Atlas of Living Australia
ala.org.au

STRATEGY
2025 TO 2030

NCRIS
National Research
Infrastructure for Australia
An Australian Government Initiative

CSIRO

Acknowledgement of Country

The Atlas of Living Australia acknowledges the Traditional
Owners of the land. We pay respect to the past and
present Elders of the nation's Aboriginal and Torres Strait
Islander communities. We honour and celebrate their
spiritual, cultural and customary connections to Country
and the biodiversity that forms part of that Country.

Citing This Publication

1. INTRODUCTION

The Atlas of Living Australia (ALA) is a National Collaborative Research Infrastructure Strategy (NCRIS) research infrastructure, hosted by Australia's national science agency, CSIRO, providing users with trusted biodiversity data services.

The ALA annually delivers biodiversity data to over 120,000 users coming from:

- Biodiversity sciences, including ecology and evolutionary biology, taxonomy, and biodiversity research, particularly in academia and public research agencies.
- Biological collections, including those hosted by State Government, museums, CSIRO and universities.
- Commonwealth and State/Territory governments, particularly in environmental protection, agriculture, and land management.
- Environmental consultants conducting environmental assessments, and other industry users.
- Non-government organisations that manage or are interested in biodiversity, including citizen scientists, Indigenous organisations and community groups.

As the Australian node of the Global Biodiversity Information Facility (GBIF), the ALA ensures Australian biodiversity data are available to support the international science community, providing reciprocal data benefits to Australian users.

Beyond its core data function, the ALA also designs, builds and manages cutting-edge biodiversity products and services for its partners. These products and services utilise global biodiversity data standards and ALA expertise to enhance biodiversity data acquisition, management, and delivery.

Minute Two-spotted Ladybird
(Diomus notescens) up close.
This insect ally preys on pest
insects such as aphids.
📷 Angus Rae, ANU

We acknowledge Microscopy Australia
at the Centre for Advanced Microscopy,
The Australian National University, a facility
enabled by NCRIS and university support.

Ngunawal Traditional Custodian, Tyronne Bell, led the ALA leadership team on a cultural heritage walk on Black Mountain. We discussed the mountain's changing landscape since ancient times, Aboriginal cultural sites, and bush tucker and other plants.
📷 Andre Zerger

2. VISION

To deliver trusted biodiversity data services for Australia, supporting world-class science and decision-making.

3. BIODIVERSITY IN AUSTRALIA

The criticality of maintaining healthy and resilient landscapes through the identification, description, conservation, and management of biodiversity has received increasing recognition in recent years owing to the unprecedented impacts of climate change, devastation caused by a series of extreme events and the increasing ecological and economic importance of biosecurity in Australia. Understanding the important role of biodiversity in human health and the provision of ecosystem services to industries (such as agriculture and tourism) has generated a suite of pressing research and management challenges that require trusted data.

Despite these drivers, it is estimated that only 30% of Australia's 566,398 species have been named and documented; thus, there remains a major species discovery and documentation challenge, which the ALA supports through its partnerships with Australia's biological collections sector.

4. FUTURE DRIVERS

Australia's biodiversity data landscape has undergone noticeable changes since the inception of the ALA. This includes the increased use of novel biodiversity monitoring technologies, which drive increased data volumes, as well as the ability to describe survey protocols and methods, including genomic-based surveys, high-resolution imaging from biological collections, and automated monitoring, such as acoustic and camera trap recordings. These new data types will improve our understanding of the state and trends in Australian biodiversity.

From its inception as a primarily open-data infrastructure, ALA has continued to adapt to address users' needs for managing sensitive data with appropriate access and governance controls. This currently encompasses data on species of biodiversity and conservation concern. There are future challenges around Indigenous data sovereignty, managing data shared by industry providers, and managing environmental biosecurity data. In parallel, the demands of supporting a secure national infrastructure in an environment of heightened cyber risk while delivering exceptional system service levels for over 120,000 users relying on ALA services will only increase.

The growth in novel data collection and analysis methods, including Artificial Intelligence/Machine Learning (AI/ML), will create new opportunities and expectations for the ALA. This will require an evolution of the ALA data model, in line with changes initiated by GBIF and supported by the Biodiversity Information Standards organisation (also known as TDWG), and how we deliver analysis-ready data to users to support national-scale biodiversity reporting. With ALA's adoption of global standards and a structured approach to data interoperability, a foundation is in place to address this emerging need.

The ALA has pioneered a model for Indigenous engagement through its Indigenous Ecological Knowledge Program, which partners with Indigenous linguists and Language Centres to record the names and descriptions of plants and animals on Country. Given the fundamental role Indigenous groups play in monitoring and understanding biodiversity in remote and regional Australia, we will build on this foundation by partnering to incorporate the richness of Indigenous biodiversity knowledge alongside a Western model.

The 2025-30 Strategy responds to these drivers while recognising the need to maintain existing data, products and services.

The Atlas of Living Australia (ALA) Advisory Board meeting in April 2024 was hosted by the NSW Department of Primary Industry in Orange, NSW. It was the first of what we hope will be many meetings in regional areas of Australia. Pictured is Dr Catherine Byrne looking at samples from biological collections supporting biosecurity surveillance and response.
📷 Andre Zerger

5. STRATEGIC PRIORITIES

Reliable Data Services

For over a decade, reliable national biodiversity data, available under an open license, delivered by the ALA, have proven fundamental in supporting applied and foundational science, biodiversity policy, and major conservation programs. Australia's biodiversity data landscape has also evolved, for example, with the growth in citizen science-based biodiversity monitoring.

A transformation is underway globally around the development of advanced biodiversity monitoring technologies. Enhanced ALA capabilities will be developed to support the more complex data types arising from innovative biodiversity monitoring programs, including camera trap, environmental DNA (eDNA), acoustic monitoring and advanced imaging programs from Australia's biological collections sector.

The ALA has transformed access to Australia's biodiversity data through over 1200 datasets, delivering 150 million species occurrence records to users. However, major geographic and taxonomic gaps exist in the data supplied to ALA. This is unsurprising, given that Australia is a large, sparsely populated, biodiverse continent.

Filling gaps is important given significant threats to species survival, including climate variability, invasive species, and urbanisation. During the Strategic Plan 2020-2025, considerable progress was made to fill geographic and taxonomic gaps through our investment in the ALA's Biodiversity Data Mobilisation Program; however, further work is required. We will work with our data partners to adopt a more strategic approach to prioritise biodiversity data acquisition campaigns.

Robust Platforms and Applications

The ALA will uplift our data loading infrastructure and data model to support the increasing variety and volume of data to be harmonised nationally. It will continue to support the current species occurrence model and standards, aligning Australian infrastructure with national and global programs, specifically the developments led by GBIF, ALA's major international partner. It will build on the current infrastructure, which is now 12 years old and inadequate for supporting the challenges and opportunities emerging from Australia's biodiversity data system. As the ALA has no appetite for risk in cybersecurity or data breaches, infrastructure will be developed to mitigate these emerging risks.

In addition to its core biodiversity products and services, ALA's capability, infrastructure, data, and people underpin a suite of related products and services built in collaboration with our partners. This includes the Australian Virtual Herbarium and DigiVol platforms, the Biodiversity Heritage Library, the MERIT online reporting tool of the Department of Climate Change, Energy, the Environment, and Water, and the Australian Seedbank Portal, which is harmonising Australia's seedbank data. Our products and services portfolio is growing and aging, and the ALA will review, consolidate and modernise to ensure a focus on high-impact capabilities.

In recent years, the ALA has led a national transformation to improve the discovery, access, and reuse of restricted species data for research, environmental assessment, and conservation management. The ALA will enhance and expand its supporting capabilities for restricted access data, including new use cases for biosecurity and Indigenous communities, developing data standards, refining security protocols and access controls, and providing training and tools.

The strategy commits to modernising infrastructure to leverage the benefits of AI/ML and share these with users. This may include using AI/ML to improve our processes or ensuring that the ALA delivers AI/ML-ready data, for example, to support the development of foundation or computer vision models. Such an approach will enable Australia's innovation system to leverage this data to develop new products and applications that help address Australia's major biodiversity challenges.

The Bottlebrush Orchid *(Dendrobium smillieae)* is widespread on the Cape York Peninsula and occurs as far south as Townsville. It is pollinated by the yellow honeyeater *(Stomiopera flava)* also known in Queensland as the canary honeyeater. It often grows on trees with loose papery bark.
📷 Tapio Linderhaus CC BY NC

Strong Partnerships

Partnerships are fundamental to our work as a National Collaborative Research Infrastructure Strategy (NCRIS) capability. The ALA will adopt a sectoral approach to engaging with new partners, complementing our core function of supporting Australia's science and innovation system. Priority sectors include government, industry (particularly environmental assessment), biological collections, ecosystem sciences, citizen science and biosecurity. We will support them with biodiversity data, data standards and platform development, training and capacity building, and, where possible, by establishing data partnerships to allow them to contribute biodiversity data.

Excellent progress has been made across several sectors, including industry, through partnerships with the environmental consulting sector and in biosecurity with the Australian Government's Department of Agriculture, Fisheries, and Forestry. Biosecurity will continue to provide the ALA with new opportunities to deliver impact, given that the core infrastructure required to manage Australia's environmental biosecurity data is the same as that for native biodiversity.

Partnerships with the NCRIS program will remain key, delivering greater collective benefit to Australia. For example, our partnership with Australia's biological collections sector will be enhanced with improved access to genomics, advanced imaging, microscopy and related eResearch capabilities across the NCRIS program. The ALA will play a leadership and brokering role in areas of biodiversity science and informatics and will support related programs with data, products, services, and skills.

As the Australian and largest global node of GBIF, and an active participant in the TDWG community, the ALA plays a crucial role in capturing and delivering international initiatives for the Australian context, such as the use of Checklist Bank, GBIF data models, and data standards development. We will also develop and nurture our partnerships with global data and infrastructure programs to ensure internationally acquired biodiversity data collected in these and other community participation platforms support Australian science.

Our strategy differentiates four models of partnership, including (a) NCRIS core services & partnerships (e.g. Biocache, Spatial Portal, Galah, Biodiversity Heritage Library), (b) national research infrastructure partnerships (e.g. Australian Reference Genome Atlas), (c) co-investment (e.g. Australian Seedbank Portal), and (d) professional services. The latter will enable the ALA to deliver platforms and expertise to government and industry where the scope exceeds what is possible under the ALA's existing resourcing profile.

Informed Decision-making

Alongside our people, ALA's strength is the breadth of its biodiversity products and services, available not only online but also, and increasingly, programmatically through application programming interfaces (APIs). Data provided to the ALA are rich and complex as they integrate species occurrence data, species descriptions, high-resolution imagery, spatial data, and genomic data. Navigating this richness can be challenging for users, and this strategy commits to improving the user experience and software interfaces across ALA products and services to deliver a more seamless user experience. We will adopt a user-centred, data-driven approach to deliver improvements.

The ALA will deliver analytics-ready data streams and supporting tools by partnering with biodiversity analysis and modelling communities to ensure data are fit for purpose. We will enhance our popular Galah suite of technologies and grow our ALA Labs capability to support future research and decision-making needs.

As a national research infrastructure, delivering data in a format that can support global and national biodiversity reporting frameworks is essential. The ALA will continue to evolve its systems and tools to provide rapid, analytics-ready data to international frameworks, including the Kunming-Montreal Global Biodiversity Framework and the Essential Biodiversity Variables, as well as national frameworks, such as Economic-Environmental Accounting and State of the Environment reporting.

To extend the ALA's reach and effectiveness, there is an opportunity to deliver tailored biodiversity data and training on products and services. This includes supporting industry users, early-career researchers, regional users, and government analysts. The ALA will refine its training offering and develop tools to better deliver training at scale, including potential support for micro-certification. We will provide direct training programs and partner with national and state-based biodiversity and industry conferences and events. Examples include the annual conferences of the Ecological Society of Australia and the Environmental Institute of Australia and New Zealand.
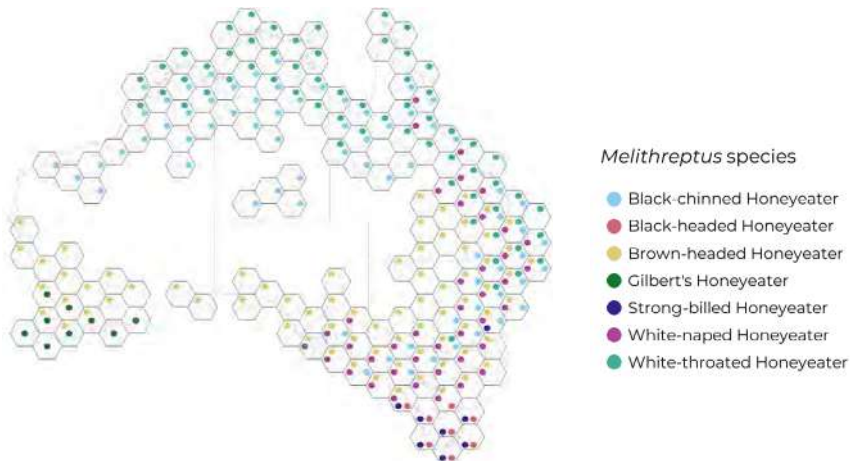
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5. STRATEGIC PRIORITIES

Strategic priorities, objectives and actions.

1. Reliable data services	2. Robust platforms and applications
Deliver comprehensive and transparent biodiversity data for Australia.	**Provide high-reliability products and services to our users.**
1.1 *Support **innovative biodiversity monitoring data streams**, for example, from camera traps, environmental DNA and eco-acoustic monitoring.	**2.1** *Re-engineer our core biodiversity data infrastructure** to streamline operations and reduce the cost and environmental impact of our services.
1.2 Prioritise all areas of **data quality**, including supporting data providers to resolve issues and communicating ALA data workflows to users.	**2.2** Continually **review and simplify** ALA's product and service portfolio to focus on higher-impact capabilities.
1.3 Build a publicly accessible, regularly updated, robust **taxonomic backbone and names matching service**, based on the National Species List, to support research, government, industry and community users.	**2.3** Develop our data infrastructure to manage and deliver improved **restricted access species data solutions** for environmental, biosecurity and Indigenous data.
1.4 * Work towards adopting **CARE** principles (Collective benefit, Authority to control, Responsibility, and Ethics) to support our engagement with Indigenous partners.	**2.4** Strengthen **cyber resilience and compliance** by adopting modern access control standards and enforcing least-privileged access.
1.5 Adopt a more **strategic approach to prioritise biodiversity data acquisition** based on acquiring a basic, continental scale dataset for as many species as possible to meet Australia's biodiversity data needs.	**2.5** Transform our infrastructure and build the skills across the team to benefit from **AI/ML technologies**, including delivering data to support AI/ML advances.

* 'Stretch' actions are new areas of capability and capacity development that may require new resourcing, partnerships or approaches.

The ALA helps to create a more detailed picture of Australia's biodiversity for scientists, policy makers, industry and the general public. This visualisation is a novel way to show range overlaps and distributions of multiple species at once.

Melithreptus species
- Black-chinned Honeyeater
- Black-headed Honeyeater
- Brown-headed Honeyeater
- Gilbert's Honeyeater
- Strong-billed Honeyeater
- White-naped Honeyeater
- White-throated Honeyeater

Feather-tailed Glider *(Acrobates pygmaeus)* is the world's smallest gliding mammal, around the size of a small mouse. It is found in the treetops of forests from northern Queensland down to Victoria.
📷 James Bennett, CC BY NC

3. Strong partnerships	4. Informed decision-making
Ensure Australia has a robust national biodiversity data system built on enduring partnerships.	Support our users to best leverage ALA data and services.

3.1 Partner with **Commonwealth, State and Territory governments** to ensure efficiencies and integration of biodiversity data.

3.2 Build deeper partnerships with our **NCRIS project partners** to deliver national benefit.

3.3 *Work with Australia's biological collections sector to realise a vision around a **nationally distributed biological collection**.

3.4 Build on our **international partnerships** including with GBIF, Catalogue of Life, TDWG and the Biodiversity Heritage Library.

3.5 **Enhance partnerships** with sectors that require timely access to national biodiversity data, including industry, Indigenous organisations and the biosecurity sector.

3.6 Develop strategic **partnerships with NGOs** to maximise biodiversity data availability, for example with iNaturalist, Birdlife Australia, NatureMapr and Australian Wildlife Conservancy.

4.1 Deliver a more effective user experience and better interfaces to support a more **seamless user experience** across ALA web products.

4.2 Build **innovative analysis tools** to support our users to use ALA data better and to adopt **Open Science principles**.

4.3 Support major **national biodiversity assessment, reporting and monitoring programs** with ALA data.

4.4 Design and deliver tailored **training and credentials** to build capacity across priority sectors.

4.5 Design systems and frameworks to better **measure and report** on the impact of our work and services.

The ALA is used as biodiversity repository by researchers, government and citizen scientists.
Andre Zerger

6. OUR GUIDING PRINCIPLES

The ALA is committed to upholding its environmental, social, and governance responsibilities. It aims to foster inclusive engagement with its staff, stakeholders, and the wider Australian community to support continued access to biodiversity data, thereby improving the understanding and management of our environment.

Positive Team Culture

A supportive, inclusive, positive team culture is central to creating high-performing teams and positioning the ALA as an employer of choice. We will strive for excellence in CSIRO's **annual culture survey** and work with our staff to maintain an engaged, supported and valued team culture. This will be achieved by helping each other, valuing diversity, communicating openly and often, and creating opportunities for career development. The ALA will adopt a flexible work model supported by contemporary communication and collaboration tools as a national team.

Exceptional User Experience

We are dedicated to delivering an exceptional user experience by leveraging data-driven insights and user feedback. We aim to consistently achieve an **excellent** Net Promoter Score in our **annual user satisfaction survey** and improve satisfaction results from our priority sectors, reflecting our commitment to understanding and exceeding user expectations.

The Gadji Gadji Garden project brings women together over a cup of native plant tea to share Kamilaroi language and knowledge of plants and animals. Pictured here are Cecilia Daley and Aunty Lill Bartholemew. This knowledge is then recorded, with consent, in the Atlas of Living Australia, and the Kamilaroi Plant and Animal online Encyclopedia.
📷 Bernadette Duncan

Partnerships with Indigenous Australians

The ALA is committed to extending our partnerships with Indigenous Australians, given the fundamental role Indigenous custodians of Country and biodiversity play in Australia. We **partner with Indigenous Australians** to bridge gaps between Indigenous ecological knowledge and Western science. Together, we will enhance Indigenous communities' awareness and utilisation of the ALA and create opportunities for them to contribute to and benefit from the ALA. CARE and Indigenous Cultural and Intellectual Property principles will underpin ALA's data functions and partnerships with Indigenous communities, ensuring that the rights and sovereignty of Indigenous Australians are respected.

Commitment to Open Science

As a publicly funded biodiversity infrastructure, we are committed to making our **tools, services, and products accessible**. We believe in the power of open science to drive discovery, innovation, and collaboration, benefiting society and improving environmental insights. We are committed to supporting and guiding users in harnessing ALA data for analyses intended for long-term use, with results that are both usable and reproducible years in the future.

Lowering Our Environmental Impact

The ALA increasingly relies on cloud IT infrastructure for managing vast quantities of Australia's biodiversity species and related data, including high-resolution images, genetic data, and spatial information. The ALA will collaborate with our IT partners to achieve **net-zero emissions from our IT infrastructure** by monitoring and reducing energy usage, and responsibly offsetting any unavoidable carbon emissions. Our team will also be encouraged to use **the lowest-emission transport options** where practical. We will communicate these outcomes with our team and share learnings with our partners.

Excellence in Governance

An independent Advisory Board will govern the ALA, bringing together **skilled and diverse board members** with expertise in areas aligned with the ALA's strategy. Board diversity will be realised across several facets, including geography, gender, and Indigenous representation. We will publish board communiques to keep our key stakeholders informed about the board's priorities and operations.

Throughout Australia, algal habitats are deteriorating due to warming waters. Thanks to support from the ALA's Australian Biodiversity Data Mobilisation Program, Royal Botanic Gardens Victoria has mobilised five decades of specimen data from the herbarium of eminent phycologist, Dr Gerry Kraft, significantly boosting the marine algal data held in the ALA, and enabling more comprehensive analyses of ecosystem change through time and space.

7. MEASURING OUR IMPACT

The ALA Strategy 2025-2030 will guide ALA's annual business planning process, endorsed by the ALA Advisory Board each year. Major activities and projects for that year will be communicated to our stakeholders through an **annual, published work plan**. This will form the basis of ALA's Annual Activity Plan, which is provided to the Australian Government's NCRIS program.

The ALA has a mature, data-driven approach to monitoring its performance, including the following methods:

- Publication of an **annual year-in-review** that reports progress against ALA's yearly workplan.
- Completion of an **annual user satisfaction survey**. Evaluate ALA's Net Promoter Score (NPS) to achieve a minimum of 20 which is considered a favourable score.
- Monitoring **system uptime** across our products and services, aiming for a 99% minimum uptime.
- Tracking research impact through the ALA's **research publication tracking system**, comparing the number of publications, topics and tool use to previous years. This includes realising annual growth in using ALA data and services in research, beyond just general citation.
- An **annual staff culture survey** that evaluates the ALA's organisational values and practices, to consistently maintain an engaged, supported and valued team culture.

- Tracking biodiversity **data metrics**, such as the number of data uploads and downloads, to ensure that numbers remain consistent or increase for ALA's flagship products.
- Tracking **registered user numbers**, their affiliated sector or origin, and overall engagement with ALA products and services.
- Monitoring the reach and uptake of our **communication activities**, including webinar participation, social media impressions, and related engagement metrics. Our channels will grow consistently and be critically reviewed where necessary to address any declines.
- Tracking the **carbon footprint of our IT operations** to reduce both impact and cost.

8. STRATEGIC DRIVERS

International

- Convention on Biological Diversity
- Intergovernmental Panel on Biodiversity and Ecosystem Services
- Kunming-Montreal Global Biodiversity Framework
- Global Biodiversity Information Facility (GBIF) Strategic Framework 2023–2027
- Taskforce on Nature-Based Financial Disclosures
- United Nations Sustainable Development Goals

The Atlas of Living Australia is Australia's national biodiversity data infrastructure. It enables researchers, decision-makers, and the community to contribute, access, and analyse data on Australia's plants, animals, and fungi.

National

- Australia's National Science and Research Priorities
- Data and Digital Government Strategy
- Discovering Biodiversity – a decadal Plan for Taxonomy and Biosystematics in Australia and New Zealand
- National Agreement on Closing the Gap & Indigenous Procurement Policy
- National Biosecurity Strategy Action Plan
- Nature Positive Plan – better for the environment, better for business
- National Research Infrastructure Roadmap
- Research Translation and Commercialisation Agenda
- Australia's Strategy for Nature
- Threatened Species Action Plan

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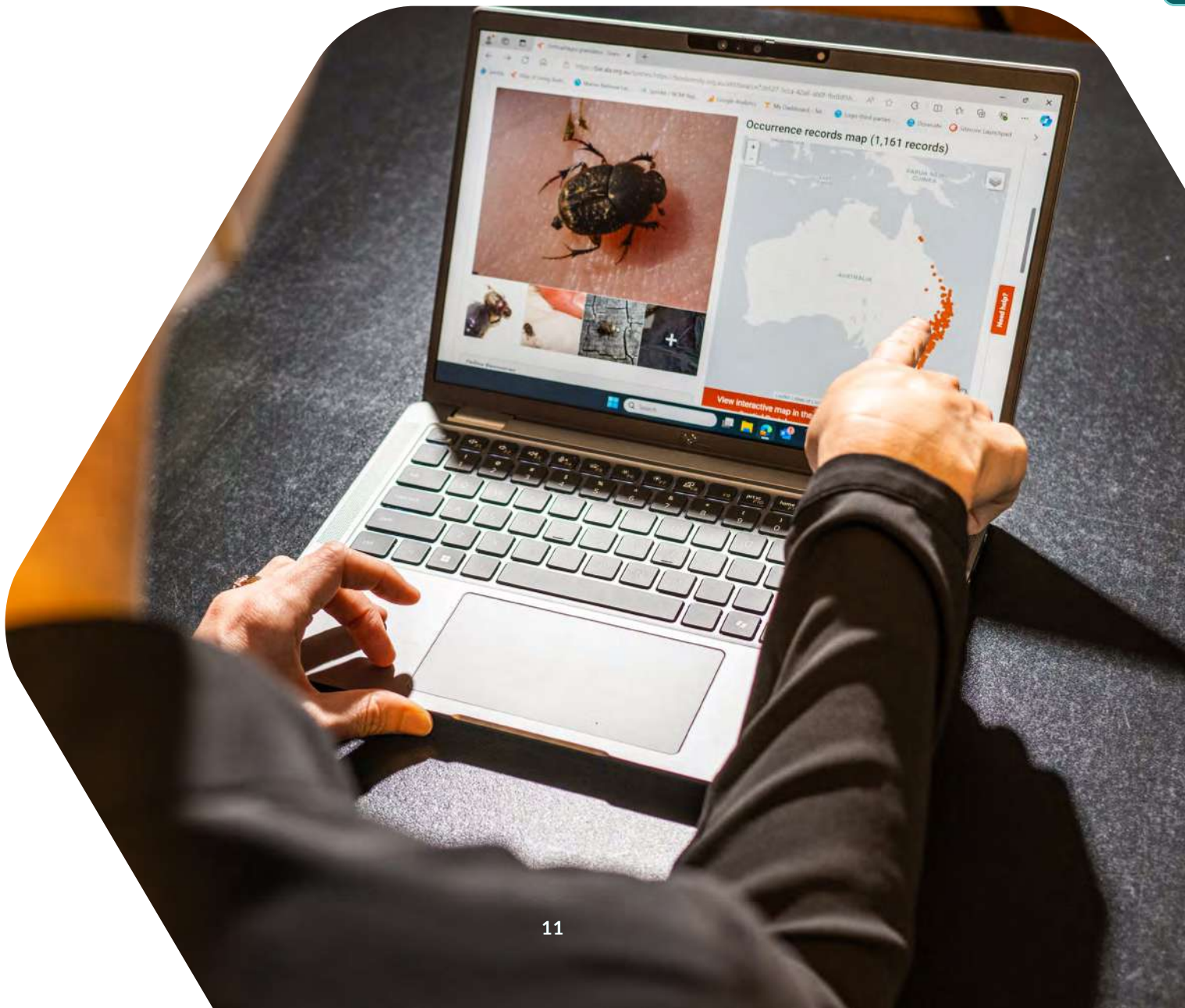
The Australian node of the Biodiversity Heritage Library is supported by the Atlas of Living Australia and hosted by Museums Victoria. Its purpose is to digitise Australia's biodiversity literature and make it freely accessible online. This illustration of a Red-bellied black snake *(Pseudechis porphyriacus)*, by James Sowerby, is from 'Zoology of New Holland', by George Shaw, published in 1794, from Museums Victoria's rare book collection.

Coluber Porphyriacus.

Each bird in the sky represents 10,000 parrot records in the Atlas of Living Australia. The colours of the birds represent their Environment Protection and Biodiversity Conservation status, with birds in lighter colours representing records of species that are more threatened. The hills in the foreground are made up of frequency curves of records of two parrot species that were declared extinct in the 1920s: the Red-fronted Parakeet *(Cyanoramphus novaezelandiae) and the Paradise Parrot (Psephotellus pulcherrimus). More than half of the records in the ALA are bird records (87 million out of 150 million)*, and over 8 million of those bird records are of parrots. Image credit: Shandiya Balasubramaniam, ALA

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Thorny Devil *(Moloch horridus)* eats ants and can absorb water from damp sand. Its colours are brighter during warm weather.
📷 Tim Rudman, CC BY NC

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