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MARINE TURTLE UPDATE

Recent News from the WWF Africa & Madagascar Marine Turtle Programme

Number 2 – November 2005

In 2002 WWF launched a new Africa and Madagascar Marine Turtles Programme. Building on over 30 years of experience in marine turtle conservation, WWF's new initiative aims to provide strategic field interventions to help guarantee a future for these threatened species.

The long term goal of the programme (25 years) is: *Viable populations of all five species of Marine Turtles in African waters are conserved.*

The Programme has four targets

1. Loss and degradation of critical nesting, inter-nesting and foraging habitats reduced or prevented in at least eight key sites by 2010.
2. Measures to control unsustainable use and trade of marine turtles and turtle products enhanced in at least six countries by 2010.
3. Incidental capture of marine turtles reduced in the territorial waters of at least six countries and in at least two pelagic fisheries by 2010.
4. Capacity for monitoring, research and management of marine turtles and their habitats enhanced in at least eight countries by 2006.

For further information on the WWF Africa and Madagascar Marine Turtles Programme, check our website: http://www.panda.org/africa/marineturtles

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This edition of *Marine Turtle* Update was compiled and edited by Sarah Humphrey & Alison Wilson. Layout by Sandrine Jiménez.

Marine Turtle Update provides recent news on the conservation work undertaken and supported by WWF in Africa and Madagascar to conserve marine turtles. The update is aimed at WWF staff and WWF's partners such as range state governments, international and national non-governmental organizations, and donors. It will be published at least once per year.

Cover Picture: Green sea turtle, Chelonia mydas, common green turtle coming to a halt on coral ground and releasing air from lungs. Pacific Ocean © WWF-Canon / Jürgen FREUND

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INSIDE THIS ISSUE

Welcome!

Welcome to the second issue of the *Marine Turtle Update*, the occasional newsletter of The WWF Africa & Madagascar Marine Turtle Programme. This update features work undertaken by WWF together with national regional, and international partners in Cape Verde, Cameroon, Gabon, Kenya, Madagascar, Mozambique, South Africa and Tanzania, contributing to conservation of the five species of marine turtles found in WWF's three focal marine ecoregions – the Eastern African Marine Ecoregion (EAME), West African Marine Ecoregion (WAMER) and Western Indian Ocean Islands Marine Ecoregion (WIOMER) – as well as in the Gulf of Guinea.

A major threat highlighted by several contributors is bycatch, affecting Atlantic and Indian Ocean marine turtle populations. Samantha Petersen reports that each year more than 250,000 loggerhead and leatherback turtles are killed by pelagic longline fishing gear alone. Observer programmes are proving effective in assessing the level of bycatch in South Africa vessels but, as yet, none of the mitigation measures being developed internationally, such as circle hooks, have been tested in South Africa.

Some significant progress is being made in addressing bycatch in trawlers. Rémi Ratsimbazafy and Xavier Vincent report on an innovative partnership between WWF and the Malagasy Shrimp Fisheries and Farming Association to reduce trawling impacts including marine turtle bycatch. And in Mozambique, WWF has supported production of a TEDs guide towards implementation of the new fisheries legislation reported in Update no 1.

WWF welcomes the new resolutions on bycatch adopted at the 9th Session of the Indian Ocean Tuna Commission and looks forward to further policy developments and action in this critical area. WWF will be urging parties to the Convention on Migratory Species to support and adopt the Resolution 8.14 concerned with bycatch at their forthcoming meeting in Kenya.

We are grateful for the collaboration of many partners and for the support of the WWF network and other donors for the work described in this update.

First Meeting of the Partnership for Sea Turtle Conservation in Gabon

Gabon is one of the most important nesting sites for leatherback turtles in the world, after the Guianas and many different organizations are working to conserve marine turtles on its pristine beaches.

Gabon beaches with marine turtle conservation activities (22% of total the total coast) and the organizations involved. All NGOs work together with the Gabonese authorities.
(Source: Bas Verhage, WWF Gamba)

At present three local NGOs *Aventures Sans Frontières* (ASF), *Gabon Environnement* and Ibonga-ACPE; two international NGOs (WCS and WWF); and one regional marine turtle programme (PROTOMAC) are involved in marine turtle conservation in Gabon. ASF and *Gabon Environnement* conduct research in the Mayumba Marine National Park and Pongara National Park (see map). The local NGO *Ibonga* operates in the Gamba Complex of Protected Areas. WCS supports ASF and executes weekly monitoring patrols in northern Loango National Park in collaboration with a private tourism investor, *Operation Loango*. PROTOMAC (*Protection Tortues Marines Afrique Central*) is funded through an EU supported Flagship Species project and is responsible for the regional coordination of marine turtle work in Central Africa PROTOMAC is also giving technical and financial support to *Gabon Environnement* and *Ibonga*. Finally, WWF is supporting marine turtle research in the Gamba Complex by providing *Ibonga* with technical, logistical and financial support and is contributing to the aerial surveys for the total coastline of Gabon (together with WCS and the US Fish and Wildlife Service, see below).

Although much work has been done over the last few years by these partners to protect Gabon's marine turtles, no coordination or exchange of information structure existed. This lack of a coherent approach has been identified by all partners as a serious impediment to a better understanding of the conservation status of marine turtles in Gabon, and to developing an efficient nation-wide protection system.

During the International Sea Turtle Symposium (ISTS) in Savannah in January 2004, the US Fish and Wildlife Service (USFWS) expressed their interest in catalyzing the creation of a nation-wide coordination structure in Gabon, within the framework of the Marine Turtle Conservation Act (MTCA). Angela Formia (a marine turtle specialist who worked in Gabon) took on the task of writing a project proposal involving all the different partners to finance the organization of a meeting in Gabon, to identify a national coordination structure and to develop a coherent national marine turtle conservation strategy. The USFWS accepted the project and from 7 to 9 September 2005 the meeting was held in Libreville, Gabon involving the different government entities (National Parks Council, Environmental Ministries), national research centres, local and international NGOs and a representative of USFWS (Earl Possardt). The Park Warden and WCS project leader of Conkouati National Park (Congo-Brazzaville) and a representative of Equatorial Guinea (INDEFOR: National Institute for the Management of Forests and Protected Areas) were also present to develop transboundary coalitions.

The objective of the meeting was to define a coherent nation-wide research and conservation strategy and action plan involving all actors implicated in marine turtle conservation in Gabon to be partially funded by USFW through the MTCA.

Meeting outcomes

To ensure a long term national research and conservation program it was considered necessary to consolidate and harmonize current research and conservation focussing on the following set of priorities:

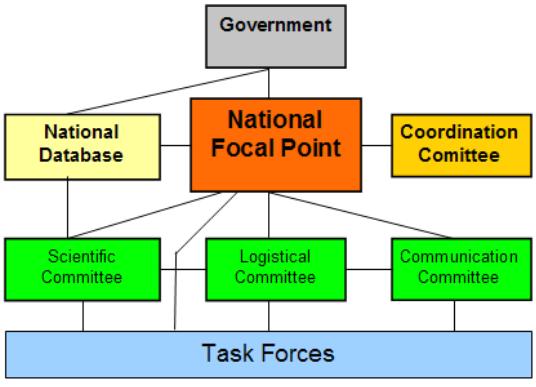
- standardization of monitoring and nest protection activities across all field sites,
- enhancement of habitat surveillance,
- strengthening of the PIT tagging program,

- standardized training of all field staff,
- standardization of data-collection methodo.-logies and protocols,
- data-sharing in a national database,
- concerted outreach and awareness-raising efforts,
- aerial surveys of the entire coastline,
- coordinated fundraising,
- feasibility study for the removal of logs washed up on the beaches, known to represent serious obstacles for nesting females and hatchlings.

Furthermore it was noted that although several beaches had recorded a drop in leatherback nesting numbers in the last couple of years, it could not be concluded that the population was "declining" because low nesting numbers may reflect a natural cycle. Only long term monitoring can confirm this assumption. To ensure government ownership, coherence with national policies and regulations and law enforcement, it was suggested to incorporate the National Turtle Action Plan within the 5-year strategic plan for the National Parks of Gabon.

Creation of National Marine Turtle Coordination Structure

In order to address the above mentioned priorities on a national level coherently, meeting participants agreed to create a national organization structure grouping government and conservation partners along a national turtle conservation strategy.



National marine turtle conservation coordination structure in Gabon

Firstly a 'Turtle Coordination Committee' *("Cellule Tortues Gabon")* was created, consisting of one representative of each partner. Annual meetings will be held to discuss research protocols, new developments and funding. The conservator (Park Warden) of Mayumba Marine National Park was appointed as national focal point for marine turtles in Gabon.

Secondly, three thematic committees were created:

- the scientific committee's mandate is to produce a yearly national status report and coordinate scientific publications. It will make use of the national database which will be based at the marine department of the National Research Centre (CNDIO) to which all NGO's will provide their data,
- the logistical committee plays the right hand of the National Focal Point and makes sure that data comes in before the deadlines, organises the annual meeting and training courses,
- the communication committee is in charge of the creation of a national website and contacts with the media.

To assist the National Focal Point and the three committees, several cross-cutting task force groups were created, to provide input and advise on specific issues such pathology, commercial fisheries, aerial surveys, oil exploitation, logs, education and outreach, genetics, database quality control, satellite tracking and transboundary issues.

Next steps

As a result of the meeting, a 100,000 US$ funding proposal to USFWS has been prepared by the partners covering the period April 2006 to March 2007 and focussing on five main objectives;

- ground surveys/nest protection,
- environmental outreach,
- data management,
- coordination and,
- aerial surveys.

These funds work as co-funding mechanisms for NGOs to assure continued field presence on selected beaches.

Although finding levels are still modest, the outcome of the meeting provided a very important step towards a national marine turtle conservation strategy. The partners agreed that coordination needs to be expanded throughout the Gulf of Guinea, the only way forward to conserve highly migratory species such as marine turtles.

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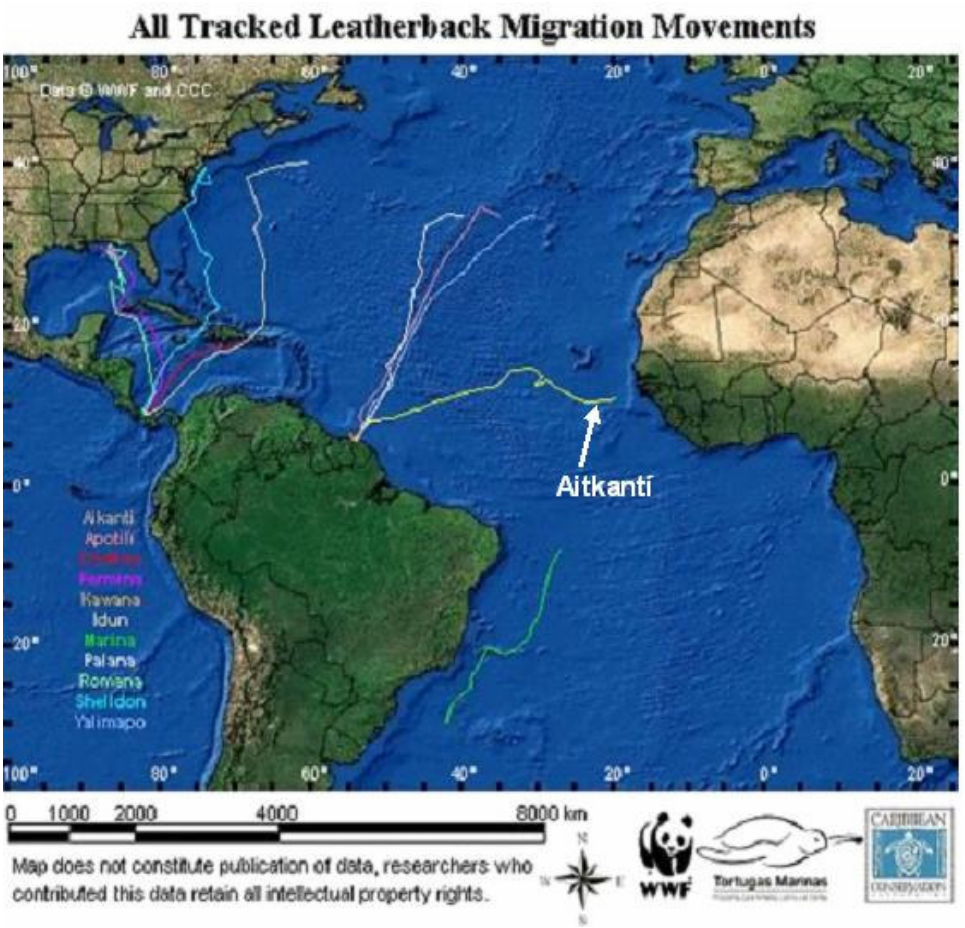

This map is for illustrative purpose and does not constitute formal publication of data

Bugged Turtles Reveal Migration Secrets

New satellite telemetry technology is helping scientists to gain a better understanding of migration routes taken by leatherback turtles across the Atlantic. The results of the study will help conservationists to design measures to reduce by-catch of this Critically Endangered species, for example by identifying 'hotspots' of interaction between turtles and fisheries. An estimated 50,000 leatherbacks are caught as by-catch each year by longline fisheries. Observer data from 1992-1999 reveals a 50% mortality among the 308 to 1054 leatherbacks caught annually in the US Atlantic longline fishery.

Recoveries of turtles fitted with traditional flipper tags have already revealed the astonishing distances that leatherbacks travel :

for example, females tagged in French Guiana have been found in the Azores and along the Moroccan coast, and a female tagged in Surinam was recaptured a year later in Ghana, 5,900 km away. Tag recoveries, however, only provide information about the start and end points of sea turtle migrations, but not the routes taken.

Modern satellite telemetry is allowing precise monitoring of post- nesting movements of sea turtles and also their behaviour at sea. One study showed that some of the movements of female leatherbacks are associated with ocean fronts with an abundance of jellyfish, their principal diet. Telemetry studies have also revealed that while most leatherback dives are restricted to within 250 m of the surface (making the interaction with fisheries quite likely), they can plunge as deep as 1,200 m.

The main limitation for satellite tracking has been the battery life of the transmitters, typically in the order of seven months to a year. The new project, a team effort between scientists, WWF offices in Latin America and the Caribbean and Africa, and several partners, hopes to obtain up to three years worth of information from each turtle using state-of-the-art transmitter technology. With luck – and only if the turtle does not fall victim to fisheries gear during migration — an individual leatherback

can be tracked back to the beach where it was fitted with the transmitter, and hence be followed across a complete migration cycle for the first time.

The more sophisticated transmitters include time-depth recorders to monitor diving behaviour, as well as basic information about the location of the turtle and water temperature.

To date, eleven leatherbacks from Panama, French Guiana, and Uruguay have been fitted with the high-tech transmitters. The results have confirmed that leatherback movements are complex and highly individual. As of October 17 2005, one female, named Aitkanti, who was tagged in June 2005 in Suriname had travelled more than 3,830 km across the Atlantic, apparently heading for the West Coast of Africa. Click through the website

Http://www.panda.org/atlantic_leatherbacks

to check her most recent position and the whereabouts of the ten other tagged individuals.

"Tracking turtles is only the beginning" says project executant Carlos Drews, *" The design and implementation of measures to reduce bycatch is the goal of this transatlantic initiative. The alignment of governments, industry, scientists and conservation organisations on bycatch reduction is an exemplary way to tackle the environmental challenges facing our oceans".*

Project scientists plan to deploy satellite tags on three nesting females in Gabon next year and they are hoping that additional sponsorship will enable up to 25 leatherbacks to be fitted with transmitters, providing a more comprehensive picture of these astonishing journeys.

The project's partners include WWF , the Caribbean Conservation Corporation, Proyecto Karumbe, IUCN-France, Project Kudu, the Centre National de la Recherche Scientifique (CNRS) and the Centre d'Ecologie et Physiologie Energetique (CEPE). Sponsors include WWF, the Convention on Migratory Species (CMS), SkyTV, Nokia, and the Latin School of Chicago.

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Credit: WWF / Carlos Drews

WWF and Caribbean Conservation Corporation deployed four satellite transmitters in Playa Chiriqui, Panama, this year

Keeping Turtles off the Hook... the Birdlife SA/WWF-SA Responsible Fisheries Programme

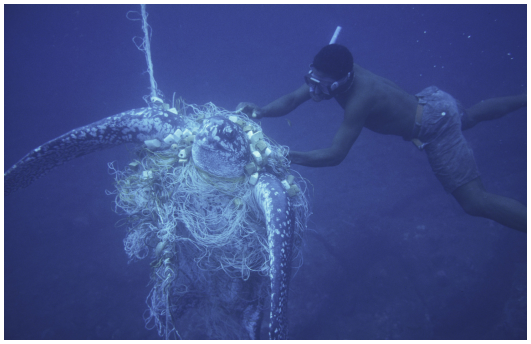
Samantha Petersen
Programme Manager, Birdlife SA/
WWF-SA Responsible Fisheries Programme

The oceanic environment off southern Africa is one of the most dynamic and diverse marine environments in the world. As a result it supports highly valued commercial fishing interests. It is also home to five species of sea turtle, 24 species of albatrosses and petrels, and 36 species of sharks all threatened with extinction as a result of incidental mortality or bycatch in longline and trawl fisheries. This incidental mortality of seabirds, turtles and sharks poses a serious conservation concern globally. Many of these species are long lived, with delayed maturity and limited reproductive capability. As a result they are particularly vulnerable to even small increases in adult mortality.

The BirdLife/Responsible Fisheries Programme aims to ensure that fishing practices within the Benguela Current Large Marine Ecosystem are conducted in an environmentally friendly manner, maintaining the integrity of the entire ecosystem and in doing so protecting the livelihoods of those

that depend on her resources. The larger body of work which commenced in August 2004, is primarily funded by the BCLME under the UNDP and operates within South Africa, Namibia and Angola. Data collection is primarily obtained from the observer programmes managed by the respective fisheries departments, but is also supplemented by specialized information collected under this programme.

South Africa has a pelagic longline fishery operating within (although not limited to) its Exclusive Economic Zone (EEZ). Bycatch of seabirds in South African waters has been well documented over the past few years, but bycatch of other long-lived species has not received the same attention. Of the five species of sea turtle occurring in South African waters, four (loggerhead, leatherback, green and hawksbill) are caught by this fishery: only the olive ridley has not been reported. Catch rates per 1000 hooks (estimated numbers caught in parentheses): 0.05 (69) in 2000, 0.03 (57) in 2001, 0.06 (169) in 2002 and 0.02 (42) in 2003. Most of the turtles (95%) caught were released or discarded, the remaining 5% were retained. 84% were reported alive although post-release survival is unknown. 31.5% of these were released with the hook left in the animal and in 37% of cases the hook was removed. Loggerheads were predominantly caught in summer (53%) and spring (41%) and leatherbacks were caught throughout the year. Most (85%) turtles were caught in the oceanic water off the Namibian and northwestern coast and off the KwaZulu-Natal coast.



Unsuccessful attempt by a diver to rescue a leatherback turtle (*Dermochelys coriacea*) caught in a net. After days of struggle, it finally drowned after resurfacing a few times (Picture from Sao Tome and Principe)

South African populations of leatherback turtles reached a critically low level in the mid 1960s when only five females bred along the KwaZulu-Natal coast in 1966. The average number of nesting leatherbacks has now risen to more than 90. The number of loggerhead turtles has also increased from less than 100 pairs in the 1960s to 500 pairs. These increases are thought to be the result of conservation action taken to protect these species on land. Although we are experiencing increases in these populations, the rate of increase might be higher if mortality as a result of longline fishing could be addressed.

There is global recognition of the threat longline fishing poses to turtle populations. All species are vulnerable to fisheries bycatch, with leatherback and loggerhead turtles being particularly vulnerable elsewhere in the world. It has been estimated that over 200 000 loggerheads and 50 000 leatherbacks are killed in pelagic longline fishing gear each year worldwide. In 2000 an estimated 22 000-40 000 turtles were killed in the Pacific, 250-10 0000 in the Mediterranean, 30 000-60 000 in the Atlantic and 4000 in the Indian Ocean. There has been up to a 95% decline in population numbers of loggerhead and leatherback turtles in the Pacific over the past 20 years. Turtle bycatch in the South African fleet accounts for 0.07-1% and 0.07-0.3% of the global bycatch estimate for loggerhead and leatherback turtles, respectively. Since all the species caught are of conservation concern this level of interaction is considered too high.

Mitigation measures are under development internationally, but none have been adopted as permit conditions in South African waters at present nor have they been tested under local conditions.

Fisheries observers

Furthermore, the responsible fisheries programme acknowledges the fact that fisheries observers play a pivotal role in reducing the current bycatch levels experienced in our waters. Fisheries observers are in the unique position of being able to assess and reduce the bycatch of seabirds. Firstly, they assist our understanding by collecting valuable information. This allows a detailed analysis of both the numbers of seabirds that are killed as well as how, where and when they were killed. This information then informs management decisions. Moreover, observers are the first point of contact with fishers and therefore play an important role in raising their awareness about the urgency to implement effective mitigation measures.

A training programme has been developed to educate observers beyond their general training, to identify the affected species and become aware of the fisheries' impacts and the measures available to mitigate the problem. A manual "*A Practical Guide to Understanding and Reducing Vulnerable Bycatch*" has been developed both in English (for distribution in South Africa and Namibia) and in Portuguese (for distribution in Angola and Mozambique).

This manual aims to inform fisheries observers,

skippers and other interested parties and covers the following topics: fishing sectors implicated; the biology, conservation status and population trends of vulnerable species; available mitigation measures; data collection; handling of live animals and species identification. Additional to the species descriptions, are laminated species identification sheets used to aid under at-sea conditions. Thus far approximately 100 observers have been trained from South Africa, Namibia and Angola.

Education is fundamental to saving our marine life. It is therefore our vision is to empower our fisheries observers to protect our seabirds and in doing so, the sustainability of our fisheries.

"*We only conserve what we love,*
We only love what we know
And we only know what we are taught…."

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A longliner hauls a turtle aboard in coastal waters
(WWF Mozambique, 2002)

KESCOM Study Exposes Rampant Turtle trade

The Kenya Sea Turtle Conservation Committee (KESCOM) continues to gather information on the national trade in marine turtles and their products. Last year, reconnaissance surveys were conducted in selected sites along the entire Kenyan coast, with the aim of identifying key contact persons and informants among local community members, leaders, government representatives, fish traders and fishermen. The chosen informants were given two training sessions on data collection and on basic concepts of demand and supply and market organization and structure.

Seven data collection blocks were identified: Shimoni-Msambweni, Diani -Shelly beach, Mombasa-Kilifi, Watamu, Malindi-Ngomeni, Tana Delta and Lamu archipelago, with an average of 20 key contacts within each block. The number of persons involved in data collection, however, was much greater than this since the project also relied on Turtle Conservation Groups (TCGs) already established by KESCOM to collect data.

Most data collection has been centered on fishermen who are the principal sources of turtle trade items. Information has also been gathered from historical records on trade in Kenya predating the legislative measures (the Fisheries and Wildlife Act-Cap 378 and 376 of the laws of Kenya) aimed at protecting turtles. This information will help in assessing the impact of the current laws in controlling consumption and trade in turtle products in Kenya. Data is also being collected on the actual number of cases reported and prosecuted by the government.

Progress to date

During the past year, KESCOM has made progress on the identifying the volume, composition, structure and organisation of the trade. It has also established new community conservation groups, identified high priority areas, enhanced capacity for conservation and management of marine turtles in Kenya, and presented a preliminary report to the 4th

Western Indian Ocean Marine Science Association (WIOMSA) Symposium in Grand Baei, Mauritius.

The results of the survey so far indicate that trade and consumption of sea turtle products is still rampant in many parts of the Kenyan coast in spite of the existing national legislation and the fact that Kenya is a signatory to several international instruments relating to endangered species. Turtle oil and meat appear to be the most frequently traded and consumed items, while eggs, carapaces and stuffed turtles are traded occasionally, with carapaces fetching high prices in some survey sites such as Lamu archipelago. The data collected during this survey probably reflects only 30% of the magnitude of trade based on the number of sources of information and willing interviewees.

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Smoke-curing of loggerhead turtle (*Caretta caretta*) (picture from Grand Bassam, Ivory Coast)

Fishermen account for more than 40% of trade and consumption of marine turtle products in Kenya. Turtles are captured intentionally or as bycatch during fishing. Fishermen understand turtle behaviour and through experience they know the major turtle foraging grounds and migratory routes. The use of shark nets (mesh size 40x 40cm) to specifically target sea turtles was reported to occur in Kinyaole and Mto Kilifi within Ngomeni, the fisher camping island of Ziwayu in Tana River Delta and in Kiunga, Kizingitini and Ndau within the Lamu archipelago. Together, these areas constituted more than 50% of the volume of trade and consumption of sea turtle products reported during the survey.

Most fishermen slaughter green sea turtles caught at sea, to avoid law enforcement officers. They transport the carcass disguised as fish in polythene bags, while the oil is carried in used water bottles. The meat and oil are then sold directly to dealers, middlemen, local retailers or even to consumers. Eggs and carapaces are obtained from nesting females (although carapaces are also obtained from stranded turtles). In most cases the females are slaughtered after laying their eggs. Stuffed turtles, especially hawksbills, may be crafted from stranded or captured individuals as hawksbill meat is not preferred.

The trade in marine turtle products in Kenya is conducted discretely. The peak trade and consumption appears to coincide with the fishing season during the North East Monsoon (September – March), confirming the important role of fishermen. Information on the availability of a particular product is passed on secretly through the supply chain: sometimes dealers, fishermen and retailers use sign language to alert would-be buyers of the availability of products, or even use code names such as ‘a goat ‘ or an ‘elephant’. Local people and fishing villages are aware of the identity of the main traders, dealers, and middlemen.

Trade volume, distribution and dynamics

More than 600 records of illegal trade and consumption patterns were reported during the survey between January and July 2005. Meat and oil constituted the largest market share per survey block. Although meat contributed the highest gross revenue to the market share, turtle oil has the highest value owing to its demand for medicinal use. The areas within the Lamu archipelago (Kiunga, Ndau, Pate, Kizingitini, Amu and Matondoni), Tana River (Ziwayu, Mpeketoni and Mto Kilifi) Ngomeni (Kinyaole), Malindi town, Mombasa (Old Town) and Msambweni harbour the highest numbers of turtle dealers, middlemen, consumers and are also important fishing grounds.

Turtle oil is often used to treat asthma, impotence and infertility, waterborne diseases, earaches, measles and tuberculosis. Local midwives use it to induce quicker placenta presentation. The price per litre ranges between Kshs 100 to Kshs1000 on the south coast and Kshs 500 to 1000 in Lamu. Turtle meat ‘skewers’ are commonly found in local brew dens while in villages they are supplied by fishermen and ‘dealers’ in ½ -1kg bundles (mafungu) at prices ranging between Kshs 20 in Diani to about Kshs 100 in Shimoni.

Green turtles have the preferred meat. Eggs are priced at Kshs 2 per egg and between Kshs 250-800 per clutch depending on the target consumers, who include locals, tourists and foreign residents. Carapaces are mostly used for decoration and their prices vary between Kshs 800 in south coast to about Kshs 2000 in Lamu.

Approximately 10% of the turtle products obtained from the Tana Delta and Malindi-Ngomeni area are traded by foreign fishers, mainly from Somalia and Tanzania. Evidence from interviews suggested a link to foreign markets (international trade) in these countries. It

has been shown through tag returns that the turtles tagged within Kiunga Marine Reserve in Lamu Archipelago and who migrate northwards, are caught and eaten by Somali fishermen especially from the Koyama tribe.

The KESCOM Secretariat is preparing an overall assessment of the trade which will be presented to the government agencies and other stakeholders. As project executant Simmons Nzuki says, *"It will be difficult to reduce trade and consumption of sea turtle products in Kenya without sustained collaboration and involvement of local fishers and communities. We need to provide support and additional resources to Turtle Conservation Groups (TCGs) to help mobilize community action at the local level: these and the newly formed community groups could potentially serve as important entry points for joint government and civil society intervention. We also need to develop targeted education and awareness tools to promote compliance with conservation and management measures. Advocacy and lobbying is needed at the government level to provide an enabling framework for the implementation of the recommendations of this survey."*

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Mozambique's "*Wanted Alive!!*" Campaign takes off

A campaign to increase awareness of the plight of marine turtles and to initiate a certification scheme for shops and market stalls aims to achieve an 80% reduction in the volume of turtle shell sold in the curio markets of Maputo, Pemba and Nampula in Mozambique.

In 2004, public schools, informal markets and shops were targeted, and the activities involved more than 500 schoolchildren aged between 7 and 16. Schoolchildren from 16 schools in Maputo and Matola cities distributed leaflets, held interviews with curio salesmen and traders, engaged in school debates and gave presentations about marine turtles.

In April 2005 a workshop on marine endangered species took place in Maputo involving 72 school children from 16 schools. The objective of the workshop was to present the results of the awareness campaign and all the activities done by the schools last year in Maputo. Two schools presented the results of the interviews with curio salesmen, one performed a play about curio markets, three presented the school newspaper, one presented a leaflet about sea turtles and the school activities, and four schools presented a PowerPoint presentation on the importance of sea turtle and their characteristics. At the end of the workshop all participants were asked to choose the best representation/presentation.

The winner was the group that performed the play! Each member of the group received books about the life in marine waters, turtle T-shirts and the Bird Identification Atlas of Southern Mozambique.

A rapid assessment survey undertaken in 2004 to evaluate the trade in products of sea turtles in Maputo found a total of 13 tourist outlets selling sea turtle products, one in Maputo International Airport inside the duty free shop. All jewellery products are made with hawksbill shells. A total of 34,722 cm^2 were found in the shops surveyed, corresponding to 37 carapaces.

Schoolchildren are learning how they can help conserve threatened marine species

Starting in July 2005, the "Wanted Alive! " Campaign is giving a series of presentations at each shop selling these products using the data obtained, because during the surveys many salesmen and shop owners indicated that they are not aware that sea turtles are protected by laws and international agreements and are endangered species.

The Campaign will be greatly helped by the recent announcement in the media by the Government of Mozambique that it will be strongly enforcing national and international legislation relating to trade in endangered species, including marine turtle products, corals and some mollusc species.

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Monitoring and Conservation in the Campo-Ma'an Coastal Region of Cameroon

Project Campo-Ma'an, the first marine turtle conservation project in Cameroon, operates in a 770,000 ha. area along the southern coast. The region hosts leatherback, olive ridley (the two nesting species), green and hawksbill turtles. As throughout West Africa, many adult females are killed for their flesh, rendered oils and grease, and carapaces. Humans destroy an estimated 90% of turtle nests. Another threat in the Kribi area (the biggest touristic town in the region) is the uncontrolled removal of sand from the beach for building purposes. Coastal artisanal fisheries accidentally catch many adult female turtles and juveniles in their nets. Since the increase in shipping, oil pipelines and platforms, observers increasingly report sightings of turtles covered by hydrocarbons or other oily substances.

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Mediko Tobic, local turtle researcher, Ebodje. Buffer zone of Campo-Ma'an National Park, Cameroon

The WWF Campo-Ma'an project is providing support to a village ecotourism group to monitor marine turtles in and around Ebodje village in the South Province. During the nesting season, night patrols tag, identify and measure every turtle encountered, and count nests. Morning patrols then use turtle tracks to verify the previous night's nest count. At the end of the nesting season the patrols visit coastal villages to identify and measure carapaces. Analysis of the information will be used to help develop a management plan. Preliminary observations (sponsored by a local hotel) of captured marine turtles shows that most green and hawksbill turtles marked and released in Kribi were recaptured in and around Kribi. However one hawksbill has been recaptured 70 km to the south and one green turtle has been recaptured in Bata (Equatorial Guinea). A lot still needs to be done to ensure ownership of the marine turtle monitoring and conservation initiatives.

To raise awareness, the group was supported to build a turtle museum for students, tourists and villagers. The museum, called "Maison Ndiva" is imposingly situated in the centre of Ebodje village. The involvement of local communities and the creation of job opportunities by the project have been well received, and tourists are happy to see the turtles and an effort to protect the coastal habitat.

But the long-term solution for protecting marine turtles in the region lies in coastal and marine management. There are currently no coastal or marine protected areas in Cameroon. Environmental degradation is increasing due to industry and tourism, and industrial fisheries do not respect the three-mile limit or use of TEDs. Though the idea of a marine protected area is quite new in Cameroon, a three year project proposal for developing a management plan for the coastal zone of the Campo project and all the Cameroon coastline amounting to 72 million FCFA (Euro 110,769 or $144,000) has been developed by WWF-Cameroon Country Programme Office with the main goal of complete protection of marine turtles.

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WWF Kiunga Marine Turtle Conservation Programme

Five marine turtle species (hawksbill, loggerhead, leatherback, olive ridley and green) are known to nest, forage or migrate through Kenyan waters. All have been recorded in the Kiunga Marine National Reserve (KMNR) in various stages of their life cycle. The green turtle, the commonest species, forages, mates and nests in KMNR and is the focus of the WWF Kiunga Project.

Nest protection a resounding success

The WWF-Kiunga programme is focussed on the protection of female turtles on their nesting beaches as well as the protection of mating and feeding areas. Turtle nests are preferably protected *in situ* by covering the nest site with a wire mesh/cage to deter wild predators, mainly hyaena, porcupine, genet cats, hedgehogs and jackals. Constant surveillance also ensures that the nest is safe from ghost crabs. However, any nests dug below the high tide regime of the season, or on unsafe parts of the beach that may be difficult to patrol or prone to predation are usually translocated to higher/safer ground within the same general locality.

Photo by Sam Weru
Hatchlings in Kiwaiyu Island, Kiunga

In the far-flung areas of Rubu and Mambore, WWF maintains a year-round 24-hour surveillance turtle monitoring outpost. This is the most important turtle nesting beach with over 50% of turtle nests recorded within KMNR. The outpost enables patrols on adjacent beaches and sea areas to record turtle nesting, feeding and mating activity. These patrols are a joint venture between WWF and the local community whereby local youths are initiated into turtle conservation and other environmental activities such as collection of beach litter (e.g. flip-flop rubber sandals) that impede female turtles coming to nest, as well as emerging hatchlings. During the peak nesting season (April to August) beach patrols are conducted day and night to ensure no nests or female turtles are overlooked. This monitoring has been so effective such that no predation of nests has been observed at Rubu and the adjacent islands. To date, over 10,000 green turtle hatchlings successfully emerge each year as a direct result of this protection and surveillance.

Monitoring bycatch mortality

Beach patrols also involve monitoring dead turtles washed ashore, and finding out the cause of death. Sometimes, tissue samples are collected and sent to the Kenya Sea Turtle Conservation Committee (KESCOM) secretariat for forwarding to laboratories that conduct DNA analysis.

Turtles are captured as bycatch through fishing activities that include shoreline set nets, long lines, seine nets and prawn trawlers operating in areas adjacent to the Kiunga foraging grounds. The major cause of turtle mortality in KMNR is gillnet or beach seine strangulation which accounts for over 70 percent of deaths. Most of the dead turtles have strangulation marks on their neck, carapace and are usually bloated with no discernible injury. Some of the dead turtles are decapitated: this could be caused by fishermen trying to prevent damage to their nets. Most of the mortalities in KMNR are of green turtle (the dominant species present) with a few hawksbill and occasional olive ridley. The number of mortalities starts to increase during the months of December and January and peaks during the months of March and April. This coincides with peak fishing activity as well as increased turtle mating and the nesting season.

Photo by Sam Weru
WWF Kiunga Turtle Team take measurements of a green turtle that had just nested on Mkokoni Beach

Other project activities

Sea patrols are conducted to ensure compliance with fishing regulations in terms of use of sustainable gear as well as to monitor and record any by-catch or rescued turtles. These patrols are jointly conducted by Fisheries Department, WWF and the Kenya Wildlife Service.

Nesting female turtles are tagged when they come ashore with a metal tag with a code number pinned to the flipper. This the only kind of tagging practiced in KMNR and the system synchronizes with the national coding controlled by KESCOM.

WWF also runs a local youth volunteer programme where local youths get together with a WWF turtle protection team member to conduct surveillance on the nesting island of Rubu. The volunteers learn basic turtle ecology and behaviour in addition to being taught how to verify a turtle nest. The team also conducts awareness and education activities directly to fishermen during sea and beach patrols and indirectly via education excursion by students, awareness workshops involving the local community and other stakeholders.

The WWF turtle team maintains a turtle database which includes the nest number, nesting species, date of nesting, estimated date of hatching, number of eggs if translocated, reason for translocation and eventually, number of hatchlings that are successful or fail. It also keeps records of turtle tagging, mortality, sightings at sea or beach and activity observed. This database is linked to the national database through the KESCOM.

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The Status of Marine Turtles in The United Republic of Tanzania

Catharine Muir
Tanzania Community-based
Turtle & Dugong Conservation Programme

Five species of marine turtles inhabit Tanzania's coastal waters. Their status was first assessed in the mid 1970s when populations of all species were reported to be declining. In 2005, WWF supported work by the National Committee on the Conservation and Management of Marine Turtles & their Habitats to review the current status of turtles in Tanzania. Information was gathered from a nationwide survey conducted in 2003 by the Tanzania Turtle & Dugong Conservation Programme, and from a review of existing literature.

Catharine Muir records a green turtle (*Chelonia mydas*), that was accidentally caught in fishing gear and is about to be returned to the wild. Mafia Island, Tanzania.

The green turtle is the most common and widespread of the five species. While low density nesting occurs along the mainland coast, the most concentrated nesting is in the Zanzibar and Mafia archipelagos. It is estimated that approximately 120 – 150 female green turtles nest a year in Tanzania. They are highly migratory moving between Tanzania and other countries in the region including Kenya, Seychelles, Comoros, Mayotte and South Africa.

Hawksbills are also widely distributed but less abundant, their most important nesting sites being on Pemba and Mafia Islands. It is believed that annual nesting populations of hawksbills in Tanzania may only be between five and ten females.

Olive ridleys were observed to nest in Tanzania in the mid 1970s but no further nesting records have been made. Although loggerheads do not nest in Tanzania, coastal waters do provide important foraging grounds for female loggerheads nesting in Tongaland and Natal in South Africa. The status of the leatherback is unknown due to infrequent sightings.

The main threats to turtles include disturbance of their nesting and foraging habitats, incidental net captures, poaching of meat and eggs, pollution, inadequate protection and limited enforcement of existing regulations. Urgent measures are needed to secure the long-term survival of turtles in Tanzania, including: protection of key nesting and feeding habitats; efforts to reduce turtle bycatch; community involvement; education; and further research.

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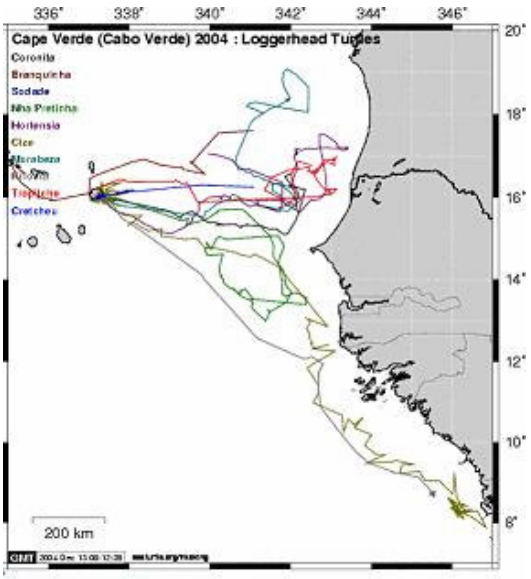
Turtle Conservation in Cape Verde

Arona Soumare (WWF-WAMER) and Sonia Elsy Merino (INDP, Mindelo)

Cape Verde is a natural marine species sanctuary, among which turtles are key species. Located in the heart of the Atlantic Ocean, between 14º 23´N and 17º 12´N and 22º 40´W e 25º 22´W, ten islands and few islets give shape to this archipelago. Surrounded by open ocean the 4033 km² total territory is 560 km off the west coast of the African Continent, with an EEZ reaching more than 734,265 Km2 (Bravo de Laguna, 1985) and part of Western African Marine Ecoregion (WAMER).



Satellite tracking in Cape Verde, courtesy of INDP

Of the six species of marine turtles known to be present in the Atlantic coast of West Africa (Fretey 2001), only *Lepidochelys kempii* has not been reported for the Cape Verde marine environment. Three species can be seen in the coastal zone of the majority of the islands: *Caretta caretta* nesting and juveniles of *Eretmochelys imbricata* and *Chelonia mydas* using the area as feeding grounds. There are unconfirmed reports of occasional nesting activity for the two latter species. *Lepidochelys olivacea* and *Dermochelys coriacea* are less frequently found with only few onshore records. These species use the area as a migration corridor and are frequently reported to be accidentally caught in the nets and hooks of fishermen.

The loggerhead, *Caretta caretta* is the most common in the archipelago and known to nest in Boavista, Sal and Maio islands, Santa Luzia, São Vicente and the Branco islet. Fishermen also speak of nesting turtles in the islands of Santiago, Fogo, Sao Nicolau and Santo Antão. It has been calculated that in Boavista alone there is an average annual nesting population of around 2000 females; at the national level there are estimated to be around 4000 nesting females. This establishes the Cape-Verdian archipelago as a primary nesting site in the African region.

In Cape Verde marine turtles are protected by the Decree Law No. 7/2002, Dec. 30th, 2002 forbidding the capture, retention, possession, consumption, trade, commercial trading of meet, eggs and other products as well as the disturbance of turtles during the reproduction period and the destruction or transformation of their habitats. The Natural Protected Areas Decree Law No. 3/2003, February 24th 2003 specially protects the main nesting beaches for *C. caretta* and the feeding and growth habitats for *E. imbricata* and *C. mydas* on the island of Boa Vista.

Major threats faced are accidental capture as bycatch on the longlines used by national and international fleets, followed by the transformation and degradation of the numerous nesting beaches by tourism, urbanism, industry development and sand extraction. The other threats are related to local consumption and commercialization of eggs and meat and various type of pollution.

Since 1998, a yearly sea turtle monitoring campaign has been undertaken between June and December in the island of Boa Vista in collaboration with the University of Las Palmas. Research involved reproductive biology of nesting loggerheads, satellite tracking, genetics studies, epibionts sampling and inventorying, and inventory of observed injuries in nesting females. Some ecotourism activities were initiated.

In 2005, the Cape Verde- in partnership with University of Las Palmas, the Marine Turtles Research Group (MTRG), and with co-financing of other environmental and conservation international

institutions developed research activities involving the satellite monitoring of migratory routes for Caretta caretta. Links between marine turtles in Cape Verde with those of the African mainland were already known by the National Directorate of Fisheries (INDP) but the satellite monitoring research results have nevertheless proved highly illuminating (see figures below). They clearly demonstrate the relevance of the sub-regional initiative for marine turtle conservation through the regional turtles conservation action plan (TOMAO) and also point to the appropriateness of the ecoregional approach to marine and coastal conservation.

At national level, there are efforts to reduce the ongoing consumption and commerce of marine turtle meat and eggs amongst some local populations and conservation education and awareness activities. An annual 'Marine Turtles Day' has been implemented for several years, most recently with the support of WWF, and in 2005 a campaign was developed at the national level, involving school and lyceums. The campaign is designed to reach a wide audience, with a special emphasis on schoolchildren.

At the regional level Cape Verde participates with other WAMER countries in framework of the TOMAO network. Activities to date include the elaboration of a regional action plan for the conservation of turtles and training workshops on monitoring of marine turtles for specialists from the six countries of the ecoregion.

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Programme Support to the Sustainable Management of Shrimp Resources in Madagascar

Rémi Ratsimbazafy, Marine Programme Officer, WWF MWIOPO, and
Xavier Vincent, Projects Coordinator, GAPCM

The Malagasy Shrimp Fisheries and Farming Association (GAPCM) has had a sustainable management policy related to shrimp resources for many years. This policy currently permits its members to be engaged in voluntary measures to protect the environment.

The year 2004 was the turning point of the management policy: measures for the management of the fishery, adopted at the request of the profession, now provide great benefits for the protection of the marine environment in general, and sometimes for marine turtles. These measures include:

- a lengthening of the fishery closure season from two to four and a half months,
- diminution of maximum size of the towing warps for the trawl from 77m to 69m,
- increase of the legal mesh size from 40 mm to 50 mm in the cod-end of the trawl, and 60 mm for the rest of the net.

The same year, individual or local measures have been taken, such as:

- alternation of night and day fishing during the season,
- spatial and time bound closures of activities in areas considered as sensitive, or where exploitation appears unsustainable,
- abolition of twin trawls in favour of simple trawls, reducing the area swept by nets.

Photo by Xavier Vincent
Trawl equipped with TED

Furthermore, during the 2005 season, complementary measures have been tested such as stopping night fishing at the beginning of the season, the abolition of scraping chains, and systematization of the simple trawls use. At the same time, a study of fishing gear impacts has been carried out to reduce energy consumption. This work shows that the gear used is light and does not have much contact with the sea bottom. However, the panels should be elevated to reduce even more risks of impacts.

The most important measure undertaken to protect marine turtle populations is the adoption by the Malagasy industrial fisheries, on a voluntary basis, of the Turtle Excluder Device (TED). This decision came from a workshop in July 2003 on shrimp fisheries management, and the Malagasy fisheries administration validated this decision the same year. In early 2005, although there were

technical and economic risks involved, all industrial shrimp fishing vessels were equipped with TEDs. Since then, the number of marine turtles caught has been significantly reduced to zero during the season.

In parallel, since 2003, shrimp-fishing companies have initiated a marine turtle monitoring programme showing that before the implementation of TEDs, 5 to 10% of marine turtles caught would die. It also assessed factors determining their mortality such as the towing duration. The monitoring programme has also demonstrated the migration of marine turtles between the eastern coast of South Africa, near the Mozambican border, and the western and eastern coasts of Madagascar. On-going studies are currently being developed to consider alternative measures to TEDs if they provide too many constraints.

In the first phase of implementing sustainable management of shrimp resources, GAPCM members have demonstrated the possibility of reconciling ecology and economy with exploitation. However, it should be mentioned that the new environmental measures developed up to now have brought only a few commercial advantages, and could eventually be prejudicial to the viability of all operations. This Association is therefore looking for public recognition, and ideally for the valorization of the agreed efforts within the market, upon which the sustainability of these voluntary measures greatly depends.

Programme support to the Sustainable Shrimp Resources in Madagascar is supported by the French Cooperation, the Fonds Français pour l'Environnement Mondial (FFEM), and the French Agency for Development (AFD.) The WWF Madagascar and West Indian Ocean Programme Office and the GAPCM are closely collaborating on aspects related to marine turtles and the protection of the environment.

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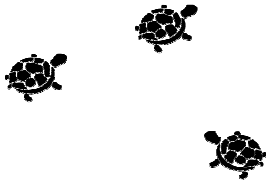

Research Partnership for the Iles Barrens

In November 2005, a multidisciplinary research partnership will be launched between Swiss, Malagasy and international researchers to carry out an environmental and social assessment of marine turtles in the South West Indian ocean. The research will be centered on the Iles Barrens off Maintirano in Western Madagascar - a major nesting site for green turtles which are traditionally used by the local Vezo fishermen as a source of meat and eggs. The research partnership, coordinated by the Geneva Natural History Museum, is supported by Geneva International Academic Network (Réseau Universitaire International de Genève - RUIG) and the City of Geneva. Other partners include IFREMER and the Réunion based turtle research centre (Centre des etudes et de Decouverte des tortues marine) which will conduct genetic studies to explore linkages between Indian Ocean and Atlantic green turtle populations in the Mozambique channel. The Graduate Institute of Development Studies (IUED) in Geneva which will focus on socio-economic aspects of the programme. IUCN's Marine Turtle specialist Group and UNEP CMS's IOSEA Secretariat will provide additional technical support.

WWF will build on the research results to define management options to ensure the long-term conservation of marine turtles in the Iles Barrens. Planned activities including education and awareness programme amongst the wider population, exploration of alternative means of livelihoods for local fishermen, and implementation of a community based management system providing capacity, opportunities and responsibilities to local fishermen.

WWF is also working with a Malagasy government initiative to establish the Conservation and Management Plan for Marine Turtles at national level in the framework of the Memorandum of Understanding for the Indian Ocean and South East Asia. A Task Force has been established to deal with modalities on the organization of a national workshop to finalize the Conservation and Management Plan and come up with the action plan.

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TEDs Pamphlet for Mozambique

WWF is part of a working group in Mozambique that has produced an illustrated pamphlet for fisherman to use as a guide to construct and install turtle excluder devices (TEDs) on their nets. It explains that the TEDs would not only protect endangered marine turtles, which are accidentally caught and killed during trawling operations, but would also allow Mozambican producers to enter the US market, which requires the shrimp exporters to be certified as TED users.

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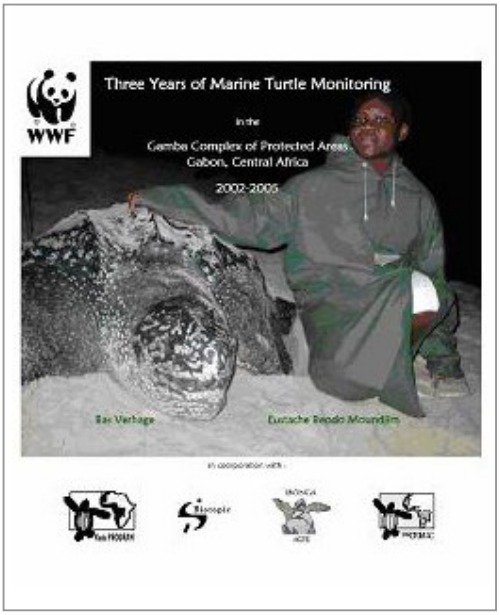
Publication Alert!

A report on three years of marine turtle monitoring in the Gamba Complex of Protected Areas in Gabon is available on the WWF website.



The report, which covers the years 2002-2005, reveals that there was a large (77%) decline in numbers of nesting leatherbacks during this period. The report's authors emphasize that it will be vital to continue monitoring the beaches of the Gamba Complex to confirm if these observations constitute a temporary decrease (and thus part of a natural reproduction cycle in West Africa) or show that the African leatherback population is in critical danger.

See:www.panda.org/about_wwf/where_we_work/africa/where/central_africa/gabon/publications/puNewsID=21710&uLangId=1

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WWF's mission is to stop the degradation of the planet's natural environment and to build a future in which humans live in harmony with nature by:
- conserving the world's biological diversity
- ensuring that the use of renewable natural resources is sustainable
- promoting the reduction of pollution and wasteful consumption.

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