Conference Abstract

Grow a Backbone! Introducing Nomos as a New Taxonomic Backbone for Western Australia

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Abstract

In 2022, the Biodiversity Information Office (BIO) launched Dandjoo, a central, actively managed biodiversity data repository for the state of Western Australia (WA) to facilitate data sharing across all environment-related sectors to make biodiversity data more discoverable, accessible, and useable. Future integration with other platforms such as Environment Online as part of the Streamline WA project will support efficient, evidence-based, and transparent decision making for conservation and environmental assessments in Western Australia. Dandjoo will also integrate with The Biodiversity Data Repository as part of the Australian Government's Digital Environmental Assessments Program.

Biodiversity data requires taxonomic information as its foundation. To enable the curation of data ingested into Dandjoo, BIO developed Nomos, a taxonomic names management system and authoritative source to aggregate, store and manage recognised taxonomic names of organisms found in Western Australia and any changes to them through history and into the future.

This solution did not come without its challenges. There is no single source of Western Australian taxonomy—official checklists are only maintained for some taxonomic groups, and the availability of structured data around taxonomic changes is largely limited to plants through an internal departmental system called WA Census.

WA Census is a legacy Oracle forms system for managing and referencing taxonomic names that underpinned several other applications such as FloraBase, WAHERB (WA Herbarium's collection management information system), NatureMap (now defunct) and the Threatened Species and Communities branch databases for threatened flora and fauna. While Dandjoo needed a taxonomic backbone, there were also many internal systems that would essentially break without a similar source of information to draw from, hence the need to aggregate taxonomic names from the WA Museum and WA Herbarium (WA Census) into one single source of truth.

There were also technical challenges for development. Nomos needed to support two nomenclatural codes, and link names together in hierarchies as well as through synonyms. It also needed to integrate with other agency systems and adhere to internal information technology policies and requirements. Additionally, the tight deadline for Dandjoo's release meant that BIO needed to manage Nomos's scope carefully for its initial release, deferring some non-core features for future releases.

Nomos now aggregates taxonomic names from the Western Australian Herbarium and Western Australian Museum and provides the backbone that enables curation in Dandjoo and access to Western Australia's biodiversity data. It stores a rich and growing history of taxonomic change, especially names of threatened flora and fauna, providing the capability to "relate" names to each other and track relationships through time.

BIO staff, including data engineers and science officers, developed innovative workflows around maintaining taxonomic information in Nomos from Western Australian Herbarium and Western Australian Museum. For example, Nomos and WA Census are unable to be connected via API due to WA Census infrastructure, so data engineers and science officers worked together to develop a script to highlight record changes between WA Census extracts, to make sure that Nomos is kept up to date with WA Census. A similar process was deveoped to keep threatned species names and codes in Dandjoo systems up to date and in line with Threatened Species and Communities. Future workflows need to be developed around standardising the way agencies handle taxonomic names from invasive, alien and naturalised species.

Future developments will expand API-driven connectivity with other systems, introduce conservation codes, and enhance functionality around subgenera and hybrid taxa. Nomos and the information it contains will ultimately enhance interoperability and knowledge-sharing across agencies, and support a common understanding of biodiversity data.

Keywords

taxonomy, biodiversity, conservation, data, biodiversity data, data sharing

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Presented at

TDWG 2023

Hosting institution

Department of Biodiversity Conservation and Attractions

Conflicts of interest

The authors have declared that no competing interests exist.