



# MONITORING, TAGGING AND CONSERVATION OF MARINE TURTLES IN MOZAMBIQUE: 200/10 ANNUAL REPORT

*Edited and Compiled by*

Eduardo J S Videira, Marcos A M Pereira, Dalila A Narane & Cristina M M Louro



MACHANGULO SA - PANORAMA INVESTIMENTOS, SARL



# MONITORING, TAGGING AND CONSERVATION OF MARINE TURTLES IN MOZAMBIQUE: 2009/10 ANNUAL REPORT

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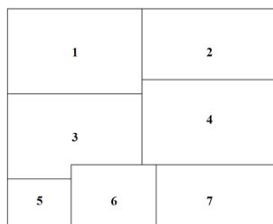
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Cover and back cover concept and graphic design: Marcos A M Pereira.

## **Cover photos:**



1 - Loggerhead turtle (*Caretta caretta*) heading back to sea after laying eggs. Ponta Malongane, December 2009 (photo: Mádyo Couto).

2 - Tagging of a loggerhead turtle (*Caretta caretta*) after the nesting was completed. Ponta Milibangalala, December 2009 (photo: Eduardo J S Videira).

3 - Loggerhead turtle (*Caretta caretta*) laying eggs. Ponta Milibangalala, December 2009 (photo: Marcos A M Pereira).

4 - Monitoring program supervision at Macaneta beach, January 2010. (photo: Marcos A M Pereira).

5 - Leatherback turtle (*Dermochelys coriacea*) heading back to sea after nesting. Ponta Malongane, December 2009 (photo: Marcos A M Pereira).

6 - Rangers displaying a turtle slaughtered by the members of the local community. Bilene, April, 2010 (photo: Marcos A M Pereira).

7 - Loggerhead turtle (*Caretta caretta*) killed by members of the local community. Ponta do Ouro, December 2009 (photo: Miguel Gonçalves).

## **Back cover photo:**

Leatherback turtle (*Dermochelys coriacea*) crawling back to sea after nesting. Ponta Malongane, December 2009 (photo: Marcos A M Pereira).

*The opinions, positions and points of view expressed in this document, are those of the authors and do not necessarily reflect those of the governmental institutions, private sector or civil society which contributed to the production of this document.*

**Maputo, August 2010**

## **S**ummary

A total of 933 marine turtle nests were reported for the 2009/10 season in Mozambique. About 77% of these nests were reported from the area between Ponta do Ouro and Inhaca Island and about 16% from Vamizi and Rongui islands. These two areas proved once more to be very important marine turtle nesting grounds in Mozambique.

The loggerhead turtle (*Caretta caretta*) was the dominant species with 666 nests laid, followed by the leatherback (*Dermochelys coriacea*) with 83 nests and the green turtle (*Chelonia mydas*, 10). There were, however, a high number of nests recorded (174), where no positive identification of the species was provided, especially at Vamizi and Rongui islands (information not discriminated to species level). Nevertheless, and taking in to account the records from previous seasons, it is believed that the majority of these nests were laid by green turtles. The area from Ponta do Ouro to Inhaca Island, which was practically covered in its total length this season, proved to be the most important nesting ground in the country for loggerheads and leatherbacks (respectively 642 and 74 nests). Vamizi and Rongui islands were the most important nesting ground for green turtles.

Some components of the program, namely the eggs and hatchlings monitoring is still facing difficulties and is not functioning properly. Further attention should be given to this component in the following seasons.

The tagging program is being implemented a bit more cautiously, in order to ensure better quality of the data collected. In a few areas, tagging programs are being implemented with consistency, good quality and are actually expanding. This is the case at: Ponta do Ouro – Ponta Malongane, Ponta Malongane – Ponta Dobela and Vamizi and Rongui islands. In this season, 171 tagging events were recorded, of which, 60% in the Ponta Malongane – Ponta Dobela area.

Marine turtle poaching and collection of eggs is still a fact, despite being prohibited by law for 45 years. This takes place along the whole coastline, although, according to the data collected, some areas are particularly worrying such as Inhambane, Primeiras and Segundas Archipelago and Macaneta. These places are deemed of high importance for tourism development in the country.

A growth in the number of areas covered by the program is apparent as well as the consolidation of the work conducted. However, the central and northern regions of the country still show great deficiencies with regards to marine turtle monitoring and conservation. The data provided are of low quality or, in the case of the Quirimbas National Park, non-existent. Only at Vamizi and Rongui islands there is a systematic monitoring and tagging program going on, although the information provided this year was not sufficiently detailed.

Lastly, the need for further funding for marine turtle conservation in the country should be highlighted. The participation of the private sector, in all areas of activity, should be encouraged, following the example of a few companies of the tourism sector which support with success the monitoring program in a few areas (for example Ponta do Ouro, Malongane and Vamizi). This is deemed important to ensure the continuity of the local monitoring teams. Additionally, there is a need to ensure the proper long-term planning, execution and continuity of the program as a whole, including the purchase of materials and equipment.

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## Introdução

Five species of marine turtles occur and nest along the Mozambican coast. All of them are threatened worldwide and despite being protected in Mozambique for over 45 years. Nonetheless, the mortality of nesting turtles or those caught at sea, and the collection of eggs is common, widespread and goes unpunished throughout the coast (Louro *et al.*, 2006; Videira *et al.*, 2008, Pereira *et al.*, 2008).

On the other side, the knowledge regarding biological aspects such as the occurrence, feeding and nesting areas of marine turtles in Mozambique is scarce. This in turn, hinders the implementation of protection and conservation measures for these species.

In this report, the data on the monitoring, tagging and mortalities of marine turtles recorded in the 2009/10 season is presented. As in the previous seasons (Videira *et al.*, 2008, Pereira *et al.*, 2009), the data are presented in table form for an easy interpretation. These, however, must be interpreted and analysed *à posteriori* with caution. The data presented were extracted *as is* from the available sources, and errors might occur in the data series, beyond the editors' control.

## Methodology

In the reporting season, the monitoring programs followed in general, a similar methodology: on-foot night or day patrols covering about 5-7 km per monitor. Table 1 shows the monitoring period and methods per area covered. Videira *et al.* (2008) provided more details on the methodology. No data were available for the Cabo de São Sebastião Total Protection Zone, the Primeiras and Quirimbas National. Two new monitoring areas were established in Inhambane province: Zavala and Závora in addition to two new areas which were not covered in the previous report: Ponta Mucombo - Santa Maria and Primeiras and Segundas Archipelago.

Table 1. Methods and monitoring period per monitoring area.

Local	Método	Km de praia monitorada	Período monitorado
Ponta do Ouro	Patrulha à pé	8	31 Out 09 - 31 Mar 10
Malongane - Dobela	Patrulha de carro	32	1 Nov - 6 Fev 10
Dobela - Mucombo	Patrulha à pé	25	23 Out 09 - 31 Mar 10
Mucombo - Santa Maria	Patrulha à pé	25	30 Out 09 - 31 Mar 10
Inhaca	Patrulha à pé	12	1 Out 09 - 31 Mar 10
Macaneta	Patrulha à pé	15	26 Nov 09 - 31 Mar 10
Manhiça	Patrulha à pé e de carro	15	1 Out 09 - 31 Mar 10
Bilene	Patrulha à pé	10	1 Out 09 - 30 Abr 10
Xai-Xai	Patrulha à pé	10	25 Nov 09 - 25 Mar 10
Zavala	Patrulha à pé	15	1 Nov 09 - 31 Mar 10
Závora	Patrulha à pé	15	4 Nov 09 - 31 Mar 09
Tofo (Barra - Praia Rocha)	Patrulha à pé	10	1 Out 09 - 28 Fev 10
PNA Bazaruto	Patrulha à pé	50	1 Out 09 - 31 Mar 10
Primeiras and Segundas	Patrulha à pé	2	-
Vamizi/Rongui	Patrulha à pé	12	1 Jan 09 - 31 Dez 09

## Results

Table 2. Marine turtle emergencies per species per area (NI = not identified).

Local	<i>Caretta caretta</i>	<i>Chelonia mydas</i>	<i>Dermochelys coriacea</i>	<i>Eretmochelys imbricata</i>	<i>Lepidochelys olivacea</i>	NI	Total
Ponta do Ouro	77	-	5	-	-	-	82
Malongane - Dobela	713	-	54	-	-	-	767
Dobela - Mucombo	246	-	7	-	-	-	253
Mucombo - Santa Maria	153	-	9	-	-	2	164
Inhaca	24	-	10	-	-	-	34
Macaneta	1	-	1	-	-	-	2
Manhiça	2	-	-	-	-	4	6
Bilene	5	-	7	-	-	10	22
Xai-Xai	1	-	1	-	-	4	6
Zavala	21	-	2	-	-	-	23
Závora	15	-	-	-	-	2	17
Tofo	3	-	-	-	-	7	10
PNA Bazaruto	2	3	1	-	-	-	6
Primeiras and Segundas	-	7	-	-	-	-	7
Vamizi/Rongui	-	-	-	-	-	155	155
<b>Total</b>	<b>1263</b>	<b>10</b>	<b>97</b>	<b>0</b>	<b>0</b>	<b>184</b>	<b>1554</b>

Table 3. Number of nest per species per area (NI= not identified).

Local	<i>Caretta caretta</i>	<i>Chelonia mydas</i>	<i>Dermochelys coriacea</i>	<i>Eretmochelys imbricata</i>	<i>Lepidochelys olivacea</i>	NI	Total
Ponta do Ouro	27	-	7	-	-	-	34
Malongane - Dobela	326	-	49	-	-	-	375
Dobela - Mucombo	165	-	0	-	-	-	165
Mucombo - Sta Maria	104	-	9	-	-	1	114
Inhaca	20	-	9	-	-	-	29
Macaneta	1	-	1	-	-	-	2
Manhiça	2	-	-	-	-	3	5
Bilene	3	-	7	-	-	10	20
Xai-Xai	-	-	-	-	-	2	2
Zavala	11	-	0	-	-	-	11
Závora	5	-	-	-	-	1	6
Tofo	-	-	-	-	-	4	4
PNA Bazaruto	2	3	1	-	-	-	6
Primeiras and Segundas	-	7	-	-	-	-	7
Vamizi/Rongui	-	-	-	-	-	153	153
<b>Total</b>	<b>666</b>	<b>10</b>	<b>83</b>	<b>0</b>	<b>0</b>	<b>174</b>	<b>933</b>

Table 4. Loggerhead turtle (*Caretta caretta*): nests laid per area.

Local	Jan	Fev	Mar	Abr	Mai	Jun	Jul	Ago	Set	Out	Nov	Dez
Ponta do Ouro	13	-	-	-	-	-	-	-	-	-	6	8
Malongane - Dobela	107	-	-	-	-	-	-	-	-	-	25	194
Dobela - Mucombo	51	5	-	-	-	-	-	-	-	-	37	72
Mucombo - Santa Maria	19	-	-	-	-	-	-	-	-	1	44	40
Inhaca	7	-	-	-	-	-	-	1	-	-	3	9
Macaneta	-	-	-	-	-	-	-	-	-	-	1	-
Manhiça	2	-	-	-	-	-	-	-	-	-	-	-
Bilene	2	-	-	-	-	-	-	-	-	-	1	3
Xai-Xai	-	-	-	-	-	-	-	-	-	-	-	-
Zavala	2	1	-	-	-	-	-	-	-	-	3	5
Závora	2	2	-	-	-	-	-	-	-	-	-	1
Tofo	-	-	-	-	-	-	-	-	-	-	-	-
PNA Bazaruto	-	-	-	-	-	-	-	-	-	-	2	-
<b>Total</b>	<b>205</b>	<b>8</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>1</b>	<b>-</b>	<b>1</b>	<b>122</b>	<b>332</b>

Table 5. Leatherback turtle (*Dermochelys coriacea*): nests laid per area.

Local	Jan	Fev	Mar	Abr	Mai	Jun	Jul	Ago	Set	Out	Nov	Dez
Ponta do Ouro	1	-	-	-	-	-	-	-	-	-	-	6
Malongane - Dobela	19	-	-	-	-	-	-	-	-	-	5	25
Dobela - Mucombo	-	-	-	-	-	-	-	-	-	-	-	-
Mucombo - Santa Maria	5	-	-	-	-	-	-	-	-	-	-	4
Inhaca	7	-	-	-	-	-	-	-	-	1	1	-
Macaneta	-	-	-	-	-	-	-	-	-	-	1	-
Manhiça	-	-	-	-	-	-	-	-	-	-	-	-
Bilene	1	-	-	-	-	-	-	-	-	2	2	2
Xai-Xai	-	-	-	-	-	-	-	-	-	-	-	-
Zavala	-	-	-	-	-	-	-	-	-	-	-	-
Závora	-	-	-	-	-	-	-	-	-	-	-	-
Tofo	-	-	-	-	-	-	-	-	-	-	-	-
PNA Bazaruto	1	-	-	-	-	-	-	-	-	-	-	-
<b>Total</b>	<b>34</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>3</b>	<b>9</b>	<b>37</b>

Table 6. Green turtle (*Chelonia mydas*): nests laid per area.

Local	Jan	Fev	Mar	Abr	Mai	Jun	Jul	Ago	Set	Out	Nov	Dez
PNA Bazaruto	-	-	-	-	-	-	-	-	-	-	1	2
Primeiras and Segundas	-	-	-	-	-	-	-	-	-	-	-	-
PN Qurimbas	-	-	-	-	-	-	-	-	-	-	-	-
Vamizi/Rongui	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>1</b>	<b>2</b>

Table 7. Hawksbill turtle (*Eretmochelys imbricata*): nests laid per area.

Local	Jan	Fev	Mar	Abr	Mai	Jun	Jul	Ago	Set	Out	Nov	Dez
PNA Bazaruto	-	-	-	-	-	-	-	-	-	-	-	-
Primeiras and Segundas	-	-	-	-	-	-	-	-	-	-	-	-
Vamizi/Rongui	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>

Table 8. Olive Ridley turtle (*Lepidochelys olivacea*): nests laid per area.

Local	Jan	Fev	Mar	Abr	Mai	Jun	Jul	Ago	Set	Out	Nov	Dez
PNA Bazaruto	-	-	-	-	-	-	-	-	-	-	-	-
Primeiras and Segundas	-	-	-	-	-	-	-	-	-	-	-	-
Vamizi/Rongui	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total</b>	-	-	-	-	-	-	-	-	-	-	-	-

Table 9. Unidentified turtle species: nests laid per area.

Local	Jan	Fev	Mar	Abr	Mai	Jun	Jul	Ago	Set	Out	Nov	Dez
Ponta do Ouro	-	-	-	-	-	-	-	-	-	-	-	-
Malongane - Dobela	-	-	-	-	-	-	-	-	-	-	-	-
Dobela - Mucombo	-	-	-	-	-	-	-	-	-	-	-	-
Mucombo - Santa Maria	-	-	-	-	-	-	-	-	-	-	1	-
Inhaca	-	-	-	-	-	-	-	-	-	-	-	-
Macaneta	-	-	-	-	-	-	-	-	-	-	-	-
Manhiça	-	-	-	-	-	-	-	-	-	-	-	3
Bilene	-	-	-	-	-	-	-	-	-	-	4	3
Xai-Xai	-	-	-	-	-	-	-	-	-	1	1	-
Zavala	-	-	-	-	-	-	-	-	-	-	-	-
Závora	1	-	-	-	-	-	-	-	-	-	-	-
Tofo	1	-	-	-	-	-	-	-	-	-	2	1
PNA Bazaruto	-	-	-	-	-	-	-	-	-	-	-	-
Primeiras and Segundas	-	-	-	-	-	-	-	-	-	-	-	-
Vamizi/Rongui	20	24	33	14	19	-	10	6	-	3	2	3
<b>Total</b>	<b>22</b>	<b>24</b>	<b>33</b>	<b>14</b>	<b>19</b>	-	<b>10</b>	<b>6</b>	-	<b>4</b>	<b>10</b>	<b>10</b>

Table 10. Number of hatchlings and eggs laid by *C. caretta* and *D. coriacea*.

Local	<i>Caretta caretta</i>				<i>Dermochelys coriacea</i>			
	Nº crias	Ovos não eclodidos	Nº crias mortas	Casos ovos roubados	Nº crias	Ovos não eclodidos	Nº crias mortas	Casos ovos roubados
Ponta do Ouro	1708	47	8	-	740	16	13	-
Malongane - Dobela	-	-	-	1	-	-	-	-
Dobela - Mucombo	5096	3650	844	-	-	-	-	-
Mucombo - Santa Maria	3890	528	72	-	-	-	-	-
Inhaca	1360	-	-	2	780	-	-	-
Macaneta	-	-	-	-	-	-	-	-
Manhiça	-	-	-	-	-	-	-	-
Bilene	456	84	12	-	402	150	7	-
Xai-Xai	-	-	-	-	-	-	-	-
Zavala	354	-	42	-	-	-	-	-
Závora	-	-	-	-	-	-	-	-
Tofo	-	-	-	-	-	-	-	-
PNA Bazaruto	179	30	14	-	74	8	4	-
<b>Total</b>	<b>13043</b>	<b>4339</b>	<b>992</b>	<b>3</b>	<b>1996</b>	<b>174</b>	<b>26</b>	-



Table 11. Number of hatchlings and eggs laid by *C. mydas* and *E. imbricata*.

Local	<i>Chelonia mydas</i>				<i>Eretmochelys imbricata</i>			
	Nº crias	Ovos não eclodidos	Nº crias mortas	Casos ovos roubados	Nº crias	Ovos não eclodidos	Nº crias mortas	Casos ovos roubados
PNA Bazaruto	80	40	16	-	-	-	-	-
Primeiras and Segundas	-	-	-	-	-	-	-	-
Vamizi/Rongui	-	-	-	-	-	-	-	-
<b>Total</b>	<b>80</b>	<b>40</b>	<b>16</b>	-	-	-	-	-

Table 12. Number of hatchlings and eggs laid by *L. olivacea* and unidentified species.

Local	<i>Lepidochelys olivacea</i>				NI			
	Nº crias	Ovos não eclodidos	Nº crias mortas	Casos ovos roubados	Nº crias	Ovos não eclodidos	Nº crias mortas	Casos ovos roubados
Xai-Xai	-	-	-	-	-	-	-	2
PNA Bazaruto	-	-	-	-	-	-	-	-
Primeiras and Segundas	-	-	-	-	-	-	-	-
Vamizi/Rongui	-	-	-	-	-	-	-	-
<b>Total</b>	-	-	-	-	-	-	-	<b>2</b>

Table 13. Number of nests per species destroyed by natural causes. (NI = unidentified species).

Local	<i>C. caretta</i>	<i>D. coriacea</i>	<i>C. mydas</i>	<i>E. imbricata</i>	<i>L. olivacea</i>	N.I.
Ponta do Ouro	-	-	-	-	-	-
Malongane - Dobela	-	-	-	-	-	-
Dobela - Mucombo	-	-	-	-	-	-
Mucombo - Santa Maria	-	-	-	-	-	-
Inhaca	-	-	-	-	-	-
Macaneta	-	-	-	-	-	-
Manhiça	-	-	-	-	-	-
Bilene	-	-	-	-	-	1
Xai-Xai	-	-	-	-	-	-
Zavala	-	-	-	-	-	-
Závora	-	-	-	-	-	-
Tofo	-	-	-	-	-	-
PNA Bazaruto	-	-	-	-	-	-
Primeiras and Segundas	-	-	-	-	-	-
Vamizi/Rongui	-	-	-	-	-	62
<b>Total</b>	-	-	-	-	-	<b>63</b>

Table 14. Reported mortalities of adult marine turtles.

Local	Espécies/Causas	Total
Ponta do Ouro	2 loggerheads (one holding tags: ZAST 589 / ZASS 172) killed by members of the local community.	2
Malongane - Dobela	1 leatherback and 1 loggerhead killed by members of the local community.	2
Mucombo - Santa Maria	2 cases of suspected loggerhead killings by the local community were reported. The carcasses were not found, although in one case a blood trail was identified on the beach and in the second case no return track was seen.	2
Macaneta	3 leatherback and 6 green turtles were caught in a beach seine net and killed.	9
Manhiça	1 green turtle - natural causes; 1 green/loggerhead (?) - natural causes; 1 unidentified turtle - killed by members of the local community.	3
Bilene	1 loggerhead turtle - possibly natural causes.	1
Xai-Xai	1 green turtle caught by hook and line and killed. The shell was found in the dune vegetation. Two nesting females (a leatherback and a loggerhead) were killed.	3
Zavala	1 loggerhead shell found on the beach. Cause of death unknown.	1
Tofo	18 green turtle; 8 loggerheads; 46 unidentified killed by members of the local community.	72
Primeiras and Segundas	5 green turtles and 2 olive Ridley turtles killed by artisanal fishermen. Other 40 turtle killings were reported.	47
<b>Total</b>		<b>142</b>

Table 15. Number of marine turtles tagged, per species. \* = data provided did not discriminate species.

Local	<i>C. caretta</i>	<i>D. coriacea</i>	<i>C. mydas</i>	<i>E. imbricata</i>	<i>L. olivacea</i>
Ponta do Ouro	20	1	-	-	-
Malongane - Dobela	93	9	-	-	-
Dobela - Mucombo	10	-	-	-	-
Mucombo - Santa Maria	-	-	-	-	-
Inhaca	-	-	-	-	-
Macaneta	-	-	-	-	-
Manhiça	-	-	-	-	-
Bilene	-	-	-	-	-
Xai-Xai	-	-	-	-	-
Zavala	-	-	-	-	-
Závora	-	-	-	-	-
Tofo	-	-	-	-	-
PNA Bazaruto	1	-	3	2	-
Primeiras and Segundas	-	8	-	-	-
Vamizi/Rongui	-	-	24*	-	-
<b>Total</b>	<b>124</b>	<b>18</b>	<b>27</b>	<b>2</b>	<b>-</b>

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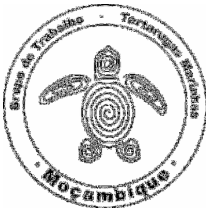


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