

Progress Report SP 2012-005

Western Australian flora surveys

Ecosystem Science

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Project status as of July 2, 2020, 3:57 p.m.

Update requested

Document endorsements and approvals as of July 2, 2020, 3:57 p.m.

Project Team	required
Program Leader	required
Directorate	required

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Context

Flora surveys of targeted areas provide knowledge of vegetation pattern and structure for conservation management. These surveys are undertaken for a variety of purposes and for, or in collaboration with, a number of partner organisations. Current projects include:

- Floristic survey and vegetation mapping of the mound springs and surrounding vegetation communities of Walyarta Conservation Park (Mandora Marsh) in collaboration with the West Kimberley District.
- Flora and vegetation survey of Fitzroy Valley in collaboration with the West Kimberley District and Traditional Owners.
- Floristic Survey of the Mound Springs of Dampier Peninsular and Carlton Hill Station in collaboration with the Kimberley Region and Traditional owners.
- Floristic Survey of Lake Carnegie wetland vegetation.

Aims

- Undertake targeted surveys aimed at providing specific management advice, monitoring long term change in vegetation at specific sites or in specific communities, or to fill specific data gaps.

Progress

- Walyarta veg mapping ...
- The field program and species identifications have been completed, and the final stage of report preparation is underway for a survey of selected land parcels in the Fitzroy Valley.
- A report chapter was written on the flora of Kimberley Region mound springs and the Nimalarragan wetland at Willie Creek north of Broome.
- Field surveys of gypsum plant communities of Western Australia have been completed. Plant material of gypsophile and gypsocline taxa for nutrient and molecular analysis have been forwarded to Spanish researchers as part of the EU funded GYPWORLD project. Phylogenetic studies will focus on the genus *Frankenia* a significant component of the states gypsum flora with several taxa of conservation significance.
- Field work for a survey of the flora of Lake Carnegie wetlands and fringing landscapes has been undertaken.
- Data curation of Tutanning Nature Reserve Flora data, 22,058 records have been checked and edited against field sheets for inclusion in Data Catalogue and transfer to DBCA Regional office.
- Publication of AusPlots vegetation and soil survey methods for the Australian Rangelands in *Frontiers in Ecology and Evolution*
- Publication of manuscript addressing plant identification and phylogenomics for 600 Pilbara species using genome skimming approaches in *Plant Methods*. Samples sourced and prepared for another 400 species.
- Lodgement of plant specimen vouchers from the Kimberley Islands Biodiversity survey has been completed, with an additional 2573 specimens submitted to the Western Australian Herbarium.

Management implications

- A comprehensive DNA barcode library for Pilbara plants species will facilitate rapid plant identifications that will support traditional identification approaches while also clarifying the taxonomic status of many species and species complexes. This barcode library will also support the development of a proposed Pilbara eflora and relax restrictions on field sampling time for plant specimens as fertile vouchers, particularly for ephemeral species, will no longer be essential to confirm identification.
- Kimberley mound springs surveys (Dampier Peninsular and Carlton Hill) will provide the locations of significant weed occurrences (date palm) and priority taxa to guide mound spring management. Documentation

of the floristic values of the springs provides important context for assessing possible future impacts of any proposed groundwater abstraction projects.

- Walyarta Conservation Park (Mandora Marsh) vegetation survey and mapping will enable identification of vulnerable vegetation communities for monitoring, and provide information for a monitoring plan to determine the effectiveness of feral herbivore exclusion or removal.
- The Fitzroy Valley survey will provide vegetation site descriptions and updated floristic information for a region that has been relatively unsurveyed and is under consideration for inclusion in the reserve system.
- The Lake Carnegie flora survey will provide vegetation descriptions for submissions on the conservation status of Lake Carnegie and provide a baseline for monitoring.
- Gypsum deposits in southern Western Australia are subject to mining for agricultural soil amelioration and building materials. Phylogenetic studies in *Frankenia* will assist with the circumscription of taxa of conservation significance to underpin assessment of the impacts of mining proposals.
- Tutanning Flora data and species traits data will be useful for determining species distribution, vegetation descriptions and ecological responses and should be useful to Regional adaptive management projects.

Future directions

- Continue collection of water depth data from claypans in Ellen Brook Nature Reserve to provide information on drying cycles.
- A manuscript on the Jurien coastal wetlands survey will be completed.
- Analyse and continue to build genome library of Pilbara plant species.
- Continue to curate Tutanning remaining flora data records and voucher relevant collections in support of data