2021 Progress Report: ENHANCING LEGACY AND CAPACITY FOR MARINE AND COASTAL ENVIRONMENTAL COORDINATION IN FI THROUGH COLLABORATION AND PARTNERSHIP

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26/11/2021 VERSION FINAL

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VERSION CONTROL

VERSION	AUTHOR	DATE
First Draft	Narissa Bax	November 2021
Draft reviews	Al Baylis, Tara Pelembe, Paul Brickle, Teresa Bowers	November 2021
FINAL	Narissa Bax	25/11/2021

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Cover photo: Marine garden, including *Errina* sp. corals photographed in 2021 at three new sites from ~40 - 50m off Bird Island, one of the proposed MMA locations in the Falkland Islands. The coral genus *Errina* is one of the most species rich genera of Stylasteridae (lace) corals and isolated field-like aggregations have been documented in Antarctica, the sub-Antarctic, Patagonia and now potentially in the Falkland Islands as well.

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ABOUT THE SOUTH ATLANTIC ENVIRONMENTAL RESEARCH INSTITUTE (SAERI)

SAERI was a Falkland Islands Government initiative and operated as an arm's length government department from 2012 until June 2017. From 1 July 2017, however, it became a fully-fledged and independent Charitable Incorporated Organisation (CIO) operating out of its hub in Stanley, Falkland Islands. Its origins remain a fundamental aspect to its growth and its future.

SAERI undertakes research in the UK Overseas Territories (UKOTs) and other Atlantic and Caribbean coastal communities, from the tropics down to the ice in Antarctica. Its vision is to deliver world-class environmental research that informs the effective stewardship of our planet. Its mission is to grow a sustainable environmental research institute in the Falkland Islands, and to build research and environmental stewardship capacity within and between South Atlantic Overseas Territories.

Strategically, SAERI aims to be a world-class research institute that teaches students and builds capacity within and between the South Atlantic Overseas Territories. In order to achieve that it must be:

1. Project optimised – by operating as a streamlined and efficient organisation through the Focal Areas;

2. Fully funded – Falklands registered limited company is able to fund SAERI overheads, ensuring SAERI ultimately becomes fully financially independent from Falkland Islands Government and by ensuring that all grant applications (where possible) contain cost of seat coverage; and

3. The holder of proprietary environmental knowledge of the South Atlantic – by continuing to provide the research expertise offered to date.

TABLE OF CONTENTS

1. BACKGROUND AND CONTEXT

SAERI recruited a **non-project based, coordination role** within the organisation to **ensure the continued focus** on, and **development of**, **marine and coastal environmental management** in the Falkland Islands. Thanks to funding from the John Ellerman foundation the **role of Marine and Coastal Programme Co-ordinator (MCPC) was secured at SAERI for a 2.5-year period. This post has been created to** build capacity and sustainability in ocean conservation, management and research coordination by continuing to work with Falkland Islands Government (FIG) and stakeholders, providing evidence to support the proposed Marine Managed Areas (MMAs), establishing a framework to monitor the proposed MMAs and consolidating successful work that has already been completed including fine-scaling the design of the MMAs.

In recognition of the need for holistic marine management, and in support of the UK's commitments to meet the Aichi Target 11, the Falkland Islands started a process of Marine Spatial Planning (MSP) in 2014, which was followed by an Assessment of Fishing Closure Areas as Sites (AFCAS) for wider management of the Falkland Islands marine environment. The aim of the AFCAS process was to provide evidence-based recommendations for a network of marine protected areas. The AFCAS process focused on areas that are closed to fishing or subject to low fishing impact (termed marine wilderness areas in the literature), which have irreplaceable biodiversity and are ecologically representative, but presently do not have a legal framework for protection. The AFCAS study prioritized four main marine wilderness areas as potential MMAs. This MCPC post will secure long-term capacity and sustainability in ocean conservation, management and research co-ordination by continuing to work with FIG and stakeholders, providing evidence to support the proposed MMAs, establishing a framework to monitor the proposed MMAs and consolidating successful work that has already been completed.

There are **three key project outcomes:**

- **Outcome 1:** The local **community will be engaged** in the Marine and Coastal environment of the Falkland Islands, and there will be a strong commitment from **FIG** to lead on Marine and Coastal Environmental coordination into the future.

- **Outcome 2:** Marine Management Areas on the Falkland Islands will be strengthened through the development and implementation of the first **MMA Monitoring plans**, and the creation of **'mixed sustainable use zones'**.

- **Outcome 3:** The Marine and Coastal Environment of the Falkland Islands will be better understood through further funded **innovative research**, and **robust data management**.

2. OUR ORGANISATION

Please outline any major changes in management, staffing or policy since the application.
Tell us briefly about your organisation's main activities and achievements during the past year.

SAERI is in a transition from an establishment to a growth phase and this will be maintained and progressed with SAERI's Senior Leadership Team with guidance and oversight from the SAERI Board. There have been no major changes in management, staffing or policy since our application. In brief, our research is fundamental and applied and is designed to inform the sustainable management of the natural environment. Our research is also stakeholder-driven with outputs that are policy-relevant and help to inform management interventions. During the past year we have worked across UK overseas territories and beyond, across marine, terrestrial and freshwater

environments. In the marine environment, we have continued to support FIG in the designation of proposed MMAs through our John Ellerman Foundation funded work outlined in this report. We have also developed MSP tools to support the sustainable management of the Turks and Caicos Islands marine environment. Our terrestrial and freshwater work has focused on aligning management objectives and actions, into action plans. Most notably, this is through our Falkland Islands wetlands project – which aims to establish a long-term monitoring plan for Falklands wetlands and a National Wetlands Action Plan. We have also continued our research into Falkland Islands peat, in particular carbon stock and flux to support the development of carbon offsetting schemes, with aims to complement this work in the Falklands marine environment with blue carbon research in the future.

3. PROGRESS TO DATE - MAY - NOVEMBER 2021

Summarise what you said you planned to achieve in the application/last year's report, and tell us about the progress toward this

The report below gives a summary of progress to date against the delivery of the project outcomes.

3.1. OUTCOME 1: FIG AND COMMUNITY ENGAGEMENT

A core component of the MCPC role is supporting the FIG to implement the proposed Falkland Islands MMAs. Over the past 6 months, the MCPC has worked closely with the FIG Environment Unit to provide technical support. This technical support has entailed developing a public facing document and a technical document that summarizes and synthesises the scientific evidence supporting the proposed MMAs. These documents will provide the background material for the public consultation that is being led by FIG, but will require considerable input and support from the MCPC. Public consultation is planned for 2022.

The MCPC has also been introduced as part of SAERI's regular outreach materials (e.g. newsletter a social media @SAERI_FI on twitter) and contributed to four co-author peer-review publications since June 2021

3.2. OUTCOME 2: MMA MONITORING PLANS AND MIXED SUSTAINABLE USE ZONES

The MCPC will develop research and monitoring plans in collaboration with FIG based on stakeholder recommendations from the public consultation. Significant progress on this outcome is anticipated in 2022.

3.3. OUTCOME 3: INNOVATIVE RESEARCH AND ROBUST DATA MANAGEMENT

The main focus of the research component of the implementation in the first six months of the project, has been to (i) consolidate and better quantify our understanding of blue carbon from existing data that was collected during surveys in 2017 and 2019. This data is being used to add further support for the designation of the Burdwood Bank MMA, anticipated in 2022. (ii) Coordinate Research, by helping to deliver **a Sub-Antarctic Connectivity and Climate Change symposium** which considered the Falklands Islands as a key biodiversity hot spot for developing marine management best practise, and globally relevant climate change mitigation focused research. (iii) Undertake field work within the Falkland Islands Inshore MMA.

3.3.1 Blue carbon:

Consolidate and better quantify our understanding of blue carbon from existing data that was collected during surveys in 2017 and 2019. This data is being used to add further support for the designation of the Burdwood Bank MMA, anticipated in 2022.

To support FIG in their designation of the proposed Burdwood Bank MMA, we have collated and analysed existing data to determine the contribution of the proposed Burdwood Bank MMAs to carbon storage and sequestration. This analysis will form the basis of a technical report that quantifies the importance of the Burdwood Bank in terms of blue carbon storage and benthic biodiversity, including a comparative assessment outside of the proposed MMA area on the South Falkland Shelf. This analysis is being undertaken as a collaboration with researchers from the British Antarctic Survey. We will then use these results to undertake a broader scale study which includes data from the Falkland Islands, South Georgia, and the West Antarctic Peninsula to determine 'blue carbon hot spots' for carbon sequestration and biodiversity, to inform and highlight the importance of the Falkland Islands as a potential 'blue carbon hotspot' and help to identify management and monitoring options for the future.

The blue carbon Burdwood Bank research complements SAERI's research on blue carbon in Falkland Island kelp forests (Bayley et al., 2021), and the neighbouring UK Overseas Territory of Ascension Island (Barnes et al., 2019). Blue carbon is of particular interest both locally and globally in the context of climate change, the protection of carbon sinks and the development of carbon credit schemes, with COP26 in November noting that 'Marine ecosystems are also recognised as "carbon sinks" in COP26 Article 21 of the final decision, which emphasises the importance of the protection, conservation and restoration of terrestrial and marine ecosystems in the reduction of greenhouse gas (GHG) emissions' and UNFCCC COP6 passed this year, paving the way for carbon credits linked to blue carbon and marine biodiversity conservation in the future.

In addition, the MCPC is involved with broader working groups as part of the UN International Decade of Ocean Science for Sustainable Development 2021–2030, including: **A)** Challenger 150: a decade to study deep sea life, with SAERI listed on their webpage as a research partner. The Challenger 150 South Atlantic working group is composed of a multidisciplinary, multi-partner network of deep sea specialists working across the South Atlantic to coordinate deep sea voyages and fill important knowledge gaps. **B)** The Deep Ocean Stewardship Initiative (DOSI) **C)** and The Southern Ocean United Nations Decade form a deep sea community of practise within the UN. These linkages provide opportunities for wider collaboration and dissemination of the work that is being supported by the John Ellerman Foundation.

3.3.2 Research coordination

Research coordination, by helping to deliver a Sub-Antarctic Connectivity and Climate Change symposium which considered the Falklands Islands as a key biodiversity hot spot for developing marine management best practise, and globally relevant climate change mitigation focused research.

In October 2021 SAERI co-organised a Sub-Antarctic Connectivity and Climate Change Symposium at Wilton Park in the UK, where the MCPC presented and led a theme on blue carbon to provide: An assessment of the unique temporal and spatial complexity of benthic blue carbon sinks across the sub-Antarctic to inform global carbon capture to sequestration estimates and nature-based solutions to climate change.

Symposium discussions led to the creation of a sub-Antarctic blue carbon network of 27 researchers working in the region, across career stages, nationalities and disciplines. This network is currently coordinated informally by the MCPC, with potential to formalise the network in the future. This places SAERI as a global centre-point leading the way on Blue Carbon research. The blue carbon theme was hailed as the key demonstration project of the symposium, and the theme was extended to include research on the use of natural archives such as ice-core, corals, peat-core and fjord geology to elucidate our understanding of blue carbon in the past, present and future. The symposium discussions provided a range of options for research and monitoring in the context of Falkland Islands proposed MMAs.

3.3.3 Field work

Field work within the Falkland Islands Inshore MMA

In October/November 2021 the MCPC organised a ~10 day coral voyage of discovery to Bird Island, focused on collecting specimens for morphological, genetic and paleo-archive analysis and quantifying the distribution of the stylasteridae coral, *Errina* sp - ecosystem engineers of the seafloor. Three new coral sites were identified at Bird Island, with abundance similar to the density found in other pristine locations such as the Patagonian Fjords and Antarctica - confirming that Bird Island hosts important mesophotic coral biodiversity. In all instances (and in combination with previous diver surveys to ~20m), footage illustrates high biodiversity and justification for MMA designation due to the unique ecosystems across the depths explored to date (~5m - 50m). This work will enable a greater understanding of the linkages within and between Falkland Island biodiversity 'hot spots' and proposed MMAs, which will allow for more coherent management and monitoring plans to be developed (the development of which is being led by the MCPC).

4. UNINTENDED OUTCOMES

Please tell us about any outcomes that you have not intended or anticipated, and how you dealt with these.

None to date.

5. THE YEAR AHEAD

Do your plans remain the same or have they changed? If they have changed, tell us why and what you now intend to achieve.

Our plans remain the same and we anticipate the majority of the focus will be on outcome 1: **stakeholder and community engagement**, supporting FIG with the designation of MMAs and the development of management and monitoring plans for MMAs and the coastal zone (outcome 2). In addition, we will look to develop education programmes for the MMAs and the coastal zone.

5.1. PLANNED ACTIVITIES:

Outcome	Planned activities
Outcome 1: FIG and Community Engagement	To engage the community in the Falklands marine environment, the MCPC will present community talks related to the work listed here. The MCPC will play a key role in supporting the FIG led MMA consultation process.
Outcome 2: Research coordination	The MCPC will begin to frame and develop a research and monitoring plan for the proposed MMAs based on stakeholder engagement and in collaboration with FIG
Outcome 3: Fieldwork	Significant progress has already been made with Outcome 3. However, in the coming year, the MCPC will identify key research gaps and opportunities based on scientific research and available data to-date and will form the basis for being able to identify research funding opportunities to enable a research and monitoring plan to be implemented before 2023.

6. FINANCIAL INFORMATION

A breakdown of income and expenditure for the work funded against your original budget. If this differs from your original income and expenditure budget please explain why. If our grant was for core costs, you should simply send us your management accounts covering the last 12 months.

A copy of your latest approved annual report and accounts (if you have not already sent them). If they are not yet available, please send them to us as soon as they are.

	Year 1 May 2021 - April 2022		Year 2 May 2022 - April 2023		Year 3 May 2023 - Sept 2023	
	Budget	Actuals	Budget	Actuals	Budget	Actuals
Income	**49,834.34**	**51,245.01**	**46,401.94**		**24,234.77**	
The John Ellerman Foundation	49,834.34	49,834.76	46,401.94		24,234.77	
SAERI - MMA residual	-	1,410.25				
Expenditure	**60,934.83**	**30,150.81**	**46,401.94**		**24,234.77**	
Salary	42,642.18	16,657.97	34,155.34		17,103.67	
Overheads	12,792.65	7,673.25	10,246.60		5,131.10	
Recruitment & Relocation	5,500.00	5,442.91	2,000.00		2,000.00	
Misc expenses		376.68				
Residual to May 2022		**22,830.22**				
Salary		17,710.82				
Overheads		5,119.40				
Projected spend Year End		**52,981.03**				
(OVER)UNDERSPEND		(1,736.02) *				

* The grant received was allocated to the recruitment and monthly salary costs of the project manager as well as overheads for SAERI. Due to a time lag between the application and the successful recruitment of the incumbent, salary costs increased which is why there is a slight project year-end overspend. This short fall will be covered by SAERI. We also enclose our 2020 Annual report and financial statements as submitted to the Charity Commission. Our 2021 financial year ending 30 June 2021 is currently under audit and as a result the report is not yet available. We would be glad to forward this once ready, likely early in 2022.

7. IMAGES OF THE WORK

Image: Bird Island, a proposed MMA © Narissa Bax SAERI

Image: PhD student Amy Guest preparing for work on Bird Island. Amy is working to document intertidal biodiversity (0-5m), a key gap in knowledge because marine surveys often focus on divable depths (~5-20m). This work complements Narissa's research goals focused on seafloor biodiversity at deeper depths below ~30m to capture unique and understudied biodiversity in the Falkland Islands.

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Image: Tide pool and kelp habitat at Ten Shilling Bay, with the yacht *Saoirse* in the background. Kelp species *Macrocystis pyrifera* (giant bladder kelp) and *Durvillaea antarctica* (souther bull kelp) are important blue carbon habitats in the Falkland Islands and understanding how connected (or the inverse isolated) locations are from one another helps inform conservation management. Specimens collected from 11 sites (9 from west Falklands, and 2 from East Falklands) will contribute to local and global scale genomics research.

Image: Marine garden, including *Errina* sp. corals photographed in 2021 at three new sites from ~40 - 50m off Bird Island, one of the proposed MMA locations in the Falkland Islands. The coral genus *Errina* is one of the most species rich genera of Stylasteridae (lace) corals and isolated field-like aggregations have been documented in Antarctica, the sub-antarctic, Patagonia and now potentially in the Falkland Islands as well.

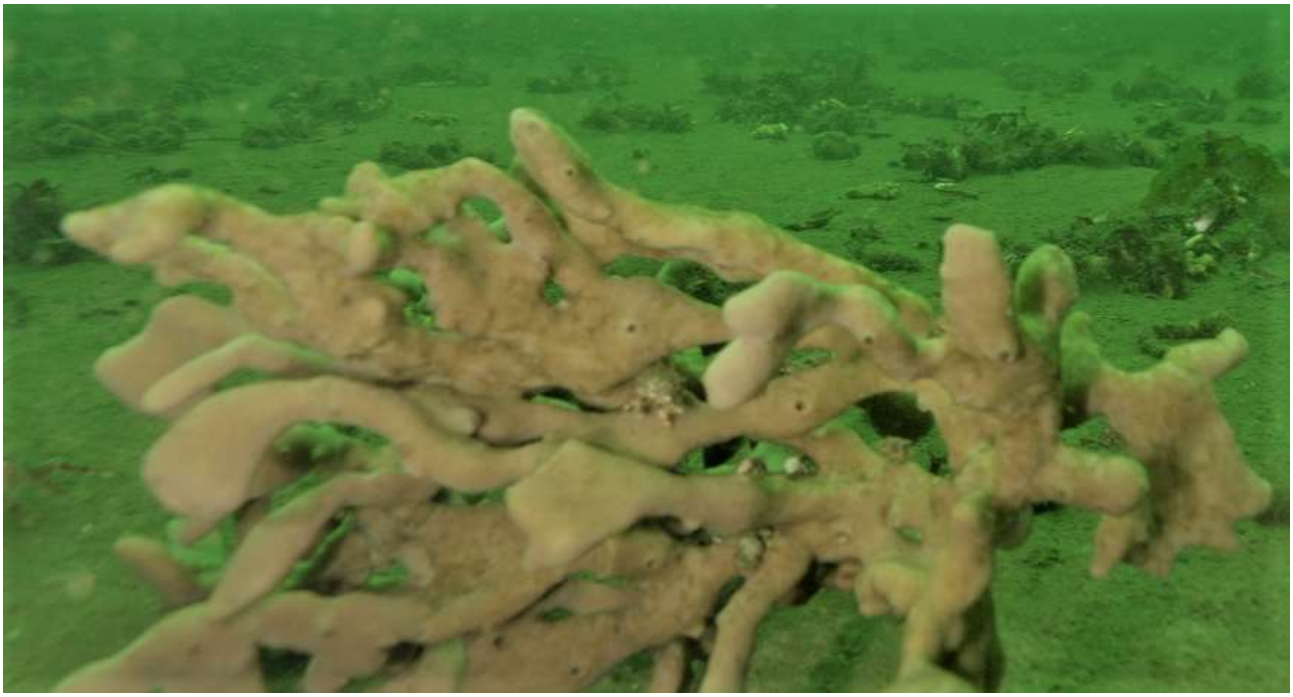

Image: *Haliclona* sp. sponge from BoxFish ROV footage near Albemarle at ~20 meters, West Falklands. Sponge diversity is high in the Falklands, particularly in deep locations like the Burdwood Bank. The sponge expert Claire Goodwin was visiting the Falklands in early November and kindly identified this sponge image and provided an expert tutorial on taxonomic tools for SAERI staff members Tabitha Pearman, Amy Guest and Narissa Bax.

Image: *Gorgonocephalus chilensis* from BoxFish ROV footage in the anchor bay of Bird Island at ~24 meters.

Image: Gentoo penguins (*Pygoscelis papua*) coming ashore at dusk at York Bay, near Stanley, Falkland Islands. This location was closed until November 2020 due to the presence of land mines from the Falklands war. Now it is open to the public, and only a short ~10 minute drive from the office, this location provides a unique view of biodiversity on our door step and this photo was accepted for publication in a pending publication (Bax and Bayley in *Frontiers in Ecology and the Environment*).

Image: The sea slug, *Elysia* sp. found in a local and isolated rock pool near Stanley. This species represents a possible test case for genetic research. The genus is described in Patagonia, but is not formally described in the Falkland Islands. It would be interesting to understand the relative connectivity, or isolation, and to know if this is a founder population.