

Concept Plan SP 2020-007

Monitoring to inform reporting and management of priority Western Australian wetlands

Ecosystem Science

Project Core Team

Supervising Scientist	Michael Venarsky
Data Custodian	Michael Venarsky
Site Custodian	

Project status as of Feb. 18, 2021, 10:12 p.m.

New project, pending concept plan approval

Document endorsements and approvals as of Feb. 18, 2021, 10:12 p.m.

Project Team	granted
Program Leader	granted
Directorate	required

Monitoring to inform reporting and management of priority Western Australian wetlands

Biodiversity and Conservation Science Program

Ecosystem Science

Departmental Service

Service 6: Conserving Habitats, Species and Communities

Aims

1) Building the map: Collate existing information on Ramsar sites.

Most WA Ramsar sites have been the focus of short-term studies or have some ongoing monitoring. These data are scattered among public and private institutions (NRM groups, other community groups, universities, and state government agencies) and much of this data has not been formally analyzed or published. This hinders the ability of DBCA to report on the status of these wetlands or to identify research priorities and avoid duplication. We propose to create an internally directed data repository (most likely Data Catalogue) and a shared bibliography for publications.

2) Constructing a common foundation: Understand spatial and temporal patterns in primary drivers of wetland character

Ecological Character Descriptions for Ramsar sites recognise that spatial and temporal patterns in hydrology, water quality, and vegetation structure are the major drivers of wetland biodiversity and character. In fact, two-thirds of LACs (98 of 156) relate to these groups of variables. These gross habitat descriptors can therefore be used as surrogates for changes in biodiversity. We will use a combination of remote sensing, drone imaging, installed sensors and on-site work, to track spatial and temporal patterns in these core drivers of biodiversity. A component of this work will be modelling of depth data from the former South West Wetland Management Program (SWWMP) using remotely sensed water presence.

This basic information will assist with development of improved conceptual models of how dynamic wetlands are through time, help to define/refine LACs and will flag potential changes in ecological character. This component will be undertaken on a rolling basis with frequency and intensity of field work determined by budget and location, with the goal of monitoring the above factors at all Ramsar sites on at least a rolling five-year basis. Wetlands in the southwest may be visited more frequently, but we will also partner with regional conservation managers and other groups to reduce the length of time between data collection events. For example, we will work with local managers to develop protocols for the regular collection of water quality samples.

3) The original Ramsar criterion: Waterbirds.

Most WA Ramsar wetlands were selected on the basis that they provide habitat for significant diversity and numbers of waterbirds. While the criteria for Ramsar listing have broadened, waterbirds remain a focus at most Ramsar wetlands and 29 LACs relate to waterbirds. Waterbirds are also a major consideration for potential new Ramsar wetlands in WA (e.g. Lake Gregory, Fortescue Marsh, Lake McLeod, Lake Carnegie). Waterbirds are also highly responsive to changes in wetland condition. Thus, we will continue waterbird monitoring at the subset of Ramsar sites where monitoring is ongoing and expand regular monitoring to other sites. An exception will be Roebuck Bay and Eighty Mile Beach where there is already a well established shorebird monitoring program coordinated by Birdlife and supported by DBCA's Kimberley Region and where high-level shorebird expertise and capacity is required.

Other components of wetland ecosystems will be included in monitoring programs as and when required to fill site and wetland specific knowledge gaps. For example, there have been significant changes to water quality within some Muir-Byenup wetlands that are known to support endemic threatened fish but there has been no survey for these in over a decade.

Expected outcome

Aim 1 – Reduced time invested in collating data for reporting. Clear map of where to focus efforts that address key knowledge gaps.

Aim 2 – Improved ability to report on limits of acceptable change in the ECDs through monitoring of critical habitat quality and quantity as surrogate indicators of broader wetland health and biodiversity values.

Aim 3 – Consistent data on which to base assessments of limits of acceptable change and listing criteria associated with waterbird populations.

Outputs: Reports, peer-reviewed journal articles, conference presentations, contributions to working groups, provision of advice on condition and values for DBCA reporting, outreach materials, contributions to updates to the ecological character descriptions and Ramsar Information Sheets.

Strategic context

This project aligns with multiple themes, goals, and approaches outlined in DBCAs strategic plan (2018 to 2020), including:

Strategic Theme	Strategic Goal	Approach
Biodiversity knowledge	Adequate knowledge of biodiversity is available to support the department's conservation and management of terrestrial, estuarine and marine ecosystems.	Conduct biological survey, in priority management areas for key species and ecological communities. Effectively acquire and share knowledge of biodiversity.
Conservation of threatened species and ecological communities	Biodiversity conservation and recovery programs are based on scientific knowledge.	Undertake research to address knowledge gaps for threatened ecological communities. Assess conservation status of ecological communities. Provide scientific basis for monitoring of threatened ecological communities.
Pressures and threats to ecosystem composition, function and values	Understanding of the effects and opportunities for mitigation of pressures and threats to terrestrial, estuarine and marine ecosystems and associated values	Understand the pressures and threats acting on ecosystems ... Develop and evaluate effectiveness of mitigation strategies to inform management planning and conservation of species and ecosystems.
Availability of scientific information for evidence-based decision making	Scientific knowledge is available to inform adaptive management and decision making. Conservation advice is based on scientific information.	Undertake research and monitoring to address gaps in biodiversity knowledge and support decision-making.

Expected collaborations

DBCA: Ecosystem Science Program scientists in hydrology, botany and genomics; Remote Sensing and Spatial Analysis Program. Regional conservation managers undertaking monitoring and/or management.

University collaborations and student projects will develop as this program matures.

Non-government organizations (e.g. NRM groups, Birdlife, local community groups), other agencies (especially DWER). E.g. already working with PHCC, SCNRM and SWCC.

Proposed period of the project

April 10, 2020 – None

Staff time allocation

Role	Year 1	Year 2	Year 3
Scientist (MPV)	1.0	0.7	0.7

Role	Year 1	Year 2	Year 3
Scientist (BH)	0.25	0.1	0.1
Scientist (AP)	0.1	0.1	0.1
Technical	0.2	0.2	0.2

Indicative operating budget

Source	Year 1	Year 2	Year 3
Consolidated Funds (DBCA)	40000	40000	40000
External Funding	7300 (SCNRM)		7300 (SCNRM)