery nest.

Through research and experience we have learned that temperature monitoring and control is critical to a successful hatch. Since sea turtles are reptilian their sex is ambiguous until the second trimester of their incubation. The pivotal temperature, the temperature that produces equal numbers of males and females is (depending on whom you read) between 28.5 to 30 degrees Celsius. We had a difficult time controlling the temperature with the hatchery this year. We experienced an unusually dry rainy season and the ambient temperatures were much warmer than usual. Consequently, our hatch rate was lower in the first part of the season until we discovered that we could lower temperature by watering regularly with fresh water. This process stimulated natural rain and proved quite successful.

Hatchery security has proven to be an absolute necessity. We not only need to protect the nests from natural predators and feral domestic animals, but also from human thieves. Over the

course of the years we have lost several nests to thieves when the hatchery is left unattended. Therefore we maintain security coverage of the hatchery twenty-four hours per day.

We check individual nests within the hatchery several times a day. In addition to monitoring for temperature and moisture content of the sand, we also check each nest for its hatch readiness. We know that the average incubation time is forty-five days. However, some nest may go as long as fifty-five days, while others may begin hatching at forty-two days. Interestingly not all eggs in an individual nest will hatch on the same day. There is often a four to five day lag between the first hatchlings of a nest emerging and the final eggs hatching. For this reason we must use extreme care when opening any nest not to damage any unhatched but viable eggs.

Research objectives

Our research objectives this year were very simple. We cared to evaluate how we could achieve the highest hatch rate possible. Our initial methodology was to mimic the techniques that worked for us last year. We quickly determined that what had worked well in 2011, was failing dismally in 2012. We reexamined every component of our methodology and ultimately discovered that the main factors involved in creating an acceptable hatch rate was strict temperature control and using clean sand. The most important factors for temperature control appear to be shade and regular watering (see Appendix A).

A secondary research project emerged by accident. Towards the end of the hatching season we discovered two hatchlings that were unable to be released. We decided to try to keep them alive and measure their rate of growth and to evaluate if they would outgrow or overcome their individual disabilities. One has no use of its rear flippers and the other cannot dive and only

swims in circles. It is amazing to watch them grow, in two months they have both quadrupled in size. I am optimistic that the tortugita that only has use of its front flippers will eventually be able to be released. The other, whom we have nicknamed “Razzle”, however, may never be able to survive in the wild, due to its inability to dive, will likely spend his life as a pampered research subject. Plans are underway to build it a pool.

Release methods

During hatching season we schedule releases daily. We change the times and locations of our releases in an effort to prevent to creation of feeding stations for fish and birds. We transport the hatchlings to the beach and give them to opportunity to walk five to ten meters to the sea. During this time we evaluate the readiness of each hatchling for release. If a hatchling does not appear ready we recollect it and put it in a bed of moist sand and leave it overnight in a cool dark place. Those hatchlings that appear strong and ready, we recollect and walk them into to sea past the break to give them an extra head start on their journey. This activity is very popular both with tourist and members of the local community.

Project evaluation

We believe that a critical, comprehensive, and ongoing evaluation of our efforts and methodology is critical to the success of STRN. We recognize that we don’t know everything there is to know about hatching sea turtles or managing a conservation project. However, we are willing to learn and have a flexible attitude. We are discovering that what is successful under one set of conditions may not work under another. We are constantly looking for new information and ideas to improve our methods and increase the number of hatchlings that we release. With this in mind, we are always open to productive feedback.

We made one critical mistake this year. We were not adequately prepared for dealing with an unusually dry and hot season. While we regret this failure it provided us with an excellent opportunity to learn and refine our techniques. We plan to modify our hatchery design for the coming season and build a more permanent structure to better protect the nests from excessive heat. Additionally, we plan to run a waterline to the hatchery to be able to more readily adjust the temperature and sand moisture content.

Our volunteer recruitment was much improved this year. We were able to attract three long term (three weeks or more) volunteers and several short term volunteers. These individuals were invaluable to the success of the 2012 season. In addition to funding, I believe that we need to figure out a way to sponsor interested and capable people to help with the various functions of the project. We also need to establish ongoing year round activities for potential volunteers. After all, the project is much more comprehensive than just putting babies into the water and there are many tasks that need to be done in the “off season”.

We did an excellent job of stretching our operating budget this year. We spent just over two thousand five hundred dollars to produce six thousand four hundred forty-one hatchlings. This computes to thirty-nine point three cents per hatchling (see Appendix B). We believe that this represent a success in our commitment to be responsible to our donors. We try to recycle materials whenever possible and make do with things that are available locally.

Our fund raising activities this year fell far below our projected need. In our initial excitement over our success in 2011 we had planned to expand our scope of operation from one to six hatcheries. As it turned out this was probably a blessing. We were forced to restructure our organization. We also discovered that we had much more to learn. MSV-Nicaragua stepped up

and provided us with the funds that we need to operate for 2012 and gave us the opportunity to reevaluate our plans for expansion. While we sincerely wish to be able to put more hatchlings into the ocean, we recognize that expanding will increase our administrative and logistical expenses. We maintain that the need to expand exists; however, the required infrastructure to accomplish expansion will be a major expense. Realistically, our ability to expand the project will be dependent on our ability to attract corporate and institutional support and sponsorship.

Summary

The 2012 turtle season was very challenging. Sea Turtle Rescue – Nicaragua rose to the challenges by critically evaluating each component of our methods, searching for alternatives and making appropriate adjustments to our techniques. We recognize that we need to be flexible and constantly in search of ways to improve while never losing sight of our primary mission – releasing healthy hatchlings into the sea. It is true that we did not reach our numerical goals, however, we learned a great deal that will serve us and the turtles in the future. For this reason we deem our efforts in 2012 a success. There is still a great deal of work to be done and we reaffirm our commitment to increasing our success in the future.

We understand that our work here does not exist in a vacuum and that we rely on an international cadre of donors, volunteers and concerned individuals to continue to exist and advance. We extend heartfelt gratitude to all those who contribute to the effort of making this a better world for all the Mother's creatures.

Appendix A

Statistical Data Overview

Overall

Total number of eggs collected – 14802 eggs

Total number of nests collected – 160 nests

Average nest size – 91 eggs

Total number of hatchlings released – 6441

Overall hatch rate – 43.3%

Experimental

With sand change and artificial rain

Number of nests – 24 nests

Hatch rate – 60.5%

With sand change, artificial rain, and improved shading

Number of nests – 5 nests

Hatch rate – 88.8%

Appendix B

2012 Expense Summary

Hatchery construction and maintenance	36.58
Miscellaneous	41.47
Salaries	
Hatchery Manager	\$506.68
Guard	\$204.34
Motorcycle (fuel and maintenance)	\$ 291.09
Eggs	<u>\$1452.10</u>
Total expenses	\$2532.26

Cost per live hatchling released

39.3 ¢

Acknowledgements and Gratitude

1. MSV – Nicaragua
2. Knut and Susan Nichols
3. Andreas Heerd
4. Simone Nordhiem
5. Gabriel Koeppel
6. Robert Rothrock
7. Austin Rothrock
8. Ari Sieberman
9. Pagan
10. Tina Morris
11. Jeffery Semionoff, PhD
12. Joe Hudson
13. Jason Searing