

Darwin Initiative Main Project Annual Report

Important note: *To be completed with reference to the Reporting Guidance Notes for Project Leaders:
it is expected that this report will be about 10 pages in length, excluding annexes*

Submission Deadline: 30 April

Darwin Project Information

Project Reference	20-017
Project Title	Strengthening the capability of Kenyan communities to conserve coral reefs
Host Country/ies	Kenya
Contract Holder Institution	Wildlife Conservation Society
Partner institutions	Kenya Fisheries Department (now called State Department of Fisheries), Stockholm Resilience Centre (Stockholm University)
Darwin Grant Value	£181,533
Funder (DFID/Defra)	
Start/end dates of project	1 April 2013 – 31 March 2016
Reporting period (e.g., Apr 2015 – Mar 2016) and number (e.g., Annual Report 1, 2, 3)	April 2014 - March 2015 (Annual Report 2)
Project Leader name	Dr. Nyawira Muthiga
Project website/blog/Twitter	
Report author(s) and date	Dr. N. Muthiga, Ms Caro Abunge and reviewed by Ms E. Mueni, Dr. T. Daw and Dr. B. Crona

1. Project Rationale

The project addresses the challenge of building the capacity of local fishing communities, who are dependent on coral reefs, to sustainably manage coral reef ecosystems that fringe the Kenyan coastline. Coral reefs are some of the nation's most biologically diverse and economically important marine ecosystems. However, coral reefs are particularly vulnerable to overexploitation from fishing, and the impacts of this exploitation and other threats are aggravated by climate change and a growing human population. Small-scale fishing communities are highly dependent on coral reefs in Kenya, contributing up to 80% of the marine landed catch.

Unfortunately, coral reefs are common-pool resources that are challenging to sustainably manage, particularly when taking into account the multiple social and ecological outcomes (such as social equity and maintenance of biodiversity) that different users and management institutions want to achieve. Recent research has shown that despite weak institutional capacity of developing countries like Kenya, there is considerable promise in the concept of fisheries co-management, in which resource users get a say in the development and implementation of rules. Early experiences in Kenya suggest that community-managed fisheries closures (tengefu) can align previously conflicting interests by addressing diverse values (community

empowerment, fisheries protection, benefit sharing) in the management process. Although tengefu have the potential to generate significant benefits for marine conservation and local people, they are beset by challenges: communities lack resource management experience, compliance and enforcement are weak, and socioeconomic conditions foster disempowerment and impede active participation by men and women. This project will encourage and promote participatory processes, and use knowledge generated to develop and implement adaptive management systems for tengefu that take into account social, ecological and institutional realities.

The project is located in the southern coast of Kenya at eight tengefu at Kuruwitu, Bureni, Mradi, Msumarini, Nyari, Mtangata Mpunga and Mkwiro. The sites differ in their ecological, social and institutional characteristics and contexts but are primarily located at shallow coral reef sites and fishing is the dominant livelihood.

2. Project Partnerships

During the period under review, the core partnership between the State Department of Fisheries (SDF), the fishing communities at the target sites and WCS continued to strengthen through participation in the Project Implementation Committee (PIC), and while working together when implementing project activities such as training, monitoring and research. Ms. Mueni continued her liaison role between the project and the SDF. She assisted in reviewing the co-management guidelines to ensure they conform to Beach Management Unit (BMU) guidelines, facilitated meetings with the county government officials as well as the county fisheries officials and assisted in conflict resolution meetings in Mwaembe (where the Mpunga tengefu is situated) and Msambweni and participated in the Annual Fishers' Forum with the Provincial Head, SDF.

The project also acquired several new partners including the Kilifi and Kwale Fisheries county officers represented by Ms. Agnes Mkazalla and David Bett for Kilifi County and Mr. Njuguna for Kwale County. These officers were assigned to the project during a meeting with the Heads of the County Fisheries offices of Kilifi, Kwale and Mombasa (see Annex 4.1 & 4.2). During the meetings, an overview of the project was presented, areas of collaboration were discussed as well as participation of the County officials in the Fishers' forum. County fisheries officers were subsequently involved in activities that were undertaken within their counties either directly participating in project activities or providing advice where needed. For example, the County fisheries officers of Kilifi presided over the Bureni tengefu closure ceremony, participated and presented the county fisheries workplans at the Fishers' forum, were involved in training activities and were consulted when monitoring was undertaken within the tengefu in their jurisdiction. The Fishers' forum was advocated as an activity that the counties could support within their annual workplans and budgets. This will be followed up in the coming month as the counties start their budget process that commences at the end of August. The Fishers' forum was held at the Red Cross hall in Kwale and officials from the Kwale County government attended, specifically the Sub County Administrator (see Annex 4.3) and the Ukunda Ward Administrator Mr. A. Vumbi and Mr. O. Khamisi.

Other new partners include the African Nature Organisation (ANO), a local NGO working with communities in Vanga (south coast). ANO supported the attendance of fishers from the Vanga Majoreni area at the Fishers' forum through a joint UNDP-funded project with WCS. We also collaborated in the annual Fishers' forum with a Marine and Coastal Science for Management (MASMA) co-management project and suggested fishers from the project sites attend a workshop on ecosystem services and human wellbeing under an Ecosystem Services and Poverty Alleviation project (www.espa.ac.uk). One of the principal investigators of this project Dr. Tim Daw is also a collaborator in this Darwin Initiative project. These three projects were indicated as leveraged funding sources in the Darwin Initiative project proposal. The project also partnered with the Conservation Leadership Programme (www.conservationleadershipprogramme.org) by facilitating Sarah Buckley a PhD candidate at the University of Queensland to undertake a study 'Assessing the extinction risk of Kenya's exploited coral reef fish' (see Activity 3.4 for more details). The study was undertaken at landing sites in the south coast including Darwin Initiative project sites.

The project activities were jointly planned and undertaken through the PIC. In most cases, interactions with our partners were driven by the needs of the project activities but in some cases the interactions were based on specific requests to WCS and or SDF. For example, we organised a conflict resolution meeting between the Mwaembe, Chale and Gazi BMUs and Fisheries department to resolve the problem of the use of beach seines (an illegal gear) by Gazi fishers within the fishing grounds of the Mwaembe BMU including within the Mpunga tengefu. This has been an ongoing issue for many years and this was the first meeting bringing all the concerned parties together. This issue was not resolved during the meeting and will be followed up in the coming months.

3. Project Progress

3.1 Progress in carrying out project activities

Output 1: Eight adaptive management plans are signed and endorsed as part of the bylaws of the BMUs within which the tengefu occur.

Activity 1.1: *Conduct project inception workshop to discuss and agree on detailed work-plans roles and responsibilities of project participants.*

Completed in previous reporting period.

Activity 1.2: *Conduct participatory assessments (socioeconomic, ecological and institutional) and draft adaptive management plans with communities.*

Ecological, socioeconomic and institutional information was collated in the previous period except for ecological data for Mkwiro and Msumarini. These were completed at the new Mkwiro site (Jiwe la Kale) and at Msumarini in this reporting period.

Activity 1.3: *Facilitate process with communities for review and adoption of the adaptive management plans and prepare for incorporation of the plan into the BMU by-laws by the Ministry of Fisheries Development.*

The project continued to facilitate the management planning process that progressed at different rates at the different sites. At Mkwiro, the community named the new tengefu Jiwe la Kale ("Stone of Kale" in English). This tengefu has now been mapped and baseline ecological surveys were completed (Activity 1.3 above). At Bureni, the community finally agreed to close the tengefu and it was demarcated with marker buoys. Vipingo Estate (the largest land owner in the area) agreed to support the management of the tengefu. At Mwaembe, the negotiations about the sighting of the closure were completed and a new tengefu called Mpunga is now in place. This has also been mapped and demarcated with buoys, which brings to five the number of tengefu that are now functional and fully accepted by their respective communities and the County fisheries offices.

The remaining three sites have also progressed, although not as much as projected. At Msumarini, despite follow-up, final agreement on the suggested area has not been achieved mainly due to conflict over fishing grounds between the Msumarini fishers and the adjacent Ngoloko fishers. We are working with the Kilifi county office to resolve this issue. Progress has also been slower at Nyari and Mtangata. At Nyari, the issue is that the suggested closure is at the border of two BMUs, and the BMU members without a tengefu want to continue fishing within the area suggested as a closure. At Mtangata, the issue is the undue influence of beach seine fishers in the area. We continue to hold meetings to encourage resolution of these issues. Despite a number of meetings at these sites, little progress has been made, however, we plan to increase focus on these tengefu in the coming period.

According to the BMU regulations, in order for the tengefu to be incorporated within the by-laws of the BMUs at their respective sites, co-management plans are required. Co-management plans incorporate a larger area than the closures and hence the process requires consultations with a much larger audience of stakeholders. The project is collaborating with the SDF, the county fisheries officers and stakeholders to start this process at two project sites. The first of these is at Kuruwitu and Bureni -- since these tengefu occur within the same fishing grounds and within one BMU it makes sense to have one co-management plan. Discussions have

commenced as a first step in the process. The Kuruwitu Welfare Association in collaboration with the Kilifi county fisheries office and WCS and Kuruwitu and Bureni landowners are involved in this process. In addition, the process has also commenced at Mkwiro that will incorporate the new tengefu Jiwe la kale.

Output 2: Through the adaptive management process, communities gain management skills and a better understanding of the factors that enhance or impede success of community managed areas.

Activity 2.1: Conduct training/skills needs assessment and implement appropriate trainings based on the findings.

Training of PIC and tengefu communities continued to be an important component of the project during its second year. We conducted a training exercise on monitoring management effectiveness (Annex 4.4a) that included a fishers learning exchange (whereby fishers from the south coast came to the north coast and vice versa (see Annex 4.4b & c), as well as a field exercise to practice ecological monitoring (see Annex 4.5a & b). This focused on increasing understanding about adaptive management and the need to collect, review and use information to enhance management. After the training, a monitoring program (see Annex 4.6 for the presentation) was trialled to be undertaken by a combined team of tengefu members under the supervision of the project on a quarterly basis.

Over the years, it has become clear that although the Fishers' forum is an effective means of disseminating information on fisheries management and coral reef conservation, community leaders are poorly equipped to then disseminate this information at their landing sites. We therefore conducted a training session on information dissemination during the Fishers' forum. The training session was designed to get the leaders to discuss their understanding of the information they had received and the ways they will then distribute this information. We also asked them to discuss what support they needed to make this process more effective. It was emphasised that smaller meetings conducted at the landing sites are needed and WCS developed a proposal "*Facilitating a learning forum for small-scale fisheries in the WIO*" that was submitted for a recent MASMA call for proposals to support a more targeted learning program for small scale fishers.

Activity 2.2: Design and implement appropriate awareness and learning exchange programs for communities based on results of the assessment in Activity 2.1.

The awareness activities that were undertaken during this period included presentations made at the PIC meetings, a session during the training on adaptive management and monitoring (Activity 2.1 above), as well as presentations during the annual Fishers' forum (Activity 2.4 below). In terms of learning exchanges, we supported attendance of PIC members and other fishers to relevant workshops including a workshop on strategic adaptive management focusing on the national Marine Protected Areas (MPAs). Participation at this workshop allowed the PIC members to learn about adaptive management within the context of national MPAs, reinforcing the understanding that national MPAs follow a similar planning and management process as the tengefu/BMU. In addition, we suggested fishers and other actors at the project sites to attend a workshop on ecosystem services and well-being implemented by an Ecosystem Services for Poverty Alleviation (ESPA) funded project. We have also designed a brochure for each of the tengefu describing the site, the resources and the benefits of closure that will be translated to Kiswahili. The brochure will be distributed at each tengefu and displayed at the landing site bandas where they are present.

Activity 2.3: Monitor and evaluate success and uptake of training and awareness programs.

We continued to make observations and informally assess the use of training by the PIC and other community members involved in project activities. We assessed for example the level of participation of PIC members in PIC meetings, the level of participation in training exercises and during the annual fishers' forum in terms of how engaged they were in the discussions, their willingness to participate in the monitoring exercises and their level of understanding and use of the knowledge they had gained. Our observations during the implementation of project activities at the tengefu sites and during fisheries catch monitoring at the adjacent landing sites

indicated that more awareness and training is required for a broader group of fishers than is currently covered by the project, hence we submitted a proposal to MASMA (see 2.1 above). We will continue to monitor the use of monitoring skills during the coming period.

Activity 2.4: Convene Annual Fishers Forum.

We convened the 2014 Annual Fishers' Forum on 13 November 2014 (See Annex 4.7). The Forum was held at the Red Cross hall, Kwale County. Attendees included the Sub-County Administrator, the Ward Representative, 128 fishers from 42 landing sites, fisheries officials from Kwale, Mombasa and Kilifi Districts, fish traders, and other stakeholders including NGOs, research scientists and the media.

As in previous Fishers' Forums, a combination of presentations and discussions were held, but this year we also organised an afternoon session to discuss how information from the Forum can be disseminated more effectively at the landing sites. In addition to the presentations made by scientists from WCS, County Fisheries Officers from the Kwale, Mombasa and Kilifi counties provided an overview of the specific activities that the counties have planned for the Fisheries sector in this fiscal year. Participation at the forum was supported with funding by the Darwin Initiative as well as a MASMA project jointly undertaken with the SDF and UNDP through ANO. Presentations included the results of catch monitoring at the 17 landing sites, an analysis of fish length of different species in the catch and discussion on the minimum size limits, an evaluation of the escape gap trap studies, the progress of tengefu, and a study assessing the extinction risk of Kenya's exploited coral reef fish by Sarah Buckley, a PhD student from University of Queensland (see details Activity 3.4 below).

Output 3: Overexploitation and destructive fishing activities are reduced in 8 tengefu as management interventions are implemented.

Activity 3.1: Draft operational procedures for management.

Completed in the last reporting period.

Activity 3.2: Implement management actions.

The main management actions undertaken at the five tengefu that are fully functional are surveillance to ensure compliance of the closures, collection of sea turtle nesting data where they occur, and in the case of Kuruwitu collection of entry fees. Following the training on adaptive management and monitoring (Activity 2.1 above), a simple system of keeping track of management actions consisting of a logbook where daily activities (meetings, monitoring, surveillance) can be logged has been provided to each tengefu and will be reviewed every month to evaluate performance.

Activity 3.3: Evaluate and adapt management actions.

At tengefu that are already established, the daily log will be reviewed monthly and if any changes in management are needed, these will be discussed with the tengefu leaders prior to instituting any changes. In this way, the tengefu leaders will learn to evaluate and adapt changes.

Activity 3.4: Conduct empirical studies on management effectiveness.

Good progress has been made on the empirical studies. Ms. Shauna Mahajan at Stockholm University completed her MSc titled "Who benefits and who loses? Evaluating the impacts of community-based marine protected areas on ecosystem services and human wellbeing" (see Annex 4.8 for abstract). Her study showed that participation in, and donor support for, community-managed fisheries closures (tengefu) influence how resource users perceived the tengefu and their impacts on ecosystem services and human wellbeing. Individuals who were more engaged in the project or held leadership or employee positions perceived more positive impacts on ecosystem services and human wellbeing compared to those not involved. This indicates the need to involve the wider community starting with raising awareness about the

benefits of tengefu. Although the Fisher' forum plays an important role in this, a more targeted mechanism with a wider reach is needed. Ms. Caroline Abunge, who is registered at Pwani University, has completed her course work and will start her thesis study in the coming months. Her work will focus on the use of soft vs. hard strategies in the management of MPAs and will compare tengefu and national MPAs in Kenya.

Ashley Perl, an MSc student at Stockholm University, was supposed to undertake a study focusing on a qualitative comparative analysis of all eight tengefu, comparing resources, governance indicators at each site and evaluating the importance of each for progress and sustainability. However, the study was not undertaken because of the terrorist attack that occurred in Lamu (5th to 6th July 2014) that led to travel advisories for much of the northern coast of Kenya. We are in discussion with our partners at Stockholm University, Dr. T. Daw and Dr. B. Crona, and local universities to see whether this work could be undertaken by a local student as it is increasingly unlikely that students from Stockholm University will be able to do field work in Kenya in the near future. We have started collecting data on a social network study of the tengefu communities with the aim of describing the number and complexity of social networks of the tengefu as a part of the institutional analysis (see Annex 4.9).

The project also collaborated with Sarah Buckley, a PhD candidate at the University of Queensland (supervised by Dr McClanahan, WCS) who undertook a study "Assessing the extinction risk of Kenya's exploited coral reef fish. The study focused on five locations along the Kenyan coast including Mwaepi and Shimoni within the fishing grounds of the Darwin project sites. The study used questionnaires to get local knowledge from the fishers and underwater surveys to verify the declines of exploited species. Preliminary results from this study were presented at the Fishers' forum. The findings from this study will be shared with the CBD focal point, the county and state fisheries authorities and the fishers to raise awareness about the fishes that are at risk of extinction due to fishing.

Output 4: Coral reef and reef fish recovery increases in 8 tengefu.

Activity 4.1: Monitor coral reef and associated ecosystems health.

All the tengefu were monitored this period including the new tengefu, Jiwe la Kale and Mpunga, as planned and the information was presented during the annual Fishers' forum (see Annex 4.10 for a brief report).

Activity 4.2: Monitor fisheries and fish prices.

Monitoring of fisheries catches and fish prices at the adjacent landing beaches also continued in this reporting period and will be repeated again during the next period. Information from the fisheries catch monitoring was presented at the Fishers' forum (see Annex 4.11).

Activity 4.3: Produce scientific papers and the final report.

The following publications are in preparation or in review

McClanahan T, Abunge CA, Muthiga NA (in review) Current status, challenges and opportunities in the establishment of community managed fisheries closures in Kenya. Coastal Management" was reviewed and we are in the process of addressing the reviewers' comments and resubmitting the manuscript for publication in Coastal Management.

Muthiga NA, McClanahan TR, Abunge C (in prep) Community fishers' forum as a means to facilitate the uptake of science into small-scale fisheries co-management. An abstract on the findings of this work (see Annex 4.12) has been submitted for the 9th WIOMSA Scientific Symposium (October 2015).

Ms Mahajan is also working on a publication from her thesis.

Output 5: Human well-being and food security in target communities are improved over the long-term.

Activity 5.1: Conduct socioeconomic (basic necessities) surveys.

Baseline demographic and socioeconomic information was collected in the previous reporting period. In this reporting period, we commenced on the process of conducting basic necessities surveys. Basic necessities surveys are completed in 3 steps: 1) building a list of assets and services considered basic necessities at the target sites using focus groups, 2) surveying households, and 3) analysis of the data. Focus group discussions (see Annex 4.13) were conducted at all the tengefu and a list of assets and services has been completed, household surveys and analysis of the data will be completed in the coming months.

3.2 Progress towards project outputs

Output 1: Eight adaptive management plans are signed and endorsed as part of the bylaws of the BMUs within which the tengefu occur.

Five of the eight tengefu are now fully functional as they are mapped, communities are enforcing the closures, and monitoring activities are underway. Discussions continue for the other three with the support of the County fisheries officials. The process of endorsement through the BMU regulations has commenced with discussions to develop co-management plans for two tengefu and this process will continue in the coming period (see activity 1.3 above).

Output 2: Through the adaptive management process, communities gain management skills and a better understanding of the factors that enhance or impede success of community managed areas.

Communities gained knowledge and skills through the training on adaptive management and monitoring, the presentations at the annual Fishers' forum, the training on information dissemination and the participation in other workshops.

Output 3: Overexploitation and destructive fishing activities are reduced in 8 tengefu as management interventions are implemented.

In five of the eight tengefu, management interventions, including protection and surveillance, are being fully implemented. In the other three, protection is only partial and additional management interventions will hopefully begin soon. In all tengefu, monitoring continues, although one of the planned studies was not undertaken due to security issues (Activity 3.4 above). We expect at least two more studies to commence in the coming months.

Output 4: Coral reef and reef fish recovery increases in 8 tengefu.

Good progress has been made in this output and we can now start to make comparisons between the baseline information (pre-project) and the current status of reef ecology and reef fish biomass. Based on studies in the western Indian Ocean, finfish biomass has been shown to be the most robust measure of the health of reef ecology and 250kg/ha has been shown to be the threshold below which phase shifts occur in terms of reef ecology (McClanahan et. al. 2007). Fish biomass at the project sites ranged from (~30 to 290 kg/ha), the closures with relatively high compliance (Kuruwitu, Mradi, Kanamai) had values >270kg/ha while the younger closures had values < 100 kg/ha. When compared to pre-project baselines, reef fish biomass either increased or did not change, coral cover showed minimal increases or did not change and urchin biomass showed quite large decreases compared to pre-project variables. Monitoring by both the community and by the project team will be undertaken again in the coming period.

Output 5: Human well-being and food security in target communities are improved over the long-term.

Progress has been made in collecting basic necessities lists of assets. We will use this information combined with the baseline socioeconomic information that was collected in the previous reporting and information from the planned household surveys to evaluate the trajectory in improvements in food security and well-being of target communities.

3.3 Progress towards the project Outcome

We experienced two main challenges that could affect project outcomes: insecurity affecting the rate and efficiency of conducting our work and limiting collaboration with our partners at Stockholm University, and the continued conflicts at some project sites over fishing grounds. The security situation in Kenya continues to be a concern as there have been a number of deadly terrorist attacks, the most recent being the attack on Garissa University College, on 2nd April 2015. Although there has not been a direct impact on the project sites, the impacts have been felt across the coast. We have developed a security management system and carefully monitor the situation at the sites prior to undertaking any field activities. Travel advisories from the UK, the US, France and Germany have also resulted in a dramatic reduction in the number of tourists coming to Kenya, which has affected the coastal economy and livelihoods of people who depend directly or indirectly on the tourism industry. It is not clear at this point in time how this may impact the outcomes of the project. In terms of the conflict issues at Msumarini, Nyari and Mtangata (see details Activity 1.3 above), we are working with the county fisheries offices and SDF to resolve these issues.

3.4 Monitoring of assumptions

We made four main assumptions when developing this project and the factors that may affect these assumptions are detailed below:

Assumption 1: The assumption that community members will remain willing to participate in this tengefu implementation remains valid for five of the eight tengefu. Communities in Msumarini, Nyari and Mtangata, however, are experiencing difficulties in implementing their tengefu. From our assessment of the situation at these sites, there is likelihood that Msumarini and Nyari may resolve their issues in the coming year but at Mtangata, where there are multiple vested interests, this may not be resolved in the coming year;

Assumption 2: This assumption remains valid. The county governments are aware and supportive of the project, as demonstrated by their attendance at the annual Fishers' forum, which also helped in legitimizing the project. In addition, the Kwale and Kilifi county fisheries departments and the SDF have participated in the implementation of many activities and facilitated meetings to resolve issues at project sites;

Assumption 3: This assumption remains valid for some of the tengefu. We have recorded increases in finfish biomass and coral cover and reduction of sea urchins in some of the tengefu. The contribution of recovery to livelihoods remains to be measured;

Assumption 4: We recognized the risk that factors beyond the control of this project may occur, but were assuming that these would not impact project outcomes. The main factor that affects this assumption is the security situation on the Kenyan coast. This has severely affected tourism and hence livelihoods of local communities. In addition, there is a sand dredging and removal project of the reef in Tiwi that is adjacent to the Nyari tengefu. The sand is transported to the port of Mombasa to build a railway terminal. This project is causing increased turbidity and has the potential to negatively affect the reef in the area. We attended a meeting to discuss this issue but because the project is sanctioned by the Kenya government, which is committed to building a single gauge railway, it is unlikely to be stopped despite the protest of local communities, land owners and conservation practitioners.

3.5 Impact: achievement of positive impact on biodiversity and poverty alleviation

By communities closing off portions of their fishing grounds, reduction in fishing is resulting in recovery of coral reef biodiversity, including finfish resources and corals within the tengefu (see Activity 3.2, Output 3 and 4, Annex 10 above). By training communities to manage their fishing grounds more sustainably, the project is broadly contributing to increased fisheries catches within the adjacent areas and hence has the potential to positively impact community welfare and alleviate poverty in the medium- to long-term.

4. Project support to the Conventions (CBD, CMS and/or CITES)

The project is contributing to better management of coral reefs and associated ecosystems (Aichi Targets 1, 6, 10), to habitat recovery and improved fisheries with potential positive outcomes for livelihoods (Aichi Targets 6, 10, 11, 14) and to reducing anthropogenic disturbance with the potential to increase the resilience of coral reefs and associated ecosystems to cope with climate change impacts (Aichi Target 15). The scientific information and empirical studies that have been undertaken are contributing towards assisting in meeting these goals. The project is collaborating with the Kenya Wildlife Service (KWS), which is the national focal point for the CBD, CMS and CITES conventions in training and also when infringement issues arise in the Mradi tengefu that is adjacent to the Mombasa national MPA. We also expect the project to contribute to Kenya meeting its obligations under the Convention on Migratory Species (CMS) through increased protection of the coral reefs that provide critical habitat for marine turtles. In addition, findings from the study on the extinction risk of coral reef fish, has the potential to general knowledge that will be useful for conservation.

We have interacted with KWS through collaborating in training on strategic adaptive management, introduced the project to the new Assistant Director for the Coast Conservation Area and continue to provide updates on the project to the KWS Senior Marine Scientist.

5. Project support to poverty alleviation

This project is expected to contribute indirectly to poverty alleviation by increasing finfish biomass, coral reef recovery and tourism revenues in the long-term. The project benefits local communities managing the tengefu as well as communities adjacent to the tengefu. The achievements in this year include continued full protection of three tengefu (Bureni, Kuruwitu, Kanamai and Mradi), the full protection of two new tengefu (Jiwe la Kale and Mpunga) and the partial protection of three tengefu (Msumarini, Nyari and Mtangata). The indicators include recovery in finfish biomass, coral cover and reduction in sea urchins within some tengefu. From the list of poverty benefits identified in the Darwin Initiative's Learning note on poverty and biodiversity, the project also has the potential to contribute to food security, health, and income, in the medium to long term.

6. Project support to Gender equity issues

The project has endeavoured to encourage participation of women and youth in project activities. Women participate as members of the PIC (the Kanamai PIC member is a woman), participation in the fishers' forum (15 out of 128 participants were women, similar to the numbers that attended in the last fishers' forum) and in the monitoring (Kuruwitu) as did the youth. The gains for participation in the project include knowledge and skills, and practical experiences that build confidence and social capital. These enhance collaboration and participation in management activities building the capacity for communities to become effective stewards of the resources that they depend upon.

7. Monitoring and evaluation

As detailed in last year's reports, we continue to monitor using a tracking tool composed of a matrix designed from the project workplan. We modified the tracking tool to include the activity being monitored, the periodicity and the indicators (see Annex 4.14) in response to last year's project review. We have also developed another matrix to monitor higher level variables including outcomes and assumptions and have started collect information both qualitative and quantitative that would allow us to evaluate progress (see Annex 4.15). We also increased the level of communication and follow up with PIC members.

8. Lessons learnt

The main issue that limited our progress was the same as last year, namely the underestimation of the problems at Nyari, Mtangata and Msumarini and the length of time it is

taking for these communities to come to agreement allowing full closure of the tengefu. At the moment these sites are only partially closed with a part of the community respecting the tengefu but a few fishers continue to fish in the proposed closure. If we were to do this again, we would reduce the number of focal sites and allocate more funds to sites that needed more attention. The south coast sites (Mtangata and Nyari) are particularly problematic due to a history of conflict over fishing and land rights. In the coming period, we plan to focus more on these sites and facilitate the PIC members and Kwale fisheries officials to meet and discuss workable solutions. We will also approach the Kenya Coastal Development Project (KCDP) to support this process through their community development component. In the future, we plan to build a larger coalition of stakeholders for tengefu by identifying and encouraging local land owners and hoteliers to support the tengefu.

We also learned to put processes in place to deal with the insecurity issue. WCS has a Crisis Management Team and under their guidance and assistance we ensured that we were as well informed about security as was possible. This entailed monitoring the situation on the ground and having constant communication with staff and PIC members in the field. During the Fishers' forum for example, the Kwale county administration police and Ukunda police were informed and provided security at the venue. We learned it was important to inform and work with the relevant authorities as we went about our business.

9. Actions taken in response to previous reviews (if applicable)

The general assessment from last year's report focused primarily on the need to better define our M&E methodology, which we have addressed in Section 7, above. Also, as requested, we have evaluated our outcome assumptions in more detail (Section 3.4).

10. Other comments on progress not covered elsewhere

There is no substantial change in the process or methods employed in implementing the project and the difficulties experienced and risks are detailed above (see 3.3. and 8 above).

11. Sustainability and legacy

The project was promoted at the annual fishers' forum, in meetings with the Kilifi, Kwale and Mombasa county fisheries office, at the KWS Coast Conservation Area, and during meetings when seeking collaboration with KCDP and WIOMSA. During the Fishers' forum more fisher communities approached WCS for support in establishing tengefu (Wasini, Shimoni and Vanga). This increased interest in other communities to establish tengefu is a good indicator of the strength of the tengefu movement and the desire on the part of local communities to play a larger role in the management of small scale fisheries. This is a good indicator of sustainability of the project outcomes in the long term.

We expect the legacy of the project to be effectively managed tengefu and an annual fishers' forum that is sustained in the long term. We expect that some tengefu will be able to function well without much support except for the provision of scientific and monitoring information, which can be provided by WCS, since we have a long term monitoring project at many sites along the coast that will continue past the end of the project. We have been advocating for tengefu and the fishers' forum to the SDF and more recently the County fisheries offices and we expect that these institutions will take on more financial responsibility for the forum given that it is currently the only consistent outreach mechanism for small scale fisheries on the Kenyan coast and that the Fisheries department is mandated to We expect the project to build enough capacity to enable the tengefu to continue in the long term, hence sustaining the ecological, social and economic gains over time.

12. Darwin Identity

The project used the Darwin logo in presentations at the fishers' forum, the adaptive management and monitoring training, at PIC meetings, in the brochures under development and during meetings with the county fisheries officials, KWS and KCDP. The Darwin Initiative is also acknowledged in the scientific publication McClanahan et al (in review). During project

activities, the Darwin project is acknowledged as a project and other sources of funding that were used for the annual fishers forum (MASMA and UNDP project) were acknowledged as such. The Darwin Initiative is already recognised by many of the project collaborators including the SDF and the Kwale county fisheries officers from a previous project undertaken in the south coast of Kenya but not to the Kilifi fisheries officers. We also submitted an article for the Darwin newsletter that was published in the August 2014 issue.

13. Project Expenditure

Table 1 Project expenditure during the reporting period (1 April 2014 – 31 March 2015)

Project spend (indicative) since last annual report	2014/15 Grant (£)	2014/15 Total Darwin Costs (£)	Variance %	Comments (please explain significant variances)
Staff costs (see below)				
Consultancy costs				
Overhead Costs				
Travel and subsistence				
Operating Costs				
Capital items (see below)				
Others (see below)				
TOTAL	55611.00	55610.00		

14. **OPTIONAL: Outstanding achievements of your project during the reporting period (300-400 words maximum). This section may be used for publicity purposes**

Annex 1: Report of progress and achievements against Logical Framework for Financial Year 2014-2015

Project summary	Measurable Indicators	Progress and Achievements April 2014 - March 2015	Actions required/planned for next period
<p>Impact</p> <p>Community-managed closures (<i>tengefu</i>) across Kenya cover more area, and are more effectively and adaptively managed by local communities, leading to a reduction in overexploitation of marine resources and destructive fishing practices, and a consequent increase in productivity. This will produce the benefits of improved fishers' livelihoods, greater food security, and stronger protection of reef biodiversity.</p>		<p>Training in adaptive management of community closures (<i>tengefu</i>) and adjacent fishing grounds increased knowledge on how to more effectively manage their fishing grounds</p> <p>Recovery of finfish numbers and biomass and coral cover at some project sites has suggested benefits to biodiversity</p>	
<p>Outcome</p> <p>The outcome of this project is the increased capacity of Kenyan coastal communities to effectively manage eight community-managed closures (<i>tengefu</i>). Establishing participatory processes and developing and testing adaptive management plans will build the capacity of communities to protect and benefit from the biodiversity on which they depend (through the restoration of coral reefs and associated species), and improve their livelihoods and quality of life (through greater food security and income). We expect that increased participation in management, networking and outreach will also improve social organization, resulting in communities that are able to effectively negotiate and resolve conflict over shared resources.</p>	<ol style="list-style-type: none"> 1. Eight <i>tengefu</i> communities will show significantly increased knowledge and skills to manage their <i>tengefu</i> by actively participating in the adaptive management planning process and adopting and institutionalizing a management plan by end of year. 2. Eight <i>tengefu</i> communities will be better able to manage their fisheries and coral reef resources, have more confidence in interacting with fisheries managers and other stakeholders and show increased independence in managing their <i>tengefu</i> as shown by implementing at least 3 key management actions from each of their plans by Year 1.5. 3. Eight <i>tengefu</i> communities are actively participating in control and removal of gears that destroy coral reefs and compromise fisheries and by implementing monitoring and surveillance programs by end of Year 2. 4. Residents of 8 <i>tengefu</i> communities have 	<ol style="list-style-type: none"> 1. Good progress has been made in increasing management capacity in five of the <i>tengefu</i> and these communities have remained willing and enthusiastic about the project 2. Communities have also interacted more with the county fisheries officials and the devolution process has thus far been more beneficial, especially with the county officials showing support for the <i>tengefu</i>. Management actions include enforcement of closures, ecological monitoring and meetings 3. In five of the <i>tengefu</i>, plans have been completed and are in use, and ecological variables within the <i>tengefu</i> showed recovery or remained 	<p>Key actions planned for next period include:</p> <ol style="list-style-type: none"> 1. Continuing to evaluate management actions in <i>tengefu</i> that are fully functional and supporting adaptation of effective actions through training where needed; 2. Continuing to work with county fisheries officials to facilitate the 3 <i>tengefu</i> that are not fully functional with the establishment of full closures; 3. Continuing the process of incorporation of management guidelines into BMU through co-management plans as required by the BMU regulations; 4. Continuing to monitor basic necessities and ecological changes to evaluate <i>tengefu</i> performance; 5. Completing and publishing empirical

	increased access to basic necessities and improved household incomes by end of Year 3.	stable 4. Terrorist attacks in Kenya have led to a dramatic reduction in tourism (a strong driver of the economy in this area) and also affected the collaboration of external scientists; the long term effect of this on the tourism-dependent communities is not yet clear	studies.
Output 1: Eight adaptive management plans are signed and endorsed as part of the bylaws of the BMUs within which the tengefu occur.	1.1 Adaptive management plans for eight <i>tengefu</i> have been completed through a participatory process. 1.2 BMU by-laws incorporate the eight adaptive management plans	1.1 The plans (now called management guidelines) were completed and are in use by 5 of 8 <i>tengefu</i> . 1.2 The process of endorsement has started with the first steps towards developing co-management plans at 2 of the 8 <i>tengefu</i> . The indicators are appropriate	
Activity 1.1: Conduct project inception workshop to discuss and agree on detailed work-plans roles and responsibilities of project participants.		The inception workshop was completed in the first year of the project, the PIC will follow-up through meeting, planning and overseeing implementation of project activities	
Activity 1.2: Conduct participatory assessments (socioeconomic, ecological and institutional) and draft adaptive management plans with communities.		Ecological and institutional assessments have been completed at all sites. For the socioeconomic assessments, basic household surveys have been completed and basic necessities surveys are planned in the coming period.	
Activity 1.3: Facilitate process with communities for review and adoption of the adaptive management plans and prepare for incorporation of the plan into the BMU by-laws by the Ministry of Fisheries Development.		Review and adoption and use of management guidelines completed at 5 of the 8 sites. Incorporation of guidelines into by-laws entail development of co-management plans that will commence in the coming period	
Output 2. Through the adaptive management process, communities gain management skills and a better understanding of the factors that enhance or impede success of community managed areas.	2.1 Community members actively use resource management planning skills gained during this project. 2.2 Community members participate actively at Annual Fishers Forum and community exchanges. 2.3 Scientific publications have been written on governance of these 8 <i>tengefu</i>	2.1 Knowledge and skills have been enhanced through the training exercises and the annual fishers' forum and communities have started using skills gained in monitoring and managing their <i>tengefu</i> . 2.2 Participation in the annual fishers' forum was enhanced especially with the introduction of the training session and group discussions at the forum. 2.3 Production of scientific papers progressed, one paper is being	

		revised and three are in preparation. Indicators are appropriate
Activity 2.1: <i>Conduct training/skills needs assessment and implement appropriate trainings based on the findings.</i>		This was completed in the previous period. We will continue to evaluate use of skills during implementation of project activities.
Activity 2.2: <i>Design and implement appropriate awareness and learning exchange programs for communities based on results of the assessment in Activity 2.1</i>		The assessment (Activity 2.1) showed the lack of adaptive management skills and monitoring of management actions. We conducted a training exercise on these and will follow-up with quarterly monitoring at project sites in the coming period. We also conducted a training exercise on information dissemination during the annual fishers forum.
Activity 2.3: <i>Monitor and evaluate success and uptake of training and awareness programs.</i>		This continued and will continue during the coming period
Activity 2.4: <i>Convene Annual Fishers Forum.</i>		This was completed and we plan to hold the next forum in Kilifi County to ensure exposure of fishers from both Kwale and Kilifi counties where the project sites occur.
Output 3: Overexploitation and destructive fishing activities are reduced in 8 tengefu as management interventions are implemented.	3.1 Overexploitation of fishery resources and use of destructive fishing practices are reduced. 3.2 Activities as outlined in the management plans are actively implemented in the communities	3.1 Within five tengefu, full protection has been achieved, at three there is partial protection and some fishing continues 3.2 Within five tengefu, management actions including surveillance, enforcement and monitoring are being implemented Indicators are appropriate
Activity 3.1: <i>Draft operational procedures for management.</i>		Completed
Activity 3.2: <i>Implement management actions.</i>		Management actions continued to be implemented and monitoring will continue in the coming period
Activity 3.3: <i>Evaluate and adapt management actions.</i>		These will continue to be evaluated through monitoring in the coming period
Activity 3.4: <i>Conduct empirical studies on management effectiveness.</i>		One empirical study was completed, and data were collected for two other studies to be completed in the coming period.
Output 4: Coral reef and reef fish recovery increases in 8 tengefu.	4.1 Indicators of coral reef health and reef fisheries improve over the life of the project in and around 8 tengefu	General response was recovery or no change of measured indicators of reef health. Fisheries catches have not shown measurable changes, this maybe because there has not been sufficient time for measurable changes in the catch.
Activity 4.1: <i>Monitor coral reef and associated ecosystems health.</i>		Monitoring results showed different responses in the tengefu. Reef fish biomass either increased or did not change, coral cover showed minimal increases or did not change and urchin biomass showed quite large decreases compared to pre-project variables. Monitoring will continue

		be undertaken in the coming period.
Activity 4.2: Monitor fisheries and fish prices.		Catch monitoring and fish prices monitoring completed at landing sites adjacent to project sites. This will continue in the coming period.
Activity 4.3: Produce scientific papers and the final report.		One paper in review will be resubmitted to Coastal Management and 3 papers in preparation will be completed and submitted in the coming period. As well two studies have commenced and manuscripts will be prepared for submission in the coming period
Output 5: Human well-being and food security in target communities are improved over the long-term.	5.1 Indicators of human well-being in target communities have improved.	Household surveys and basic necessities surveys were started and will be repeated in the coming period. These surveys measure the demographic characteristics of communities as well as access to the basic necessities communities perceive to be important for their well-being. Indicators are appropriate
Activity 5.1: Conduct socioeconomic (basic necessities) surveys.		Basic socioeconomic information collated for all sites. Basic necessities survey were started and will be repeated in the coming period

Annex 2 Project's full current logframe

Project summary	Measurable Indicators	Means of verification	Important Assumptions
<p>Goal: Effective contribution in support of the implementation of the objectives of the Convention on Biological Diversity (CBD), the Convention on Trade in Endangered Species (CITES), and the Convention on the Conservation of Migratory Species (CMS), as well as related targets set by countries rich in biodiversity but constrained in resources.</p>			
<p>Outcome: The outcome of this project is the increased capacity of Kenyan coastal communities to effectively manage eight community-managed closures (<i>tengefu</i>). Establishing participatory processes and developing and testing adaptive management plans will build the capacity of communities to protect and benefit from the biodiversity on which they depend (through the restoration of coral reefs and associated species), and improve their livelihoods and quality of life (through greater food security and income). We expect that increased participation in management, networking and outreach will also improve social organization, resulting in communities that are able to effectively negotiate and resolve conflict over shared resources.</p>	<ol style="list-style-type: none"> 1. Eight <i>tengefu</i> communities will show significantly increased knowledge and skills to manage their <i>tengefu</i> by actively participating in the adaptive management planning process and adopting and institutionalizing a management plan by end of year. 2. Eight <i>tengefu</i> communities will be better able to manage their fisheries and coral reef resources, have more confidence in interacting with fisheries managers and other stakeholders and show increased independence in managing their <i>tengefu</i> as shown by implementing at least 3 key management actions from each of their plans by Year 1.5. 3. Eight <i>tengefu</i> communities are actively participating in control and removal of gears that destroy coral reefs and compromise fisheries and by implementing monitoring and surveillance programs by end of Year 2. 4. Residents of 8 <i>tengefu</i> communities have increased access to basic necessities and improved household incomes by end of Year 3. 		<ol style="list-style-type: none"> 1. Community members will remain willing and enthusiastic about actively participating in the development and implementation of <i>tengefu</i> management. 2. Implementation of the new Kenyan constitution and the devolved governance system it advocates will effectively support community-based natural resource management. 3. Coral reefs and nearshore fisheries will recover at a rate that starts to generate benefits to people and marine life within the period of the project. 4. Coral reefs, nearshore fisheries, and local communities will not be additionally impacted by exogenous factors beyond the control of local communities, such as commercial fishing enterprises, coastal development projects, natural disasters, or severe environmental conditions such as drought or flood.
<p>Outputs: 1. <i>Eight adaptive management plans are signed and endorsed as part of the bylaws of the BMUs within which the <i>tengefu</i> occur.</i></p>	<ol style="list-style-type: none"> 1.1 Adaptive management plans for eight <i>tengefu</i> have been completed through a participatory process. 1.2 BMU by-laws incorporate the eight adaptive management plans 	<ol style="list-style-type: none"> 1.1. Assessment reports, adaptive management plans, project evaluations, reports of meetings 1.2. Assessment reports, adaptive management plans, project 	

		evaluations, reports of meetings	
2. Through the adaptive management process, communities gain management skills and a better understanding of the factors that enhance or impede success of community managed areas.	2.1 Community members actively use resource management planning skills gained during this project 2.2 Community members participate actively at Annual Fishers Forum and community exchanges 2.3 Scientific publications have been written on governance of these 8 <i>tengefu</i>	2.1. Progress reports of key management action; reports of meetings 2.2. Annual Fishers Forum and community learning exchanges reports, 2.3 Scientific publications	
3. Overexploitation and destructive fishing activities are reduced in 8 <i>tengefu</i> as management interventions are implemented.	3.1 Overexploitation of fishery resources and use of destructive fishing practices are reduced. 3.2 Activities as outlined in the management plans are actively implemented in the communities	3.1 Gear use survey report, Surveillance and monitoring plans, compliance reports, coral reef and reef fisheries reports 3.2 Project evaluations, on-site observations and discussions with communities	
4. Coral reef and reef fish recovery increases in 8 <i>tengefu</i> .	4.0 Indicators of coral reef health and reef fisheries improve over the life of the project in and around 8 <i>tengefu</i>	4.0 Catch monitoring, market survey and coral reef and reef fisheries monitoring data	
5. Human well-being and food security in target communities are improved over the long-term.	5.0 Indicators of human well-being in target communities have improved	5.0 Basic household necessities surveys	
<p>Activities (each activity is numbered according to the output that it will contribute towards, for example 1.1, 1.2 and 1.3 are contributing to Output 1)</p> <p>Output 1</p> <p>1.1 Conduct project inception workshop to discuss and agree on detailed work-plans roles and responsibilities of project participants</p> <p>1.2 Conduct participatory assessments (socioeconomic, ecological and institutional) and draft adaptive management plans with communities</p> <p>1.3 Facilitate process with communities for review and adoption of the adaptive management plans and prepare for incorporation of the plan into the BMU by-laws by the Ministry of Fisheries Development</p> <p>Output 2</p> <p>2.1 Conduct training/skills needs assessment and implement appropriate trainings based on the findings.</p> <p>2.2 Design and implement appropriate awareness and learning exchange programs for communities based on results of the assessment in Activity 2.1</p> <p>2.3 Monitor and evaluate success and uptake of training and awareness programs</p> <p>2.4 Convene Annual Fishers Forum</p> <p>Output 3</p>			

- 3.1 Draft operational procedures for administration, conservation and surveillance actions from the adaptive management plans
 - 3.2 Implement three key management actions guided by the operational plans
 - 3.3. Evaluate management actions and work with communities to adjust actions as needed based on the findings of the evaluations
 - 3.4. Conduct empirical studies on the factors that enhance or impede effective community management; publish findings and report the results at Annual Fishers Forum and other appropriate venues
- Output 4.
- 4.1 Monitor coral reef and reef fish health and report at the Annual Fishers Forum
 - 4.2 Monitor fisheries, fish catches and prices at *tengefu* landing sites
 - 4.3 Publish and report findings at appropriate fora
- Output 5
- 5.1 Conduct basic necessities surveys

Annex 3 Standard Measures

Table 1 Project Standard Output Measures

Code No.	Description	Gender of people (if relevant)	Nationality of people (if relevant)	Year 1 Total	Year 2 Total	Year 3 Total (planned)	Total to date	Total planned during the project
2	Number of people to attain Masters qualification (MSc, MPhil etc) *	Female and male	2 Kenyan 2 European	0	2	1	1	4
6A	Kenyan participants to receive other forms of education/training		Kenyan	60	130		148	
9	Management plans/guidelines			8			5	8
11A	Number of papers to be published in peer reviewed journals				1	3	0	4
11B	Number of papers to be submitted to peer reviewed journals				1	1	1	
14A	Number of conferences/seminars/ workshops to be organised to present/disseminate findings	Female and male	Kenyan	1	1	1	2	3
14B	Number of conferences/seminars/ workshops attended at which findings from Darwin project work will be presented/ disseminated.	Female and male	Kenyan	1	1	1	0	3
15A	Number of national press releases in host country(ies)				2	2	1	4
15B	Number of local press releases in host country(ies)				2	2	0	4
23	Value of resources raised from other sources (ie. in addition to Darwin funding) for project work							128242

Table 2 **Publications**

Title	Type (e.g. journals, manual, CDs)	Detail (authors, year)	Gender of Lead Author	Nationality of Lead Author	Publishers (name, city)	Available from (e.g. website link or publisher)
Current status, challenges and opportunities in the establishment of community managed fisheries closures in Kenya	Journal	McClanahan TR, Abunge CA, Muthiga N A (in review)	Male and two females	USA	Coastal Management Taylor & Francis Group	In review

Annex 4 Onwards – supplementary material (optional but encouraged as evidence of project achievement)

ACRONYMS

ANO – African Nature Organisation
BMU – Beach Management Unit
CBD – Convention on Biological Diversity
CITES - Convention on International Trade in Endangered Species of Flora and Fauna
CMS - Convention on Migratory Species
ESPA – Ecosystem Services for Poverty Alleviation
KCDP – Kenya Coastal Development Project
KWS - Kenya Wildlife Service
MPA - Marine Protected Area
NGO - Non Governmental Organization
PIC – Project Implementation Committee
SDF – State Department of Fisheries
SPACES - Sustainable Poverty Alleviation from Coastal Ecosystem Services
WCS – Wildlife Conservation Society
WIOMSA – Western Indian Ocean Marine Science Association

Table of contents of supplemental materials

Annex 4.1. Kilifi Fisheries Office
Annex 4.2 Kwale Fisheries Office
Annex 4.3 Sub County Administrator
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Annex 4.4b Learning Exchange
Annex 4.4c Learning Exchange
Annex 4.5a Monitoring field exercise
Annex 4.5b Monitoring field exercise
Annex 4.6 Ecological monitoring presentation
Annex 4.7 Report of Fishers’ forum
Annex 4.8 Mahajan thesis abstract
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Annex 4.10 Tengefu presentation fishers forum
Annex 4.11 Fish landing monitoring presentation
Annex 4.12 9th WIOMSA scientific symposium abstract
Annex 4.13 Basic necessities survey methods
Annex 4.14 M&E Activity matrix
Annex 4.15 Tracking risks and assumptions

Checklist for submission

	Check
Is the report less than 10MB? If so, please email to Darwin-Projects@ltsi.co.uk putting the project number in the Subject line.	
Is your report more than 10MB? If so, please discuss with Darwin-Projects@ltsi.co.uk about the best way to deliver the report, putting the project number in the Subject line.	
Have you included means of verification? You need not submit every project document, but the main outputs and a selection of the others would strengthen the report.	
Do you have hard copies of material you want to submit with the report? If so, please make this clear in the covering email and ensure all material is marked with the project number.	
Have you involved your partners in preparation of the report and named the main contributors	
Have you completed the Project Expenditure table fully?	
Do not include claim forms or other communications with this report.	