

Sea
Sense



Helping coastal communities protect endangered marine life in Tanzania

ANNUAL REPORT 2017



***Working with coastal communities to conserve
and protect marine wildlife in Tanzania***

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BACKGROUND

Coastal ecosystems link marine, estuarine, freshwater and terrestrial environments and support the physical and biological processes that underpin the health of the wider marine ecosystem. They are among the most biologically productive environments in the world and also play an important role in climate regulation through the storage and sequestration of carbon. Conservation and management of coastal ecosystems is critical to the preservation of marine biodiversity.

Tanzania, located on the central east Africa coast is rich in marine biodiversity. A network of coral reefs and seagrass meadows provide food and shelter for a diverse range of fish and invertebrate species. They also provide important feeding grounds for five species of marine turtle (green, hawksbill, loggerhead, olive ridley and leatherback) and a small population of dugongs. Whale sharks, whales and dolphins also make Tanzanian coastal waters their home. In 2014, in recognition of its high biodiversity value, the central Tanzania coast was declared a 'Site of Regional Importance to Marine Turtles' under the auspices of the *Indian Ocean South-East Asian Marine Turtle Memorandum of Understanding*.

The natural productivity associated with coral reefs and seagrass meadows is central to the lives of coastal fishing communities in Tanzania and as a result, coastal communities frequently interact with marine wildlife during their daily lives. Incidental capture of marine turtles in fishing gears is common and the turtles are rarely released alive. Dugongs are now so rare in Tanzania that their population cannot sustain the current level of bycatch (<1 per year). With near shore fish stocks depleted, a marine turtle or dugong represents valuable protein and an opportunity for quick profit. Marine turtles and dugongs have been utilized for their meat for generations but the impact of traditional consumption is being exacerbated by an expanding green turtle fishery and the degradation of turtle and dugong breeding and foraging habitats caused by destructive fishing practices, particularly blast fishing and beach seining.

Over the past 16 years, Sea Sense has implemented a range of research, conservation and education activities that promote the protection and continued survival of endangered marine wildlife. Sea Sense uses a 'grass roots' approach to promote harmony between humans and marine wildlife. A network of community 'Conservation Officers' is active across six coastal districts and serves as a vital link between Sea Sense and local communities.

Sea Sense uses a 'grass roots' approach to promote harmony between coastal communities and marine wildlife.

SEA SENSE GOALS

Sea Sense activities are channelled through four priority programme areas and are associated with four strategic goals. The strategic goals are strongly aligned with international agreements such as the UN Sustainable Development Goals, UN Convention on Biological Diversity (CBD), the Convention on Migratory Species (CMS), the UNEP Nairobi Convention as well as the *UNEP/CMS Indian Ocean – South-East Asian Marine Turtle Memorandum of Understanding* and the *UNEP/CMS Memorandum of Understanding on Dugong Conservation* to which Tanzania is a signatory state.

To achieve the strategic goals, Sea Sense uses research, conservation, education, capacity building, networking and advocacy tools across sectors and in geographic areas of the Tanzanian coast that are nationally and regionally important to marine wildlife survival.

Priority Programme Area	Strategic Goal
Research and conservation	Marine wildlife populations and critical marine habitats are healthy and productive.
Education and outreach	Citizens are actively involved in maintaining healthy and productive marine and coastal ecosystems.
Sustainable livelihoods	Coastal livelihoods provide conservation benefits for marine wildlife and promote the prosperity of local people.
Governance and leadership	Local and national governments are accountable to citizens on the use and management of marine and coastal resources.



ACHIEVEMENTS IN 2017:

MARINE WILDLIFE RESEARCH AND CONSERVATION

MARINE TURTLES

1. Nesting activity in Tanzania

During the first half of 2017 a network of 33 community Conservation Officers was active in six coastal districts of Tanzania: Pangani, Kigamboni, Mkuranga Mafia, Kibiti and Kilwa. An additional five Conservation Officers based in Mkinga District, Tanga City and Muheza District joined the team in August 2017. The new Conservation Officers participated in a three day training session incorporating both theory and practical components on sea turtle biology and life cycle, nesting and migratory behaviour, threats to survival, nest identification, nest relocation protocols and post hatching excavations.

The new Conservation Officers also participated in a four day study tour to Pangani District where Sea Sense has a well established network of Conservation Officers. During the study tour they were able to practice their practical sea turtle conservation skills and interact with experienced Conservation Officers to discuss strategies to engage their communities and find solutions to shared challenges.

Conservation Officers conducted daily foot patrols of nesting beaches to monitor sea turtle nesting activity, protect nests from poachers and predators, record strandings of marine turtles, dugongs and cetaceans and document illegal fishing activities.

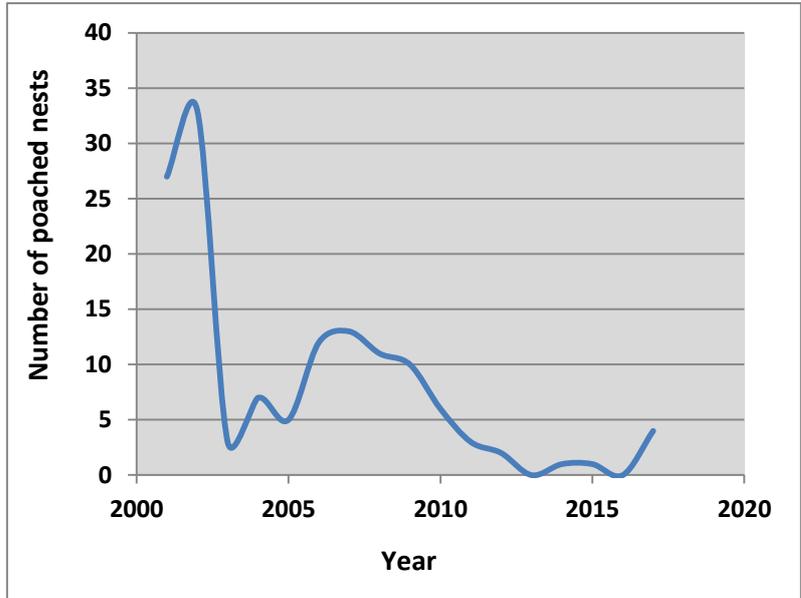
246 turtle nests were recorded, monitored and protected by Sea Sense Conservation Officers in 2017. All were laid by green turtles. 20,239 hatchlings safely reached the sea. Mafia, Pangani and Kigamboni support the largest green turtle nesting populations in Tanzania.





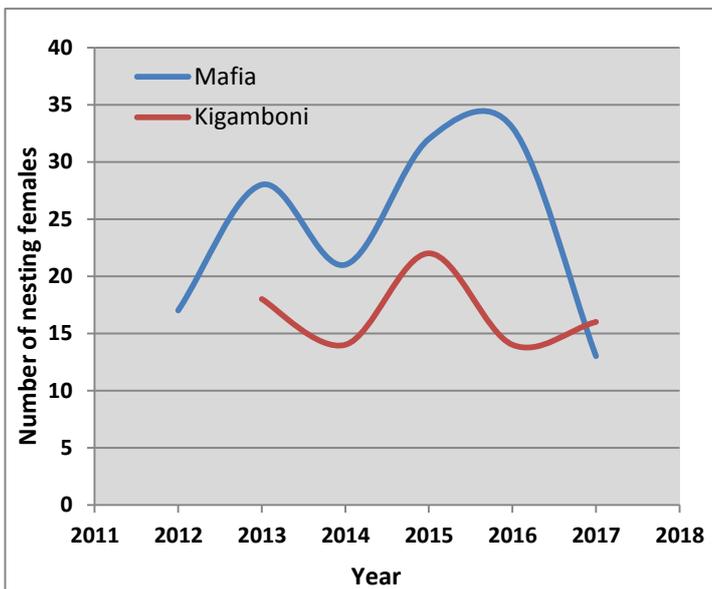
46 nests failed to hatch. 33 were predated by wild animals including honey badgers, monitor lizards, domestic dogs, and red ants. Five nests contained rotten eggs and four nests were inundated by the high tide before they could be relocated by Conservation Officers.

The rate of poaching has decreased dramatically since Sea Sense was first established but in 2017 there were four poaching incidents which is the highest level of poaching recorded in a single year since 2010. All poaching incidents were reported immediately to village councils for action.



2. Population census

During the peak nesting months of April and May, Sea Sense Conservation Officers conducted intensive monitoring of green turtle nesting activity as part of an annual nesting population census at the two largest nesting sites in Tanzania (Kigamboni and Juani Island in Mafia District). The population census has been conducted every year since 2012. Morphometric data are collected from each nesting female and titanium flipper tags are applied to enable identification of individual females.



The graph on the left shows the trend in the number of nesting females at each site since 2012. 2017 was the first year that the number of nesting females in Kigamboni exceeded the number of nesting females in Mafia. The mark-recapture method has enabled Sea Sense to produce the first nesting green turtle population estimate in Tanzania based on actual reproductive parameters. Analyses of flipper tagging data from Kigamboni District have produced an estimated population size of 33 – 59 individuals.

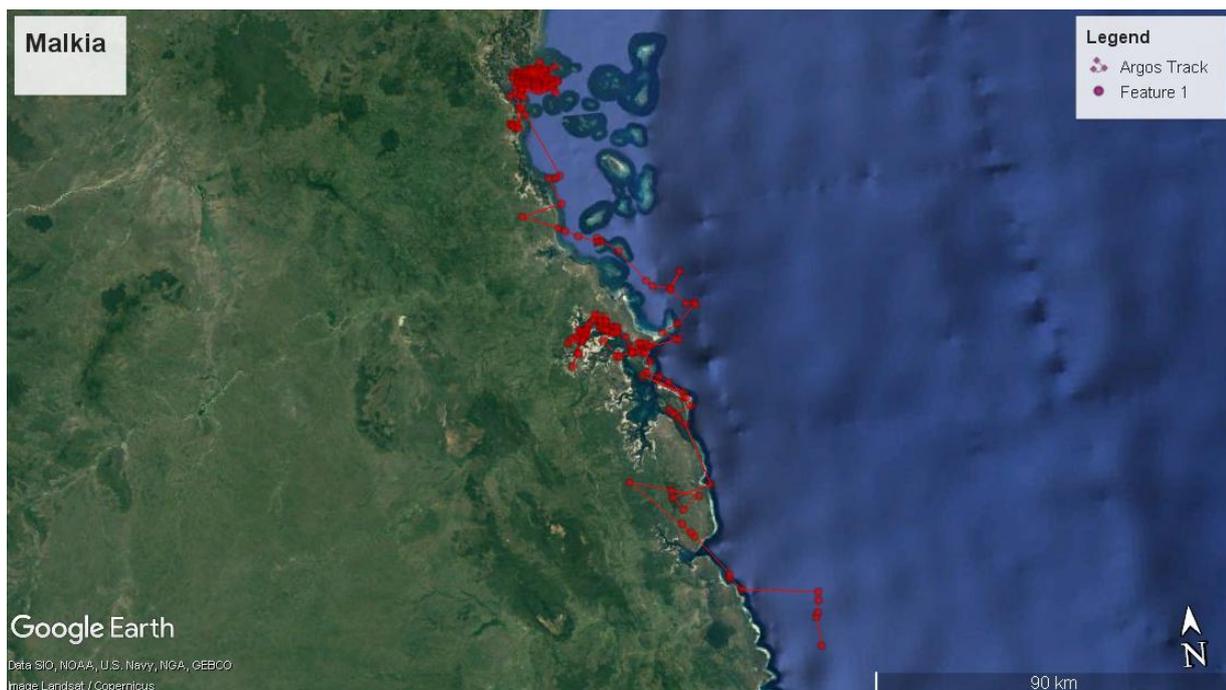
Annual fluctuations in numbers of nesting females are common in green turtle populations and are thought to reflect varying conditions at foraging grounds. Annual fluctuations highlight the importance of a long term data set that will allow robust population estimates and subsequent identification of upward or downward trends in the population.

3. Movement patterns

Due to the importance of Lindi Region for juvenile green turtles, this life history stage was prioritised for satellite tracking in order to determine the extent of movement between neighbouring foraging grounds. In June 2017, satellite tags were deployed on five green turtles that had been captured in fishing nets. Four were juveniles and one was a sub-adult.

The three juvenile turtles remained within 10 km of the foraging ground at which they were captured. This behaviour is typical of juvenile foraging individuals.

The sub-adult turtle migrated 155km north to Mohoro Bay in the Rufiji Delta as shown in the map below. Mohoro Bay supports lush seagrass meadows and is a known green turtle foraging ground. This is likely to be a developmental migration which is a migration undertaken to adult habitat prior to sexual maturity. The tag stopped transmitting after 105 days, so it is not clear whether the turtle remained in Kilwa or continued to an adult habitat elsewhere.



This is the first time that juvenile and sub-adult green turtles have ever been satellite tracked in Tanzania and indicates the importance of Lindi Region to different life history stages of green turtles. Information on marine turtle movement patterns and habitat use will be incorporated into an Environmental Impact Assessment for a proposed LNG plant in Lindi District.



4. Ecotourism

Conservation Officers in Mafia, Kigamboni and Pangani Districts continued to lead a marine turtle ecotourism initiative which raised USD 7,642 in 2017. Half of the revenue was donated to communities living close to nesting beaches for local development projects.

5. Mortalities

In 2017, 220 marine turtle mortalities were recorded by Conservation Officers: green n=204, hawksbill n=9, leatherback n=2, loggerhead n=2, olive ridley n=1. Two mortalities were not identified to species level. 93% of green turtle mortalities (n=189) were juveniles and sub-adults, confirming that this segment of the population is at high risk in Tanzania, most likely from fisheries interactions.

Sea Sense uses sea turtle mortality data to identify high risk areas for marine turtles so that communities residing nearby can be targeted for education and outreach activities.

DUGONGS

1. Population census

As part of an ongoing process to determine the current status of dugongs in Tanzania, Sea Sense conducted aerial surveys of the Rufiji Delta and Mafia Channel in March and July 2017. 23 transects were flown between the west coast of Mafia and the Rufiji Delta along a north-south baseline of approximately 100 km (Figure 2). Total survey time was 4 hours 52 minutes. No dugongs were observed during either survey.



2. Mortalities

A dugong was captured in a gill net in Pemba Island in May 2017 and reported to Sea Sense. The dugong was slaughtered for its meat and oil. Prior to the capture of this individual, dugongs were thought to be no longer present in Pemba Island.



Dugong captured in Pemba Island



3. Dugong and Seagrass Conservation and Management Plans

In 2017 Sea Sense commenced community level consultations to elicit support for the development of site specific Dugong and Seagrass Conservation and Management Plans in Mafia Island and the Rufiji Delta. Consultations were held with 11 communities and focused on eliciting support for seagrass habitat conservation which is vital for dugong survival. In Tanzania, seagrass habitat is threatened by illegal and destructive fishing practices and limited understanding amongst stakeholders of the importance of seagrass conservation and management.



COMMUNITY PERCEPTIONS OF BARRIERS TO EFFECTIVE SEAGRASS CONSERVATION AND MANAGEMENT



- Persistent illegal fishing practices e.g. blast fishing, use of beach seine nets and poisons|
- High fishing pressure in seagrass habitat.
- Limited understanding amongst coastal communities of the importance of seagrass conservation.
- Inadequate capacity amongst stakeholders to manage seagrass habitat.
- Access to education on seagrass conservation and protection.
- Low priority given to seagrass conservation and management.
- Weak cooperation between stakeholders e.g. communities and district authorities.

COMMUNITY PERCEPTIONS OF STAKEHOLDER ROLES AND RESPONSIBILITIES IN SEAGRASS CONSERVATION



A second round of consultations is planned for 2018 to include discussions on specific actions that can be taken to conserve dugongs and seagrass in order to generate content for draft Dugong and Seagrass Conservation and Management Plans.



CETACEANS

Nine cetacean strandings were recorded by Conservation Officers during 2017: one sperm whale, three humpback whales and five dolphins (unidentified to species level). Humpback whales migrate through Tanzanian waters between July and December each year and are at risk of entanglement in fishing gears.

MANGROVES

In 2017 Sea Sense continued a research collaboration with Louisiana State University, University of Rhode Island and the University of Dar es Salaam on a project entitled ***Poverty traps and mangrove ecosystem services in coastal Tanzania***. More than 35% of mangrove areas worldwide have been degraded or lost entirely in the past 20 years. This degradation has significant consequences for human wellbeing due to the range of ecosystem services provided by mangroves that are particularly beneficial to coastal communities.

Four ecosystem services of mangrove forests that are likely interlinked with poverty are being examined: goods extracted (fuel wood, building poles, and charcoal); fish and shrimp habitats; coastal protection; and prospects for carbon storage. In 2017, three rounds of data collection were conducted at household level in Kibiti and Pangani Districts to determine levels of mangrove use, fishing activities, access to drinking water, energy sources, long-term and short-term shocks and perceptions on future risks. The natural science team continued with fish sampling and assessments of carbon storage in mangrove forests. Data are currently being analysed and a stakeholder workshop is planned for 2018 to provide feedback to national and district authorities and facilitate decision making on future management of mangrove and fisheries resources.

ACHIEVEMENTS IN 2017: EDUCATION AND OUTREACH



Community events were held on World Environment Day (June 5th) and International Coastal Clean-up Day (September 20th). More than 1,500 people participated in the events.

Community theatre productions were staged in two communities in Mafia Island to raise awareness of marine wildlife conservation and the importance of good governance of marine and coastal resources.

Sea Sense partnered with the Msasani fishing village in Dar es Salaam to hold a three day event promoting sustainable fisheries.

Nine primary and four secondary schools participated in marine wildlife education sessions with Sea Sense.



Focus Group Discussions were held in 11 communities to sensitise coastal citizens on the links between marine resource conservation and local livelihoods.

Two outreach sessions were held for female fish traders in Kigamboni District to provide them with an opportunity to engage more fully in marine turtle conservation through sensitization of other women in their village who cook and trade in turtle meat.

Outreach sessions were held with three youth groups in Lindi District on marine turtle biology and practical conservation skills. They are now conducting daily patrols of nesting beaches in their localities.



ACHIEVEMENTS IN 2017: SUSTAINABLE LIVELIHOODS

The Government of Tanzania has adopted a participatory, co-management approach to natural resource management. Within Marine Protected Areas, Part V of the Marine Parks and Reserves Act 1994 provides for the establishment of Village Liaison Committees (VLCs) which have a shared management responsibility with Marine Park managers. VLCs act as the primary interface between park managers and communities living within the park boundaries.

The Fisheries Act 2003 provides for the establishment of local fisheries co-management organisations known as Beach Management Units (BMUs). BMUs have the responsibility for fisheries conservation, management and development in their locality.



In 2017 Sea Sense worked closely with VLCs in Tanga Coelacanth Marine Park to strengthen their capacity to carry out the roles and responsibilities that have been devolved to them and to improve their understanding of the linkages between biodiversity conservation and sustainable livelihoods.

35 committee members from eight BMUs in Kigamboni District participated in a five day Monitoring, Control and Surveillance (MCS) training course, delivered through a partnership between Sea Sense and the Fisheries Education and Training Agency. BMU members were trained in fisheries management and legislation, MCS strategies, boat handling and survival at sea.

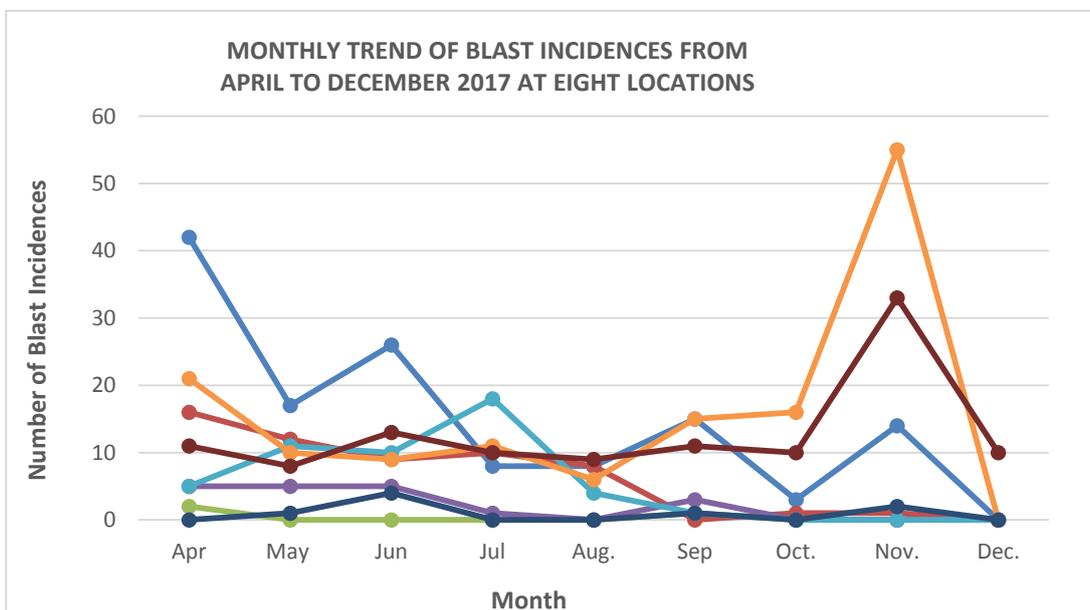




Community based monitoring of blast fishing

Blast fishing refers to the use of explosives for fishing. It has been a widespread practice in Tanzania for many years and has caused extensive damage to fragile marine and coastal ecosystems. Despite extensive education campaigns and capacity building programmes for fisheries managers, the practice has persisted and it has been widely acknowledged that intensive enforcement interventions were urgently needed in order to stop blast fishing.

Since 2016, a network of 24 community based blast recorders has been monitoring the incidence of blast fishing along the length of the Tanzania coast. The project is a collaboration between Sea Sense, WWF and Mwambao Coastal Community Network. Blast recorders record daily blasts in their location for six hours per day (7am to 1pm) for eight days per month. During 2017, the frequency of blast fishing declined dramatically at all sites monitored by Sea Sense blast recorders.



Minister orders arrest of criminals engaged in dynamite fishing

DAILY NEWS REPORTER / 20 DECEMBER 2016



Trends in the frequency of blast fishing were correlated with specific enforcement actions so as to determine the success of anti-blast fishing initiatives and lobby for continued enforcement actions by the government. Military operations were conducted along the length of the Tanzania coast in 2017. A number of arrests were made, boats were confiscated and criminal cases were opened.

Blast recorders have not recorded any blasts at monitored sites since the end of 2017.



ACHIEVEMENTS IN 2017:

GOVERNANCE AND LEADERSHIP

Sea Sense works with decision makers at all levels of the governance chain from village and ward councils to district authorities and national ministries.

Particular efforts are made at village council level. Although most village councils are supportive of Sea Sense, they do not regard environmental stewardship as a component of their own role. Many leaders do not understand their roles and responsibilities as they rarely receive training when they are elected into position. Hence, meetings with Sea Sense are an important opportunity to share information about marine wildlife conservation and fisheries issues but also sensitize leaders on the concepts of good governance and strong leadership.

In 2017.....

698 village councilors were sensitized on marine wildlife conservation and 40 village councilors were trained on good governance and leadership concepts.



Three feedback meetings were held with District Council Management Teams to advocate for greater commitment to marine biodiversity conservation.



A meeting was held with Regional and District Fisheries Officers in Tanga to share information on illegal fishing.



INFORMATION EXCHANGE IN 2017



- Manuscript published in the peer reviewed journal *Testudo* describing nesting behaviour of green turtles in Kigamboni District.
- Poster presented at 10th Western Indian Ocean Marine Science Association (WIOMSA) Symposium.
- Sea Sense Director organised and chaired a Special Session on marine turtle conservation and management in the Western Indian Ocean region at 10th WIOMSA Symposium.
- Participation in 7th meeting of the *Western Indian Ocean Marine Turtle Task Force*.
- Participation in the first meeting of the *Western Indian Ocean Seagrass Network*.
- News piece on Capital TV focusing on Sea Sense efforts to reduce threats to marine wildlife in Tanzania.



CHALLENGES TO MARINE WILDLIFE CONSERVATION IN TANZANIA

- Low levels of environmental awareness amongst coastal communities in Tanzania and few opportunities to access environmental information outside of Sea Sense education programmes. With more than 1,000km of coastline, it is a challenge for Sea Sense to reach all communities in Tanzania that are in urgent need of environmental education.
- Weak governance and petty corruption continues to be a major obstacle to the long term conservation and protection of endangered marine wildlife in Tanzania. Illegal fishers are frequently protected by village and ward councillors or other people in positions of power.
- Inadequate financial and human capacity in the fisheries sector to support sustainable fisheries management and marine biodiversity conservation.



A REFLECTION ON 2017

2017 was an exciting year for Sea Sense in many ways. Most significantly, 2017 saw the scale up of Sea Sense's community based marine wildlife conservation efforts into Tanga Region in northern coastal Tanzania. Tanga Region is an area rich in marine biodiversity and marine turtle nesting activity occurs on several beaches in the region. In recognition of its outstanding marine biodiversity, the area was gazetted as a Marine Protected Area in 2009 and named Tanga Coelacanth Marine Park (TACMP). Five new Conservation Officers were recruited in Tanga Region in 2017 and they are learning a lot from an existing network of Sea Sense Conservation Officers in neighbouring Pangani District.

2017 was the sixth successive year of an annual nesting green turtle population census. As a result, Sea Sense was able to produce the first robust population estimate for any sea turtle population in Tanzania based on actual reproductive parameters. Kigamboni District, Tanzania's second largest green turtle rookery is estimated to support 33- 59 nesting females. The population is extremely vulnerable to coastal development due to the proximity of nesting beaches to the centre of Dar es Salaam, Tanzania's commercial capital. In 2018, Sea Sense will commence the development of an action plan for sea turtles in Kigamboni District which will facilitate mainstreaming of biodiversity conservation into Municipal planning processes.

One of the persistent threats to marine wildlife and their habitats in Tanzania has been the widespread use of explosives for fishing. In 2017, the Government of Tanzania embarked on a series of military operations to curb illegal fishing and by the end of 2017, coastal communities were reporting that blast fishing had stopped completely and fish catches were increasing. Sea Sense is continuing to monitor the situation so enforcement authorities can be alerted to any new incidences of blast fishing.

2017 saw some disturbing events in Mafia Island where Sea Sense was first established more than 16 years ago. Three green turtle nests were poached which were the first poaching events in Juani Island for more than eight years. One of the nesting females was slaughtered. Sea Sense followed up on the incident and received reports of the female turtle being used for traditional medicine. These incidents highlight the importance of ongoing education campaigns so that coastal communities can better understand the benefits of biodiversity conservation.

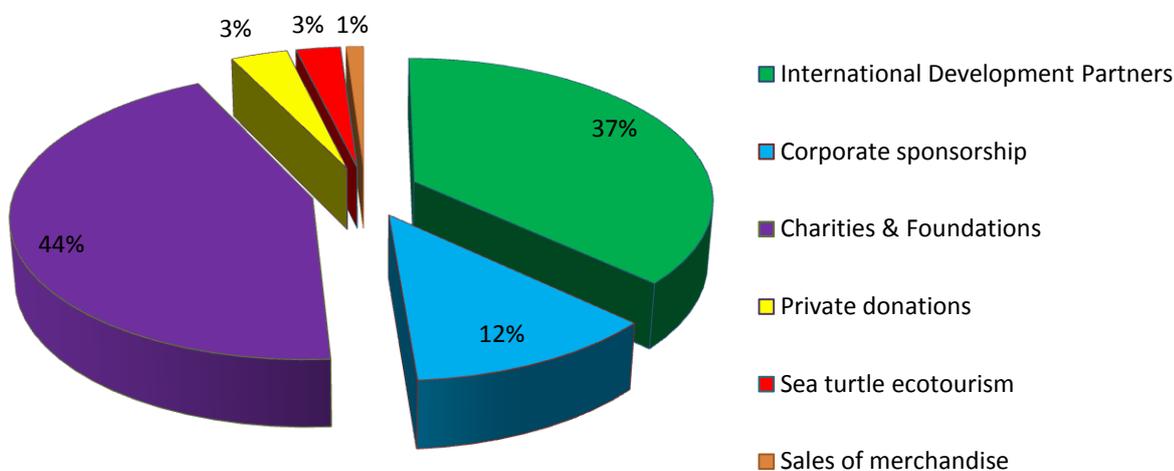
There were no dugong sightings in 2017, despite two aerial surveys in the Rufiji Delta, their last known refuge in Tanzania. In 2017, Sea Sense focused on engaging communities in seagrass conservation in order to reduce threats to critical dugong habitat. The approach has been successful so far and communities are welcoming the opportunity to learn more about this critical habitat that they depend on so much for their livelihoods.

Sea Sense secured new funds from the European Union in 2017 as well as some corporate sponsorship from Songas Ltd, a natural gas company based in Tanzania. We are also happy to report a new partnership with Minara Foundation which is supporting the vital work of our community Conservation Officers.

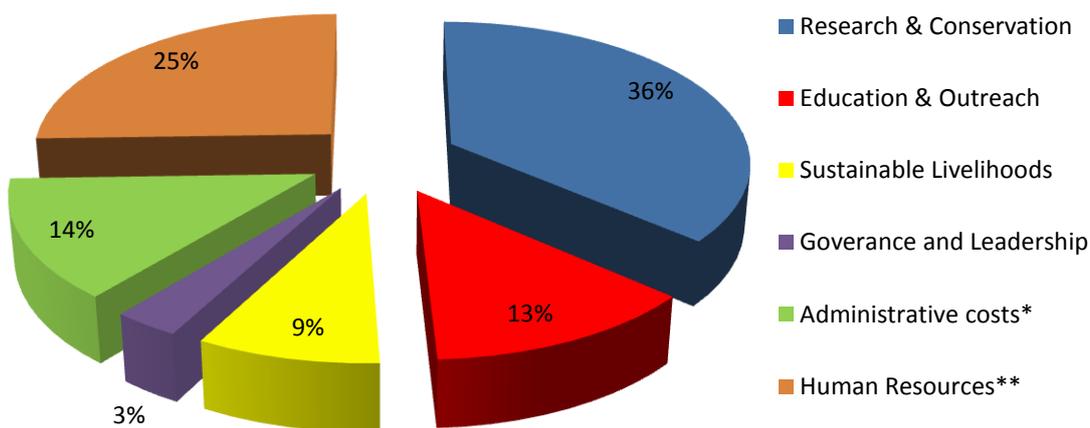
SEA SENSE FINANCES IN 2017

In 2017, Sea Sense received funds from six main sources: international development partners, charities and foundations; corporate sponsors; private donations, sea turtle ecotourism and through the sale of Sea Sense merchandise. Income for the year was USD 233,473.

Sea Sense Income 2017



Sea Sense Expenditure 2017



* Includes office rent, insurance, utilities, audit fees, internet and communications, stationery and office supplies and bank charges.

** Includes HQ staff (Director and Finance Officer) and payroll expenses (Skills and Development Levy, staff pension fund contributions and Workers Compensation Fund).



ACKNOWLEDGEMENTS

Sea Sense would like to thank all donors, supporters and friends for their continued support for Sea Sense throughout 2017. Our sincere thanks go to our Conservation Officers who work tirelessly to conserve and protect marine wildlife in Tanzania. Thanks also to Village Chairpersons, Council Members, Beach Management Units, Environment Committees, District Authorities and the Government of Tanzania for helping to protect marine wildlife and critical coastal habitats in Tanzania.

Sea Sense, P.O. BOX 105044, Dar es Salaam, Tanzania

Email: info@seasense.org Web: www.seasense.org