

FALKLANDS WETLANDS AND AQUATIC HABITATS: BASELINES FOR MONITORING FUTURE CHANGE

PREPARED BY STEFFI CARTER AND ALASTIAR BAYLIS



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1. BACKGROUND

The Falkland Islands (FI) (Figure 1) historically lacked herbivorous mammals. The introduction of grazing animals approximately 250 years ago has led to vegetation changes and soil erosion. The impact of these changes on wetlands and other aquatic habitats is not well understood; limited past research suggests that water quality has remained fairly natural and is largely influenced by sea salt deposition and humic acids from peat runoff. Some studies, however, have shown evidence of human impacts, such as elevated nutrient concentrations in some ponds.

Climate change also presents several threats to the FI wetlands. A predicted temperature rise could directly impact the aquatic biota and increase evapotranspiration rates, which without equivalent increases in rainfall could adversely affect freshwater availability and thereby leading to the loss of some habitats and their associated species. Changes in the magnitude and/or temporal distribution of precipitation could similarly impact the hydrological regimes of wetlands. Increased storm frequency or severity is likely to change water quality (through increased deposition of sea salts) and may alter the hydro-morphology of drainage systems and wetlands. These impacts on aquatic biota can be identified and tracked into the future by regular monitoring of suitable indicators.

The project is hereafter referred to as Wetlands Project. 'Wetlands' as addressed in this project are defined in the [project brief](#) based on Ramsar definitions and have focussed on inland aquatic wetlands such as streams, rivers, ponds or lakes containing either freshwater or brackish water. It excluded coastal systems and other wetland types included in the Ramsar Convention's definition of the term 'wetland'.

The Wetlands Project fulfilled the following objectives:

Identifying gaps in baseline data

All existing data and literature related to lakes, ponds, rivers and streams in the Falkland Islands were brought together, including outputs from previous Darwin Plus projects and data from published and unpublished research. All data were reviewed to identify gaps in knowledge. All open data were uploaded into the Falkland Islands data portal, reviewed and analysed to identify gaps in knowledge about the Islands' wetlands. All spatial data were compiled into a GIS database.

Filling the gaps in baseline data

Gaps in data related to wetlands were addressed by an intensive field assessment of 81 inland aquatic wetland within 11 representative regions distributed across the Falkland Islands. Within each site, representative examples of relevant waterbodies were visited and a range of biological, chemical and hydrological field data on the aquatic systems was collected.

Producing action plans and defining indicators

Recommendations for a terrestrial Wetlands Action Plan were made based on the knowledge gained during the project. Measurable indicators for ecosystem condition were defined and recommendations for long-term monitoring were made. Infrastructure for basic hydrological long-term monitoring was developed and deployed.

2. PROJECT OUTCOMES

The wetlands project consisted of three main outputs:

Output 1: Existing baseline data mined and collated and data gaps identified and prioritised

Output 2 focussed on gathering and evaluating existing data and published literature on the wetlands and aquatic habitats as defined in the [project brief](#). A literature review including a gap analysis was undertaken by the PM and one project partner; the review is available on the [project website](#). All existing and available data previously obtained by visiting researchers have been collated and uploaded to the [FI data portal](#). A webGIS was created for the Wetlands Project to spatially display some of the existing data that can be displayed spatially as well as the project fieldwork data. The webGIS with the data layers is available [here](#).

Output 2: Priority data gaps addressed through fieldwork

The focus of Output 3 was the completion of fieldwork to address the identified knowledge gaps. It was originally planned that project partners would travel to the Falklands for joint fieldwork during the 2020/21 austral summer. Due to Covid-19 travel restrictions this was not possible and fieldwork with project partners was postponed to the following summer. Nonetheless, the PM completed a fieldwork season during the first summer with local assistants. Travel circumstances during the 2021/22 austral summer were not much better for project partners, which meant that only one project partner was able to visit. In the beginning of the summer, the PM completed a second fieldwork programme with local assistants. She joined up with project partner Chris Evans in the second half of the summer to visit additional sites. A total of 81 waterbodies across 11 regions were surveyed over two fieldwork summers, exceeding the initial project plan for fieldwork. The full fieldwork reports are available on the project website for [field season 1](#) and [field season 2](#).

The gaps in spatial aspects of water quality in inland waters were addressed during the fieldwork. In-situ measurements were made at each waterbody for pH, conductivity, dissolved oxygen and salinity. More detailed data on water quality were obtained by collecting water samples and sending these to a laboratory in the UK for analyses. Data loggers were deployed at six sites to monitor water level, temperature and light levels; one site also received loggers to monitor pH and conductivity; the latter provides an indication of salinity. Details are provided in the fieldwork reports (links under Indicator 3.1).

A Wetlands Symposium was organised for the end of the fieldwork and was planned to coincide with World Wetlands Day on 2 February 2022. Three project partners joined online and visiting project partner Chris Evans joined in the Falklands. A full report on the Symposium including links to presentations, attendance list and discussion outputs is available [on the project website](#).

As explained for Indicator 3.1 and in Section 9 only one project partner – Chris Evans – was able to visit the Falklands for fieldwork. He carried out fieldwork on Stanley Common and on Sea Lion Island

and was joined by the PM for fieldwork at Goose Green. Chris's visit is summarised in a social media post [here](#).

The field season database and the webGIS were updated after the completion of fieldwork. The fieldwork data in the webGIS can be accessed [here](#).

Output 3: Indicators established, capacity in indicator monitoring built and policy recommendations made

The aim of Output 4 was to ensure that some of the work started during the project and the future care of Falkland Islands wetlands can take place beyond the project with on-Islands capacity. The first output feeding into this is an Indicator Monitoring Report, which can be accessed on the [project website](#). This report lists nine key indicators for the monitoring of inland aquatic wetlands, suggests budget-based monitoring scenarios and outlines monitoring protocols for each of the indicators. A practical training session took place at the end of the project with 10 attendees (50% female; 4 FIG staff, 3 SAERI staff and 3 FC staff). It was felt that the training session would be more effective if FC were included rather than focussing on just SAERI and FIG. The full training report is available [here](#). Additionally, three landowners were engaged with during the project to become involved in long-term monitoring.

The second output for project legacy were recommendations for an action plan, in which pressures and threats for the targeted wetland types are identified and actions to eliminate, reduce or mitigate these pressures and threats are proposed. The action plan is submitted alongside the final report. Both the indicator report and the action plan will be presented to FIG at the next Environment Committee on 18 May 2022. It was not possible to finalise these for the previous Committee Meeting (25 February 2022) due to Wetlands Symposium preparations and fieldwork commitments with Chris Evans (visiting from 27 January to 15 February 2022).

A final project talk took place on 31st March 2022, which was open to the general public and all stakeholders. The presentation is available [here](#).

3. NEXT PROJECT YEAR

Although the wetlands project has ended, the in-situ monitoring of wetland sites has only just commenced. Hence, the final year of project funding will go toward maintaining and expanding our monitoring equipment and long-term monitoring sites.

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