



Atlas of Living
Australia

Year in Review

2023–24



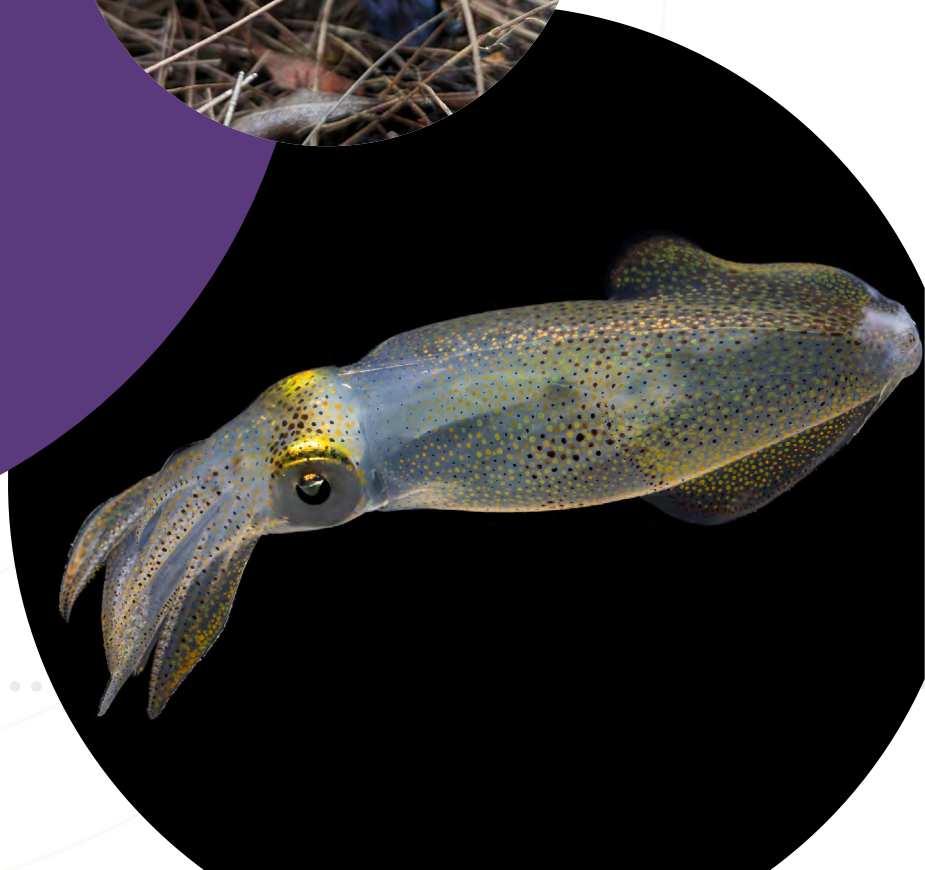
Atlas of Living
Australia
ala.org.au

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Cover image:
Verco's Nudibranch (*Tambja verconis*)
© Rafi Amar CC BY NC



Elegant Blue Webcap
(*Cortinarius rotundisporus*)
© Joe Lipson CC BY NC



Luminous Bay Squid (*Uroteuthis noctiluca*)
© Jono Dashper CC BY NC

Director's overview



It's a pleasure to welcome you to the Atlas of Living Australia's (ALA) Year in Review 2023–24, in which we showcase our collective achievements and recognise the significant contributions made by our partners and team in supporting our purpose.

This year was one of international engagement, hosting and leadership, and it was wonderful to welcome our global partners to Australia. Our journey began by hosting the annual Biodiversity Information Standards (TDWG) annual meeting in Hobart from 9th to 13th October. The event welcomed more than 166 participants from 26 countries to present, learn, and connect, and we are grateful to those who made the effort to continue the work of TDWG so far. The TDWG-maintained Darwin Core standard has underpinned many of the world's biodiversity data systems, including the ALA, and ensures interoperable biodiversity data can move freely across platforms and borders. Events such as the TDWG annual meeting are critical in supporting the evolution of biodiversity data standards and the applications it enables.

TDWG was a timely precursor to our next series of events hosted in Canberra and framed around the two-day Governing Board meeting of the Global Biodiversity Information Facility (GBIF). Australia last hosted GB04 in 2002 at the National Academy of Sciences, welcoming at the time 18 countries to Canberra. Twenty-one years later, we hosted 145 people from 30 countries at the National Portrait Gallery and CSIRO (with 28 joining online from 12 countries) to govern, support and grow the GBIF network. A highlight was being joined by the Honourable Minister for the Environment and Water, Tanya Plibersek, at the gala dinner hosted at the National Museum of Australia.

Hosting this series of international meetings affirms Australia's global leadership role. We are grateful to the individuals and teams in Australia that have established such a strong foundation for more than two decades. Australia's capability across species discovery and description, biodiversity informatics, and ecosystem modelling and analysis positions the nation well to address emerging challenges and opportunities around effective biodiversity management. This includes supporting international and domestic biodiversity policy agendas, including the Convention of Biological Diversity and Nature Positive, mitigating the risk to Australia's biodiversity posed by invasive species, and anticipating and responding to the impacts of climate change.

I want to end by expressing our gratitude to the Australian Government's National Collaborative Research Infrastructure Strategy (NCRIS) and our hosts CSIRO, for their unwavering support. Along with our team and data partners, Australia has built something remarkable. As I introduce you to our Year in Review, I'm reminded of The Hon Minister Plibersek's address to our international audience in Canberra in October when she noted, "In God we trust, but everyone else must bring data" which remains prescient.





We hope you enjoy reading our 2023–24 story as much as we've enjoyed telling it.

Dr Andre Zerger,
Director, Atlas of Living Australia

How are we tracking?

Checking in with our Work Plan

Our annual Work Plan details the projects, activities and major investments planned to deliver on the strategic priorities outlined in the ALA Strategy 2020–25. The table below shows key activities the ALA team worked on during 2023–24. You can view our full annual Work Plan on our website ala.org.au/publications.

	2023		2024		
	JUNE	DECEMBER	APRIL	JUNE	BEYOND JUNE
 In progress	Environmental Biosecurity Program - Alerts project				
	Lists tool redevelopment				
	Redesigning the digital biodiversity experience				
	UX UI upgrade				
	Data roadmap				
	Streamlining data provision				
	Towards a National Approach to Biological Collections				
	Species pages content improvement				
 Phase complete	Strengthening IT resilience				
	Australian Reference Genome Atlas				
	Taxonomic backbone rearchitecture				
	Industry engagement				
 Operational Mode	Australian Seedbank Online				
	Restricted Access Species Data Framework and Services				
	Indigenous Partnerships Program				
	MERIT - product development and services delivery				
 Complete	EcoCommons Australia Program				
	Hosting the Biodiversity Information Standards (TDWG) international conference				
	Hosting the 30th Global Biodiversity Information Facility Governing Board meeting				

For more details, visit ala.org.au/publications

Work Plan highlights across 2023–24

ALA Taxonomic names refresh project

This year the ALA completed the first phase in updating our taxonomic names system. This fundamental restructuring is essential for accurately organising and presenting Australia's biodiversity data. By refining our data sources and adopting the most current scientific classifications for species, we have improved the precision and consistency of biodiversity information discoverable through the ALA.

The ALA taxonomic backbone is principally sourced from the National Species List, but also draw names from the New Zealand Organism Register as well as the Catalogue of Life. The significant changes to align our taxonomic backbone reduces duplication of species listings, therefore improves accuracy, synonym matching and navigation when users are searching for new species or threatened species records through the ALA.

While much of the work has occurred behind the scenes, the impacts are evident in improved search results, more reliable species identification, and a better understanding of species relationships through the names hierarchy. The ALA is committed to maintaining a current and accurate taxonomic framework. We will continue to further improve the ALA taxonomic backbone over the next twelve to eighteen months and resolve issues that have not already been addressed.



Tasmanian Masked Owl
(*Tyto novaehollandiae castanops*)
© sitkendizzle CC BY NC



ARGA
Australian Reference Genome Atlas

Australian Reference Genome Atlas

The Australian Reference Genome Atlas (ARGA) is a collaborative project developed by the ALA, BioCommons Australia, BioPlatforms Australia, and the Australian Research Data Commons (ARDC). ARGA serves as a searchable index for Australian biodiversity genomic data, sourced from global genomics repositories. ARGA integrates sequence data from the National Centre for Biotechnology Information GenBank, Barcode of Life Data Systems, and the Bioplatforms Australia data platform, harmonised with specimen records from the ALA for enhanced data searching and filtering.

The first public version of this application was formally launched in November 2023, meeting a major project milestone, and delivering a dynamic, innovative and highly anticipated tool to Australian genomics researchers. The forthcoming second phase of the ARGA project aims to further facilitate data access by incorporating diverse sources such as ecological and ethnobiological traits, leveraging a new data framework to enable the Australian genomics community to utilise AI for advanced search capabilities and insights into biodiversity. For more information, visit app.arga.org.au.



Spotted Sun-Orchid
(*Thelymitra ixioides*)
© Izakschoon CC BY NC

Atlas of Living Australia 2023–24 in numbers



(*Coprinopsis pulchricaerulea*)
© Michelle Colpus CC BY NC

Total metrics (as at 30 June 2024)



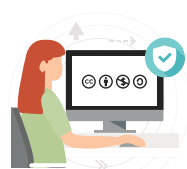
134,899,658

Total species occurrence records



1,138

Total number of datasets



99.4%

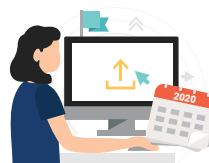
Total number of records under
Creative Commons licenses



141,759

Total number of
ALA registered users

Annual metrics



13,337,856

Records first loaded
2023–24



371*

Total publications
referencing the ALA in the
last financial year, **200** of
which were journal articles



1,171

Number of support tickets
resolved through the ALA
helpdesk in 2023–24



191

Datasets added 2023–24



6,576

Number of Galah (R) and
362 Python package
downloads

** These figures are retrieved from
the 2023–24 financial year
(July 1st 2023 – June 30th 2024)
as a holistic assessment of research
impact in the past financial year.*

Red-rumped Parrot
(*Psephotus haematonotus*)
© Michael Hains CC BY NC



(*Stigmodera gratiosa*)
Photo Credit Joshua Neech CC BY NC

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Subscribe to our newsletter!

Anemone Stinkhorn Fungus (*Aseroe rubra*)
Photo Credit Kymo CC BY NC



Leaf Green Tree Frog (*Litoria phyllochroa*)
Photo Credit James Bennett CC BY NC

Connecting with the ALA

ALA's biodiversity news to your inbox

The ALA delivers a regular newsletter to our subscriber base of more than **105,000 verified users**. Our high reaching newsletters provide our external audience with updates on current and future ALA projects, partnerships and events. Through implementing A/B testing to optimise formats and content layouts, the use of highly visual graphics and

considered text, ALA newsletters have been refined to maximise engagement and readability for a wide range of readers. These newsletters are a valuable resource for researchers, government, industry, educators, and anyone interested in understanding more about the ALA and receiving updates on Australian biodiversity news.



Give us a follow!
[@atlasoflivingaustralia](https://www.instagram.com/atlasoflivingaustralia)

Connecting socially

The ALA manages three regular social channels, Facebook, X and LinkedIn and continues to connect with an established userbases across all three platforms. In June 2024, the ALA launched a profile on Instagram [@atlasoflivingaustralia](https://www.instagram.com/atlasoflivingaustralia) to expand our reach to a broader scope of audiences. Our different social channels allow the ALA to provide regular updates to our audience through facilitating open dialogue to share knowledge about both Australian and global biodiversity-related topics.

Followers



(as of June 30th 2024)

Research impact

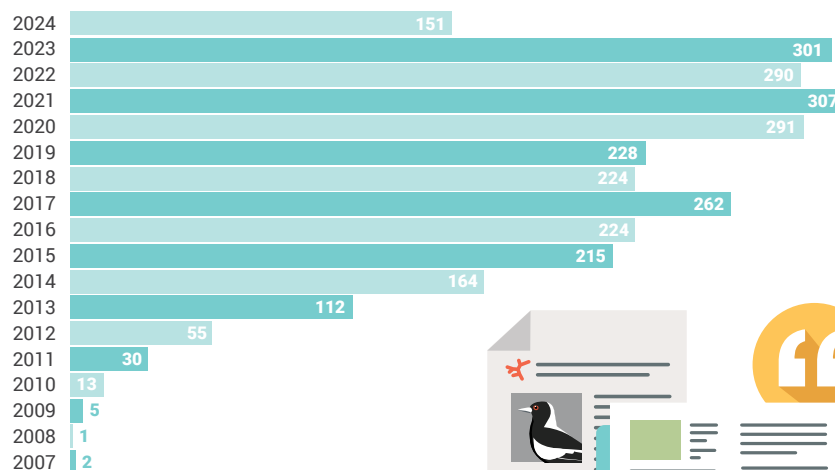
Publications citing the ALA

In 2020, we released a new online bibliography. It lists known journal articles, books, websites etc. that cite data in the ALA or ALA infrastructure.

You can browse or search the publication list and also let us know how you have used the ALA.

ala.org.au/ala-cited-publications

Annual number of journal articles citing the ALA*



* This data uses a calendar year reporting period. Note data for 2024 is from January 2024 to June 2024, while other years are complete calendar years (Jan – Dec).

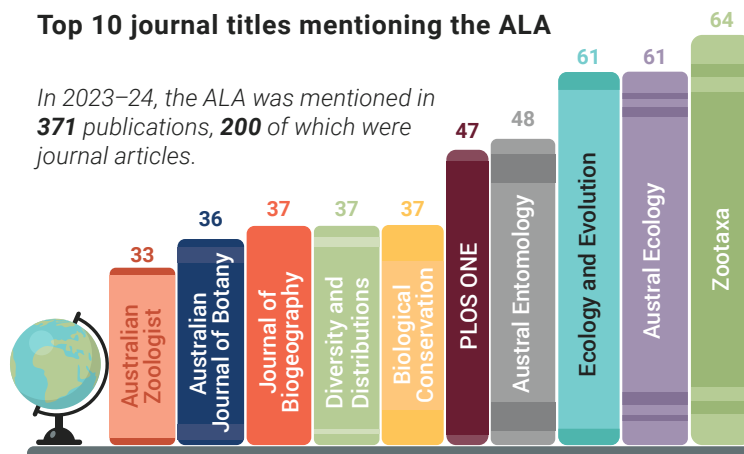


Common Eastern Froglet
(*Crinia signifera*)
Tom V CC BY NC



Top 10 journal titles mentioning the ALA

In 2023–24, the ALA was mentioned in **371** publications, **200** of which were journal articles.

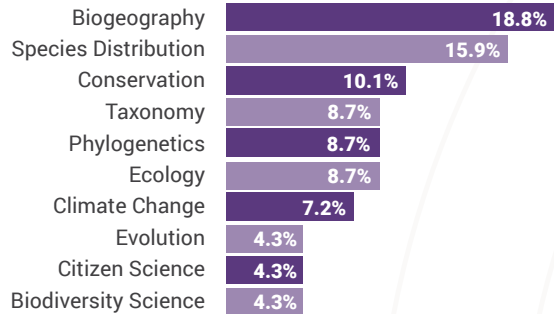


Black Bootlace Orchid (*Erythrorchis cassythoides*)
© Izakschoon CC BY NC



Research domains citing the ALA

The ALA is used by researchers across many different research domains from life sciences and taxonomy as well as education, social science and the arts.



The ALA Australian Biodiversity Data Mobilisation Program

The ALA launched the Australian Biodiversity Data Mobilisation Program (ABDMP) in 2022 which provides grants of up to AUD \$20,000 or \$50,000 to support the digitisation of existing Australian biodiversity data that aligns with national biological priorities. In the first two years of the program, 11 projects from Australian institutions received funding through ABDMP, mobilising hundreds of thousands of analogue Australian biodiversity records to be made openly accessible through the ALA.

Tasmanian Devil
(*Sarcophilus harrisii*)
© Tasmanian Museum
and Art Gallery



In February 2024 ahead of opening applications for the third round of ABDMP, the ALA hosted a public webinar titled *Transforming Australia's biological collections to open data*, which highlighted three previously funded projects. The projects were a combination of fully delivered and in-progress projects from round one and two of the program. The programs highlighted were from Tasmanian Museum and Art Gallery, represented by Dr David Hocking, Queensland Museum represented by Dr Mieke Strong and Dean Beasley and Western Australia Museum represented by Dr Kit Prendergast. Delivering the webinar to more than 1,400 registered viewers, the project leads highlighted how the ABDMP helped to support the digitisation of museum and collection specimen data that would otherwise have not been made widely accessible.



Delivering data: from our data partners to your desktop

We harmonise more than 1,138 datasets from many different data providers across museums, collections and herbaria, universities, science organisations, government departments, Indigenous communities, industry and community groups.

Data in the ALA

Top data providers by biodiversity occurrence record count



eBird
Australia
40.7m



BirdLife
Australia
15.1m



NSW BioNet
Atlas
14.7m



Victorian
Biodiversity
Atlas
10.1m



Ocean
Biodiversity
Information
System
(OBIS)
10.1m



iNaturalist
Australia
7.1m

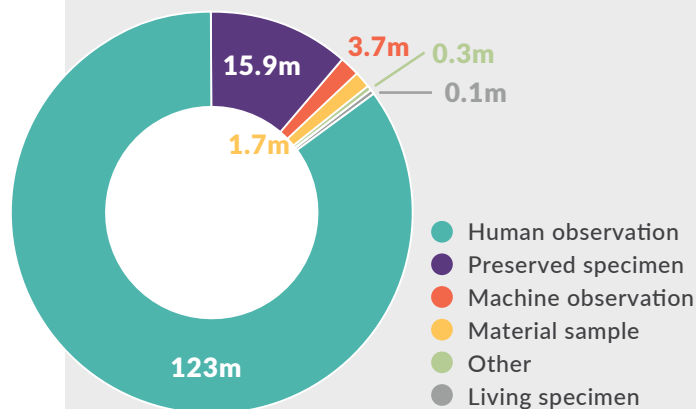


Australasian
Virtual
Herbarium
6.2m

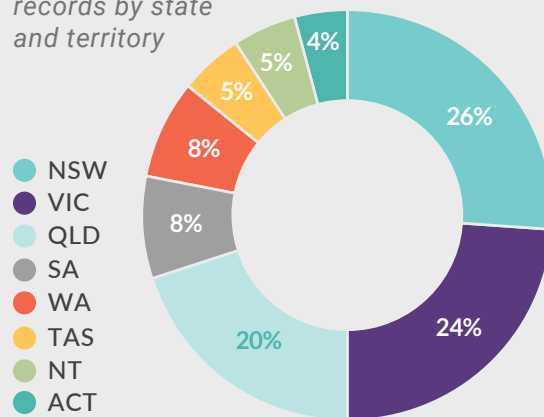


Online
Zoological
Collections
of Australian
Museums
(OZCAM)
5.6m

Species occurrence record attribution



Occurrence records by state and territory



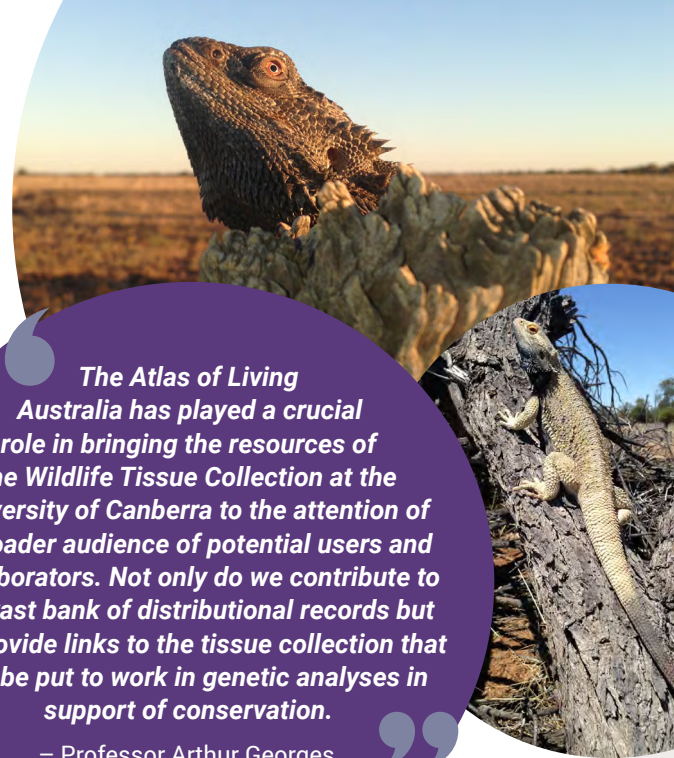


Data partner spotlights

University of Canberra

The Centre for Conservation Ecology and Genetics (CCEG) at the University of Canberra (UC) manages a curated tissue database that has accumulated over many decades from ecological projects from across Australia and New Guinea. CCEG combines ecological insights with genomic advances to generate fundamental knowledge and practical solutions for emerging environmental challenges.

The team have worked with ALA to bring these distributional records into the public domain and to provide open access to the associated tissues that may support a broad range of potential projects and collaborations. Currently focussed on reptiles, there are plans to expand the curated tissue set to include those derived from a broader taxonomic base. As such, the distributional records and associated tissues combined with records already in the ALA databases will contribute to the ALA's mission of producing the most complete picture possible of Australia's biodiversity.



The Atlas of Living Australia has played a crucial role in bringing the resources of the Wildlife Tissue Collection at the University of Canberra to the attention of a broader audience of potential users and collaborators. Not only do we contribute to the vast bank of distributional records but we provide links to the tissue collection that can be put to work in genetic analyses in support of conservation.

– Professor Arthur Georges,
Institute for Applied Ecology
University of Canberra

© Arthur Georges |

I strongly feel that QVMAG's participation with ALA will enhance STEM engagement across the wider community, allowing everyone to access collections that include amazing and important specimens. Documenting our biodiversity is crucial, especially in the face of a changing climate, to ensure we understand and protect our natural world for future generations.

– Dr Alfonsina Arriaga Jiménez,
Senior Curator Natural Sciences,
QVMAG



Golden Stag Beetle (*Lamprima aurata*)
© Simon Fearn, QVMAG 2006

Queen Victoria Museum and Art Gallery

The Queen Victoria Museum and Art Gallery (QVMAG) maintains a strong partnership with the ALA, increasing the accessibility and utility of its extensive entomological collections. In the last year alone, QVMAG data contributed to 3,785,883 records downloaded from 17,952 downloads, primarily used for ecological research, education, and environmental assessment. This collaboration highlights QVMAG's commitment to making natural history collections available to everyone to explore and understand biodiversity and foster greater appreciation and guardianship of our natural world.







Ram's Horn Squid (*Spirula spirula*)
thebeachcomber CC BY NC

Our data partners: highlights for 2023–24

Biodiversity Heritage Library






BHL Australia is a national project working to digitise Australia's biodiversity heritage literature and make it freely available and discoverable online. It is funded by, and operates as a co-investment between, Museums Victoria and the ALA.

-  **42** contributing organisations across Australia
-  **92,520** pages of Australia's biodiversity literature made openly accessible online (at June 30 2024)
-  **92,520** pages from 1,806 volumes in 2023–24; **606,054** pages from 6,180 volumes total (since 2011)
-  **88,051** total page views at June 20 2024
-  **29,564** total individual users at June 20 2024

DigiVol






DigiVol enables volunteers to capture data and digitise collections held within museums, libraries, archives and herbaria. It is managed by the Australian Museum and powered by the ALA.

-  **23,767** volunteers
-  **17,262,513** transcriptions
-  **36%** increase in transcriptions from the previous year

iNaturalist Australia






The ALA manages the Australian node of iNaturalist – the world's leading social network for biodiversity. iNaturalist Australia uses community expertise and image recognition to help users identify species and share observations.

-  **43,816** observers
-  **2.3 million** observations
-  **41,416** identified species

International Living Atlases





Software code originally developed by our Australian team is now in use by countries around the world to help manage their national biodiversity databases. The network of biodiversity data infrastructures is called the Living Atlases community.

-  **20** live instances including ALA
-  **8** instances in development
-  **12** instances in discussion

Australasian Virtual Herbarium



The AVH provides access to collection data for plant, algae and fungi specimens held in Australian and New Zealand herbaria. It is powered by the ALA.



-  **26** herbaria that provide data
-  **6.27 million** records

MERIT



Australian Government

The Monitoring Evaluation Reporting and Improvement Tool (MERIT) is the Department of Climate Change, Energy, the Environment and Water's (DCCEEW) online reporting tool and is powered by the ALA. It is used to collect and store planning, monitoring and reporting data associated with natural resource management grants projects funded by the Australian Government.

-  **6,689** projects
-  **27** programs
-  **124** subprograms

Velvet Worm (*Diemenipatus taiti*)
© Gonzalo Giribet CC BY NC

Southern Marbled Gecko (*Christinus marmoratus*)
© t-weichselbaum CC BY NC



Delivering trusted data for research

Through harmonising data from hundreds of sources, the ALA is committed to making Australian biodiversity data open and accessible. The ALA empowers researchers to explore complex ecological patterns, understand species distributions, and model the impacts of climate change to better understand Australian biodiversity landscapes. Through our ALA Labs and social media platforms, we've created bite-sized summaries of how researchers have used data accessible within the ALA across the year.

Learn more: labs.ala.org.au/research/highlights

eDNA metabarcoding can take snapshots of coastal biodiversity

DiBattista et al. 2024

Selection for better imposters drives speciation in parasitic cuckoos

Langmore et al. 2024

Weevil in, weevil out: Predicting the global habitat range of an invasive weevil species

Hsiao & Liao 2024

Pollen diversity gives insight into allergies

Van Haeften et al. 2024

Habitat suitability of 10,633 Australian flora & fauna species in future climates

Archibald et al. 2024

The tale of changing gecko tails in extreme climates

Green et al. 2024

Aligning citizen science objectives to foster research grade data

O'Reilly et al. 2023

Citizen science data improves key recreational fish population models

Graba-Landry et al. 2023

Will frogs bounce back after chytrid fungus?

Scheele et al. 2023

Pining appetites: Insects' global impact on *Pinus radiata*

Bröckerhoff et al. 2023

Zooming in: Improving Koala monitoring with photography

Danaher et al. 2023

When do Jacaranda trees bloom?

García-Rojas et al. 2022

The screenshot shows a mobile interface for the 'Atlas of Living Australia' social media page. The post is titled 'Cuckoo coevolution' and discusses the relationship between parasitic cuckoos and their hosts. It highlights that coevolutionary interactions are a major reason for species diversification and that parasitic cuckoos exploit host species to raise their young. The post mentions that hosts expel imposters if they can recognize them, leading to selection pressure for better mimics. It also notes that Langmore and colleagues used phylogenetic, genetic, and morphological evidence to understand cuckoo species divergence. The authors found multiple sources of evidence showing that host defenses result in selection for better imposters, driving speciation in parasitic cuckoos. The study provides rare empirical evidence linking macroevolutionary patterns to microevolutionary processes, supporting a fundamental tenet of speciation and evolutionary theory. A link is provided: https://labs.ala.org.au/research/highlights/2024_cuckoos/. The post is attributed to CSIRO The Australian National University #ResearchImpact. Below the screenshot is a cover of the journal 'Science' featuring two birds on a branch. The main title of the cover is 'Science' and the subtitle is 'CUCKOO COEVOLUTION'. The cover also includes the text 'Host matching drives lineage divergence' and the journal's ISSN and issue information: \$15, 31 MAY 2024, SCIENCE.

Atlas of Living Australia
Just now · 🌐

Coevolutionary interactions are believed to be a major reason for diversification of living organisms, and why there are millions—not thousands—of species. Parasitic cuckoos, which lay eggs in other species' nests, exploit host species as parents to raise their young. Some hosts expel imposters if they can recognise them, so cuckoos are under selection pressure to be better mimics of the broods they are in to fool their new parents.

Langmore and colleagues used a range of evidence—phylogenetic analyses of cuckoo species, genetic evidence using current and historic DNA samples, morphological evidence of divergent plumage and song, and (with the help of ALA data) spatial evidence of overlapping but distinct populations—to understand the mechanisms behind cuckoo species divergence.

The authors found multiple sources of evidence to show that host defenses result in selection for better imposters, driving speciation in parasitic cuckoos. This is especially clear in species that lay eggs in a broad range of host species' nests.

This study provides rare empirical evidence that links macroevolutionary patterns (e.g. new species across geographic regions) to microevolutionary processes (e.g. drivers of genetic diversity), supporting a fundamental tenet of speciation and evolutionary theory.

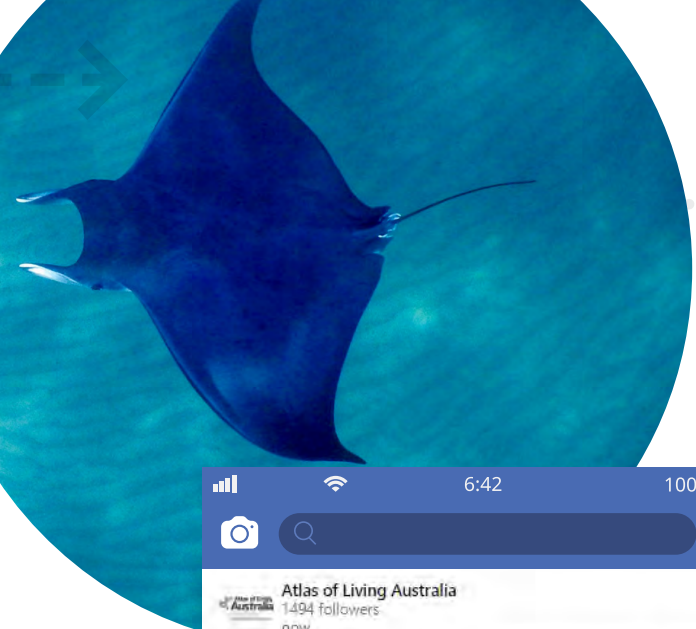
https://labs.ala.org.au/research/highlights/2024_cuckoos/

CSIRO The Australian National University #ResearchImpact

Quantum computers aim for practical uses—in chemistry p. 950 | Nanoparticles from charged microdroplets pp. 956 & 2022 | Misinformation and who spreads it pp. 390, 378, & 979

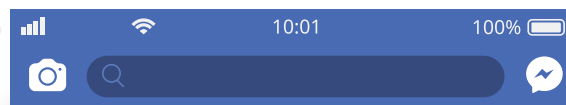
Science
\$15
31 MAY 2024
SCIENCE

CUCKOO COEVOLUTION
Host matching drives lineage divergence p. 1000



Longhorned Pygmy Devil Ray (*Mobula eregoodoo*)

© Gemma Molinaro CC BY NC



Atlas of Living Australia
Just now · 🌐

With enough time, species can evolve to adapt to a different environment or climate. Sometimes (though, not always) this can be expressed in a detectable physical change: the shape and size of a leaf, a limb, or even the colour of scales, feathers, or fur. These changes add up, and over time these adaptations in a population can even demarcate into a new species.

To make sense of the potential drivers of physical changes and species splits, researchers use knowledge of the historic environment to compare with changes in physical traits. In this paper, Green et al. use climate data from the Atlas of Living Australia's Spatial Portal alongside delineated environmental regions to explain the changes in gecko tail shape across Australia.

They find that wider, flatter tails predominantly occur in the Australian Monsoonal Tropics (regions with extreme wet and dry seasons), whereas narrower, tapered tails occur in more arid regions. They suggest the 'bulbous' morphology of the wider-tailed geckos could reflect an adaptation to harness energy stores during periods of high resource availability (wet seasons) in order to prepare for potential scarcity in dry seasons (analogous to how succulents' function in the plant world)!

📄 🌐: <https://doi.org/10.1093/zoolinnean/zlad186>



Dotted Velvet Gecko (*Diplura geminata*)
Photo Credit: Julian Dean, CC BY NC



Supporting decision-making

By harmonising biodiversity data from many data partners across research, industry, state and local governments, and community groups, the ALA is well positioned to support Australian biodiversity and environment programs.

Restricted Access Species Data Pathways

The Restricted Access Species Data Pathways (RASDP) project is a collaborative initiative aimed at improving access to sensitive biodiversity data. By bringing together conservation agencies, research institutions, and data experts, RASDP has developed a national framework for responsible sensitive data sharing. This framework provides clear guidelines for data custodians and users, ensuring data is protected while still being available for research and conservation.

A central Restricted Access Species Data Service (RASDS) has also been established to streamline data requests and management. This project is a significant step forward in balancing data privacy with the need for information to support biodiversity conservation and scientific understanding.

The RASDP project is a collaborative effort between the ALA, Australian Research Data Commons (ARDC), conservation agencies, museums, and herbaria, EcoCommons and the Western Australian (WA) Biodiversity Science Institute.



Australian Atlas Moth (*Attacus wardi*)
© James P. Tuttle CC BY NC

BirdLife Australia has long upheld a restricted access policy for sensitive species data as a basis for our citizen science work. This gives contributors the confidence that sharing their data will not put species at risk, while still allowing for its use in conservation. We are excited to now have a nationally consistent framework for sensitive species data sharing, which will massively increase the use and impact of bird and other species data in science and conservation.

– Dr Golo Maurer, BirdLife Citizen Science Program Leader

Making biodiversity data accessible with galah



In 2021, the ALA developed and released the {galah} package – a bespoke tool for streamlining access to biodiversity data using R and Python coding languages. {galah} is managed by the ALA Science and Decision Support team who facilitate training and workshops to empower users to confidently use this tool.

Since its first release, {galah} for R has been downloaded 18,137 times and {galah} for Python has been downloaded 3,391 times. To date more than **1,000,000 download queries are made each month using {galah} from users in more than 500 locations!**

{galah} is having a growing impact on the scientific community, and has been used across a broad range of applications including:

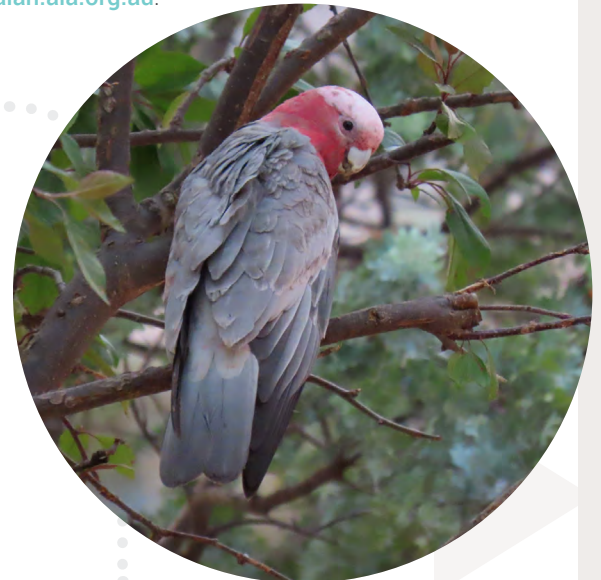
- Supporting scientific peer-reviewed publications in ecology and conservation
- Downloading data for a government reports
- Assisting university educators and their students to create outputs like interactive apps for visualising biodiversity data
- Retrieving statistics on Australia's biodiversity for the 2021 State of the Environment reporting
- Building the ALA's automated Biosecurity Alerts System.

To learn more about {galah} visit galah.ala.org.au.

Monitoring, evaluation, reporting and improvement tool (MERIT)

MERIT is a digital platform used to track, assess, and report on environmental projects managed by the Australian Government. Developed in collaboration between the ALA and DCCEEW, it aims to provide consistent reporting across all Australian Government Natural Resource Management (NRM) programs and allows greater transparency, increased efficiency and the ability to use project data to directly report on program and high-level strategies.

Recently the ALA MERIT team has been working with our fellow NCRIS facility the Terrestrial Environmental Research Network (TERN) and the Biodiversity Data Repository (BDR) team at DCCEEW to develop a system that enables stakeholders in federally funded environmental projects to collect field data using TERN's new "Monitor" app. This app adheres to Australia's new environmental monitoring standards. MERIT is central to this process, handling data flow and user interaction.



Galah (*Eolophus roseicapilla*)
© deborod CC BY NC

Teddy Bear Bee (*Amegilla bombiformis*)

© Dianne Clarke



Partnering for impact

International collaboration

The ALA and CSIRO's National Research Collections Australia co-hosted the Biodiversity Information Standards (TDWG) Annual Conference in Hobart and the 30th Annual Governing Board Meeting of the Global Biodiversity Information Facility (GBIF) in Canberra in October 2023. CSIRO has had a long history of association with both organisations, having been involved with TDWG and GBIF since they were established in 1985 and 2001 respectively.



**Biodiversity
Information
Standards**

TDWG

Biodiversity information Standards (TDWG)

The TDWG conference brought together international biodiversity researchers and practitioners to share advancements in biodiversity informatics standards. The event was attended by 166 participants from 26 countries, with a further 143 participants joining virtually. The event was comprised of four days of symposium presentations and discussions and one day of excursions around Hobart. The ALA team presented 10 abstracts across the conference and was involved in coordinating nine symposia and workshops.

Platypus (*Ornithorhynchus anatinus*)

© adamrichardt CC BY NC



Global Biodiversity Information
Facility Governing Board
international delegation at the
National Portrait Gallery, Canberra.



Global Biodiversity Information Facility (GBIF) 30th Annual Governing Board meeting

In addition to hosting the GBIF 30th Annual Governing Board Meeting, The ALA and CSIRO also hosted an international delegation for a number of additional surrounding events. The international GBIF delegation was welcomed to the CSIRO offices in Canberra for two days of Nodes training, followed by the Global GBIF Nodes Meeting. We welcomed 45 participants in-person from 30 countries and nine organisations to the Nodes Meeting, with a further 28 individuals from 12 countries and six organisations participating online.

Following the Nodes meeting, the GBIF 30th Annual Governing Board meeting kicked off at the National Portrait Gallery with a gala dinner hosted at the National Museum of Australia where Minister for the Environment and Water the Hon Tanya Plibersek delivered an opening speech, affirming Australia's commitment to collaboration on international biodiversity matters and informed by robust biodiversity data.

The week concluded with the ALA and CSIRO hosting an international Symposium titled *The Changing Face of Biological Collections – data, science and applications*. This event involved GBIF delegates as well as a suite of national stakeholders to present, discuss and explore the increasingly important role of biological collections in supporting innovative biodiversity science.



The Hon Minister Plibersek speaking at the gala dinner at the National Museum of Australia to the GBIF international delegation.

It was fantastic to see so many inspiring and passionate international delegates come together to advance discussions on global biodiversity data. The collective knowledge at an event such as the GBIF Governing Board Meeting is immeasurable. By connecting through such forums, we create pathways to further learn and collaborate, and by doing so make biodiversity data more accessible to everyone. We are particularly grateful to Australia for hosting such a marvellous event.

– Dr Olaf Banki,
Executive Secretary,
Catalogue of Life



People highlights



ALA Systems Team

Meet our Systems Team

Under the leadership of Sathish Sathya Moorthy, and supported by a skilled team including Matt Andrews, Simon Bear, Adam Collins, Nick dos Remedios, Bruce Hyslop, Hamza Javed, Yasima Kankanamge, Joe Lipson, Kylie Morrow, and Bai Qifeng, the **Systems Team** is dedicated to ensuring the operational robustness, security, and modernisation of the ALA's systems.

The team oversees and reports on the IT risk profile of the ALA, ensuring that operational metrics, security protocols, budget management, and technical debt are effectively handled. Their efforts are critical to maintaining the ALA as a reliable and innovative platform for biodiversity data, which currently encompasses more than 145 million occurrence records.

By leveraging both internal expertise and strategic external partnerships, the team introduces cutting-edge techniques that enhance the ALA's infrastructure, particularly in areas like system modernisation and cloud architecture. They manage more than 15 core biodiversity products and systems, while also driving new IT projects and maintaining key relationships with providers such as Amazon Web Services and the Australian Research Data Commons (ARDC) Cloud Compute.



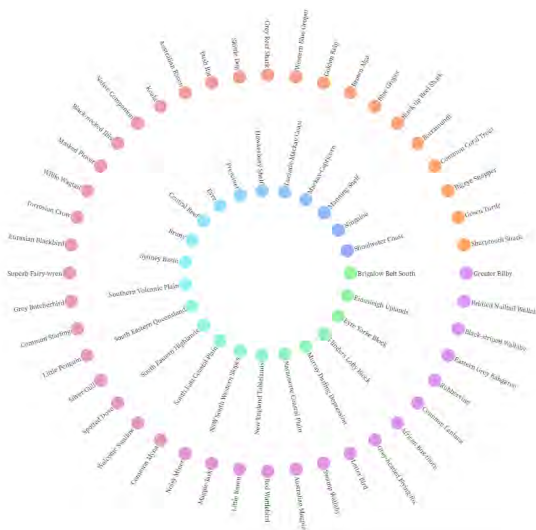
The "Myrtle Rust March" campaign was driven by University of Adelaide postgraduate student Rebecca Paxton as part of her internship with the ALA.

ALA Internships

The ALA Internship Program offers aspiring Australian university students opportunities to learn and refine best-practice biodiversity data skills and create meaningful connections with professionals working in the industry. Across the year the ALA was proud to support:

- Three students from the University of New South Wales (UNSW) undertook internships ranging from three to six months in duration as part of their coursework for their degrees, digitising and mapping historical non-passerine bird data on range and morphology.
- Two Summer Vacation Scholarship students from UNSW undertook three month placements with the ALA over summer 2023–24 focused on projects that included visualising data available on the EcoAssets website, as well as a machine learning project that investigated how to identify and filter images of deceased animals on roadsides.
- One postgraduate student from University of Adelaide who undertook an eight-month placement with the ALA focusing on driving awareness of myrtle rust as a biosecurity threat.

Data visualisation developed by UNSW Internship student Clara Peers Tejero during her time with her ALA.



Industry partnerships

The ALA supports sectors such as mining, agriculture, and environmental consulting in meeting their environmental obligations and making informed decisions. For instance, the ALA can be used to support Environmental Impact Assessments (EIA) to identify potential impacts on threatened species as required by the *Environmental Protection and Biodiversity Conservation Act, 1999*. EIAs are required for most large and medium-scale developments in Australia. Additionally, agricultural businesses can leverage the ALA to understand the distribution of pests and diseases, aiding in crop management and protection. The ALA also collaborates with industry partners, such as the Western Australian government, to develop tools like the Index of Biodiversity Surveys for Assessments (IBSA), which streamlines data sharing and access for environmental consultants involved in mining projects.

“
The ALA houses a wealth of essential information about biodiversity, which we use regularly in our work to inform decision-making and to develop new products and services.
”

– Vicki Brady
Head of the Environment
Institute of Australia and
New Zealand.

To better support Australian businesses utilising ALA's tools and services, we have partnered with the Environment Institute of Australia and New Zealand to deliver targeted training to industry professionals. This initiative, identified as a key area for development in the Industry Users project in 2022, has now reached **18% of the existing industry user base**. These sessions cover a broad range of topics such as how to use ALA's threatened species list tools, using galah, understanding spatial mapping tools and more.

Governance

ALA Advisory Board

The ALA Advisory Board supports high-level direction and delivery of the ALA by providing vision, advocacy and advice. We are pleased to have 12 current ALA Advisory Board members, chaired by Professor David Cantrill. In addition to Professor Cantrill, Board members include: Ron Avery, Dr Kate Brandis, Dr Catherine Byrne, Dr Bek Christensen, Dr Robyn Cleland, Marlee Hutton, Margie Jenkin, Toni Moate, Dr Rebecca Pirzl, Dr Stephen van Leeuwen and ALA Director Dr Andre Zerger.

The Board met four times last year in Canberra (hosted by CSIRO), Darwin (hosted by the Museum and Art Gallery of the Northern Territory), Orange (hosted by the NSW Department of Primary Industries) and once virtually. For more information about the ALA Advisory Board including access to Board communiques, please visit ala.org.au/governance



| ALA Advisory Board

Acknowledgements

We thank each and every organisation, community and individual for your contributions and support. The ALA would not be possible without you. However, with more than 900 data partners it is a difficult task to acknowledge everyone, so please forgive any omissions.

Advisory Board (2023–24)

- Prof David Cantrill (Chair)
- Royal Botanic, Gardens Victoria
- Mr Ron Avery, Biodiversity Information Systems, NSW DCCEEW
- Dr Kate Brandis, UNSW
- Dr Catherine Byrne, TMAG
- Dr Bek Christensen, Peter Cullen Trust Representative, Ecological Society of Australia
- Dr Robyn Cleland, independent
- Ms Marlee Hutton, Kimberley Land Council
- Ms Margie Jenkin Nature Australian Environmental Grant Makers Network
- Ms Toni Moate, CSIRO
- Dr Rebecca Pirzl, DCCEEW
- Dr Stephen van Leeuwen, Curtin University
- Dr Andre Zenger ALA CSIRO.

Partners

- Council of Heads of Australasian Herbaria (CHAH) – Australasian Virtual Herbarium
- Museums Victoria – Biodiversity Heritage Library
- Australian Museum – DigiVol
- Australian Biological Resources Study (ABRS)
- Global Biodiversity Information Facility
- iNaturalist
- Council of Heads of Australian Faunal Collections (CHAFC) – Online Zoological Collections of Australian Museums (OZCAM)

- Australian Seedbank Partnership – Seedbank Portal.

Collaboration partners

National Research Infrastructure Strategy (NCRIS) facilities

- Australian Research Data Commons (ARDC)
- Australian Urban Research Infrastructure Network (AURIN)
- Bioplatforms Australia
- Integrated Marine Observing System (IMOS)
- National Computing Infrastructure (NCI)
- Terrestrial Ecosystem Research Network (TERN)
- National Imaging Facility (NIF), Microscopy Australia, Australian Access Federation).

Department of Climate Change, Energy, the Environment and Water (DCCEEW)

- Monitoring, evaluation, reporting and improvement tool (MERIT)
- Murray-Darling Basin Authority hub
- National Environmental Science Program
- Citizen Science Bushfire Recovery Project Finder
- EcoAssets for State of the Environment reporting, Australian Biodiversity Information Governance Group.

International collaboration partners

- International Living Atlases
- iDigBio, Global Biodiversity Information Facility (GBIF)

- Biodiversity Information Standards (TDWG)
- Catalogue of Life – ChecklistBank.

Western Australian Government

- Index of Biodiversity Surveys for Assessments (IBSA)
- Index of Marine Surveys for Assessments (IMSA).

Centre for Invasive Species Solutions

- Weeds Australia.

Indigenous ecological knowledge groups

- Kamilaroi, Ngukurr, Noongar Boodjar Language Centre, Olkola and Wariyangga people, communities and Country.

Universities and research organisations

- Australian National University
- Charles Darwin University
- Commonwealth Scientific and Industrial Research Organisation (CSIRO)
- Macquarie University
- Monash University
- University of Adelaide
- University of Canberra
- University of Melbourne
- University of New South Wales
- University of Western Australia
- University of Queensland
- University of Sydney
- Western Australian Biodiversity Science Institute (WABSI)
- Plant Health Australia
- Australian Institute of Marine Science (AIMS).



Australian Sealion (*Arctocephalus pusillus*)
 © Possumpete CC BY NC

- Australian Plant Census
- AusFungi
- AusMoss.

Natural science collections, museums, herbaria, galleries and libraries

- All state and territory natural history collections
- Council of Australasian Museum Directors (CAMD)
- National Research Collections Australia (CSIRO)
- National Library of Australia (Trove)
- University herbaria and natural science collections.

International science agencies

- New Zealand Organisms Register.

Australian Government

- Department of Climate Change, Energy, the Environment and Water
- Department of Agriculture, Fisheries and Forestry – National biosecurity surveillance alerts service
- Department of Education, Skills and Employment
- Department of Industry, Science and Resources.

State, Territory and Local Governments

- ACT Government
- Brisbane City Council
- New South Wales Government Department of Planning, Industry and Environment
- Northern Territory Government Department of Environment and Natural Resources; Central Land Council

- Queensland Government Department of Environment and Science
- South Australia Department for Environment and Water
- Tasmanian Government Department of Primary Industries, Parks, Water and Environment
- Victorian Government Department of Environment, Land, Water and Planning; Office of the Lead Scientist
- Western Australian Government Department of Environment and Energy; Environmental Protection Agency.

Non-government organisations, community groups and conservation groups

- BirdLife Australia
- ClimateWatch
- Earthwatch
- eBird
- Greening Australia
- Landcare
- MangroveWatch.

Citizen science apps and projects

- Birddata
- Butterflies Australia
- Echidna CSI
- FrogID
- iNaturalist Australia
- NatureMapr
- QuestaGame
- and many more.

Peak bodies

- Australian Citizen Science Association
- Environmental Consultants Association Western Australia
- National Academy of Sciences
- Taxonomy Australia
- Environment Institute of Australia and New Zealand.

Data partners

Authoritative and reference data

- Australian Biological Resources Study (ABRS)
- Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES)
- Geoscience Australia.

Australian Biological Resources Study projects and services

- Australian Faunal Directory (AFD)
- Australian Plant Names Index (APNI)

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Citing this publication

Atlas of Living Australia Year in Review 2023–24,
Atlas of Living Australia publication series No. 15,
Canberra, Australia, 24 pp

DOI: doi.org/10.54102/ala.43763



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