South Africa

GENERAL INFORMATION

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Other agencies, institutions, or NGOs that have provided input:

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Oceanographic Research Institute (NGO)
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OBJECTIVE I. REDUCE DIRECT AND INDIRECT CAUSES OF MARINE TURTLE MORTALITY

1.1 Introduction to marine turtle populations and habitats, challenges and conservation efforts. [INF]

Five species of sea turtles are found in the waters off South Africa of which two species nest in significant numbers. The nesting species are loggerhead and leatherback turtles. Green and hawksbill turtles use the shallow reefs as grow-out areas since most are immature. About one or two olive ridleys are observed per annum as occasional strays or in strandings.

The best information exist for the nesting beaches and reefs in the iSimangaliso Wetland Park (previously the Greater St Lucia Wetland Park), where loggerhead and leatherback nesting numbers have been monitored since 1963. Initially an area of 8km was nested and that has now been expanded to ~56km that is monitored nightly for the entire nesting

and hatching season (i.e. 5 months). No programme exists to do in water counts for any of the species, other than through fisheries information. An important characteristic of the nesting species is that the loggerhead and leatherback turtle populations are shared with Mozambique with a few individuals nesting on both sides of the border. Here, a monitoring programme has been in place since 1996.

South Africa has a good network of protected areas and all of the nesting area, as well as a substantial amount of reef habitats are taken up in protected areas. The result is that direct harvesting and habitat destruction are marginal threats in South Africa. Fisheries impacts, specifically long-lining and bather protection nets are the greatest (quantified) threat to turtles while in South Africa waters. Ghost fishing and trawling may also be of importance but needs to be monitored. Diseases such as fibropapilloma or fungal infections in nests seems to be largely absent.

The effect of climate change is a great unknown at this stage and the effect can go in any direction i.e. positive or negative. Studies will be undertaken in the near future to better understand the threats associated with climate change and South African turtle populations.

1.2.1 Describe any protocol or approaches practiced in your country, which you consider exemplary, for minimising threats to marine turtle populations and their habitats, which may be suitable for adaptation and adoption elsewhere. [BPR]

1. Comprehensive turtle monitoring programme with:

a. Continuous patrolling and monitoring of turtle nesting numbers in the index areas (56 km).
b. Community monitors are hired and trained annually to do the monitoring.
c. A range of ecotourism ventures (ranging from walk-on community tours to lodge developments) capitalising on turtles and turtle monitoring.
d. Education and awareness programmes around nesting beaches highlighting the importance and sensitivity of marine turtles and advocating best management practices (new stronger initiative in SA).
d. Expansion of research associated with all aspects of turtle management but particularly trying to build a population model of nesting species.

2. Integrated Coastal Zone and Marine Management with:

a. A network of protected areas adequately protecting turtles as well as their habitats during various life stages.
b. Zonation plans, within protected areas, ensuring the areas of complete protection and sustainable levels of resource use in coastal waters in order to create refugia for turtle nesting.
c. Banning of off-road vehicles in the coastal zone which not only protects turtles and turtle nests from disturbance and crushing but also creating marine refugia since large proportions of the coastline is otherwise inaccessible.
d. National Biodiversity Spatial Assessment for the marine environments to the edge of the EEZ. This provides an indication of biodiversity, habitats, threats and conservation targets for each aspect throughout the EEZ.
e. Practical contingency plans during strandings, oil spills and other shipping, pollution or natural disasters.

3. Development of observer programme on longliners.

-Basic turtle bycatch information has been obtained since 2000. This data is currently under review in a PhD thesis (by S. Petersen UCT). This thesis also review bycatch mitigation. It has been difficult to test the use of circle hooks in swordfish and tuna fisheries due to resistance from industry.

4. Fisheries Legislation and Management:

-South Africa has strong marine legislation with fairly good implementation and compliance. The Marine Living Resources Act restricts all destructive gear (e.g. drift nets) and fisheries practises (dynamite or poison fishing). It has a strong emphasis on environmental sustainability.

1.3.1 Describe any socio-economic studies or activities that have been conducted among communities that interact with marine turtles and their habitats. [BPR, INF]

Studies:
Nothing specific on turtles.

Activities:

Interactions with turtles primarily in the Greater St Lucia Park by:
1. Subsistence communities: either involved in monitoring, poaching or walk concession ventures
2. Ecotourism ventures: with exclusive lodges and expensive drive concession tours

1.3.2 Which of these adverse economic incentives are underlying threats to marine turtles in your country? [TSH]

☐ High prices earned from turtle products relative to other commodities

■ **Lack of affordable alternatives to turtle products**

■ **Ease of access to the turtle resource (eg. by virtue of proximity or ease of land / water access)**

☐ Low cost of land near nesting beaches

■ **Low penalties against illegal harvesting**

■ Other1: Illegal developments in protected areas = uncontrolled tourism

☐ Other2:

☐ Other3:

☐ None of the above or Not Applicable

The northern sections of the iSimangaliso Park have "open" access since there are communities living in the bounds of the Park. These people are very poor and are living a subsistence lifestyle off the land. Due to the remoteness of the area and the fantastic attraction of the area there are a variety of developments that get erected with the intent of bringing more visitors and therefore riches to the area. These developments however do not always go through proper authorisation or EIA procedures. The effect is the destruction of biodiversity and disturbance of turtles - mostly through unregulated use of the beach during nesting and hatching season, the indiscriminate use of lights by the visitors or lighting of the properties.

1.3.3 Has your country has taken any measures to try to correct these adverse economic incentives? [BPR]

■ YES ☐ NO ☐ NOT APPLICABLE (no adverse economic incentives exist)

Empowerment programmes to subsistence communities: Coast Care, Sustainable Livelihoods Programme, joint development ventures in and around the iSimangaliso Park.

Capping (and controlling) the number of tourism ventures in the conservation areas: Restricted number of exclusive developments as well as number of drive-concessions.

When process of negotiation is unsuccessful legal action is taken against illegal developments/developers.

1.4.1 Indicate, and describe in more detail, the main fisheries occurring in the waters of your country, as well as any high seas fisheries in which flag vessels of your country participate, that could possibly interact with marine turtles. [INF]

a) Shrimp trawls: ■ YES ☐ NO

Ephemeral & Erratic - 8 National permits issued, only 2 to 3 vessels operating periodically (due to droughts). Original estimates were that < 5 turtles are caught per annum and released alive. Observers have been placed on vessels and indications are that catches are probably 10X as much (~ 50 turtles per annum). (Actual data = 16 turtles (all identified as *Caretta caretta* - may not be so) observed in 177 trawls from 2003 and 2005; No indication whether turtles are alive or dead.

Tugela Bank Operation depth: 10 - 50 m depth; Trawl duration is 4-6 hours. TEDs are not used. Grids to exclude elasmobranchs are likely to be introduced on an experimental basis in 2006 - they will also exclude turtles.

Fennessy & Isaksen (2007) evaluated the use of BRDs (bycatch reduction devices) is Mozambique. These are comparable fisheries in terms of species composition for catch and bycatch but more stable. They indicated that BRDs can be used successfully, but needs industry buy-in.

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Fennessey, S. & Isaksen, B. 2007. Can bycatch reduction devices be implemented successfully on prawn trawlers in the Western Indian Ocean - South African Journal of Marine Science 29(3): 453-463.

b) Set gill nets: ■ YES ☐ NO

Gill-nets used as bather protection nets against shark attacks in KwaZulu-Natal. ~27 km of semi-permanent gill net installations scattered over 36 localities. These are set outside of protected areas, and checked ~ 20 times per month. Turtles are caught year-round with a mean number of catches per annum around 50 turtles, of which about half are released alive. (Details can be found in Young, 2001.) In February 2007 the Natal Sharks Board started with a systematic replacement of the gill nets with baited drum lines. Drum lines catches are more targeted (to predatory sharks) and should reduce inter alia turtle bycatch. Up to half of the 27km of nets will be replaced with drum lines (http://www.shark.co.za/nets.htm). A postgraduate project at the Nelson Mandela Metropolitan University (NMMU) is currently investigating the effect of shark nets on marine turtles in KZN.

A small-scale, coastal St Joseph Shark / Harder fishery is in operation on the Atlantic coast of SA using beach seine nets. It does not seem to interact with turtles since there are no reports of turtles being caught in this activity.

No other gill net fisheries are used legally in the EEZ of South Africa. The illegal use is suspected but should be incidental with negligible towards impacts on turtles.

On the high seas the Walters Shoal is an important fishing area. A demersal gill-net fishery seems to be gaining momentum. This fishery is targeting sharks. It has a lucrative bycatch of deepwater rock lobster. The idea on turtles (directly or indirectly is unknown). The current discharge levels in KZN is ~5 vessels discharging every 2 months.

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Young, N. 2001. An analysis of the trends in by-catch of turtle species, angelsharks and batoid species in the protective gillnets off KwaZulu-Natal, South-Africa. Unpublished MSc Thesis, University of Reading, 99pp.

c) Anchored Fish Aggregating Devices (FADs): ☐ YES ■ NO

No permits are issued for any FADs in South Africa but they are sometimes deployed illegally in commercial skiboat line-fishery to attract pelagic fish. Associated direct impact on turtles is unquantified but entanglement at sea or in ghost gear is possible.

d) Purse seine (with or without FADs): ■ YES ☐ NO

The fishery currently supports around 100 purse-seine vessels of which most are of the pelagic vessels are y 20-24 m long (Nielsen & Nara 2006). These are mostly are operating on the on west and south coast of South Africa with a strong seasonal pattern. The licensed vessels in South Africa target mainly sardines and anchovy with few other small. No information exists on the impacts on sea turtles although it is predicted to be limited. The purse seiners though fishing offshore tend to operate closer inshore (that what turtles seem to frequent) and are mostly restricted to the upwelling regions. Turtles seem to have moved offshore by the time they reach the south and west coast of the country.

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Nielsen, J.R. & M. Hara. 2006 Transformation of South African industrial fisheries. Marine Policy 30(1): 43-50.

e) Longline (shallow or deepset): ■ YES ☐ NO

SA has an active pelagic fishery with 20 tuna directed and 30 swordfish directed licences (DEAT 2007, Petersen in prep). 50 permits are currently issued annually to South African flagged vessels or Asian vessel operating under join venture contracts with South African companies. Impact on turtles has been estimated as 0.04 turtles per 1000 hooks, with loggerhead turtles being the most frequently caught species and leatherbacks the second most frequently. That is 60% and 31% respectively. Extrapolating these observer numbers to actual catch figures indicate that about 164 turtles are caught per annum. The current fishing effort may expand three-fold under the current licence agreements and policy. The effect on turtle bycatch, assuming current implementation practice, will increase catches to 770 turtles per annum (Petersen in prep).

Demersal longlining also takes place in South Africa and mostly targets hake. No turtle bycatch has been reported in this fishery (Petersen in prep).

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DEAT 2007: Government Gazette. Republic Of South Africa. Vol 510. 7 December 2007. No 30535. Notice 1718 of 2007. Draft policy and application forms concerning the allocation and management of the longterm fishing rights in the large pelagic (tuna and swordfish) sector, 2007.

Petersen, S. in prep. (2008) Understanding Bycatch of vulnerable species. PhD thesis UCT.

f) Driftnet: ☐ YES ■ NO

Illegal in South Africa.

g) Other1:

These fisheries are all illegal and not often transgressed.

h) Other2:

Inshore demersal sole & hake fishery ~ south coast (30 vessels) - no obvious interaction with turtles.

Linefishery - no major interaction with turtles although can have incidental capture through hooking or entanglement.

☐ **None of the above**

1.4.2 Please indicate the relative level of fishing effort and perceived impact of each of the above fisheries on marine turtles (e.g. in terms of by-catch). [TSH]

a) Shrimp trawls

Fishing effort:

☐ RELATIVELY HIGH ☐ MODERATE ■ **RELATIVELY LOW** ☐ NONE ☐ UNKNOWN

Perceived Impact:

☐ RELATIVELY HIGH ☐ MODERATE ■ **RELATIVELY LOW** ☐ NONE ☐ UNKNOWN

Source: Fennessey, S. & Isaksen, B. 2007. Can bycatch reduction devices be implemented successfully on prawn trawlers in the Western Indian Ocean - South African Journal of Marine Science 29(3): 453-463.

b) Set gill nets

Fishing effort:

☐ RELATIVELY HIGH ■ **MODERATE** ☐ RELATIVELY LOW ☐ NONE ☐ UNKNOWN

Perceived Impact:

☐ RELATIVELY HIGH ■ **MODERATE** ☐ RELATIVELY LOW ☐ NONE ☐ UNKNOWN

Source: Young, N. 2001. An analysis of the trends in by-catch of turtle species, angelsharks and batoid species in the protective gillnets off KwaZulu-Natal, South-Africa. Unpublished MSc Thesis, University of Reading, 99pp. 27km fixed nets / drum lines ~50 Caught per annum; 1/2 released alive.

c) Anchored Fish Aggregating Devices (FADs)

Fishing effort:

☐ RELATIVELY HIGH ☐ MODERATE ☐ RELATIVELY LOW ■ **NONE** ☐ UNKNOWN

Perceived Impact:

☐ RELATIVELY HIGH ☐ MODERATE ☐ RELATIVELY LOW ■ **NONE** ☐ UNKNOWN

Source: Pers Com: Rob Broker - Conservation Manager , Offshore Operations (EKZNW)

d) Purse seine (with or without FADs)

Fishing effort:

☐ RELATIVELY HIGH ■ **MODERATE** ☐ RELATIVELY LOW ☐ NONE ☐ UNKNOWN

Perceived Impact:

☐ RELATIVELY HIGH ☐ MODERATE ■ **RELATIVELY LOW** ☐ NONE ☐ UNKNOWN

Source: Nielsen, J.R. & M. Hara. 2006 Transformation of South African industrial fisheries. Marine Policy 30(1): 43-50.

e) Longline (shallow or deepset)

Fishing effort:

☐ RELATIVELY HIGH ■ **MODERATE** ☐ RELATIVELY LOW ☐ NONE ☐ UNKNOWN

Perceived Impact:

■ **RELATIVELY HIGH** ☐ MODERATE ☐ RELATIVELY LOW ☐ NONE ☐ UNKNOWN

Source: [Peterson, S. 2005. Initial bycatch assessment of South Africa's pelagic longline fishery 2000-2003. An unpublished report, WWF-Bridlife SA. Pp 46.]

Petersen, S. (2008) Understanding Bycatch of vulnerable species. PhD thesis UCT.

f) Driftnet

Fishing effort:

☐ RELATIVELY HIGH ☐ MODERATE ☐ RELATIVELY LOW ■ **NONE** ☐ UNKNOWN

Perceived Impact:

☐ RELATIVELY HIGH ☐ MODERATE ☐ RELATIVELY LOW ■ **NONE** ☐ UNKNOWN

Source: Pers Com: Rob Broker - Conservation Manager , Offshore Operations (EKZNW)

g) Other1 (from 1.4.1): **Chemical, explosive or stunning**

Fishing effort:

☐ RELATIVELY HIGH ☐ MODERATE ☐ RELATIVELY LOW ■ **NONE** ☐ UNKNOWN

Perceived Impact:

☐ RELATIVELY HIGH ☐ MODERATE ☐ RELATIVELY LOW ■ **NONE** ☐ UNKNOWN

Source: Illegal - Marine Living Resources Act

Pers Com: Rob Broker - Conservation Manager , Offshore Operations (EKZNW)

h) Other2 (from 1.4.1): **Inshore demersal sole & hake fishery ~ south coast (30 vessels)**

Fishing effort:

☐ RELATIVELY HIGH ☐ MODERATE ■ **RELATIVELY LOW** ☐ NONE ☐ UNKNOWN

Perceived Impact:

☐ RELATIVELY HIGH ☐ MODERATE ☐ RELATIVELY LOW ■ **NONE** ☐ UNKNOWN

Source: Demersal Trawling:
Petersen, S. (2008) Understanding Bycatch of vulnerable species. PhD thesis UCT.

Line fishery - incidental hooking of turtles:

1.4.3 Describe any illegal fishing that is known to occur in or around the waters of your country that may impact marine turtles. Describe the measures being taken to deal with this problem and any difficulties encountered in this regard. [TSH]

Across-boarder poaching (in protected areas) is a potential problem, especially by foreign longliners, trawlers and beach poaching. Even though "high tech" surveillance equipment is used, effective enforcement is difficult due to the remoteness (and border location).

The magnitude of non-turtle related illegal imports (drugs, goods, shells etc) ; it is making local law enforcement difficult; Law enforcement agencies can only concentrate on semi-commercial and commercial scale activities. Continuous "small-scale" imports are therefore ignored.

1.4.4 Which of the following methods are used by your country to minimise incidental capture/mortality of marine turtles in fishing activities? [IND]

a) **Appropriate handling** of incidentally caught turtles (e.g. resuscitation or release by fishers using equipment such as de-hooking, line cutting tools and scoop nets)

☐ YES ☐ NO ■ **NOT APPLICABLE**

No mitigation measures are required under the permit conditions of any of the legal fisheries specifically to reduce bycatch or turtle specific impacts.

TEDs, and circle hooks are not currently implemented, although there is one experimental fishery currently employing circle hooks. There is at least one vessel operating in the swordfish longline fishery currently employing (and testing) circle hooks

Bather protection (shark) nets are regularly inspected (~ daily) and all live bycatch is recorded and released.

Observers are onboard 10 - 20 % of the SA fishing fleet. However, few of the observers have been trained to deal with turtle bycatch especially in dehooking techniques etc.

b) **Devices that allow the escape of marine turtles** (e.g. turtle excluder devices (TEDs) or other measures that are comparable in effectiveness)

☐ YES ☐ NO ■ **NOT APPLICABLE**

Fennesy, S. / Oceanographic Research Institute with the help of industry evaluated the need and value of TEDs. The fishery is not large enough, and the turtle bycatch is not large enough to justify. However, general BRDs are supported (Fennessy & Isaksen 2007).

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Fennessey, S. & Isaksen, B. 2007. Can bycatch reduction devices be implemented successfully on prawn trawlers in the Western Indian Ocean - South African Journal of Marine Science 29(3): 453-463.

c) **Measures to avoid encirclement** of marine turtles in purse seine fisheries

☐ YES ☐ NO ■ **NOT APPLICABLE**

None.

d) **Appropriate combinations** of hook design, type of bait, depth, gear specifications and fishing practices

☐ YES ☐ NO ■ **NOT APPLICABLE**

Petersen, S. evaluated the impacts of longlining on vulnerable species. This thesis makes recommendations on mitigation. For sea turtles there are a range of measures that can be taken to reduce impact.

e) **Monitoring and recovery of fish aggregating devices** (FADs)

☐ YES ☐ NO ■ **NOT APPLICABLE**

Locally (on the east coast) regular law enforcement exercises are undertaken to remove all FADs encountered.

f) **Net retention and recycling schemes**

☐ YES ■ **NO** ☐ NOT APPLICABLE

Nothing for trawlers or purse seiners.

Only the lifting of shark nets during the annual sardine run where the potential for entanglement of target and non-target species (and resultantly net loss or damage) may be elevated.

g) **Spatial and temporal control of fishing** (e.g. seasonal closures of fishing activities)

☐ YES ■ **NO** ☐ NOT APPLICABLE

Nothing turtle specific - although the majority of nesting beaches and coral containing reefs are protected in MPAs.

An excellent network of marine protected areas exists with good spatial planning and the achievement of international biodiversity targets.

h) **Effort management control**

■ **YES** ☐ NO ☐ NOT APPLICABLE

All of the fisheries have capped effort either through a restricted number of rights holders or catch limits. However, none of these efforts are targeting sea turtles. There are however measures being implemented for sea birds i.e. maximum of 25 birds per annum. If this number is exceeded vessels must stop fishing.

Tugela banks prawn fishing closed from September to February i.e. includes peak summer - aimed at protecting recruitment of juvenile squaretail kob *(Argyrosomus thorpei)* and at reducing bycatch ~ 4 years / 6 years: Most likely benefiting developing green turtles.

☐ Other (list and explain):

☐ None of the above

1.4.5 Which of the following programmes has your country developed - in consultation with the fishing industry and fisheries management organisations - to promote implementation of measures to minimise incidental capture and mortality of turtles in national waters and in the high seas? [IND]

Onboard observer programmes

■ **YES** ☐ NO ☐ NOT APPLICABLE

Observers present on 10-20 % of all (SA flagged) and 100% of foreign commercial vessels fishing in SA waters. Observers are trained to collect fish bycatch and bird bycatch information rather that turtle info. Data collection on turtles is relatively scant and the release of (de-hooked) turtles poor, as observers are not specifically trained to handle incidentally-caught turtles.

Vessel monitoring systems

■ **YES** ☐ NO ☐ NOT APPLICABLE

All SA-flag commercial vessels are required to have VMS. It has a 5-year phased implementation scheme. It is now required for all fleets, but the commercial ski-boat sector. This is still to be implemented. VMS information is not very useful to protect turtles though other than it indicating whether fishing has taken place in protected areas or fisheries reserves.

Inspections (i.e. at sea, in port, at landing sites)

■ **YES** ☐ NO ☐ NOT APPLICABLE

The majority of vessels (from all fisheries) are only inspected in port. There is not a 100% coverage of these vessels either: the national inspection level is estimated to be ~ 80%. However, there is a large inconsistency along the South African coast in terms of enforcement. There is no national minimum requirement on monitoring authorities. Limited at-sea inspections and no high-seas monitoring is taking place. However, the Directorate Marine and Coastal Management along with SA Navy have increased their marine fleet and is in a position to enforce better offshore compliance.

Training programmes / workshops to educate fishers

■ **YES** ☐ NO ☐ NOT APPLICABLE

Awareness campaigns such as the Sustainable Sea Food Initiative is trying to educate both sellers of sea food as well as consumers to be more critical about their sea food choices. Issues such as by-catch impacts from longlining is addressed, although it is not turtle specific.

Training of compliance officers have taken place (as a Birdlife SA - WWF initiative) and awareness campaign for fishers was launched in Jan 2006 by BirdLife/WWF Responsible Fisheries Programme. Training of observers as well as compliance officers should however be expanded to before it can be effective.

Informative videos, brochures, printed guidelines etc.

■ **YES** ☐ NO ☐ NOT APPLICABLE

Sustainable Sea Food Initiative - National campaign with booklets & training courses. A practical guide to understanding and reducing vulnerable bycatch by Samantha Petersen (Birdlife SA and WWF) and a brochure Keeping or endangered marine life off the hook: Benefits to fishers and marine life by Samantha Petersen (BirdLife/WWF Responsible Fisheries Programme SA). However, this has been limited in scope.

Other (list and explain):

☐ YES ☐ NO ☐ NOT APPLICABLE

☐ **None of the above**

1.4.6 Are the mitigation measures described in 1.4.4 and 1.4.5, periodically reviewed and evaluated for their efficacy? [SAP]

■ **YES** ☐ NO ☐ UNSURE

Many of the programmes are still in the development phase and have not been evaluated. However, programmes such as the observer programme has proofed it use and is reviewed on a continuous basis since it is now managed by a company (CAPFISH) outside of the SA government and has to report back to government. (See http://www.capfish.co.za/index.htm for more information). CAPFISH has been involved in the observer programme since 1999.

1.4.7 In your country, what types of data collection, research and development have been undertaken to support the reduction of marine turtle incidental catch (while taking into consideration the impact of various mitigation measures on other species)? [SAP]

Birdlife SA & WWF have (jointly) reviewed the impacts of longlining and trawling on vulnerable species (S. Petersen's PhD thesis to be submitted in 2008). It assesses the impact of these sectors on vulnerable species including turtles.

Natal Sharks Board is collecting data on an ongoing basis to evaluate the impacts of shark nets (now partly replaced by drumlines) on target and non-target species. These figures are released annually with the season report for the nest protection programme by Ezemvelo KwaZulu Natal-Wildlife (EKZNW).

Birdlife SA & WWF have been trying to implement some experiment with circle hooks on some of the SA longlining vessels. This has proofed to be very difficult due to lack of buy-in from industry. It is believed that the first vessels are

equipped with circle hooks, but the first data is not available yet. Observer training is also improving and expanding.

Prawn trawl bycatch impacts have been under review for the last 5 years by the Oceanographic Research Institute. The SA prawn fishery is very small and not really justified to be monitored continuously. However, turtle bycatch can be reduced by the implementation of BRDs targeting elasmobranchs which are caught more frequently (Fennessy & Isaksen 2007).

Marine and Coastal Management (MCM) and partners are mapping the paths of leatherback turtles away from the nesting grounds using satellite tags to assess the spatial and temporal overlap of these migratory animals with fisheries.

1.4.8 Has your country exchanged information and provided technical assistance (formally or informally) to other Signatory States to promote the activities described in 1.4.4, 1.4.5 and 1.4.7 above? [SAP]

■ **YES** ☐ NO ☐ UNSURE

These exchanges have mostly been informally through activities of parastatals or NGOs.

BirdLife SA particularly has sent a country representative to attend and present at an IOTC bycatch working group meeting.

Birdlife SA has also developed and distributed material aimed at observers. This material was made available to representatives of neighbouring countries (Namibia and Mozambique particularly).

The Oceanographic Research Institute tested the efficacy of BRDs in local (South African and Mozambican prawn fisheries) and presented the results as 3 different events (two regional FAO workshops and a WIOMSA conference) attended by all of the WIO signatories and non-signatories.

1.4.9 What legislative and practical measures has your country taken in support of UN General Assembly Resolution 46/215 concerning the moratorium on the use of large-scale driftnets? [SAP]

Driftnets are banned in South Africa since 1998 when new legislation, the Marine Living Resources Act, came into effect.

1.5.1 Does your country have legislation to prohibit direct harvest and domestic trade in marine turtles, their eggs, parts and products; and to protect important turtle habitats? [IND]

■ **YES** ☐ NO ☐ UNSURE

Regulation 58(7) of the Marine Living Resources Act (1998) exercise control over turtles as a marine living resource providing full protection to turtles/products and their habitats 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."

A consequence of this regulation is that a permit is needed in terms of the MLRA to undertake any consumptive or non-consumptive (including research and ecotourism) activity pertaining to turtles. No permits are currently issued for any activities other than for (four) viewing ecotourism ventures, limited research and national aquaria to be in possession of turtles. This clause in the legislation is however not publicly well-known so occasionally people do end up with turtles/products in their possession, but since trade is hugely suppressed with no demand or market value, there is virtually no domestic trade in turtle/turtle products. If the animals are live strandings (including hatchlings) they are usually transported to aquaria where they are rehabilitated.

The MLRA also stipulated the inclusion of the nesting beaches and adjacent waters to a 3nm extend into a marine protected area which is now a world heritage site, the iSimangaliso National Park. Nesting and internesting areas are thus well protected, with relatively well controlled access to nesting beaches. Furthermore, 15-20 monitors are employed annually for the duration of the nesting season to patrol and protect eggs, turtles and hatchlings while on the beach.

1.5.2 Which, among the following list, are economic uses and cultural values of marine turtles in your country? Please rate the relative prevalence / importance of each consumptive or non-consumptive use. [INF]

USES / VALUES | **RELATIVE PREVALENCE / IMPORTANCE**

Meat consumption

■ **YES** ☐ NO ☐ HIGH ☐ MODERATE ■ **LOW** ☐ UNKNOWN

This was a use prior to 1963. The use of turtle meat has now been reduced to less than one turtle slaughtered per annum.

Egg consumption

■ **YES** ☐ NO ☐ HIGH ☐ MODERATE ■ **LOW** ☐ UNKNOWN

This was a use prior to 1963. The incidence of (attempted) nest raiding by people has dropped and is less than 5 per annum. (Nel, pers obs; EKZNW unpublished data).

Shell products

☐ YES ■ **NO** ☐ HIGH ☐ MODERATE ☐ LOW ☐ UNKNOWN

Extremely uncommon and no processed turtle shell products have been seen in any market in recent decades. (Nel, pers obs)

Fat consumption

☐ YES ■ **NO** ☐ HIGH ☐ MODERATE ☐ LOW ☐ UNKNOWN

(Nel pers obs)

Traditional medicine

■ **YES** ☐ NO ☐ HIGH ☐ MODERATE ■ **LOW** ☐ UNKNOWN

Data (from EKZNW resource use programme - traditional market surveys) indicate that the majority of turtle parts used in traditional medicine come from outside of the South African borders and not harvested domestically. Even then it is very low with only a few pieces (shell, eggs or skulls) seen at markets.

Eco-tourism programmes

■ **YES** ☐ NO ■ **HIGH** ☐ MODERATE ☐ LOW ☐ UNKNOWN

Between 4 - 8 tour operators have concessions in the iSNP, operate for approximately 90 days during the nesting season either through walk-on and drive concessions. The number of visitors viewing sea turtles per annum on concession tours is estimated to range between 5000 to 9000 pa. It is thus by far the most important activity related to sea turtles. All of the major aquaria in the country also host rehabilitated sea turtles, although none have a permanent turtle display/focus area.

Cultural / traditional significance

■ **YES** ☐ NO ☐ HIGH ■ **MODERATE** ☐ LOW ☐ UNKNOWN

The turtle monitoring programme was initiated because nesting numbers declined significantly and carcasses were visible at various places along the coast. The effect was that nesting numbers of turtles started to recover while incidents of slaughtering and nest raiding dropped significantly (despite increasing turtle numbers).

Similarly, the monitoring programme strived and depended on greater participation from local communities. The effects were that the monitoring programme employ and pay people that are otherwise subsistence farmers in the protected area. As the programme became more organised (from a community perspective) it also became more competitive.

Employment notices are sent into the community and interviews are conducted at the beginning of the season assessing particular basic skills. Successful candidates are then provided with the necessary identification gear (like programme t-shirts, caps, rain gear, torch lights, reflective vests and watches, as well as transport to town on month-end shopping days). The outcome was that there is now "authority" and "prestige" associated with turtle conservation, plus a limited amount of training (possibly increased employability) and support. As a consequence, approximately 15 - 20 house holds are thus directly supported off the monitoring programme with an additional ripple effect generating (indirect) income and opportunity for other members of the community (through craft and curio selling, carrying gear, guiding, domestic services and babysitting) by attracting turtle-viewing tourist to the area. The attitude/value has thus changed from "consumptive use" to a sustainable non-consumptive, conservation ethic.

One superstition that has remained though is that the high fecundity of turtles can be transferred to domestic animals. Sometimes turtle eggs are fed to chickens in the hope that the chickens will increase their production.

Other

1.5.3 Please indicate the relative level and impact of traditional harvest on marine turtles and their eggs. [IND, TSH]

Level of harvest:

☐ RELATIVELY HIGH ☐ MODERATE ■ **RELATIVELY LOW** ☐ NONE ☐ UNKNOWN

Impact of harvest:

☐ RELATIVELY HIGH ☐ MODERATE ■ **RELATIVELY LOW** ☐ NONE ☐ UNKNOWN

Source of information:

This must be reported as insignificant within the country. Reports are incidental with less than five incidents of any kind per annum.

It is assumed that the Southern African loggerhead and leatherback turtles are under pressure from traditional harvesting if they nest accross the boarder, or migrate to the feeding grounds.

[Monitor and compliance officer reports - EKZNW Unpublished data.]

1.5.4 Have any domestic management programmes been established to limit the levels of intentional harvest? [SAP]

■ **YES** ☐ NO ☐ UNKNOWN

No physical boarder barrier exists on the coastline between South Africa and Mozambique and it is very easy to move across from one country to the other. However, a very effective turtle monitoring and law enforcement (boarder control) programme exists in SA; Nesting beaches are patrolled nightly (and early morning) through-out the entire nesting and hatching season, for the entire peak nesting area which makes it difficult for any person (local or foreign) to harvest turtle/products. Vehicles moving through the boarder crossing are randomly inspected for any illegal/unregulated goods including turtle products.

More importantly, since the first (sub)regional workshop in Sodwana, South Africa in 1996, South Africa has supported a monitoring programme across the boarder around Ponto Du Oro/Melongane area. Apart from the original training a local Mozambique tour operator still receives flipper tags from SA. Monitoring and protection is then executed similarly to the SA programme.

A representative from SA also (now) participates in the southern Mozambique turtle working group meetings.

1.5.5 Describe any management agreements negotiated between your country and other States in relation to sustainable levels of traditional harvest, to ensure that such harvest does not undermine conservation efforts. [BPR]

No formal agreements. As per 1.5.4 the interactions are mostly informal taking place at a provincial/programme to programme level.

1.6.1 First, select one of the options at left to indicate whether or not your country has any of the following measures in place to minimise the mortality of eggs, hatchlings and nesting females. If yes, then estimate the relative effectiveness of these measures. [IND, SAP]

MEASURES	RELATIVE EFFECTIVENESS
Monitoring / protection programmes	
■ **YES** ☐ NO ☐ N/A	■ **EXCELLENT** ☐ GOOD ☐ LOW ☐ UNKNOWN

This is the strongest aspect of turtle conservation in South Africa. The programme was initiated in 1963 where the highest density rookery (8km) was monitored. Over time the area was expanded and 56km of beach is now monitored for 5 months of the year, either on foot or by vehicle. The consistent increase in the number of nests per season indicates that this programme is very successful.

Education / awareness programmes

■ **YES** ☐ NO ☐ N/A ☐ EXCELLENT ■ **GOOD** ☐ LOW ☐ UNKNOWN

Three particular programmes are currently in place:

a) a 3-day training programme for turtle monitors: this training is not limited to only monitoring skills, but include aspects of turtle biology, life history, threats, and potential conservation measures. It has been found that if monitoring and conservation is contextualised the outcomes of the monitoring programme is greater (data more reliable and consistent, fewer incidents etc.

b) a 1-day training programme for tour operators: the training is very similar to the monitor training and also cover turtle biology, life history and threats. The operator training then expands to cover appropriate behaviour and best practice principles of tourists around a turtle.

c) an Eco-School programme: this is a programme where community conservation officers work with teachers of two grade classes (one junior and one senior) at 10 schools in/around the iSNP. The school syllabus is modified and adapted to use sea turtles as a flagship to bring across different concepts. This message is not only one of conservation but it is used across disciplines; for example mathematics (calculating various population parameters), geography (using migratory routes to teach about ocean basin localities, countries, and capitals) etc. Monitor and tour operator training is conducted at the beginning of each season whereas the Eco-Schools have a 3-year focus period.

Most of the organised programmes are focussed around the conservation areas. The "general public" awareness raising is more on an ad hoc basis using every opportunity that is presented (like the 2006 YoT).

There is variable success to each of these efforts but the overall outcome seems good with some impact.

Egg relocation / hatcheries

☐ YES ☐ NO ■ **N/A** ☐ EXCELLENT ☐ GOOD ☐ LOW ☐ UNKNOWN

The long-term monitoring programme negates the current need for relocation/hatcheries. It was however used in the past when there was a serious threat to the main loggerhead rookery due to a potential harbour development. The future need for it is however consistently monitored and will be used if necessary.

Predator control

☐ YES ☐ NO ■ **N/A** ☐ EXCELLENT ☐ GOOD ☐ LOW ■ **UNKNOWN**

Currently under review as part of an MSc (by Boyes) evaluating hatching success of nests and eggs. Suspected to have a small impact due to natural predation which will not be managed/altered (at current levels).

Vehicle / access restrictions

■ **YES** ☐ NO ☐ N/A ■ **EXCELLENT** ☐ GOOD ☐ LOW ☐ UNKNOWN

Complete national ban of ORV in the coastal zone since 2002 with the exception of a few restricted sites stretching a few hundred meters in each case used for launching of small motorised crafts (ski boats).

Removal of debris / clean-up

■ **YES** ☐ NO ☐ N/A ■ **EXCELLENT** ☐ GOOD ☐ LOW ☐ UNKNOWN

There are three particular programmes:
a) The international beach clean-up day. This functions as a significant awareness raising day involving politicians, local authorities, schools etc. while cleaning up the beach. This event is generally very well organised and supported.
b) The Coast Care programme: takes place on an ongoing basis. Individuals from poor communities are employed to do various labour intensive, limited-skills tasks on the coast including beach cleaning and removal of alien vegetation. This is a multimillion rand, national programme but is particularly useful in parks and remote areas that do not receive such services from local authorities.
c) Municipal solid waste removal projects: are operating in all urban and peri-urban coastal towns. During peak holiday periods (like new year which overlap with turtle nesting and hatching) the programme is intensified and beaches are cleaned on a daily basis.

Re-vegetation of frontal dunes

■ **YES** ☐ NO ☐ N/A ■ **EXCELLENT** ☐ GOOD ☐ LOW ☐ UNKNOWN

All the turtle nesting habitat in SA is located in protected areas with restricted access and very low levels of development. There is however on occasion impacts on frontal dunes. The philosophy applied to date has been that if primary dunes are impacted through natural causes (like wind blow-outs or storm erosion) it has to self-rehabilitate. If the degradation is due to public access, trampling or driving it is rehabilitated through brush-packing and signage erected to redirect traffic, unless it is in a "sacrificial area". Sacrificial areas are areas that are in permanent use and instead of "rehabilitation", "mitigation" is used as a principle. This generally include hardening of ramps using natural material "ladders" across the sand to stabilise the area and redirecting the opening of ramps/access paths not to face into the predominant wind direction which could cause severe blow-outs.

Building location/design regulations

■ **YES** ☐ NO ☐ N/A ■ **EXCELLENT** ☐ GOOD ☐ LOW ☐ UNKNOWN

The turtle nesting beaches in SA have been proclaimed RAMSAR sites and protected areas since the mid-70's. The effect is that the coastal area is pristine with a maximum of 7 development nodes, 3 with <1km beach facing extent and 3 undetectable from the beach (out of ~ 180km). The only "not ideal" development is ironically the turtle management and research station (at Bhanga Nek). This is restricted to 3 houses facing the beach from the frontal dunes. All other developments are located behind primary or secondary dunes. Any new developments (irrespective of size) go through an Environmental Scoping procedure. Furthermore, a new Integrated Environmental Coastal Management Bill is under review will come into effect (as the Coastal Management Act) in the near future. This Bill/Act set out specific guiding principles and policies for all developments and activities along the coast.

Light pollution reduction

■ **YES** ☐ NO ☐ N/A ■ **EXCELLENT** ☐ GOOD ☐ LOW ☐ UNKNOWN

As per the previous two points, there are very few developments along the nesting beaches and those that are there are sheltered by frontal dunes. The developments around the nesting beaches are generally not on the national electricity grid and many require generators for electricity. The generators do not run past midnight forming a temporal escape from lights for turtles. The larger development nodes generally have sheltered lights.

Other (list and rate them)

☐ YES ☐ NO ☐ N/A

1.6.2 Has your country undertaken any evaluation of its nest and beach management programmes? [SAP]

■ **YES** ☐ NO ☐ NOT APPLICABLE

Turtle monitoring has been taking place annually since 1963. A Season Report is drafted annually highlighting the population nesting trends, shark net catches, tag returns as well as management problems experienced during the season. The report will provide feedback on each of the aspects listed above (if it was problematic). The report is an internal EKZNW report that is sent to all other authorities (Park Authority, Marine and Coastal Management etc) and donors.

OBJECTIVE II. PROTECT, CONSERVE AND REHABILITATE MARINE TURTLE HABITATS

2.1.1 What is being done to protect critical habitats *outside* of established protected areas? (NB: It is assumed that legislation relating to established protected areas will have been described in Section 1.5.1) [BPR, SAP]

Very little critical habitat exists outside of protected areas (that we are aware of), with <10 nests outside of protected areas per annum. Furthermore, legislation such as the Marine Living Resources Act and the National Environmental Management Act provide strict instruction as to how sensitive species and habitats should be treated irrespective of inside/outside of protected areas.

2.1.2 Are assessments routinely made of the environmental impact of marine and coastal development on marine turtles and their habitats? [IND, SAP]

■ **YES** ☐ NO ☐ NOT APPLICABLE

Existing programmes include:
> Annual turtle nest monitoring
> 5-yearly Systematic spatial conservation planning of the KwaZulu-Natal Province (C-Plan)
> Ongoing reef monitoring in the iSNP by the Oceanographic Research Institute

2.1.3 Is marine water quality (including marine debris) monitored near turtle habitats? If yes, describe the nature of this monitoring and any remedial measures that may have been taken. [SAP]

☐ YES ☐ NO ■ **NOT APPLICABLE**

River run-off is measured periodically by the Department of Water Affairs & Forestry (DWAF) although the input into the marine environment along the turtle beaches is not measured directly. The reason being that the nesting habitat is in a protected area with relatively low levels of adjacent development/industry/agriculture. It is thus not applicable.

2.1.4 Are measures in place to prohibit the use of poisonous chemicals and explosives? [SAP]

■ YES ☐ NO ☐ NOT APPLICABLE

Multiple pieces of legislation are in place as well as good enforcement thereof. Inter alia:
> Marine Living Resources Act 1998
> National Environmental Management Act No 107 of 1998
> [Waste Management Bill]
> Explosives Act 15 of 2003

2.2.1 Are efforts being made to recover degraded coral reefs? If yes, give details (location, duration, effectiveness, lessons learned, future plans etc). [IND, SAP]

☐ YES ☐ NO ■ **NOT APPLICABLE** (no degraded coral reefs)

There is no indication that the rocky reef covered in a coral veneer is degraded in SA. No extractive use is allowed on any of the coral reefs, and 2/3 of the coral reefs in SA are in not only in protected areas but sanctuary areas unavailable to public access.

2.2.2 Are efforts being made to recover degraded mangrove habitats that are important for turtles? If yes, give details (location, duration, effectiveness, lessons learned, future plans etc.) [IND, SAP]

☐ YES ☐ NO ■ **NOT APPLICABLE** (no mangrove habitats important for turtles)

Mangrove habitats are marginal in South Africa. They are relatively small and occur only in the mouths of a few estuaries. Some of the mangroves are under pressure from poor estuarine management practices; water abstraction has lead to a large fraction of the estuaries changing to temporary open-closed systems with a reduced tidal influence and being closed for extended periods of times. However, this habitat has not been of any importance to sea turtles in the past.

2.2.3 Are efforts being made to recover degraded sea grass habitats? If yes, give details (location, duration, effectiveness, lessons learned, future plans etc.). [IND, SAP]

☐ YES ☐ NO ■ **NOT APPLICABLE** (no degraded sea grass habitats)

Typical sea grass beds (mostly used by green turtles) are absent in SA. Sea grass occur only in the shallow sub-tidal margin on rocky habitats and in large intertidal rock pools. These habitats are restricted to the most northern part of the country, already protected in the World Heritage Site. There is no degradation of this habitat and thus no rehabilitation required.

OBJECTIVE III. IMPROVE UNDERSTANDING OF MARINE TURTLE ECOLOGY AND POPULATIONS THROUGH RESEARCH, MONITORING AND INFORMATION EXCHANGE

3.1.1 Give a list of available literature that includes baseline information from studies carried out in your country on marine turtle populations and their habitats. [INF]

McALLISTER, H.J., A.J. BASS, H.J. VAN SCHOOR. 1965. Marine turtles on the coast of the Tongaland, Natal. The Lammergeyer 3(2): 10-40.

HUGHES, G.R., A.J. BASS, M.T. MENTIS 1967. Further studies on the marine turtles in Tongaland I. The Lammergeyer 7: 5-54.

HUGHES, G.R., M.T. MENTIS 1967. Further studies on the marine turtles in Tongaland II. The Lammergeyer 7: 55-72.

HUGHES, G R. 1971. Preliminary report to the Southern Africa Wildlife Foundation (World Wildlife Fund) on the status of sea turtles in South East Africa. Section 2 : Madagascar and the Mascarenes. Parts 1 : Europa Island : 2 : South and South West Madagascar. O R I Special Report : 1-52.

HUGHES, G R. 1971. Sea turtle research and conservation in South Africa. I U C N Publ. New Series supp. Pap., (31) : 57-67.

HUGHES, G R. 1971. Preliminary report on the sea turtles and dugongs of Mozambique. Veterin. Mocambicana, 4(2) : 45-62.

HUGHES, G R. 1972. The olive ridley sea turtle (Lepidochelys olivacea) in South East Africa. Biol. Conserv., 4(2) : 128-134.

HUGHES, G R. 1972. Preliminary report to the Southern Africa Wildlife Foundation (World Wildlife Fund) on the status of sea turtles in South East Africa. Section 2 : Madagascar and the Mascarenes. Part 4 : Mauritius and the St Brandon turtle fishery. O.R.I. Special Report : 1-10.

HUGHES, G R. 1973. The survival situation of the hawksbill sea turtle (Eretmochelys imbricata) in Madagascar. Biol. Conserv., 5(1) : 41-45.

HUGHES, G R. , B. Huntley and D. Wearne, 1973. Sea turtles in Angola. Biol. Conserv., 5(1) : 92-93.

HUGHES, G R. 1973. The sea turtles of South East Africa. Thesis submitted for the degree of Doctor of Philosophy, University of Natal, Durban, 1-409.

HUGHES, G R. 1976. The green turtle fishery of St Brandon. Proc. Roy. Soc. Arts and Science Mauritius. III (2) : 165-189.

HUGHES, G R. 1976. Irregular reproductive cycles in the Tongaland loggerhead sea turtle, Caretta caretta L. Zool. Africana II (2) : 285-292.

HUGHES, G R. 1977. Sea turtles : a guide. Natal Parks Board, Pietermaritzburg, 1-22.

HUGHES, G R. 1978. Marine turtles. IN : Ed. A E F Heydorn. Ecology of the Agulhas Current Region. Proc. Roy. Soc. S. Afr. 43(2) : 151-190.

HUGHES, G R. 1978. Diving record for leatherback sea turtle. Lammergeyer, 26 : 64.

HUGHES, G R., and C. W. Sapsford, 1978. Body temperature of the loggerhead sea turtle Caretta caretta and the leatherback sea turtle Dermochelys coriacea during nesting. Zoo. Africana 13(1) : 63-69.

HUGHES, G R. 1982. Nesting cycles in sea turtles, typical or atypical - IN : Proc. "First World Conference on Sea Turtle Conservation" Ed. K. Bjorndal, Washington D.C. November 1979. pp 81-89.

HUGHES, G R. 1982. The conservation situation of sea turtle populations in the South African Region. IN : Proc. "First World Conference on Sea Turtle Conservation" Ed. K. Bjorndal, Washington D.C. November 1979. pp 297-303.

HUGHES, G R. , and J y LE GALL, 1987. Migration de la tortue verte Chelonia mydas a l'Ocean Indian a partir des marquages su les sites du ponte Europa and Tromelin (1970 1985) Amphibia Reptilia : 277-282.

HUGHES, G R. 1987. The Tongaland sea turtle research programme IN : (Eds. A P Bowmaker, D van der Zyl and J H Ridder). Marine Research in Natal Symposium, ORI, Durban, 10-11 Feb. 1986. CSIR SA Nat. Sc.P.Repr. No. 139 : 160-164.

BALDWIN R., G.R. HUGHES AND R.I.T PRINCE 2003. Loggerhead turtles in the indian ocean. (Chapter 14) In Bolten, A. B. Witherington B.E. (eds) Loggehead Sea turtles. Smithsonian Books, Washington. P218-232.

SCHLEYER, M. L. CELLIERS. 2005. Modelling reef zonation inthe Greater St Lucia Wetland Park, South Africa. Estuarine Coastal and Shelf Science 63:373-384

3.1.2 Have long-term monitoring programmes (i.e. of at least 10 years duration) been initiated or planned for priority marine turtle populations frequenting the territory of your country? [IND, BPR]

■ **YES** ☐ NO ☐ UNSURE

In 1963 a long-term monitoring programme was initiated, monitoring the nesting loggerhead and leatherback turtles over a 8km stretch of beach. In 1972 this area was expanded to 60km including the highest density areas of both these species.

Shark- net bycatch (outside of protected areas) have been monitored for ~ 20 years. This is the only consistent information on non-nesting species in SA (including green turtles, hawkbill and olive ridleys).

3.1.3 Has the genetic identity of marine turtle populations in your country been characterised? [INF, PRI]

■ **YES** ☐ NO ☐ UNSURE

Contributions to global studies:

BOWEN B.W., KAMEZAKI N., LIMPUS C.J., MEYLAN A.I. AND AVISE J.C., & HUGHES, G. 1994. Global phylogeography of the loggerhead turtle *(Caretta caretta)* as indicated by mitochondrial DNA haplotypes. Evolution 48 (6): 1820 - 1828.

DUTTON, P.H., B.W. BOWEN, D.W. OWENS A. BAQRRAGAN AND S.K. DAVIS. 1999. Global phylogeography of the leatherback turtle *(Dermochelys coriacea)*. J. Zool. Lond. 248:397-409.

The genetic identity of the marine turtles of the iSimangaliso Wetland Park will be determined between 2009 and 2012, by a postgraduate student of the Nelson Mandela Metropolitan University.

3.1.4 Which of the following methods have been or are being used to try to identify migration routes of turtles? Use the text boxes to provide additional details. [INF, PRI]

Tagging ■ **YES** ☐ NO

Approximately 5 tag returns are received per annum, mostly from loggerhead turtles.

Hughes, G.R. 1996. Nesting of the leatherback turtle (Dermochelys coriacea) in Tongaland, KwaZulu-Natal, South Africa : 1963-1995. Chel.Cons and biology. 1996 2(2) : 153 - 158

Hughes, G.R. 1996. The Status of Sea Turtle Conservation in South Africa. IN : Proc. Western Indian Ocean Workshop on Sea Turtles. Sodwana Bay, S. Africa. Nov. 12-18, 1995 UNEP Regional Seas Rept. & Stud. 165 : pp 95-102.

Satellite tracking ■ **YES** ☐ NO

A number of loggerhead and leatherback turtles have been tagged giving some indication of the migration routes of both nesting species. Leatherback tracking is ongoing as a partnership between MCM, NMMU and EKZNW.

HUGHES, G.R AND F. PAPI, 1997. Information on sea turtle navigation obtained by satellite tracking. IN : Orientation and Navigation - Birds, Human and other Animals. 1997 Spring Conf. Of Royal Inst. Of Navigation 21 - 23 April 1997. pp 10 (-1) - 10(7).

HUGHES, G.R AND F. PAPI, P. LUSCHI & E. CROSIO, 1997. Satellite tracing experiments on the navigational ability and migratory behaviour of the loggerhead turtle Caretta caretta.IN : Marine Biology (1997) 129 pp 215-220.

LUSCHI, P., J.R.E. LUTJEHARMS, P. LAMBARDI, R. MENCACCI, G.R. HUGHES AND G.C. HAYS. 2006. A review of migratory behaviour of sea turtles off south-eastern Africa.

Botha, M. 2007. Internesting behaviour of leatherback turtles (Dermochelys coriacea) in the Greater St Lucia Wetland Park. Unpublished Hons Project. NMMU, p32.

■ **Other**

Notching of loggerhead hatchlings:

Approximately 100 000 Cc hatchlings have been notched per annum for ~20 years. This provided some indication of the direction and the rate of dispersal of hatchlings in the few months after hatching.

☐ **None of the above**

3.1.5 Have studies been carried out on marine turtle population dynamics and survival rates (e.g. including studies into the survival rates of incidentally caught and released turtles)? [INF, PRI]

■ **YES** ☐ NO ☐ UNSURE

To construct a population model for any given sea turtle population seems simple especially since emigration/immigration factors can be excluded. However, the late maturing, complex life history and migratory behaviour make it very difficult to construct a reliable population model for sea turtles.

EKZNW (previously Natal Parks Board) have been monitoring nesting females for over 4 decades. This programme also had specific periodic experiments such as notching of many loggerhead hatchlings. Hughes (1974) provides a comprehensive overview of many of the parameters such as estimates for fecundity and reproductive output per female, that are used to construct population models. However, even with the estimates obtained from Hughes' work and the ongoing population monitoring there is still information lacking to construct a population model and estimate survival rate. A research programme (in partnership with various organisations) has been established to systematically address these uncertainties in order to model the population dynamics of loggerhead and leatherback turtles nesting along the beaches of KZN.

The research is therefore still ongoing and no estimates are available at this stage.

In order to assess the mortality/survival rates of incidentally captured (and released) turtles, it is recommended that turtles caught in shark nets, be tagged by the National Sharks Board/onboard observers before being released.

****

HUGHES, G R. 1974. The sea turtles of South East Africa. Unpublished PhD thesis, University of Natal, Durban, 1-409.

3.1.6 Has research been conducted on the frequency and pathology of diseases in marine turtles? [INF, PRI]

■ **YES** ☐ NO ☐ UNSURE

This has been limited. Only one study described some of the typical diseases developed by sea turtles in captivity (by Wendt 1988). Furthermore, all of the aquaria keep some form of a log of the injuries/problems/disease that they can identify as sea turtles come in for rehabilitation, or that they may develop while in captivity. This needs to be firmed-up though.

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WENDT, G.E. 1988. Growth and osmoregulatory studies of loggerhead turtles, Caretta caretta L. An Unpublished MSc thesis, UPE. Pp 138.

3.1.7 Is the use of traditional ecological knowledge in research studies being promoted? [BPR, PRI]

■ **YES** ☐ NO ☐ UNSURE

The national funding agency for research (National Research Foundation or NRF) has a specific programme that addresses traditional knowledge. The programme is only marginally useful for reasons unknown. There are no turtle-specific projects taken up in this programme.

3.2.1 List any regional or sub-regional action plans in which your country is already participating, which may serve the purpose of identifying priority research and monitoring needs. [INF]

Assistance with the establishment of the Western Indian Ocean Task Force (WIO MTTF).

3.2.2 On which of the following themes have collaborative studies and monitoring been conducted? Use the text boxes to describe the nature of this international collaboration or to clarify your response. Answer 'NO' if the studies/monitoring undertaken do not involve international collaboration. [INF, PRI]

a) Genetic Identity ■ **YES** ☐ NO ☐ NOT APPLICABLE

Bowen B.W., Kamezaki N., Limpus C.J., Meylan A.I. and Avise J.C., & Hughes, G. 1994. Global phylogeography of the loggerhead turtle (Caretta caretta) as indicated by mitochondrial DNA haplotypes. Evolution 48 (6) : 1820 - 1828.

DUTTON, P.H., B.W. BOWEN, D.W. OWENS A. BAQRRAGAN AND S.K. DAVIS. 1999. Global phylogeography of the leatherback turtle (Dermochelys coriacea). J. Zool. Lond. 248:397-409.

Skin samples are also collected of green turtles that area caught in shark nets or strand to be anaysed by France/Reunion.

b) Conservation status ■ **YES** ☐ NO ☐ NOT APPLICABLE

2005/6 Leatherback SWOT analysis.
2006 Loggerhead SWOT analysis.

Information sharing with southern Mozambique on nest monitoring.

c) Migrations ■ **YES** ☐ NO ☐ NOT APPLICABLE

HUGHES, G.R AND F. PAPI, 1997. Information on sea turtle navigation obtained by satellite tracking. IN : Orientation and Navigation - Birds, Human and other Animals. 1997 Spring Conf. Of Royal Inst. Of Navigation 21 - 23 April 1997. pp 10 (-1) - 10(7).

HUGHES, G.R AND F. PAPI, P. LUSCHI & E. CROSIO, 1997. Satellite tracing experiments on the navigational ability and

migratory behaviour of the loggerhead turtle Caretta caretta.IN : Marine Biology (1997) 129 pp 215-220.

LUSCHI, P., J.R.E. LUTJEHARMS, P. LAMBARDI, R. MENCACCI, G.R. HUGHES AND G.C. HAYS. 2006. A review of migratory behaviour of sea turtles off south-eastern Africa.

LAMBARDI, P, J.R.E. LUTJEHARMS, R. MENCACCI, G.C. HAYS, P. LUSCHI. 2008. Influence of ocean currents on long-distance movement of leatherback sea turtles in the Southwest Indian Ocean. Marine Ecology Progress Series 353: 289-301.

d) Other biological and ecological aspects ☐ YES ■ **NO** ☐ NOT APPLICABLE

■ **Other**

Partnership and informal agreement between Kelonia (previously Corail) and EKZNW (previously Natal Parks Board) for exchange of information, staff exhance and training.

3.3.1 List, in order of priority, the marine turtle populations in your country in need of conservation actions, and indicate their population trends. [PRI]

>Dermochelys coriacea:
Huge inter-annual nesting variation; although nests tend is stable with consistently between 100 - 400 nests per season. (~ 60 nests per annum in the 8km index area as opposed to 6 at inception)

Longlining seems to be the greatest current pressure.

>Caretta caretta:
Population increasing rapidly. Numbers have increased from ~ 250 to ~1750 nests per annum in a 8km index area over 40 years.

Long-lining is the biggest threat in the country boarders or from SA flagged vessels. Artisanal fisheries also expected to have a significant impact.

>Chelonia mydas and Eretmochelys imbricata:
Developmental area - population size unknown. The bather protection catches can be used as proxy to indicate trends. From this information both these species are assumed to have stable populations in the SA borders.

Neither of these species are hugely pressure from within South Africa with the greatest pressure from net fisheries (including ghost fishing). Could consider removing nets close to regular feeding grounds (such as the Tugela Banks). Need to learn more of population size and dynamics.

3.3.2 Are research and monitoring activities, such as those described above in Section 3.1 periodically reviewed and evaluated for their efficacy? [SAP]

■ **YES** ☐ NO ☐ UNSURE

The routine monitoring activities i.e. nest monitoring is conducted on an ongoing basis. It is evaluated for success and impact at the end of each season. The projects that are aimed at addressing specific questions - such as satellite tagging, genetics, nest fidelity etc are conducted as research projects. They are once-off until the question is addressed, or is only reviewed periodically.

The information obtained through research and monitoring is most credible for the nesting species (Cc & Dc) with scant information available on the non-nesting species (Ei, Cm & the occasional Lo).

3.3.3 Describe how research results are being applied to improve management practices and mitigation of threats (in relation to the priority populations identified in 3.3.1, among others). [SAP]

Wrt habitat conservation and incidental capture there is very little room for improvement on current management practices. Research is however conducted to ensure that the current observed trends can/will be maintained into the future. For example, ascertaining current levels of hatching success as oppose to (historically) only evaluating nesting

success.

Wrt incidental capture, fisheries practices and permit conditions can be considerably improved. However, a current research project (Petersen PhD) is evaluating the impacts of the most important fisheries. This in combination with the strandings information and shark net catches will provide an estimate of mortality which will be used in comprehensive population models for loggerhead and leatherback turtles.

3.4.1 Has your country undertaken any initiatives (nationally or through collaboration with other Range States) to standardise methods and levels of data collection? [BPR, INF]

■ **YES** ☐ NO ☐ UNSURE

Each of the different responsibilities and monitoring sectors are managed by different authorities. For example, all flipper tags are managed through EKZNW (including nest monitoring or aquaria rehabilitation), satellite tags, EEZ and high seas observer information by MCM (in combination with partners CAPFISH, WWF & Birdlife), prawn fisheries bycatch by ORI, and bather protection nets by NSB. These responsibilities were derived out of the functions of each authority and can not be replaced or duplicated by any other entity. However, the information is managed through an informal turtle working group that has been established. (Once a draft national policy is adopted this will become an official working group.). The results from each of these sectors are tabled annually for review and discussion. Furthermore, there is a very close working relationship and information exchange policy among these authorities which has a positive effect on turtle conservation.

3.4.2 To what extent does your country exchange scientific and technical information and expertise with other Range States? [SAP, IND]

☐ OFTEN (SYSTEMATICALLY) ■ **OCCASIONALLY** ☐ RARELY ☐ NEVER

3.4.3 If your country shares scientific and technical information and expertise with other Range States, what mechanisms have commonly been used for this purpose? Comment on any positive benefits/outcomes achieved through these interactions. [INF]

> South Africa and southern Mozambique try to have a close working relationship by inviting representatives to meetings/workshop that are of interest to both countries/programmes.

> South Africa also participates in (sub)regional activities/workshops such as the establishment of the WIO MTTF, or FAO workshops that can impact on regional conservation activities.

> South African scientist attend as many (sub)regional conferences/meetings e.g. WIOMSA to share information and lessons learned with the international audience.

> Two possible opportunities that could be expanded is a) joint multi-national research projects and b) cross-supervision of students doing post-graduate research in the (sub)region.

3.4.4 Does your country compile and make available to other countries data on marine turtle populations of a regional interest? [INF]

■ **YES** ☐ NO ☐ UNSURE

> The objective of South African research has always been publishing findings in international literature. With the retirement of the long-standing champion of turtle research and conservation in South Africa no information has been published in recent years. However, several post-graduate degrees are in progress as well as publications in preparations.

> South Africa (and EKZNW particularly) have always had an open information sharing policy and data has always been made available to any initiatives such as the SWOT reports.

> Nesting/tagging information is also shared with any contributor that reports a turtle tag return/citing, giving the full-history of the turtle.

OBJECTIVE IV. INCREASE PUBLIC AWARENESS OF THE THREATS TO MARINE TURTLES AND THEIR HABITATS, AND ENHANCE PUBLIC PARTICIPATION IN CONSERVATION ACTIVITIES

4.1.1 Describe the educational materials, including mass media information programmes that your country has collected, developed and/or disseminated. [INF, PRI]

Posters describing the nesting programme (in both English and Zulu)

Z-folder describing the turtle monitoring programme.

Regular Television coverage in natural science programmes (~6 pa)

Popular articles (~ 1pa)

News paper articles highlighting turtle nesting events (1/2 pa)

Training of monitors and concessionaires

Public talks to conservancies / donors

Eco-schools programmes

Scienctific Conferences

4.1.2 Which of the following groups have been the targets of these focused education and awareness programmes described in above in Section 4.1.1? [PRI, INF]

- ☐ Policy makers
- ■ **Fishing industry**
- ■ **Local/Fishing communities**
- ■ **Indigenous groups**
- ■ **Tourists**
- ■ **Media**
- ☐ Teachers
- ■ **Students**
- ■ **Military, Navy, Police**
- ■ **Scientists**
- ☐ Other:
- ☐ None of the above

* These programmes are targeting compliance officers and observers making them aware of impacts of long-lining on turtles (and other by-catch species) and signs for the use/disuse of mitigatory measures.

Students that are targeted are school children that are targeted through an ecoschool programme.

Local fishing communities are either operating as turtle monitors or concessionaires, or are targeting turtles for egg poaching. Both ways they require more training.

4.1.3 Have any community learning / information centres been established in your country? [BPR, SAP]

☐ YES ■ **NO**

Not per se. There are no centers where the public can freely visit or access turtle information or nesting sites. However, the (fairly exclusive) tourist lodges have targeted programmes where visitors can attend a talk presented before they go on a turtle trot/drive.

4.2 Alternative livelihood opportunities [IND, BPR] Describe initiatives already undertaken or planned to identify and facilitate alternative livelihoods (including income-generating activities) for local communities.

The livelihood issues especially around turtle nesting beaches are complex since turtle nesting beaches are in protected areas (a world heritage site) that has been under conservation for an extended time (~1965). The community therefore has a limited (recent) history of turtle use and is not depended on turtles for their livelihood. On the other hand the potential of - turtle specific alternative livelihood - opportunities have not been investigated and probably used to its potential.

The current initiatives that are utilized is by the community being employed in the monitoring programme for the nesting/hatching season (~ 5.5 months of the year, ~16-20 individuals). Two individuals are employed by their own community through walk concession operations (max of 30 clients per night for ~ 3 months of the year), and ~6-10 individuals are employed through other drive concessions to act as guides or assistants with tourists.

4.3.1 Describe initiatives already undertaken or planned by your country to involve local communities, in particular, in the planning and implementation of marine turtle conservation programmes. Please include details of any incentives that have been used to encourage public participation, and indicate their efficacy. [BPR, IND]

As per description above.

Some of the concessions participate in data collection / monitoring which make them unique in this regard. They take the public out while doing it, and therefore introduce them to turtles and the conservation and monitoring programme.

Public participation is encouraged by - adopt-a-turtle - programmes (by these concessions) where the public are buying a turtle tag and then receiving information on that turtle over time.

4.3.2 Describe initiatives already undertaken or planned to involve and encourage the cooperation of Government institutions, NGOs and the private sector in marine turtle conservation programmes. [IND, BPR]

The conservation actions have mostly been driven by parastatals (provincial conservation agency) and NGOs (WWF, Birdlife & Conservation trust). Private sector has been involved through paying for the right to drive on otherwise restricted beaches and expose the public to turtles. National Government has only recently (~ 3 years) been involved in supporting research and monitoring. It has therefore been a 'bottom-up' approach.

A national working group -- with representation from all these sectors -- will be established under a new dedicated national turtle conservation policy.

OBJECTIVE V. ENHANCE NATIONAL, REGIONAL AND INTERNATIONAL COOPERATION

5.1.1 Has your country undertaken a national review of its compliance with Convention on International Trade in Endangered Species (CITES) obligations in relation to marine turtles? [SAP]

☐ YES ■ **NO** ☐ NOT APPLICABLE

Data suggests that turtle trade through South Africa is of low importance. However, there is continous screening of import/export product since there is a large fraction of other (mostly non-marine) wildlife products moving through South Africa.

5.1.2 Does your country have, or participate/cooperate in, CITES training programmes for relevant authorities? [SAP]

■ **YES** ☐ NO ☐ NOT APPLICABLE

Although limited, and nothing turtle specific. Turtles are not common in international trade (as picked up through port inspections).

5.1.3 Does your country have in place mechanisms to identify international illegal trade routes (for marine turtle products etc.)? Please use the text box to elaborate on how your country is cooperating with other States to prevent/deter/eliminate illegal trade. [SAP]

■ **YES** ☐ NO ☐ NOT APPLICABLE

Yes - but limited. The marine species that are encountered are mollusc shells and hard and soft corals. These cases are investigated and if there are irregularities in permits etc. they are prosecuted. No cases re turtles have ever gone to court.

5.1.4 Which international compliance and trade issues related to marine turtles has your country raised for discussion (e.g. through the IOSEA MoU Secretariat, at meetings of Signatory States etc.)? [INF]

None.

5.1.5 Describe measures in place to prevent, deter and eliminate domestic illegal trade in marine turtle products, particularly with a view to enforcing the legislation identified in Section 1.5.1. [INF]

Little - mostly tolerated at the moment due to the low level of turtle products being available. (Although take/possession in the protected areas is taken very seriously and is prosecuted.)

5.2.1 Has your country already developed a national action plan or a set of key management measures that could eventually serve as a basis for a more specific action plan at a national level? [IND]

■ **YES** ☐ NO

A national conservation and management plan is being drafted outlining best practice as well as providing guidelines for data collection. This is happening in under the framework of a national policy that is being drafted simultaneously by national government and provincial authorities. Both these documents will still have to go through a public participation phase.

5.2.2 From your country's perspective, which conservation and management activities, and/or which particular sites or locations, ought to be among the highest priorities for action? [PRI]

Domestic:

Education & Awareness Programmes expanded (specifically targeting decision makers and industry) (4.1)

Partnership:

Incidental capture and mortality reduced (1.4)
Collaborative research (genetics, tag returns, satellite tagging) (3.1)
Action plans developed and implemented (throughout the WIO) (5.2)
Capacity building and training (throughout WIO) (5.4)
Efforts broaden to expand MoU membership (to include all WIO countries) (6.1)

5.2.3 Please indicate, from your country's standpoint, the extent to which the following local management issues require international cooperation in order to to achieve progress. [PRI]

Illegal fishing in territorial waters	☐ ESSENTIAL ■ **IMPORTANT** ☐ LIMITED ☐ NOT AT ALL
Incidental capture by foreign fleets	☐ ESSENTIAL ■ **IMPORTANT** ☐ LIMITED ☐ NOT AT ALL
Enforcement/patrolling of territorial waters	☐ ESSENTIAL ■ **IMPORTANT** ☐ LIMITED ☐ NOT AT ALL
Hunting/harvest by neighboring countries	■ **ESSENTIAL** ☐ IMPORTANT ☐ LIMITED ☐ NOT AT ALL
Poaching, illegal trade in turtle projects	☐ ESSENTIAL ☐ IMPORTANT ■ **LIMITED** ☐ NOT AT ALL
Development of gear technology	■ **ESSENTIAL** ☐ IMPORTANT ☐ LIMITED ☐ NOT AT ALL

Oil spills, pollution, marine debris	☐ ESSENTIAL ☐ IMPORTANT ■ **LIMITED** ☐ NOT AT ALL
Training / capacity-building	■ **ESSENTIAL** ☐ IMPORTANT ☐ LIMITED ☐ NOT AT ALL
Alternative livelihood development	☐ ESSENTIAL ☐ IMPORTANT ■ **LIMITED** ☐ NOT AT ALL
Identification of turtle populations	■ **ESSENTIAL** ☐ IMPORTANT ☐ LIMITED ☐ NOT AT ALL
Identification of migration routes	☐ ESSENTIAL ■ **IMPORTANT** ☐ LIMITED ☐ NOT AT ALL
Tagging / satellite tracking	■ **ESSENTIAL** ☐ IMPORTANT ☐ LIMITED ☐ NOT AT ALL
Habitat studies	■ **ESSENTIAL** ☐ IMPORTANT ☐ LIMITED ☐ NOT AT ALL
Genetics studies	■ **ESSENTIAL** ☐ IMPORTANT ☐ LIMITED ☐ NOT AT ALL

Mozambique - protection of nesting population & offshore habitats from illegal fishing. Namibia (outside of IOSEA but relevant to SA) - identification of leatherback populations frequenting the territorial waters of this species.

Overall equivalent application of best practice (banning of drift nets, gill nets), mitigatory actions (VMS, TEDs, long-lining time and speed of setting / release of caught turtles) data collection (Observer recordings).

5.3.1 Identify existing frameworks/organisations that are, or could be, useful mechanisms for cooperating in marine turtle conservation at the sub-regional level. Please comment on the strengths of these instruments, their capacity to take on a broader coordinating role, and any efforts your country has made to enhance their role in turtle conservation. [INF, BPR]

WIOMSA as a research forum.

WIO MTTF to ensure even implementation of the IOSEA CMP.

5.3.2 Has your country developed, or is it participating in, any networks for cooperative management of shared turtle populations? [BPR, INF]

■ **YES** ☐ NO ☐ NOT APPLICABLE

5.3.3 What steps has your country taken to encourage Regional Fishery Bodies (RFBs) to adopt marine turtle conservation measures within Exclusive Economic Zones (EEZs) and on the high seas? [SAP]

South Africa (through a Birdlife SA & WWF initiative) has processed observer data on impacts of longlining on non-target species. This was presented at the Borneo meeting (2005) which was the first meeting of the bycatch working group of the IOTC. Both of these NGOs are extremely active in the SA observer programme and with the relevant authorities (MCM) are training observers and compliance officers. They are also reviewing existing permit conditions to improve regulations and compliance.

5.4.1 Describe your country's needs, in terms of human resources, knowledge and facilities, in order to build capacity to strengthen marine turtle conservation measures. [PRI]

The country is fairly strong (based on the size of the populations and the impacts locally) on most aspects re turtle conservation and has an established history in monitoring. However, collaboration with expert scientists outside of the region will provide expertise that does not exists currently in the country. Moreover, it will enhance the rate of information permeation especially with respect to non-nesting species. Simultaneously, exposure and access to the latest bio/technology will be useful.

5.4.2 Describe any training provided in marine turtle conservation and management techniques (e.g. workshops held, training manuals produced etc.), and indicate your plans for the coming year. [PRI, INF]

Turtle monitor training - 3 day per annum before the nesting season begins

Concession training - 1 day per annum before tourist seasons begins.

EcoSchools training - building into the biology curriculum of local schools around the park.

Post graduate degrees - 1 PhD, 2 MSc's, and 1 Hons project.

Observer training - species identification, data collection, mitigatory measures & release of turtles (one day course)

Compliance officer training - one day workshop discussing legislation/permit conditions / mitigatory measures.

5.4.3 Specifically in relation to capacity-building, describe any partnerships developed or planned with universities, research institutions, training bodies and other relevant organisations. [BPR]

WWF (Green Trust) use to fund most of the education and awareness programmes and materials on the nesting grounds.

Birdlife SA & WWF is funding the training related to the offshore training.

National Government (MCM & NRF) is funding postgraduate research - although this is on a competitive basis.

5.5.1 National policies and laws concerning the conservation of marine turtles and their habitats will have been described in Section 1.5.1. Please indicate their effectiveness, in terms of their practical application and enforcement. [SAP, TSH]

Very effective especially in proportion to the demand. (Relatively low demand with high enforcement).

Marine Living Resources Act protects turtles as well as habitats by having all known important nesting and feeding sites in South Africa.

National policy still being drafted - this will outline best practice that is currently being used, but also brining in new principles.

5.5.2 Has your country conducted a review of policies and laws to address any gaps, inconsistencies or impediments in relation to marine turtle conservation? If not, indicate any obstacles encountered in this regard and when this review is expected to be done. [SAP]

■ **YES** ☐ NO ☐ UNSURE

New policy and management plan is being drafted (through a complex process). The country has had a long history of conservation management of turtles but it has not been formalized through national documents/processes. The policy should bring current practice, legislation and responsibilities in line. Should only be completed by 2010.

5.5.3 From the standpoint of law enforcement, has your country experienced any difficulties achieving cooperation to ensure compatible application of laws across and between jurisdictions? [TSH]

☐ YES ■ **NO** ☐ UNSURE

National perspective: turtle nesting is only taking place in one province (KZN) and conservation therefore originated in this province. It has been very successful. It is only recently that it has received national attention - through the two CMS MoUs that required national participation.

The level of importance of turtle conservation issues with our neighbouring countries are not on quite the same level (as it has been in KZN). No national committee/working group in place (yet) but it is expected to improve as awareness grows.

OBJECTIVE VI. PROMOTE IMPLEMENTATION OF THE MoU INCLUDING THE CONSERVATION AND MANAGEMENT PLAN

6.1.1 What has your country already done, or will it do, to encourage other States to sign the IOSEA MoU? [INF]

Invited participants to local (national workshops) as well as giving presentation to government officials of neighbouring states, but needs new attention.

6.1.2 Is your country currently favourable, in principle, to amending the MoU to make it a legally binding instrument? [INF]

☐ YES ☐ NO ■ **NO VIEW**

6.1.3 Would your country be favourable, over a longer time horizon, to amending the MoU to make it a legally-binding instrument? [INF]

■ **YES** ☐ NO ☐ NO VIEW

Will have to be reviewed in time, but it will only be useful if it can be enforced. It will also depend on the text of the agreement.

6.2 Secretariat and Advisory Committee

6.2.1 What efforts has your country made, or can it make, to secure funding to support the core operations of the IOSEA MoU (Secretariat and Advisory Committee, and related activities)? [IND]

SA provided financial support for the YoT activities.

6.3.1 What funding has your country mobilised for domestic implementation of marine turtle conservation activities related to the IOSEA Marine Turtle MoU? Where possible, indicate the specific monetary values attached to these activities/programmes, as well as future plans. [IND]

Turtle Nest Monitoring: ~Rand 0.5M pa
Observer Programme: ~Rand 1.0M pa (estimate)
Bather Protection Nest monitoring: ~Rand 2.0M pa (estimate)
Education and Awareness: ~Rand 0.1M pa (estimate)
Meetings (Coordination): Rand 0.04M pa
Research: ~Rand 0.25M pa

[1M Rand = approx./USD 130,000 in Feb 2008]

6.3.2 Has your country tried to solicit funds from, or seek partnerships with, other Governments, major donor organisations, industry, private sector, foundations or NGOs for marine turtle conservation activities? [IND]

■ YES ☐ NO

National funding sources quite successful. International unsuccessful.

6.3.3 Describe any initiatives made to explore the use of economic instruments for the conservation of marine turtles and their habitats. [BPR]

None.

6.4.1 Has your country designated a lead agency responsible for coordinating national marine turtle conservation and management policy? If not, when is this information expected to be communicated to the IOSEA MoU Secretariat? [IND]

■ **YES** ☐ NO

It is a national responsibility under the Department of Environmental Affairs, the specific directorate Marine & Coastal Management. Due to the long history and disparate interest from the provincial conservation agency since sea turtles nest in KwaZulu-Natal, it has been a "bottom-up" approach.

6.4.2 Are the roles and responsibilities of all government agencies related to the conservation and management of marine turtles and their habitats clearly defined? [IND]

☐ YES ■ **NO** ☐ UNSURE

National responsibility clearly defined (through the Marine Living Resources Act). However, the history indicate that the roles have been executed by other agencies depending on where the interest and expertise were. This is currently being addressed through the drafting of a national policy as well as a conservation and management plan which will clearly outline responsibilities and institutional arrangements.

6.4.3 Has your country ever conducted a review of agency roles and responsibilities? If so, when, and what was the general outcome? If not, is such a review planned and when? [SAP],

■ **YES** ☐ NO ☐ UNSURE

Continous discussion, not always turtle specific though. This is currently taking place through the drafting of the policy and management plan. (Aim for 2010).

Comments/suggestions to improve the present reporting format:

Additional information not covered above: