

FINAL REPORT

Toodyay BioBlitz



SEPTEMBER
2015



Australian Government

National
Landcare
Programme



wheatbelt
natural resource
management



This publication is produced by Wheatbelt NRM through funding from the Australian Government's National Landcare Programme.



● *Sundew* (Wayne Clarke)



Acknowledgements:

Wheatbelt NRM would like to thank the following groups and individuals for their contributions and efforts in helping run the successful 2015 Toodyay BioBlitz.

- **Toodyay Naturalists' Club members** – for their ideas and assistance in planning the event.
- **Brian and Robyn Foley | Don and Eva Smith | Ron Witt** – for access to their properties for data collection during the event, and for their assistance before and during the event.
- **Robert Huston from the Department of Parks and Wildlife (DPaW)** – for granting access to the Julimar State Forest during the event.
- **Kelvin and Trinette Ryan** – for allowing participants to camp on their property, and for their assistance before and during the event.
- **Toodyay Lions Club** – for catering on the Saturday evening to a very appreciative crowd.
- **Sue Eldridge** – for being our First Aid Officer.
- **Paul Van Heurck** – for collating the invertebrate information, post event.
- **Jacque Lucas and Cate Tauss** – for plant identification post event.
- **Team Leaders and BioBlitz volunteers** – for your invaluable assistance – we couldn't have done it without you!

Graphic design:

Wheatbelt NRM

CONTENTS

Introduction	2
The Site	5
Survey Methodology	8
Results	9
Threats and Recommendations	11
Species List	12
References	25

● COVER – *Barking Gecko* (Wayne Clarke)

BACKGROUND

The 2015 Toodyay BioBlitz was the tenth BioBlitz held in the Wheatbelt and was jointly organised by Wheatbelt NRM and the Toodyay Naturalists' Club.

The collaborative, community-based, biological survey was held over 24 hours during the 12-13 September 2015 at four private properties on the Bindoon-Dewars Pool Road in the Shire of Toodyay, totalling almost 360 hectares of remnant vegetation and farmland. Surveys were also conducted in the adjacent Julimar State Forest.

Professional and amateur biologists, ecologists and naturalists worked together as 'citizen scientists', conducting fieldwork with local community members and participants from across the South West, to discover more about this area's high conservation value bushland and biodiversity.

Information and data obtained during this BioBlitz will provide useful indicators of environmental quality to various stakeholders and serve as a baseline for future monitoring and management of the remnant bushland.

This report summarises findings from the event, identifies various species found during the survey, and identifies environmental management issues.



● *Moth Caterpillar* (Lyn Phillips)

PROJECT AIM

The aim of the 2015 Toodyay BioBlitz was to increase the local community's interest in and awareness of the area's biological richness, while enhancing the community's skills and capacity for engaging in biodiversity conservation activities.

Activities that manage plants, animals and fire events have been ongoing in the bushland area, with occasional bird, mammal and plant surveys being undertaken by keen locals.

Wheatbelt NRM's involvement in jointly organising the Toodyay BioBlitz helped reinforce key elements of its 3 Year Plan – to engage communities, including youth and research institutions, in biodiversity conservation activities in the Wheatbelt.

The BioBlitz concept is a cost-effective, volunteer and community-based event which provides a rapid assessment of site-specific biodiversity values and threats. This event aimed to gather information on the needs of community-managed lands in the area.

Volunteers taking part in the Toodyay BioBlitz were from various ages and vocations and included scientists, amateur naturalists, biologists, professional consultants, and university students. Most participants were enthusiastic amateurs. The educational benefits of the BioBlitz experience were enhanced with an all pervading sense of fun.

PROJECT GOALS

Primary Goals

- to collect data on as many species, and from as many taxonomic groups as possible, over a 24-hour time period
- to create a report summarising results from the survey, including prioritised management recommendations for the community to consider.

Secondary Goals

- to bring various specialists with considerable and varied expertise to the rural community for scientific endeavor
- to build links between scientists and local community members, and between urban and rural residents
- to raise awareness of the rich biodiversity and conservation value of the Bindoon-Dewars Pool Road and Julimar State Forest area
- to create local learning opportunities around biodiversity by working alongside experienced practitioners to collect baseline biological information
- to have fun!

LIST OF PARTICIPANTS

The success of BioBlitz events is partly due to the enormous efforts made by volunteers.

Over 60 people participated in the 2015 Toodyay BioBlitz by helping run the event, leading teams, or simply taking part. There were many new faces too alongside the core group of volunteers who regularly attend BioBlitzes in Western Australia.

Arthur Blundell

Dimity Boggs

Guy Boggs

Tanami Boggs

Astrid Boggs

Taryn Brebner

Joyce Chela

Desrae Clarke

Wayne Clarke

Vanessa Clarke

Thomas Constant

Jackie Courtenay

Chris David

Simone Dempster

Simon Dempster

Angus Dempster

Bridie Dempster

Pauline Dilley

Jennifer Donegan

Sarah Dudley

Sue Eldridge

Robyn Foley

Brian Foley

Heather Frank

Leighton Frank

Tamara Green

Amy Griffiths

Claire Hall

Clair Hamersley

Bree Howard

Rebecca Jennings

Terry Jones

Cecile Lach

Brian Leach

Jacque Lucas

John Masters

Jeanette Masters

Eric McCrum

Sandy McKay

Shannon Murphy

Kimberley Page

Grant Page

Lyn Philips

Maggie Philips

James Piper

Maggie Redfern

Michalie Ruoss

Bec Ryan

Trinette Ryan

Kelvin Ryan

Liam Ryan

Eva Smith

Don Smith

Joshua Smith

Georgina Steytler

Cate Tauss

Kelly Thorburn

Paul Van Heurck

Leigh Whisson

Mat Williams

Stacey Williams

Ron Witt

[team leaders]

LOCATION

Toodyay is located in the Avon River Catchment and forms part of the globally significant Southwest Australia Ecoregion (SAE). The area is classified as a biodiversity hotspot due to its rich diversity of species which are under considerable threat. Clearing for agriculture has affected a high proportion of the region's vegetation, making it one of 25 biologically rich areas around the world that have lost at least 70% of their original habitat. Weeds, fire, and feral animals (both herbivores and carnivores) pose ongoing threats to the remaining vegetation and associated fauna.

Bindoon-Dewars Pool Road has significant areas of remnant vegetation and includes the Julimar State Forest and the Bindoon Army Training area. The area surveyed during the Toodyay BioBlitz included private properties and areas adjacent to those properties that form part of the Julimar State Forest. The three main vegetation types in the area are Jarrah, Marri and Powderbark Wandoo forests growing on laterite and sand on the ridgelines of the eastern Darling Scarp. There are also heathlands associated with fringing areas of exposed granite.

A number of sites were selected for the survey based on these vegetation communities. Team leaders who specialise in various environmental fields then led small groups in activities to collect information on the plants and animals found in the area.



● Wandoo Woodland (Leigh Whisson)

WEATHER CONDITIONS

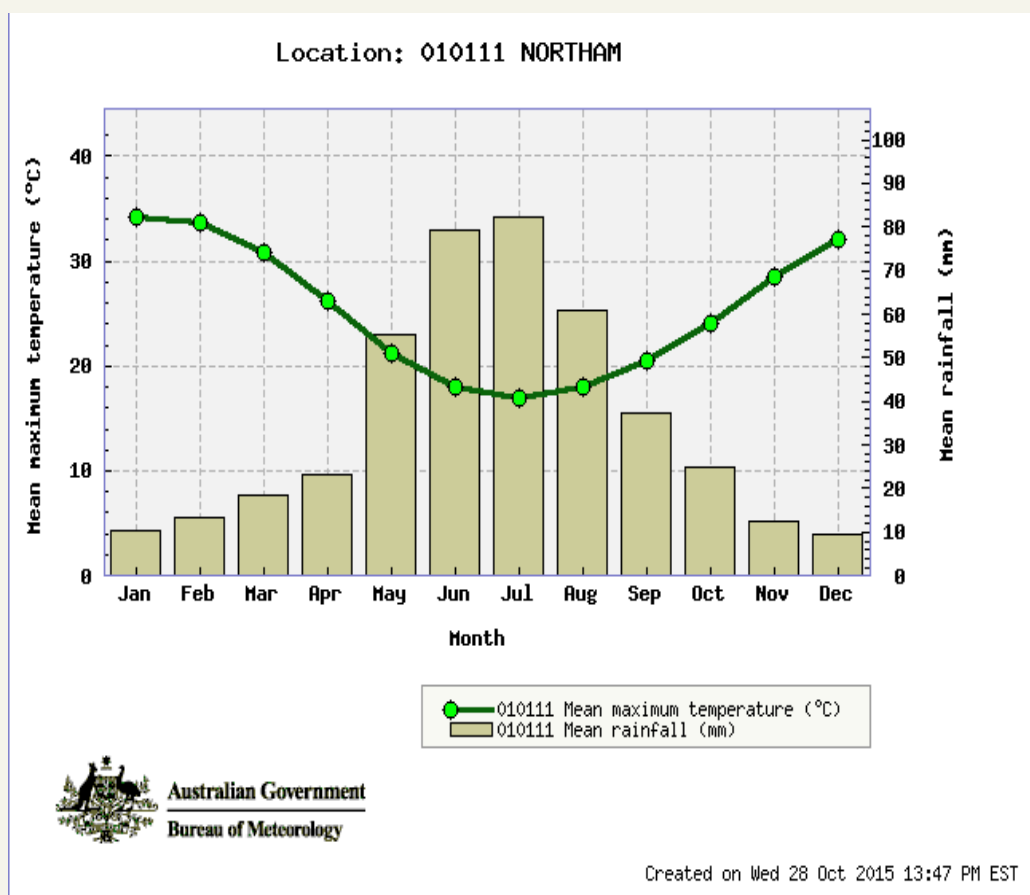
The Wheatbelt climate is described as Mediterranean with winter-predominant rainfall of 300 – 650 mm per annum and 7 – 8 months of dry weather (*Beard, 1990*). The Shire of Toodyay receives an average of 450 mm rain each year based on figures taken from the Northam weather station 36 km south east of the site (See Figure 1).

Typical temperatures range from 5 – 18°C during winter months (June-August) and 15 – 34°C during summer (December-February) (*Bureau of Meteorology, 2015*).

During the 2015 Toodyay BioBlitz, mid-mornings were cool, dry and very windy, days had clear skies with bright sunshine, and nights were cool with easing winds.

Weather in the week leading up to the BioBlitz was 25 – 30°C. The first day of the event was overcast with cold, wet and windy conditions and overnight temperatures that dropped to 1°C. The second day dawned bright and sunny with still conditions – perfect for the morning bird walk. Unfortunately, conditions then became overcast during the day, which wasn't great for locating reptiles or animal sightings on the evening spotlighting walk.

Figure 1



Ambient temperatures recorded during the event at the Northam weather station (*Bureau of Meteorology, 2015*):

Temperatures – Saturday min 10.0°C, max 16.9°C – Sunday min 1.2°C, max 17.8°C

Rainfall – Saturday 3.2 mm – Sunday 4.1 mm

GEOLOGY AND SOILS

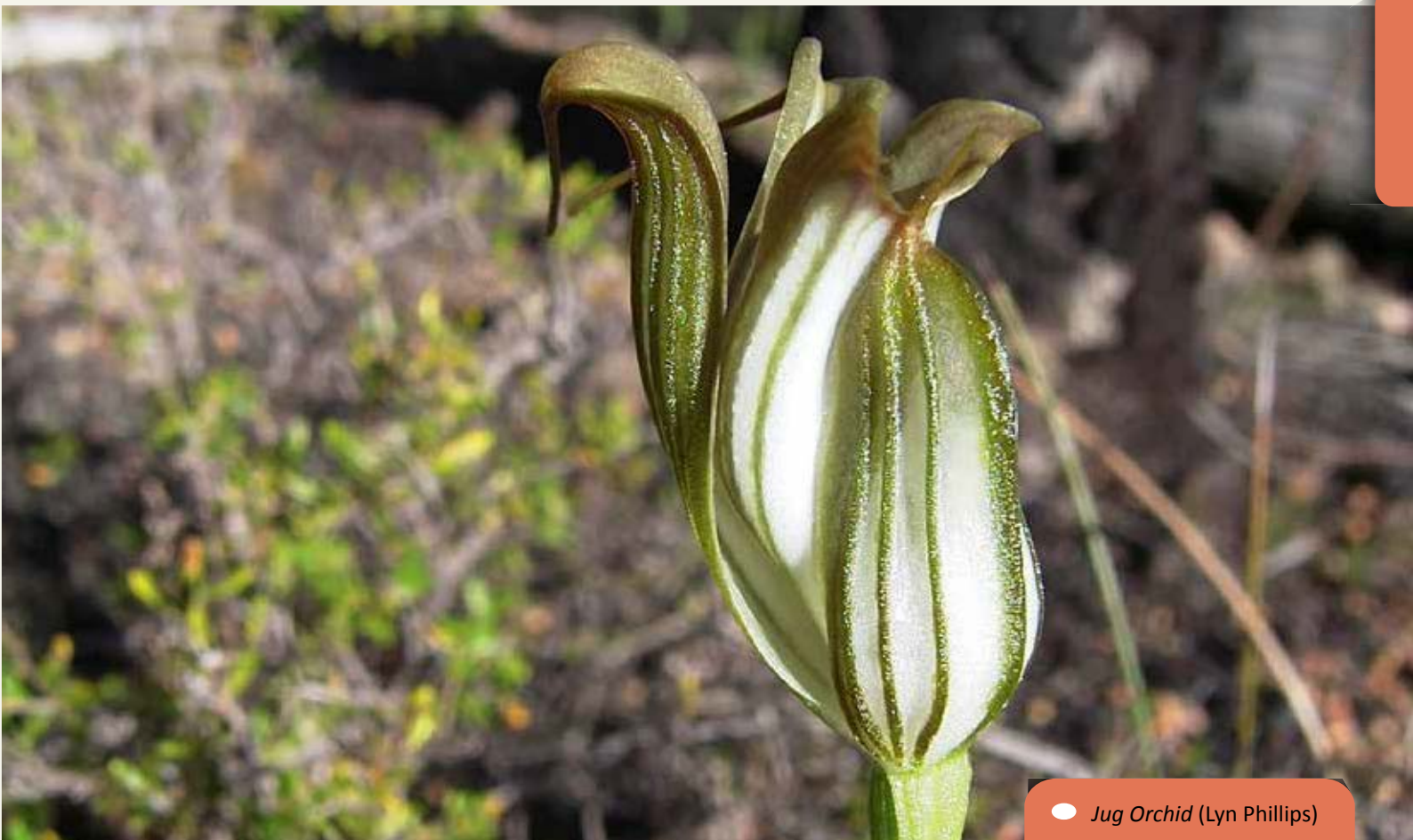
The Darling Plateau's eastern edge stretches through the Shire of Toodyay's western region where the BioBlitz took place. At this point the plateau has an elevation of around 300 metres with a base of granite that gently slopes east with softer, heavily weathered rocks. The region is mainly laterite with occasional white and yellow sands. It has gentle undulations cut by steep sided stream valleys where underlying granite outcrops are regularly exposed by erosion.

REGIONAL SIGNIFICANCE

The Shire of Toodyay covers 1694 km² and has extensive areas of remnant vegetation compared to other Wheatbelt shires. Approximately 50% of the shire retains its remnant vegetation, mainly in the west. Thirty-five percent of the shire is held in shire reserves, nature reserves and crown land (which includes land for army training). Only 15% of the shire's remnant vegetation is owned by private landholders. (More et al, 1984).

The shire's existing vegetation provides important refuge habitat for a number of species, including: Chuditch (*Dasyurus geoffroii*), Woylie (*Bettongia penicillata ogilbyi*), Common Brushtail Possum (*Trichosurus vulpecula*), Honey Possum (*Tarsipes rostratus*), and Western Pigmy Possum (*Cercatetus concinnus*). It also provides nesting and feeding habitat for the Carnabys' Black Cockatoo (*Calyptorhynchus latirostris*).

Of the four private properties surveyed in the Toodyay BioBlitz, only one was partially cleared while the rest were fully vegetated. Adjacent blocks of the Julimar State Forest were located on the north and south side of the private properties.



● Jug Orchid (Lyn Phillips)

3

SURVEY METHODOLOGY

The BioBlitz was preceded by an extensive period of preparation and consultation between Wheatbelt NRM and the Toodyay Naturalists' Club.

Eight 'team leaders' guided groups of up to ten volunteers throughout the weekend, with volunteers swapping between sessions according to their skills or interests. Sometimes teams from different areas of interest joined forces and undertook field work alongside each other to improve survey efficiency.

The team leaders identified likely habitats for flora and fauna, answered a myriad of questions and were ultimately responsible for returning the final species datasheets to the BioBlitz coordinator at the end of each survey period.

The first survey period was held on Saturday 12 September 2016, from 1:00 pm to 6:00 pm. The second survey period was held on Sunday 13 September 2016, from 8:00 am to 1:00 pm.

Some of the bird and mammal teams surveyed outside the above timeframe to make the most of the dawn and dusk animal activity patterns. Three teams also conducted two hour nocturnal spotlighting walks on the Saturday night.

Data collection was completed by 1:00 pm on Sunday – the designated finish time for the 24 hour BioBlitz period. Additional identification of invertebrates and confirmation of plant species took place by several team leaders after the event.

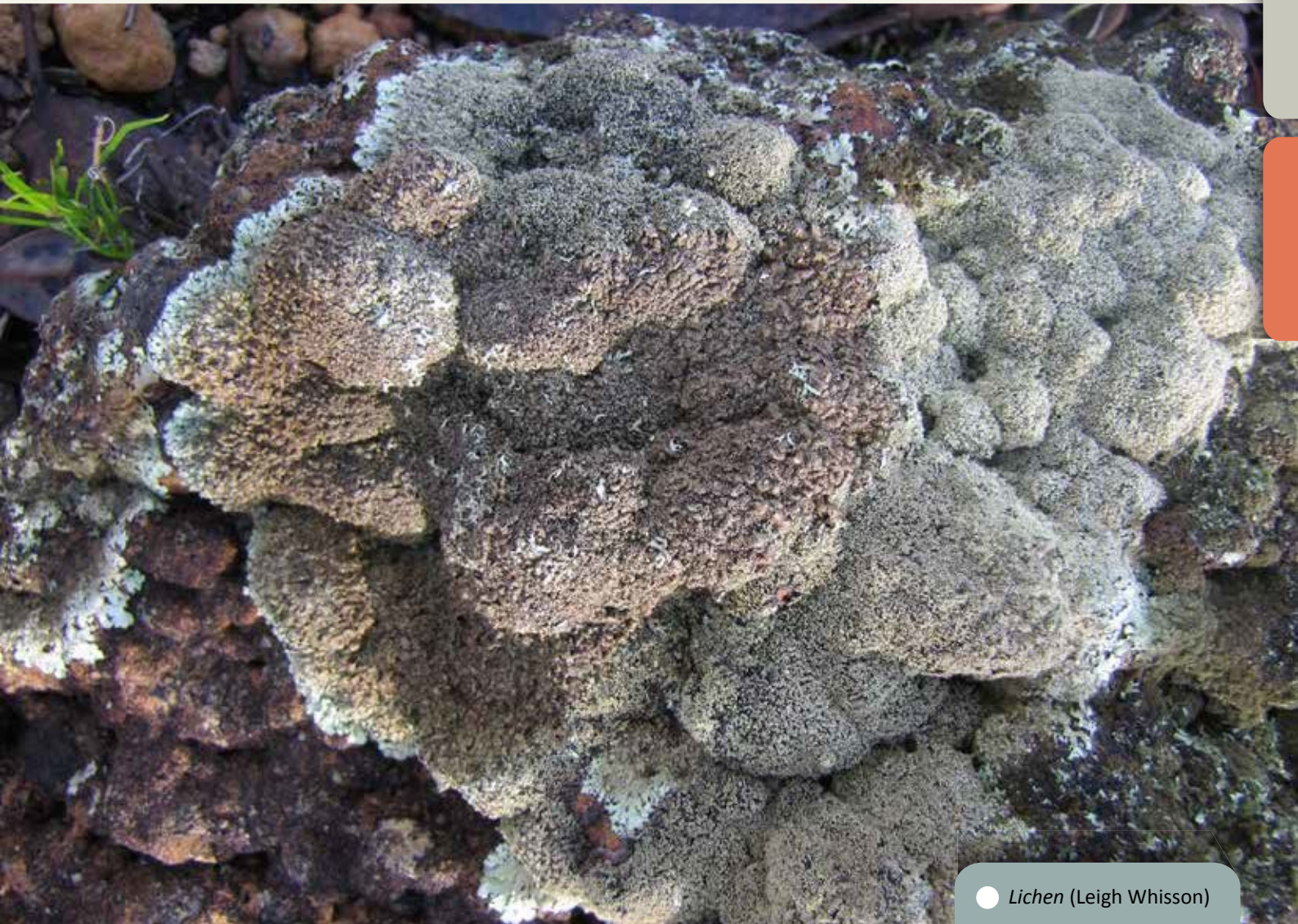


● *Black Wood Scorpion* (Shannon Murphy)

The 2015 Toodyay BioBlitz recorded 390 plant and animal species, including six mammals (two introduced), 10 reptiles, 45 birds, 117 invertebrates, 207 plants (including one Priority 4, and one Priority 1 species) and four lichen/fungi species. A full species list can be found in Appendix 1.

FLORA

The botany groups did a fantastic job in identifying 208 species in the 24 hour period, a good indication of the high diversity of small areas of vegetation in Western Australia's biodiversity hotspot. Two threatened plant species were identified on the properties – the Yellow China Orchid (Priority 4) *Cyanicula ixoides subsp ixoides* and *Synaphea panhesya* (Priority 1) (DPaWb 2015). There were also four different fungi and lichen species found but not identified.



● Lichen (Leigh Whisson)

FAUNA

Some of the more interesting sightings included nocturnal spotlighting of critically endangered Woylies (*Bettongia penicillata ogilbyi*), and finding a South Western Rock Skink (*Liopholis pulchra pulchra*) and other reptiles despite the cooler weather. Several endangered Carnaby's White-tailed Black Cockatoos (*Calyptorhynchus latirostris*) were also observed feeding in the area over the weekend.

Daytime surveys identified **scats** from Echidnas, Grey Kangaroos, Foxes and Rabbits, while the nocturnal walks spotlighted numerous Woylies, Grey Kangaroos and Euros. No bat species were identified during the surveys, most likely due to the inclement weather and the lack of a bat specialist in attendance.

Footage from **motion sensing cameras** placed on the properties prior to the surveys revealed the presence of Brushtail Possums (*Trichosurus vulpecula*), Chuditch (*Dasyurus geoffroii*) and Western Brush Wallabies (*Macropus irma*). They also identified the presence of **feral** foxes, cats and rabbits on the properties.

Considering Saturday's damp conditions, the **herpetology (reptile)** survey teams were very productive in identifying nine species, including: South Western Rock Skink (which may be a range extension), numerous Barking Geckos (*Underwoodisaurus mii*), Granite Worm Lizard (*Aprasia pulchella*), Legless Lizard (*Delma fraseri*), and Gould's Hooded Snake (*Parasuta gouldii*).

The **ornithology (bird)** survey groups also did well identifying 45 species, including: the endangered Carnaby's Black Cockatoo, and one introduced species – the Laughing Kookaburra. The only species observed nesting was the Striated Pardalote which had several pairs in one of the mature Powderbark Wandoo trees.

The **entomology (insect)** groups identified 117 different invertebrate species, including: 27 spiders, two native cockroaches, eight centipedes, five beetles, two springtails, two millipedes, eight flies, nine bugs, 15 bees and wasps, four slaters, seven termites, nine butterflies/moth (and larvae), two praying mantis, one snail, one lacewing, one earthworm, two flatworms, nine grasshoppers, one scorpion, and one silverfish.

There were no **amphibians** or **fish** identified during the survey.



● Grey Short-horned Grasshopper (Kim Grant)

5

THREATS & RECOMMENDATIONS

During this event a number of threats to biodiversity were identified. Opportunities for reducing these threats are broadly outlined below.

The Toodyay BioBlitz confirmed the area's high level of biodiversity and the very good condition of its remnant vegetation. Conservation value of the area is also high due to its proximity to the Julimar State Forest and given the extent of native vegetation loss in the eastern half of the shire and throughout the Wheatbelt.

Fragmentation is recognised as a serious threat to the long-term viability of bushland remnants in the Wheatbelt. Although these private landholdings lie within the half of the shire that retains 50% of its vegetation, the discontinuity of vegetation cover hinders species' movement and interferes with genetic distribution. Species in isolated remnants are also more susceptible to catastrophic events such as a fire which can wipe out entire populations.

Nine species of **weeds** were found on the private properties during the BioBlitz. Weeds are a widespread problem in Wheatbelt remnants and direct treatment is unlikely to be practical or feasible. However, their spread can be minimised by curtailing disturbance of the remnant where possible.

Five of the nine species are considered environmental weeds in WA and should be monitored. These are Cape Weed (*Arctotheca calendula*), Smooth Catsear (*Hypochaeris glabra*), Common Sowthistle (*Sonchus oleraceus*), Fingerleaf (*Oxalis glabra*), and Blow Fly Grass (*Briza maxima*).

The presence of **feral foxes, cats and rabbits** was also noted during the BioBlitz. It is recommended that the current control methods used by the landholders be continued, as well as the Department of Parks and Wildlife's coordinated feral animal control in the neighbouring Julimar State Forest.

Foxes and cats have had a massive impact on native fauna in the Wheatbelt, especially species in the weight range between 55 grams to 5.5 kilograms (Johnson & Isaac, 2009), with many native species that fall into this weight range now being locally extinct. Those that remain are likely to be under considerable predation pressure from feral predators, and it can be assumed that native faunal diversity will continue to decline in their presence. Ongoing feral animal control is recommended to reduce the pressure on the native fauna on the properties.

Continued monitoring for the presence of Woylies, Chuditches and Western Brush Wallabies is also recommended, using spotlighting and motion sensing cameras on a regular basis.

PLANTS (204) * weeds

FAMILY, Genus, species etc.	Common Name	Status
AMARANTHACEAE		
<i>Ptilotus manglesii</i>	Pom Poms, Mulamula	
APIACEAE		
<i>Daucus glochidiatus</i>	Australian Carrot	
<i>Eryngium pinnatifidum</i> subsp. <i>pinnatifidum</i>		
<i>Xanthosia candida</i>		
<i>Xanthosia huegelii</i>		
ARALIACEAE		
<i>Hydrocotyle callicarpa</i>	Small Pennywort	
<i>Trachymene pilosa</i>	Native Parsnip	
ASPARAGACEAE		
<i>Chamaescilla corymbosa</i> subsp. <i>corymbosa</i>	Blue Squill	
<i>Dichopogon capillipes</i>		
<i>Laxmannia grandiflora</i> subsp. <i>grandiflora</i>		
<i>Lomandra caespitosa</i>	Tufted Matrush	
<i>Lomandra effusa</i>	Scented Matrush	
<i>Lomandra hermaphrodita</i>		
<i>Lomandra sericea</i>	Silky Mat Rush	
<i>Sowerbaea laxiflora</i>	Purple Tassels	
<i>Thysanotus manglesianus</i>	Fringed Lily	
<i>Thysanotus patersonii</i>		
<i>Thysanotus sparteus</i>		
<i>Thysanotus thyrsoideus</i>		
ASTERACEAE		
* <i>Arctotheca calendula</i>	Cape Weed	
<i>Blennospora drummondii</i>		
<i>Brachyscome bellidioides</i>		
<i>Brachyscome iberidifolia</i>		
* <i>Cotula coronopifolia</i>	Waterbuttons	
<i>Helichrysum leucopsideum</i>		
* <i>Hypochaeris glabra</i>	Smooth Catsear	

FAMILY, Genus, species etc.	Common Name	Status
<i>Lagenophora huegelii</i>		
<i>Lawrenzia rosea</i>		
<i>Millotia tenuifolia</i> var. <i>tenuifolia</i>	Soft Millotia	
<i>Podotheca gnaphalioides</i>	Golden Long-heads	
<i>Pterochaeta paniculata</i>		
<i>Podolepis lessonii</i>		
<i>Quinetia urvillei</i>		
<i>Rhodanthe manglesii</i>		
* <i>Sonchus oleraceus</i>	Common Sowthistle	
<i>Tricoryne elatior</i>	Yellow Autumn Lily	
<i>Trichocline spathulata</i>	Native Gerbera	
* <i>Ursinia anthemoides</i> subsp. <i>anthemoides</i>		
<i>Waitzia acuminata</i>	Orange Immortelle	
<i>Waitzia nitida</i>		
<i>Waitzia</i> ? <i>suaveolens</i>	Fragrant Waitzia	
BORYACEAE		
<i>Borya sphaerocephala</i>	Pincushions	
CAMPANULACEAE		
<i>Wahlenbergia preissii</i>		
CASUARINACEAE		
<i>Allocasuarina huegeliana</i>	Rock Sheoak	
<i>Allocasuarina humilis</i>	Dwarf Sheoak	
CELASTRACEAE		
<i>Stackhousia monogyna</i>		
<i>Stackhousia pubescens</i>	Downy Stackhousia	
<i>Tripterococcus brunonis</i>	Winged Stackhousia	
COLCHICACEAE		
<i>Burchardia congesta</i>		
CRASSULACEAE		
<i>Crassula colorata</i> var. <i>colorata</i>		
CYPERACEAE		
<i>Cyathochaeta</i> sp.		
<i>Lepidosperma pubisquameum</i>		
<i>Lepidosperma squamatum</i>		
<i>Lepidospermum pubisquameum</i>		
<i>Tetragia octandra</i>		
<i>Tetragia</i> sp. Jarrah Forest (R. Davis 7391)		

DILLENIACEAE*Hibbertia commutata**Hibbertia huegelii**Hibbertia hypericoides*

Yellow Buttercups

Hibbertia lasiopus

Large Hibbertia

*Hibbertia montana**Hibbertia ovata***DROSERACEAE***Drosera barbiger**Drosera bulbosa**Drosera erythrorhiza* subsp. *collina**Drosera glanduligera*

Pimpernel Sundew

Drosera macrantha

Bridal Rainbow

Drosera leucoblata

Wheel Sundew

Drosera pallida

Pale Rainbow

Drosera stolonifera

Leafy Sundew

ERICACEAE*Astroloma compactum*

Kick Bush

Astroloma ? sp. Cataby E.A Griffin 1022*Leucopogon concinnus**Leucopogon* ? *oxycedrus**Leucopogon* sp. unknown*Styphelia tenuiflora*

Common Pinhead

FABACEAE*Acacia acuminata*

Jam, Mangard

*Acacia applanata**Acacia extensa*

Wiry Wattle

Acacia pulchella var. *glaberrima**Acacia saligna* var. *saligna**Acacia stenoptera*

Narrow Winged Wattle

Bossiaea ornata

Broad Leaved Brown Pea

Daviesia decurrens

Prickly Ditter-pea

*Daviesia hakeoides**Gastrolobium bilobum*

Heart Leaf Poison

Gastrolobium trilobum

Bullock Poison

*Gastrolobium epacridoides**Gastrolobium spinosum*

Prickly Poison

*Gompholobium knightianum**Gompholobium marginatum*

FAMILY, Genus, species etc.**Common Name****Status***Gompholobium preissii**Hovea chorizemifolia**Hovea pungens**Hovea trisperma* subsp. *trisperma**Kennedia prostrata**Kennedia coccinea**Sphaerolobium medium*

Holly-leaved Hovea

Devil's Pins

Scarlet Runner

Coral Vine

GOODENIACEAE*Dampiera alata**Dampiera linearis**Dampiera lavandulacea**Lechenaultia biloba**Velleia trinervis*

Winged-stem Dampiera

Common Dampiera

Blue Leschenaultia

HAEMODORACEAE*Anigozanthos humilis**Anigozanthos manglesii**Conostylis setigera* subsp. *setigera**Haemodorum laxum**Haemodorum simplex**Haemodorum spicatum*

Catspaw

Mangles Kangaroo Paw

Mardja

HALORAGACEAE*Glischrocaryon aureum*

Common Popflower

HEMEROCALLIDACEAE*Caesia micrantha**Caesia* sp. Wongan (K.F. Kenneally 8820)*Dianella revoluta* var. *divaricata**Stypandra glauca**Tricoryne elatior*

Pale Grass-lily

Blueberry Lilly

Blind Grass

Yellow Autumn Lily

IRIDACEAE*Orthrosanthus laxus* var. *gramineus**Patersonia juncea**Patersonia occidentalis***Romulea rosea* var. *australis*

Grass Leaved Orthrosanthus

Rush Leaved Patersonia

Purple Flag

Guildford Grass

LAURACEAE*Cassytha glabella*

Tangled Dodder Laurel

LAMIACEAE*Hemiandra pungens*

Snakebush

LORANTHACEAE*Amyema miquelii*

Stalked Mistletoe

MYRTACEAE*Babingtonia camphorosmae*

Camphor Myrtle

Calytrix fraseri

Pink Summer Calytrix

Calothamnus sanguineus

Silver-leaved Blood Flower

Corymbia calophylla

Marri

Eucalyptus accedens

Powderbark Wandoo

Eucalyptus marginata subsp. *thalassica*

Blue-leaved Jarrah

Eucalyptus wandoo subsp. *wandoo*

Wandoo

Hypocalymma angustifolium

White Myrtle, Kudjid

Leptospermum erubescens

Roadside Teatree

ORCHIDACEAE*Caladenia flava* subsp. *flava**Calochilus stramenicola**Cyanicula ixiodes* subsp. *ixiodes*

Yellow China Orchid

P4

*Cyanicula sericea**Diuris brumalis**Diuris corymbosa**Diuris laxiflora*

Bee Orchid

Drakaea sp.*Leporella fimbriata*

Hare Orchid

Pterostylis pyramidalis

Snail Orchid

Pterostylis recurva

Jug Orchid

*Pterostylis sanguinea**Pterostylis vittata*

Banded Greenhood

Thelymitra crinita

Blue Lady Orchid

OROBANCHACEAE*Parentucellia latifolia*

Common Bartsia

OXALIDACEAE*Oxalis perennans***Oxalis glabra***PHYLLANTHACEAE***Phyllanthus calycinus*

False Boronia

Poranthera microphylla

Small Poranthera

POACEAE*Austrostipa elegantissima*

FAMILY, Genus, species etc.

Common Name

Status

Austrostipa flavescens

Austrostipa sp.

**Briza maxima*

Neurachne alopecuroidea

Rytidosperma ? caespitosa

Blowfly Grass

Foxtail Mulga Grass

POLGALACEAE

Comesperma volubile

Love Creeper

PORTULACACEAE

Calandrinia calyptрата

Pink Purslane

PRIMULACEAE

**Lysimachia arvensis*

Pimpernel

PROTEACEAE

Banksia dallanneyi subsp. *melicula*

Banksia fraseri var. *fraseri*

Banksia nivea

Banksia sessilis var. *sessilis*

Banksia squarrosa subsp. *squarrosa*

Grevillea corrugata

Grevillea pilulifera

Grevillea synapheae subsp. *synapheae*

Hakea lissocarpha

Honeypot Dryandra, Pudjarn

Parrot Bush

Pingle

T

Woolly-flowered Grevillea

Honey Bush



● Parrot Bush (Kelly Thorburn)

FAMILY, Genus, species etc.**Common Name****Status***Hakea prostrata*

Harsh Hakea

Hakea ruscifolia

Candle Hakea

Hakea undulata

Wavy-leaved Hakea

*Petrophile striata**Petrophile serruriae**Petrophile striata**Synaphea petiolaris*

Synaphea

Synaphea panheysa

P1

PTERIDACEAE*Cheilanthes austrotenuifolia***RESTIONACEAE***Desmocladius asper**Desmocladius fasciculatus**Desmocladius flexuosus**Lepidobolus preissianus* subsp. *preissianus***RHAMNACEAE***Cryptandra arbutiflora* var. *arbutiflora**Trymalium ledifolium* var. *lineare**Trymalium odoratissimum* subsp. *odoratissimum**Trymalium urceolare***RUBIACEAE***Opercularia echinocephala**Opercularia vaginata*

Dog Weed

RUTACEAE*Boronia subsessilis**Boronia ramosa***STYLIDIACEAE***Stylidium araeophyllum* Wege ms

Stilt Walker

Stylidium brunonianum

Pink Fountain Triggerplant

*Stylidium cilium**Stylidium dichotomum*

Pins-and-needles

Stylidium diuroides subsp. *diuroides**Stylidium hispidum*

White Butterfly Triggerplant

Stylidium junceum

Reed Triggerplant

Stylidium piliferum

Common Butterfly Triggerplant

Stylidium repens

Matted Triggerplant

Stylidium schoenoides

Cow Kicks

FAMILY, Genus, species etc.

Common Name

Status

THYMELAEACEAE

Pimelea suaveolens subsp. *suaveolens*

Pimelea ? sylvestris

XANTHORRHOEACEAE

Xanthorrhoea drummondii

Xanthorrhoea preissii

Grass tree, Palga

ZAMIACEAE

Macrozamia fraseri

BIRDS (45) (Orded by the 'Birdlife Australia Working List of Australian Birds' spreadsheet)

Dromaius novaehollandiae novaehollandiae

Emu

Chenonetta jubata

Australian Wood Duck, Wood Duck

Phaps chalcoptera

Common Bronzewing

Ocyphaps lophotes whitlocki

Crested Pigeon

Accipiter fasciatus fasciatus

Brown Goshawk

Aquila audax

Wedge-tailed Eagle

Falco cenchroides

Australian Kestrel

Calyptorhynchus latirostris

Carnaby's Cockatoo,
Short-billed Black-cockatoo

E

Eolophus roseicapilla

Galah

Cacatua sanguinea

Little Corella

Barnardius zonarius

Australian Ringneck

Purpureicephalus spurius

Red-capped Parrot

Climacteris rufa

Rufous Treecreeper

Chrysococcyx lucidus plagosus

Shining Bronze-cuckoo

**Dacelo novaeguineae*

Laughing Kookaburra

Malurus splendens splendens

Splendid Fairy-wren

Smicrornis brevirostris ochrogaster

Weebill

Gerygone fusca fusca

Western Gerygone

Acanthiza chrysorrhoa

Yellow-rumped Thornbill

Acanthiza apicalis

Inland Thornbill

Acanthiza inornata

Western Thornbill

Pardalotus striatus

Striated Pardalote

Lichenostomus virescens virescens

Singing Honeyeater

Anthochaera carunculata

Red Wattlebird

Lichmera indistincta

Brown Honeyeater

Phylidonyris novaehollandiae

New Holland Honeyeater

Daphoenositta chrysoptera

Varied Sittella

Coracina novaehollandiae

Black-faced Cuckoo-shrike

Pachycephala pectoralis

Golden Whistler

FAMILY, Genus, species etc.

Common Name

Status

<i>Pachycephala rufiventris</i>	Rufous Whistler	
<i>Colluricincla harmonica</i>	Grey Shrike-thrush	
<i>Cracticus nigrogularis</i>	Pied Butcherbird	
<i>Cracticus tibicen</i>	Australian Magpie	
<i>Rhipidura albiscapa</i>	Grey Fantail	
<i>Rhipidura leucophrys</i>	Willie Wagtail	
<i>Corvus coronoides</i>	Australian Raven	
<i>Grallina cyanoleuca cyanoleuca</i>	Magpie Lark	
<i>Petroica boodang</i>	Scarlet Robin	
<i>Eopsaltria griseogularis griseogularis</i>	Western Yellow Robin	
<i>Zosterops lateralis chloronotus</i>	Grey-breasted White-eye, Silvereve	
<i>Petrochelidon nigricans</i>	Tree Martin	
<i>Hirundo neoxena</i>	Welcome Swallow	
<i>Dicaeum hirundinaceum hirundinaceum</i>	Mistletoebird	
<i>Anthus novaeseelandiae bilbali</i>	Australasian Pipit	

REPTILES (10)

<i>Diplodactylus granariensis</i> subsp. <i>granariensis</i>	Western Stone Gecko	
<i>Crenadactylus ocellatus ocellatus</i>	Clawless Gecko	
<i>Underwoodaisaurus milli</i>	Common Thick-tailed Gecko, Barking Gecko	
<i>Morethia obscura</i>	Shrubland Snake-eyed Skink	
<i>Cryptoblepharus buchananii</i>	Buchanan's Snake-eyed Skink	
<i>Liopholis pulchra pulchra</i>	South-western Rock-skink	Pos. Range Extension
<i>Pagona minor minor</i>	Western Bearded Dragon	
<i>Delma frazeri</i>	Legless Lizard	
<i>Aprasia pulchella</i>	Granite Worm-lizard	
<i>Parasuta gouldii</i>	Gould's Hooded Snake	



● Buchanan's Snake-eyed Skink (Kate Raston)

INVERTEBRATES (117)

ARANEAE (Spiders)

Badumna Species 01	Wandoo Log Lace Web Spider
<i>Chenistonia tepperi</i>	Lidless Trapdoor Spider
Gnaphosidae Species 01	Jarrah Litter Sac Spider
Gnaphosidae Species 02	Wandoo Log Sac Spider
Lycosidae Species. 01	Wandoo Litter Wolf Spider
Lycosidae Species 02	Jarrah Litter Wolf Spider (female)
Lycosidae Species 03	Blue Eyeshine Bareground Wolf Spider
Lycosidae Species 04	Wandoo Wolf Spider
Unknown Species 03	Tea Tree Spider
Unknown Species 04	Tea Tree Spider
Unknown Species 05	Tea Tree Spider
Unknown Species 06	Tea Tree Spider
Unknown Species 07	Tea Tree Spider
Unknown Species 09	Tea Tree Spider
Unknown Species 10	Tea Tree Spider
Unknown Species 11	Wandoo Spider
Unknown Species 12	Wandoo Spider
Nicodamidae Msp. 01	Wandoo Red and Black Spider
Phonognatha Species 01	Leaf-curling Spider web
Salticidae Species 01	Wandoo Litter Jumping Spider
Sparassidae Species 01	Jarrah Burl Huntsman Spider
<i>Supanna albopunctata</i>	Wasp Mimicking Sac Spider
Theridiidae Species 01	Tea Tree Tangleweb Spider
Theridiidae Species 02	Tea Tree Tangleweb Spider
Zodariidae Species 01	Jarrah Litter Ant Spider
Zodariidae Species 02	Wandoo Litter Ant Spider
Zodariidae Species 03	Wandoo Litter Ant Spider

BLATTODEA (Cockroaches)

Blattidae Species 01	Black Native Cockroach
Blattidae Species 02	Log Black Native Cockroach

CHILOPODA (Centipedes)

Unknown Species 03	Thin Golden Centipede
Unknown Species 05	Wandoo Centipede
Unknown Species 06	Wandoo Centipede
Unknown Species 07	Wandoo Centipede
Scolopendridae Species 01	Jarrah Log Centipede
Scolopendridae Species 02	Jarrah Log Centipede

FAMILY, Genus, species etc.**Common Name****Status**

Scolopendridae Species 03

Wandoo Log Centipede

Scutigera Species 01

Wandoo Long-Legged Earth Centipede

COLEOPTERA (Beetles)

Buprestidae Species 01

Yellow with Four Black Dashed Jewel Beetle

Chrysomelidae Paropsis Species 01

Large Golden Leaf Beetle

Chrysotharta Species 01

Yellow Leaf Beetle

Cleridae Species 01

Black and Orange Tea Tree Clerid Beetle

Scarabaeidae Species 01

White with Orange Headed Scarab Beetle Grub

COLLEMBOLA (Springtails)

Unknown Species 01

Wandoo Litter Red Springtail

Unknown Species 02

Wandoo Litter White Springtail

DIPLOPODA (Millipedes)

Antichiropus Species 01

Brown Pointed Tail Millipede

Unknown Species 02

Wandoo Litter Thin Black Millipede

DIPTERA (Flies)

Asilidae Species 01

Wandoo Litter Robber Fly

Calophoridae Species 01

Wandoo Brown Blowfly

Muscidae Species. 01

Like-a-Bush Fly

Muscidae Species 02

Bush Fly

Muscidae Species 03

Bush Fly

Syrphidae Species 01

Hover Fly

Tachinidae Species 01

Insect Parasitic Tachinid Fly

HEMIPTERA (Bugs)

Aleyrodidae Species 01

Tea Tree Whitefly

Aleyrodidae Species 02

Tea Tree Whitefly

Margarodidae Species 01

White Myrtle Cottony Scale

Pentatomidae Species 01

Tea Tree Predatory Bug

Pseudococcidae Species 01

Zamia Palm Mealybugs

Psyllidae Species 01

Parrot Bush Lerp

Reduviidae Species 01

Wandoo Log Assassin Bug

Reduviidae Species 02

Wandoo Log Assassin Bug

Unknown Species 05

Tea Tree Leaf Hopper

Unknown Species 06

Leaf Hopper

HYMENOPTERA (Bees and Wasps)

Apis mellifera European Honey

Bee caught in Drosera plant

Braconidae Species 01

Black and Red Insect Parasitic Wasp

FAMILY, Genus, species etc.**Common Name****Status**

Camponotus Species 01	Log Honey Ant	
? Colletidae Species 01	Wandoo Native Bee	
Formicidae Species 01	Wandoo Ant	
Iridomyrmex Species 01	Jarrah Litter Trailing Ants	
Iridomyrmex Species 02	Jarrah Litter Trailing Ants	
Iridomyrmex Species 03	Wandoo Log Trailing Ants	
Myrmecia Species 01	Pale Bullant	
Myrmecia Species 02	Bullant	
Rhytidoponera Species 01	Black-headed Ant	
Rhytidoponera Species 02	Jarrah Black-headed Ant	
Rhytidoponera Species 03	Wandoo Log Black-headed Ant	
Tiphidae Species 01	Wandoo Orchids Flower Wasp	
Vespidae Eumeninae Species 01	Mud-Dauber Wasp	

ISOPODA (Slaters)

Unknown Species 01	Log Slater	
Unknown Species 02	Jarrah Log Slater	

ISOPTERA (Termites)

Mandibulate soldier Species 03	Jarrah Log Termite	
Nasuite Species 01	Termite Nasuite Soldier	
Termite Species 02	Jarrah Log Termite	
Unknown Species 01	Wandoo Log Termite	
Unknown Species 02	Wandoo Log Termite	
Unknown Species 03	Wandoo Log Termite Workers	



● Bee caught on sundew (Kelly Thorburn)

LEPIDOPTERA (Butterflies and Moths)

Cossidae Species 01 pupal case	Wandoo Witchetty Grub Moth
Geometridae Species 01	Wandoo Litter Looper Moth
Geometridae Species 02	Wandoo Looper Moth
Incurvariidae Species 01	Wandoo Leafminer Moth
Noctuidae Species 01	Native Noctuid Moth Caterpillar
<i>Vanessa kershawi</i>	Australian Painted Lady Butterfly
<i>Belenois java</i>	Caper White Butterfly
<i>Delias aganippe</i>	Spotted Jezebel Butterfly (pupal cases)
<i>Uraba lugens</i>	Gum Leaf Skeletonizer (9th instar caterpillars)
Zygaenidae Pollaninus Species 01	Golden-green Day Moth

MANTODEA (Praying Mantis)

Unknown Species 01	Wandoo Log Grey Mantis
Unknown Species 02	Wandoo Log Grey Mantis

MOLLUSCA (Snails)

Bothriembryon Species 01	Wandoo Native Cone Snail
Neuroptera (Lacewings)	
Neuroptera Species 01	Light-brown Lacewing

OLIGOCHAETE (Earthworms)

Unknown Species 01	Jarrah Log Earthworm
--------------------	----------------------

ORTHOPTERA (Grasshoppers)

Acrididae Species 01	Grey Short-horned Grasshopper
Acrididae Species 03	Jarrah Litter Short-horned Grasshopper
Acrididae Species 04	Wandoo Litter Short-Horned Grasshopper
Goniaea Species 01	Jarrah Litter Dead-leaf grasshopper
Gryllidae female Species 01	Jarrah Litter Field Cricket
Tettigonidae Species 01	Wandoo Litter Long-horned Grasshopper
Tettigonidae Species 02	Jarrah Litter Long-horned Grasshopper (female)
Tettigonidae Species 03	Jarrah Litter Long-horned Grasshopper
Tettigonidae Species 04	Tea Tree Long-horned Grasshopper

PLATYHELMINTH (Flatworms)

Platyhelminth Species 01	Tan-coloured Log Flatworm
Platyhelminth Species 02	Grey Log Flatworm

SCORPIONIDA (Scorpions)

Cercophonius Species 01	Black Wood Scorpion
-------------------------	---------------------

FAMILY, Genus, species etc.**Common Name****Status****THYSANURA (Silverfish)**

Unknown Species 01

Jarrah Log Silverfish

MAMMALS (6)*Felis catus*

Cats

Vulpes vulpes

Foxes

Oryctolagus cuniculus

Rabbits

Betongia penicillata olgiby

Woylies

CE

Macropus fuliginosus

Western Grey Kangaroos

Trachyglossus aculeatus

Echidna

7**REFERENCES**

Climate Statistics for Australian locations, (Bureau of Meteorology, 2015). Accessed 18/10/2015. <http://www.bom.gov.au/climate/averages/tables/cw_010140.shtml>

Conservation Codes for Western Australian Flora, (Department of Parks and Wildlife, 2015) <https://www.dpaw.wa.gov.au/images/documents/plants-animals/threatened-species/Listings/conservation_code_definitions.pdf>

Florabase Advanced Search, (Department of Parks and Wildlife, 2015) <<https://florabase.dpaw.wa.gov.au/search/advanced>>

Florabase Swan Weeds – List of Weeds, (Department of Parks and Wildlife, 2015) <<https://florabase.dpaw.wa.gov.au/weeds/swanweeds/list>>

Johnson C. N. & Isaac J. L., Body Mass and extinction risk in Australian Marsupials: ‘Critical Weight Range’ revisited, Austral Ecology, Vol 34: Issue 1, pp. 35-40 (Ecological Society of Australia, 2009) <<http://onlinelibrary.wiley.com/doi/10.1111/j.1442-9993.2008.01878.x/abstract>>

Moore S.A., Williams A.A.E., Crook I.A. and Chatfield G.R., ‘Nature reserves of the Shire of Toodyay’, Western Australian Nature Reserve Management Plan No. 6, (Department of Fisheries and Wildlife, 1984)

Lantzke N., Soils of the Northam Advisory District Volume 2 – The Zone of Rejuvenated Drainage, Bulletin 4245, (Department of Agriculture Western Australia, 1993)

‘BirdLife Australia Working List of Australian Birds’, spreadsheet version 1.2, (BirdLife Australia, 2014) <http://www.birdlife.org.au/documents/BWL-BirdLife_Australia_Working_List_v1.2.xlsx>

Australian Guide to Running a BioBlitz <http://www.ala.org.au/wp-content/uploads/2011/10/BioBlitz_Guidelines_WEB-final-201507.pdf>

For more information and background on the ‘BioBlitz’ concept, <<http://web.uconn.edu/mnh/BioBlitz>>

Toodyay Naturalist’s Club <www.toodyaynats.org.au>



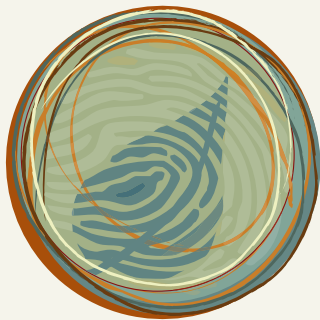
● Donkey Orchid (Leigh Whisson)

Healthy
Environments

Sustainable
Industry &
livelihoods

Productive
Relationships

Organisational
Excellence



wheatbelt
natural resource
management

PO Box 311
269 Fitzgerald Street
Northam, WA 6401

P: 08 9670 3100

E: info@wheatbeltnrm.org.au

W: wheatbeltnrm.org.au

WWW.WHEATBELTNRM.ORG.AU