2015
ANNUAL REPORT

Sea Sense

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

CONTENTS

OUR MISSION

To promote the conservation and protection of marine wildlife and improve the lives of coastal fishing communities who rely on the natural productivity associated with marine ecosystems.

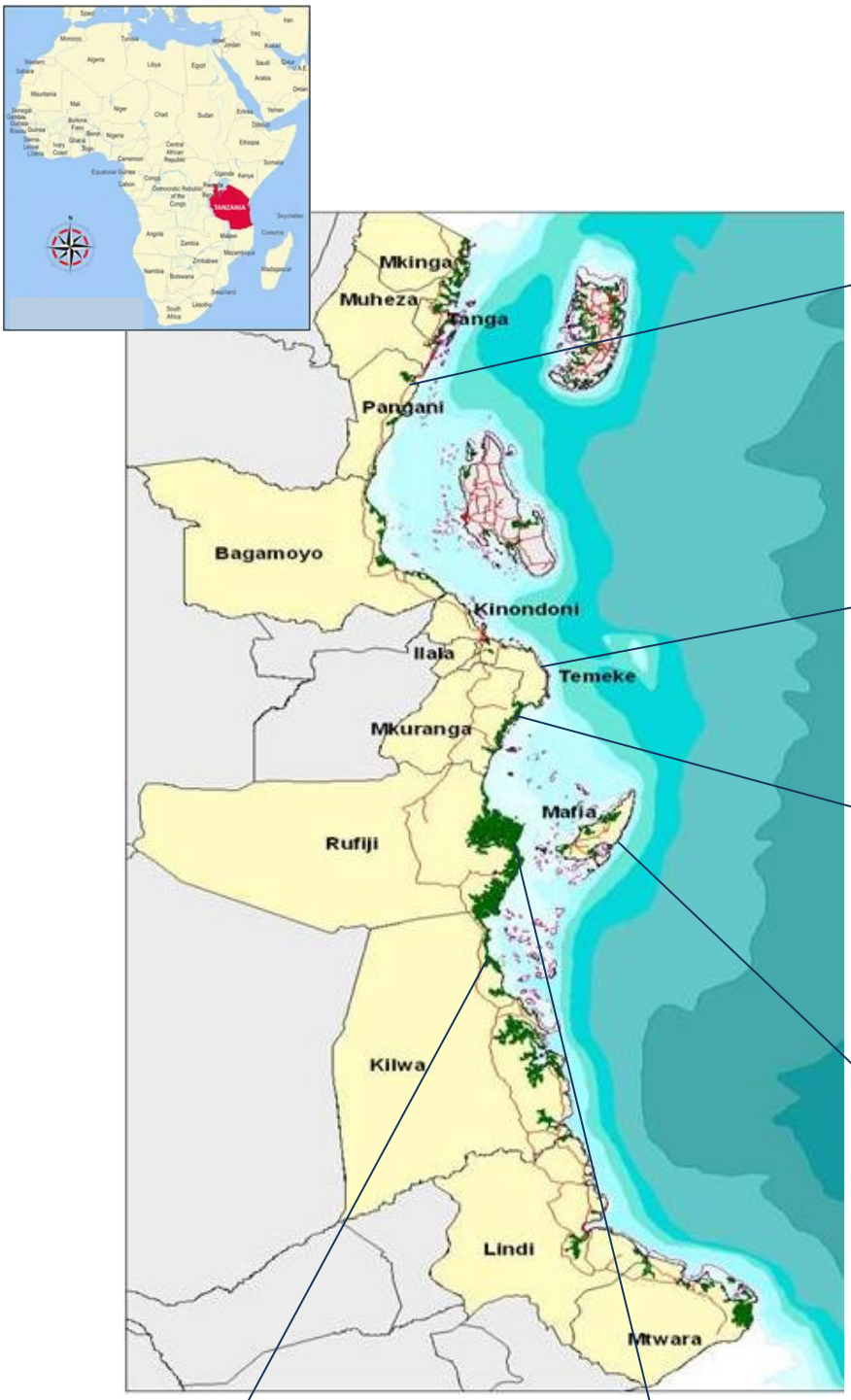
OUR THEORY OF CHANGE

Sea Sense believes that citizens are more likely to initiate and sustain positive behaviours related to the conservation and protection of marine and coastal resources if they have a sense of 'ownership' of those resources and a shared vision of what sustainable resource use means to their social and economic wellbeing.

A key driver for this change is access to information, particularly information that stimulates new ways of thinking, encourages the formation of new alliances or changes perceptions of existing relationships. Access to information is a critical step in the process of driving attitude and behavioural changes and Sea Sense continues to provide a supportive environment for those changes to take place.

OUR STRATEGY

SEA SENSE ON THE GROUND



Pangani District

- Six Conservation Officers
- Green turtle rookery
- 80 – 120 nests per year
- Marine turtle ecotourism initiative

Temeke District

- 11 Conservation Officers
- 1 Turtle Tour Guide
- Green turtle rookery
- 80 – 120 nests per year
- Marine turtle ecotourism initiative

Mkuranga District

- Four Conservation Officers
- Minimal nesting activity
- High fishing pressure

Mafia District

- First Sea Sense project site (2001)
- Tanzania's largest green turtle rookery
- 250 – 300 nests per year
- Small hawksbill nesting population
- Marine Protected Area
- Five Conservation Officers
- 1 Turtle Tour Guide
- Marine turtle ecotourism initiative
- Dugong hotspot (west coast)
- Resident whale shark population

Kilwa District

- One Conservation Officer
- Dugong hotspot (Somanga)
- High level of turtle slaughter

Rufiji District

- Four Conservation Officers
- Dugong hotspot
- High fishing pressure

SEA SENSE ACHIEVEMENTS IN 2015

MARINE TURTLE RESEARCH AND CONSERVATION

A network of 33 community Conservation Officers conducted daily beach patrols in six coastal districts to **monitor marine turtle nesting activity**. The number and species of nesting turtles were recorded based on track counts. Nests under threat from poaching, predation or tidal inundation were relocated to a safer area using internationally agreed protocols. Each nest was monitored throughout the incubation period. After hatching, each nest was excavated to determine emergence success.

Conservation Officers recorded **465 green turtle nests and three hawksbill nests.** 50% of nests were laid in Mafia Island, 25% were laid in Pangani District and 25% were laid in Temeke District. 37,833 hatchings emerged successfully. 37 nests were predated by wild animals (monitor lizard n=21; mongoose n=11; red ants n=4; domestic dog n=1). One incident of poaching was reported in Pangani District.

296 strandings were recorded by Conservation Officers in Mafia, Pangani, Temeke, Mkuranga, Rufiji and Kilwa Districts. One stranding was reported by a member of the public in Dar es Salaam. Species were green (277); hawksbill (18); and olive ridley (2). 86% of green turtle strandings belonged to juvenile and sub-adult age classes. Between September and November 2015, unusually high numbers of turtle strandings were recorded in Mkuranga District (52 individuals compared to an annual average of 4-6 individuals over the past 12 years). External wounds on the necks and flippers of many of the stranded individuals were consistent with injuries caused by fisheries interactions.

An annual green turtle **flipper tagging programme** was conducted in Mafia and Temeke Districts during the peak nesting months of April and May. 7km of nesting beach in Juani Island were monitored and 98 emergences were recorded. 77 were nesting events and 31 individual females nested. 14km of nesting beach were monitored in Temeke District and 46 emergences were recorded. 40 were nesting events and 20 individual females nested.

SEA SENSE ACHIEVEMENTS IN 2015

A **marine turtle ecotourism** initiative continued to attract visitors in Mafia, Temeke and Pangani. USD 8,345 was generated by the initiative in 2015, half of which was donated back to communities living close to nesting beaches to support community development projects.

Sea Sense staff **provided training** to six officers from three national Marine Protected Areas to increase their capacity to monitor turtle nesting activity and promote marine turtle ecotourism as a conservation strategy.

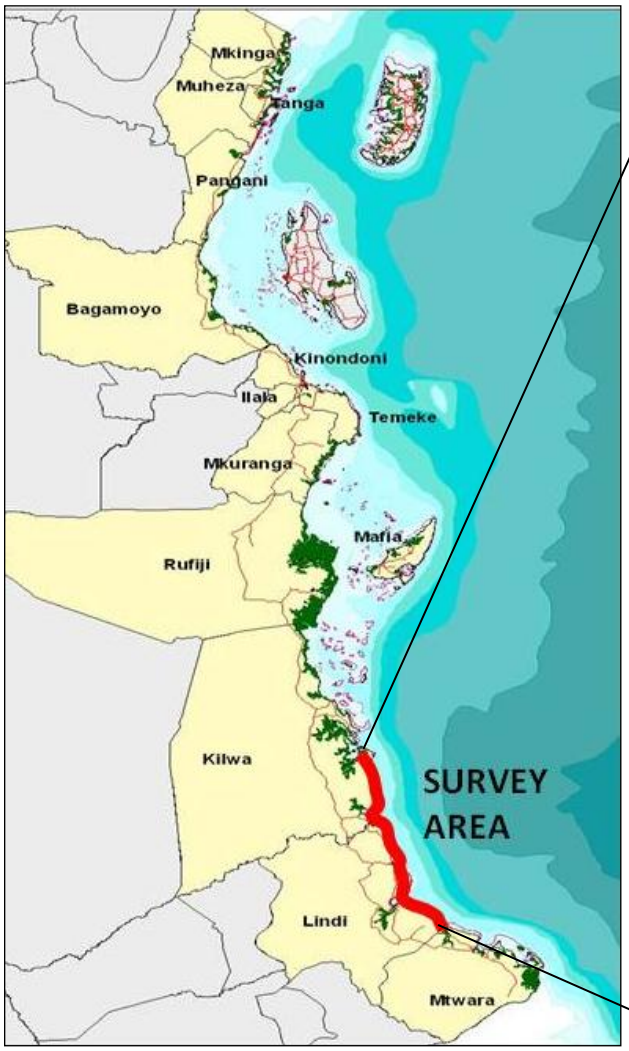
SEA SENSE ACHIEVEMENTS IN 2015

EXPANSION INTO LINDI REGION

Information from local people indicates that historically, marine turtle nesting was common in Lindi Region (Kilwa and Lindi Districts) although nesting activity is reported to have declined dramatically over the past 40 years. Currently, Lindi Region is considered to be data deficient in terms of the status of nesting turtle populations and little is known about movement patterns and habitat use by marine turtles at other life history stages.

In 2015, Sea Sense secured funding to conduct an assessment of marine turtle nesting activity in Lindi Region. Information on the location of beach habitat was obtained from satellite imagery, technical reports and existing knowledge of the area within the Sea Sense team. Ground surveys of 82.5km of beach habitat were conducted (25% of Lindi Region coastline) and inhabitants of local communities were interviewed to gather information on historical and current nesting activity and threats to marine turtles and their habitats.

LINDI REGION SURVEY RESULTS



11 of 13 survey sites were considered to provide suitable nesting habitat for green turtles

Evidence of current green turtle nesting activity was found at seven sites

Decline in nesting activity due to widespread hunting for meat and poaching of eggs

A green turtle fishery existed at all 13 surveyed villages

Law enforcements efforts were largely absent so citizens did not fear apprehension for turtle poaching

105 discarded carapaces were recorded during four surveys

SEA SENSE ACHIEVEMENTS IN 2015

A targeted marine turtle fishery persists in Lindi Region. Evidence of the fishery was found at all of the 13 survey sites, either through direct observations of specially designed nets known as 'likembe' or from verbal reports from local residents. There is no other place in Tanzania where a marine turtle fishery is so well established. Nesting density is currently very low in Lindi Region due to the persistent direct take of nesting females so it is likely that the discarded carapaces observed during the surveys were from foraging individuals originating from nesting sites elsewhere in the region. This conclusion is supported by the retrieval of four international flipper tags at Shuka which originated in Madagascar, Mayotte and Seychelles. High reproductive success rates at green turtle nesting sites in Mayotte and Seychelles contribute to the maintenance of the green turtle population in the south-west Indian Ocean region which is recognised as a distinct Regional Management Unit. Therefore, persistent removal of sexually mature females from the population during their foraging phase constitutes a considerable threat to the longer term stability of green turtle populations in the region.

To address threats to marine turtles in Lindi Region, Sea Sense will be launching a comprehensive marine turtle education and awareness campaign in early 2016.

SEA SENSE ACHIEVEMENTS IN 2015

DUGONG RESEARCH AND CONSERVATION

Snorkel surveys were undertaken in Mafia Island and the Rufiji Delta to **identify dugong habitat and assess seagrass diversity.** 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 and the presence/absence of dugong feeding trails. 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.* **Dugong feeding trails** were observed in the southern Rufiji Delta and close to Mbarakuni Island and Bwejuu in Mafia. No dugongs were observed during the surveys

Questionnaire surveys were conducted at three villages in Mafia Island (Tumbuju, Jibondo and Jojo) and in September at four villages in the Rufiji Delta (Kiechuru, Mbwera Jaja and Pombwe). A total of 97 questionnaires were completed. The interviews generated some information on recent dugong sightings that had not previously been reported to Sea Sense including a live dugong sighting at Utikiti reef, close to Pombwe in the Rufiji Delta in late 2014. It was also reported that a juvenile dugong was captured close to Jibondo Island in Mafia in July 2014. It was slaughtered at Jibondo.

SEA SENSE ACHIEVEMENTS IN 2015

WHALE SHARK CONSERVATION

The presence of an accessible resident population of whale sharks is a major attraction for visitors to Mafia Island and as a result, a whale shark tourism industry has grown rapidly. Over the past five years, the growth of the industry has been poorly managed, raising widespread concerns over the welfare of the sharks.

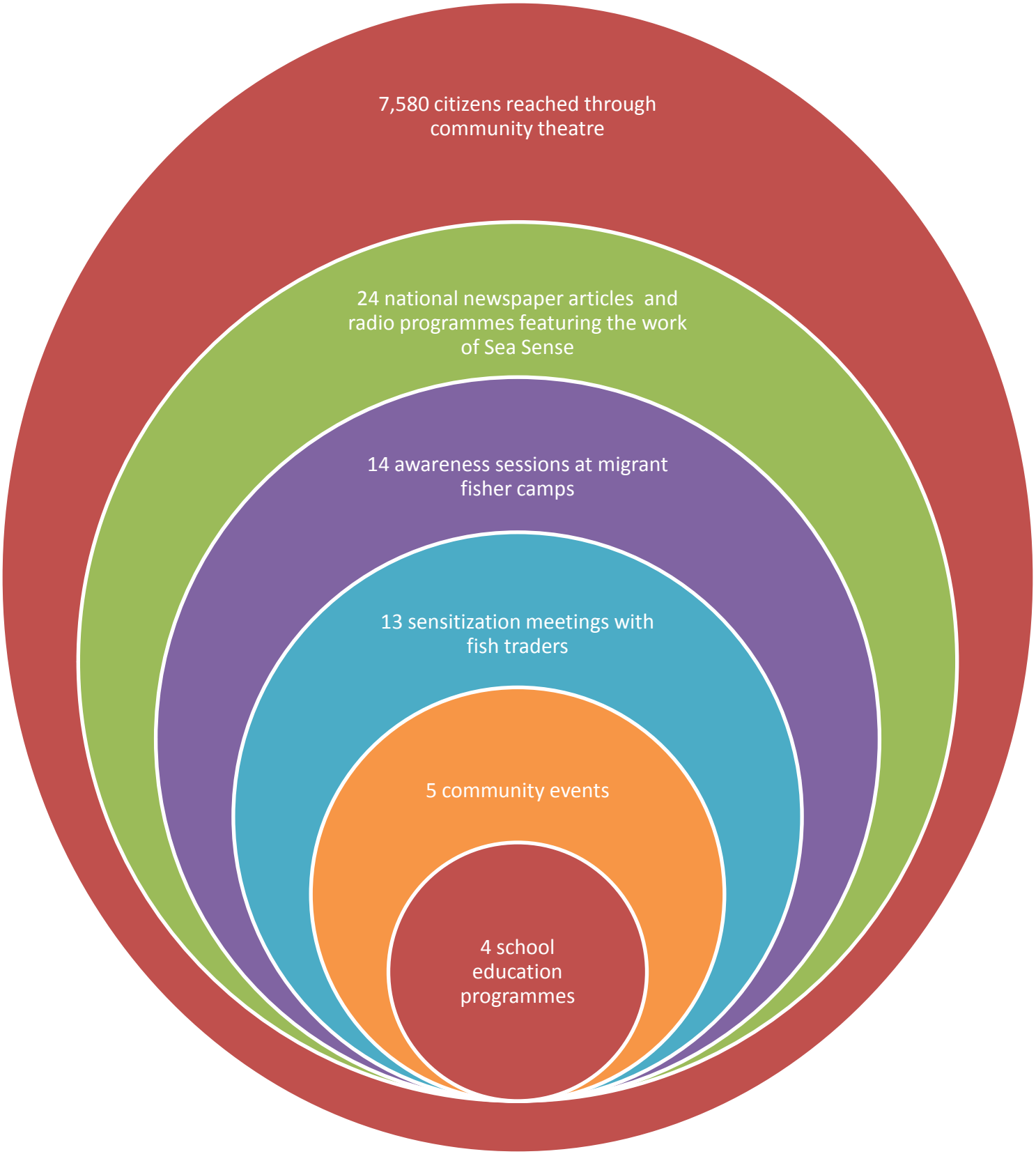
Sea Sense partnered with the Marine Megafauna Foundation to implement a series of actions to improve the sustainability of whale shark tourism in Mafia Island and elicit greater support from key stakeholders for the preparation and implementation of a whale shark management strategy.

An economic survey was undertaken to collect data on the contribution of whale shark tourism to the livelihoods of Mafia citizens and assess their perceptions of the value of the industry. 48 questionnaires were completed by goods and service providers in Mafia Island and results showed that many service providers relied heavily on the tourism sector for their livelihoods and recognized the importance of whale sharks to the broader economy of Mafia Island.

A meeting for whale shark stakeholders in Mafia Island was held to share findings from the economics survey, to identify the components of a whale shark management strategy and gather stakeholder inputs towards the implementation of a whale shark management strategy. There was a broad consensus that a whale shark management strategy was urgently needed to address threats posed to whale sharks in Mafia Island by tourism and fisheries interactions. Sea Sense will be working with WWF in 2016 to initiate development of the strategy.

EDUCATION AND OUTREACH

2015: THE STATS.....



SEA SENSE ACHIEVEMENTS IN 2015

SUSTAINABLE LIVELIHOODS: STRENGTHENING COMMUNITY BASED FISHERIES MANAGEMENT

Workshops were held for 32 Beach Management Units (BMUs) in Mafia, Rufiji, Kilwa, Pangani and Temeke Districts to train members in key **life skills** including team working, critical thinking, decision-making, communicating, negotiating and conflict resolution. The final session during the training focused on formulating a vision for the BMU. This included setting the BMU goals and identifying strategies for implementing their goals.

Two BMUs in Pangani District received training in **fisheries bylaw formulation**. A range of issues were identified for bylaw formulation including regulation of migrant fishers, designation of fish landing sites, regulation of sardine processing and control of mangrove harvesting and coral mining. Participants acknowledged that enforcement of national and local laws was an important tool in fighting against illegal fishing. The drafted bylaws were submitted to Pangani District Legal Officer for approval.

Finance training workshops were held for six BMUs in Pangani District which had recently been awarded the contract for district fisheries revenue collection. The training included topics on identification of revenue collection opportunities, differences between licenses, taxes, tariffs and penalties, recording and documentation, plan preparation and financial reporting. In the three months following the training, Kipumbwi BMU collected TZS4.8 million in fisheries revenue which is 12 times the amount collected by the previous contractor.

Sea Sense collaborated with the EU SmartFish programme to provide training to BMUs in Pangani District on the procedures for issuing **vessel registrations and fishing licences**. Theoretical components focused on categories of fishing licences and vessel registrations and the specific Tanzania Fisheries Legislation related to each type of licence and vessel. A practical session followed whereby licences and vessel registrations were issued and boats were tagged.

SEA SENSE ACHIEVEMENTS IN 2015

GOVERNANCE AND LEADERSHIP

34 • Village meetings held.

781 • Village councillors sensitized on good governance principles.

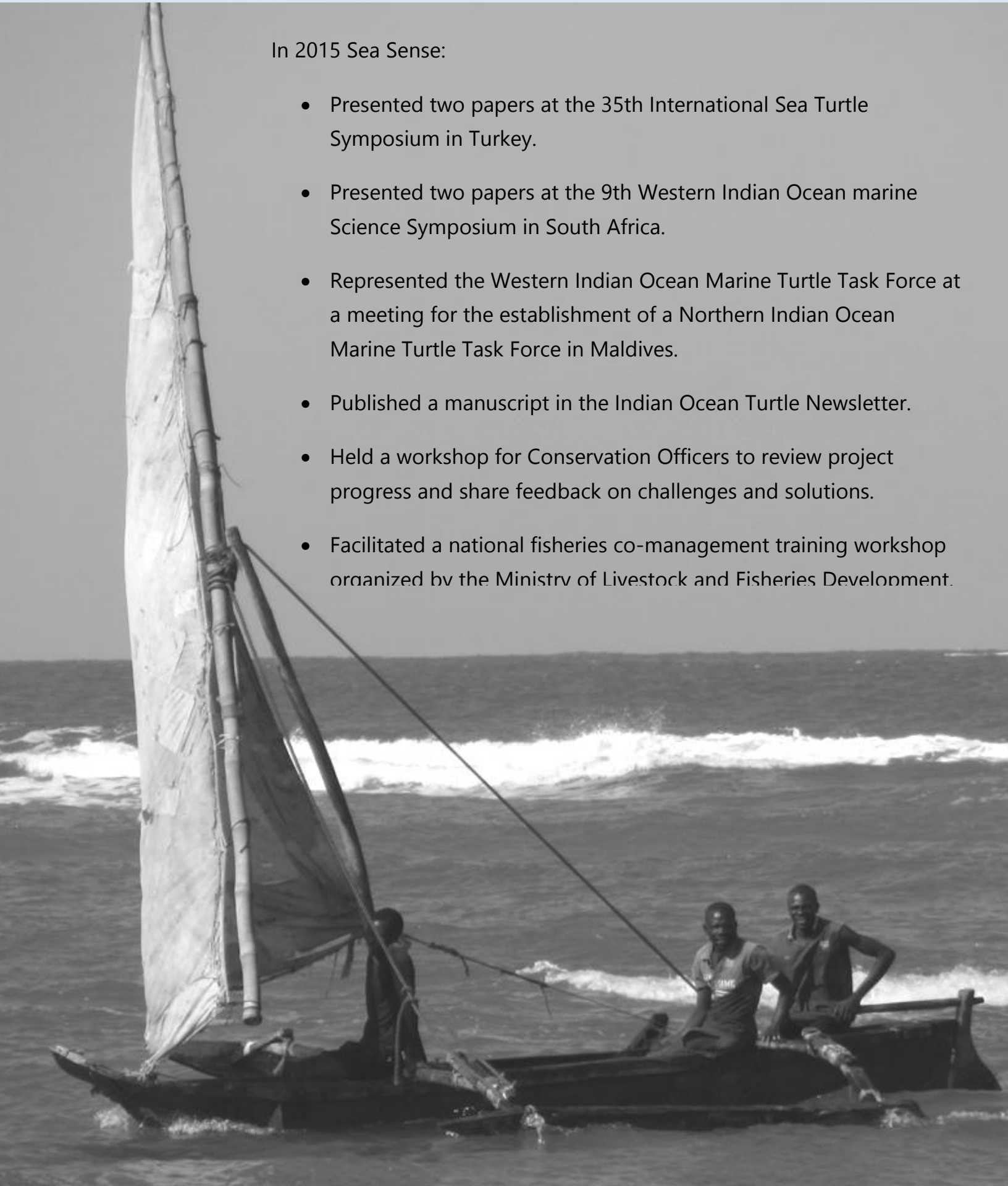
4 • Ward Development Committee meetings held.

82 • Ward Development Committee members sensitized on fisheries sector development.

6 • Council Management Team meetings held.

Strong leadership is essential for the sustainable management of marine and coastal resources but local leaders often lack access to information on the principles of good governance and do not recognize the importance of personal accountability.

INFORMATION EXCHANGE



In 2015 Sea Sense:

- Presented two papers at the 35th International Sea Turtle Symposium in Turkey.
- Presented two papers at the 9th Western Indian Ocean marine Science Symposium in South Africa.
- Represented the Western Indian Ocean Marine Turtle Task Force at a meeting for the establishment of a Northern Indian Ocean Marine Turtle Task Force in Maldives.
- Published a manuscript in the Indian Ocean Turtle Newsletter.
- Held a workshop for Conservation Officers to review project progress and share feedback on challenges and solutions.
- Facilitated a national fisheries co-management training workshop organized by the Ministry of Livestock and Fisheries Development.

A SUCCESS STORY FROM KIPUMBWI VILLAGE

The white sandy beaches of Pangani District in northern Tanzania are used by nesting green turtles and hawksbill turtles are frequently observed by divers on inshore reefs. In 2008, Sea Sense established a community based marine turtle nest monitoring and protection programme in Pangani and since 2008, 713 nests have been recorded by a team of community Conservation Officers who conduct daily foot patrols of six nesting beaches.

One of the beaches is close to Kipumbwi, a small fishing village situated in central Pangani District. However, nesting activity is rare at Kipumbwi due to high levels of human disturbance. For several years, the beach has been used as a dumping ground for household rubbish and waste from fish processing. Many villagers have also been using the beach as a public latrine.

In 2011, in response to continued degradation of the beach, Sea Sense embarked on a waste management awareness campaign using community theatre as a form of educational entertainment. Community events with a waste management theme were held on World Environment Day (June 5th) and World Oceans Day (June 8th) where Sea Sense joined forces with Kipumbwi community to remove waste from local beaches and raise awareness of the importance of good waste management practices, including reusing and recycling.

In 2013, as a direct result of ongoing awareness efforts, a weekly village clean-up was implemented and enforced by Kipumbwi village council. In recognition of the positive step taken by Kipumbwi village leaders, Sea Sense donated wheelbarrows, rakes and gloves to assist with clean-up activities. An area of the village was set aside as a rubbish dump and citizens were fined for non-compliance. To this day, Kipumbwi village council continues to lead weekly beach and village clean-ups and local community groups have taken up the issue. A community fishers association successfully lobbied their local MP to join in a beach clean-up activity to support their efforts, and a youth group has shown interest in becoming ambassadors for improved waste management in Kipumbwi.

A SUCCESS STORY FROM KIPUMBWI VILLAGE

On International Coastal Clean-up Day in September 2015, the youth group led their own clean-up initiative in Kipumbwi and cleaned 2.5km of beach and collected 66kg of waste.

Towards the end of 2015, Sea Sense provided support to the community to formalize their waste management efforts by assisting with the drafting of village level waste management bylaws. In 2015, four years after the initial engagement on waste management issues, Kipumbwi beach is one of the cleanest in Pangani District and is used by villagers as a place for socialising and relaxation. Perhaps the beach will soon be used by nesting turtles again.

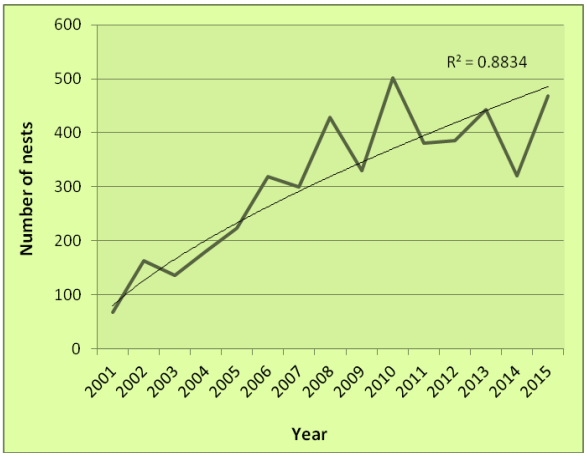
Sea Sense has been invited to present the Kipumbwi waste management success story at the *Regional Forum on Solutions for Oceans, Coasts and Human Wellbeing in Africa*, to be held in Zanzibar in June 2016. The forum aims to facilitate the adaptation and replication of successful experiences in sustainable coastal management and development and promote shared learning. The Forum will be attended by 100 participants from across Africa, 30 of which will be sharing their 'Blue Solutions'.

A REFLECTION ON THE SEA SENSE JOURNEY

The past 15 years have seen the scale up of Sea Sense's community based marine conservation efforts from one coastal district to six. 2015 saw further expansion into a seventh district (Lindi). Sea Sense projects now cover more than half of the Tanzanian coastline. Alongside geographical expansion over the past 15 years, Sea Sense has also expanded its portfolio of projects which range from research and education to ecotourism and fisheries governance. The result is a broader mission, incorporating new programmatic efforts to address human behaviours that lead to the degradation of marine and coastal ecosystems and the biodiversity they support.

Much of Sea Sense's success can be attributed to a **community based approach** to conservation. Sea Sense has established a network of community Conservation Officers which act as a link between Sea Sense and the wider community. The network started with six Conservation Officers in 2001 and expanded in 2004 and again in 2008. There are now 33 active members in six coastal districts and they are the lead implementers of Sea Sense's marine research and conservation initiatives. The presence of an active community network 'on the ground' in coastal communities is an invaluable resource for Sea Sense. Conservation Officers work closely with the Sea Sense team to identify specific needs and knowledge gaps in their communities which plays an important role in the design of targeted conservation programmes. Conservation Officers also share critical insights into the readiness of their communities to engage in conservation initiatives and are able to respond to emerging issues in collaboration with other local stakeholders.

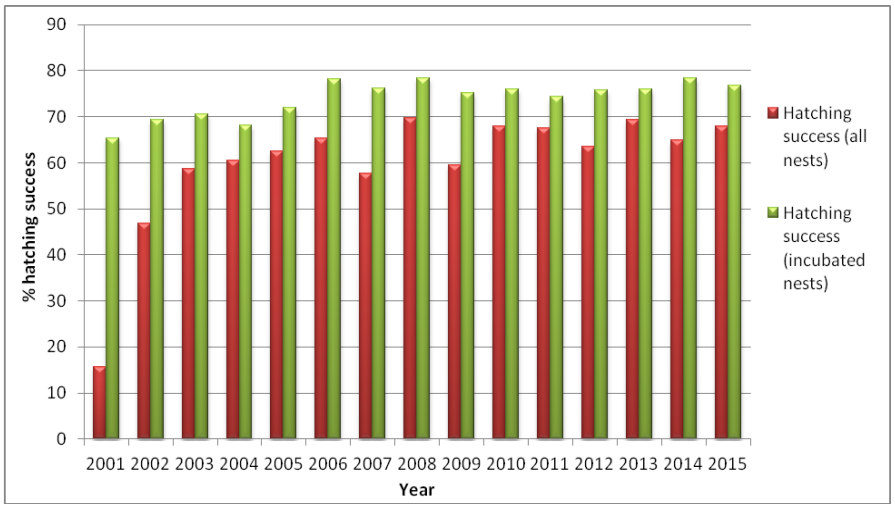
At a species level, the past 15 years have a seen the **growth of the nest monitoring programme**. Sea Sense Conservation Officers have recorded a total of 4,763 turtle nests, spread over six districts.



There has been a **dramatic decrease in the rate of turtle nest poaching** along the Tanzanian coast. Historically, turtle nests were routinely poached. In 2001, Sea Sense started to monitor nesting activity in Mafia and 47% of recorded nests were poached that year. In 2002, that figure decreased to 20% of recorded nests and by year three of the nest monitoring and protection programme, the rate of nest poaching had decreased to 2% and has stayed below 2% ever since, with the exception of 2007 when it rose slightly to 7%. The same pattern of decrease in nest poaching has been observed at all other monitored nesting sites in Pangani, Temeke and Mkuranga Districts.

A REFLECTION ON THE SEA SENSE JOURNEY

Hatching success rates are a useful indicator of the success of Sea Sense's marine turtle conservation efforts because they reflect the success of efforts to protect turtle eggs during the incubation period, including reducing rates of poaching and predation.



The graph on the right shows hatching success rates over the past 15 years for all marine turtle nests that were recorded by Conservation Officers. The graph also shows hatching success rates of nests that completed an incubation period i.e. nests that were successfully protected against poaching and predation. Data clearly show an **upward trend of hatching success** during the first five years of the project which is a result of decreased poaching. Since 2005, hatching success rates for incubated nests have remained consistently above 70% (range of 71% to 78%). These data demonstrate that the community based nest monitoring and protection scheme implemented by Sea Sense over the past 15 years has achieved significant success in increasing the survival rate of turtle eggs. Since 2001, 357,289 hatchlings have successfully emerged from their nest as a result of the nest protection programme.

"Fisheries resources are ours so we should therefore be responsible for protecting them together".

Said Omary, citizen of Pangani. Text message to Pangani FM radio station.

The impacts of Sea Sense's marine conservation programmes on the **attitudes and behaviours of coastal people** are considerable. Citizens of coastal communities are becoming increasingly aware of the need to conserve and protect marine resources and are starting to look to local level leaders to promote and support sustainable resource exploitation. Demands for accountability represent a significant shift in attitudes towards community stewardship of marine resources. In the past, there has been a widely held belief that conservation and protection of natural resources was the responsibility of the government alone and a culture of blame persisted. Over the past five years in particular, Sea Sense has observed that citizens are becoming increasingly empowered to take on the responsibility of resource conservation and protection and in this context, the important role of strong BMUs cannot be understated. Many citizens are actively seeking out conservation information from Sea Sense which provides a basis for demand led accountability.

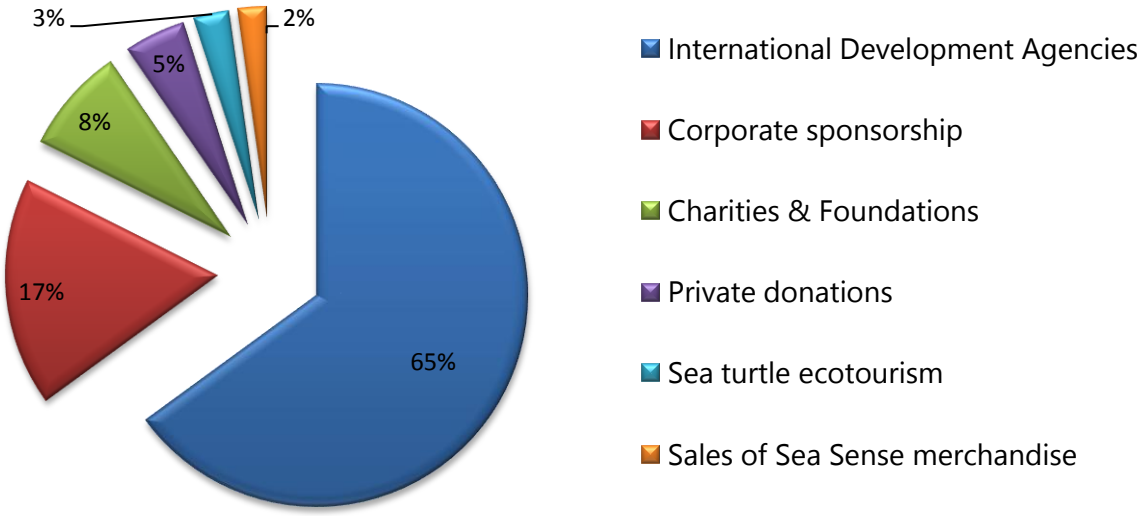
A REFLECTION ON THE SEA SENSE JOURNEY

In addition to achievements on the ground in Tanzania, over the past 15 years **Sea Sense has received increasing recognition** both regionally and internationally as a leader in community based marine conservation. This recognition has come in many forms including invitations for research collaborations, corporate sponsorship and requests for technical support and advice from a range of organisations and institutions.

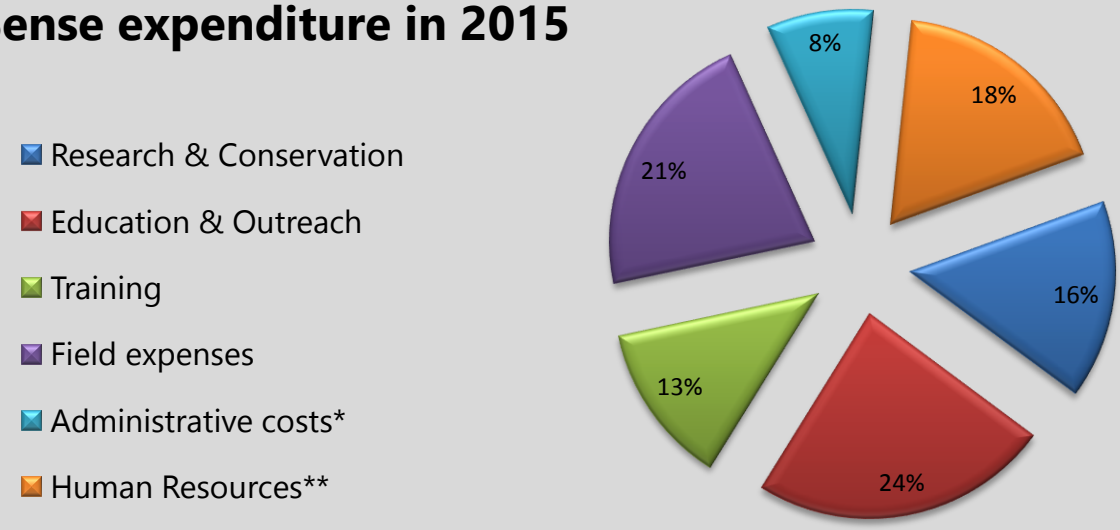
Sea Sense has undertaken successful collaborations with James Cook University, Marine Conservation Society UK and Ocean Sole Foundation, Kenya. Sea Sense is currently collaborating with the Centre for Dolphin Studies (Nelson Mandela Metropolitan University) and Kenya Wildlife Service on dugong conservation and with the University of Rhode Island and Louisiana State University, USA on a two year research project to investigate the relationship between mangroves and poverty traps.

SEA SENSE FINANCES

In 2015, Sea Sense received funds from six main sources: international aid agencies; small charities and foundations; corporate sponsors; private donations, sea turtle ecotourism and through the sale of Sea Sense merchandise. The income for the year was USD 337,240.

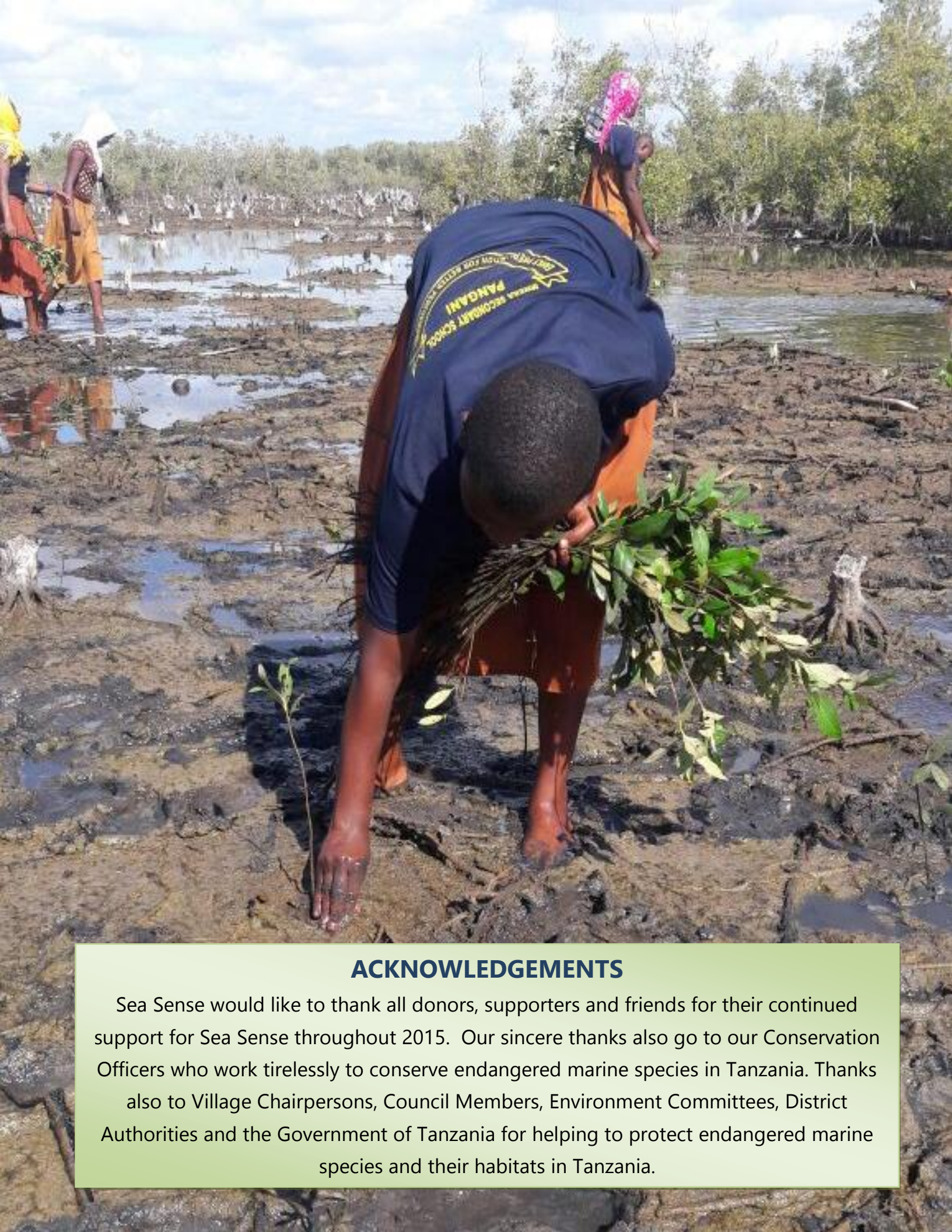


Sea Sense expenditure in 2015



** 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 2015. Our sincere thanks also go to our Conservation Officers who work tirelessly to conserve endangered marine species in Tanzania. Thanks also to Village Chairpersons, Council Members, Environment Committees, District Authorities and the Government of Tanzania for helping to protect endangered marine species and their habitats in Tanzania.

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