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Kununoppin BioBlitz Report

Kununoppin Town & Water Reserves

(AVON L 14263, 13252, 16764 & 22520)

September 2004

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Cover photo: The briefing session at the start of the 2004 BioBlitz. Photo: Richard McLellan/WWF-Australia. All other photos by Mick Davis/WWF Australia unless otherwise stated.

Acknowledgments

WWF-Australia would sincerely like to thank the following groups and individuals for their contributions towards the 2004 Kununoppin BioBlitz:

- The Shire of Trayning for permission to collect flora in Shire Reserves and provision of the Base Camp/Headquarters camping area,
- Mr Paul Blechynden from the Department of Conservation and Land Management Merredin District Office for facilitating the collection flora on Crown Reserves,
- All of the team leaders and BioBlitz volunteers; and
- Mr Kevn Griffiths and Mr Eric McCrum for lichen identifications.

Many thanks also to Mrs Linda Vernon for her assistance throughout the event, which was critical to the weekend's success.

Mick Davis
Woodland Watch Project Officer
WWF-Australia

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1.0 INTRODUCTION

1.1. Background

The 2004 Kununoppin BioBlitz was the third community-based, collaborative, 24-hour biological survey[1] organised by WWF-Australia (WWF) in the Avon River Basin, undertaken in two shire-vested Reserves in the Shire of Trayning. Professional and amateur biologists, ecologists and naturalists - working as volunteers for WWF - conducted fieldwork with members of local Trayning communities to help them discover more about biodiversity in two relatively high conservation value local reserves. The data obtained during the BioBlitz provides a useful indicator of environmental quality and serves as a baseline for future monitoring and management of the reserves.

1.2. Project Description

The 2004 Kununoppin BioBlitz involved a comprehensive biodiversity survey team brought together specifically for the purpose of conducting a 'snapshot' biological survey in this designated site within the Avon River Basin. The BioBlitz was organised by WWF in response to a request from the Shire of Trayning and the North Eastern Wheatbelt Regional Organisation of Councils (NEWROC) - with which WWF has a partnership agreement.

WWF has worked closely with NEWROC in recent years, particularly through the Woodland Watch project, to provide information regarding the biodiversity values of shire-vested Reserves within the NEWROC region. The intention of this series of 'snapshot' biodiversity surveys in the region has been to raise the profile of the value of remnant bushland in the district, and provide shires with baseline data on some of their largest reserves.

[1] For more information on the BioBlitz process, please refer to the BioBlitz Organisational Guide **(CMNH 1995)** online at http://web.uconn.edu/mnh/bioblitz/

1.3. Rationale

In conducting the Kununoppin BioBlitz, WWF is continuing to reinforce key elements of the partnership agreement signed with NEWROC early in 2002. The BioBlitz concept is a cost-effective, volunteer-focussed and community-based monitoring event, which provides a rapid assessment of site-specific biodiversity that contributes to NEWROC objectives of gaining more information about the biodiversity of the region.

The volunteers who participated in the 2004 Kununoppin BioBlitz comprised scientists, amateur naturalists and biologists, and enthusiastic 'learners'.

1.4. Goals

The primary goals of the 2004 Kununoppin BioBlitz were to:

- collect data on as many species, from as many taxonomic groups, as possible in a 24-hour time period;
- identify any rare and unique species that may be located in the reserves; and
- document the species' occurrence.

Other (secondary) goals were to:

- bring specialists with considerable expertise to an isolated rural community for scientific endeavour;
- build links between scientists and lay community members, and between urban and rural residents;
- raise awareness of the biodiversity richness (and the natural value) of a high conservation value patch of bush;
- create a local learning opportunity – as one of the best ways to learn about biodiversity is to get out into the field alongside experienced scientists; and
- have fun – making an enjoyable day for everyone in the bush, while collecting baseline biological information.

2.0 List of Participants

About 50 people contributed to and/or participated in the 2004 Kununoppin BioBlitz. The voluntary efforts of every participant contributed to the success of the 2004 Kununoppin BioBlitz - the third BioBlitz to be conducted in the Wheatbelt by WWF. There were many new faces at the 2004 event, along with a core group of volunteers who have contributed their time and expertise at every BioBlitz since 2002. A special thanks to this latter group of highly committed individuals (indicated with an asterix*), as well as the Team Leaders (in bold text).

Bevan Buirchell
Bronwen Smith
Buddy Kent
Callum Bell
Carl Danzi
Cheryl Gole*
Chris Curnow
Daniel Parnell
Elanor Adams
Glenda Marshall
Hon. Brendon Grylls MLA
Hon. Dee Margetts MLA
Ian Croff
Ian Johnson
James Duggie
Jeff Richardson
Jeffrey Howe
Jenni Adams
Joel Collins
Jon Pridham
Kate Gole
Kevn Griffiths*
Kristy DeGraaf
Kristy Wilcox
Leanna Parnell
Linda Vernon
Marcus Hemsted
Margaret Batten
Martin Gole
Mathew Field
Maurice Barnes
Melissa Scott
Michael Hislop
Mike Griffiths
Mike McFarlane*
Nic Woodfield
Niel Adams
Nina McLaren
Pauline Guest
Richard McLellan
Sally Black
Samuel Atkinson
Sandra Waters
Sarah Muirhead
Stacey McFarlane
Susanne McFarlane
Sylvia Potalivo
Sue Sachse
Tegan Smith
Trevor Lamond
Vanessa Harris
Zoë Hemsted

3.0 Site Description

3.1. Site Location

The Kununoppin Water and Recreation Reserves (AVON L 14263, 13252, 16764 & 22520) are located in the Shire of Trayning. The reserves surround, and are adjacent to, the townsite of Kununoppin – about 265km Northeast of Perth, on the Nungarin - Wyalkatchem Road. Trayning is one of 41 shires in the Avon River Basin. The Avon River Basin is one of fifty-seven Natural Resource Management zones in Australia (Commonwealth of Australia 2002, 2004). The Avon River is fed by runoff from tributaries within the Yilgarn and Lockhart sub-catchments, which have their headwaters beyond the clearing line and rabbit-proof fence in the east of the WA agricultural area. Water flows intermittently, if at all, along the Avon River and its major tributaries to meet the Swan River in the state's capital of Perth.

Figure 1 - View west across a saline drainage system to the west of Kununoppin to an emergent York gum (*Eucalyptus loxophleba*) woodland. Water flowing past Kununoppin enters the Yilgarn sub-catchment of the Avon River and eventually flows into the Swan River.

3.2 GPS and Map Co-ordinates

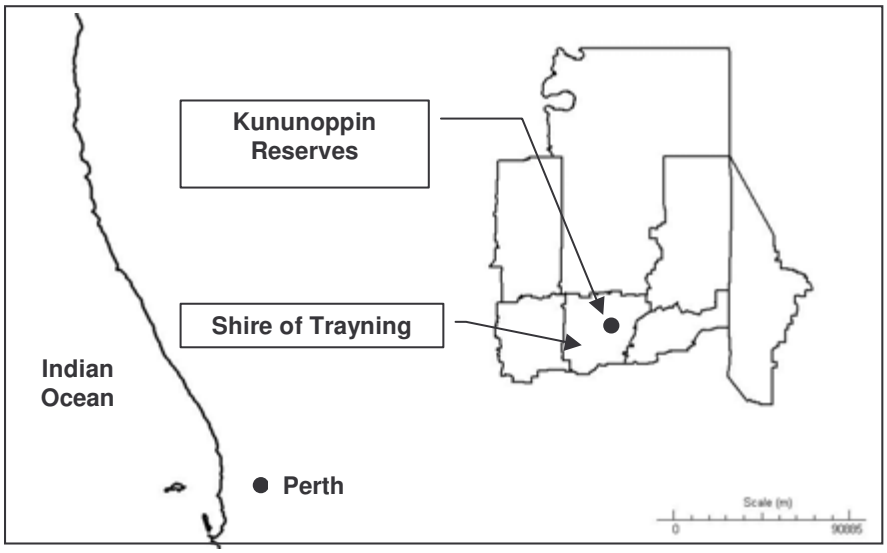

Figure 2 - Location of the 2004 Kununoppin BioBlitz and the NEWROC region. The distance from Perth is approximately 265km. Created using data from the ***Avon Catchment Council's*** Spatial Data Project.

Kununoppin Town Reserve: Latitude **31.10 °S** Longitude **117.89°E** (WGS84)
Kununoppin Water Reserve: Latitude **31.08 °S** Longitude **117.92°E** (WGS84)
Bencubbin Topographic Map (1:100 000 scale)
National Topographic Map Series

3.3. Weather Conditions

The climate of the WA Wheatbelt region has been described as typically a dry, warm Mediterranean climate; with winter-predominant precipitation of between 300 – 650mm per annum, and 7 – 8 months of predominantly dry weather (Beard 1990). The area around the Shire of Trayning receives on average approximately 325mm of rainfall each year (pers. comm. Linda Vernon).

Typical temperatures in the area range from 5.7°C to 16.3°C during the winter months (June-August) to 16.9°C to 33.9°C during summer (December-February). (Commonwealth of Australia 2004b).

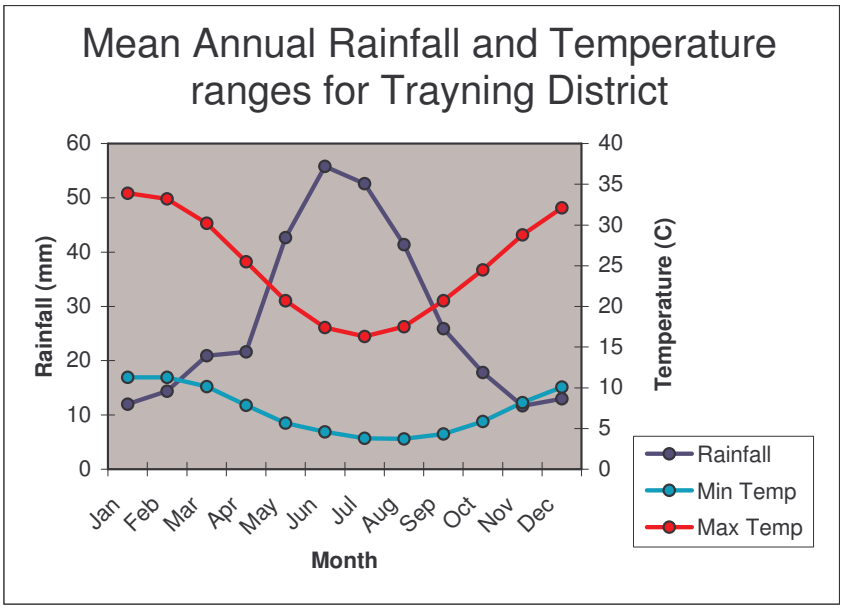

Figure 3 – Annual Temperature and Rainfall patterns for the Trayning district, averaged over 108 years. Source: Bureau of Meteorology Website

During the 2004 BioBlitz survey, the weather conditions ranged from cool and damp conditions in the mornings (with clear skies), bright sunshine throughout the days, followed by cool and frosty conditions overnight. The temperatures recorded during the BioBlitz weekend were: Saturday - min 0.4°C, max 17.4°C; and Sunday - min 2.8°C, max 21.6°C (Commonwealth of Australia 2004b).

3.4. Geology and Soils

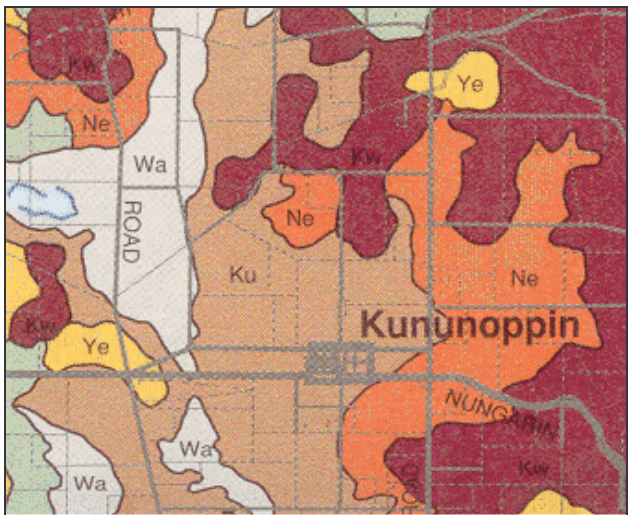

Figure 4 - Extract from landscape map of the Bencubbin area (Grealish & Wagnon 1995) showing localised soil systems around Kununoppin.

The soils of the Kununoppin Town Reserve are dominated by the Kununoppin Soil System, with minor Wallambin and Yelbeni soil systems in the west (Grealish & Wagnon 1995). In contrast, the majority of the Water Reserve has soils typical of the Kwelkan Soil System, with some minor patches of Kununoppin Soils on its southern boundaries.

Kununoppin (Ku) Soils generally occur on level or gently sloping plains that form valley and lower slopes, commonly on the southeastern margins of salt lakes (Grealish & Wagnon 1995). The vegetation is typically morrel and salmon gum woodlands with a shrubby understorey. Kwelkan (Kw) Soils occur on undulating hills with granite outcrops in all landscape positions. Streams are typical, especially in soils dominated by variable-depth gritty quartz sand to sandy loams (Grealish & Wagnon 1995).

Wallambin (Wa) Soils occur on level plains and are characterised by salt lakes, interconnected salt drainage channels and sand dunes. Typical native vegetation includes samphire and saltbush. Fringing shrublands exist on weakly developed alkaline

soils – which grade from loams to clays further from the salt lakes (Grealish & Wagnon 1995). Yelbeni (Ye) Soils occurs on gently undulating plains in upland areas. Soils are varied, including deep yellow sand, sandy loam, gravelly loams and breakaways (Grealish & Wagnon 1995). Heath and shrubland are common, with minor mallee and woodland areas.

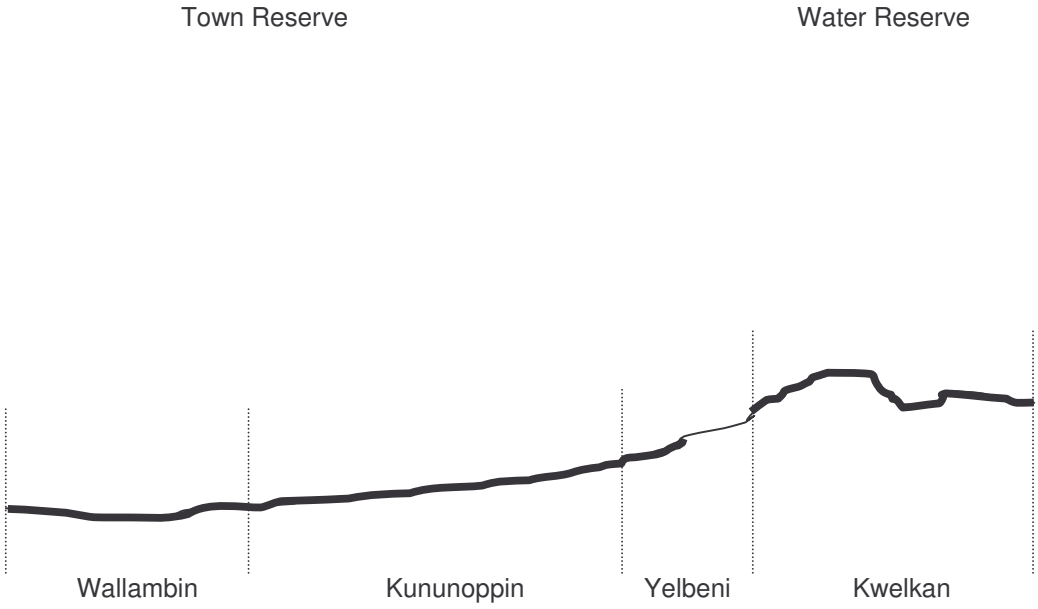

Figure 5 – Cross section of the Soil Systems occurring in the Kununoppin area with the bold line ( ) representing each reserve as it sits in the landscape (after Grealish & Wagnon 1995).

3.5 Regional Significance

The Shire of Trayning extends over approximately 165,000 hectares, of which 10.04% is remnant vegetation (Safstrom 1999). Approximately 6.42% of the remnant vegetation cover is on private land. Both the Kununoppin Town Reserve and the Kununoppin Water Reserve are large, intact patches of remnant vegetation, and are part of a network of large remnants in the Northeast of the Trayning Shire, which includes the relatively well-known Billlycatting Reserve.

The Kununoppin Water Reserve has played an important role in supplying Kununoppin with water, utilising a roaded catchment and drainage channels alongside the Bencubbin - Kununoppin Road which flow into the town dam. The Kununoppin Town Reserve was totally cleared of vegetation (mostly salmon gum woodland) in 1909/1910 prior to being gazetted (Couper 2004), with the only 'virgin' bush being left to the west of the townsites in the vicinity of the natural wetlands area. The Reserve has provided a variety of functions for the Kununoppin community over the years, including gravel (since 1910), for local infrastructure such as the Kununoppin airstrip and local roads.

The Kununoppin Water Reserve is a magnificent example of an upper-landscape granite ecosystem, containing *Acacia spp*. and *Melaleuca spp.* shrublands, mallee and open woodlands of salmon gum (*E. salmonophloia*) and gimlet (*E. salubris*). A dense matt of annuals and a highly intact cryptogam layer add to the Reserve's natural values.

The Kununoppin Town Reserve is a unique example of regrowth woodland of mixed morrel, salmon gum and gimlet, which has recovered to a good quality structure in the 94 years since it was cleared. The variety of plants and animals in this bush is a tribute to the bush's ability to recover from major disturbance many years ago.

As large and representative patches of Wheatbelt remnant vegetation, the Kununoppin Water and Town reserves are an important local biodiversity asset. Recent assessment by the Department of Environment has determined both reserves to have a 'high' regional biodiversity value (pers comm. Chantelle Noack, 2004).

In summary, both Reserves are considered to be regionally significant, and worthy of active conservation management to protect both natural and cultural qualities in and around Kununoppin.

4.0 Survey Methodology

The BioBlitz began after an extensive preparation period prior to the arrival of participants in Kununoppin in mid-September 2004. Eleven 'Team Leaders' were briefed then allocated to a group of four to six volunteers to work with during the field survey sessions. Each team operated independently, collecting data on their particular field, with the Team Leader responsible for returning the data to the BioBlitz co-ordinator at the end of each survey period.

The first survey period was conducted from 1pm to 5pm on Saturday September 11, with the second survey period running from 8am to 1pm on Sunday September 12. A number of birding teams surveyed outside this timeframe - to make the most of the dawn and dusk bird activity, and another group ('the Night-stalkers') looked for nocturnal activity on the Saturday evening as part of the 'Great Australian Marsupial Nightstalk'.

All data was collected by 1pm on the Sunday afternoon – the designated finish for the 24hr BioBlitz period - and was subsequently collated for further analysis where required.

For more information on preparing your own BioBlitz please visit the Connecticut Museum of Natural History Website, http://web.uconn.edu/mnh/bioblitz/

5.0 Results

A total of 271 individual plant and animal species were recorded from the Kununoppin Town and Water Reserves during the 24-hour BioBlitz period. These included: 7 species of mammals, 11 reptiles and amphibians, 52 birds, 27 invertebrates, 165 plants and 9 lichens.

5.1 Fauna

Of the mammals, four were feral species (domestic dog, feral cat, European fox and European rabbit), while the rest were native mammals commonly seen in the district (western grey kangaroo, short-nosed echidna and white-striped mastiff bat).

Figure 6 - Bobtail skink (*Tiliqua rugosa*) foraging beneath shrubland.

Two Herpetological teams identified four (4) lizards, three (3) geckos and three (3) snakes over the two days. The lizards included the wood mulch slider (*Lerista muelleri*), western bluetongue (*Tiliqua occipitalis*) and bobtail lizard (*Tiliqua rugosa*). The fourth species was recorded as a historical sighting, being a large bungarra (*Varanus gouldii*), known to inhabit the Town Reserve, but not observed on the day.

The three geckos included the beautiful gecko (*Diplodactylus pulcher*), the variegated tree dtella (*Gherya variegata*) and another gecko (*Heteronotia binoei*). The three snakes were the dugite (*Pseudonaja affinis*), the gwardar (*Pseudonaja nuchalis*) and *Suta gouldii*. Only one Amphibian species was identified, being the immature tadpoles of *Littoria spp* from the dam within the Town Reserve.

Figure 7 – Pink and grey galah (*Cacatua roseicapilla*), a common species in the WA Wheatbetl. Photo by Elanor Adams.

The five ornithological teams identified 52 bird species, from within all of the major vegetation types in both reserves. Twenty-two (22) of these species were considered remnant dependant or declining in the Wheatbelt (Pers. comm. Cheryl Gole). These declining species were the Australian owlet-nightjar, brown honeyeater, brown-headed honeyeater, chestnut-rumped thornbill, common bronzewing, crested bellbird, grey butcherbird, grey fantail, grey shrike-thrush, jacky winter, red-capped robin, rufous whistler, spiny-cheeked honeyeater, striated pardalote, tawny frogmouth, weebill, western gerygone, white-browed babbler, white-eared honeyeater, white-winged fairy-wren, white-winged triller and yellow-rumped thornbill.

Figure 8 – Distinctive burrow of the threatened tree-stem trapdoor spider (*Aganippe castellum*), against a Jam (*Acacia acuminata*) tree-stem.

Opportunistic observations in the Reserves recorded a small number of invertebrates. The terrestrial species included ants, spiders, flies and centipedes, while aquatic species included midges, beetles and leeches. Significantly, a small colony of the threatened tree-stem trapdoor spider (*Aganippe castellum*) (figure 8) was recorded in the Reserve, representing a new population of this species.

5.2 Flora

Six dominant vegetation types occur in the Kununoppin Town and Water Reserves being;

- Mixed salmon gum/gimlet woodland;
- Red morrel woodland;
- York gum woodland;
- Granite outcrop open shrubland
- *Acacia* spp. and *Melaleuca* spp. shrubland; and
- Salt Lake (Playa) communities, including *Halosarcia* spp.

Overall, the condition of these vegetation types was considered to be ‘good’ to ‘very good’, with minimal disturbance throughout. A number of tracks and roads were present within the Town Reserve, as well as historical debris from pioneering times. This debris has become part of the character of the bush, providing habitat for reptiles and invertebrate life.

Figure 9 - This york gum (*E. loxophleba*) woodland displays a bountiful array of annual wildflowers beneath its canopy. Photo by Sam Atkinson

The three botanical teams identified a total of 165 plant species over the weekend. These species were identified from mainly within woodland habitat, although some species were recorded from within shrubland and granite complexes. Botanical specimens from york gum (*E. loxophleba*) and salmon gum (*E. salmonophloia*) woodlands were vouchered by the Western Australian Herbarium as part of the Woodland Watch project.

Seven (7) weed species were identified during the surveys, all being commonly associated with agricultural practices. These weed plants included capeweed (*Arctotheca calendula**), wild oats (*Avena barbata**), Mediterranean turnip (*Brassica tournefortii**), red brome grass (*Bromus rubens**), slender iceplant (*Mesembryanthemum nodiflorum**), stinking rodger (*Tripterus clandestina**) and *Cleretum papulosum**. While no declared weeds were identified during the BioBlitz, it is highly likely that Paterson’s Curse (Echium plantagineum) is present in the reserve. It is known to occur in the road reserve coming from Kununoppin.

Figure 10 - Capeweed (*Arctotheca calendula*) is a common agricultural fodder plant that is often found as an invasive species in and on the edges of most remnant vegetation.

The single team searching for lichens in the reserves found a total of nine (9) species, most of which are considered as common (but frequently ignored) species.

6.0 Recommendations

The Kununoppin Water and Recreation Reserve is a large patch of remnant vegetation considered to be of high conservation value. The Water Reserve contains Acacia spp. and Melaleuca spp. shrublands, mallee and open woodlands, as well as a dense mat of annuals. The Kununoppin Town Reserve is a unique example of regrowth woodland of mixed morrel, salmon gum and gimlet. This Reserve is known to provide habitat for at least 271 species of flora and fauna, with the actual number likely to be considerably higher.

Apart from its function as a water collection and storage facility, the Reserve is also used regularly by members of the Kununoppin community for sports and leisure activities. In addition, gravel is extracted from a number of pits in the Reserve, providing valuable resources for local infrastructure. The Kununoppin Reserve has a long history of use by the local community which is likely to continue well into the future.

Management planning for the Reserve is in its initial stages, involving a range of key stakeholders including the Shire of Trayning, the Water Corporation, the Department of Conservation and Land Management (CALM), the Kununoppin community and WWF-Australia.

The information attained during the 2004 Kununoppin BioBlitz has made a significant contribution towards a better understanding of the composition and value of the Reserve, while acting as an ‘at-the-time’ snapshot of the Reserve’s value as a regional biodiversity asset. The data has also helped identify management actions that need to be addressed to protect these special values.

Based on the data collected, the observations made, the advice put forward by the specialists attending the 2004 Kununoppin BioBlitz, and contributions from local key stakeholders and community members, the following recommendations are made:

1. That a copy of the 2004 Kununoppin Reserve BioBlitz report be forwarded to: the Avon Catchment Council for use in its Regional NRM planning; the Shire of Trayning and the WA Water Corporation for use in their reserve management and planning; and to the CALM regional office in Merredin for inclusion in its database.

2. That the Shire of Trayning changes the purpose of the Kununoppin Recreation Reserve to include 'for the protection of flora and fauna'.

3. That in collaboration with WWF-Australia, the shire of Trayning develops a conservation policy to guide the management and protection of all reserves of high conservation value which are vested in its authority.

4. That the WA Water Corporation and Shire of Trayning collaborate to eradicate weed outbreaks such as capeweed (*Arctotheca calendula*) and Mediterranean turnip (Brassica tournefortii) within the Reserves.

5. That the Shire of Trayning consider planning for control of Paterson's Curse at an operational level in the Kununoppin Recreation Reserve – While not detected in the reserve during the BioBlitz it is highly likely it is present and remains a threat to biodiversity.

6. That the Avon Catchment Council applies the BioBlitz methodology within its biodiversity project 'toolkit' as a means to galvanise broad-based community support for biodiversity conservation in the Avon River Basin.

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APPENDIX I

Full species list recorded at 2004 Kununoppin BioBlitz, 11th & 12th September 2004

Scientific Name	Common Name
Mammals (7)	
Canidae sp.	Domestic Dog
Felis catus	Feral Cat
Macropus fuliginosus	Western Grey Kangaroo
Oryctolagus cuniculus	European Rabbit
Tachyglossus aculeatus	Short-nosed Echidna
Tadaria australis	White-striped Mastiff Bat
Vulpes vulpes	European Fox
Reptiles/Amphibians (11)	
Lizards	
Lerista muelleri	Wood Mulch Slider/Mueller's Lerista
Tiliqua occipitalis	Western Bluetongue
Tiliqua rugosa	Bobtail
Varanus gouldii	Bungarra/Sand Goanna
Geckos	
Diplodactylus pulcher	Beautiful Gecko
Gehrya variegata	Variegated Tree Dtella
Heteronotia binoei	Gecko
Snakes	
Pseudonaja affinis	Dugite
Pseudonaja nuchalis	Gwardar
Suta gouldii	
Frogs	
Littoria sp	Tadpoles only
Birds (52)	
Acanthagenys rufogularis	Spiny-cheeked Honeyeater#
Acanthiza chrysorrhoa	Yellow-rumped Thornbill#
Acanthiza uropygialis	Chestnut-rumped Thornbill#
Accipiter cirrhocephalus	Collared Sparrowhawk
Aegotheles cristatus	Australian Owlet-nightjar#
Aquila audax	Wedge-tailed Eagle
Barnardius zonarius	Australian Ringneck
Cacatua pastinator	Western Corella
Cacatua roseicapilla	Galah

Calyporhynchus banksii	Red-tailed Black-cockatoo
Charadrius ruficapillus	Red-capped Plover
Cheramoeca leocosternus	White-backed Swallow
Cinclorhamphus cruralis	Brown Songlark
Circus assimilis	Spotted Harrier
Colluricincla harmonica	Grey Shrike-thrush#
Columba livia	Feral Pigeon
Coracina novaehollandiae	Black-faced Cuckoo-shrike
Corvus coronoides	Australian Raven
Cracticus nigrogularis	Pied Butcherbird
Cracticus torquatus	Grey Butcherbird#
Cuculus pallidus	Pallid Cuckoo
Egretta novaehollandiae	White-faced Heron
Elanus axillaris	Black-shouldered Kite
Gerygone fusca	Western Gerygone#
Grallina cyanoleuca	Australian Magpie-lark
Gymnorhina tibicen	Australian Magpie
Himantopus himantopus	Black-winged stilt
Hirundo neoxena	Welcome swallow
Hirundo nigricans	Tree Martin
Lalage sueurii	White-winged Triller#
Lichenostomus leucotis	White-eared Honeyeater#
Lichenostomus virescens	Singing honeyeater
Lichmera indistinca	Brown Honeyeater#
Malurus leucopterus	White-winged Fairy-wren#
Manorina flavigula	Yellow-throated Miner
Melithreptus brevirostris	Brown-headed Honeyeater#
Microeca fascinans	Jacky Winter#
Neophema elegans	Elegant Parrot
Ocyphaps lophotes	Crested Pigeon
Oreoica gutturalis	Crested Bellbird#
Pachycephala rufiventris	Rufous Whistler#
Pardalotus striatus	Striated Pardalote#
Petroica goodenovii	Red-capped Robin#
Phaps chalcoptera	Common Bronzewing#
Podargus strigoides	Tawny Frogmouth#
Pomatastomus superciliosus	White-browed Babbler#
Rhipidura leucophrys	Willie Wagtail
Rpipidura fuliginosa	Grey Fantail#
Smicrornis brevirostris	Weebill#

Tadorna tadornoides	Australian Shelduck
Todiramphus macleayii	Red-backed Kingfisher
Tyto alba	Barn Owl
Invertebrates (27)	
Terrestrial Invertebrates	
Aganippe castellum	Tree-stem Trapdoor Spider
Arachnida	Spiders (x2)
Badumna insignis	Black House Spider
Blatodea	Bush Cockroach
Chilopoda	Tiger Centipede
Diptera	Blowfly
Formicidae	Bull-ants
Formicidae	Meat-ants
Gaius villosus	Trapdoor Spider
Heteropoda venatoria	Huntsman Spider
Hymenoptera	Large moths around lights
Lycosa godeffroyi	Common Wolf Spider
Melobasis sp	Jewel Beetle
Psyllidae	Waxy Lerps
Lepidoptera	Grey/blue Butterfly
Aquatic Invertebrates	
Annelida	Worm
Chironomididae	Midgie
Chironomididae	Mosquito Larvae and adults
Coleoptera	Beetle Larvae (x3)
Copepoda	Crustacean
Hemipteran	A True Bug
Hirudinea	Leech
Mollusca	Fresh Water Mollusc
Ostracoda	Seed Shrimp
Flora (165)	
Acacia acuaria	Wattle
Acacia acuminata	Jam Wattle/Raspberry Jam Tree (Mangard)
Acacia aestivalis	
Acacia cladocalyx	
Acacia hemiteles	Tan Wattle
Acacia lasiocalyx	Shaggy/Caterpillar Wattle/Wilyurwur
Acacia merrallii	Merrall's Wattle
Acacia sp2	
Acacia sp1 (minni richi)	

Actinoble uliginosum	
Allocasuarina acutivalvis	Black Tamma
Allocasuarina campestris	Tamma/Shrubby She-oak
Amphipogon caricinus	Long Greybeard Grass
Amphipogon turbinatus	
*Arctotheca calendula**	Capeweed
Astroloma serratifolium	Cranberry (Kondrung)
Atriplex bunburyana	Silver Saltbush
Atriplex sp1	
Austrodanthonia caespitosa	Common Wallaby Grass
Austrostipa elegantissima	Elegant Feathergrass/Feather Speargrass
*Avena barbata**	Bearded/Wild Oats
Baekea sp1	
Boronia sp1	
Borya sphaerocephala	Pin Cushions
Bossiaea walkeri	Cactus Pea
Brachyscome iberidifolia	Swan River Daisy
*Brassica tournefortii**	Mediterranean Turnip
*Bromus rubens**	Red Brome Grass
Caladenia dimidia	Chameleon Orchid
Caladenia hirta ssp rosea	Pink Candy Orchid
Caladenia radialis	Drooping Spider Orchid
Caladenia roei	Ant/Clown Orchid
Caladenia varians ssp varians	Spider Orchid
Calothamnus gilesii	Claw Flower
Calotis hispidula	Bindy Eye
Calytrix sp1	
Chthonocephalus pseudevax	Wooly groundheads
Cephalipterum drummondii	Pompom Head
Cheilanthes sieberi	Rock Fern
*Cleretum papulosum**	
Comesperma integerrimum	Milkwort
Conostylis sp	
Crassula colorata	Dense Crassula
Cryptandra nutans	Nodding Cryptandra
Cryptandra sp	
Cyanicula amplexans	Blue Orchid
Cyanicula deformis	Blue Fairy Orchid/Blue Beard
Dampiera lavandulacea	Lavender Dampiera
Daucus glochidiatus	Native/Australian Carrot

Dianella revoluta	Blueberry Lily/Spreading Flax Lily
Disphyma crassifolium	Round-leaved Pigface
Diuris porrifolia	Rosy-cheeked Donkey Orchid
Diuris sp	
Dodonaea inaequifolia	Hop Bush
Dodonaea viscosa	Sticky Hop Bush
Drosera erythrorhiza	Red Ink Sundew
Drosera glanduligera	Common Scarlet/Pimpernel Sundew
Drosera macrantha ssp macrantha	Bridal Rainbow/Climbing Sundew
Enchylaena lanata	Saltbush
Eremophila alternifolia	Narrow Leaf Fuschia
Eremophila clarkei	Turpentine Bush
Eremophila maculata	Spotted Emu Bush/ Native Fuchsia
Eremophila oppositifolia	Twin-leaf Eremophila
Eremophila papillata	
Erodium cygnorum	Blue Heron's Bill
Eucalyptus camaldulensis	River Red Gum (Yalpiliny)
Eucalyptus leptopoda	Tammin Mallee
Eucalyptus longicornis	Red Morrell (Poot)
Eucalyptus loxophleba ssp lissophloia	Smooth-barked York Gum
Eucalyptus loxophleba ssp loxophleba	York Gum (Yandee/Doatta)
Eucalyptus loxophleba ssp supralaevis	York Gum
Eucalyptus myriadena	
Eucalyptus salmonophloia	Salmon Gum/Wurak
Eucalyptus salubris	Gimlet
Eucalyptus sheathiana	Ribbon-barked Gum/Mallee
Eucalyptus sp1	
Eucalyptus yilgarnensis	Yorrel
Euctochloia sp	
Exocarpos aphyllus	Leafless Ballart (Mirnikuyan)
Gilberta tenuifolia	
Glischrocaryon aureum	Common Popflower/Western Gold Pennants
Goodenia berardiana	
Grevillea acuaria	
Grevillea nana	Dwarf Grevillea
Grevillea paradoxa	Bottlebrush Grevillea
Grevillea yorkrakinensis	
Gunniopsis rubra	
Hakea coriacea	Pink Spike Hakea

Hakea francisiana	Bottle Brush/Grass Leaf/Pink Spike Hakea
Hakea invaginata	
Hakea recurva	Standback/Bag Needle Bush/Djarnokmurd
Hakea scoparia	Broom Bush Hakea
Halosarcia sp (shorter branchlets)	
Halosarcia sp (longer branches)	
Hibbertia hypericoides	Yellow Buttercups
Hyalosperma demissum	Tiny Sunray
Hyalosperma glutinosum	Charming Sunray
Hydrocotyle pilifera	Pennywort
Hydrocotyle rugulosa	Pennywort
Hypoclamydia sp	
Isotoma petraea	Small Isotome
Kunzea pulchella	Granite Kunzea
Lawrencella rosea	Pink Everlasting
Leptospermum erubescens	Roadside/Wheatbelt/Pink Tea Tree
Leptospermum erubescens (white)	
Lycium australe	Water Bush
Maireana carnosa	Cottony Bluebush
Maireana marginata	Bluebush
Melaleuca acuminata	Creamy Honey Myrtle
Melaleuca conothamnoides	Wheatbelt Honey myrtle/Purple Pom-Pom Myrtle
Melaleuca cordata	Heart-leaf Honey Myrtle
Melaleuca hamulosa	Creekline/Broom Bush Honey Myrtle
Melaleuca lateriflora	Oblong-leaf Honey Myrtle (Gorada)
Melaleuca radula	Graceful Honey Myrtle
Melaleuca uncinata	Broombush/Broom Honey Myrtle
Menkea australis	Fairy Spectacles
*Mesembryanthemum nodiflorum**	Slender Iceplant
Monotaxis bracteata	
Myoporum sp	
Olearia muelleri	Goldfields/Mueller's/Dusky Daisy Bush
Ophioglossum plyphyllum	Adder's Tongue
Phebalium tuberculosum	
Phyllangium sulcatum	Mitrewort
Pimelea avonensis	
Pimelea microcephala	Mallee Riceflower (Gundagurrie)
Pimelia sp1	
Plantago debilis	Plantain
Podolepis canescens	Bright/Grey Podolepis

Podolepis lessonii	Yellow Buttons
Podotheca gnaphalioides	Golden Long-heads
Prasophyllum regium	King Leek Orchid
Pterostylis nana	Dwarf Greenhood/Snail Orchid
Pterostylis roensis	
Pterostylis rufa	Rusty Hood Orchid
Ptilotus exaltatus	Purple Mulla Mulla
Ptilotus holosericeus	Mulla Mulla
Ptilotus spathulatus	Mulla Mulla
Rhagodia drummondii	Low/Lake Fringing Rhagodia
Rhagodia preissii	Saltbush
Rhodanthe laevis	Smooth Sunray
Rhodanthe manglesii	Silver-backed Everlasting/Pink Sunray
Rhodanthe pygmaea	Pigmy Sunray
Santalum acuminatum	Quondong (Wolgol)
Santalum spicatum	Sandalwood (Poilyenum)
Scaevola spinescens	Currant/Maroon Bush/ Prickly Fanflower (Gubaru)
Schoenia cassiniana	Pink Cluster Everlasting
Sclerolaena sp1	
Sclerolaena sp2	
Sclerolaena diacantha	Grey Bindii/Copperburr
Senna artemisioides ssp *artemisioides*	Silver Cassia
Senna artemisioides ssp *filifolia*	Desert Cassia/Punty Bush
Solanaceae sp1	
Stypandra glauca	Blind Grass
Stypandra imbricata	Cluster-leaved Blind Grass
Templetonia smithiana	Kerosene Bush
Templetonia sulcata	Flat Templetonia/Centipede/Kerosene Bush
Thelymitra antennifera	Vanilla/Lemon Orchid
Trachymene ornata	Spongefruit
Triglochin sp1	
*Tripterus clandestina**	Stinking Rodger
Trymallium sp	
Velleia cycnopotamica	
Wahlenbergia gracilenta	Annual Bluebell
Waitzia acuminata	Orange Immortelle/ Golden Everlasting
Zygophyllum sp	Twinleaf
Fungi (9)	
Pycnoporum sp.	Scarlet Bracket Fungi
Flavoparmelia rutidota	A Foliose Lichen

Xanthoparmelia reptans	A Foliose Lichen
Teloschistes chrysopthalmos	An Orange Foliose Lichen
Buellia sp.	A Sac fungi
Carnoparmelia pruinata	
Diploschistes sp.	
Lecanora sp.	
Psona sp.	
* indicates a weed/introduced species	
# indicates birds declining in the Wheatbelt	