BIO BLITZ

Julimar State Forest

2025









We acknowledge the Yued and Whadjuk Noongar peoples as the Traditional Custodians of the land on which the Julimar State Forest Bioblitz was conducted. We pay our respects to their Elders past, present, and emerging, and extend that respect to all Aboriginal and Torres Strait Islander peoples.

Julimar State Forest Bioblitz 2025 Report.

Held, 6 – 7 September 2025.

Prepared by the Conservation Council of WA & the Julimar Conservation and Forest Alliance. With thanks to the 94 citizen scientists, Team Leaders, Experts and volunteers that participated.

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Funding support: Bupa and Conservation Council of WA.

Cover: Julimar State Forest landscape by Amber Bateup.
Complex Castiarina crocicolor by @ziggymello (iNaturalist)
Stereum illudens by @eudoria (iNaturalist)
Caladenia filifera by K J Tullis (iNaturalist)
Isopedella cana by kimbap (iNaturalist)

Inside cover: Smoking ceremony by Amber Bateup.

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Left: Two keen participants inspecting a web on a twig.
Photo by Amber Bateup

EXECUTIVE SUMMARY

Over the weekend of 6–7 September 2025, 94 participants gathered at Julimar State Forest, Western Australia, to take part in the Julimar State Forest 2025 Bioblitz. The event brought together community members, scientists, taxonomic experts, and partner organisations to document the biodiversity of Julimar State Forest through an intensive, collaborative survey effort.

The aims of the bioblitz were to:

- Document biodiversity across a range of taxa and habitats within Julimar State Forest
- Engage community members in hands-on biodiversity survey methods
- Raise awareness of Julimar State Forest as a significant site to strengthen the call for national park designation
- Contribute high-quality, verifiable biodiversity records to public databases
- Support future monitoring, conservation planning, and land-use decision-making through the establishment of baseline data

Surveys were conducted across a range of vegetation types and habitats, including mixed woodlands of threatened Wandoo (*Eucalyptus wandoo*) and Marri (*Corymbia calophylla*), open forests of Jarrah (*Eucalyptus marginata*), and riparian communities, using a combination of daytime and nocturnal survey techniques. A total of 25 ecological surveys targeting ten taxonomic groups were conducted over the weekend, reflecting the biodiversity of the forest and the breadth of expertise involved.

Participants submitted their findings to the 'Julimar State Forest Bioblitz 2025' project on iNaturalist, of which **1,997 observations***, representing **380 species*** (204* classed as 'Research Grade'**), were recorded. Observations were supported by photographs, acoustic recordings, and expert verification where possible, ensuring the quality and reliability of the data collected. Additionally, habitat surveys were carried out over the weekend and a native bee survey postponed to October 2025.

* As of July 2026
** Research Grade status means that more than 2/3 of identifiers agree on a taxon at species-level.

The bioblitz yielded several notable records, including the elusive velvet worm (*Occiperipatoides gilesii*), the impressive smooth cage fungus (*Ileodictyon gracile*), several fungi species still being confirmed, the critically endangered woylie (*Bettongia penicillata ogilbyi*) (listed under the Western Australian Biodiversity Conservation Act 2016), and the threatened Carnaby's cockatoo (*Calyptorhynchus latirostris*). These findings highlight the high biodiversity value of Julimar State Forest and underscore its importance as a conservation area within the region.

Julimar State Forest is ecologically significant due to its diverse habitats, transitional landscapes, and role in supporting native flora and fauna, yet it faces ongoing pressures from land use and development. Community-led biodiversity surveys such as this bioblitz provide valuable baseline information and increase public awareness of the forest's conservation importance.

All records from the Julimar State Forest 2025 Bioblitz are publicly accessible via the iNaturalist project page, with the exception of threatened species records, for which exact locations are obscured to ensure species protection. These records will contribute to broader open-access biodiversity databases, including the Atlas of Living Australia.

The outcomes of the bioblitz will be used to inform future biodiversity surveys, support funding applications and conservation initiatives, and guide repeat monitoring efforts. The event also strengthened connections between community members, experts, and organisations, laying the groundwork for ongoing citizen science engagement and future bioblitzes in the region.

INTRODUCTION

Bioblitzes are short, intensive biodiversity survey events that bring together scientists, taxonomic experts, and community members to record as many species as possible within a defined area and timeframe (Hepburn et al., 2015).

By combining expert knowledge with community participation, bioblitzes generate valuable biodiversity data while also building public understanding of local ecosystems and conservation issues (Hoskins et al., 2026; Tiago et al., 2024).

The 2025 Bioblitz was held in Julimar State Forest, located approximately 90km north-east of Perth in Western Australia. The forest was selected as the focus of this bioblitz due to its high ecological diversity, range of vegetation types and habitats, and conservation significance within the region.

The forest represents the northernmost extent of the Northern Jarrah Forest, making it particularly vulnerable to climate change, altered fire regimes, and landscape fragmentation (Lawrence et al., 2022). It also plays an important ecological role as a transitional zone between bioregions, a refuge for forest-dependent species, including threatened and endemic species (e.g. BirdLife International, 2022; Burbidge et al., 2025).

Citizen science is particularly well suited to bioblitzes in areas such as Julimar State Forest. Involving trained volunteers alongside expert taxonomists allows broad spatial and taxonomic coverage in a short period, while also fostering community stewardship, environmental awareness, and hands-on learning (Hepburn et al., 2015; Tiago et al., 2024).

Data collected through these efforts, when supported by expert verification and robust data-handling procedures, contribute to publicly accessible biodiversity databases and inform future research, conservation, and land-use planning (Hoskins et al., 2026).

The bioblitz aimed to:

- Document biodiversity across multiple taxa and habitats, creating baseline data to support future monitoring and conservation
- Engage community members in hands-on biodiversity survey methods and skills development
- Contribute high-quality, verifiable biodiversity records to public databases, including iNaturalist and Atlas of Living Australia
- Raise awareness of Julimar State Forest as a significant site requiring protection, strengthening the case for national park designation

Together, these aims reflect the dual purpose of the bioblitz: to generate reliable biodiversity information for Julimar State Forest, and to strengthen connections between people, place, and conservation through active participation in ecological survey work.

In places like Julimar State Forest, citizen science is a really important way to gather biodiversity data across large landscapes, while also building stronger community connections to conservation.

Kelly Sheldrick
Citizen Science Program Manager, Conservation Council of WA

STUDY AREA: JULIMAR STATE FOREST

Julimar State Forest is located approximately 90 km north-east of Perth, within the Shire of Toodyay, Western Australia, and covers an area of around 28,600 hectares. The traditional owners of the land are the Noongar people, specifically the Yued and Whadjuk groups. The forest is managed by the Department of Biodiversity, Conservation and Attractions and forms part of a broader forested landscape within the Swan Coastal Plain and Jarrah Forest bioregions.

The forest contains a diverse array of vegetation types and habitats, reflecting variation in soils, topography, and hydrology. During the Julimar State Forest 2025 Bioblitz, key habitats surveyed included jarrah forest, wandoo woodland, and riparian zones. This habitat diversity provides shelter and resources for a wide range of flora and fauna, contributing to the forest's overall biodiversity value.

A map of Julimar State Forest showing the location of the bioblitz survey areas is provided in Figure 1, below.



Figure 1: Survey locations

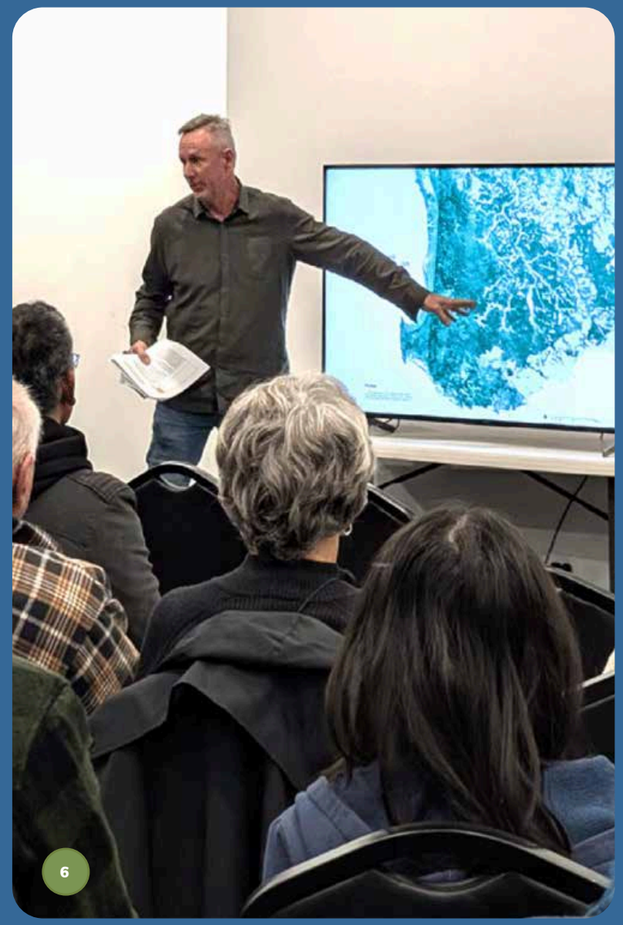












Photos: (1) Kelly Sheldrick, Citizen Science Program Manager at CCWA, welcoming everyone to the BioBlitz. (2) Daniel Heald, captivating us with the world of invertebrates. (3) Melissa Howe, Survey Lead, chatting to her group about the effects of fire on the landscape. (4) Citizen Science participants, smiling through the cold and wet conditions. (5) Julianne Waldock fascinating us with trapdoor spiders (6) Jason Fowler, Senior Campaigner of the WAFA, giving an overview of the forest and the current threats it faces.

EVENT OVERVIEW

The Julimar State Forest 2025 Bioblitz took place over the weekend of 6–7 September 2025, bringing together community members, students, professionals, and experts to survey the biodiversity of Julimar State Forest.

The weekend began on Friday 5 September with participant registration at the Environment Matters event in Toodyay. This well-attended registration included talks on Julimar State Forest, birds, native bees, trapdoor spiders, and an overview of bioblitzes and the use of iNaturalist.

On Saturday, activities commenced with a Welcome to Country at 9:00 am at Base Camp, Munyerring Springs Road, followed by a series of surveys conducted throughout the day and evening. Survey sessions ran across morning, afternoon, and evening periods, concluding on Sunday morning with a final set of morning surveys.

Survey efforts spanned both diurnal and nocturnal periods, enabling participants to record a wide variety of taxa across multiple habitats. Taxonomic focus areas included plants, fungi, birds, nocturnal mammals (including bats), reptiles, amphibians, and invertebrates (including trapdoor spiders and moths). Teams were led by experts and team leaders, who guided identification, ensured safety, and mentored participants.

Participants had a diverse mix of backgrounds, including local community members, students, professional ecologists, and Traditional Owners, creating an inclusive environment for learning, collaboration, and hands-on experience.

Photographs from the weekend highlight the energy and engagement of participants in the field while testimonials from participants reflect both personal learning outcomes and the broader sense of connection to Julimar State Forest.

We can't change the Julimar State Forest's conservation status alone. It takes real community effort, including partnering up with other groups, volunteers, and citizen scientists. Together, our voices are the real driving force behind getting the forest the permanent protection it deserves.

Melissa Adams
Secretary, Julimar Conservation & Forest Alliance

METHODS

SURVEY DESIGN

Survey effort during the Julimar State Forest 2025 Bioblitz varied among taxa and habitats depending on participant expertise, weather conditions, and logistical constraints. A combination of daytime and nocturnal surveys was used to maximise coverage across taxa and habitats.

The following surveys were conducted under the guidance of expert leads:

- **Three terrestrial invertebrate surveys** – hand searches and hand netting
- **Three native vegetation surveys** – visual surveys at designated sites
- **Three fungi surveys** – visual surveys
- **Three bird surveys (general)** – transects with auditory and visual identification
- **Two cockatoo nest surveys** - targeted searches following Birdlife nest search protocols (see, BirdLife Australia, 2024).
- **Three reptile surveys** – visual encounter with searches under logs and rocks
- **Three fire impact assessments** – surveys comparing burnt vs unburnt areas
- **One trapdoor spider survey** – searches for species at specific microhabitats
- **One bat survey (night)** – acoustic monitoring including deployment of two passive detectors (Wildlife Acoustic Song Meter Mini Bat) at base camp for 2 nights and a transect survey with active detectors (Wildlife Acoustic Echo Meter Touch 2).
- **One moth survey (night)** – light trap and visual surveys
- **One frog survey (night)** – auditory and visual surveys at waterways
- **One spotlighting survey (night)** – nocturnal transect walk with spotlight recording species seen

A native bee survey was planned but rescheduled due to unsuitable weather. Report for this survey has been included in the appendix.

DATA RECORDING AND VERIFICATION

Observations were recorded primarily through iNaturalist, with photographs and field notes submitted for verification. Vouchers were not collected to minimise impact. All records were checked and verified by expert survey leads, ensuring data quality and reliability.

SURVEY EFFORT SUMMARY

Across the weekend, participants conducted 25 surveys totalling 71 survey hours. Survey approaches varied among taxa and habitats depending on methods, expertise, and field conditions.

Right: Adam Peck, measuring the girth of a *Eucalyptus wandoo*

OBSERVATIONS/ RESULTS

As of July 2026, the Bioblitz recorded **a total of 380 species,** (204 classed as 'Research Grade'), across multiple taxa. These results provide a snapshot of biodiversity documented during the weekend and are not an exhaustive inventory of the forest. Some specimens, particularly fungi and invertebrates, could not be fully identified at the time of reporting and are still under investigation.

OBSERVATIONS BY TAXONOMIC GROUP

Taxonomic group	Number of species	Number of observations	Notes
Plants	144	1,004	
Fungi & Lichen	50	324	
Birds	42	56	
Mammals	7	40	
Reptiles	7	15	
Amphibians	2	10	
Invertebrates	82	359	Not including native bee survey
Arachnids	27	112	
Other	4	9	Fish (1 spp), Mollusc (1 spp), Protozoans (2 spp), Unknown (6 obs)
Total	**365***	**1929***	

* Not including casual observations or unknown/unlisted taxa

THREATENED SPECIES RECORDED

Common Name	Scientific Name	WA Status	IUCN Red List
Plants			
Common Woollybush	*Adenanthos cygnorum*	Not threatened	Vulnerable
Many-headed Dryandra	*Banksia polycephala*	Not threatened	Endangered
Round-fruit Banksia	*Banksia sphaerocarpa*	Not threatened	Vulnerable
Hooded Smokebush	*Conospermum glumaceum*	Not threatened	Vulnerable
Marri	*Corymbia calophylla*	Not threatened	Near Threatened
Yellow China Orchid	*Cyanicula ixioides ixioides*	Priority Four	Vulnerable
Wandoo	*Eucalyptus wandoo*	Not threatened	Vulnerable
Jarrah	*Eucalyptus marginata*	Not threatened	Near Threatened
Blue-leaved Jarrah	*Eucalyptus marginata thalassica*	Not threatened	Near Threatened
Catkin Grevillea	*Grevillea synapheae*	Not threatened	Vulnerable
	Grevillea synapheae synapheae	Not threatened	Vulnerable
Marble Hakea	*Hakea incrassata*	Not threatened	Vulnerable
Spreading Coneflower	*Isopogon divergens*	Not threatened	Vulnerable
Mammals			
Woylie	*Bettongia penicillata ogilbyi*	Critically Endangered	Critically Endangered
Birds			
Forest Red-tailed Black-Cockatoo	*Calyptorhynchus banksii naso*	Vulnerable	Not listed
Carnaby's Black-cockatoo	*Calyptorhynchus latirostris*	Endangered	Endangered

INATURALIST OBSERVATIONS AND SPECIES RECORDED*





Most observed species:



38
Blood Spider Orchid
(*Caladenia filifera*)
Photo by Samantha Campbell



34
Leafy Sundew
(*Drosera stolonifera*)
Photo by Angus Dempster

The top 3 abundant groups were:

38% PLANTS

22% INSECTS

13% FUNGI

* iNaturalist observation and species numbers will fluctuate over time as more species are identified or found to have been misidentified.

Citizen scientist with most observations:



@Gemfyre713

247
OBSERVATIONS

78
SPECIES

FUNGI & LICHEN

44
fungi

6
lichen species

324
total observations

Highlights

- Usnea Lichen (*Usnea scabrida*) is an indicator of good air quality and Rock Shield Lichens are indicators of healthy granite outcrops.
- White Punk fungi (*Laetiporus portentosus*) are important for nutrient cycling.
- Vermilion Amanita (*Amanita xanthocephala*) are regionally distinctive.
- Smooth Cage Fungus (*Ileodictyon gracile*) is a saprophyte (recycler) fungus with unusual morphology. Its fruit bodies are shaped like a lattice ball with a smelly brown slimy layer on the inside which contains the spores. Not often seen.



Smooth Cage Fungus (*Ileodictyon gracile*). Photo by Angus Dempster, (iNaturalist).

PLANTS

144
species recorded

1,004
total observations

Highlights

- Eight species of Drosera identified.

Along with several threatened or vulnerable species (IUCN Red List or WA), including:

- Yellow China Orchid (*Cyanicula ixioides ixioides*),
- Catkin Grevillea (*Grevillea synapheae*),
- Many-headed Dryandra (*Banksia polycephala*),
- Marble Hakea (*Hakea incrassata*),
- Common Woollybush (*Adenanthos cygnorum*),
- Round-fruit Banksia (*Banksia sphaerocarpa*),
- Hooded Smokebush *(Conospermum glumaceum)*,
- Marri (*Corymbia calophylla*),
- Wandoo (*Eucalyptus wandoo*),
- Jarrah (*Eucalyptus marginata*).



Erect Sundew (*Drosera stricticaulis)* Photo by @eeeeetp, (iNaturalist).



Yellow China Orchid (*Cyanicula ixioides ixioides*). Photo by Melissa Adams

BIRDS

42
species recorded

56
total observations

Highlights

- Threatened species observed included Carnaby's Black-Cockatoo (*Calyptorhynchus latirostris*) and Forest Red-tailed Black-Cockatoo (*Calyptorhynchus banksii naso*).
- Notable sightings also included Emu (*Dromaius novaehollandiae*), Little Eagle (*Hieraaetus morphnoides*), and Scarlet Robin (*Petroica boodang*).

Notes

Overall bird counts were considered low due to extreme wet weather over the bioblitz weekend.



Carnabys' Black-cockatoo (*Calyptorhynchus latirostris*). Photo by Warin Chotirosniramitnos, (iNaturalist)

MAMMALS

7
species recorded

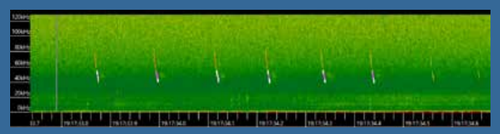
40
total observations

Highlights

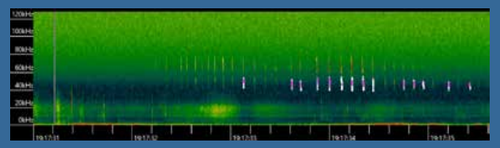
- Discovering we recorded bats despite not noticing any during the bat transect
- Spotting a critically endangered Woylie during the spotlighting survey

Notes

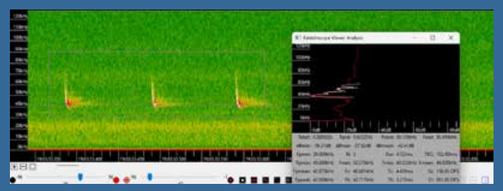
- Bat activity was considered low due to cold, wet weather.
- Wild pig activity noteworthy as introduced species, requiring management due to ecological impact.



Long-eared bat (Nyctophilus spp) recorded during transect.



Long-eared bat (Nyctophilus spp) recorded during transect.



On our passive detectors we had a few passes from a Southern forest bat (*Vespadelus regulus*) – the smallest bat in the southwest (only about 5g).

Key's Stick Insect (*Podacanthus keyi*). Photo by Amber Bateup.

INVERTEBRATES

27
arachnid species

112
arachnid observations

82
insect species

359
insect observations



Southern Velvet Worm
(*Occiperipatoides gilesii*),
Photo Daniel Heald, (iNaturalist)

Highlights

- The Spiny Trapdoor Spider (Family *Idiopidae*) builds silk-lined burrows with camouflaged trapdoors. This species comes from an ancient and distinct family of *mygalomorph* spiders. Even if not formally threatened, they are often ecologically significant indicators.
- The Velvet worm (*Occiperipatoides gilesii*) is found in banksia and eucalypt bush with low rainfall.

REPTILES

7
species recorded

15
total observations

Highlights

- Fraser's Delma (*Delma fraseri*) are small, cryptic legless lizard; interesting for herpetological diversity.

Notes

Overall reptile counts were considered low due to extreme wet weather and cold over the bioblitz weekend.



Western Tree Dtella
(*Gehyra variegata*).
Photo by @plantsonsamscam,
(iNaturalist)

AMPHIBIANS & FISH

2
species recorded

10
total observations

Highlights

- Crawling Brood Frogs (*Pseudophryne guentheri*) have unique reproductive behaviour and are small, cryptic species.
- The only fish was also recorded during the frog surveys, the Western Galaxias (*Galaxias occidentalis*), an endemic freshwater fish; interesting for stream health monitoring.



Crawling Brood Frog
(*Pseudophryne guentheri*).
Photo by Joy Chew
(iNaturalist)

RECORDING & IDENTIFICATION

All observations during the Julimar 2025 Bioblitz were recorded using iNaturalist, contributing directly to the Atlas of Living Australia (ALA) and other open-access biodiversity databases. Participants submitted photographs, audio recordings, and field notes, providing supporting evidence for species identifications.

Records were reviewed and verified by expert survey leads to ensure accuracy. Observations that could not be confidently identified (such as some fungi or cryptic invertebrates) were flagged for further investigation or specialist review. The inclusion of photographs, audio calls, and other documentation was particularly valuable for nocturnal species, including bats, frogs, and moths.

This approach ensured that all data were high-quality, verifiable, and suitable for long-term biodiversity monitoring and conservation planning, while also providing participants with a hands-on learning experience in scientific surveying and species identification.

Right: A citizen scientist capturing a species of fungi. Photo by Amber Bateup.



Yellow China Orchid
Recorded by @ziggymello



Australian Golden Orbweaver
Recorded by @jenavon1



Red Fingers
Recorded by @cult_of_detritus



Western Galaxias
Recorded by @angus_dempster



Rufous Treecreeper
Recorded by @apiccinini



Many-headed Dryandra
Recorded by @daniel_heald

COMMUNITY ENGAGEMENT & CAPACITY BUILDING

Below: Avid bird watchers keeping an eagle eye on things.
Photo by Amber Bateup.



The Julimar 2025 Bioblitz provided participants with hands-on experience in biodiversity surveying and identification, fostering both skills and confidence in ecological monitoring. Participants learned techniques such as plant and fungi identification, bird call recognition, spotlighting for nocturnal fauna, bat call acoustics and moth trapping, guided by experienced expert mentors and team leaders. This mentorship allowed volunteers to develop practical skills while gaining insights into professional survey methods.

Beyond technical skills, the bioblitz promoted broader environmental literacy and stewardship, enabling participants to better understand the ecological significance of Julimar State Forest and the value of conserving its diverse habitats. Feedback from participating organisations highlighted several key outcomes:

1. Engagement of a younger demographic, including students and early-career naturalists
2. Participation by people travelling from outside the region, expanding awareness of Julimar State Forest beyond local communities
3. Opportunities to explore and learn about a new site, including lesser-known habitats and species

Participant reflections and testimonials underscore the impact of the bioblitz on learning, community connection, and environmental awareness. Photographs from the weekend also illustrate active participation across all survey activities, capturing both fieldwork and mentorship moments.

By combining expert guidance with community involvement, the Julimar 2025 Bioblitz strengthened local capacity for biodiversity monitoring, created lasting connections between participants and the landscape, and contributed to the broader goals of citizen science and conservation education.

LIMITATIONS & FUTURE DIRECTIONS

While the Julimar 2025 Bioblitz successfully engaged participants and documented a broad snapshot of biodiversity, several limitations should be noted:

WEATHER
Heavy rain over the weekend affected attendance and survey conditions. Of the 120 people registered, 94 participants were able to attend. Many families with children were unable to join due to the weather.

TIME CONSTRAINTS
Limited lead-up time meant that participant communication and survey flow could have been improved, allowing for smoother coordination across teams.

TAXA NOT FULLY SURVEYED
Some planned surveys could not be completed or were impacted by conditions. For example, the native bee survey was postponed, and activity for reptiles, bats, and moths was low. Other seasonal taxa were likely missed due to the timing of the bioblitz.

NEED FOR REPEAT SURVEYS
Single-event data provide a snapshot only; repeat and seasonal surveys are essential to capture the full biodiversity and to establish long-term monitoring baselines.

UNIDENTIFIED SPECIES
Approximately 42% of records were identified to species level (research grade), with the remaining records identified only to genus or higher taxonomic levels. This is likely due to a combination of factors, including taxa that are difficult to identify from photographs alone (e.g. fungi, mosses and lichens), cryptic species, and groups that require more specialised or invasive identification methods. Despite this, these records still represent valuable data, contributing to baseline biodiversity knowledge, documenting species presence, and highlighting taxonomic groups that warrant further targeted survey or expert investigation.

Building on these findings, future directions could include repeat bioblitzes, targeted follow-up surveys, broader data use, and ongoing site protection to support long-term biodiversity monitoring and conservation.

CONCLUSION

The Julimar 2025 Bioblitz demonstrated the value of bringing people together to explore, document, and celebrate biodiversity. Despite challenging weather and time constraints, participants contributed high-quality observations across a range of taxa, providing a valuable snapshot of Julimar State Forest's ecological richness.

Julimar remains a site of high conservation importance, supporting diverse habitats and species, including threatened and range-restricted taxa. This bioblitz has reinforced the forest's significance and the need for ongoing monitoring, protection, and advocacy.

Importantly, the event showcased the power of community-led citizen science, combining the enthusiasm of volunteers with the guidance of experts to generate meaningful data, build skills, and foster stewardship. The Julimar Bioblitz sets a strong foundation for future surveys, continued learning, and long-term conservation outcomes.



Above: Citizen science requires nourishment, especially on a cold wintry day. Photo by Amber Bateup.

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APPENDICES

APPENDIX [A] - FULL SPECIES LISTS

Fungi

Team Leader: Roz Hart
Number of species: 44 **Observations:** 240

Common name	Scientific name / Taxon	Function
Vermilion Amanita	*Amanita xanthocephala*	Mycorrhizal
Bysso Skin Fungus	*Byssomerulius corium*	Decomposer
Red Fingers	*Colus pusillus*	Decomposer
Eucalypt Crepidotus	*Crepidotus eucalyptorum*	Decomposer
Dung-loving Deconica	*Deconica coprophila*	Decomposer
Tuart Nut Fungus	*Harknessia uromycoides*	Decomposer
Spatula Jelly	*Heterotextus peziziformis*	Decomposer
Smooth Cage Fungus	*Ileodictyon gracile*	Decomposer
White Punk	*Laetiporus portentosus*	Decomposer
Umber-brown Puffball	*Lycoperdon umbrinum*	Decomposer
Hairy Trumpet	*Panus fasciatus*	Decomposer
	Peziza austrogeaster	Decomposer
Dung Button	*Poronia erici*	Decomposer
Onion Earthball	*Scleroderma cepa*	Mycorrhizal
Purplish Stereum	*Stereum illudens*	Decomposer
Scarlet Bracket	*Trametes coccinea*	Decomposer
Witch's Butter	*Tremella mesenterica*	Decomposer
Burgundy Wood Tubaria	*Tubaria rufofulva*	Decomposer
Identified at a higher taxon level		
Jelly	*Family Auriculariaceae*	
Puffballs	*Genus Calvatia*	
Bracket	*Genus Coltricia*	Decomposer
Mushroom	*Genus Coprinellus*	
Inkcaps	*Genus Coprinopsis*	
Webcaps	*Family Cortinariaceae*	Mycorrhizal
Bird's nest	*Genus Crucibulum*	
Earthstars	*Genus Geastrum*	
Field and button mushrooms	*Genus Agaricus*	
Rustgills and Gyms	*Genus Gymnopilus*	Decomposer
Fiber Caps	*Genus Inocybe*	Mycorrhizal
Mushroom	*Genus Lepiota*	
Mushroom	*Genus Mallocybe*	
Bird's nest	*Genus Nidula*	
Mottlegills	*Genus Panaeolus*	
Pisolithus	*Genus Pisolithus*	Mycorrhizal
Shields	*Genus Pluteus*	
Shell	*Genus Resupinatus*	
Mold	*Genus Trichoderma*	

Common name	Scientific name / Taxon	Function
Unverified observations		
Post Fire cup fungus	*Anthracobia muelleri*	
Dark-tipped coral	*Clavulina vinaceocervina*	Mycorrhizal
Cellar fungus	*Coniophora puteana*	
Brick Red Laccaria	*Laccaria lateritia*	Mycorrhizal
Salmon gum Mushroom	*Phlebopus marginatus*	Decomposer
Common Pholiota	*Pholiota communis*	Decomposer

Lichen

Team Leader: Roz Hart
Number of species: 6 **Observations:** 84

Common name	Scientific name / Taxon	Status	Group
Usnea Lichen	*Usnea scabrida*		Beard Lichens
	Thysanothecium hookeri		Spindles and Structured Lichens
Identified at a higher taxon level			
Greenshield Lichens	*Genus Flavoparmelia*		Greenshield Lichens
Rock Shield Lichens	*Genus Xanthoparmelia*		Rock Shield Lichens
Unverified observations			
	Heterodea muelleri		Spindles and Structured Lichens
Bristly Beard Lichen	*Usnea hirta*		Beard Lichens

Mammals

Team Leaders: Carly Moir, (Spotlighting), Kelly Sheldrick (Bats)
Number of species: 8 **Observations:** 40

Common name	Scientific name / Taxon	Status	Group
Woylie	*Bettongia penicillata ogilbyi*	Critically Endangered - WA & EPBC Near Threatened - IUCN Red List	Marsupial
Western Grey Kangaroo	*Macropus fuliginosus*		Marsupial
	Macropus fuliginosus melanops		Marsupial
Wild Boar	*Sus scrofa*	Introduced	Mammal
Common Brushtail Possum	*Trichosurus vulpecula*		Marsupial
Western Short-beaked Echidna	*Tachyglossus aculeatus acanthion*		Monotreme
Southern Forest Bat	*Vespadelus regulus*		Bat
Identified at a higher taxon level			
Australian Long-eared Bats	Genus *Nyctophilus*		Bat

Insects

Team leader (Invertebrates): Daniel Heald
No. of species: 82 **No. of observations:** 359

Common name	Scientific name / Taxon	Status	Group
	Albastaspis xanthorrhoeae		Scale Insects
Clouded Footman	*Anestia ombrophanes*		Moth
European Honey Bee	*Apis mellifera*	Introduced	Bee
	Calliphora albifrontalis		Flies
	Camponotus chalceus		Ant
Bark-mimicking Grasshopper	*Coryphistes ruricola*		Grasshopper
	Dolichoderus omicron		Ant
	Drepanotermes tamminensis		Termite
Cryptic Bark Moth	*Gastrinodes argoplaca*		Moth
Eucalyptus Prominent Moth	*Hylaeora eucalypti*		Moth
Southern Meat Ant	*Iridomyrmex purpureus*		Ant
	Myrmecia forceps		Ant
	Myrmecia tepperi		Ant
Serrated crest-moth	*Nisista serrata*		Moth
	Paederus meyricki		Beetle
Key's Stick Insect	*Podacanthus keyi*		Phasmid
Green-head Ant	*Rhytidoponera metallica*		Ant
	Sylvicola dubius		Fly
Long-tailed Bombyx	*Trichiocercus sparshalli*		Moth
Gum Leaf Skeletoniser	*Uraba lugens*		Moth
Australian Painted Lady	*Vanessa kershawi*		Butterfly
Australian Twig-mimicking Katydid	*Zaprochilus australis*		Katydids
Desert Mid-lined Cockroach	*Zonioploca medilinea*		Cockroach
Identified at a higher taxon level			
Achilid Planthoppers	Family *Achilidae*		
Whiteflies	Family *Aleyrodidae*		
	Genus *Amphaces*		
	Genus *Ancyttalia*		
	Genus *Aporocera*		
Australian Grass Mantises	Genus *Archimantis*		
	Subfamily *Aspidiotinae*		
	Genus *Balta*		
Giant Cockroaches	Family *Blaberoidea*		
	Tribe *Broscini*		
	Genus *Callipappus*		
	Genus *Catocheilus*		
Gall and Forest Midges	Family *Cecidomyiidae*		
Cedarinias	Genus *Cedarinia*		
	Family *Cerambycidae*		
Chalcopterus Beetles	Genus *Chalcopteroides*		
	Genus *Chauliognathus*		
	Family *Chironomidae*		
	Complex *Castiarina crocicolor*		
	Genus *Coptotermes*		
Derbid Planthoppers	Family *Derbidae*		
	Genus *Dialeptopus*		
	Tribe *Diptychini*		
Predaceous Diving Beetles	Family *Dytiscidae*		
Broad-nosed Weevils	Subfamily *Entiminae*		
	Genus *Eublackburniella*		
Potter and Mason Wasps	Subfamily *Eumeninae*		
	Family *Eurybrachidae*		
	Genus *Geron*		
	Genus *Goniaea*		
True Crickets and Allies	Superfamily *Grylloidea*		

Common name	Scientific name / Taxon	Status	Group
Mole Crickets	Family *Gryllotalpidae*		
	Genus *Helina*		
Swift Moths	Family *Hepialidae*		
Balloon Flies	Genus *Hilara*		
Ichneumonid and Braconid Wasps	Superfamily *Ichneumonoidea*		
	Genus *Leioproctus*		
	Family *Limoniidae*		
Plant Bugs	Family *Miridae*		
Concealer Moths	Family *Oecophoridae*		
Coconut Ants	Genus *Papyrius*		
	Subfamily *Perginae*		
	Genus *Poliodule*		
	Genus *Pollanisus*		
	Infraorder *Proctotrupomorpha*		
Bark Lice, Book Lice, and Parasitic Lice	Order *Psocodea*		
	Family *Psychidae*		
	Genus *Pterolocera*		
	Family *Scarabaeidae*		
Window Flies	Family *Scenopinidae*		
Dark-winged Fungus Gnats	Family *Sciaridae*		
	Subfamily *Spondyliaspidinae*		
	Tribe *Stenocotini*		
	Genus *Tapinogyna*		
Fierce, Pennant, and Pavement Ants	Genus *Tetramorium*		
Tortricid Leafroller Moths	Family *Tortricidae*		
	Genus *Tritymba*		
Unverified observations			
Black-headed Bull Ant	Myrmecia nigriceps		Ant
Black-headed Sugar Ant	Camponotus nigriceps		Ant

Arachnids

Team leaders: Daniel Heald (Invertebrates), Rowan Lymbery (Trapdoor spiders)
Number of species: 27 **Observations:** 112

Common Name	Scientific Name	Threatened Status	Group
Huntsman	*Isopedella cana*		Spider
Redback Spider	*Latrodectus hasselti*	Not threatened	Spider
Arrowhead Wolf Spider	*Lycosa australicola*		Spider
Variable Peacock Spider	*Maratus chrysomelas*		Spider
Arid Semi-social Spider	*Phryganoporus nigrinus*		Spider
Australian Golden Orbweaver	*Trichonephila edulis*		Spider
Coastal Robust Scorpion	*Urodacus novaehollandiae*		Scorpion
Identified at a higher taxon level			
Wandering Ghost Spiders	Genus *Argoctenus*		
House Spiders	Genus *Badumna*		
Snout Mites	Family *Bdellidae*		
Jumping spiders	Tribe *Chrysillini*		
Leafcurling Sac Spiders	Genus *Clubiona*		
	Genus *Corasoides*		
Ground and Ant-mimic Sac Spiders	Family *Corinnidae*		
	Infraorder *Gamasina*		
Stealthy Ground Spiders	*Family Gnaphosidae*		
Ant-eating spiders	Genus *Habronestes*		
Flat spiders	Genus *Hemicloea*		
Spiny Trapdoor Spiders	Family *Idiopidae*		
Mites	Genus *Linopodes*		
Ground-hunting spiders	Genus *Miturgopelma*		
Harvestmen	Genus *Nunciella*		
Tree-trunk spiders	Genus *Tamopsis*		
True Velvet Mites	Family *Trombidiidae*		
Unverified observations			
Twig spider	*Acroaspis olorina*		Spider
Knobbled Orbweaver	*Socca pustulosa*		Spider
Crab spider	*Tharpyna simpsoni*		Spider



Insect and arachnid hunting. Photo by Amber Bateup.

Plants

Team leader (Plants): Rob Boase
Number of species: 144 **No. of observations:** 1,004

Common name	Scientific name / Taxon	Group	Status
Pom Pom	*Ptilotus manglesii*	Amaranthaceae	
Native Parsnip	*Trachymene pilosa*	Araliaceae	
Twining Fringe-lily	*Thysanotus patersonii*	Asparagaceae	
Purple Tassels	*Sowerbaea laxiflora*	Asparagaceae	
	Acanthocarpus canaliculatus	Asparagaceae	
Balga	*Xanthorrhoea preissii*	Asphodelaceae	
Blue Stars	*Chamaescilla corymbosa*	Asphodelaceae	
	Chamaescilla corymbosa corymbosa	Asphodelaceae	
Pale Grass Lily	*Caesia micrantha*	Asphodelaceae	
Common Billy Buttons	*Craspedia variabilis*	Asteraceae	
Coarse Bottle-Daisy	*Lagenophora huegelii*	Asteraceae	
Dwarf Beauty-Heads	*Blennospora drummondii*	Asteraceae	
Mangle's Sunray	*Rhodanthe manglesii*	Asteraceae	
Star of the Veldt	*Ursinia anthemoides*	Asteraceae	Introduced
	Lawrencella rosea	Asteraceae	
	Panaetia lessonii	Asteraceae	
	Quinetia urvillei	Asteraceae	
Pincushions	*Borya sphaerocephala*	Boryaceae	
Dwarf Sheoak	*Allocasuarina humilis*	Casuarinaceae	
Creamy Candles	*Stackhousia monogyna*	Celastraceae	
Dwarf Burchardia	*Burchardia multiflora*	Colchicaceae	
Early Nancy	*Wurmbea dioica*	Colchicaceae	
	Wurmbea dioica alba	Colchicaceae	
	Morelotia octandra	Cyperaceae	
Large Hibbertia	*Hibbertia lasiopus*	Dilleniaceae	
Yellow Buttercups	*Hibbertia hypericoides*	Dilleniaceae	
Bridal Rainbow	*Drosera macrantha*	Droseraceae	
Erect Sundew	*Drosera stricticaulis*	Droseraceae	
Leafy sundew	*Drosera stolonifera*	Droseraceae	
Pimpernel sundew	*Drosera glanduligera*	Droseraceae	
Pink Rainbow	*Drosera menziesii*	Droseraceae	
Red-leaved Sundew	*Drosera bulbosa*	Droseraceae	
	Drosera collina	Droseraceae	
	Drosera spilos	Droseraceae	
	Styphelia nitens	Ericaceae	
Broad Leaved Brown Pea	*Bossiaea ornata*	Fabaceae	
Common Brown Pea	*Bossiaea eriocarpa*	Fabaceae	
Common Hovea	*Hovea trisperma*	Fabaceae	
	Hovea trisperma grandiflora	Fabaceae	
Coral Vine	*Kennedia coccinea*	Fabaceae	
Devil's Pins	*Hovea pungens*	Fabaceae	
Drummond's Wattle	*Acacia drummondii*	Fabaceae	
Granny Bonnets	*Isotropis cuneifolia*	Fabaceae	
Handsome Wedge Pea	*Gompholobium knightianum*	Fabaceae	
Holly-Leaved Hovea	*Hovea chorizemifolia*	Fabaceae	
Prickly Bitter-Pea	*Daviesia decurrens*	Fabaceae	
	Daviesia decurrens hamata	Fabaceae	
Prickly Moses	*Acacia pulchella*	Fabaceae	
Prickly Poison	*Gastrolobium spinosum*	Fabaceae	
Running Postman	*Kennedia prostrata*	Fabaceae	
Thorny Mirbelia	*Mirbelia spinosa*	Fabaceae	
York Road Poison	*Gastrolobium calycinum*	Fabaceae	
	Daviesia hakeoides	Fabaceae	
	Daviesia hakeoides subnuda	Fabaceae	
	Gompholobium marginatum	Fabaceae	
	Templetonia drummondii	Fabaceae	
	Bossiaea spinescens	Fabaceae	
Bonfire Moss	*Funaria hygrometrica*	Funariaceae	
Blue Leschenaultia	*Leschenaultia biloba*	Goodeniaceae	
Brilliant-flowered Tiurndin	*Tribonanthes elongata*	Haemodoraceae	
Red and Green Kangaroo Paw	*Anigozanthos manglesii*	Haemodoraceae	
White Cottonhead	*Conostylis setosa*	Haemodoraceae	
Tiny Star	*Pauridia glabella*	Hypoxidaceae	
	Pauridia occidentalis	Hypoxidaceae	
	Pauridia occidentalis quadriloba	Hypoxidaceae	
Morning Iris	*Orthrosanthus laxus*	Iridaceae	
Onion Grass	*Romulea rosea*	Iridaceae	Introduced
Stalked Mistletoe	*Amyema miquelii*	Loranthaceae	
Western Australian Christmas Tree	*Nuytsia floribunda*	Loranthaceae	
Jarrah	*Eucalyptus marginata*	Myrtaceae	Near Threatened - IUCN Red List
Blue-leaved Jarrah	*Eucalyptus marginata thalassica*	Myrtaceae	Near Threatened - IUCN Red List
Marri	*Corymbia calophylla*	Myrtaceae	Near Threatened - IUCN Red List
Roadside Teatree	*Leptospermopsis erubescens*	Myrtaceae	
Wandoo	*Eucalyptus wandoo*	Myrtaceae	Near Threatened - IUCN Red List
White Myrtle	*Hypocalymma angustifolium*	Myrtaceae	
	Calytrix sylvana	Myrtaceae	
	Olax benthamiana	Olacaceae	
Banded Greenhood	*Pterostylis vittata*	Orchidoideae	
Blood spider orchid	*Caladenia filifera*	Orchidoideae	
Blue Fairy Orchid	*Pheladenia deformis*	Orchidoideae	
Cowslip Orchid	*Caladenia flava*	Orchidoideae	
	Caladenia flava flava	Orchidoideae	
Crimson Spider Orchid	*Caladenia footeana*	Orchidoideae	
Dancing Spider Orchid	*Caladenia discoidea*	Orchidoideae	
Hare Orchid	*Leporella fimbriata*	Orchidoideae	
Jug Orchid	*Pterostylis recurva*	Orchidoideae	
Leaping Spider Orchid	*Caladenia macrostylis*	Orchidoideae	
Lemon-scented Sun Orchid	*Thelymitra antennifera*	Orchidoideae	
Pink Fairy Orchid	*Caladenia reptans*	Orchidoideae	
Little Pink Fairy Orchid	*Caladenia reptans reptans*	Orchidoideae	
Rabbit Orchid	*Leptoceras menziesii*	Orchidoideae	
Reaching Spider Orchid	*Caladenia arrecta*	Orchidoideae	
Red-banded Greenhood	*Pterostylis sanguinea*	Orchidoideae	
Red Beaks	*Pyrorchis nigricans*	Orchidoideae	
Short-eared Snail Orchid	*Pterostylis brevisepala*	Orchidoideae	
Silky Blue Orchid	*Cyanicula sericea*	Orchidoideae	
Small-flowered Donkey Orchid	*Diuris porrifolia*	Orchidoideae	
Sugar Orchid	*Caladenia saccharata*	Orchidoideae	
Yellow China Orchid	*Cyanicula ixioides ixioides*	Orchidoideae	Priority 4 - WA; Vulnerable - IUCN Red List
Purple Woodsorrel	*Oxalis purpurea*	Oxalidaceae	Introduced
False Boronia	*Phyllanthus calycinus*	Phyllanthaceae	
Foxtail Mulga Grass	*Neurachne alopecuroidea*	Poaceae	
	Triquetrella papillata	Pottiaceae	
Blue Pimpernel	*Lysimachia loeflingii*	Primulaceae	Introduced
Candle Hakea	*Hakea ruscifolia*	Proteaceae	

Common name	Scientific name / Taxon	Group	Status
Catkin Grevillea	*Grevillea synapheae*	Proteaceae	Vulnerable - IUCN Red List
	Grevillea synapheae synapheae	Proteaceae	
Common Woollybush	*Adenanthos cygnorum*	Proteaceae	
Couch honeypot	*Banksia dallanneyi*	Proteaceae	
Fraser's Banksia	*Banksia fraseri*	Proteaceae	
	Banksia fraseri fraseri	Proteaceae	
Harsh Hakea	*Hakea prostrata*	Proteaceae	
Honey Bush	*Hakea lissocarpha*	Proteaceae	
Hooded Smokebush	*Conospermum glumaceum*	Proteaceae	
Many-headed Dryandra	*Banksia polycephala*	Proteaceae	
Marble Hakea	*Hakea incrassata*	Proteaceae	
Narrow-fruited Hakea	*Hakea stenocarpa*	Proteaceae	
Parrot Bush	*Banksia sessilis*	Proteaceae	
	Banksia sessilis sessilis	Proteaceae	
Pincushion Coneflower	*Isopogon dubius*	Proteaceae	
Pingle	*Banksia squarrosa*	Proteaceae	
	Banksia squarrosa squarrosa	Proteaceae	
Round-fruit Banksia	*Banksia sphaerocarpa*	Proteaceae	
Synaphea	*Synaphea petiolaris*	Proteaceae	
Woolly-flowered Grevillea	*Grevillea pilulifera*	Proteaceae	
	Banksia bipinnatifida multifida	Proteaceae	
	Petrophile striata	Proteaceae	
Rock Fern	*Cheilanthes austrotenuifolia*	Pteridaceae	
Karri Hazel	*Trymalium odoratissimum*	Rhamnaceae	
Cow Kicks	*Stylidium schoenoides*	Stylidiaceae	
Little Fountain Triggerplant	*Stylidium tenue*	Stylidiaceae	
Queen Triggerplant	*Stylidium affine*	Stylidiaceae	
Scented Banjine	*Pimelea suaveolens*	Thymelaeaceae	
Silvery Leaved Pimelea	*Pimelea argentea*	Thymelaeaceae	
Sandplain Zamia	*Macrozamia fraseri*	Zamiaceae	
Zamia Palm	*Macrozamia riedlei*	Zamiaceae	
Identified at a higher taxon level			
Veldtgrasses	Genus *Ehrharta*		
	Genus *Entosthodon*		
Pocket Mosses	Genus *Fissidens*		
	Genus *Grimmia*		
Section Glomeratae	*Section Glomeratae*		
	Genus *Laxmannia*		
	Genus *Lepidosperma*		
	Genus *Parakeelya (taxon split- was*	*Calandrinia)*	
	Genus *Phaeoceros*		
Unverified observations			
Golden Wreath Wattle	*Acacia saligna*	Fabaceae	
Common Donkey Orchid	*Diuris corymbosa*	Orchidoideae	
Bristly Cottonhead	*Conostylis setigera*	Conostylis	
Rush Leaved Patersonia	*Patersonia juncea*	Patersonia	
Prickly Conostylis	*Conostylis aculeata*	Conostylis	
Bloodroot	*Haemodorum spicatum*	Haemodorum	
Variegated Featherflower	*Verticordia huegelii*	Verticordia	
Borya laciniata	*Borya laciniata*	*Borya*	
Tufted Thread-Moss	*Ptychostomum imbricatulum*	*Ptychostomum*	

Birds

Team Leader: Max Howard
Number of species: 42 **Observations:** 56

Common name	Scientific name	Status
Australian Magpie	*Gymnorhina tibicen*	
Australian Owlet-nightjar	*Aegotheles cristatus*	
Australian Ringneck	*Barnardius zonarius semitorquatus*	
	Barnardius zonarius zonarius	
Australian Wood Duck	*Chenonetta jubata*	
Brown Honeyeater	*Lichmera indistincta*	
Brown-headed Honeyeater	*Melithreptus brevirostris*	
Brown Goshawk / Collared Sparrowhawk (ID uncertain)	*Accipiter fasciatus / Accipiter cirrocephalus*	
Carnaby's Black-Cockatoo	*Calyptorhynchus latirostris*	Endangered – EPBC; Endangered – WA
Corella (Little or Western)	*Cacatua sanguinea / Cacatua pastinator*	
Dusky Woodswallow	*Artamus cyanopterus perthi*	
Emu	*Dromaius novaehollandiae*	
Fan-tailed Cuckoo	*Cacomantis flabelliformis*	
Forest Red-tailed Black-Cockatoo	*Calyptorhynchus banksii naso*	Vulnerable – EPBC; Vulnerable – WA
Gilbert's Honeyeater	*Melithreptus chloropsis*	
Grey Currawong	*Strepera versicolor plumbea*	
Grey Fantail	*Rhipidura albiscapa*	
Grey Shrike-thrush	*Colluricincla harmonica*	
Jacky Winter	*Microeca fascinans*	
Laughing Kookaburra	*Dacelo novaeguineae*	Introduced
Little Eagle	*Hieraaetus morphnoides*	
Painted Button-quail	*Turnix varius*	
Pacific Black Duck	*Anas superciliosa*	
Red Wattlebird	*Anthochaera carunculata woodwardi*	
Red-capped Parrot	*Purpureicephalus spurius*	
Red-capped Robin	*Petroica goodenovii*	
Rufous Treecreeper	*Climacteris rufa*	
Rufous Whistler	*Pachycephala rufiventris*	
Scarlet Robin	*Petroica boodang*	
Shining Bronze-Cuckoo	*Chrysococcyx lucidus*	
Singing Honeyeater	*Gavicalis virescens virescens*	
Splendid Fairy-wren	*Malurus splendens*	
Striated Pardalote	*Pardalotus striatus substriatus*	
Tree Martin	*Petrochelidon neglecta*	
Western Gerygone	*Gerygone fusca fusca*	
Western Spinebill	*Acanthorhynchus superciliosus*	
Western Thornbill	*Acanthiza inornata*	
Western Yellow Robin	*Eopsaltria griseogularis*	
Western Golden Whistler	*Pachycephala pectoralis occidentalis*	
Weebill	*Smicrornis brevirostris*	
Willie Wagtail	*Rhipidura leucophrys leucophrys*	
Yellow-plumed Honeyeater	*Ptilotula ornata*	

Reptiles

Team Leader: Forrest He
Number of species: 7 **Observations:** 15

Common name	Scientific name / Taxon	Status	Group
Fraser's Delma	*Delma fraseri*		Lizard
Pretty Worm-Lizard	*Aprasia pulchella*		Lizard
Shingleback	*Tiliqua rugosa rugosa*		Lizard
Southwestern Clawless Gecko	*Crenadactylus ocellatus*		Gecko
Thick-tailed Barking Gecko	*Underwoodisaurus milii*		Gecko
Wheatbelt Stone Gecko	*Diplodactylus granariensis*		Gecko
Western Tree Dtella	*Gehyra variegata*		Gecko

Amphibians

Team Leader: Forrest He
Number of species: 2 **Observations:** 10

Common name	Scientific name / Taxon	Status	Group
Bleating Froglet	*Crinia pseudinsignifera*		Typical Froglets
Crawling Brood Frog	*Pseudophryne guentheri*		Brood Frogs

Other

Number of species: 4 **Observations:** 6

Taxonomic group	Common name	Scientific name	Status
Fish	Western Galaxias	*Galaxias occidentalis*	
Mollusc	Land Snail	Genus *Bothriembryon*	
Protozoan	Slime Mold	Order *Physarales*	
Protozoan	Testate Amoeba	Genus *Arcella*	



Max Howard showing participants chew markings on a marri nut that has been made by black cockatoos accessing seeds. Photo by Amber Bateup.

APPENDIX [B]

CARNABY'S COCKATOO NEST SURVEY REPORT

Team Leader: Adam Peck

Background
The 2025 Julimar Bioblitz took place on the weekend of 6-7 September 2025. Adam Peck led two surveys to inspect tree hollows for Carnaby's nests. Julimar is known to be a breeding site for Carnaby's, but few nests are confirmed in the Birdlife breeding database. To date, no comprehensive surveys have been completed. The aim of this work was twofold: to look for nests and to train Julimar Conservation and Forest Alliance (JCAFA) volunteers in the methodology.

Methods
Two methods were used. The traditional 'tap and flush' method was used on all trees. This involves tapping prospective trees (ones with suitable hollows) on the trunk with a stick and looking to see if birds flush (come to the entrance). Hollows within reach were then inspected with 'cocky cam', a 12m telescopic pole with wireless camera. The work was carried out using Birdlife WA's Animal Ethics approval.

Surveys
- Morning 6/9/25 (9.30am to midday). A group of ten did the morning survey, in the area north and west of the Munyerring Spring base camp. Melissa, Greg and Vicki from JCAFA were in this group.
- Afternoon 6/9/25 (1-3.30pm). A group of six surveyed on the Bindoon Spring Road. Sharon from JCAFA was in this group.

Results
No active nests were located. In the morning, roughly 30 trees were surveyed. These were almost all Wandoo trees, with a few Marri. Lots of large hollows were inspected and many appear to be suitable for Carnaby's nesting. In the afternoon, roughly 20 trees were surveyed, all Wandoo. Six of these were from the Birdlife database (TOOJULH002, 003, 004,005, 017 and 018). Data from these trees were entered into Survey123 as requested by Birdlife WA. Heavy rainfall before and during the event hindered access to some areas and made surveying difficult.

Discussion
It is not surprising that no nests were found. Locating nests of Carnaby's without a thorough knowledge of previous and current activity is like finding a needle in a haystack. Julimar is a very large area with potentially thousands of suitable hollow bearing trees. It may take several years to build up an accurate picture of the most reliable nesting areas within the forest. Timing may also be a factor. Peak Carnaby's breeding is usually September to January. However, timing can be highly variable from year to year and site to site. Autumn rainfall is a good predictor of an early, good breeding season (Saunders et al). Poor rainfall in autumn 2025 may mean that early September was too soon to start surveys this year. Only one sighting of Carnaby's was recorded during the bioblitz (early on Saturday morning), which indicates that few if any Carnaby's were nesting in the vicinity at that time.

Next steps
The area around Munyerring Spring was selected due to intel from Max Howard. Max also thinks the area just NW of the junction of Heine Road and Julimar Road has been used by Carnaby's for nesting. These areas and others where Carnaby's are seen and heard in spring should be visited by JCAFA members and notes taken to build up a better picture of Carnaby's spring movements. Adam can potentially return to do more surveys mid to late October. Any confirmed nests should be added to the Birdlife database and trees tagged to aid future surveys. Additionally, anecdotal reports of the presence of up to 50 artificial hollows in Julimar (pers comm M Giroud) should be investigated and these hollows also surveyed. Ideally, one or more members of JCAFA should gain enough experience to do surveys under the Birdlife WA approval. Purchasing a cocky cam, DBH tape and tagging kit would also assist in this respect.

Conclusion
The 2025 Julimar Bioblitz Carnaby's surveys should not be seen as a failure. It was a good way to introduce JCAFA members to the methods used to locate nests and to learn about breeding behaviour and ecology. There is great potential to use Carnaby's as an umbrella species to protect large parts of Julimar from mining, destructive prescribed burning and other threats. The success of the Cocanarup Conservation Alliance in stopping mining near Ravensthorpe is a great example of this strategy. A large part of that success was the implementation of best practice surveying and mapping of Carnaby's nests, supported by Birdlife WA. This example should be followed to assist in the goal to make Julimar into a National Park, protected in perpetuity.



APPENDIX [C]

NATIVE BEE REPORT
(As part of the Great Southern Bioblitz 2025)

Team Leader: Dr Kit Prendergast

Native bees are a precious component of biodiversity, and many play important roles in the structure and functioning of ecosystems (Potts et al. 2016). Their diverse ecologies (Michener 2007), in terms of nesting substrate requirements, specialisation or generalisation on pollen resources, preferences or reliance on particular flowering plants, body size, and phenologies, means that they are bioindicators of ecosystems, and the composition of bee assemblages can provide insights into ecosystem functioning and responses to environmental change.

Australian native bees represent a major component of biodiversity. Despite this, there is little known about the native bee assemblages in many parts of Australia. There exist large knowledge gaps about their diversity, distribution, plant interactions, and phenology. There are over 1,700 described species, yet we estimate there are at least 500 undescribed species. Many places have never been surveyed for native bees before, even ecologically important areas like nature reserves and state forests. We have limited information on what native bees visit which plants, and which plants are visited by native bees, hampering our ability to ensure pollination of plants through protecting their pollinators, and conduct targeted plantings for pollinators. We have very limited ongoing data so we lack an understanding about their phenology and therefore how climate change is influencing this as well.

Southwest Western Australia is an internationally recognised biodiversity hotspot. There have been few systematic surveys, however past collection efforts largely by Dr Terry Houtson revealed a high biodiversity of native bees (Houston 2000; Houston 2011). Systematic surveys by Dr Kit Prendergast on the Swan Coastal Plain and the northern Jarrah forest have further revealed this region hosts an incredible biodiversity of native bees, including many undescribed species, new range records, new host records and new behaviours e.g. (Prendergast 2019b, 2020b; Prendergast 2020c; Prendergast 2023b, c, a, d; Prendergast and Willers 2024). Dr Terry Houston has further discovered many new species, behaviours and host interactions e.g. (Houston et al. 2023; Houston 2024). However, many areas still remain unsurveyed.

Whilst species-level identification via citizen science records is very difficult for most invertebrates (Van Horn et al. 2018; Mesaglio et al. 2023; Xue 2025), citizen science has many benefits including records of higher level taxa, increasing the survey efforts, and when paired with professional scientists, allows on-the-ground educational opportunities (Kobori et al. 2016).

The Great Southern BioBlitz (https://www.greatsouthernbioblitz.org/about-1) is an opportunity for all Southern Hemisphere countries to record organisms during Spring, run by a grassroots network of keen citizen scientists. Great Southern BioBlitz 2025 ran from October 24th-27th, with participants in the event will then having a further 14 days to upload and identify all of their observations made during this period to the iNaturalist platform.

Methods

Surveys were conducted during the Great Southern Bioblitz period in October 2025. Surveys were conducted on Oct 25th at Neerabup Nature Reserve and Oct 26th at Julimar State Forest.

Sites

Neerabup Nature Reserve : Oct 25th 2025
Neerabup NR covers 937 ha and is a Class A conservation reserve (https://www.bushlandperth.org.au/wp-content/uploads/2018/01/ParksandReservesofYanchepandNeerabup2012.pdf). The area is TEC 26a Melaleuca huegelii – Melaleuca systena shrublands of limestone ridges. There area is mostly low shrub with open patches and some taller banksia and acacia dotted around. Species in flower include: Conosytlis sp, Hemiandra pungens, Hibbertia hypericoides, Melaleuca systena (and potentially Melaleuca sp Wanneroo), Petrophilie macrostachya, Phyllanthus calycinus, Jacksonia sternbergiana, Banksia attenuata, Calothamnus quadrifidus, Stylidium, some everlastings and other small annuals.



Julimar State Forest – Oct 26th 2025
Julimar State Forest is 28,563 (ha), situated in the Avon River Catchment and is vital to the surface and ground water streams that supply the Avon and Swan Rivers. It forms part of the globally significant Southwest Australia Ecoregion (SWAE). The area part of the southwest biodiversity hotspot, and has a rich diversity of species that are under threat. It is recognised an area of international significance. Julimar Forest is one of the last remaining areas of wandoo, marri and jarrah forests to the northeast of Perth. Its proximity to the Avon Valley National Park, the Walyunga National park and the Bindoon Training Area adds to its conservation significance (https://julimarcafa.org.au/about-julimar-state-forest/). There are at least 20 vegetation communities within Julimar. Over 500 wildflower species have been found in the Forest including 27 known priority species. However, during the time of the surveys there was minimal floral diversity and none of the trees were in flower. The main flowers were herbaceous annuals, especially native Asteraceae and some Stylidium.



Survey methodology
Surveys were conducted from 11:00-12:30 am by Kit Prendergast native bee expert using targeted sweep netting, and then 12:30-2:00 pm by the community scientists using the iNaturalist photography platform. This time period is the best time for observing bees foraging due to the warmer weather. Native bees were collected by a Dr Kit Prendergast using targeted sweepnetting. This method is the most effective at collecting the greatest abundance and diversity of native bees in this region (Prendergast et al. 2020), and allows identification of floral hosts (Prendergast and Hogendoorn 2021). Kit Prendergast received a Fauna Collecting licence by DBCA.

Citizen scientists then joined Kit and looked for bees to record via taking a photograph and uploading it to iNaturalist. This also allowed them to learn about native bee identification, ecology and native bee spotting tips from an expert. Kit also showed the participants the specimens she collected. Prior to the Bioblitzes, in September CCWA held a Bioblitz workshop in which some participants attended during which Kit Prendergast gave a course on native bee taxonomy and identification.

The iNaturalist projects can be found at the following links:
Neerabup: https://inaturalist.ala.org.au/projects/great-southern-bioblitz-2025-greater-perth
Julimar: https://www.inaturalist.org/projects/great-southern-bioblitz-2025-avon-west-wa

Collected species were pinned and labelled with location, GPS location, date of collection, collector, host plant, and given a unique identifier number. Species were identified by K.S. Prendergast using published descriptions, keys to genera (where available) (e.g. see references in (Houston 2018)), and with reference to a previous collection of native bees collected on the Swan Coastal Plain (Prendergast 2019a, 2020a), which in turn were cross-checked with the WA Museum Entomology collection. When a species could not be keyed out or did not match any published descriptions, it was assigned a unique morphospecies ID. Specimens will be donated to the WA Museum.

Results and Discussion

Neerabup
A total of 17 native bees belonging to five species in three genera and two families (Megachilidae and Colletidae) were recorded by Dr Kit Prendergast from four plant species (Table 1).

Leioproctus (Urocolletes) rhodurus is interesting as it has the colouration of many megachilid species (including M. canifrons), and likely represents a case of Mullerian mimicry. Despite the Melaleuca being abundant, very few native bees were collected from it, even though Melaleuca is generally very attractive to native bees (Prendergast 2023e). Unfortunately only a few Jacksonia sericea were in flower, but these already attracted a high number of native bees, and it is likely that more native bees would be recorded as the Jacksonia reaches peak flowering (Prendergast 2023e). Jacksonia sericea is also the host plant of Leioproctus zephyr (Prendergast 2022); it would be interesting to conduct surveys when the flower is in peak during the time of L. zephyr's activity period (mainly Dec-Jan) to determine if this rare oligolectic bee occurs here.

Hylaeus (Macrohylaeus) alcyoneus is oligolectic on Proteaceae (specialises on the pollen) (Alcock and Houston 1987). Males were observed defending Banksia spikes (https://www.instagram.com/bee.babette_performer/reel/DQVQBpoDslH/?hl=en). A female Megachilid was observed entering a burrow, but unfortunately it was not possible to observe what species it was.

Table 1. Native bees and plant host associations at the GSB 2025 collected by Dr Kit Prendergast at Neerabup NR Oct 25th

		Plant species visited			
		Melalueca systena	*Stylidium neurophyllum*	*Jacksonia sericea*	*Banksia attenuata*
Native bee species	*Megachile (Hackeriapis) canifrons*	1			
	Leioproctus (Urocolletes) rhodurus		3		
	Leioproctus plumosus			2	
	Megachile (Austrochile) remotula			6	
	Hylaeus (Macrohylaeus) alcyoneus				5

Only *Apis mellifera* were recorded by citizen scientists via the iNaturalist GSB project at Neerabup.

Julimar
A total of three species in two genera and two families (Halictidae and Colletidae) were recorded by Dr Kit Prendergast from three plant species (Table 2). The lack of flowers other than small annuals may explain the low diversity of native bees during the survey. The small halictids were relatively abundant. All taxa are ground nesting bees but nests were not seen.

Table 2. Native bees and plant host associations at the GSB 2025 collected by Dr Kit Prendergast at Julimar State Forest Oct 26th

		Plant species visited		
		Hyalosperma?	Waitzia acuminata	Stylidium tenue
Native bee species	Leioproctus sp. 1			1
	Lasioglossum (Chilalictus) pyton?	5	4	
	Lasioglossum (Chilalictus) castor		1	

At the Julimar Bioblitz citizen scientists recorded in addition to the European honey bee Apis mellifera, three Lasioglossum (Chilalictus) observations, and one Lipotriches (Austronomia) flavoviridis observation.

Conclusion
Neerabup and Julimar represent important areas for biodiversity conservation. With no native bee surveys in these area to date, these surveys add to our knowledge of the biodiversity and host associations in these areas.

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APPENDIX [D]

IN THE MEDIA

DBCA Bushland News

Summer 2025-26
Article by Melissa Adams, Secretary JCAFA
Download here



Toodyay Herald articles

October, 2025 edition, p.32
Julimar State Forest BioBlitz reveals rich biodiversity.
Article by Sharon Richards, Chair, JCAFA.
Download here.

October, 2025 edition, p.7
Julimar (Doorla-Maart) holds memory, spirit and life.
Article by Noongar Kaartdijin Aboriginal Corporation.
Download here.


Julimar Forest BioBlitz Reveals Rich Biodiversity

Julimar (Doorla-Maart) holds memory, spirit and life

Upcoming first

RTRFM Radio
On the Record

7th of October, 2025

Interview with Kelly Sheldrick,
Citizen Science Program Manager & Ecologist at the Conservation Council of WA

Julimar Brook. Photo by Amber Bateup.

BIO BLITZ

Julimar State Forest

2025

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Conservation Council of WA.