DPLR1\1052

Darwin Plus Local - Final Report (1)

Officer: Linzi Ogden

Section 1 - Darwin Plus Local Project Information (Essential)

Project Reference Number

DPL00013

Q1. Project Title

No Response

Overseas Territory(ies)

☑ St Helena, Ascension, and Tristan de Cunha

Lead Organisation or Individual

Ascension Island Government Conservation and Fisheries Directorate

Partner Organisation(s)

NA

Value of Darwin Plus Local Grant Award

[redacted]

Project Start Date

23 May 2023

Project End Date

31 March 2024

Project Leader Name

Dr Adam Sharp

Project Website/Twitter/Blog etc.

No Response

Report Author(s)

Dr Adam Sharp

Report Date

29 April 2024

Project Summary

No Response

Project Outcomes

Checked	**Biodiversity: improving and conserving biodiversity, and slowing or reversing biodiversity loss and degradation;**
Checked	**Climate Change: responding to, mitigating and adapting to climate change and its effects on the natural environment and local communities;**
Checked	**Environmental quality: improving the condition and protection of the natural environment;**
Checked	**Capability and capacity building: enhancing the capacity within OTs, including through community engagement and awareness, to support the environment in the short- and long-term.**

Section 2 - Project Outcomes (Essential)

On a scale of 1 (high – outcome substantially exceeded) to 5 (low – outcome substantially did not meet expectation), how successful do you think your project has been?

⦿ 3 - Outcome met expectation

Project outcomes and justification for rating above

This project overall met expectation. We met most of our aims, despite some minor setbacks resultant of the ambitious scope and timeframe of the project.

The following knowledge gaps were previously limiting the AIGCFD from effectively managing their anchialine pool ecosystems. The knowledge improved during this project is indicated by *:
1. Poor understanding of pool hydrology and ocean connectivity.
The pool hydrology is fully understood, and it is now known that the pools are not directly connected to the ocean.
2. Poor understanding of species and ecosystem.
It has been discovered that photosynthesis within the pools supports all species and forms the base of the ecosystem.
3. No quantitative assessment or prioritisation of threats, preventing the development of effective mitigation measures. Threats include:

a. Rising temperature and subsequent effects on pool salinity and dissolved oxygen.
It was found the increasing air temperatures have increased mean water temperature by approximately 2.0°C since 1950. Dissolved oxygen regularly plummets according to tide and time of day, and is predicted to decline with sea-level rise.
b. Increased inundation caused by sea level rise and storm waves.
Inundation was found to occur occasionally but did not appear to be a significant threat to endemic anchialine biodiversity.
c. High pool connectivity rendering low spatial redundancy to biosecurity and pollution impacts.
We found no spatial redundancy within each of two distinct groups of pools, all connected at high tide. Pools are therefore highly vulnerable to impacts.
d. Regular littering or disturbance.
Littering and physical disturbance did not occur over the project timeframe and does not appear to be a significant threat.
e. None of the five endemic crustacean species have been Red List assessed.
Two species of crustacean have been Red Listed but three more could not be. This was because those required scientific description, which was unavoidably delayed.
f. The island community are largely unaware of the value and fragility of the pools.
The community have been educated via social media channels. An information board populated with new knowledge has been designed but not yet erected at the pool site.

Separately, the following specified targets have been met:
• Hydrology map – completed in Raster and diagrammatic form.
• Three new species described – all species have been isolated and are in the process of being described by the NHM-based global authority in the group.
• Comprehensive Threat Assessment – has been compiled and is accessible to all stakeholders.
• Information boards – have been designed and will be installed in the first half of 2024.
• Red List assessment of endemic species – Two described species have been assessed as Critically Endangered and three more cannot yet be Red Listed, pending taxonomic description.
• Updated Nature Reserve Management Plan – Updated with new knowledge and actions.
• Social media posts – >3,000 total engagements.

AIGCFD now has the knowledge and tools to begin addressing the long-term threats to Ascension's anchialine biodiversity. AIGCFD is able to predict and plan mitigation strategies against changing microclimate.

Supporting Evidence - file(s) upload

Red_List_assessment_Procaris_ascensionis
29/04/2024
05:03:15
docx 16.63 KB

AIG Shelly Beach signage2
29/04/2024
04:59:40
pdf 1.46 MB

Management_Plan
29/04/2024
04:53:14
pdf 12.78 MB

Threat_assessment
29/04/2024
04:53:14
docx 10.76 MB

CP_hydrology
29/04/2024
04:53:13
gif 7.93 MB

MP_hydrology
29/04/2024
04:53:13
gif 6.15 MB

Article_Draft
29/04/2024
04:53:11
pdf 1.59 MB

Red_List_assessment_Typhlatya_rogersi
29/04/2024
04:53:10
docx 16.68 KB

Supporting Evidence - links to published document/online materials

NA

Project Challenges

This project experienced several problems, mostly due to timeframes with informal external partners which were outside of AIGCFD control. We were hopeful to have avoided these problems but due to the ambitious nature of our project, they were not unexpected.

• We were unable to successfully quantify water salinity in the anchialine pools. This is because the salinity sensors that we purchased were unable to measure salinity at the levels of the habitat. Salinity was much higher than expected, and beyond the range of most commercially available sensor devices. This is important and interesting information in itself and has been factored into management plans.

• Three species descriptions have not yet been published and thus it is impossible to Red List assess the species. We have been fortunate in receiving taxonomic input from the global authority on the amphipods. She has unfortunately been unable to find time to officially describe the species yet, and the process is ongoing.

• We anticipated completing and installing the information signs before the closure of this project but were unsuccessful. This was because of a delayed start to the project, which delayed collection of information for the signs. The signs have been designed and ordered, and the AIGCFD Coastal Reserves Manager has taken responsibility for installing them upon their arrival in May 2024.

Lessons Learned

i) Many aspects of this project worked well. Key was the collaboration between Invertebrate and Marine officers at AIGCFD and the IUCN Mid-Atlantic Island Invertebrate Group to threat assess the species. Those individuals contributed complementary technical skills which progressed the project.

ii) Reliance on external collaborators who were unable to commit to timeframes because of their own busy workloads did slow completion of some aspects of the project. This was unavoidable, because the skills that they contributed could not be found in other specialists.

iii) If we repeated the project, we would request a short-term extension in order to meet and report on 100% of

objectives.
iv) We would recommend that others collect data and biological samples as early as possible, or even before the onset of the project, in order to meet all goals.

Section 3 - Project Finance (Essential)

Project Expenditure

Project Spend (indicative) since last Annual Report	2023/24 Grant (£)	2023/24 Total actual Darwin Plus Costs (£)	Variance %	Comments (please explain significant variances)
Staff Costs	£0.00	£0.00	0	*No Response*
Consultancy Costs	£0.00	£0.00	0	*No Response*
Overhead Costs	£0.00	£0.00	0	*No Response*
Travel and Subsistence	£0.00	£0.00	0	*No Response*
Operating Costs	£0.00	£0.00	0	*No Response*
Capital Items	[redacted]	[redacted]	4	*No Response*
Others	£0.00	£0.00	0	*No Response*
Total	[redacted]	[redacted]	4	

Please provide a short narrative summary on project finances.

As proposed, the majority of funds were spent on purchasing loggers for monitoring environmental variables within the pools including depth, dissolved oxygen and conductivity. Additional purchases included the cost of the signboards to increase community awareness of these unique species and habitats as well as the posts and concrete required for installation. Variance between projected costs and actual expenditure was below 10%.

Section 4 - Contribution of Project to Darwin Plus Programme Objectives

Please select up to **one** indicator that applies within **each group/indicator list (A, B, C, D)** and report your results for that indicator in the text box underneath. If you do not have relevant results to report for any of the indicators in a particular group, you can leave them blank.

Please also submit some form of evidence (above) to demonstrate any results you list below, where possible.

Group A: Capability and Capacity - Core Darwin Plus Standard Indicators (select one)

Unchecked	**DPLUS-A01: Number of people from key national and local stakeholder groups completing structured and relevant training.**
Unchecked	**DPLUS-A02: Number of secondments or placements completed by individuals of key local and national stakeholders.**
Checked	**DPLUS-A03: Number of local/national organisations with improved capability and capacity as a result of project.**
Unchecked	**DPLUS-A04: Number of people reporting that they are applying new capabilities (skills and knowledge) 6 (or more) months after training.**
Unchecked	**DPLUS-A05: Number of trainers trained reporting to have delivered further training by the end of the project.**

Group A Indicator Results

AIGCFD has knowledge (threat assessment) and equipment (sensor devices) to monitor and mitigate against the most immediate threats to Ascension's endemic anchialine biodiversity.

Group B: Policies, Practices and Management- Core Darwin Plus Standard Indicators (select one)

Checked	**DPLUS-B01: Number of new/improved habitat management plans available and endorsed.**
Unchecked	**DPLUS-B02: Number of new/improved species management plans available and endorsed.**
Unchecked	**DPLUS-B03: Number of new/improved community management plans available and endorsed.**
Unchecked	**DPLUS-B04: Number of new/improved sustainable enterprises/ community benefits management plans available and endorsed.**
Unchecked	**DPLUS-B05: Number of people with increased participation in local communities / local management organisations (i.e., participation in Governance/citizen engagement).**
Unchecked	**DPLUS-B06: Number of Local Stakeholders and Local Communities (people) with strengthened (recognised/clarified) tenure and/or rights.**

Group B Indicator Results

The AIGCFD management for Mars Bay Nature Reserve has recently been updated with specific actions resultant of this project.

Group C: Evidence and Best Practices - Core Darwin Plus Standard Indicators (select one)

Unchecked	**DPLUS-C01: Number of best practice guides and knowledge products published and endorsed.**
Unchecked	**DPLUS-C02: Number of new conservation or species stock assessments published.**
Checked	**DPLUS-C03: New assessments of habitat conservation action needs published.**
Unchecked	**DPLUS-C04: New assessments of community use of biodiversity resources published.**
Unchecked	**DPLUS-C05: Number of projects contributing data, insights, and case studies to national Multilateral Environmental Agreements (MEAs) related reporting processes and calls for evidence.**

Group C Indicator Results

Threat assessment and management actions for the Ascension anchialine project has been written and made available to all stakeholders.

Group D: Sustainable Benefits to People, Biodiversity and Climate - Core Darwin Plus Standard Indicators (select one)

Unchecked	**DPLUS-D01 Hectares of habitat under sustainable management practices.**
Unchecked	**DPLUS-D02: Number of people whose disaster/climate resilience has been improved.**
Checked	**DPLUS-D03: Number of policies with biodiversity provisions that have been enacted or amended.**

Group D Indicator Results

This project directly addresses aims 1, 2, 3 and 8 of the Ascension Island Biodiversity Strategy and Action Plan (2022).

Section 5 - Project Partnerships, Wider Impacts and Contributions

Project Partnerships

i) The AIGCFD was the only official partner in this project. They were responsible for all aspects of this project. Red List assessment support came informally from the IUCN Mid-Atlantic Island Invertebrate Specialist Group.
ii) The Ascension Island Government were involved in all aspects of this project.

iii) There were no formal partnerships in this project to report on.
iv) The IUCN group were involved in organising reviewers for Red List assessments, through pre-existing relationships with Dr Sharp. Red List assessments themselves were written by AIGCFD. Species descriptions are being written through the NHM by the curator of the taxonomic group. She was unable and unwilling to commit to the necessary written timeframes.

Wider Impacts and Decision Making

One of the project outputs is globally-relevant scientific research on the threats posed by climate change against anchialine pool habitats. This is especially relevant to the UKOT of Bermuda, which has extensive anchialine habitat and many endemic anchialine invertebrates with unknown threat status. Publication of this research in a peer-reviewed journal (Hydrobiologia) allows the knowledge gained from this project to be accessible to a wider audience.

Sustainability and Legacy

The long-term AIGCFD staff involved in data collection for this project continue to regularly survey the anchialine pool site. They are equipped with the devices purchased on the expenses of this project to effectively monitor the site for continued environmental change. Community awareness will continue to increase through the installation of long-lasting interpretive signs at the pool sites. Dr Adam Sharp has left AIGCFD and now works at the University of Hong Kong.

Section 6 - Communications & Publicity

Exceptional Outcomes and Achievements

The Darwin Local project Conserving Five Ascension-Endemic Crustaceans In A Tiny Biodiversity Hotspot was led by the Ascension Island Government Conservation & Fisheries Directorate (AIGCFD). It aimed to formally assess the threats faced by crustaceans that are endemic to a tiny yet globally significant anchialine pool habitat on the barren south coast of the island. Most of those threats related to climate change, including rising water temperatures, reduction in oxygenation and unnatural disturbance through violent storm waves. Through an interdisciplinary collaboration between terrestrial and marine conservation officers, high resolution 3D terrain modelling via drone, long-term water parameter monitoring and quantitative analysis, it was found that shifts in pool hydrology are likely to cause regular hypoxia and increased maximum water temperatures within just decades. This important finding will allow AIGCFD to monitor the onset of this habitat degradation and develop mitigation strategies in advance accordingly. Quantitative research on the Ascension anchialine pools and climate change has contributed to global understanding of the long-term threats faced by these unique habitats. This has great potential to inform anchialine habitat management not only on Ascension but also other oceanic islands, including the UKOT of Bermuda which has significant endemic anchialine biodiversity. Previously undescribed species have been isolated from the Ascension anchialine pools and will be formally described as “new” species in 2024. The comprehensive Red List threat assessments for the endemic shrimp species Procaris ascensionis and Typhlatya rogersi on Ascension Island are the first for anchialine crustaceans in the Southern Hemisphere. Long-term capacity has been significantly boosted on Ascension for the conservation of the anchialine habitat through training of AIGCFD staff members in pool hydrology monitoring, the acquisition of state-of-the-art digital sensors for collecting monitoring data, and the development of crucial knowledge products to inform future management decisions. This project has significantly progressed Ascension and the UKOTs in becoming global leaders in anchialine habitat conservation and management.

Photo, video or graphic to be used for publicity and communications.

Please upload at least one relevant and engaging image, video or graphic that you consent to be used alongside the above text in Defra, JNCC or NIRAS communications material.

CP_hydrology
29/04/2024
05:13:33
gif 7.93 MB

MP_hydrology
29/04/2024
05:13:31
gif 6.15 MB

Photo, video, and/or graphic captions and credits.

CP_hydrology.gif
Animated tidal hydrology of the anchialine “Coral Pools” on Ascension Island. This delicate habitat, to which the predatory shrimp Procaris ascensionis is entirely endemic, expands in water volume by over 7.5x during the tidal cycle.
Ascension Island – Dr Adam Sharp

MP_hydology.gif
Animated tidal hydrology of the anchialine “Marl Pool” on Ascension Island. This tiny pool, in which the endemic shrimp Typhlatya rogersi is abundant, expands in water volume by over 20x during the tidal cycle and is less than 0.5 m deep at its lowest point.
Ascension Island – Dr Adam Sharp

I agree for the Biodiversity Challenge Funds Secretariat, Administrator, and/or JNCC to publish the content of this section.

⦿ Yes, I agree for the BCFs Secretariat and/or JNCC to publish the content of this section.

Please list any accounts that you would like tagged in online posts here. This can include project pages, partners’ pages or individuals’ accounts for any of the following platforms: LinkedIn, Facebook, Twitter, or Instagram.

Twitter:
@AIGConservation
@DrAdamSharp

Facebook:
AscensionIslandConservation

Section 7 - Darwin Plus Contacts

Please tick here to confirm that you have read and acknowledge the BCF's Privacy Notice on how contact details will be used and stored and that you have sought agreement from anyone that you are sharing personal details with us on their behalf.

⦿ I confirm I have read the Privacy Notice and have consent to share the following contact details

Project Contact Details

Project Contact Name	Dr Tiffany Simpson

Role within Darwin Plus Project	Director of AIGCFD
Email	[redacted]
Phone	[redacted]
Do you need further sections to provide additional contact details?	⦿ No