Concept Plan SP 2023-017

A digital Flora of Western Australia – a guide to the State's botanical species diversity

BCS Plant Science and Herbarium

Project Core Team

X X **Supervising Scientist** Juliet Wege
Data Custodian Juliet Wege

Project status as of June 12, 2023, 9:33 a.m.

X X New project, pending concept plan approval

Document endorsements and approvals as of June 12, 2023, 9:33 a.m.

X X
Project Team granted
Program Leader granted
Directorate required

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Program

BCS Plant Science and Herbarium

Departmental Service

Service 6: Conserving Habitats, Species and Communities

Background

Western Australia is environmentally and ecologically diverse and has an evolutionarily remarkable flora that is not only the richest and most diverse of any Australian State but is of immense global scientific interest. There are more than 12,900 native and introduced plant species, many of which are threatened or otherwise significant for conservation management, and new species are regularly discovered through surveys, taxonomic assessment of collections at the Western Australian Herbarium, and phylogenetic studies.

Although new WA plant species continue to be described by Herbarium staff and associates at globally significant rates, the State lacks an overarching Flora with up-to-date descriptive, distributional, and ecological data for all species and associated identification guides. Descriptive data and keys are currently held across disparate resources including historical literature (often written in Latin), out-of-print field guides, and a broad range of journals (some of which are behind pay-walls). For many species (including those that are conservation-significant), no up-to-date or accessible description exists.

Whilst some information and images are provided via Florabase (and downstream data aggregators such as ALA, Dandjoo-BIO, AVH etc.), this premier botanical resource of the State in its current form is unable to deliver the expected currency, depth and breadth of botanical data and content for stakeholders, among them local, national and international researchers, industry consultants, conservation personnel, biosecurity officers, the education sector, and citizen scientists.

The dearth of accurate taxonomic, identification and distribution information on the State's flora impedes accurate and efficient plant identification and hampers taxonomic resolution of undescribed species. It leads directly to species misidentification (including of rarities, novelties and environmental weeds), which in turn leads to an increased likelihood of suboptimal conservation decisions.

Aims

This project will develop an overarching strategy to guide the completion of a contemporary digital Flora for Western Australia. It will improve the accuracy, depth, breadth and accessibility of botanical information on WA plants, initially focussing on a subset of genera in Myrtaceae and Stylidiaceae, groups for which descriptive content is being produced for the Flora of Australia with the support of external funding from the Australian Biological Resources Study. Taxonomic content will be generated and mobilised on the digital Flora of Australia platform, a national flora-building tool that is undergoing further development to improve functionality and to facilitate data sharing so that taxonomic content for WA species will be able to be imported to Florabase. Best-practice workflows will be developed for delivering high-quality taxonomic content to the Flora of Australia (including information published in the WA Herbarium's journal *Nuytsia*) and updating associated data on Florabase (e.g. inputting data to improve search outputs, and validating the identity of herbarium specimens and associated images).

Expected outcome

In the short-term, this project will:

- generate, capture and communicate a substantial amount of specialist taxonomic information on Myrtaceae (> 300 WA species) through the digital Flora of Australia, aiding accurate identification of these species by stakeholders and associated conservation efforts;
- provide critical Florabase updates to enable taxonomic content for WA plant taxa to be imported from the digital Flora of Australia, an expanded image set to be displayed, and improvements to the search functionality (initially by adding underlying data for Myrtaceae and Stylidiaceae);
- establish best-practice workflows and guidelines for producing a contemporary digital flora of Western Australia;
- build technical capacity at the Western Australian Herbarium in aspects of digital Flora preparation.

The production of a digital Flora for Western Australia will be a staged process, with further funding and collaborations sought to expand content generation to other plant groups.

Strategic context

This project is strongly aligned with many of the goals of the Science Strategic Plan 2022–2025, including those that seek to ensure:

1) *adequate knowledge is available to assess biodiversity values in terrestrial and marine environments* — the availability of biodiversity knowledge generated through taxonomic research and associated herbarium curatorial activities will be enhanced via delivery through digital platforms;

2) *data is effectively captured, curated and accessible to support conservation management and decision making* – workflows will be established to streamline digital data capture, curation and publication, enabling up-to-date descriptive, ecological and nomenclatural data to be made widely available through online portals including Florabase, the digital Flora of Australia, Australia's Virtual Herbarium, Dandjoo-BIO and the National Species List;

3) *improved access to data and information* – enhanced Florabase functionality will increase the ease with which WA botanical data can be mobilised and updated, improving data accessibility and accuracy;

4) *science is innovative and agile in assessing and adopting new technologies and methodologies* — a digital flora model will be embraced so that data sharing opportunities can be realised, and to ensure that Florabase remains the premier portal for botanical information on the WA flora;

5) *biodiversity conservation and recovery programs are informed by scientific knowledge and population trends* – descriptive and ecological information for conservation-listed species will be made readily available, making plant identification and assessment of conservation status more efficient and more accurate;

6) *adaptive management and decision making is based on scientific knowledge* – the availability of fundamental, up-to-date information on WA's flora will contribute to effective decision-making for conservation and the sustainable management of biodiversity;

7) *expand the impact of science programs through effective partnerships* – collaborations will initially be fostered between State and Federal government agencies, with ongoing potential to collaborate with industry and non-government organisations;

8) *improved efficiency of service delivery through digital processes* – enhanced accessibility and discoverability of taxonomic and identification information;

9) *enhance community engagement with nature and passion for conservation* – the WA flora is an incredible source of inspiration for the community and as such this project lends itself to science communication (e.g. via the Florabase blog, WA Herbarium Facebook page, Twitter and Landscope) and will provide a more rich and informative experience for community users of digital flora platforms.

Expected collaborations

BCS (Plant Science and Herbarium and Ecoinformatics Programs), including Barbara Rye (WA Herbarium Research Associate: Myrtaceae specialist); the Australian Biological Resources Study (Department of Climate Change, Energy, the Environment and Water), most notably Phillip Kodela (Flora Editor), who will provide guidance and advice with respect to content generation and delivery on the digital Flora of Australia platform; members of the Floras of Australia Working Group, who discuss and oversee practical matters regarding the function and content delivery of multiple Australian Floras; staff at other Australian Herbaria, who will provide assistance with respect to the curation of WA collections and accommodate research visits. There is strong potential to develop additional research collaborations with botanists from across the country, foster ECRs, and engage citizen scientists.

Proposed period of the project

May 30, 2023 – June 30, 2026

Staff time allocation

to | X | X | X | X |

Role	Year 1	Year 2	Year 3
Scientist	0.4	0.4	0.4
Technical	0.6	0.6	0.6

Volunteer	0.4	0.4
Collaborator		

Indicative operating budget

to | X | X | X |

Source	Year 1	Year 2	Year 3
Consolidated Funds (DBCA)	20,000	20,000	
External Funding	35,000	35,000	35,000