



Indian Ocean – South-East Asian Marine Turtle Memorandum of Understanding



South Africa

GENERAL INFORMATION

Agency or institution primarily responsible for the preparation of this report:

Department of Environmental Affairs: Oceans and Coasts Branch (Supported by)
Department of Zoology, Nelson Mandela Metropolitan University

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

iSimangaliso Wetland Park Authority
Ezemvelo KZN Wildlife, KwaZulu Natal; South Africa
Oceanographic Research Institute (NGO)
Birdlife - South Africa (NGO)
WWF - South Africa (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 developmental areas since most are immature turtles. About one or two olive ridleys are observed per annum as occasional strays, caught in shark nets or reported in strandings.

The best information exist for the nesting beaches and reefs in the iSimangaliso 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. This distance is monitored using night vehicle and foot patrols over a period of 5 months that include the entire nesting and hatching season. 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. A few in water surveys for non-nesting species (i.e. green and hawksbill turtles) have been undertaken. 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. Foreign vessels have 100% observer coverage whereas domestic vessels have no observers (currently) on board. Three post-graduate projects have analysed the data from the last 12 years identifying trends and threats. The forth post-graduate project is currently underway.

4. Environmental and Fisheries Legislation and Management:

- The environmental rights are enshrined in the Constitution of the Republic of South Africa (Act 108 of 1996). Therefore, the legal framework of both environmental and fisheries legislation reconfirms the State's responsibility of the environment on behalf of the country's inhabitants. Particular legal instruments include:

- National Environmental Management Act (NEMA) Act 107 of 1998):

NEMA ensures proper environmental protection through fair decision-making; sustainable utilisation of natural resources; general duty of care to prevent, control and rehabilitate the effect of significant pollution (including historic pollution) and makes it a criminal offence to cause significant pollution and environmental degradation; it also introduces cooperative governance of environmental governance with various governmental institutions (in this which are pertinent to the management and the conservation of marine turtles).

- National Environmental Management: Biodiversity Act (NEM:BA) (Act 10 of 2004):

Ensures the protection of both species and ecosystems as well as sustainable use of indigenous biological resources. --

- National Environmental Management: Protected Areas Act (NEM:PAA) (Act 57 of 2003):

Ensures the protection of the country's biological diversity (natural landscapes and seascapes). It also provides for the establishment of a national register of protected areas as well as the management thereof.

iSimangaliso Wetland Park has been declared a World Heritage Site according to the National Heritage Convention Act (Act 49 of 1999). Therefore, only limited activities (through a permitting system) are allowed within the Park.

- National Environmental Management: Integrated Coastal Management Act (NEM:ICMA) (Act 24 of 2008).

This Act aims to establish a system of integrated coastal and estuarine management in order to promote the conservation of the coastal environment and the maintenance of the natural attributes of coastal landscapes and seascapes for ecological, social and economical benefits. This act also outlines activities that are permissible at sea, controls dumping at sea and pollution in the coastal zone.

- The Marine Living Resources Act (MLRA) (Act 18 of 1998):

The MLR Act introduces regulating measures for the conservation of the marine ecosystem, the long-term sustainable utilisation of marine living resources and access to exploitation, utilisation and protection of certain marine living resources. This Act also specifically restricts all destructive gear (e.g. drift nets) and fisheries practices (dynamite or poison fishing). The legislative framework, like NEMA has strong emphasis on environmental sustainability.

South Africa has very strong environmental legislation protecting both the coast and marine environments with fairly good implementation and compliance with a rigorous permit evaluation process.

- South Africa is a Signatory State to numerous Multi-Lateral Agreements (MEA's) and Conventions aimed at the protection of marine turtles and the minimization of their threats. These MEA's and Conventions are:

- The Ramsar Convention on Wetlands of International Importance especially as Waterfowl Habitat (1972)

- The World Heritage Convention Concerning the Protection of the World Cultural and Natural Heritage (1972)

- The Convention on the International Trade in Endangered Species of Wild Fauna and Flora (1975) (CITES)

- The Convention on the Conservation of Migratory Species of Wild Animals (1979) (CMS)

- The Convention on the Conservation and Management of Fishery Resources in the South-East Atlantic Ocean (1982)

- The United Nations Law of the Sea Convention (1982) (UNCLOS)

- The Convention on Biological Diversity (1992) (CBD)

- The Code of Conduct for Responsible Fisheries (1995)

- The Convention on the Prevention of Marine Pollution by dumping of Wastes and Other Matter (1972) (The London Convention) and the 1996 Protocol

- Secretariat of the Climate Change Convention and the Kyoto Protocol (Bonn)

- International Union for the Conservation of Nature (The) (IUCN)

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 although South Africa was included in a global study by WWF - Money Talks.

Troeng, S., Drews, C., 2004. Money talks: economic aspects of marine turtle use and conservation. WWF-International, Gland, Switzerland: 41pp. Online at: <http://assets.panda.org/downloads/moneytalks.pdf>.

Activities:

Interactions with sea turtles takes primary place in iSimangaliso Wetland Park, hence the option for sustainable use is direct

and indirect. To deter unsustainable use, members from local subsistence communities are hired annually (for five months of the year) to act as turtle monitors and some are allocated the exclusive right to host guided beach tours (i.e. walk-on concessions). Indirect benefits are generated to the communities by a few exclusive lodges in or around iSimangaliso Wetland Park that have developed around the turtle nesting activities. These ventures pay for the exclusive right to take high-end tourists on exclusive vehicle drives (drive concessions). These lodges and ventures are obliged to employ members from the local or nearby communities and ideally develop a range of business, tourism and hospitality industry related skills.

Direct negative interactions in South Africa is no incidental (or accidental) although a concern is raised through increased recent interest in turtle products (through an increase in foreign nationals setting up small businesses in the area).

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. Most of these individuals live a subsistence lifestyle due to the remoteness of the area and a consequent lack of economic opportunities. However, the remoteness also provides a fantastic attraction for tourism with some unregulated developments erected. This is done by both locals as well as outsiders to the area with the intent of bringing more visitors and economic opportunities. Lately, infrastructure (particularly roads) have been upgraded facilitating access which makes access control more complicated. Despite significant effort by the local authorities (iSimangaliso and Ezemvelo) these developments however do not always go through proper authorisation or EIA procedures. However, individuals are eventually prosecuted especially if the effect is the destruction of biodiversity through habitat transformation and/or disturbance of turtles through unregulated beach use during nesting and hatching season, and indiscriminate use of lights.

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: Working for the Coast (previously 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 and Erratic – As catch per unit effort (CPUE) in the WIO shallow trawl fisheries continues to decline and consequently effort has also declined. South Africa had virtually zero shallow trawling effort in 2013 owing to poor prawn recruitment and poor prices for prawns. Deep water trawling along the east coast is at a low level. However, several new rights holders have been issued since beginning 2014 but are not yet operational. Approximately three active vessels of a possible max of 7. No observer programme on prawn vessels since 2010. Reports of prawn (and turtle catches) from the rest of the WIO region has also declined.

Generally though operational depth on the Tugela Bank is 10 - 50 m; Trawl duration is 4-6 hours. TEDs are not used. Grids to exclude elasmobranchs were introduced in 2006 which also exclude turtles.

Fennessy & Isaksen (2007) evaluated the use of BRDs (bycatch reduction devices) in 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.

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.

FENNESSY, S.T., VINCENT, X., BUDEBA, Y., MUENI, E. M. & GOVE, D. Z. 2008. An update on initiatives to reduce prawn trawl bycatch in the Western Indian Ocean. Western Indian Ocean Journal of Marine Science. 7(2): 217-222.

b) Set gill nets: YES NO

Detail:

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 Brazier et al 2012). 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 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.

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.

Brazier, W., Nel, R., Cliff, G., Dudley, S., 2012. Impact of protective shark nets on sea turtles in KwaZulu-Natal, South Africa, 1981-2008. African Journal of Marine Science 34, 249-257.

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

Detail:

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

Detail:

The fishery currently supports around 100 purse-seine vessels of which most are of the pelagic vessels are between 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.

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

Detail:

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 joint 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 2008).

Three post-graduate studies have been conducted on the impacts of longlines:

Samantha Petersen: Environmental impacts of longline fisheries on bycatch (UCT 2008)

Anje De Wet: Factors affecting mortality of loggerhead (*Caretta caretta*) and leatherback (*Dermochelys coriacea*) sea turtles of South Africa (NMMU 2013)

Darrell Anders: Spatial and temporal overlap between South African leatherback turtles (*Dermochelys coriacea*) and pelagic longliners fishing in the South African EEZ (CPUT, 2010)

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.L., Honig, M.B., Ryan, P.G., Nel, R., Underhill, L.G., 2009. Turtle bycatch in the pelagic longline fishery off southern Africa. African Journal of Marine Science 31, 87-96.

f) Driftnet: YES NO

Detail:

Illegal in South Africa with no evidence of transgressions.

g) Other1:

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

h) Other2:

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 and Isaksen evaluated the impacts of prawn trawl fisheries in South Africa and suggested this to be low despite the lack of the use of TEDs. However, recent evidence (i.e. increase in loggerhead nesting numbers coinciding with the decline in trawling) suggests that the historical impact might have been bigger than realised (Nel 2013).

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.

Nel, R., Punt, A.E., Hughes, G.R., 2013. Are Coastal Protected Areas Always Effective in Achieving Population Recovery for Nesting Sea Turtles? PLoS ONE 8, e63525.

b) Set gill nets

Fishing effort:

RELATIVELY HIGH **MODERATE** RELATIVELY LOW NONE UNKNOWN

Perceived Impact:

RELATIVELY HIGH **MODERATE** RELATIVELY LOW NONE UNKNOWN

Source: Young 2001, Brazier et al 2012, and Nel 2014 evaluated the impacts of the shark nets on sea turtles on the South African sea board. In all instances, the conclusions were that the impacts are not significant, and that the effort by the KZN Sharks Board leads to a continuous reduction in sea turtle mortalities in shark nets.

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.

Brazier, W., Nel, R., Cliff, G., Dudley, S., 2012. Impact of protective shark nets on sea turtles in KwaZulu-Natal, South Africa, 1981-2008. African Journal of Marine Science 34, 249-257.

Nel, R. 2014 50 Years of turtle conservation, monitoring and research: A state of knowledge report. Unpublished report to Ezemvelo KZN Wildlife. Pg43.

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 (Ezemvelo)

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: Petersen SL, Honig MB, Ryan PG, Nel R, Underhill LG (2009) Turtle bycatch in the pelagic longline fishery off southern Africa. African Journal of Marine Science 31: 87–96.

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

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

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 (Ezemvelo)

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 (Ezemvelo)

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

Details/future plans:

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.

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

Domestic observer programme halted since 2010. However, foreign vessels have 100% coverage with levels of training uncertain.

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**

Details/future plans:

Fennessy, 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).

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

Details/future plans:

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 resultant 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

Details/future plans:

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

Details/future plans:

Observers present on 10-20 % of all (SA flagged – although halted since 2010) and 100% of foreign commercial vessels fishing in SA waters. Observers are trained to collect fish bycatch and bird bycatch information rather than turtle info.

Data collection on turtles is relatively scant and the release of (de-hooked) turtles is 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

Details/future plans:

The majority of vessels (from all fisheries) are only inspected in port. There is limited coverage of these vessels. National level inspections are 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 Branch:Oceans and Coasts along with SA Navy have increased their marine fleet and is in a position to enforce offshore compliance. Current activities along the South African eastern seaboard include anti-piracy activities as well as fisheries permit inspections.

Training programmes / workshops to educate fishers

YES NO NOT APPLICABLE

Details/future plans:

Awareness campaigns such as the Southern African Sustainable Sea Food Initiative (<http://www.wvfsassi.co.za/?m=1>) 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 before it can be effective.

Informative videos, brochures, printed guidelines etc.

YES NO NOT APPLICABLE

Details/future plans:

Southern African Sustainable Sea Food Initiative - National campaign with booklets & training courses (available on <http://www.wvfsassi.co.za/?m=1>).

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 with no activities since 2005.

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 were developed but were never implemented since 2010 or tested phase and have not been evaluated.

The observer programme outsourced by the fisheries department to a private company (CAPFISH) has been halted since 2010. (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 (see Petersen et al 2009). It assessed 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 (Ezemvelo) (see Brazier et al 2012, and Nel 2014).

Birdlife SA in partnership with WWF South Africa tried to implement experiments with circle hooks on some of the SA longlining vessels. This has proved to be very difficult due to lack of buy-in from industry.

Prawn trawl bycatch impacts have been under review for the last 10 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). Oceans and Coasts (O&C) 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.

Brazier, W., Nel, R., Cliff, G., Dudley, S., 2012. Impact of protective shark nets on sea turtles in KwaZulu-Natal, South Africa, 1981-2008. African Journal of Marine Science 34, 249-257.

Nel, R., 2014. 50 Years of turtle conservation, monitoring and research: a state-of-knowledge report. Ezemvelo KZN Wildlife, Nelson Mandela Metropolitan University, p. 43.

Petersen, S.L., Honig, M.B., Ryan, P.G., Nel, R., Underhill, L.G., 2009. Turtle bycatch in the pelagic longline fishery off southern Africa. African Journal of Marine Science 31, 87-96

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.

All of these activities were pre-2010 with nothing new since.

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 Wetland 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.

- The National Environmental Management Act (NEMA) (Act 107 of 1998) is the overarching environmental legislation. The NEMA has six Specific Environmental Management Acts (SEMA's), among them are the Biodiversity Act (Act 10 of 2004) and the Protected Areas Act (Act 57 of 2003).

-- National Environmental Management: Biodiversity Act (NEM:BA) (Act 10 of 2004) ensures the management and protection of species and ecosystems.

----- Section 51-57 (Chapter 4): Addresses Threatened or Protected species and ecosystems. This is to ensure that these species are protected to ensure their ecological integrity and species survival. The Threatened or Protected Species (ToPS) Regulation (instituted under NEM:BA) is currently under review. However, Section 56 (1) stipulates that any activity involving a specimen listed threatened or protected species requires a permit.

----- Chapter 7 of NEM:BA gives clear directions regarding the permit process. This further ensures that the harvesting of turtles and its derivatives are protected.

-- National Environmental Management: Protected Areas Act (Act 57 of 2003) Provides for the protection and conservation of ecologically viable areas representative of the biological diversity.

iSimangaliso Wetland Park has been declared a World Heritage Site under the World Heritage Convention (Act 49 of 1999). The NEM:PAA makes provision in Section 50 for the Management Authority of a protected area to allow for any commercial activity within the protected area provided that it may not impact negatively on the survival of any species or significantly disrupt the integrity of the ecological system of the protected area. In terms of the marines turtles, harvesting was banned in Kwa-Zulu -Natal by the Natal Coastal Fisheries Ordinance (Hughes, 1989). Due to the low levels of breeding females, any harvesting of marine turtles or any of its eggs, parts or products will result in an illegal activity.

The combination of this legislation ensures that the turtles, its eggs, parts and products and turtle habitats are fully protected according to the country's environmental legislation. South Africa is also a Signatory to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) for about 40 years, ensuring that these sentiments are upheld across our borders insofar possible.

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

The conservation and monitoring programme was introduced in 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; Ezemvelo unpublished data; S. Kyle pers comm 2014).

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 Ezemvelo 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 iSimangaliso which 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 in 1963 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; Nel et al 2013). 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. (R Kyle pers comm).

Nel, R., Punt, A.E., Hughes, G.R. (2013) Are Coastal Protected Areas Always Effective in Achieving Population Recovery for Nesting Sea Turtles? PLoS ONE 8, e63525.

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:

De Wet, A., 2013. Factors affecting survivorship of loggerhead (*Caretta caretta*) and leatherback (*Dermochelys coriacea*) sea turtles of South Africa, Zoology Department. Nelson Mandela Metropolitan University, Port Elizabeth, p. 196.

Nel, R., Punt, A.E., Hughes, G.R. (2013) Are Coastal Protected Areas Always Effective in Achieving Population Recovery for Nesting Sea Turtles? PLoS ONE 8, e63525.

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

YES NO UNKNOWN

No physical barrier exists on the coastal boarder between South Africa and Mozambique and it is easy to move between countries.

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 border 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 border 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 since 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.

A Peace Park (Africa's first Trans Frontier Marine Park) has been created between Mozambique and South Africa including the bulk of the turtle nesting area. This park arrangement facilitate close co-operation on across border law enforcement activities.

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.

Nel, R., 2014. 50 Years of turtle conservation, monitoring and research: a state-of-knowledge report. Ezemvelo KZN Wildlife, Nelson Mandela Metropolitan University, p. 43.

Nel, R., Punt, A.E., Hughes, G.R., 2013. Are Coastal Protected Areas Always Effective in Achieving Population Recovery for Nesting Sea Turtles? PLoS ONE 8, e63525.

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).

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 was in place. This programme targeted teachers of two grade classes (one junior and one senior) at 10 schools in/around iSimangaliso. The school syllabus is modified and adapted to use sea turtles as a flagship to bring across different concepts. However, this programme is replaced with regular contact between the conservation officer tasked with Community Conservation visiting each school in iSimangaliso informing them about sea turtles and related conservation issues. This message is also expanded to visitors to the Park during peak holidays.

Monitor and tour operator training is conducted at the beginning of each season whereas the school activities takes place on an ongoing basis. Most of the organised programmes are focussed around the conservation areas. This totals to presentations to ~21 schools, 25 groups mainly tourists but Ezemvelo staff.

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

Was evaluated by De Wet (2013) indicating low levels of predation and high levels of hatching and emergence success for both loggerhead and leatherback turtles.

De Wet, A., 2013. Factors affecting survivorship of loggerhead (*Caretta caretta*) and leatherback (*Dermochelys coriacea*) sea turtles of South Africa, Zoology Department. Nelson Mandela Metropolitan University, Port Elizabeth, p. 196.

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 Working for the Coast programme. This 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 Act has been past protecting the coast and 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 Ezemvelo report that is sent to all other authorities (Park Authority, Oceans and Coasts etc) and donors. A full review of populations trends took place in 2010 which produced two academic publications.

Nel, R., Punt, A.E., Hughes, G.R., 2013. Are Coastal Protected Areas Always Effective in Achieving Population Recovery for Nesting Sea Turtles? PLoS ONE 8, e63525.

Thorson, J.T., Punt, A.E., Nel, R., 2012. Evaluating population recovery for sea turtles under nesting beach protection while accounting for nesting behaviours and changes in availability. Journal of Applied Ecology 49, 601-610.

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 National Spatial Biodiversity Assessment and KwaZulu-Natal's spatial use and habitat status (C-Plan)
- Ongoing reef monitoring in iSimangaliso by Ezemvelo and 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 & Sanitation (DWS) 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 (Act 18 of 1998)
- National Environmental Management Act No 107 of 1998
- National Environmental Management: Waste Act (Act 59 of 2008)
- Explosives Act (Act 15 of 2003)
- Hazardous Substances Act (Act 15 of 1973)

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)

Details/future plans:

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 not only in protected areas but and 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)

Details/future plans:

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 led 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]

New Literature

Shamblin, B.M., A.B. Bolten, F. A. Abreu-Grobois, K.A. Bjorndal, L. Cardona, C.C. Carreras, M. Clusa, C. Monzón-Argüello, C.J. Nairn, J.T. Nielsen, Ronel Nel, L.S. Soares, K.R. Stewart, O. Türkozan, Peter H. Dutton. (2014) Loggerhead turtle phylogeography and stock structure revisited with expanded mitochondrial control region sequences. PLoS ONE 9(1): e85956.

Tucek J., Nel R, Girandot, M & Hughes, G. (2014) Estimating reproductive age and size of loggerhead sea turtles. Endangered Species Research 23:167-175.

Linda Harris, Eileen Campbell, Ronel Nel, and David Schoeman. In Press. Diversity and Distributions. Sandy-beach biodiversity reveals surprising patterns in richness and endemism.

Nel, R., Punt, A.E., Hughes, G.R. (2013) Are Coastal Protected Areas Always Effective in Achieving Population Recovery for Nesting Sea Turtles? PLoS ONE 8, e63525.

De Wet, A., 2013. Factors affecting survivorship of loggerhead (*Caretta caretta*) and leatherback (*Dermochelys coriacea*) sea turtles of South Africa, Zoology Department. Nelson Mandela Metropolitan University, Port Elizabeth, p. 196.

Brazier, W., R. Nel, G. Cliff, & S. Dudley (2012). Impact of protective shark nets on sea turtles in KwaZulu-Natal, South Africa: 1981-2008. Afr. J. Mar Sci Vol 34(2):249-257.

Thornson, James T., Andre E. Punt and Ronel Nel (2012). Evaluating population recovery for sea turtles under nesting beach protection using a robust-design multi-state tag-resighting model to approximate skip-nesting and temporary emigration behaviours. J. App. Ecology, 49(3):601-610.

Boonzaaier, M.K., 2011. The effect of incubation temperature on hatching success and hatchling sex ratios of loggerhead turtles (*Caretta caretta*) in KwaZulu-Natal, South Africa, Zoology. Nelson Mandela Metropolitan University, Unpublished Thesis, p. 111.

Petersen, S., M.B. Honig, P.G. Ryan, R. Nel, L.G. Underhill 2009. Turtle Bycatch in the pelagic longline fishery off southern Africa. African J. Marine Science : 31(1):87-95.

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 Iindian 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 in the 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, hawksbill and olive ridleys).

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

YES NO UNSURE

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. BAQRAGAN AND S.K. DAVIS. 1999. Global phylogeography of the leatherback turtle (*Dermochelys coriacea*). *J. Zool. Lond.* 248:397-409.

Shamblin, B.M., A.B. Bolten, F. A. Abreu-Grobois, K.A. Bjorndal, L. Cardona, C.C. Carreras, M. Clusa, C. Monzón-Argüello, C.J. Nairn, J.T. Nielsen, Ronel Nel, L.S. Soares, K.R. Stewart, O. Türkozan, Peter H. Dutton. (2014) Loggerhead turtle phylogeography and stock structure revisited with expanded mitochondrial control region sequences. *PLoS ONE* 9(1): e85956.

The genetic identity of the marine turtles of the iSimangaliso Wetland Park is underway at 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

Details/future plans:

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.

Nathan J. Robinson, Stephen J. Morreale, Santosh Bachoo, Deon Kotze, Steven McCue, Mike Meyer, Herman Oosthuizen, Ronel Nel, Frank V. Paladino. (In Prep) Stable isotope analysis and satellite telemetry reveal the migratory behaviour of leatherback and loggerhead turtles in southern Africa and the consequences of using high-drag biologging devices.

Satellite tracking YES NO

Details/future plans:

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 Oceans and Coasts, NMMU and Ezemvelo.

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. The following publication has been produced from this.

Tucek J., Nel R, Girandot, M & Hughes, G. (2014) Estimating reproductive age and size of loggerhead sea turtles. *Endangered Species Research* 23:167-175.

Current research projects:

Post Doc: Dr Linda Harris – Identifying of sites of importance for sea turtles in the WIO using marine spatial planning tools.

PHD: Jenny Tucek – Recovery potential of loggerhead and leatherback turtles nesting in South Africa.

MSc's:

Marinus Du Preez – Contaminants contained in sea turtle eggs. (Supervisor Prof Henk Bouwman, UNW).

Bernice Mellet – Ecological Risk Assessment of sea turtles in fisheries in the Indian Ocean.

Ryan Rambaran – Ecological Role of sea turtles in iSimangaliso Wetland Park.

Diane Le Gouvello - The fate and effect of nutrients introduced by sea turtle nests on sandy beach ecosystems.

BTech: Darrell Anders: Spatial and temporal overlap between South African leatherback turtles (*Dermochelys coriacea*) and pelagic longliners fishing in the South African EEZ (CPUT, 2010).

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

Hughes (1974) provides a comprehensive overview of many of the parameters such as estimates for fecundity and reproductive output per female. This has been re-evaluated after 30 years by a PhD student. There is also some indication of survival rates of turtles caught in shark nets (which differ among species), but this has not been evaluated formally in South African fisheries.

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. The pollution load in sea turtle eggs is currently being investigated in collaboration with another university in South Africa.

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]

South Africa was instrumental in the establishment of the Western Indian Ocean Marine Turtle Task Force. Through the activities of the WIO MTTF sites of importance have been identified, along with periodic reviews of the regional priorities and work plans.

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

Details/future plans:

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. BAQRAGAN AND S.K. DAVIS. 1999. Global phylogeography of the leatherback turtle (*Dermochelys coriacea*). *J. Zool. Lond.* 248:397-409.
Shamblin, B.M., A.B. Bolten, F. A. Abreu-Grobois, K.A. Bjorndal, L. Cardona, C.C. Carreras, M. Clusa, C. Monzón-Argüello, C.J. Nairn, J.T. Nielsen, Ronel Nel, L.S. Soares, K.R. Stewart, O. Türkozan, Peter H. Dutton. (2014) Loggerhead turtle phylogeography and stock structure revisited with expanded mitochondrial control region sequences. *PLoS ONE* 9(1): e85956.

Skin samples are also collected of green turtles that area caught in shark nets or strand to be analysed by France/Reunion. Currently there is also a collaborative programme underway with Kelonia that is evaluating the genetic composition of loggerhead turtles in the WIO.

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

Details/future plans:

2005/6 Leatherback SWOT analysis.
2006 Loggerhead SWOT analysis.
Information sharing with southern Mozambique on nest monitoring.

c) Migrations **YES** NO NOT APPLICABLE

Details/future plans:

A current programme is underway in South Africa (with three collaborating organizations) as well as a collaboration with researchers from the USA. A draft publication is titled:
Nathan J. Robinson, Stephen J. Morreale, Santosh Bachoo, Deon Kotze, Steven McCue, Mike Meyer, Herman Oosthuizen, Ronel Nel, Frank V. Paladino. (Submitted) Stable isotope analysis and satellite telemetry reveal the migratory behaviour of leatherback and loggerhead turtles in southern Africa and the consequences of using high-drag biologging devices.

Previous publications include:
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

Details/future plans:

Researchers in South Africa participated in a contract to evaluate the impacts of sea turtles by tuna and tuna related fisheries in the Indian Ocean and Atlantic Regions in 2013.

Other

Partnership and informal agreement between Kelsonia and Ezemvelo (previously Natal Parks Board) for exchange of information, and occasional staff exchange 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 trend 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 doubled since the initiation of protection. Long-lining is the biggest threat in the country borders 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 under 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).

There is an active university research programme reviewing monitoring results and integrating information from various projects. (See Nel 2014).

Nel, R., 2014. 50 Years of turtle conservation, monitoring and research: a state-of-knowledge report. Ezemvelo KZN Wildlife, Nelson Mandela Metropolitan University, p. 43.

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]

With regards to habitat conservation 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.

With regards to incidental capture, fisheries practices and permit conditions can be considerably improved. A new governmental branch (Ocean Conservation Strategies) has been tasked with drafting a new turtle management and conservation plan. This will also provide for offshore regulations so that turtles can be adequately protected offshore.

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

South Africa was instrumental in the establishment of the Western Indian Ocean Marine Turtle Task Force which hosted the 4th WIO MTTTF regional meeting. Amongst other issues, standardization of monitoring protocols and prioritization was discussed. (Report available on http://www.ioseaturtles.org/pom_detail.php?id=128).

Partnership and informal agreement between Kelsonia and Ezemvelo (previously Natal Parks Board) for exchange of information, and occasional staff exchange and training.

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 MTTTF, 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 as well as contribute reports to the IOSEA website and report data base.

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]

Details/future plans:

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 or web articles articles (~ 1pa)
Newspaper articles highlighting turtle nesting events (1/2 pa)
Training of monitors and concessionaires
Public talks to conservancies / donors / public / schools
Eco-schools programmes
Scientific 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 migratory measures.
School children that are targeted through the Community Conservation programme around iSimangaliso. Local fishing communities are either operating as turtle monitors or concessionaires.

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. Also a flagship research programme has been established at NMMU (Port Elizabeth) with a number of provincial aquaria hosting turtle rehabilitation and awareness programmes.

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 alternative 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 are currently growing as access to the area improve, and capacity and economic means of the local population increases. 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. Other tourist related activities (like community accommodation camps etc) are now being developed.

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, the local community in the Park that is dependent on economic opportunities from within the park and are included in the planning and prioritization of activities (e.g. community monitors and walk-on concessions). Further, 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]

Conservation, monitoring and research in South Africa is driven by the national and provincial government entities. These are Department of Environmental Affairs: Oceans and Coast Branch, Ezemvelo KZN Wildlife, iSimangaliso Wetland Authority, and KZN Sharks Board.

NGOs (WWF, Birdlife and Conservation trust) have historically been involved especially regarding particular themes. Private sector has been involved through operating hospitality industry within the park and paying for the right to drive on otherwise restricted beaches and expose the public to turtles.

Research is mostly driven and coordinated by Nelson Mandela Metropolitan University.

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 continuous screening of import/export product (at harbours, airports and border crossings) since there is a large fraction of other (mostly non-marine) wildlife products moving through South Africa. There are 15 designated ports through which legal, permitted exports of CITES products may take place.

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

YES NO NOT APPLICABLE

Ongoing, although limited, and nothing turtle specific. The latest training session for CITES officers took place in March 2014. Turtles are not common in international trade (as picked up through port inspections). However, under the national environmental legislation, leatherback, hawksbill and loggerheads are listed as "critically endangered" and therefore do receive specific attention during 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 - (covert) but turtles have not been identified as problem species. The marine species that are encountered include mollusc shells and hard and soft corals. These cases are investigated and if there are irregularities in permits etc. they are prosecuted. No cases of international turtle trade transgressions have been reported or gone to court. However, one case of domestic poaching did and a five-year jail sentence was awarded.

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 to date – Precaution, however, must be taken as there is a potential for local (illegal) market on the SA/Mozambique border.

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]

Turtle poaching although largely under control has surfaced again in the last few nesting seasons with 1 – 5 turtles poached per annum. It is alleged that these products are sold to foreign nationals. One person, from a nearby community, was apprehended in 2010 and received a five-year jail sentence. Any take/possession of turtle products from 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 Biodiversity Management Plan (BMP) for Turtles is currently being developed. An action plan will form part of the BMP. The Action Plan will also incorporate actions from both the IOSEA and Atlantic Turtle MoU's. Once the draft BMP for Turtle is finalized, it will follow the gazetting process which includes the Public Participation Process. The first draft is expected to

be gazetted for public participation process in early 2015.

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]

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	<input type="checkbox"/> ESSENTIAL <input checked="" type="checkbox"/> IMPORTANT <input type="checkbox"/> LIMITED <input type="checkbox"/> NOT AT ALL
Incidental capture by foreign fleets	<input type="checkbox"/> ESSENTIAL <input checked="" type="checkbox"/> IMPORTANT <input type="checkbox"/> LIMITED <input type="checkbox"/> NOT AT ALL
Enforcement/patrolling of territorial waters	<input type="checkbox"/> ESSENTIAL <input checked="" type="checkbox"/> IMPORTANT <input type="checkbox"/> LIMITED <input type="checkbox"/> NOT AT ALL
Hunting/harvest by neighboring countries	<input checked="" type="checkbox"/> ESSENTIAL <input type="checkbox"/> IMPORTANT <input type="checkbox"/> LIMITED <input type="checkbox"/> NOT AT ALL
Poaching, illegal trade in turtle projects	<input type="checkbox"/> ESSENTIAL <input checked="" type="checkbox"/> IMPORTANT <input type="checkbox"/> LIMITED <input type="checkbox"/> NOT AT ALL
Development of gear technology	<input checked="" type="checkbox"/> ESSENTIAL <input type="checkbox"/> IMPORTANT <input type="checkbox"/> LIMITED <input type="checkbox"/> NOT AT ALL
Oil spills, pollution, marine debris	<input type="checkbox"/> ESSENTIAL <input checked="" type="checkbox"/> IMPORTANT <input type="checkbox"/> LIMITED <input type="checkbox"/> NOT AT ALL
Training / capacity-building	<input checked="" type="checkbox"/> ESSENTIAL <input type="checkbox"/> IMPORTANT <input type="checkbox"/> LIMITED <input type="checkbox"/> NOT AT ALL
Alternative livelihood development	<input type="checkbox"/> ESSENTIAL <input type="checkbox"/> IMPORTANT <input checked="" type="checkbox"/> LIMITED <input type="checkbox"/> NOT AT ALL
Identification of turtle populations	<input type="checkbox"/> ESSENTIAL <input checked="" type="checkbox"/> IMPORTANT <input type="checkbox"/> LIMITED <input type="checkbox"/> NOT AT ALL
Identification of migration routes	<input type="checkbox"/> ESSENTIAL <input type="checkbox"/> IMPORTANT <input checked="" type="checkbox"/> LIMITED <input type="checkbox"/> NOT AT ALL
Tagging / satellite tracking	<input type="checkbox"/> ESSENTIAL <input type="checkbox"/> IMPORTANT <input checked="" type="checkbox"/> LIMITED <input type="checkbox"/> NOT AT ALL
Habitat studies	<input checked="" type="checkbox"/> ESSENTIAL <input type="checkbox"/> IMPORTANT <input type="checkbox"/> LIMITED <input type="checkbox"/> NOT AT ALL
Genetics studies	<input checked="" type="checkbox"/> ESSENTIAL <input type="checkbox"/> IMPORTANT <input type="checkbox"/> LIMITED <input type="checkbox"/> NOT AT ALL

Mozambique - protection of nesting population and offshore habitats from illegal fishing.

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 facilitate even implementation of the IOSEA CMP across WIO countries.

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]

The fisheries issues have never received a significant amount of attention in South Africa as most of the large fisheries tend to operate in areas away from turtle nesting areas. However, occasional interactions (particularly with longlines) are reported through the observer programmes and strandings.

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 on most aspects of turtle research and conservation and has an excellent history in monitoring. Collaboration with expert scientists from within the region and outside of the region (through the WIO MTTF) has provided insights into turtle movements not previously known. The sub-regional working groups is definitely a strength of the region. Two weaknesses however is the lack of interaction with RFMOs as well as active NGOs .

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.

A number of post graduate degrees

Observer training (although dormant at the moment). This includes species identification, data collection, mitigatory measures and 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) used to fund most of the education and awareness programmes and materials on the nesting grounds.

Birdlife SA & WWF used to fund the training related to the offshore training.

Department of Environmental Affairs: Oceans and Coasts Branch is funding monitoring, conservation and postgraduate research.

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 bringing 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 are 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.

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 in 2004) as well as giving presentation to government officials of neighbouring states. Presented the work and activities of the WIO MTTF under IOSEA at several regional science conferences (like WIOMSA – or the Western Indian Ocean Marine Science Association meetings). However all WIO countries are now signatories with the exception of Somalia.

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 and if there is a need. The Secretariat has done an outstanding job in engaging with countries, as did the countries themselves. Currently no obvious need to change the status from a sub-regional perspective.

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 has provided financial support to the operations of the Secretariat. It will be re-evaluated in time for South Africa to host a signatory states meeting in the future.

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 0.8M 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 175,000 in June 2014]

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 due to national and provincial government support. International unsuccessful (Rufford Small Grant, Darwin Initiative or USFWS).

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

Due to the long history of turtle conservation and disparate interest from the provincial conservation agency (since sea turtles nest in KwaZulu-Natal), it has been a "bottom-up" approach under the initiative of the Natal Parks Board. The provincial responsibility is now with Ezemvelo KZN Wildlife and the iSimangaliso Wetland Authority. The national responsibility (including the at sea distribution of turtles) falls under the jurisdiction of the Department of Environmental Affairs: Oceans and Coasts Branch.

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

The national and provincial responsibilities are somewhat defined in legislation. However, the operations will in future be facilitated through a management plan (which was dormant for a number of years and is currently under review by the Directorate: Ocean Conservation Strategies). The responsibilities are as follows:

Department of Environmental Affairs: Is the custodian of the National Environmental Management Act (Act 107 of 1998). This is the overarching act of South Africa's Environmental Legislation. The National Environmental Management Act among other things encourages cooperative governance in terms of realising the conservation of biodiversity.

Department of Agriculture, Forestry and Fisheries – Is the custodian of the Marine Living Resources Act (Act 18 of 1998). The act introduces regulating measures for the conservation of the marine ecosystem and the long-term sustainable utilisation.

iSimangaliso Wetland Park Authority – Are the overall Protected Area Manager of the breeding sites under various legislations (World Heritage Convention (Act 49 of 1999); National Environmental Management: Protected Areas Act (Act 57 of 2003); National Environmental Biodiversity Act (Act 10 of 2004); Marine Living Resources Act (Act 18 of 1998); UNESCO's World Heritage Convention and Operational Guidelines and the Ramsar Convention (Convention on Wetlands of International Importance Especially as Water Fowl Habitats, 1971). iSimangaliso Wetland Park Authority have also entered into a contractual agreed Implementation Protocol regarding the Park with the Department of Environmental Affairs: Oceans and Coasts Branch.

Ezemvelo KZN Wildlife – Is the Provincial Authority mandated to carry out environmental legislation in the Province of KwaZulu-Natal under which iSimangaliso Wetland Park falls.

There are other organisations that provide support to government departments (e.g. KwaZulu-Natal Sharks Board; Oceanographic Research Institute; Nelson Mandela Metropolitan University; World Wildlife Fund for Nature (WWF); Birdlife SA). There are overlaps in some areas; however government entities and various organisations take it upon themselves to minimize duplication through contractual agreements or Memoranda of Understanding (MoU).

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

Some roles and responsibilities are mentioned in the various legislation. The roles and responsibilities of most agencies associated with the conservation of marine species are generally clear with continuous discussion held to minimize overlap. This roles and responsibilities will be discussed and explicitly stated in the (new) Biodiversity Management Plan for Turtles.

Comments/suggestions to improve the present reporting format:

Additional information not covered above: