

# Kadaltilla

Adelaide Park Lands Authority

## Adelaide Park Lands Biodiversity Survey

Thursday, 27 June 2024  
Board Meeting

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Public

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## Purpose

The purpose of this report is to present the outcomes of the 2023/24 biodiversity survey (the survey) of the Adelaide Park Lands. The survey of the Adelaide Park Lands undertaken in 2023/24 updates the understanding of biodiversity values of the Adelaide Park Lands.

The survey focused on existing Key Biodiversity Areas in the Adelaide Park Lands, select native vegetation and revegetation sites, aquatic vegetation in Karrawirra Pari, Victoria Park / Pakapakanthi wetlands, and G S Kingston Park / Wirrarninthe wetlands.

The survey is being delivered in three phases:

- Phase 1 (complete) – Desktop analysis including a literature review, gap analysis and update of data sharing and biodiversity monitoring methodologies.
- Phase 2 (complete) – Implementation of expert field surveys and citizen science campaign.
- Phase 3 (2024/25) – Development of a digital reporting framework to publicly report the findings.

Field surveys mapped, assessed and identified hundreds of species and vegetation associations that add to the knowledge of Adelaide Park Lands biodiversity. Key new species discovered by the field surveys include:

- three species of microbat that were not previously recorded in the Adelaide Park Lands – bringing the total number of species to seven microbat species plus the Grey-headed Flying-fox, which was not present for the 2003 survey report.
- one Short-finned Eel (*Anguilla australis*) was observed in Torrens Lake, which represents the first observation of the species above city weir recorded during scientific surveys.
- there is high confidence that at least two, potentially up to ten, unidentified native bee species have not been described in scientific literature – making them new discoveries. Additional species will be confirmed by native bee experts and taxonomists.
- a rarely recorded species the Jewel Beetle (*Diphucrania trimentula*) was recorded twice for the first time in the Adelaide Park Lands and there are only four records of this species in South Australia.

A summary of key survey findings is provided in **Attachment A**. Overall, the survey indicates:

- an increase knowledge of total species diversity and abundance in the Adelaide Park Lands
- an increase in distribution of biodiversity in the Adelaide Park Lands
- the return of species to the Adelaide Park Lands through the creation of habitats (eg wetlands) and their associated resources.

The City of Adelaide is continuing to develop its digital data and evidence base for the Adelaide Park Lands through a digital reporting framework to be delivered in the first quarter of 2024/25.

The reporting framework is investigating the potential to share data with the Biodiversity Database of SA and Atlas of Living Australia. This provides the capacity to regularly send and receive new data from researchers and citizen science programs and applications (such as iNaturalist).

The survey has informed, and will be delivered through, the City of Adelaide's Integrated Climate Strategy 2030.

## Recommendation

### THAT THE KADALTILLA / ADELAIDE PARK LANDS AUTHORITY RECOMMENDS TO COUNCIL

#### That the Kadaltilla / Adelaide Park Lands Authority:

1. Receives the Adelaide Park Lands Biodiversity Survey Report contained in **Attachment A** to Item 5.6 on the Agenda for the meeting of the Kadaltilla / Adelaide Park Lands Authority held on 27 June 2024.
  2. Notes a digital reporting framework for publicly communicating the findings of the biodiversity survey is in development and will be presented to Kadaltilla / Adelaide Park Lands by September 2024.
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# Implications

Adelaide Park Lands Management Strategy 2015-2025	<a href="#">Adelaide Park Lands Management Strategy 2015-2025</a> Sustainable and enduring places - <i>Management of biodiversity</i>
2023-2028 Strategic Plan	<a href="#">Kadaltilla / Adelaide Park Lands Authority 2023-2028 Strategic Plan</a> <b>Strategic Plan Alignment – Environmental Performance</b> Objective 2.2 Promote ecologically sustainable initiatives and monitor tree canopy cover, biodiversity, and environmental sustainability and design quality Objective 2.5 Increase the accessibility of evidence-based information
Policy	<p>The Biodiversity Survey aligns with the City of Adelaide’s Strategic Plan 2024-2028 To lead and advocate for the environmental value, productivity, quality and biodiversity of the Park Lands, squares, open space and streetscapes.</p> <p>The survey supports Goal 3: A city where nature thrives, of the City of Adelaide’s Integrated Climate Strategy which seeks to protect and enhance biodiversity, native grasslands and woodlands in the Adelaide Park Lands.</p>
Consultation	<p>Consultation has been undertaken with:</p> <ul style="list-style-type: none"> <li>• Representatives from the Kaurna community including Firesticks Alliance Members</li> <li>• Department for Environment and Water (DEW)</li> <li>• Green Adelaide</li> <li>• South Australian Museum</li> <li>• Botanic Gardens of South Australia</li> <li>• University of Adelaide, University of South Australia, and the Flinders University of South Australia</li> <li>• Environmental Non-Government Organisations.</li> </ul>
Resource	<p>The City of Adelaide engaged specialist consultants to conduct field surveys and review current biodiversity monitoring practices.</p>
Risk / Legal / Legislative	<p>Field surveys identified species that have a conservation status. Management of these species considers the <i>National Parks and Wildlife Act 1972 (SA)</i> and the <i>Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth)</i>.</p>
Opportunities	<p>This project provides evidence-based data to inform the implementation of the Integrated Climate Strategy 2030.</p>
City of Adelaide Budget Allocation	<p>The City of Adelaide’s Annual Business Plan and Budget 2023/24 includes a strategic project allocation of \$150,000 to complete the biodiversity survey.</p>
Life of Project, Service, Initiative or (Expectancy of) Asset	<p>Future surveys and an ongoing monitoring program will be programmed according to seasonal conditions and subject to annual budget deliberations. Future surveys will require ongoing investment depending on the scale of activity required. Opportunities for citizen science to supplement data gathering will allow for a high level of community involvement and advocacy.</p>
Ongoing Costs (eg maintenance cost)	<p>Not as a result of this report</p>
Other Funding Sources	<p>Not as a result of this report</p>

# Discussion

## Introduction

1. The purpose of this report is to present the outcomes of the 2023/24 biodiversity survey (the survey) of the Adelaide Park Lands. The survey updates the understanding of biodiversity values of the Adelaide Park Lands.
2. The last comprehensive biodiversity survey of the Adelaide Park Lands was completed in 2003. It was commissioned from the Biological Survey and Monitoring Group (then Department of Environment and Heritage, South Australia) and funded by the City of Adelaide.
3. The survey focused on existing Key Biodiversity Areas in the Adelaide Park Lands, select native vegetation and revegetation sites, aquatic vegetation in Karrawirra Pari, Victoria Park / Pakapakanthi wetlands, and G S Kingston Park / Wirraninthe wetlands.
  - 3.1. Key Biodiversity Areas are management boundaries used by the City of Adelaide to prioritise the management of high-value native biodiversity.
  - 3.2. The Adelaide Park Lands support six Key Biodiversity Areas, with at least one Key Biodiversity Area in each of the five recognised pre-European vegetation communities across the Adelaide Park Lands.
  - 3.3. Based on the survey, G S Kingston Park / Wirraninthe (Park 23) is recommended as a new Key Biodiversity Area, bringing the total number to seven, due to the high quality and extent of successful and sustained revegetation.

## Biodiversity Survey of the Adelaide Park Lands

4. The survey is being delivered in three phases:
  - 4.1. Phase 1 (complete) – Desktop analysis, including literature review, gap analysis and update of data sharing and biodiversity monitoring methodologies.
  - 4.2. Phase 2 (complete) – Implementation of expert field survey and citizen science campaign.
  - 4.3. Phase 3 (2024/25) – Development of a digital reporting framework to publicly report the findings.

### Phase 1 – Desktop analysis

5. The literature review and gap analysis completed in Phase 1 by the University of Adelaide indicates gaps in knowledge across all biota themes and the expansion of research since 2003 in areas such as microbial biodiversity, human health, invertebrate diversity, and ecosystem services.
  - 5.1. Current and future biodiversity surveys can address these gaps by conducting focused and regular surveys that measure biodiversity in consistent biota categories (subject to a funded monitoring program).
  - 5.2. The literature review highlights the importance of partnerships between government, academia, private industry and the public to inform a clear picture of the Adelaide Park Lands biodiversity over time.
6. Data sharing and biodiversity monitoring methods were considered by a joint team from Flinders University and the University of Adelaide for Phase 1. Key outcomes of the assessment are:
  - 6.1. A seasonal calendar to guide future biodiversity monitoring (flora, fauna, fungi, and microbiome) aligned with seasonal activity and environmental conditions.
  - 6.2. Data integration ensures high quality records contribute to and receive shared data openly with the Biodiversity Database of South Australia and the Atlas of Living Australia.
  - 6.3. Alignment with international monitoring practices and indexes allows for global benchmarking and reporting for comparable cities tracking and enhancing their biodiversity.

### Phase 2 – Expert field survey and citizen science campaign

7. The field survey program was conducted at targeted sites throughout the Adelaide Park Lands as a series of individual surveys by relevant experts in the fields of:
  - 7.1. Native grasslands and woodlands
  - 7.2. Aquatic vegetation and associated wildlife (including fish)
  - 7.3. Possums
  - 7.4. Bats

- 7.5. Reptiles and amphibians
  - 7.6. Native bees
  - 7.7. Insects and invertebrates
  - 7.8. Butterflies.
8. A citizen science campaign was launched during the 2023 Nature Festival using established platforms such as iNaturalist, the Aussie Bird Count, and The Environment Protection Authority (EPA) Frog Census. The results from the campaign were represented with data records in the Atlas of Living Australia.

#### **Key observations from the field survey program and literature review**

9. Field surveys mapped, assessed and identified hundreds of species and vegetation associations that add to the knowledge of Adelaide Park Lands biodiversity. Key new species discovered by the field surveys include:
- 9.1. three species of microbat that were not previously recorded in the Adelaide Park Lands – bringing the total number of species to seven microbat species plus the Grey-headed Flying-fox, which was not present for the 2003 survey report.
  - 9.2. one Short-finned Eel (*Anguilla australis*) was observed in Torrens Lake, which represents the first observation of the species above city weir recorded during scientific surveys.
  - 9.3. there is high confidence that least two, potentially up to ten, unidentified species of native bee that have not been described in scientific literature. Additional species will be confirmed by bee experts and taxonomists.
  - 9.4. a rarely recorded species the Jewel Beetle (*Diphucrania trimentula*) was recorded twice for the first time in the Adelaide Park Lands and there are only four records of this species in South Australia.
10. List of all known vegetation communities, and flora and fauna species with conservation status:
- 10.1. Grey Box (*Eucalyptus microcarpa*) Grassy Woodland – Endangered in Aus
  - 10.2. Swollen Spear Grass (*Austrostipa gibbosa*) – Rare in SA
  - 10.3. Rock Logania (*Logania saxatilis*) – Rare in SA
  - 10.4. Mount Lofty Speedwell (*Veronica derwentiana* subsp. *homalodonta*) – Endangered in SA
  - 10.5. Upright Milfoil (*Myriophyllum crispatum*) – Vulnerable in SA
  - 10.6. Wavy Marshwort (*Nymphoides crenata*) – Rare in SA.
  - 10.7. Australasian Shoveler (*Spatula rhynchotis*) - Rare in SA
  - 10.8. Yellow-tailed Black Cockatoo (*Zanda funerea*) - Vulnerable in SA
  - 10.9. Common Brushtail Possum (*Trichosurus vulpecula*) - Rare in SA
  - 10.10. Grey-headed Flying-fox (*Pteropus poliocephalus*) - Rare in SA
  - 10.11. Chequered Copper Butterfly (*Lucia limbaria*) – Rare in Metropolitan Adelaide
  - 10.12. Eastern Water Skink (*Eulamprus quoyii*) - Vulnerable in Metropolitan Adelaide
11. A summary of key survey findings is provided in **Attachment A**. Overall, the survey indicates:
- 11.1. an increase knowledge in species diversity and abundance in the Adelaide Park Lands
  - 11.2. an increase in distribution of biodiversity in the Adelaide Park Lands
  - 11.3. the return of species to the Adelaide Park Lands through the creation of habitats (eg wetlands) and their associated resources.
12. Observations from individual field surveys and desktop analyses are summarised as:
- 12.1. Native grasslands and woodlands: two remnant rare flora species were recorded Swollen Spear Grass (*Austrostipa gibbosa*) and Rock Logania (*Logania saxatilis*). Other plant species with conservation status have been planted. The former Community Education Hub, now KBA 7 in G S Kingston Park / Wirrarninthi (Park 23) was assessed and mapped with appropriate zones. KBA condition is generally good with lower condition observed in the northern KBAs (3 and 4).
  - 12.2. Aquatic vegetation:
    - 12.2.1. The wetlands in Pakapakanthi / Victoria Park (Park 16), and a revegetated area of the

Adelaide Park Lands under the Hackney Road Bridge, are attracting and hosting a wide range of species that would not previously have visited the area, including a range of frogs, water birds, reptiles, fish, bees and other insects.

- 12.2.2. A significant decline (95%) in submerged aquatic vegetation in Torrens Lake has occurred since 2022.
- 12.3. Possums: significant populations of Brushtail and Ringtail Possums in the southern and northern Adelaide Park Lands. High numbers of Brushtail Possums were observed in Whitmore Square / Iparrityi but in other Squares.
- 12.4. Bats: species diversity was greatest in the south-eastern and northern Park Lands – most bat detectors observed five species and an abundance of calls. There was a surprising lack of bat activity along waterways and in the western Park Lands.
- 12.5. Birds: the field survey program had no field surveys for this subject based on the comparative abundance of data (than other subjects). Data gathered from previous City of Adelaide surveys, Atlas of Living Australia data, and BirdLife Australia records, and other sources reports 177 bird species were observed, dominated by a small number of abundant bird species, including Rainbow Lorikeets and Noisy Miners. This is consistent with urban environments featuring *Eucalyptus* canopy with limited understorey vegetation.
- 12.6. Reptiles and amphibians: 5 species of reptile and 1 frog species were reported from a 2017/18 CoA fauna survey. Atlas of Living Australia data (including Citizen Science records) reported 12 reptiles (1 snake, 2 turtles and 9 lizards) and 4 frogs. The field survey program did not comprehensively survey this subject; however, it observed 2 turtle species, 4 lizard species and 1 frog species.
- 12.7. Fish: 8 species of native fish and 3 exotic species were caught at five survey sites. The sites were selected to observe the impact of the Torrens Weir to upstream fish movement; results support that it impacted on at least two native species.
- 12.8. Native bees: A total of 548 native bees were caught, belonging to 68 species, with a further 3 species identified 'on the wing'.
- 12.9. Butterflies: Chequered Copper Butterflies (*Lucia limbaria*) were observed in multiple Adelaide Park Land locations including Lefevre Park / Nantu Wama (Park 6), Carriageway Park / Tuthangga (Park 17) and Golden Wattle Park / Mirnu Wirra (Park 21W), suggesting growing populations in addition to the original discovery site in Victoria Park / Pakapakanthi (Park 16).
- 12.10. Invertebrates (arthropods): 664 species of arthropods (mostly insects and spiders) were identified across four survey areas. While common species were seen at all four sites, each site recorded at least 260 unique species. Preliminary analysis revealed species from 165 unique Families of arthropod; further analysis may reveal unique species in the Adelaide Park Lands.

#### Next steps

13. The City of Adelaide is continuing to develop its digital data evidence base for the Adelaide Park Lands through a digital reporting framework to be delivered in the first quarter of 2024/25.
14. The reporting framework is investigating the potential to share data with the Biodiversity Database of SA and Atlas of Living Australia. This provides the capacity to regularly send and receive new data from researchers and citizen science programs and applications (such as iNaturalist).
15. The survey has informed, and will be delivered through, the City of Adelaide's Integrated Climate Strategy 2030.

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## Data and Supporting Information

Nil

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## Attachments

**Attachment A** – Adelaide Park Lands Biodiversity Survey Summary Report