

Darwin Initiative Main/Post/D+ Project Half Year Report (due 31st October 2017)

Project Ref No	21-013
Project Title	Alternative livelihood opportunities for marine protected areas fisherwomen
Country(ies)	Sierra-Leone, UK
Lead Organisation	University of Stirling (UoS)
Collaborator(s)	Fourth Bay College, University of Sierra Leone Institute of Marine Biology and Oceanography (IMBO), Njala University (NJU).
Project Leader	<i>Dr Francis Murray (UK), Dr Saliue Sankoh (Sierra Leone)</i>
Report date and number (eg HYR3)	31 Oct 2017 – HYR3
Project website	http://www.stir.ac.uk/aquaculture-mangrove-oyster/

1. Outline progress over the last 6 months (April – Sept) against the agreed baseline timetable for the project (if your project has started less than 6 months ago, please report on the period since start up to end September).

Research into the harvesting, processing and marketing of oysters, documented in the last 3 annual reports have necessitated a revision of the original development premises of the project. Specifically, the following factors were identified as major constraints which culminated in development of a fully-revised logical framework submitted to Darwin as part of formal change-request in March 2017:

- Poor economic incentive for intensive culture of oysters given the resilience of wild mangrove oysters to increasing harvesting pressure.
- Poor economic incentives for marketing live oysters in Freetown due to local supply of (rock) oysters with lower risk of faecal contamination compared to (mangrove) oysters harvested within the Sherbro MPA.
- Lack of capacity for decentralised operation and maintenance of solar-cold chain plant in the remote Sherbro MPA.
- Lack of formal or informal access rights and associated regulation of oyster harvesting and marketing effort (i.e. almost perfect free-market conditions)

Consequently emphasis has shifted to achievement of wider project objectives through market incentives based on understanding and adaptive-development of prevailing value-chain practices for dried food commodities. Smoke-dried oysters are the dominant market-form due to their enhanced keeping quality under ambient conditions and over the last 6 months the project has been working on developing branded value-added smoked products e.g. with sauces in separate blister packs.

To this end, Mr Dimitar Taskov (UoS) coordinated a further round of market-research with IMBO support over 4 weeks in May and June 2017. Value-chain and consumer surveys in Freetown (& Waterloo) were extended to major wholesale (Gbambatok and Yagoi) and retail markets in the inland cities of Kenema and Bo - which lack access to the most popular but highly perishable fresh-steamed product form. Surveys incorporated prototype product development (inc. branding and packaging variants) and placement surveys (willingness to pay) with consumers, informal and formal retail outlets. Results demonstrated a pattern of highly limited, seasonal supply associated with unmet demand for smoked-oysters in these

locations. Secondary processing and marketing practices for dried agricultural commodities and smoked cockles, the principle substitute for smoked-oysters (frequently misrepresented as smoked oysters which command a premium due to intrinsic quality factors) were also assessed.

Findings are contributing to development of suite of market-driven interventions to support establishment of a Sherbro Women's marketing cooperative (i.e. rather than producer cooperative given the regulatory deficit and less clear economic incentive for mutually beneficial collective action at this level). This aim was also part of the remit of the First 'Bonthe Oyster Festival' facilitated by all project partners over the weekend of the 13th May 2017 with support of the Bonthe municipal council and local radio-station 'Radio Bontico'. Using footage of the event which included recipe and shucking contests, demonstration of oyster culture, food-safety and branded value-added products we hope to solicit external sponsorship for future such events as an additional, post-project cooperative income stream. The Whitstable Oyster Company provided in-kind support for the first event.

The primary biodiversity focus has shifted to mitigation of negative impacts on mangrove assemblages through more fuel efficient primary and secondary processing (steaming and smoking). We are also evaluating how more prudent, less damaging harvesting practice might be linked to market incentives under the auspices of the cooperative. One option being explored is sale of carbon-credits linked to third-party audits of mitigation efforts as an additional cooperative income stream. Discussion is underway with NGO ACES (<http://www.aces-org.co.uk/about-aces/>), pioneers of a similar initiative in East Africa using credits issued by the Plan Vivo Foundation (www.planvivo.org/).

Three MSc students; one from IMBO and two from UoS carried out linked research projects aligned with these project objectives. Two reports have been uploaded to the project website:

- Factors influencing access to improved livelihoods for oyster harvesters in the Sherbro River Estuary, Sierra Leone; a mixed-methods study. Emily Boardman (4 Aug 2017: MSc thesis, Institute of Aquaculture, University of Stirling, unpublished).
- Environmental impacts of oyster harvesting on mangrove swamps; Sherbro Island Estuary, Sierra Leone. Emily Rossi (28 Aug 2017: MSc thesis, Dept. Biological and Environmental Sciences, University of Stirling, unpublished).

The first study extended knowledge of steamed and smoked oyster marketing geography and trends in and around the Sherbro MPA. The second contributed to a more quantitative baseline assessment of mangrove impacts and intervention-options for more fuel-efficient oyster processing.

IMBO MSc student Allie Bakarr Kamara supervised by Dr Salieu Sankoh is undertaking on-going field work researching the distribution of mud-oyster beds around Bonthe, livelihood contribution as part of the larger mangrove-oyster fishery and the bio-technical and economic feasibility of low-input-output enhancement interventions based on placement of shell-waste from oyster processing.

UoS, IMBO and NJU partner staff; Francis Murray, Richard Quilliam, Richard Kakpindi and Richard Wadsworth and James Green (Whitstable Oyster Company) also undertook two field missions to Bonthe during May and June to support implementation of the Bonthe Festival, coordination of other project activities and student supervision.

As part of these missions oyster samples from mangrove roots, mud and rock substrates in the Sierra Leone (Freetown) and Sherbro estuaries. Analysis of mitochondrial DNA, currently underway in Stirling will help determine whether morphotypes associated with the different substrates have the same or discrete genotypes. Findings will contribute to management recommendations. Further hydrographic survey work was also undertaken to characterise residual current patterns within the Sherbro MPA.

2a. Give details of any notable problems or unexpected developments/lessons learnt that the project has encountered over the last 6 months. Explain what impact these could have on the project and whether the changes will affect the budget and timetable of project activities.

2b. Have any of these issues been discussed with LTS International and if so, have changes been made to the original agreement?

Discussed with LTS: Yes

Formal change request submitted: Yes

Received confirmation of change acceptance Yes

3a. Do you currently expect to have any significant (e.g., more than £5,000) underspend in your budget for this year?

Yes No Estimated underspend: £ NA

3b. If yes, then you need to consider your project budget needs carefully. Please remember that any funds agreed for this financial year are only available to the project in this financial year.

If you anticipate a significant underspend because of justifiable changes within the project, please submit a rebudget Change Request as soon as possible. There is no guarantee that Defra will agree a rebudget so please ensure you have enough time to make appropriate changes if necessary. NA

4. Are there any other issues you wish to raise relating to the project or to Darwin's management, monitoring, or financial procedures?

If you were asked to provide a response to this year's annual report review with your next half year report, please attach your response to this document. Additionally, if you were funded under R23 and asked to provide further information by your first half year report, please attach your response as a separate document.

Please note: Any **planned** modifications to your project schedule/workplan can be discussed in this report but **should also** be raised with LTS International through a Change Request.

Please send your **completed report by email** to Eilidh Young at Darwin-Projects@ltsi.co.uk. The report should be between 2-3 pages maximum. **Please state your project reference number in the header of your email message e.g. Subject: 22-035 Darwin Half Year Report**