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Herbarium collections management

BCS Plant Science and Herbarium

Project Core Team

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Herbarium collections management

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Context

The Western Australian Herbarium houses the State's botanical collections, the core resource for knowledge of the State's plants, algae, and fungi. The collection is growing constantly and consistently through accessions of new taxa and distribution records from internal and external sources. The collection is maintained to the highest standard utilising international natural science collections and archival best practice, and provides the department and the community with the fundamental resource that provides knowledge of the diversity, temporal and spatial distribution, and abundance of the flora throughout Western Australia.

Aims

- Document and audit the diversity of Western Australia's plants, algae, and fungi.
- Maintain, in perpetuity, a comprehensive and representative research and reference collection of specimens of all taxa in groups occurring in, and adjacent to, Western Australia.
- Contribute to, support and service the research, conservation and decision-making activities of the department and stakeholders.
- Contribute to, support and service taxonomic and other research by the local, national and international scientific community.
- Provide digital resources enabling open access to the botanical collections.

Progress

- The Western Australian Herbarium added 11,317 specimens to collections, including 946 specimens of priority taxa, 116 specimens of threatened taxa, and one specimen of a presumed extinct taxon (*Acacia prismifolia*), increasing the size of the collection to 833,034 catalogued items representing more than 18,600 taxa.
- The metadata of more than 86,000 specimens was updated during the year.
- The Western Australia Herbarium shared specimens with 9 national and 16 international institutions, and shipped 556 specimens in 22 transactions for scientific research. A total of 3508 exchange specimens were sent to collaborating institutions, and 26 requests for 579 tissue samples from herbarium specimens were processed for molecular and other scientific analyses.
- Major activities within the collections included substantial and targeted reduction in unprocessed specimens, incorporation of specimens returned to the Western Australian Herbarium from Manjimup (>900 specimens), and incorporation of specimens received from the South West Regional Herbarium (>1100 specimens) and Narambeen Regional Herbarium (280 specimens).
- Specimens and data were cited in more than 145 publications; the collection and associated data have been cited 2775 times since the early 1900s.
- The Herbarium received a significant donation of more than 5000 specimens from the extensive private collection of Allen Lowrie.
- A separate collection of Type specimen photographs was created (currently >1100 items), increasing the space within the Types Vault and improving care of the physical Type specimens.
- With the assistance of volunteers, 9600 specimens were mounted.
- Volunteer participation continues to be a significant and invaluable resource, despite the impacts of COVID-19 during the year, totaling 10,220 hours - equivalent to approximately 6.5 full time employees. The Herbarium was assisted by 40 regular volunteers and 17 Research Associates.
- The Reference Herbarium was accessed 2705 times by visitors and consultants for plant identifications and other scientific purposes.
- The Research Collection was accessed 1400 times by visitors for the study and identification of taxa.
- More than 6100 high resolution images of Herbarium specimens were captured and shared with departmental staff and industry consultants and a further 98 high resolution images of type specimens were

captured and shared with the online Global Plants Initiative. Specimen imaging focussed on the West Kimberley and Pilbara Threatened and Priority taxa, an initiative to digitally transform the Herbarium collections.
- The Herbarium Identification Program provided identifications to a range of clients, including departmental staff, other government agencies, environmental consultancies, regional herbaria and the public. More than 10,080 specimen identifications in 328 transactions, along with 300 image-based identifications, were undertaken for external clients. A further 120 specimen re-identifications were undertaken for Species and Communities Branch.
- Educational programs consisted of 14 Herbarium tours and monthly induction sessions for departmental staff, tertiary institutions, environmental consultancies, community groups and the media (approximately 260 participants). The Herbarium also trained a UWA Work Integrated Learning intern.
- The Collections Management team was highlighted in the Winter 2022 Landscope; and the facebook page, with more than 7000 followers, shares a monthly 'Plant of the Month'.

Management implications

- Maintenance and curation of the Western Australian Herbarium botanical collections provides an authoritative inventory of the biodiversity of Western Australia, which underpins flora conservation and state, national, and international research programs.
- The collections are drawn upon constantly by DBCA staff, consultants and policy makers to validate specimen records from biological surveys, environmental impact assessments, and assess the conservation status of native taxa.
- The curated collections data is a much utilised digital resource for systematic and taxonomic research, collections management, environmental assessment, ecological and other scientific research, restoration and remediation projects, biosecurity management and planning, educational uses and citizen science.

Future directions

- Develop curation workflows and volunteer programs that enable the imaging of physical collections and field notes for online delivery and sharing.
- Continue to significantly reduce the currently unprocessed and uncatalogued specimen items in storage.
- Support implementation of a new collections management system (Specify) that will increase scope for the extended specimen initiative and improved and efficient management of the specimen collections.
- Scope gap analysis for collections.