WWF for a living planet®

Program Title:	**Kenya Integrated Sea Turtle Conservation (KIST-Con) Program**
International Program Number:	**623-A-00-08-00004-00**
Reporting Period:	**October 2008 – September 2009**

Annual Progress Report

October 15, 2009

The Lamu Archipelago is situated along the northern part of the east coast of Kenya. It stretches from the Somalia border in the North to the Tana River delta, which makes a natural border with the South. Lamu town was recently declared a World Heritage site under the UNESCO - administered convention on the World's Natural and Cultural Heritage. Furthermore, the marine parts of the Northern archipelago were designated a Biosphere Reserve (Kiunga and Kiwaiyu) under UNESCO's Man and Biosphere (MAB) concept, whereas the forested areas (Dodori and Boni) have been designated as National Reserves by the Kenya Government. The Lamu Archipelago is a vital part of the Eastern African Marine Ecoregion (WWF's Ecoregion Programme, Global 200). It is known to have extensive mangrove formations in the delta, creeks and basins of which 160 km² is considered in pristine or near pristine condition. The area has breeding populations of green sea turtles and dugong, as well as the occasional olive ridley and hawksbill turtles that come to feed in the area. It is also has the most northerly coral reefs in the Ecoregion, in addition to unique sea birds like Osprey, Pelicans and Roseate terns that sometimes make up a breeding colony of more than 10,000 birds.

The mandated natural resource management organizations have inadequate resources to manage and protect biodiversity, educate the community and enforce the law. Key to these is the lack of essential management guidelines for joint approaches to protected area management, leading to a lack of a coordinated approach in marine ecosystem conservation. The relevant government departments/authorities have major challenges in terms of operational tools and facilities. In addition, the local communities have little formal education and knowledge of scientific principles for assessing marine resources although they do posses goodwill and indigenous knowledge on resource conservation practices. Regardless of the above issues, the natural resources, habitats and biodiversity of Lamu Archipelago are of pristine character and encompass a great number of species, some of which are endemic to the area.

The Lamu Archipelago is one of the most important marine turtle nesting grounds in Kenya. Five of the seven sea turtle species that range in the Western Indian Ocean are found within the Lamu Seascape. Three among these species - Green turtle (Chelonia mydas), Hawksbill (Eretmochelys imbricata) and Olive ridley (Lepidochelys olivacea) nest and the other two -

Loggerhead (Caretta caretta) and Leatherback (Dermochelys choriacea) have been reported to feed within the Lamu Archipelago. The main areas of concentration are Kiunga, Manda Island and Shela. Over the years, WWF has mobilized the communities to protect the marine turtles both at sea and on the beaches.

WWF, in partnership with the Kenya Wildlife Service (KWS) has been running a successful conservation and development project in Kiunga Marine National Reserve (KMNR). Among the key components of the project is species protection, under which the green turtle is a flagship species. The main threats endangering turtles in the Lamu Archipelago are:

1. By catch by local fishermen as well as semi-industrial fisheries;
2. Poaching of turtle meat and eggs;
3. Marine pollution;
4. Disturbance from new tourism developments;
5. Targeted catching (turtling culture) by coastal communities;
6. International trade in turtle products;
7. Alteration and destruction of nesting beaches and habitats; and
8. Naturally slow rate of recovery of various populations under different levels of exploitation and stress.

To strengthen on-going efforts in community based protection of turtle nests and their habitats, the Kenya Integrated Sea Turtle Conservation (KIST-Con) Program was established to provide relevant ecological information on turtles in the area. The following progress has been made in implementing each of the program objectives:

Objective 1: Improve management and conservation of natural resources along the Kenyan Coast through strategic use of scientific monitoring.

Ten additional Kiwi SAT 101 PTTs (platform transmitter terminals) were secured. Four were planned to be installed on nesting green turtles in Kiunga MNR, and to date two have been installed; the other two will be installed on green turtles at Mongo Sharif on Rubu Island. The remaining six will be used to train other turtle conservation groups in Kipini, Shela, Watamu, Mombasa, Malindi and Kisite along the Kenyan coastline and will be installed during the last week of October 2009. The exercise was agreed with KWS to allow other TCG's to learn the process and significance of the turtle tagging process, providing these groups an insight into turtle foraging and inter-nesting areas within their conservation areas. The real time monitoring of sea turtles, mapping of migratory routes, foraging grounds and habitat range of sea turtles in all nesting areas will provide broader information to national conservation agencies. A further 40 TCG members were trained in the installation of satellite tags on turtles in addition to 25 in the first year of implementation. 10 among them were women. It was realised that not many women are involved in turtle conservation work despite their passion after being involved.

The satellite transmitters installed will be monitored to check how long they will last after losing signals after six months in the previous year. The tags are expected to last well into 2010 after procuring the recommended adhesives. It was also agreed to tag a few male turtles so as to monitor both sexes during the breeding season within the inter-nesting habitats. A keen interest will be taken during the monitoring phase. A poster was developed by the project team for the 6th WIOMSA scientific symposium held in La' Reunion in 2009 (Annex 1 of this report). A copy of this information

was shared with Fisheries Department and Kenya Wildlife Service staff. Other materials produced during the implementation period include:

- Maps of turtle annual maps of nesting beaches.
- Draft protocol for the handling of nesting female turtles, nest protection and monitoring guides and nest translocation.
- Visitor Guides for turtle conservation groups youths involved in Lamu.
- Curricula for primary school kid's turtle awareness sessions.
- Power point guide on satellite tagging process.
- Standardize turtle nesting data sheets.

WWF was appointed the coordinating agency of turtle conservation initiatives in Lamu due to our strategic presence, technical and financial support it is extending to all TCGs in Lamu. The position has allowed for standardization of turtle conservation protocols in Lamu in nest handling, translocation and protection and monitoring. KWS is working on adopting these protocols for all TCGs. WWF remains a key advisor in the turtle conservation advisory panel instituted by KWS. The WWF collaborative sea turtle project underlined its importance in sea turtle conservation in Kenya through its contribution and involvement in the formulation of the Kenya Sea turtle conservation strategic plan.

The Geo-referenced database continues to be updated in the current turtle nesting period. Data is being collated on the likely effects of rising sea levels on nesting turtles from the WWF database on nest translocations laid within the high water mark for the past 5 years. Nest translocation is done to reduce preying incidences on nests and avoids nests being washed away by currents when laid below the high water mark. 80% of the nests reported were trans-located due to the turtles laying nests below the high water mark.

Various thematic maps of turtles and their nesting beaches were developed and shared with the District Environment Committee (DEC) to enable informed decision making in accepting or rejecting any new proposed developments within KMNR catchments with potential effects on these biologically valuable areas. It is mandatory for all types of development to be cleared by the DEC under the 1999 Environment Management and Co-ordination Act of Kenya.

The project in collaboration with communities and other partners was able to protect nests sites in Kiunga Marine National Reserve (KMNR) and beyond. A total of 140 nests were protected averaging 17,710 eggs. Current trends indicate a success rate of 88%. We expect to release approximately 15,585 hatchlings. Community contribution in this achievement stands at 60%. This is attributed to the close collaboration between WWF and its partnering communities. Data on turtle diseases continues to be collected though is not conclusive at the moment. However, *fibriopapiloma* remained the highest cause of mortality reported both within KMNR and in Shela and Kipini.

Objective 2: Increase awareness and incentives for communities and private sector to monitor and safeguard turtles.

The project engaged Fishermen Beach Management Units (BMU) in awareness programmes on the importance of turtle conservation as an important species in the marine environment, an important and endangered natural heritage and as an attraction for tourists. Close collaborations between fishermen and youths involved in turtle conservation were encouraged to provide an opportunity to realize that conservation and livelihood interests can be harmonized and operate side by side.

Negotiations between fishermen and turtle conservation groups have areas earmarked as tourist attractions to be zoned and protected. The arrangements are aimed at reducing conflicts between different resource users, introducing revenue sharing and agreeing on complementary roles that each interest group will play.

The participation of the local community in turtle conservation remains the key milestone to the overall success of the implementation of the KIST-Con Program. The support and active participation of the community is essential especially in the view that turtling is a culture amongst the Bajuni community and turtles are slaughtered indiscriminately just across the border in neighboring Somalia.

The incentive program continues to complement the dedication and commitment of the youth and community in general and includes the following:

Local Youth Volunteer Program – 75 new youth volunteers were involved in the turtle youth volunteer program during this period.

Co-ordination with other TCGs (Turtle Conservation Groups) - WWF–Kiunga WWF has been endorsed as the co-ordinating agency for turtle conservation work in Lamu. This is a direct response to supporting the most successful turtle protection initiative along the Kenyan coastline. Data collection, analysis and community involvement have been the strength of the programme. It has also embraced and shared satellite tracking technology to understand and improve management of the species.

Support to Kipini TCG – WWF continued extending its support to Kipini Beach Management Unit (BMU) and Tana Friends of Marine Environment (TAFMEN) with training on sea turtle habitat and nest protection, combating poaching and trade in turtle products as well as effective patrolling of turtle nesting beaches. This was done through exchange visits and staff/skills exchange with an aim of replicating KMNR turtle conservation successes. Kipini reported 24 nests laid by green turtles and 3 laid by Hawksbill.

Recovery in the tourism sector prompted TCGs in Kiunga, Kipini and Shela to gradually embrace eco-tourism as an alternative livelihood. This is a direct result of a symposium with 40 participants held on 16th June 2009 on ***"Sustainable Livelihood Opportunities from Turtle Conservation"*** organized for youths networking from all three WWF supported sites. Dialogue with the private tourism investors to develop partnerships with TCG's is being spearheaded by KWS Wardens and facilitated by WWF. One lodge in the project area has started working with the Chandani Turtle Conservation Group providing material support and bringing in guests to experience turtle nesting and hatchling process at a fee. A second lodge has expressed its willingness to work with the Mkokoni group to bring in guests interested in experiencing turtle nesting moments.

A major achievement has been linking the three TCGs involved with a local marketing partner in Lamu. The project brought in representatives of Dhow Operator Groups from Lamu to KMNR and facilitated meetings with each group to sample attractions in KMNR hosted by TCGs. A second meeting between the 3 TCGs from KMNR and the Lamu Dhow Operator group resulted in an initial agreement to market attractions in KMNR to tourists coming to Lamu and share income generated. Subsequently, four groups of tourist were hosted by the TCGs brought in by Lamu Dhow operators. Both parties involved in the agreement are happy with the arrangement. The project is facilitating

training in business development, financial management and registration of the groups as business entities. Training in visitor handling has been carried out for over 30 youths in KMNR.

The project assisted the TCGs to document extensively the possible tourist attractions and packages, at the recommendation of the Lamu Dhow operators group. This information will be used to develop brochures as a marketing tool for the ecotourism groups. Standardization of the KMNR ecotourism groups remains a challenge with the registration delaying the process. Numerous requirements in the tourism industry are delaying the groups achieving full operational status.

Objective 3: Scale-up monitoring and enforcement activities to priority areas (high threat, high potential), especially those areas where turtle protection groups are not yet functional.

Kipini and Shela turtle conservation groups were supported by the project through monthly outreaches to supervise their handling on turtle protection and monitoring by the WWF turtle team. Linking the groups with KWS personnel in their area of operations is expected to improve the groups' effectiveness in curbing poaching. They were trained prior to this reporting period on turtle conservation protocols including, nest handling, translocation etc. In Kiunga, a new outpost at Mvundeni was revived to ensure monitoring and protection of important turtle breeding beaches of Kitanga, Kikuu, and Mongoni. This step was undertaken with full cooperation of KWS as a deterrent for migratory fishermen who pose a threat to nesting females when they set temporary landing sites in the vicinity.

Joint Sea Patrols – In collaboration with the Kiunga Beach Management Unit, the turtle team conducted several joint sea patrols every week around the fishing grounds and turtle foraging grounds. This is intended to monitor compliance, and act as a deterrence measure towards turtling. Over 43 joint sea patrols (youth volunteers, fisher folk and the WWF turtle team) were carried out at Mongo Shariff, Kui, Sudhi, Kiunga Mwini, Kiunga and Ishakani fishing grounds. WWF has registered several cases of poaching within Lamu. KWS, as a partner in the implementation of KIST-Con, sent its elite intelligence and enforcement team to areas that have been identified to have rampant turtle poaching activities. Four turtle poaching cases were prosecuted in the Lamu Law courts after being reported by WWF community youth volunteers.

Turtle & GIS database – WWF – Kiunga continues to share and disseminate turtle data and share crucial turtle conservation information to relevant partners and government agencies. KWS tapped into WWF's extensive turtle database to inform its formulation of the Kenya Sea Turtle Conservation Strategic plan. Efforts are being made to embed information on satellite tracking of sea turtles in the database.

Sensitization and dialogue between WWF turtle conservation and Fisher folk – Forty two discussions sessions on turtle conservation were held between WWF/KWS and fisher folk during the reporting period. Women who were involved in the discussions provide eye opening information especially on community beliefs associated with turtle products, including:

- turtle oil cures asthma;
- turtle oil when mixed with porridge reduces strokes and high blood pressure;
- turtle meat improves fertility and is an aphrodisiac;
- turtle oil is good for hair growth in women; and
- turtle meat improves the appetite for sick people.

Capacity Building

WWF has also undertaken the following through the KIST-Con program to build and enhance capacity for the communities involved and key WWF and KWS staff:

- Key WWF and KWS staff trained in GIS were able to share their knowledge and skills by training 3 youths groups in basic mapping skills.
- In addition to the 25 key staff trained in turtle satellite tagging techniques, all turtle conservation groups in Lamu were trained in satellite tagging and its significance in managing turtle populations.
- WWF supported outreaches to Lamu schools to build capacity of school going children on the significance of turtle conservation to the region, country and even globally. 400 children were reached.
- TCGs were trained on using available knowledge to develop strong educational messages on the importance of conserving turtles for all target groups, most importantly fishermen.
- WWF trained all KWS rangers in scientific monitoring of turtles and enforcement efforts towards protecting turtles.
- 20 youths and 5 women leaders involved in turtle conservation association income generating activities were trained in business development, group dynamics and financial management.
- 15 trainers were trained in mapping and GIS for natural resource management with specific focus on marine zoning.
- 33 youths and fishermen have been trained in boundary marking and zoning for marine areas of special interest.

Conclusion

An upsurge in poaching incidents reported by youths from TCGs motivated through skills and incentives has produced good responses from enforcement agencies – KWS and Fisheries Department apprehended four poachers during this reporting period. This is a significant deterrent and has resulted in a decline in poaching incidents. A significant increase of ownership by TCGs is readily noticeable, along with prospects for earning ecotourism income by the youth groups involved. The personnel from government partner agencies and other stakeholders are also excited by the satellite tracking of nesting turtles, rejuvenating their energies and interest in turtle conservation.

A significant challenge has been in training the youth in enterprise management. This is due to low literacy levels, minimum exposure and skills in the tourism operation and management. Functional partnerships have to be forged between local groups to guarantee trust in conservation initiatives. The process will require more time and resources, but is one of the most appropriate approaches to achieve sustainable turtle conservation. Linkages and trust with government agencies also have to be galvanized through closer collaboration.

Report Completed By:	
Name	Ali Mwachui
Position/Title	Project Executant, Kiunga Marine National Reserve (KMNR)
Organization	WWF Eastern Africa Regional Programme Office (EARPO)
Date	15th October 2009

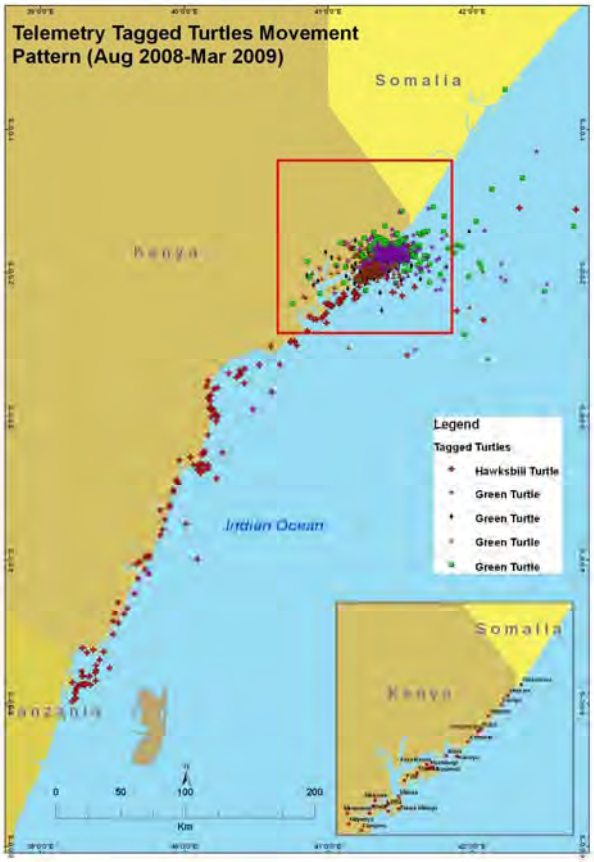
Annex 1: Poster developed by WWF for the WIOMSA scientific symposium in La' Reunion in 2009

Telemetry Tagging and Collaborative Sea Turtle Conservation in Kiunga Marine National Reserve, Kenya

The Lamu archipelago (40° 07' E, 2° 00' S) is located at the northern extreme of the Kenya coast near the border with Somalia. The area has high biodiversity importance due to nesting activities of marine turtles and migratory birds, the presence of dugongs and whales, has the largest area of mangroves in Kenya, and a series of patch and fringing coral reefs, numerous barrier islands and on the offshore rocky reef. Kiunga Marine National Reserve is located at the northernmost stretch of the archipelago extending over some 50 km in length by 3-5 km in width (from about 1° 42.25'S 41° 31.78'E to 2° 2.58'S 41° 14.80'E). The reserve gained protection status in 1979 under the Wildlife Conservation and Management Act of 1976 (Weru et al, 2001) and contains 25 turtle nesting beaches with the beaches on Rubu island consisting the most important turtle nesting sites

Turtle-Tagging Team © Kimunya Mugo, WWF ESARPO

Satellite-Tagged Turtle © Mike Olendo, WWF ESARPO



Introduction

Artisanal fishing is the main economic activity in KMNR. Turtling and turtle species are of cultural significance to the Bajuni community. Marine turtles are caught incidentally in gillnets or intentionally with a traditional form of gillnet locally referred to as Lasha set in known turtle foraging grounds. The sea turtles products such as the carapace, oil and meat have a lot of cultural significance to the Bajuni community. Marine turtle conservation in KMNR is joint initiative between the local community and WWF/KWS.

Satellite Tagging Technique

The Platform Terminal Transmitter is attached using epoxy glue to the turtle carapace on the second costal scute. The transmitter sends a signal to the satellite which tracks the turtle's position around the world each time it surfaces for air. Inherent data – loggers record speed, depth, acceleration and temperature of water.

Why Satellite Tagging?

There are many factors that determine the fate of sea turtles but only one is non – negotiable "the biological factor" No matter what conservation measures are adopted if they are not in tandem with biological facts of the life of sea turtles they will not work.The options of conserving sea turtles are limited by the animals themselves & by our in adequate knowledge of them. The biologically/ecologically limiting factors that satellite tagging will be integral in solving and enhancing knowledge include:

- Mysterious & inaccessible life cycles with many of the ecological relationship totally obscure
- Long migration that span international borders
- Unknown population dynamics
- Unknown taxonomic relationships of different populations
- Nesting cycles of variable length which make yearly census difficult to interpret
- Exceedingly long maturation time

Other areas where the telemetry tagging will be important in eliciting management options are:

- Internesting habitat
- Migration routes
- Feeding grounds
- Hibernacula

Nesting Cycles

Tagging programs world wide have a common feature of limited return tags. Nesting cycles exist the question is whether they occur in majority of the population or merely in a small & exceptional portion of the population. How is the typical is the reproductive cycle of turtles it is important from a conservation point of view that we are certain.

Site- fixity of Turtles

Homing orientation of turtles is not confined to breeding migrations; it is also used in maintaining home range boundaries by non – breeding individuals

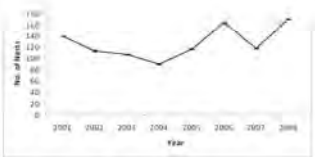


Fig1: Temporal Turtle Nesting Trends

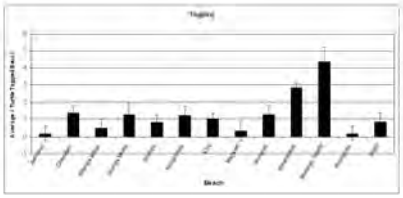


Fig2: Analogue Tagging Trends

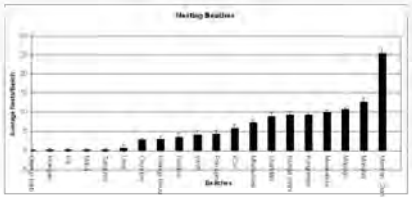


Fig3: Turtle Spatial Nesting Trends

Management

We need to increase our understanding of sea turtle in terms of reproductive biology, hatchling survival, dispersal patterns & growth. Such knowledge will enhance ability to effectively protect & conserve sea turtle habitats. As part of conserving critical habitats long term research is a pre-requisite not only for the habitat but also for the species itself.

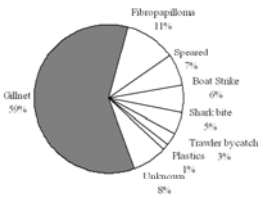


Fig4: Causes of Turtle Mortality

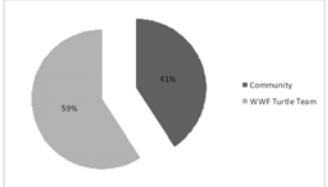


Fig5: Turtles Nest Reporters

Mike Olendo[1], Nassir Amiyo[2], Sam Weru[3], Ali Mwachui[1], Hashim Zeid[1], Hassan Bwanamkuu[1], Mzee Mohamed[1], Bwanaheri Bwanahamadi[1] and Zachary Martlim[1]

1. WWF Kiunga Marine National Reserve Conservation &Development (80500) Lamu Email:lze-amike@gmail.com,amwachui@gmail.com, hashimzeid@gmail.com,bwanaheri@gmail.com, mmohamed1@gmail.com
2. Kenya Wildlife Service, Coast, P.O.BOX 82144, Mombasa Email: nassiie@gmail.com
3. WWF East African Regional Programme Office (EARPO) Email: Sweru@wwfearpo.org, ZMartim@wwfearpo.org