

# Status of leatherback turtles in Mozambique

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## 1. The legal protection status for leatherback turtles

### 1.1 Overview

All five species of marine turtles (*Caretta caretta*, *Chelonia mydas*, *Dermochelys coriacea*, *Eretmochelys imbricata* and *Lepidochelys olivacea*) are protected under its environmental legislation. However it is poorly implemented.

The environmental legislation under which these species are protected are:

1. Forestry and Wildlife Regulation. Decree nº12/2002, of 6th of June Article 43. Number 5. Totally protects all five species of marine turtles
2. Sports and Recreational Fishing. Decree nº51/99, of 31<sup>st</sup> of August Article 14. Number 1. Totally forbids the fishing of all five species of marine turtles
3. Maritime Fishery General Regulation. Decree nº43/2003, Article 110. Number 1. States the obligatory use of the Turtle Excluder Devices (TEDs) in the trawling and motor fisheries.

### 1.2 Management agencies responsible for marine turtle conservation in Mozambique

**Name of agency:** National Directorate of Forestry and Wildlife – Agriculture Ministry (MAG)

Development Centre for Sustainable Development of the Coastal Zones – Ministry for the Coordination of Environmental Affairs (MICOA)

National Directorate for Conservation Areas – Tourism Ministry (MITUR)

However, it is important to state that these government agencies have the support of several local non-governmental organizations such as the Grupo de Trabalho de Tartarugas Marinhas de Moçambique (GTT), Fórum para a Natureza em Perigo (FNP), Centro Terra Viva (CTV) as well as international NGOs, such as the World Wildlife Fund (WWF). To mention that several local associations (e.g. Associação dos Naturais e Amigos da Ilha da Inhca – ANAI) as well as private tourism projects do support on the conservation and research of marine turtles along the Mozambican coastline(e.g. Ponta Malongane Marine Turtle Conservation Project).

**Type of agency:** Government Organizations  
Non- Government Organizations

## 2. Nesting populations

### 2.1) Overview

leatherback turtles nest at Bazaruto Archipelago and Ponta Malongane (Figure 1). For details of the nesting census surveys see Table 1.

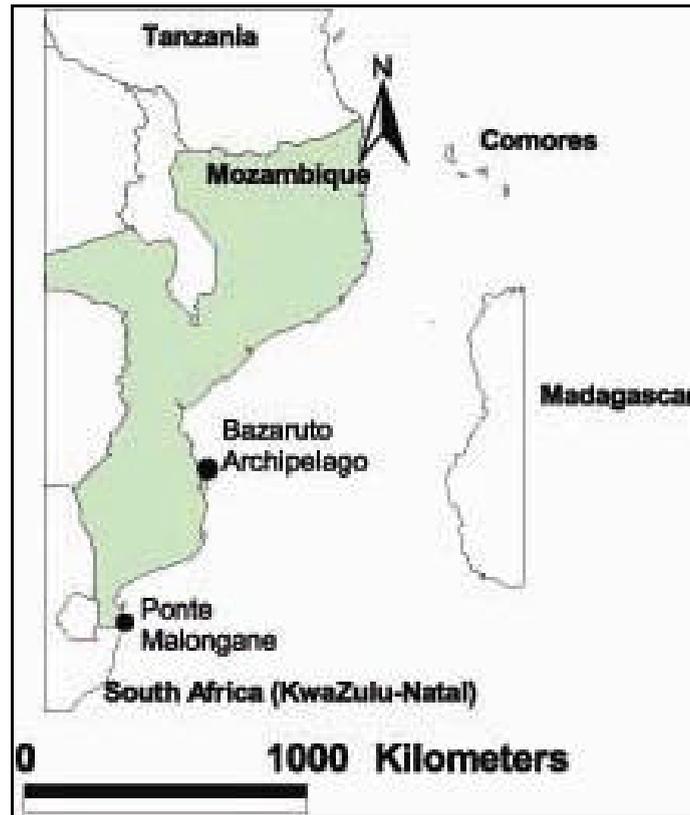


Figure 1. Location of leatherback turtle nesting beaches in Mozambique

Table 1. Number of nesting leatherback turtles recorded in Mozambique rookeries

Rookery	Latitude	Longitude	Year <sup>1</sup>	Number	Data type
Bazaruto Archipelago	21°43'S	35°28'E	1997	132	Eggs
			1999	180	Eggs
			2000	690	Eggs
			2001	150	Eggs
			2003	75	Eggs
			2004	115	Eggs
Ponta Malongane			1994	0	Females
			1995	5	Females
			1996	14	Females
			1997	6	Females
			1998	16	Females
			1999	12	Females
			2000	14	Females
			2001	6	Females
			2002	19	Females
			2003	8	Females
2004	14	Females			

1. Year given is the first year of the survey; i.e. 1997 refers to the 1997- 1998 season

**2.2) Seasonality of leatherback turtle nesting**

Nesting occurs regularly from September to March each year. In the Bazaruto Archipelago National Park and the Maputo Special Reserve, data has been collected and female leatherback turtles nest from October until February, the months of November, December and January is when there is a high nesting activity.

### 2.3 Genetic studies on nesting populations of leatherback turtles

No genetic studies have been conducted on nesting populations of leatherback turtles in Mozambique.

### 2.4) Biological parameters

See Table 2.

Table 2. Summary of biological data on leatherback turtles nesting in Mozambique

Category of data	Average & Standard deviation	Range	Sample size
Size of nesting females*	Length (cm): 157.5 ± 80.4 Width (mm): 113.3 ± 64.1	Length (cm): 145.5 – 175.0 Width (mm): 100.0 – 125.0	15
Number of eggs per clutch	134.2 ± 51.8	62 - 199	10
Clutches per season*	Bazaruto Archipelago 2.00 ± 2.00 Ponta Malongane 2.25 ± 3.86	Bazaruto Arhipelago 0 - 5 Ponta Malongane 0 - 10	11
Re-nesting interval (days)	No data available		
Number of years between breeding seasons (years)	No data available		
Size of eggs (cm)	No data available		
Size of hatchlings (cm)	No data available		
Incubation success (%)	No data available		

\* Data compiled from; Kyle & Lombard (1996), Lombard (1997), Louro (2005), Magane & João (2002) and Videira & Louro (2005).

### 2.5) Pivotal temperature studies

There has been a study on pivotal temperatures, but unfortunately, we do not have access to that information. The study was made by a foreigner student - Carla Ng in 1999/2000. The project was a collaboration, between the Universidade Eduardo Mondlane and the Faculdade de Ciencias de Lisboa, Portugal. The research was made along Inhaca Island's east coast.

### 2.6) Migration records

Since 1994 the Ponta Malongane Project has been tagging leatherback turtles with the support of the Kwazulu Natal Wildlife (KZN). However, we do not have all the information regarding migration records, these details may be acquired from them. The methods used are tag returns/recapture. The Mozambique Marine Turtle Tagging Programme has recaptured turtles from the Malongane Project, however the recaptures have only been from loggerheads. The programme has not recaptured any leatherback turtles yet. Please see details for season of 1996-1997 of 2 within season recaptured leatherbacks at Ponta Malongane:

FF401 – 5.12.1996 – Nest – 9.8 Km north of Ponta Malongane  
 FF401 – 15.12.1996 – Nest – 28.9 Km north of Ponta Malongane  
 FF401 – 25.12.1996 – Nest – 21.4 Km north of Ponta Malongane  
 FF501 – 1.12.1996 – Nest – 9.3 Km north of Ponta Malongane  
 FF501 – 13.12.1996 – Nest – 5.3 Km north of Ponta Malongane  
 FF501 – 23.12.1996 – Nest – 2.7 Km north of Ponta Malongane

### 2.7) Protection of nesting beaches (e.g. National Parks)

Three nesting beaches in Mozambique are within national parks -

- The Maputo Special Reserve – Maputo Province (Southern Mozambique)
- The Bazaruto Archipelago National Park – Inhambane Province (Southern Mozambique)
- The Quirimbas Archipelago National Park – Cabo Delgado Province (Northern Mozambique)

### 2.8) Use of hatcheries to protect marine turtle nests

There was once a hatchery in Bazaruto Archipelago National Park, but it is not functioning at the present moment.

### 2.9) Threats to nesting marine turtles

A summary of the threats to nesting leatherback turtles in Mozambique is presented in Table 3.

Table 3. Summary of the threats to nesting leatherback turtles in Mozambique

Threats at this site/area	Current occurrence	Historical occurrence & year of records
Exploitation of nesting females	We don't have reports on the number of turtles killed but Lombard (2005) sums the number of turtles killed at Ponta Malongane (these include also loggerhead turtles), this number being 32 turtles in eleven years. The area of high number of killings being from Madedjanine to Mamoli.	Yes. South of Inhambane province females were slaughtered whenever encountered (Hughes, 1971)
Egg collection	Lombard (2005) affirms the current occurrence of egg collecting. In Bazaruto Archipelago egg collection used to be one of the main causes of disturbance, this having reduced in the last three seasons, due to environmental awareness.	Yes. South of Inhambane province eggs were consumed (Hughes, 1971)
Agricultural/urban/tourism development	Tourism is rising high, especially on the southern coast of Mozambique. However, no data was found.	No data found
Artificial lighting	No data found	No data found
Coastal erosion	Yes. In Bazaruto Archipelago one of the main causes (11.76%) in 10 seasons of monitoring for the destruction of nests has been coastal erosion and the rising of the seawater level (Videira & Louro, 2005).	No data found
Vehicles	Yes. There is no legislation in Mozambique regarding driving on the beach, and this has turned into a very serious problem, due to the high rise of tourism and the weak enforcement by the local authorities. In Ponta Malongane, especially in the Ponta Techobanine region up north there has been a high rise in the driving of vehicles (Lombard, 2005). In Bazaruto Archipelago the main nesting areas are in the Bazaruto Island and these have been affected with a high incidence of vehicle driving belonging to the hotels.	No data was found.
Sand mining	No data found	No data found
Natural threats/predation	Yes. But no data was found	Yes. But no data was found

#### 2.10) Impacts of coastal development and/or sand mining on leatherback turtle nesting.

See table above

#### 2.11) Major existing threats to nesting turtles.

1. Exploitation of nesting females for food
2. Collection of eggs for food
3. Beach driving (vehicles – there is no legislation, and the level of control is very weak)
4. Tourism development (e.g. there is legislation regarding construction of tourism infrastructure, however, the level of implementation and control is very weak, there has been an uncontrolled growth.

**2.12) Other biological studies conducted on nesting leatherback turtles**

- Bazaruto Archipelago National Park Nesting Programme (Nesting and tagging monitoring);
- Ponta Malongane Marine Turtle Conservation Project (Nesting and tagging monitoring);
- Reserva Especial de Maputo (Nesting and tagging monitoring);
- Projecto Maçaneta (Nesting and tagging monitoring);
- Projecto de Biodiversidade e Turismo de Cabo Delgado (no data found, it needs also to confirm what species are being monitored);

**2.13) Activities underway to improve the conservation of nesting populations of marine turtles**

- Capacity training courses for community guards and volunteers
- Promotion of monitoring and research activities
- Sensitization and awareness campaigns (e.g. Boas Vindas 2000 Campaign; Precisam-se Vivas Campaign, among others)
- Development of current activities that promote the collaboration of local communities and tourism operators

**3. Foraging populations****3.1) Details on any leatherback turtle foraging area census or tagging results**

Mozambique Marine Turtle Tagging Programme: 1 turtle has been tagged since 2003/2004 and no tag recoveries.

**3.2 & 3.3) Seasonality and size range of leatherback turtles occurring in offshore waters**

The leatherback (MO 803) that was caught accidentally in a fishing net at Macaneta, was found in the high peak of the nesting season in December 2003. This turtle (MO 803) measured - CCL =160 cm and CCW= 100 cm.

**3.4) Information on the diet of leatherback turtles**

No information available

**3.5) Other biological studies conducted on leatherback turtles in foraging areas**

No other studies have been conducted on foraging leatherback turtles in Mozambique.

**3.6) Threats to foraging populations of leatherback turtles**

A summary of the threats to foraging leatherback turtles in Mozambique is presented in Table 4.

**3.7) Fisheries bycatch of leatherback turtles and the fisheries involved**

A summary of fisheries based threats to leatherback turtles in Mozambique is presented in Table 5.

**3.8) Other activities being undertaken to improve the conservation of leatherback turtle foraging populations**

- Approval of the Turtle Excluder Device (TEDs) since January 2005 in the General Regulation of Mitime Fisheries (Article 110. Number 1, Decree 43/2003)
- Sensitization and awareness (e.g. Boas Vindas 2000 Campaign; Precisam-se Vivas Campaign)
- Capacity training courses to community guards and volunteers, tourist and industrial and semi-industrial prawn fisheries operators and
- Development of current activities that promote the collaboration of local communities and tourism operators

Table 4. Summary of the threats to foraging leatherback turtles in Mozambique

Threats at this site/area	Current occurrence	Historical occurrence & year
Exploitation of live animals at sea	Yes. Mozambique is currently being assaulted by illegal longliners mainly dedicated to shark fishing. However, these not only capture sharks but also all the marine biodiversity they find. Some years ago heads of marine turtles were found on the beaches of the Bazaruto Archipelago National Park. Unfortunately we do not have the means to patrol our offshore waters. And currently a new project has been developed called Eyes on the Horizon, this is supported by the Fisheries, the Army and the Tourist Operators whenever strange activities are spotted along the coast.	No data found
Incidental capture in fisheries	Gove et al. (2001) states that 12 marine turtles per trawler per month are caught accidentally in shrimp trawlers, and that this number tends to increase during the high nesting season. Also more than 6 leatherback turtles were caught alive during the beginning of the shrimp fishing season, [mostly at Chami-Chami & Sofala Bank].	No data found
Boat strikes	Possibly. But no data found.	Possibly. But no data found.
Plastics (at sea)	Possibly.	No data found
Industrial effluent	No data found	No data found
Inshore oil pollution	No data found	No data found
Natural threats/predation	No data found	No data found

Table 5. Summary of the fisheries based threats to leatherback turtles in Mozambique

Type of fishery	Season of operation	Approx number of boats/operators	Impact – low, medium or high
Prawn trawling fisheries *			
Industrial	Winter (March – September)	52 (93% Sofala Bank)	1305 – 3672 marine turtles (mixed species) per year caught accidentally (Winter and Summer Seasons)
Semi-Industrial	Winter (March – September)	73 (67% Sofala Bank)	627 – 1764 marine turtles (mixed species) per year caught accidentally (Winter and Summer Seasons)

\* Gove et al. (2001)

#### 4. Concluding remarks

Regarding leatherback turtle biology and management a lot needs still needs to be done. And the same applies to all the remaining four species of marine turtles that occur and nest in our coastline. This can only be achieved if all the implementing research and management institutions work together.

#### 5. References

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