

Status of leatherback turtles in South Africa

By Ronel Nel

1. The legal protection status for leatherback turtles

1.1 Overview

Regulation 58(7) of the MLRA (1998) exercise control over turtles as a marine living resource providing full protection of turtles and their products in South Africa namely; specifying that: *No person shall, except on the authority of a permit, engage in fishing, collecting, killing, attempting to kill, disturbing, harassing, keeping or controlling of, or be in possession of, any turtle or any part or product thereof at any time.*

1.2 Management agency responsible for marine turtle conservation in South Africa

Name of agency: Legislative Responsibility – Marine & Coastal Management*

Type of agency: Government Department

* MoU with Ezemvelo KwaZulu-Natal Wildlife to perform tasks in the province, although not yet a specific MoU for turtles, EKZNW has been the almost exclusively involved in marine turtle conservation activities for the last four decades.

2. Nesting populations

2.1) Overview

The South African leatherback turtle nesting population and beaches have been described by Hughes (1974a, b and 1996). Briefly, the leatherback turtle nesting beaches in South Africa stretch for nearly 200km south from the Mozambique border. The beaches are mostly silica sand beaches rising steeply and reaching heights of 100m above sea level (Hughes 1996). The methods used in the annual nesting beach census have been standardised and a 56km section of beach (north and south of Bhanga Nek) is used as a standard index beach and this index beach is monitored nightly by EKZNW staff (see Figure 1 for example of the index beach and its relative numbers of nests). A combination of foot and vehicle patrols is used each night to collect data on nesting turtles. The leatherback turtle population in South Africa was reviewed in 1996 including data up to the 1994/1995 nesting season and then by Hughes in 1998 (Hughes 1996 and Figure 2). Results from the 32 years of monitoring reported in 1996 show a steady increase in the number of leatherback turtles nesting annually along the 56km index beach (Hughes 1996). Data from 1995 until 2004 was obtained from Nel and Papillion (2005) to update this figure.

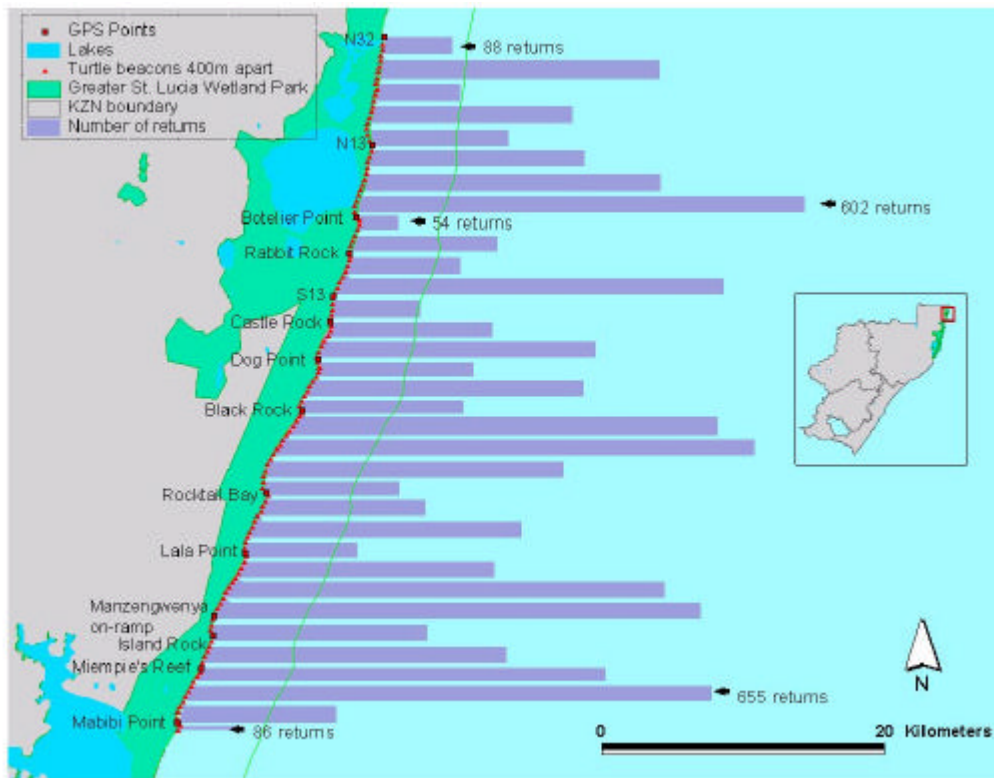
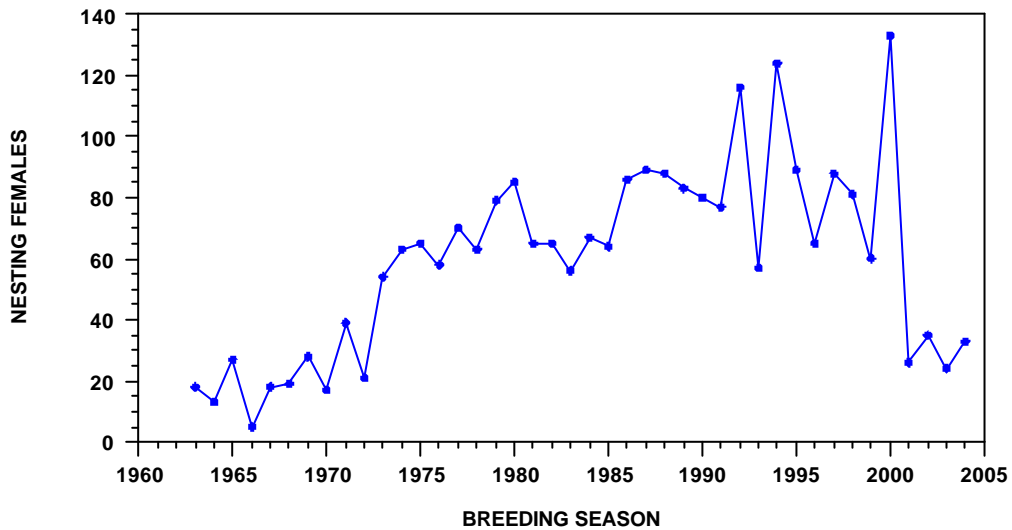


Figure 1. Summed distribution of leatherback turtles between 1965 – 2003. The distance from north to south is ~ 65km with each bar indicating number per 1mile (1.6km).



Tagging census (Hughes & Bartholomew 1998; Nel & Papillion 2005)

Figure 2. Number of nesting females recorded from the KwaZulu-Natal Wildlife index beach from 1963 until 2004

2.2) Seasonality of leatherback turtle nesting

The nesting season for leatherback turtles in South Africa occurs from October to mid February. Hatching occurs through until the end of March (Hughes 1996).

2.3) Population genetic studies on leatherback turtles

Genetic studies have been conducted on leatherback turtles in South Africa and are summarized by Dutton et al. (1999). This study found that leatherback turtles nesting in South Africa were a separate population to those nesting in Malaysia.

2.4) Biological parameters

Curved carapace length

Hughes (1996) reports that average size of nesting leatherback turtles declined from 1964 to 1968 compared with 1995 and 1995, and speculates that this decline could reflect more smaller and younger females in the population.

Remigration

Remigration intervals (n = 513) recorded from 1969/1970 through until 1993/1994 range from 1 to 12 years (Hughes 1996). The remigration intervals are dominated by two (44.8%) and three (29.2%) year periods, with a small number of females breed in consecutive years (1.9%) (Hughes 1996). Furthermore, Hughes (1996) also present data on the variability of remigration intervals for 123 nesting leatherback turtles that were recorded between 1969/1970 and 1993/1994, it is clear from this data that leatherback turtles show considerable variation in reproductive periodicity.

2.5) Pivotal temperature studies

No studies on pivotal temperatures or sex ratio have been conducted on leatherback turtles in South Africa

2.6) Migration records

Tag returns for leatherback turtles are scarce, Hughes (1996) report six tag returns for Tongaland leatherback turtles away from the nesting beaches. Two of these returns are in Mozambique, one from Madagascar and three in South Africa (Indian Ocean Coast). All recaptures were within the breeding season for leatherback turtles and were caught at distances between 250km and 2600km away from the nesting beach (Hughes 1996). Satellite telemetry of three leatherback turtles tagged while nesting at Maputaland Marine Reserve was conducted between 1996 and 1999 in collaboration with Paolo Luschi at Pisa University (Figure 2; Hughes et al. 1998; Luschi et al. 2003).

2.7) Protection of nesting beaches (e.g. national parks)

The entire nesting area for leatherback turtles (~ 200 km of nesting area) is within a World Heritage Site (Greater St Lucia Wetland Park) of which ~ 50km is currently designated as Sanctuary areas. Occasional nesting, 6-15 individuals per year, has been recorded nesting outside of the Park.

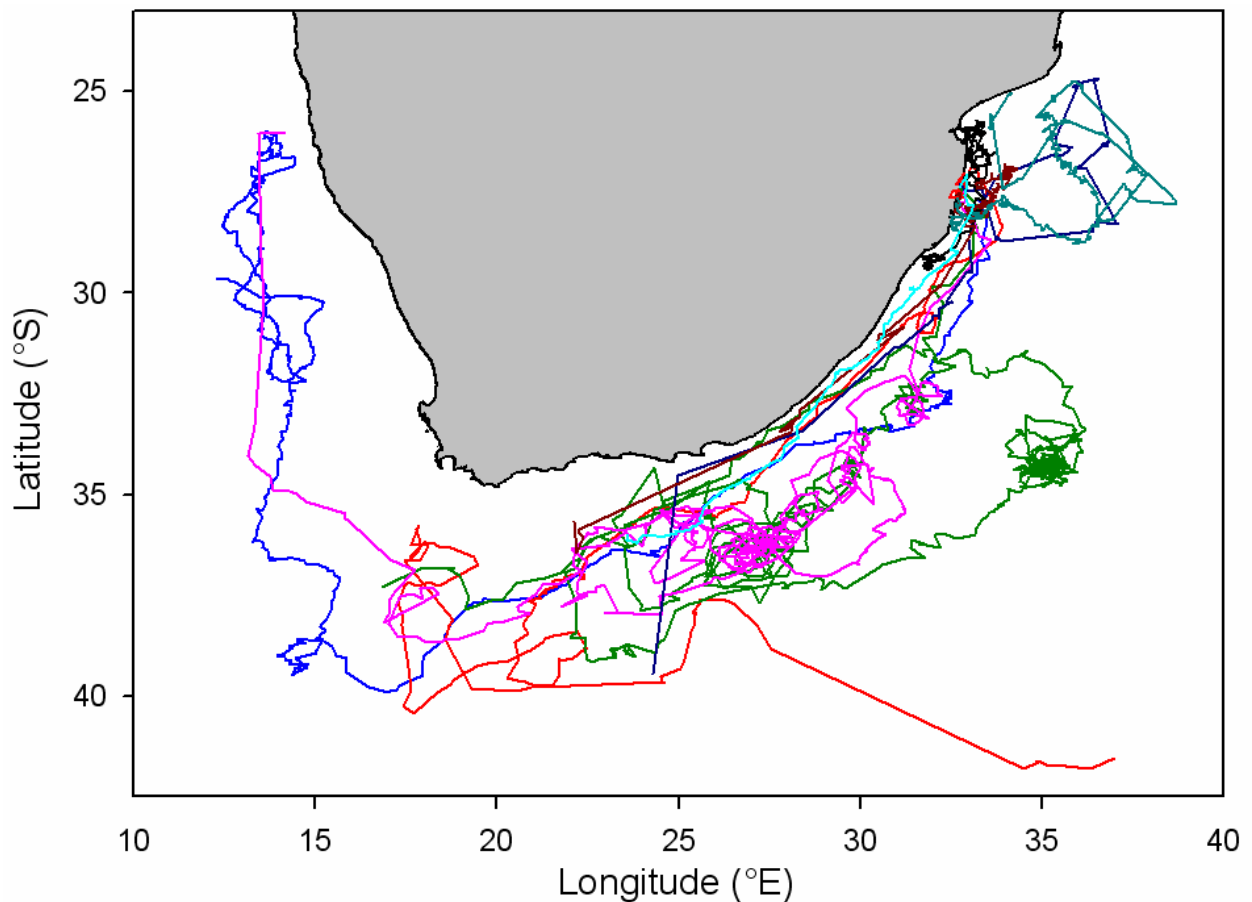


Figure 2. Reconstructed migration paths and low resolution sea surface temperatures of post nesting leatherback turtles tracked via satellite telemetry (Figure from Lambardi et al. 2006)

2.8) Use of hatcheries to protect marine turtle nests

No hatcheries are used in South Africa to protect leatherback turtle nests

2.9) Threats to nesting leatherback turtles

A summary of the threats to nesting leatherback turtles is presented in Table 2.

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

There are no coastal developments or sand mining impacts to nesting populations of leatherback turtles in South Africa.

2.11) Major existing threats to nesting leatherback turtles

The main threats to nesting populations of leatherback turtles in South Africa are boat strikes, shark nets and long-line fishing (see section 3.6/3.7).

2.12) Other biological studies conducted on leatherback turtles

Long term monitoring of the dive behaviour of two leatherback turtles was investigated by Sale et al. (2006).

2.13) Other activities underway to improve the conservation of nesting populations of marine turtles

Annual tagging projects are conducted by the EKZNW throughout the index section of the beach to monitor the nesting populations of leatherback and loggerhead turtles. See section 3.8

Table 2. Summary of threats to nesting populations of leatherback turtles in South Africa

Threats at this site/area	Current occurrence	Historical occurrence & year of records
Exploitation of nesting females	Incidental <1pa ¹	Substantial until ~1960. No quantitative data*.
Egg collection	Incidental <5 nests pa ¹	Was substantial until 1963
Agricultural/urban/tourism development	Tourism developments	
Artificial lighting	Four areas (< 100m each)	
Coastal erosion	High-energy coastline; varies seasonally.	High-energy coastline; varies seasonally.
Vehicles	< 10 Vehicles per night: concession, management & media. Single recreational use is limited to (1.5 km where there is impact)	Very heavy use of vehicles between ~ 1970 – 2000 (e.g. Figure 3) but only during daylight hours.
Sand mining	No	No
Natural threats/predation	Relatively low: honey badgers, ghost crabs & feral dogs, side striped jackals (<i>Canis adjustus</i>)#.	Relatively low: honey badgers, ghost crabs & feral dogs.

*The original monitoring area (1963-1967) and current monitoring area do not correspond in size. Numbers of nests are therefore not directly comparable.

Side striped jackals (*Canis adjustus*) were first noticed depredating turtle nests in 1994/1995 (Hughes 1996).

¹. Nel and Papillion (2005)



Figure 3. Picture of vehicle use during peak holiday season. Historically it was an extended area, now it is restricted to ~ a few kilometres out of the entire 200km stretch.

3. Foraging populations

3.1) Details of leatherback turtle foraging area census or tagging results such as tag recovery data

No foraging population census has been conducted on leatherback turtles in South Africa. However, it is suspected that the Atlantic coast of South Africa is a foraging area for both the east coast population (see Figure 2) as well as central and northern African leatherback turtles.

3.2) Seasonality of leatherback turtles in coastal and offshore waters

leatherback turtles are most often seen during October to April in both the Atlantic and Indian Ocean coasts of South Africa.

3.3) Approximate size range of leatherback turtles caught or seen in foraging areas

The size range of leatherback turtles in South Africa is between 120 – 200 cm curved carapace length (CCL) (Hughes 1996)

3.4) Information on the diet of leatherback turtles

No new information since Hughes (1972).

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

No other biological studies have been conducted on leatherback turtles in South Africa

3.6 & 3.7) Fisheries bycatch of leatherback turtles and the fisheries involved.

Type of fishery	Season of operation	Approx number of boats/operators	Impact – low, medium or high
Bather protection (shark-nets)	Year-round	27 km of gill-nets along 62 beaches, 39 localities	Low: between 2- 11 turtles per annum (1993 to 2004) with approx. 50% mortality rates (Nel and Papillion 2005)
Pelagic Long-lining	Year-round (?)	23 SA Operators	60-90 leatherbacks pa*

* Some turtles are released alive with the hooks still in place; no idea about the survival rates afterwards.

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

- o Experimentation in the long-lining fishery with circle hooks is soon to start.
- o Shark protection nets are serviced daily to release live trapped animals.

4. References

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