UN environment CMS

MEMORANDUM OF UNDERSTANDING ON THE CONSERVATION AND MANAGEMENT OF MARINE TURTLES AND THEIR HABITATS OF THE INDIAN OCEAN AND SOUTH-EAST ASIA

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Agenda Item 9.1

UPDATES ON THE STATUS OF IOSEA NETWORK SITES

RUFIJI-MAFIA SEASCAPE

(Prepared by the United Republic of Tanzania)

Update on the Status of the IOSEA Network Site
(Version: 21 August 2019)

[Rufiji– Mafia Seascape (Site of Importance for Marine Turtles in the Indian Ocean - South-East Asia Region)]

A. Date of submission (DD/MM/YYYY):
The date on which the questionnaire was completed.

05/09/2019

B. Name and address of compiler(s), if not the IOSEA Focal Point
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C. Country: *The name of the country in which the site is located.*

UNITED REPUBLIC OF TANZANIA

D. Name of site: *The name of the site (alternative names should be given in brackets).*

RUFIJI-MAFIA SEASCAPE

1. Have there been changes in the management authority?
Name, address and contact details of the body responsible for the direct local conservation and management of the site, if different than in original proposal.

None

2. **What are the current population numbers and trends for the marine turtle species present at the site?**

Please insert population numbers for each species present and the year when the population was estimated, as well as the population trend (e.g. stable, increasing, decreasing, unknown)

An annual nesting green turtle population assessment commenced in 2012 and is conducted during the peak nesting months of April and May in Juani Island which supports the largest green turtle rookery in Mafia Island. Between 2012 and 2018, a total of 140 individual female green turtles were encountered on nesting beaches (identified using titanium flipper tags).

The number of females nesting during the peak season has ranged from 13 – 33 and appears to be stable. Analyses of flipper tagging data for the period 2012 - 2018 have produced an estimated population of 41 - 72 nesting females. The seven-year dataset is now generating information on re-migration intervals which will help to refine the population assessment.

There are no data available on population numbers or trends for other marine turtle species in the Rufiji-Mafia Seascape.

3. **Have there been any changes in land/sea ownership, protected status, legislation and/or governance framework, which affect the site?**

Describe any changes to legislation / regulations relevant to the protection / conservation of marine turtles and their habitats at this site, and comment on their effectiveness.

Mention any changes in nationally relevant protected area status, international conservation designations and, in the case of transboundary sites, bilateral or multilateral conservation measures which pertain to all or part of the site since 2014. If a protected area or reserve has been established (at a national/regional level), give the date of its establishment and size. If only a part of the site is included within a protected area, the area of marine turtle habitat that is protected should be noted.

New International designations since 2014 may include sites listed under the UNESCO/World Heritage Convention, Man and Biosphere Reserve Network, Ramsar Convention, other site conservation networks, etc. Where appropriate, list the IUCN (1994) protected areas management category(ies) that apply to the site.

The National Fisheries Sector Policy (1997) and strategy statement along with its instruments have been reviewed. The current policy (2015) is designed to take on board interventions that are geared to ensure sustainable fisheries resources management, development, conservation and utilization; that will be implemented at national and local levels and by public and private sectors. Among the key areas highlighted in this policy include; i) resource management and control, ii) efficient resource utilization, iii) applied and strategic research, iv) extension services; and v) regional and international cooperation. All these areas in one way or another address specific challenges associated with conservation of sea turtles and their habitats.

The policy continued to place sea turtles among the group of organisms which are known as fish. In addition, sea turtles are recognized as endangered species and therefore require special attention. It also states categorically that the national obligations to manage fisheries resources doesn't recognize man-made or political boundaries. Thus, the development and management of shared fisheries resources calls for regional and international cooperation, this is in line with objectives being addressed in the Memorandum of Understanding of sea turtle in the IOSEA MoU.

Reviews of laws supporting the implementation of the Fisheries Policy of 2015 are underway. The laws being reviewed include the Fisheries Act No. 23 of 2003 and Fisheries Regulations of 2009, and Marine Parks and Reserves Act No. 29 of 1994. The policy also identifies the roles of other sister ministries in undertaking responsibilities related to the fisheries sector.

The Division of Environment at the Vice President's Office has made deliberately effort to ban the use of plastic bags in mainland Tanzania. This action was done concurrently with the amendment of the regulations under the Environmental Management Act (2004), which clearly states that use, possession and/or manufacture of plastic bags within the country is illegal. This is a great and historical milestone in environment conservation, as we are aware that plastic garbage/materials are among the major threats to marine organisms, including sea turtles.

4. What are currently the most important threats to marine turtles and their habitat at the site?

Describe the human and natural factors negatively affecting the ecological character of the site, both within and in the vicinity of the site. These may include new or changing activities/uses, major development projects etc., which have had, are having, or may have a detrimental effect on the natural ecological character of the site. For example, describe in terms of the percentage of coastline (or other area) modified/affected by a particular threat; for egg collection, describe in terms of number of nests, per species, per year. Mention also data-deficient threats, where a threat is known to be present but is not quantified. Collectively, this information should provide a basis for monitoring of ecological character of the site.

Sea turtle and/or egg poaching:

Egg poaching

Despite various conservation measures such as awareness raising campaigns, enforcement and monitoring within the seascape and along the entire coastal area, a few incidences of egg poaching have been reported (6 nests between 2015 and 2018 in Mafia District). Local communities residing along the coast are traditional users of turtle eggs. The eggs are traced easily through turtle tracks left during nesting events.

Predation

Nest predation is another threat to sea turtle eggs. Between 2015 and 2018, 45 nests were predated by monitor lizards in Mafia District.

Sea turtle poaching

Deliberate killing or capture of sea turtles continued to be a threat in some areas along the coast of Tanzania. Research conducted by Sea Sense NGO in Lindi region (2015) which is located to the south of the Rufiji-Mafia Seascape, revealed that there was both **incidental** and **intentiona**l capture of sea turtles, especially green turtles and a few hawksbill turtles for consumption. Incidental capture is a result of by-catch in artisanal gill nets as well as commercial prawn fishery which has been opened for few vessels after eight years of closure, while intentional is through use of specially adapted gill nets, known locally as *likembe* which have large mesh sizes to target sea turtles.

Pollution:

A number of activities are taking place in the upper stream areas of Rufiji Delta that contribute to pollution as highlighted below.

Agricultural activities

The Southern Agricultural Growth Corridor of Tanzania (SAGCOT) continued to implement its objectives which aim to improve agricultural productivity, food security and livelihoods in the southern corridor. Rufiji Delta is one of the six clusters under SAGCOT. Agricultural activities being implemented may change water patterns and balances in the future and agricultural run-off may impact foraging grounds as well as breeding habitats for sea turtles.

Construction of Hydroelectric Dam

Construction of a **hydroelectric dam** on the Rufiji River has commenced after decades of debate about the proposed development. The Arab Contractors Company from Egypt has been awarded a tender for construction. It is estimated upon completion the hydroelectric dam will generate 2115 megawatt of electricity. The Environmental Impact Assessment has been conducted to minimize if not address both environmental and social impacts associated with construction of the dam. Some of the likely negative impacts are less flow during the flood season and greater flow during the dry season. The overall impact would be decreased variation of salt intrusion over the year. For example, at the sea side of the delta, average salinity would increase and affect seagrass and mangrove habitats as well as the productivity of fisheries and other marine organisms.

Gas exploration/exploitation project

The number of gas discoveries is increasing along the coast area of Tanzania. Exploration which was taking place at two deep-water blocks located 100km offshore from the Rufiji Delta confirmed presence of large gas reserves. However, to-date there has been no exploitation of the gas reserves. Monitoring data shows that at present there are no strong flare lights or noise pollution created by generators and machines which could affect all forms of life including turtles nesting on beaches closer to the gas wells.

Natural Hazards:

Flooding has been identified as a major driver of erosion in the area, as it regularly affects the riverine villages and causes erosion in the mangrove areas. Apart from the floods and river flow, erosion is also brought about by wave action, tidal movement, and ocean currents in the coastal areas, which affects the mangroves within the Rufiji Delta. Floods also destroy natural land cover, displace indigenous plants and animals, uproot mangrove trees and cause mortalities of mangroves by trapping excessive loads of sediment on their roots.

Illegal fishing in the area: coral damage and bycatch:

Illegal fishing methods/gears particularly the use of explosives (blast fishing), small mesh size nets and beach seines have been reduced significantly in almost all Tanzania water bodies, following large scale enforcement operations conducted by the fifth phase government machinery in collaboration with different actors including local community members. If the current initiatives against illegal fishing persists, illegal undertakings which damage ecological systems will remain a history.

Habitat destruction/modification:

Benthic habitats are modified or destroyed through deposition of thick layers of mud in the Rufiji riverine zone, which may favour opportunistic or invasive species against endemic species to settle in the habitats. Floods bring nutrient-rich and pollutant contaminated water from up-stream cashew-nut agricultural lands that cause pollution to the marine environment, develop algal blooms that adversely affects marine organisms due to oxygen depletion. Human beings are also exposed to high risks of contagious and incurable diseases by eating contaminated marine organisms/fish. Furthermore, communities in the flood areas of Rufiji are always experiencing a serious shortage of food due to very low crop production, while others have lost their property, including houses, and remain homeless.

Rice farming and creation of salt pans in the Rufiji Delta modifies the mangrove areas into bare saline patches due to extensive clearance made by local community members staying within and adjacent to the area.

Socio economic factors:

Demographic trends, coupled with requirements of economic growth suggest that pressure on coastal areas and their associated resources will continue to increase. It is obvious that sole resource dependence is an outcome of poverty among community members, However, most of the people depending on natural resources are not getting even sufficient livelihoods or making any savings from their dependence. Instead, their daily earnings suffice hand-to-mouth requirements only. Resource dependence seems to be the underlying cause of migration from inland areas to the Rufiji Delta and Mafia Island for fishing, fish trading, and work in gas exploration/exploitation activities, or other business ventures. Migration could be associated with an increased demand of resources, which in turn caused over-exploitation or illegal harvesting of resources including intentional capture of sea turtles. Increasing human populations are likely to be accompanied by an extension and intensity of anthropogenic disturbances.

5. New conservation and management interventions taken since 2014 and measures planned for near future

Describe conservation and management interventions taken at the site to address threats since 2014. Any application of coastal and marine spatial planning, or integrated coastal/marine zone management planning, involving or affecting the site should be noted.

Describe any other new conservation measures taken at the site, such as restrictions on development, management practices beneficial to wildlife, closures of fishing, etc. (Note that information on any monitoring schemes and survey methods should be given under point 19, below.)

Where applicable, describe public outreach and communication activities. In addition, if applicable, describe any new developments in the involvement of local communities and indigenous people in the participatory management of the site, including co-management activities, surveillance and enforcement, and performance evaluation since 2014.

Developing a model for strategic adaptive management of MPAs in the Western Indian Ocean Project:

This project aimed at addressing the problem for ineffectively managed MPAs in the Western Indian Ocean (WIO) region, as most MPAs are not managed using science-driven approaches. With uncertain ocean conditions resulting from climate change and increasing human pressures, lack of flexible and responsive management puts MPAs at risk. Failure to take management action in response to environmental change may result in collapse of MPA systems in some areas.

The project developed a tested and flexible framework (strategic adaptive management - SAM) that enables MPA managers to integrate science and management directly. SAM entails a process of learning by doing, where social and ecological indicators have been monitored to evaluate measurable objectives and management actions. Through this project, the threats to MPAs and constraints to the use of scientific information in MPA management decision-making in the WIO were assessed. Mafia Island Marine Park (MIMP) which forms an integral part of Rufuji Delta – Mafia Seascape was one of the pilot areas strengthened by creating a more streamlined approach to the use of data resulting from MPA monitoring efforts.

This project has created strong linkages between scientific research (data) and management in WIO MPAs including MIMP, empowered MPA managers through knowledge, and evaluation of management actions as part of ongoing, adaptive socio-ecological management. Using a combination of research and management implementation, this project addresses key information gaps that have been identified in specific MPAs and the WIO region at large, and supports the development of management objectives, incorporation of data into management decision-making, evaluation of management effectiveness, and capacity building.

Building capacity for co- management of East African MPAs via collaborative learning exchanges:

The objective of the project was to work toward effective co-management of MPAs in the Western Indian Ocean, so that MPA governance and benefits are shared equitably between local communities and government management agencies. With support from SwedBio, co-management pilots in two MPAs were launched, one in Kenya (Mombasa Marine Park) and one in Tanzania (Mafia Island Marine Park), through learning exchanges. Kenya and Tanzania have similar marine ecological systems, but dramatically different marine governance systems for fisheries and MPAs and different management challenges. Tanzania has officially embraced collaborative management with communities but was suffering from extensive blast fishing and difficulties in enforcement, especially in areas which are open access. In contrast, Kenya has historically had top-down management with strong enforcement of MPA regulations that might alienate communities. However, Kenya has recently seen the rise of numerous locally-managed MPAs as community perception of benefits of MPAs has increased over time.

Through this project which was complementing SAM, a number of activities have been conducted with intention of fostering co-management principles. Some of the activities implemented include sharing lessons learned and experiences attained in managing resources. This was done through exchange visits and meetings, gathering of information through questionnaires and monitoring of resources including sea turtles.

Building capacity of co-management institutions:

In 2019, data collection and communication training sessions were conducted for statistics committees of four Beach Management Units (BMUs) and one Village Liaison Committee (VLC) in Mafia Island. The objectives of the training were to strengthen the capacity of the BMUs and VLC to collect quality data on marine wildlife and threats to marine species; to equip BMUs with the necessary skills to be able to share information with their communities and other stakeholders in an engaging and meaningful way; and to be able to recognize the formal and informal pathways that are available for reaching different types of stakeholders. There were 28 participants.

Community outreach

Community outreach activities conducted by Sea Sense NGO are ongoing within the Rufiji-Mafia Seascape.

Between 2016 and 2019, community theatre groups trained by Sea Sense produced a series of short plays to deliver key messages about the impact of illegal fishing practices on sea turtles and dugongs, the importance of seagrass conservation and links to local fisheries based livelihoods, the impacts of poor waste management and the role of community leaders in governance of marine and coastal resources. Theatre performances were held in 13 villages in Mafia District, reaching over 6,000 people.

In 2018, a community event was held in Kilindoni, Mafia Island to celebrate World Fisheries Day (21st November). Sea Sense collaborated with Kilindoni Beach Management Unit to present targeted messages on the impacts of illegal fishing practices on marine ecosystems and coastal livelihoods; community roles and responsibilities towards conservation and management of marine resources; the importance of legal and sustainable fishing practices; the role of marine biodiversity in uplifting the district economy through tourism activities; the impact of poor waste management on marine biodiversity; the role of good governance in marine resource conservation; and the impact of the marine curio trade on ecosystem health.

In 2018, a marine wildlife road-show passed though in 10 villages in Mafia Island and succeeding in reaching a large cross section of the community including women, youth, children and elders. One of the most important outcomes of the road-show was the commitment made by women to stop preparing, cooking and serving sea turtle meat. The road-show reached 2,080 people directly. It is estimated that the road-show content reached a further 8,000 people indirectly through information sharing within households.

Waste Management

In 2016 Sea Sense NGO conducted a waste management education programme in the Rufiji-Mafia Seascape.

Marine pollution education programmes were delivered at three secondary schools (Kilindoni, Kitomondo and Micheni) to a total of 120 students in Mafia District. The programme focused on the impacts of plastic on the environment and human health.

25 primary school pupils from Jaja village, Rufiji District participated in a simple waste management education session and learned about different types of waste, sources of waste and the importance of disposing of waste appropriately to avoid illness and disease. The pupils then participated in a community clean-up day in their village.

50 school pupils from two secondary schools in Mafia District participated in an environment and public health education event on International Coastal Clean-up Day focusing on a clean-up of Kigamboni beach. 800m of beach was cleaned and 814kg of waste was collected including 8,994 plastic bags and 3,067 plastic bottles.

45 peer educators in Mafia Island and 23 in Rufiji District were trained by Sea Sense in waste management and health. Participants were made aware of the types of waste and how they enter the environment through human activities. The impacts of waste on the environment, human health and marine wildlife were explained.

A community awareness event was held in Kilindoni, Mafia Island on World Oceans Day. Pupils from Kitomondo Secondary School led a beach clean-up at Kilindoni fish landing site and harbour area. Village leaders and other community members (fish traders, fishers shop keepers and food vendors) also participated (total of 150 people).

On International Coastal Clean Up day (September 2016) Sea Sense organised a community theatre performance in Mafia District to raise awareness about waste management. Approximately 1,500 people attended the theatre performance.

World Environment Day in 2016 was celebrated through a community event in Mafia Island, reaching 850 people. Sea Sense mobilized a variety of community groups to conduct a series of environmental clean-up activities. 35 pupils and four teachers from Kitomondo Secondary School went to Juani Island to conduct a beach clean-up. Other clean-ups were done at Kilindoni fish landing site and at a drainage system close to the harbour. 24 citizens (included fishers, fish traders, shop keepers and food vendors), five village leaders and five volunteers from Frontier NGO were involved in the clean-ups in Kilindoni.

A community awareness event was also held in Jaja village, Rufiji District in December 2016, led by the peer educators that had received training from Sea Sense on waste management and health. Approximately 300 people participated in the event which included a clean-up of the village and a community debate on the links between environment, waste management and public health.

Following the events, targeted community Focus Group Discussions (FGD) were held in four villages in Mafia Island and two villages in Rufiji District. The District Health Officer from each district led the discussions and a total of 232 community members participated.

Whale Shark Forums

In 2019, two awareness forums were held to sensitize ring net fishers and whale shark tour guides in Mafia Island whose economic activities threaten whale shark welfare. 30 ringnet fishers, including 4 women and 28 whale shark tour guides participated in the forums. The latest scientific data on whale shark biology and behaviour was shared, in order to influence resource user's decisions on how they conduct their livelihoods activities. The sessions included group discussions between participants on strategies to reduce threats to whale sharks and other marine wildlife from livelihoods activities.

6. Current / proposed scientific research and monitoring since 2014

Name current and/or proposed scientific research projects and their start and end dates, relating to marine turtles and their habitats. Please describe monitoring activities (e.g., tagging, satellite tracking, genetic sampling, nesting and foraging ground surveys, ongoing beach monitoring, etc.). Cite relevant published papers in support of the submission.

Nest monitoring

Sea Sense Conservation Officers conduct daily beach patrols to monitor sea turtle nesting activity. The number and species of nesting turtles are recorded based on track counts. Nests under threat from poaching, predation or tidal inundation are relocated to a safer area using internationally agreed protocols. Each nest is monitored throughout the incubation period. After hatching, each nest is excavated to determine emergence success. Between 2015 and 2018, Conservation Officers recorded 772 nests (green n=769; hawksbill n=3). 58,598 hatchlings safely reached the sea.

Population Census

A nesting green turtle population census is conducted every year during the peak nesting season (April and May). Teams of two surveyors conduct night time foot patrols between 19:00 and 06:00 hours every night on four beaches in Juani Island, Mafia District where most nesting is concentrated. Each female turtle encountered is measured (curved carapace length and width) and examined for the presence of existing tags. If not already tagged, individually numbered titanium tags (TZ series) are applied between the first and second scale along the posterior edges of the front flippers. Tags are applied after ovi-position is complete, to minimise disturbance. Tagging data are entered into a tagging database and analysed to allow calculation of clutch frequencies, inter-nesting durations, levels of nest site fidelity and re-migration intervals.

Sea Turtle Mortalities

Conservation Officers record strandings of sea turtles during their daily patrols. Morphometric data are collected from the stranded specimens including species, width, length, sex (if known) and presence of any tags or markers. Evidence of any external injuries are recorded to give an indication of the possible cause of death. Between 2015 and 2018, 298 sea turtle mortalities were recorded by Conservation Officers in the Rufij-Mafia Seascape. Mortalities were dominated by green turtles (n=260), but also included hawksbill (n=25), leatherback (n=6) and loggerhead (n=5) turtles.

Dugongs (*Dugong dugon*) of the Western Indian Ocean Region: Identity, Distribution, Status, Threats and Management (March 2014 – April 2018).

Fine scale seagrass surveys using snorkel were conducted in the west coast of Mafia Island, central Rufiji Delta and southern Rufiji Delta. Survey sites were identified using local knowledge gathered through community theatre and Focus Group Discussions with fishers and village elders. Surveyors swam along 50m transects and recorded the percentage cover of seagrass. Seagrass samples were collected from within each quadrat to determine species composition. Surveys in the southern Rufiji Delta focused on sub-tidal seagrass meadows close to Ndutu reef in Mohoro Bay. Survey sites in Mafia Island were at Mbarakumi Island, Tumbuju Jojo and Bwejuu on the west coast of Mafia. In the northern Rufiji Delta where poor water visibility prevented in water surveys, surveys of beach cast seagrasses were conducted. Seven seagrass species were identified: *Cymodocea rotundata, Syringodium isoetifolium, Enhalus acoroides, Thalassodendron ciliatum, Thalassia hemprichii, Halodule uninervis and Halophila ovalis.*

7. Briefly describe current financial as well as capacity-building needs

Identify fundraising and capacity building needs for the site (e.g. in relation to monitoring, management interventions, surveillance and enforcement, and performance evaluation).

8. References since 2014

List any new references relevant to marine turtle records and to the site, including management plans, major scientific reports, scientific articles and bibliographies. When a large body of published material on the site is available, only the most important references need be cited, with priority being given to recent literature containing extensive bibliographies. Reprints or copies of the most important literature should be appended whenever possible. Provide website addresses of references where available.