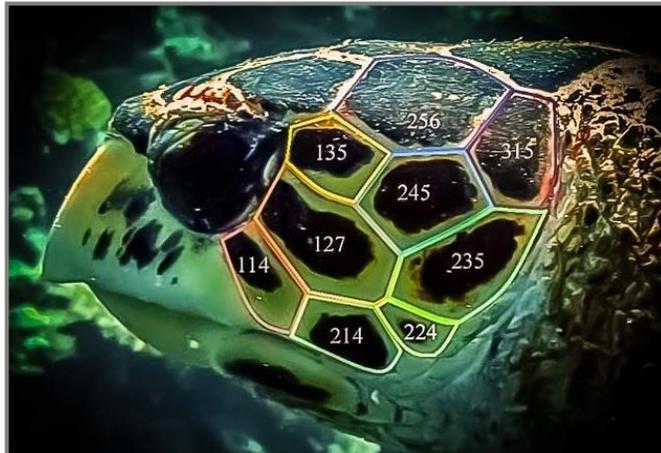


Maldives Sea Turtle Identification Program

Project Update March 2015

Seamarc PVT. LTD.



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Acknowledgements

This report was written by Jamie Fisher (Turtle Biologist), and represents the findings of the Maldivian Sea Turtle Identification Program to the current date. Special recognition should be given to Farhan Rasheed and Sam Hope as well as the whole Seamarc team who continue to collect, collate and analyze the data, while not forgetting all of those who have submitted photographs and information to the project.

Executive Summary

- At present the MSTIP has received photographs of sea turtles from 220 sites, located across a total of 16 atolls.
- Within the MSTIP database there are currently three different species of sea turtle, including the Hawksbill turtle (*Eretmochelys imbricata*), Green turtle (*Chelonia mydas*) and the Loggerhead turtle (*Caretta caretta*).
- Since the February 2015, Project Update, there have been a total of 44 turtles identified.
 - *6 new turtle were added to the database.*
- There are currently 3313 sightings within the MSTIP database, which represents 1171 Hawksbill turtles, 161 Green turtles and one Loggerhead turtle for a total of 1327 individuals.
- The Maldives Turtle ID Facebook page currently has 476 members.
- Once again the team would like to personally thank everyone who has contributed, the following are the top three contributors:
 - *No. 1 Amanada Batlle Morera (Maafushivaru)*
 - *No. 2 Angela Jensen Scharfbillig (Kuramathi)*
 - *No. 3 Beth Faulkner (MDC, Kuda Huraa)*

Introduction

Submission Requirements

All submissions are currently provided to the MSTIP via Facebook and Drop Box. For those that prefer to maintain the quality of the pictures they submit, project staff can set up a Drop Box for them, please remember to notify the Turtle Biologist via a Facebook message, stating when a Drop Box folder has been updated.

All submissions should include three photographs; a right facial profile, a left facial profile, and a full body, without all three photographs project staff may not be able to provide the participant who submitted the turtle for identification with an identification number. If the turtle is not currently within the MSTIP database and it lacks all three required photos it cannot be entered into the database as it will not form a good basis for comparison. I.E. if it only has a left hand profile it can only be compared to new sightings with a left hand profile as such its right hand profile may then be entered as a different turtle. This would lead to duplicate turtle IDs for one individual, i.e. one for each side profile, decreasing the accuracy of the database.

Please still continue to submit all photos as even if they cannot be processed at this time they will be periodically reviewed to see if they match any turtles which have been added to the database within the intervening period. In which case the photo and sighting information will then be entered into the database and the participant will be informed and provided with the specific turtle ID number.

In order for sex to be determined, the MSTIP must receive a whole body photograph along with the facial profiles. When submitting your photographs, please include the date the photos were taken, the site, the atoll, and also a size estimation of the turtles carapace to aid the team in determining the sex.

Repeat sightings

Project staff recently became aware of the fact that some participants are not submitting photos from repeat sightings of a turtle which has already been identified, laboring under the belief that we do not want or need this information. MSTIP would like to take this opportunity to clarify matters with regards to this point, please do send all of your photos as repeat sighting information can provide us with a lot of crucial pieces of the picture that is the animals life cycle. Regular photographs give us a more accurate impression of the population size of a site, atoll or region, as an animal photographed five years ago may no longer be a member of the population. If a sight is visited once a week over a long period of time and the same five turtles are documented each time, it can be assumed the population for that site is five. Conversely, if a site is monitored every week over a long period of time and new turtles are photographed frequently, we can assume that this site has a large population size or that it may be an area of high recruitment for juveniles. Also photos of an animal over time can lead to gender identification for example if a Hawksbill turtle was photographed at 50 cm it is a juvenile however if it was photographed again later and it was >80cm then project staff would then be able to sex the

individual providing more crucial information with regards to the populations sex ratio. This also highlights the importance of size estimates and whole body shots to document the gender of the turtle which can then be used to compare site use by different age groups and gender.

Missing GPS Coordinates

The MSTIP is currently missing GPS coordinates for several of the sites where turtles have been sighted. If anyone knows of these sites and can provide the team with GPS coordinates it would be very much appreciated (Table 1). Please contact the Turtle Biologist via Facebook.

Table 1: Sites missing GPS coordinates

Atoll	Site	Latitude	Longitude
Ari	Angothi Thila	-	-
Ari	Bodugaa	-	-
Ari	Kuda Faru	-	-
Ari	MaafaruFinolhu	-	-
Ari	Maavaru	-	-
Ari	Reethi Thila	-	-
Lhaviyani	Anemone Thila	-	-
North Male	Kagi West	-	-
Noonu	Fivaru	-	-

Results

Project Overview

To date, the MSTIP has received photographs from participants located within 16 different atolls around the Republic of Maldives as such no photos have been received from the remaining 10 atolls (Figure 1). Within the 16 atolls currently being monitored, the MSTIP has data from 220 individual sites with Ari Atoll having the most sites monitored (64), followed by North Male Atoll (50), and then Baa Atoll (43).



Figure 1: Atolls currently monitored by the MNSTIP

The number of sightings and individuals recorded within these three atolls are also the highest within the MSTIP database. North Male Atoll has the highest number of turtle sightings to date with 1422, followed by Baa Atoll with 1064 sightings and then Ari Atoll with 732 sightings (Figure 2). When

comparing the total number of individuals, North Male Atoll again leads with 401, then Baa Atoll with 362, followed closely by Ari Atoll with 323 (Figure 3).

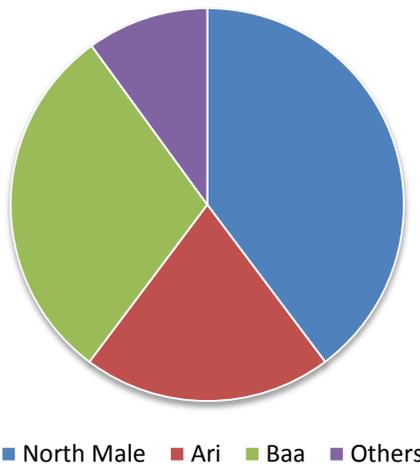


Figure 2: Percentage of sightings by atoll, all species.

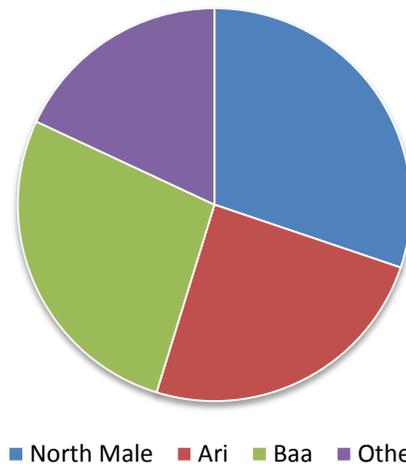


Figure 3: Percentage of individuals by atoll, all species.

Hawksbill turtles make up over 90% of all turtle sightings and individuals within the MSTIP dataset at sites within all atolls with the exception of Lhaviyani Atoll where Green turtles are the dominate species (Figure 4). In Haa and Laamu Atolls, Green turtles comprise over 50% of the sightings but the sample size (number of individuals) for these atolls are very low, one and 25, respectively. Gaaf Alif also has a higher percentage (33%) of Green turtles which accounts for three individuals out of nine.

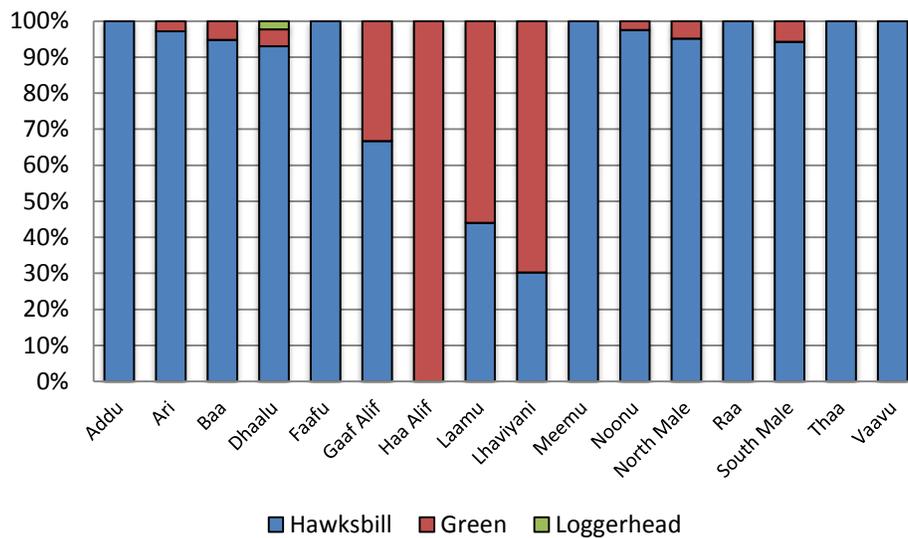


Figure 4: Sea turtle sightings within atolls by species.

March Overview

During the month of March, a total of 44 submissions were entered into the database representing 39 individuals, including six newly identified turtles. All submissions this month were of Hawksbills. These turtles were documented across 12 sites within three atolls; Ari, North Male, and Baa Atolls (Figure 5). Similar to February, Makunudhoo Reef again accounted for the highest percentage of submissions (36%) however there was greater site diversity recorded during March.

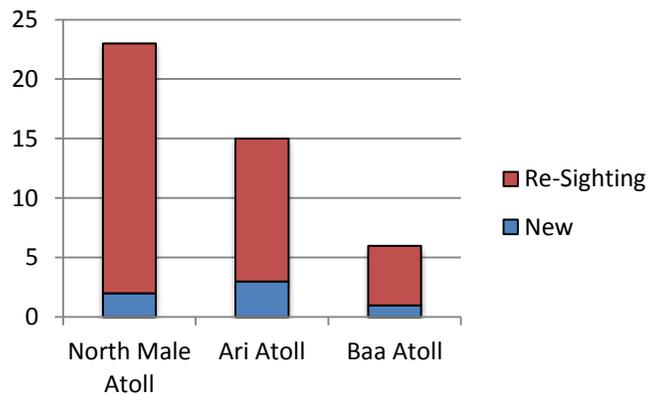


Figure 5: March sightings of re-sighted and new turtles by atoll.

Based on size estimates provided during submission two were identified as males, 12 as females, 10 as juveniles and 20 being of unknown gender (Figure 5). This highlights the importance of size estimations in addition to the photograph submission as 714 turtles (53%) within the database are of unknown gender (Figure 6).

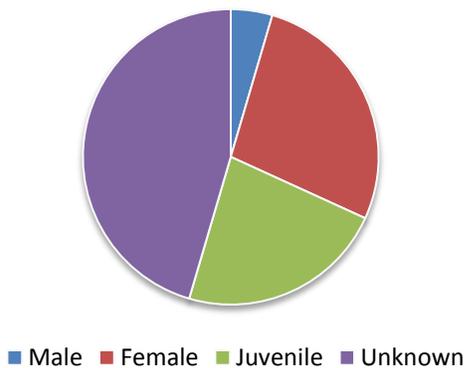


Figure 6: Gender of turtle submissions in March.

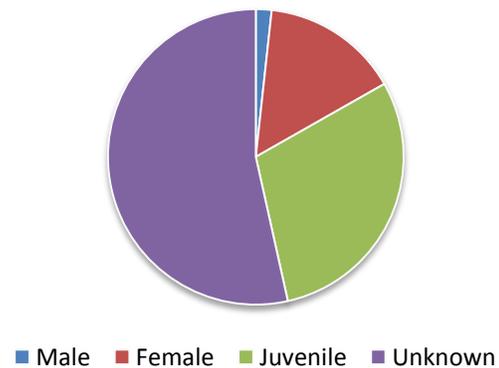


Figure 7: Overall gender of turtles in the MSTIP database.

Recent photographs of HK0409 “Juliana” have shown the progression of tail growth over the last year and a half (Figure 8). During this period, the tail length has increased to a size confirming that this turtle is a male. This shows tail growth is rather rapid upon maturity although a small tail can be seen in late

2013. The majority of information regarding sea turtle reproductive biology and maturity is predominately based on nesting females leaving little available knowledge with regards to the size and age males reach maturity. Frequent photographs of the same turtle will allow us to document the turtle's growth over time and the relative size Hawksbills in the Maldives reach maturity.



Figure 8: Tail growth in HK0409 in 2013, 2014, and present.

Of the re-sighted turtles, five turtles were sighted twice including a newly identified turtle from Kagi West, North Male Atoll. Two turtles were documented at different sites from the most recent sighting. HK1167 "Xylo" was originally sighted at Maafushivaru House Reef in January 2014 and has now been sighted 5km away at Bodu Clemen Thila, both in Ari Atoll.

HK0409 "Juliana" has been sighted at Lux Beyru, 2.5km away from the last sighting at Dhidhdhoo. This turtle has been sighted twice at Dhidhdhoo and five times at White Sands since first being recorded in 2013 (Figure 9). When comparing the turtles, for these two sites, that have been sighted more than once, 48% were sighted at both sites. Although these turtles have been recorded moving between various sites within the area, these sites are all found within the same continuous reef (figure 9).

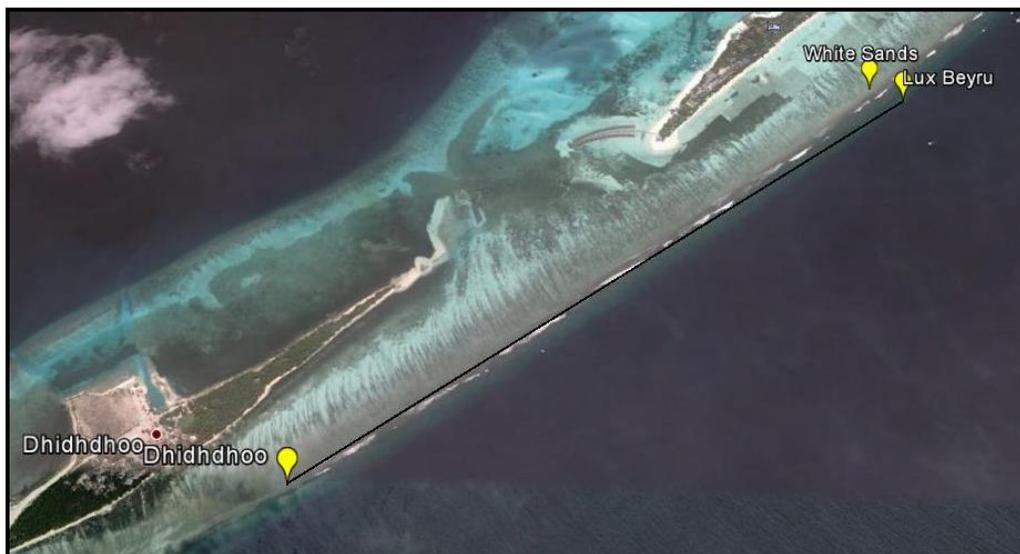


Figure 9: Movements of HK0409.

Un-Processed Submissions

Due to poor picture quality or only one profile included in a submission, not all photographs submitted can be entered into the database as a new ID or matched to current turtles. This month, five turtles were submitted that were unable to be process including the sighting of a Green sea turtle at Dhonfanu, Baa Atoll. These photographs will be stored and reviewed periodically until they are matched with future submissions from the appropriate site and atoll.

Objectives

Turtle ID Photograph Submission Guide

The Turtle ID Photograph Submission Guide will be used to raise awareness of the project and increase submissions which will include all necessary information and quality of image, allowing the database to be used for long-term comparisons of individuals, site trends, and overall population estimates.

- Complete guide providing project information, submission requirements, and general sea turtle species identification including photographs to use for reference.
- Distribute via the Maldives Turtle ID Facebook Group, the Marine Savers website and will be emailed to biologists at other resorts.

Submission Datasheet and Site Survey

This will include date of sighting, location by site name and GPS, size estimate, presence of tail, and a checklist for the needed photographs. Included in the datasheet will be a section on site characteristics to determine these vary by site and identify trends in site population and composition based on those characteristics.

- Complete the datasheet and site survey datasheet to be submitted by participants. This will include all necessary information for turtle submissions as well as provide details about site characteristics.
- Upon completion, pin to the top of the Maldives Turtle ID Facebook Group for participants to use as a submission guide by filling in the necessary data.