CAPACITY BUILDING IN THE SOLOMON ISLANDS TO ENHANCE LEATHERBACK SEA TURTLE CONSERVATION

Implementing Agency:
Marine Research Foundation (MRF), Malaysia

Funded by

In association with

October 2014

1. Introduction

Pacific leatherback turtle populations have declined alarmingly over the past 25 years, and for management and recovery efforts to be effective, obtaining accurate estimates of current abundance and distribution at critical habitats is essential. The Recovery Plan for U.S. Pacific Populations of the Leatherback Turtle (NMFS & USFWS 1998) lists identification of primary foraging areas and monitoring of the status and abundance of foraging populations as key priorities, given most of the current knowledge about leatherbacks comes from nesting beaches, and little is known about leatherback marine habitat use. The National Marine Fisheries Service (NMFS) is jointly responsible for the management, protection and recovery of marine turtle populations as mandated by the Endangered Species Act (ESA). Under the ESA the leatherback turtle (*Dermochelys coriacea*) is endangered throughout its global range with populations facing high probability of extinction due to environmental and demographic stochasticity as a result of fisheries interactions, direct harvest (of turtles and eggs/nests), predation, and habitat degradation.

In the Solomon Islands, the only substantial leatherback turtle monitoring has been ongoing at Sasakolo since 2006, with funding and technical support provided by TNC and more recently by NMFS SWFSC. Sasakolo is a small site, with a beach approximately 1200 m in length. Key threats to turtles in the Solomon Islands include collection of eggs and take of juvenile and adult turtles for consumption (although turtles are considered sacred at some sites, they are eaten at most others, either as part of cultural practices or simply as a protein alternative), bycatch in artisanal and commercial fisheries (to a large extent this also includes foreign offshore fisheries), and possibly climatic factors including increased storm erosion and decreased nesting area availability.

Importantly for this project, there are summer nesting individuals which remain unstudied and which are of particular interest to conservationists today, as these are believed to (possibly) represent a distinctive genetic or behavioural stock. There is a clear need to assist other communities in the Solomon Islands where leatherbacks nest.

Previous documentation regarding this project identified the project village as 'Wairaha'. However during the implementation of this project MRF learned that this was a case of misidentification and that the village is actually called Waisurione. Wiraha is in fact located 150m southwest of Waisurione (Figure 1), at one end of the nesting beach, adjacent to the mouth of the Wairaha River. For this report and subsequent documentation the correct names for the villages will now be used.

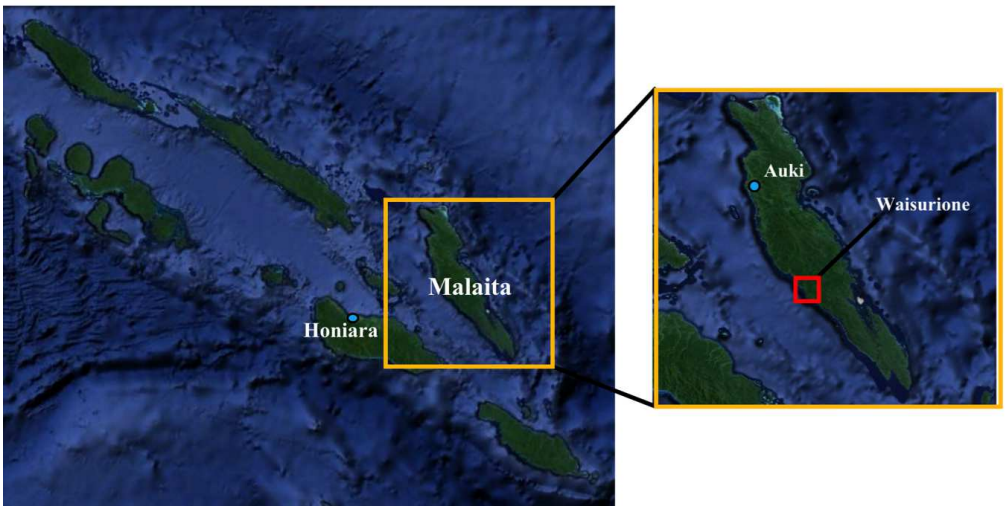

Figure 1: The location of Waisurione Village, Malaita, Solomon Islands.

2. Local Agreements

The project employs similar agreements to those held with communities in Papua New Guinea (PNG) since 2006. Project objectives, remuneration packages, work duties and responsibilities were all clearly communicated to the community of Waisurione throughout the project's start up phase and visit in February 2014. The project relies on a team of 26 volunteer rangers lead by two coordinators. All volunteers were elected by the community and local stakeholders. Logistically the tribal land the beach encompasses is accessible due to a conservational land agreement between the main villages from each of the three tribal lands Wairaha (Ausi), Waisurione (Au'vaura) and Hauhui (Po'otori). The agreement was established under the Waihau Foundation and grants freedom to conduct conservational activities along the entire length of the beach.

MRF handles all accounts and finance transactions with the assistance of Waihau's treasurer, chairman and team with regards to local expenditure. MRF also provides the project oversight, science and conservation objectivity, while Waihau helps to maintain on the ground logistics. This stable linkage is crucial to the on-going success of the project. The long-term goal is for MRF to provide the community with the skills and training needed to run the project via short-term supervision culminating with the community adopting the project as their own, running every aspect of it themselves without the aid of MRF.

3. Objectives

The overall goal of the project is to ensure the continued survival of the leatherback turtle population and raise local peoples' understanding and appreciation of the value of the species. The specific objective of this project will be to build on a previous NMFS-funded scoping mission in 2010 which identified Waisurione, on the island of Malaita, as a potential site for monitoring summer nesters, and to train community members in sea turtle biology and collection of basic nesting data for leatherbacks during the (currently) unknown summer nesting period.

Key objectives for 2014 were:

1) Conducting a site visit and training course at Wairaha by Dr. Pilcher, John Ben and James Williams, with the collaboration of the Department of Environment and Conservation (Tia Masolo). The training would take place as an 'organic theater'-style talk in the village using visual media and showing video of the PNG project (developed with funding from the Western Pacific Regional Fisheries Management Council in 2006). Training content would include turtle evolution and biology, general ecology, and an introduction to the value of turtles and other regional conservation projects.

2) Establish a monitoring schedule consisting of nightly beach walks and develop recording and reporting protocols whereby data is opportunistically collected from nesting leatherbacks and kept in a database for each season throughout the project.

3) Establish a follow-up communication process whereby community members can transfer the findings to MRF for analysis and reporting.

4) Provide copies of the final report back to the community to reinforce learning.

5) Develop, alongside the community, the design of a potential long-term monitoring program.

6) Determine a suitable development project for the community and provide assistance in delivering on their wishes, creating greater buy-in and support from the wider community.

7) Community election of Turtle Rangers and Project Leader (Coordinator) on the Solomon Islands

This progress report describes the project objectives, methodology, implementation and results of field activities from April to September 2014.

4. Project activities

In June 2014 James Williams returned to Waisurione for a 30 day stay accompanied by John Ben (project manager, PNG) for the initial seven days. Together they helped to educate and train the community elected coordinators and rangers as well as many members of the wider community using both English and Pidgin. Furthermore, James lived and worked amongst the community, providing educational reinforcement, supervising the initial third of the beach monitoring program and finding solutions to any early problems that arose. The training included observations of existing nests on the beaches (Figure 2) and informal 'outdoor classroom' style lessons on turtle biology, conservation needs, and global trends.

Figure 2: Tia Masolo observes a recently successful leatherback nest.

Many educational activities were successfully completed, each helping to increase the capacity of the community, providing them with the skills and knowledge required to conduct leatherback protection and monitoring:

- ***Community screening of the PNG documentary.*** A screening of the documentary was held at the Waihau conservation centre on two occasions. The film visually exemplified the PNG ranger's role, scope and importance; providing a benchmark for the work they and the coordinators were expected to do.
- ***Daily organic theatre/walk and talks.*** Opportunistic discussions regarding the science and logistics behind the project were held. As understanding developed so did questions from the community, these talks addressed these in an ad hoc manner.
- ***Formally scheduled Turtle biology/ecology talks***. Increasing the knowledge and understanding of the community in a large classroom style, where key information was communicated cohesively and any questions asked could be answered to the benefit of a large number of peoples understanding collectively.
- ***Weekly official update talks and coordinator meetings.*** Key points of success and areas of improvement were pinpointed to help guide the rangers and coordinators towards a satisfactory standard of work. These meetings prompted discussion amongst the rangers and the resulting queries prompted any areas of uncertainty to be weeded out. Meetings continued throughout the season and were conducted by the project coordinators following MRF staff's departure.
- ***Ranger training sessions.*** In-depth training regarding the methods required to conduct efficient turtle monitoring with particular aspects such as data collection repeated in additional sessions.

- ***Role play: phases of turtle nesting and data collection***. In the absence of live animals to demonstrate data collection techniques on, the rangers and coordinators participated in a mock demonstration whereby one individual acted out the phases of a turtle nesting while the other participants took turns to record all the necessary data from the 'turtle' (Figure 3).
- ***Discussions with community outsiders.*** Throughout James' stay in Waisurione, word of the project spread to nearby villages. This prompted people who were not involved in the project to visit the village to speak with him, additionally as James moved around the surrounding villages and attended large events in the area, impromptu conversations were held where the significance and importance of the project could be communicated, thereby raising further awareness and educating a large range of people in the region.

Each activity proved highly effective in improving the capacity of the local people and developing a thorough understanding of the project, turtle biology, ecology and conservation in general.

Figure 3: James and John talk about leatherback nesting in an organic theatre.

Daily beach patrols for nest counts and protection started on 16th June 2014 and concluded on the 14th of September. Two Rangers participated in each beach survey, which was carried out between sunset and sunrise, during incoming, high and newly falling tides. This equated to between eight and ten hours of monitoring a night across more than three kilometres of beach (Figure 4). Monitoring was timed so that rangers covered the same section of beach twice within 80 minutes (less than the average time a leatherback takes to complete nesting). Rangers were equipped with a monitoring kit containing datasheets, measuring tape, PIT tags and PIT tag reader, handheld GPS and a basic camera. Rangers produced a least amount of light and sound possible in order to reduce the risk of potentially disturbing a turtle and maximise the chance of an encounter.

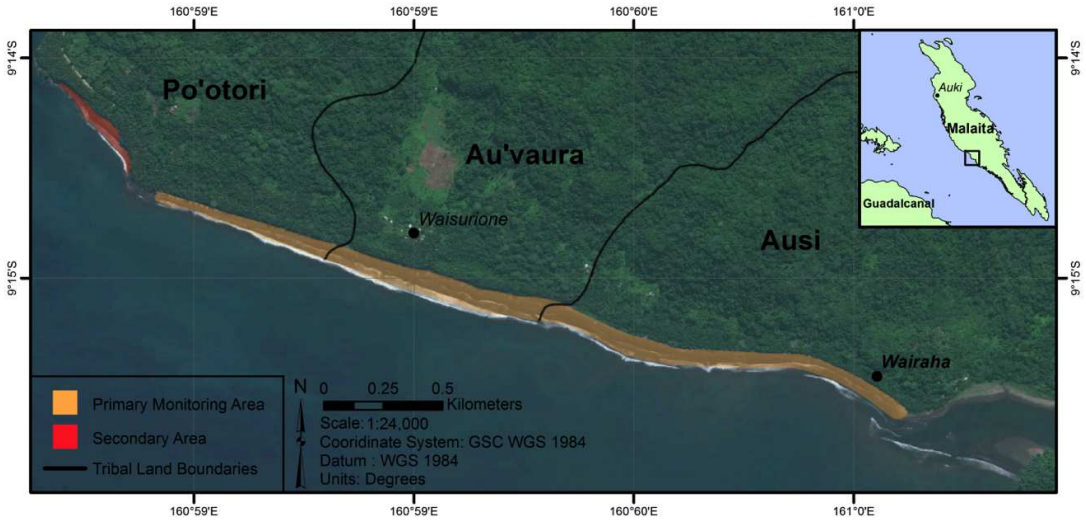

Figure 4: Area covered by beach monitoring. The primary area was consistently monitored by rangers, the secondary area historically recieves one or two turtles all year and was monitored opportunistically.

Nests encountered during the beach patrols were covered with a bamboo grid to prevent clutch depredation, and to dissuade poaching (Figure 5). Nests were numbered, latitude and longitude marked with a handheld GPS and records were maintained regarding the fate of each individual nest (hatched, lost to erosion, inundation, predator, poaching, or other). Additional daily morning beach patrols were made to identify any nests that may have been made during low tide or not seen by rangers during the night patrol. The condition of each nest was also monitored and any disturbances were noted. Further observation was made prior to sunset on nests approaching their estimated hatching date in an effort to both confirm and quantify hatchling success.

Figure 5: A completed bamboo grid.

5. Results

A total of five leatherbacks came ashore to nest between May and September, four in the months targeted by this project (June to September; Table I). Unfortunately, of the four nests three were laid before the start of beach monitoring, one before any project activities had begun (5th June) and two the night before rangers began their work (16th June). The final nest laid (likely in late June) was not identified during night or morning monitoring and was only noticed when hatchlings began to emerge in August. Six successful hatchlings were counted with the other three nests succumbing to tidal inundation (Figure 7). Rangers were able to protect two nests with bamboo grids prior to minor unrest from two individuals that prevented any further protection. Despite this, no nests monitored between June and September experienced any

poaching or predation, however the nest laid in May had its eggs removed by poachers, believed to be outsiders. In response to this Waihau made a report to the relevant government authorities; serving as a successful warning to other potential poachers in the area.

Table I: Leatherback nesting at Wiahau, austral summer 2014.

Record #	Date	# of Eggs	Grid	# Hatchings	GPS Location		Notes
					Latitude (South)	Longitude (East)	
LB01	05/2014		No	0	09 14.516	160 59.088	Old nest prior to project, eggs harvested by an outsider.
LB02	05/06/2015		No	0	09 14.662	160 59.677	Old nest before project
LB03	16/06/2014		Yes	0	09 14.690	160 59.905	Discovered in the morning, grid was destroyed
LB04	16/06/2014		Yes	0	09 14.661	160 59.667	Discovered in the morning, grid was destroyed
LB05	15/08/2014	54	No	6	09 14.472	160 58.930	This nest was unidentified when nesting

Figure 5: Live leatherback hatchlings from Waihau, August 2014

While beach monitoring for leatherbacks took place, rangers reported all turtle nests that were discovered, including those that were clearly of other species. Between June and September an additional four nests were identified, three belonging to an unidentified species of smaller turtle, two of which succumbed to tidal inundation, producing no hatchlings, one where no eggs were laid and one belonging to an olive ridley turtle (Table II). Rangers observed the turtle returning to the sea following nesting and judged the nest to be in a poor location, vulnerable to inundation. Rangers took it upon themselves to relocate this nest and under the guidance of James moved it to a safer location where it produced 41 hatchlings.

Table II: Additional nesting at Wiahau, austral summer 2014.

Record #	Date	# of Eggs	Grid	# Hatchings	GPS Location		Notes
					Latitude (South)	Longitude (East)	
Other 01	20/06/2014		No	0	09 14.728	160 59.969	Discovered in the morning, not leatherback, smaller turtle
Other 02	22/06/2014		No	0	09 14.749	160 00.017	Discovered in the morning, not leatherback, smaller turtle
OR01	25/06/2014	85	Yes	41	09 14.389	160 58.663	Olive Ridley, nest relocated to 09 14.389 160 58.670, no tag
Other 03	22/08/2014	0	No	0	09 14.661	160 59.670	Believed to be a Hawks bill, and was imediately destroy by wave

6. Project logistics

The completion of the first season of monitoring has highlighted some unforeseen issues that will be addressed in the coming 2015 summer season:

- In June Malaita experienced unusually higher spring tides than in previous months or years (according to the local people). This resulted in approximately 60-70% of the beach experiencing wave action up to the vegetation line causing earlier laid nests to become inundated by water, preventing the majority of their eggs from developing. Additionally these tides left very little exposed sand in some areas reducing the length of turtle track marks and erasing any signs of nesting almost instantly, this may explain the missed identification of nest LB05. MRF staff also observed an issue with large scale erosion of the nesting beach, further reducing the number of suitable areas for turtles to nest. As a result MRF will be seeking funding to provide further educational reinforcement prior to the 2015 summer nesting season, with emphasis on nest identification, potential threat evaluation and the importance of nest relocation.

- A misunderstanding of the project design and objectives by two members of a neighbouring village resulted in interference with some project activities. The individuals confused the values of this project with past logging activities in the area whereby each village received monetary compensation for the destruction caused by the operation. Despite the individuals' family members being Rangers they refused to discuss the project, maintaining their uninformed view. As a result rangers were not able to patrol the Ausi side of the beach without being accompanied by an Ausi villager, hampering the consistency and extent of the patrols. Furthermore, any bamboo grids placed on Ausi land were destroyed. Recently Waihau have reported that these individuals came forward after the conclusion of this season's activity, seeking reconciliation and reaching a preliminary mutual understanding with the Coordinators. Coordinators are now taking a cautious approach to further discussions but remain confident of a positive outcome that will prevent a reoccurrence in 2015.

- The overall numbers of nesting leatherbacks were lower than anticipated based on the communities previous year's observations. This season results show less than 50% of the number of leatherbacks seen between June and September 2013 came ashore this season. Leatherbacks commonly nest only once every few years; therefore it is possible that 2014 represents a gap in the pacific population. Results from 2015 will help to clarify if there is an issue with the numbers of nesters at this location.

7. Community Development Project

Local stakeholders identified the refurbishment and expansion of the Waihau foundation's conservation centre (Figure 6) and improvement of the village's sanitation as the most beneficial uses of the community development fund.

Figure 6: The current state of the Waihau Foundation conservation centre and smaller outdoor meeting area behind.

The key steps of the community development project were as follows:

a) Hire of a chainsaw and skilled carpenter to cut fresh high quality timber (Figure 7) and replace the wood the centre is currently built from, consisting of old leftover and miss-cut wood from the construction of houses in the village.
b) The purchase and transport of nails, brackets, cement and wire from the nearest town (Auki, four hours by truck or boat)
c) Hire of a local contractor to construct the building to professional, industry approved standard.
d) The installation of a flushing toilet and septic tank.

In June three trees were carefully chosen and felled from the protected area behind Waisurione (the community does not allow trees to be felled except under special circumstances). These logs were then cut to fit the planned measurements for the conservation centre. The timber is now being allowed to age, a process that will take a minimum of five months; as a safety requirement. Once aging is complete the vocational schools department of a local building and carpentry students group has been identified as the contractor to construct the new centre; allowing students within the community to gain further skills and experience. Additionally all fixtures, fittings and cement are currently on site. Construction of the toilet and septic tank is currently underway with the concrete foundations laid so far. Construction of the conservation centre is expected to begin in early 2015.

Figure 7: Milling of logs into precisely cut timber.

Prior to the project Waihau had architectural plans drawn that would increase the functionality of the conservation centre, developing the current structure into a two storey building with living quarters, conference room and offices. Additionally the installation of a small hydropower dam in a nearby stream is desired and would provide constant power to the building in place of the current low capacity solar power systems. These are further improvements which this project may wish to consider in future seasons. Waihau wish to achieve these developments before 2024, providing a headquarters to facilitate numerous conservation activities in the local area, provide jobs for the community, and serve as a place to hold meetings and accommodate visitors. The developments funded by this project have provided the first step and the catalyst to making this plan a reality.

8. Future outlook

Despite the low numbers of nesting leatherbacks and minor issues experienced this season, it is important to remember that this is the first year of a long-term project, lessons learned this year will allow informed adjustments to the project design to be made making subsequent years

stronger and more focussed. The work undertaken this year has had a multi-facetted impact on conservation in the local area; far beyond the initial scope of this project.

The extended local community from three different tribes have gained a thorough understanding of leatherback turtles and their value and importance globally and within the Solomon Islands, resulting in conservation and resource management becoming an ingrained part of their society; preservation and management of almost every resource they posses is now a key concern. The local people are proactive and intend to protect leatherback nests not only during the summer months, but also opportunistically throughout the year. Plans are now in place to reduce the use of torches on the nesting beach, allow only rangers on it at night by creating an alternative footpath and making the beach inaccessible to vehicles. Furthermore the work from this project has prompted additional agreements to be made by the three tribal communities to protect other vulnerable indigenous species such as olive ridley turtles and coconut crabs.

The conservational affinity and self-motivation of the community has maximised the impact of this project. The leatherback population will benefit in the long-term from a small group of people doing their part to ensure their continued protection on nesting beaches, as will the many other species of plants and animals that the community are starting to turn their attention to. Waisurione now stands as an example to the surrounding villages who are increasingly gaining interest in their activities. In the coming years this could lead to the spread of conservational activity across the region, amplifying efforts and maximising the benefit to the indigenous species of Malaita.