



Berriquin Wildlife

*Murray Land & Water Management
Plan Wildlife Survey 2005-2006*

*Matthew Herring
David Webb
Michael Pisasale*

INTRODUCTION

Why do a wildlife survey?

One of the great things about living in rural Australia is all the wildlife that we share the landscape with. Historically, humans have impacted on the survival of many native plants and animals. Fortunately, there is a growing commitment in the country to wildlife conservation on the farm. As we improve our knowledge and understanding of the local landscape and the animals and plants that live in it we will be in a much better position to conserve and enhance our natural heritage for future generations.

This wildlife survey was an initiative of the Berriquin Land & Water Management Plan (LWMP) Working Group and is the largest and most extensive ever undertaken in the area. Berriquin was one of four LWMP areas that took part in the project. This project had three aims:

- 1 To determine the distribution, habitat and local status of birds, reptiles, mammals and frogs
- 2 To raise awareness about wildlife ecology
- 3 To promote conservation of remaining species

What methods did we use?

A total of 150 sites were established in the Murray LWMP area with 53 of these in Berriquin. The sites were spread across

106 farms and were surveyed between June 2005 and March 2006. They incorporated a range of vegetation types (e.g. Black Box Woodland) as well as revegetation on previously cleared land and constructed wetlands. Methods used to survey wildlife included:

- Bird surveys
- Log rolling for reptiles and frogs
- Spotlighting for mammals, reptiles and nocturnal birds
- Elliot traps for small mammals and reptiles
- Pitfall trapping for reptiles and frogs
- Harp traps for bats
- Using the "Anabat" to record bat calls
- Call broadcasting to attract birds

Other targeted methods were used opportunistically and significant species seen incidentally (e.g. when traveling between sites) were also recorded. Surveying over the entire Murray LWMP area involved over 120 days of field work, usually with at least two people.

Front cover: The Olive Legless Lizard, found near Conargo and Blighty, was one of many highlights from Berriquin (D. Webb). High quality Grassy Box Woodland near Berrigan (M. Herring). Kids receiving prizes at a field day held south of Conargo (D. Webb).

Back Cover: Yellow-footed Antechinus (P. Merritt). Tuppal Creek (M. Herring).



M.Herring

Wildlife expert Adam Bester with 11 Little Forest Bats, one of Berriquin's most abundant mammals.

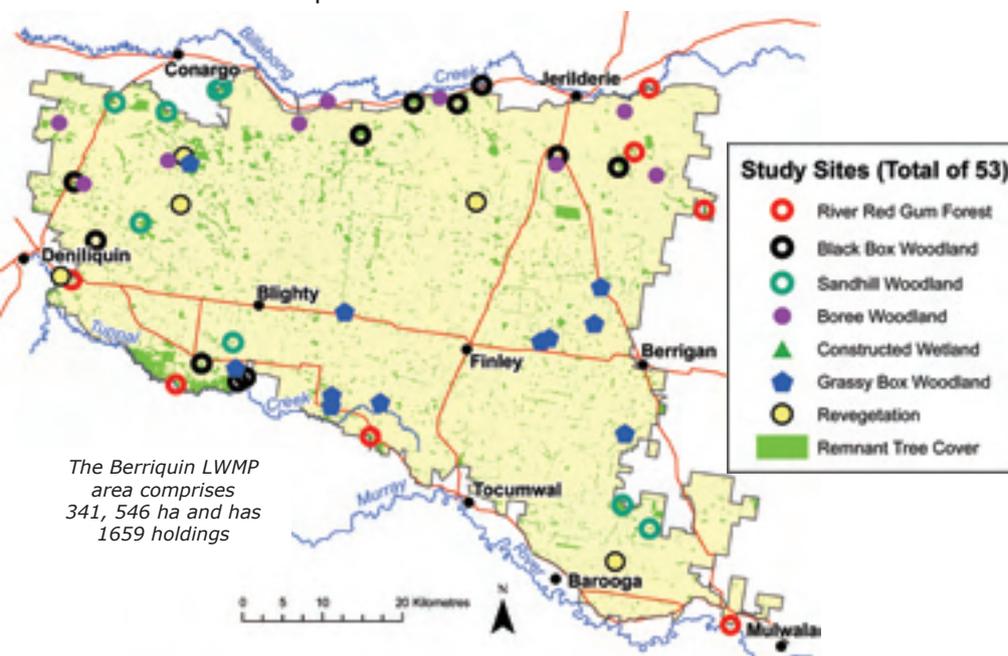
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D. Webb

The Hooded Robin was only found in the best quality patches of bush.



Summary of Results

There were 273 species (203 Birds, 33 Reptiles, 28 Mammals and 9 Frogs) found across the entire study area. Of these, 223 species were found in Berriquin.

Reptiles

A total of 16 reptiles were found in Berriquin, highlighted by two Macquarie Turtles in the Murray River near Mulwala and the South-eastern Slider in sandhill woodland near Barooga. Other Berriquin reptile highlights were the Olive Legless Lizard at three sites, Curl Snake also at three sites and two of the three blind snake species found across the four LWMP areas were recorded in Berriquin. By far the most common reptiles recorded in Berriquin were the Boulenger's Skink and Carnaby's Wall Skink, sometimes occurring in densities over 100 per hectare in good habitat. Sandhill Woodland was the most important vegetation type for reptiles across the four Murray LWMP areas but all sites that were messy with old grass, fallen logs, branches, shrubs, sheets of corrugated iron, old fence posts or other habitat were rich in reptile diversity.

Frogs

By far the most common frogs recorded during the study were Plains Froglet, Common Froglet and Spotted Marsh Frog. They were frequently recorded in large numbers near water, along rivers, creeks and in flooded wetlands including rice. The adults and tadpoles of these common frogs provide a great food source for waterbirds like Great Egret and reptiles like the Tiger Snake. The most significant of the 9 frog species found across the four Murray LWMP areas was the beautiful Southern Bell Frog, and although not recorded in Berriquin, it is very likely to exist as they were recorded at several sites in good numbers in the nearby Wakool and Cadell LWMP areas. This Southern Bell Frog population is an important stronghold for the species.



Curl Snake

D. Webb



Common Spadefoot

M. Herring

REPTILES

- Eastern Long-necked Turtle R
- Murray Turtle R
- Olive Legless Lizard R
- Southern Marbled Gecko C
- Gibber Gecko R
- Tessellated Gecko R
- Wood Gecko R
- Beaked Gecko R
- Carnaby's Wall Skink C
- Regal Skink R
- Robust Ctenotus U
- Spotted-backed Ctenotus U
- Tree-crevice Skink R
- Garden Skink R
- South-eastern Slider R
- Wood Mulch Slider U
- Eastern Robust Slider R
- Dwarf Skink U
- Chenopod Morethia R
- Boulenger's Skink C
- Shingleback R
- Common Blue-tongue Lizard U
- Eastern Bearded Dragon U
- Sand Goanna R
- Lace Monitor U
- Southern Blind Snake R
- Prong-snouted Blind Snake R
- Woodland Blind Snake R
- Carpet Python R
- Tiger Snake R
- Red-bellied Black Snake R
- Eastern Brown Snake C
- Curl Snake U

FROGS

- Peron's Tree Frog U
- Southern Bell Frog R (t)
- Plains Froglet C
- Common Froglet C
- Pobblebonk U
- Spotted Marsh Frog C
- Barking Marsh Frog U
- Common Spadefoot R
- Wrinkled Toadlet R

- Chelodina longicollis*
- Emydura macquarii*
- Delma inornata*
- Christinus marmoratus*
- Diplodactylus byrnei*
- Diplodactylus tessellatus*
- Diplodactylus vitattus*
- Rynchoedura ornata*
- Cryptoblepharus carnabyii*
- Ctenotus regius*
- Ctenotus robustus*
- Ctenotus orientalis*
- Egernia striolata*
- Lampropholis guichenoti*
- Lerista bougainvillii*
- Lerista muelleri*
- Lerista punctatovittata*
- Menetia greyii*
- Morethia adelaidiensis*
- Morethia boulengeri*
- Tiliqua rugosa*
- Tiliqua scincoides*
- Pogona barbata*
- Varanus gouldii*
- Varanus varius*
- Ramphotyphlops bicolor*
- Ramphotyphlops bituberculatus*
- Ramphotyphlops proximus*
- Morelia spilota*
- Notechis scutatus*
- Pseudochis porphyriacus*
- Pseudonaja textilis*
- Suta suta*

- Litoria peroni*
- Litoria raniformis*
- Crinia parinsignifera*
- Crinia signifera*
- Limnodynastes dumerillii*
- Limnodynastes tasmaniensis*
- Limnodynastes fletcheri*
- Neobatrachus sudelli*
- Uperoleia rugosa*

R - Rare (1 - 10% of sites)
 U - Uncommon (11-25% of sites)
 C - Common (26% sites or more)
 • - Found in Berriquin
 # - Introduced species
 (t) - Listed as threatened in NSW

BIRDS & MAMMALS

Birds

A total of 167 bird species were found in Berriquin. The Berriquin area is fortunate in that it supports species typically found well inland like Red-backed Kingfisher and Ground Cuckoo-shrike but also species only found in south-eastern Australia like Superb Parrot and White-browed Scrubwren. Sites along the Murray and Edward Rivers, and Billabong Tuppal Creeks, together with other major waterways, had the highest bird diversity. They exclusively supported species like the Azure Kingfisher. However, large patches of Boree, Grassy Box and Sandhill Woodland also supported a unique suite of birds, including many that are not found in River Red Gum or Black Box.

Sites dominated by common species had poor habitat diversity and were typically subject to continuous grazing, removal of fallen timber and a lack of flooding. The 14 most common birds for the entire Murray LWMP study (recorded at 75 or more sites) were the Australian Magpie, Galah, Striated Pardalote, Willie Wagtail, Crested Pigeon, Superb Fairy-wren, Red-rumped Parrot, Noisy Miner, Australian Raven, Eastern Rosella, Yellow Thornbill, White-plumed Honeyeater, Magpie-lark and White-winged Chough. Many of these bird species occur in open farmland and are 'winners', having benefited from changes to the landscape since European settlement.

The main waterbird highlights in Berriquin were a flock of 13 Magpie Geese near Mayrung, Broilgas, Freckled Ducks, large flocks (40+) of Plumed Whistling Ducks and Latham's Snipe. Other woodland bird highlights included a pair of Bush Stone-curlews and Painted Honeyeaters at two sites.

Mammals

A total of 23 mammals were found in Berriquin. The majority of these were bats and

marsupials. The 9 bat species found in Berriquin included a range of wattled, freetail, long-eared, forest and broad-nosed bats. The greatest number and diversity of bats were recorded in wetlands and along rivers. These fascinating creatures consume up to half their body weight in insects every night! During the day they roost in tree hollows and under bark.

A total of 8 marsupial species were found in Berriquin but the only common species were the Eastern Grey Kangaroo and Brush-tailed Possum. The Yellow-footed Antechinus was found amongst fallen timber in red gum country along the Edward River and Tuppal Creek. The Common Ringtail Possum was also closely associated with red gum. The Red and Western Grey Kangaroos and the Sugar Glider were only rarely found.

A major highlight for mammals in Berriquin was the Common Wombat, which was recorded at two sites, one near Conargo and one near Blighty. These are significant, isolated western populations. There is some hope that future surveying may reveal the Northern Hairy-nosed Wombat that is thought to be extinct in NSW and now only known from one small patch of bush in QLD. No Echidnas were recorded for the entire study. Historically, early settlers recorded the Eastern Quoll, Rufous Bettong, Bilby and White-footed Rabbit Rat, now all extinct in the Murray region.

There were six introduced mammals recorded in Berriquin during the study. In a joint effort with the Rural Lands Protection Board, many landholders in Berriquin have been extremely proactive in eradicating feral animals especially the fox and this will have enormous benefits to the local wildlife.

MAMMALS

Platypus R
• Yellow-footed Antechinus U
• Common Brushtail Possum C
• Common Ringtail Possum U
• Sugar Glider R
Squirrel Glider R (t)
• Eastern Grey Kangaroo C
• Western Grey Kangaroo R
• Red Kangaroo R
Black Wallaby R
• Common Wombat R
• Gould's Wattled Bat C
Little Pied Bat R (t)
• Chocolate Wattled Bat U
• Lesser Long-eared Bat U
• Southern Forest Bat R
• Little Forest Bat C
• Inland Broad-nosed Bat U
• Inland Freetail Bat U
• Southern Freetail Bat C
• White-striped Freetail Bat U
Water Rat U
• #House Mouse U
• #Fox C
• #Cat R
• #Rabbit C
• #Hare C
• #Pig R

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Gould's Wattled Bat

C. Grabham

BIRDS

- Emu R
- Brown Quail R
- Stubble Quail R
- Plumed Whistling-duck R
- Australian Wood Duck U
- Freckled Duck R (t)
- Blue-billed Duck R (t)
- Musk Duck R
- Black Swan R
- Australian Shelduck R
- Hardhead R
- Pacific Black Duck U
- Australasian Shoveler R
- Pink-eared Duck R
- Grey Teal U
- Chestnut Teal R
- Magpie Goose R (t)
- Great Crested Grebe R
- Hoary-headed Grebe R
- Australasian Grebe R
- Darter R
- Great Cormorant R
- Little Pied Cormorant R
- Little Black Cormorant R
- Australian Pelican R
- White-necked Heron R
- White-faced Heron U
- Cattle Egret R
- Little Egret R
- Great Egret R
- Intermediate Egret R
- Nankeen Night Heron U
- Glossy Ibis R
- Straw-necked Ibis R
- Australian White Ibis R
- Royal Spoonbill R
- Yellow-billed Spoonbill R
- Black-shouldered Kite R
- Black Kite R
- Whistling Kite U
- Collared Sparrowhawk R
- Brown Goshawk R
- White-bellied Sea-eagle R
- Little Eagle R
- Wedge-tailed Eagle U
- Swamp Harrier R
- Spotted Harrier R
- Black Falcon R
- Brown Falcon U
- Nankeen Kestrel U
- Peregrine Falcon R
- Australian Hobby R
- Brolga R (t)
- Buff-banded Rail R
- Australian Spotted Crake R
- Spotless Crake R
- Dusky Moorhen R
- Purple Swamphen R
- Eurasian Coot R
- Black-tailed Native-hen R
- Bush Stone-curlew R (t)
- Painted Button-quail R
- Little Button-quail R
- Latham's Snipe R
- Black-tailed Godwit R (t)
- Common Greenshank R
- Marsh Sandpiper R
- Wood Sandpiper R
- Red-necked Stint R
- Curlew Sandpiper R
- Sharp-tailed Sandpiper R
- Black-winged Stilt R
- Banded Stilt R
- Red-necked Avocet R
- Red-capped Plover R
- Red-kneed Dotterel R
- Black-fronted Dotterel R
- Masked Lapwing R
- Banded Lapwing R
- Inland Dotterel R
- Silver Gull R
- Whiskered Tern R
- White-winged Black Tern R
- Caspian Tern R
- Gull-billed Tern R
- #Spotted Turtle-dove R
- #Feral Pigeon R
- Diamond Dove R
- Peaceful Dove U
- Common Bronzewing C
- Crested Pigeon C
- Galah C
- Long-billed Corella U
- Little Corella R
- Sulphur-crested Cockatoo C
- Rainbow Lorikeet R
- Musk Lorikeet R
- Superb Parrot R (t)
- Cockatiel U
- Eastern Rosella C
- Yellow Rosella C
- Australian Ringneck R
- Blue Bonnet U
- Red-rumped Parrot C
- Budgerigar R
- Horsfield's Bronze-Cuckoo R
- Fan-tailed Cuckoo R
- Australian Owlet Nightjar R
- Tawny Frogmouth R
- Southern Boobook R
- Barn Owl R
- Azure Kingfisher R
- Laughing Kookaburra C
- Sacred Kingfisher C
- Red-backed Kingfisher R
- Rainbow Bee-eater R
- Dollarbird R
- White-throated Treecreeper U
- Brown Treecreeper C
- Superb Fairy-wren C
- Variegated Fairy-wren R
- White-winged Fairy-wren R
- Spotted Pardalote U
- Striated Pardalote C
- White-browed Scrubwren R
- Western Gerygone C
- Chestnut-rumped Thornbill C
- Buff-rumped Thornbill U
- Yellow-rumped Thornbill C
- Yellow Thornbill C
- Striated Thornbill U
- Weebill C
- Southern Whiteface U
- Red Wattlebird R
- Little Friarbird U
- Noisy Friarbird R
- Noisy Miner C
- Yellow-throated Miner R
- Blue-faced Honeyeater R
- Spiny-cheeked Honeyeater R
- Striped Honeyeater R
- Painted Honeyeater R (t)
- Singing Honeyeater R
- White-plumed Honeyeater C
- Black-chinned Honeyeater R (t)
- Brown-headed Honeyeater U
- Black Honeyeater R
- Crimson Chat R
- Orange Chat R
- White-fronted Chat R
- Jacky Winter U
- Flame Robin R
- Red-capped Robin U

- Hooded Robin R (t)
- Grey-crowned Babbler U (t)
- White-browed babbler R
- Chestnut-crowned Babbler R
- Varied Sittella R
- Eastern Shrike Tit R
- Gilbert's Whistler R (t)
- Golden Whistler R
- Rufous Whistler C
- Grey Shrike-thrush C
- Restless Flycatcher U
- Willie Wagtail C
- Grey Fantail C
- Black-faced Cuckoo-shrike C
- Ground Cuckoo-shrike R
- White-winged Triller U
- Olive-backed Oriole R
- White-breasted Woodswallow R
- White-browed Woodswallow R
- Masked Woodswallow R
- Black-faced Woodswallow R
- Dusky Woodswallow R
- Grey Butcherbird C
- Pied Butcherbird C
- Magpie-lark C
- Australian Magpie C
- Pied Currawong R
- Australian Raven C
- Little Raven C
- Apostlebird R
- White-winged Chough C
- Richards Pipit R
- Singing Bushlark R
- Zebra Finch U
- Red-browed Finch R
- Diamond Firetail R (t)
- # House Sparrow R
- Mistletoebird U
- Welcome Swallow C
- White-backed Swallow R
- Tree Martin U
- Fairy Martin R
- Clamorous Reed Warbler R
- Little Grassbird R
- Golden-headed Cisticola R
- Brown Songlark R
- Rufous Songlark C
- Silvereye R
- # Common Blackbird R
- # Common Starling U

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Ground Cuckoo-shrike

P. Merritt

RIVER RED GUM FOREST



P.Merritt



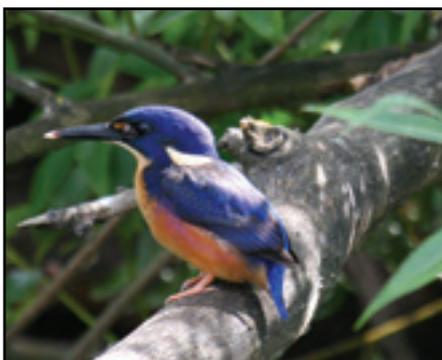
M.Herring

The **Bush Stone-curlew** is only just hanging on in south-eastern Australia. A total of three pairs were found during the Murray LWMP study including one pair in Berriquin. They were recorded in River Red Gum adjacent to the Edward River and in Black Box to the north, both just west of Berriquin in the Denimein LWMP area, as well as a Berriquin Boree site. Increased fox and cat control and retention of fallen timber in remnant patches of bush like this creekline will help improve breeding success for our remaining curlews.

There are five main vegetation types in Berriquin. These include River Red Gum Forest, Black Box Woodland, Grassy Box Woodland, Sandhill Woodland and Boree Woodland. Together with Revegetation and Constructed Wetlands, these are covered in the following sections.

River Red Gum (*Eucalyptus camaldulensis*) is one of the most intact vegetation types in the NSW Murray Catchment. The red gum forests of the Murray region are one of Australia's greatest ecological assets.

The **Azure Kingfisher** is restricted to major waterways like the Tuppall Creek and Edward and Murray Rivers.



D.Webb

Good quality red gum habitat booms with wildlife, particularly birds and mammals. Large, old River Red Gums are the equivalent of 5-star hotels for wildlife because they are filled with a range of hollows and crevices. Bats, possums, gliders, parrots, pardalotes, owls, the Tree-crevice Skink and numerous others all shelter and nest in red gums. Shedding bark is important for treecreepers, the Southern Marbled Gecko and Peron's Tree Frog. Fallen logs and branches are home to an array of reptiles and are a favourite place for the Yellow-footed Antechinus and Bush Stone-curlew. Thickets of young red gums and shrubs like Silver Wattle and Dwarf Cherry also increase habitat diversity in red gum forests and support additional species like the Black Wallaby, Gilbert's Whistler and White-browed Babbler.

More than 90 species were found in red gum in Berriquin across the seven sites. Across all four LWMP areas, the species most strongly associated with red gum compared to other vegetation types were the Australian Wood Duck, Grey Teal, Pacific Black Duck, Nankeen Night Heron, Long-billed Corella, Sulphur-crested Cockatoo, Yel-

low Rosella, Sacred Kingfisher, Azure Kingfisher, White-throated Treecreeper, Dollarbird, Striated Thornbill, White-browed Scrubwren, Little Friarbird, Restless Flycatcher, Sugar Glider, Yellow-footed Antechinus, Black Wallaby, Carpet Python, Tree-crevice Skink.

Major waterways in Berriquin act as wildlife 'highways' through the landscape, enabling wildlife populations to intermix. Intermittent flooding of red gum directly benefits waterbirds, frogs and bats but also maintains the overall health of the system.

The nocturnal **Southern Marbled Gecko** is abundant in red gum areas that have numerous large, old trees.



D.Webb

BLACK BOX WOODLAND



D. Webb

The **Carnaby's Wall Skink**, like many small skinks, is often known simply as a 'drop-tail'. This species loves dead wood and is often found basking on dead trees and fallen logs, even on cold winter days.



D. Webb

The Berriquin LWMP area is a stronghold for the **Grey-crowned Babbler**, a social bird often found in groups of six or more. Their distinctive noisy calls are often the first indication that they're present.



M. Herring

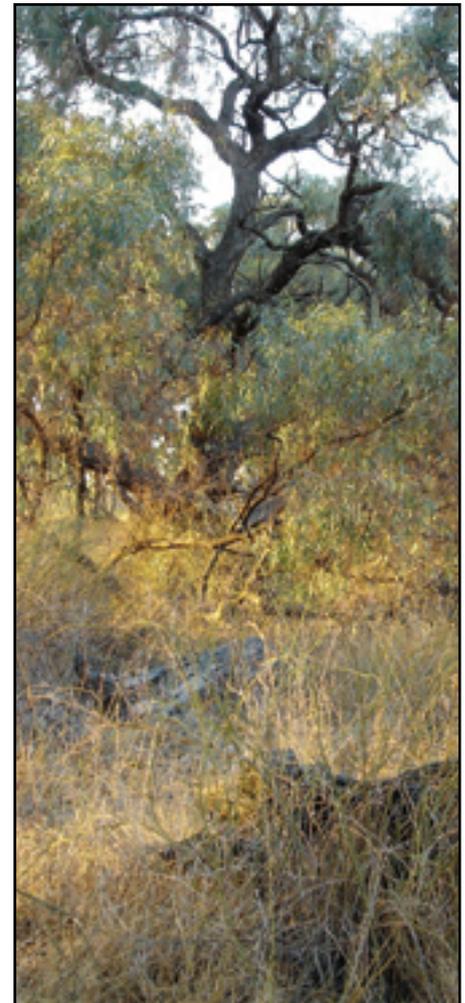
The 'bonk' call of the **Pobblebonk** (or Eastern Banjo Frog as it is also known) is very distinctive. These colorful burrowing frogs often emerge after rain and breed in flooded wetlands.

Black Box Woodland is dominated by Black Box (*Eucalyptus largiflorens*) and is often found on heavier floodplain soils, along creeks and in wetland depressions. Good quality Black Box woodland also has a range of understorey shrubs such as Miljee, Lignum, Nitre Goose-foot, Thorny Saltbush, Leafless Cherry, Native Willow and a variety of grasses. Black Box with an understorey is ideal for many woodland birds and when flooded it teems with frogs, bats and wetland birds.

More than 100 species of animals were found in Black Box across the 11 Berriquin sites but the number of species found at each site varied considerably, depending on how isolated the site was, the size of the site and the quality of habitat. Many Black Box remnants are missing an understorey of shrubs and provide habitat for only a handful of species like the Eastern Rosella, Noisy Miner, Grey Butcherbird and Eastern Grey Kangaroo. Increasing the cover of native perennial grasses, retaining fallen timber and rein-

stating native shrubs will benefit locally rare species like the Diamond Firetail, Red-capped Robin and Yellow-footed Antechinus. Fencing off remnant stands and controlling grazing to allow young trees, shrubs and various ground covers to regenerate is usually the most practical first step.

Many of the remaining stands of Black Box are disconnected from the floodplain and show signs of thirst. The wetlands watering project that the NSW Murray Wetlands Working Group and Murray Irrigation have implemented since 2001 has been a great success in bringing these systems back to life on many farms. Waterbirds like the Latham's Snipe, which only breeds in Japan, and the Red-kneed Dotterel that breeds locally, together with all local frogs and bats benefit directly from the flooding. Woodland birds like the Grey-crowned Babbler and Chestnut-rumped Thornbill, and a range of reptiles and mammals benefit in the longer term from an improvement in the health of these remnants.



High Quality Black Box-Lignum habitat

M. Herring

BERRIQUIN HIGHLIGHTS



Involving the community...

The six Berriquin field days and seminars were well attended with an average of over 50 people. We received a great deal of support and positive feedback from the community, with particular appreciation of the family-focused barbecues, novelty prizes, involvement in the surveying and the opportunity to see some of the more unusual local critters like blind snakes, long-eared bats and antechinus. A total of 1,293 people attended the 24 field days and seminars held across the four LWMP areas, testimony to the strong interest that irrigation farmers in the Murray region have in their local wildlife.



Photo Captions and Credits

Top Left: Locals inspect bat at Berriquin field day (MIL)

Top Right: Seminar at the Blighty Hotel (MIL)

Middle: Broilgas at nest (P. Merritt)

Middle Right: Locals learn about harp traps near Berrigan (MIL)

Next Page, Top Left: Wood Gecko (D. Webb)

Top Right: Wildlife seminar attendees get friendly with a Blind Snake (MIL)

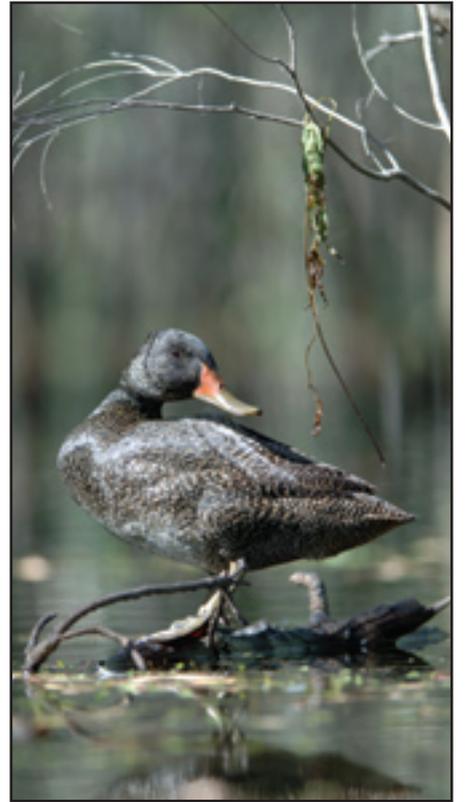
Middle Left: Macquarie Turtle (P. Merritt)

Middle Right: Freckled Duck (P. Merritt)

Bottom Left: Berriquin field day near Conargo (MIL)

Bottom Right: Common Wombat (P. Merritt)





SANDHILL WOODLAND

Sandhill woodland includes White and Murray Cypress-Pine, Buloke, Yellow Box and Needlewood and often merges with Grassy Box Woodland. Sandhills originally had the most diverse shrub layers with species such as Moonah, Rosewood, Butterbush, Native Willow, Emu Bush, Golden Wattle, Quandong and various species of saltbush. Good quality sandhill woodland is a haven for reptiles and woodland birds. The sandy soils allow movement of underground animals like blind snakes and excavation of nesting burrows by Rainbow Bee-eaters and Sand Goannas.

Sandhill Woodland has a particularly unique suite of wildlife, very different to what we find in River Red Gum areas for instance. A third of the 33 reptiles found across the Murray LWMP area were either exclusively found on sandhills with good quality remnant vegetation or were only rarely found in other



D. Webb

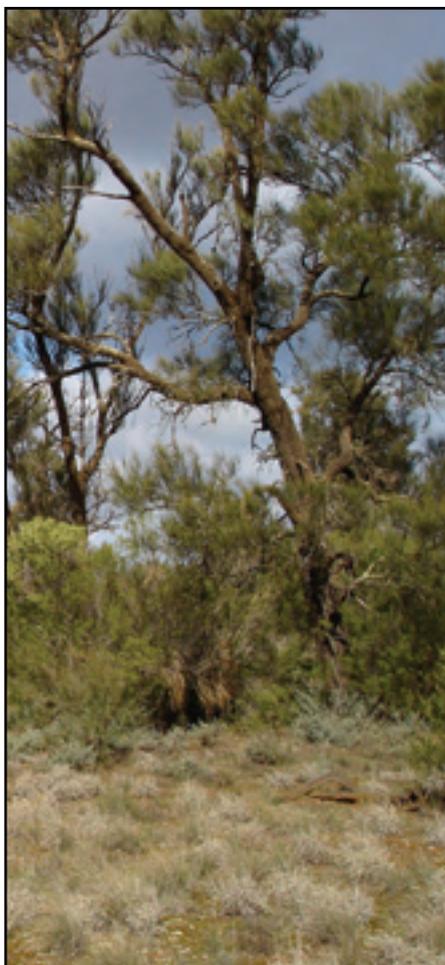


D. Webb

The **Prong-snouted Blind Snake**, one of three blind snake species found across the Murray LWMP areas, and the **Robust Ctenopus**, a beautifully patterned medium to large-sized skink, are both right at home in the loose soil of sandhill woodland.



M.Herring



M.Herring

vegetation types. A well-managed sandhill remnant with good habitat supports around 10 reptile species, even if the site is only a hectare or two in area. The most significant birds found in sandhill woodland in Berriquin were the Superb Parrot, Hooded Robin and Apostlebird.

Parts of Berriquin have extensive sandhills but when the area was first settled in the 1800s they were heavily cleared for grazing and then later for cropping. Remaining stands of Buloke, Needlewood and Murray Cypress-Pine are examples of remnant sandhill woodland that are excellent starting blocks for future restoration. This can be done by fencing out stock, controlling common weeds (e.g. Patterson's Curse, Cape Weed and Barley Grass) and replanting with shrubs. Controlling rabbits, hares, foxes and cats will also make a site more attractive to native wildlife.

Brian Noonan at his Sandhill Woodland site where stock exclusion over the last 7 years has enabled young trees to regenerate, improving wildlife habitat.

The **Eastern Bearded Dragon**, often mislabelled a 'frill-neck', can escape predators with its extreme agility or deter them when it exposes its bright yellow mouth.



M.Herring

CONSTRUCTED WETLANDS



D. Webb



D. Webb



P. Merritt

A flock of 13 **Magpie Geese** in the Mayrung area was a major highlight of the study. These unusual waterfowl breed in trios and made a big comeback in the Riverina during 2005. Most **Brolga** breeding sites are large (50 ha+), open wetlands covered in waterplants like Canegrass but they will breed in small constructed wetlands that contain shallows and waterplants like the site below. The increasingly mythical **Australian Painted Snipe** is Australia's most threatened waterbird and despite the Murray region being an important spring/summer breeding area for them, they were not found during the study. These striking yet secretive birds favour shallow, muddy wetland areas that have low, patchy cover from native waterplants like Spike-rushes. Irrigation storage dams have huge potential to support many more waterbirds by incorporating shallows with waterplants that are only flooded intermittently. This site near Jerilderie illustrates the potential biodiversity value of an irrigation storage dam, with Australian Painted Snipe recorded several times, together with more than 60 other waterbird species.

Most constructed wetlands, whether for irrigation storage or stock water, are steep-sided deep dams with insufficient habitat for most waterbirds, frogs and bats. The Australian Wood Duck and Galah are rare examples of species that have actually benefited from the proliferation of farm dams.

Simple changes to constructed wetlands can dramatically increase their wildlife carrying capacity. Earthworks to create seasonally flooded shallows that support waterplants and mudflats will attract a wide range of new species like egrets, herons, crakes, sandpipers, spoonbills and stilts. Avoiding constant grazing pressure from stock will also enable mudflats and waterplants to flourish resulting in a greater range of wildlife utilising your farm dam.



M. Herring

BOREE WOODLAND

Boree Woodland is dominated by Boree (*Acacia pendula*) and originally it covered large areas of Berriquin extending over expansive areas beyond the active floodplain. Today, there are just a few scattered stands remaining, representing about 4% of the original area.

Over 50 species were found at the 9 Berriquin sites. The Blue Bonnet and Singing Honeyeater were closely associated with Boree across all four LWMP areas. On top of Bush Stone-curlews and Painted Honeyeaters, other Berriquin Boree highlights included numerous Grey-crowned Babblers, the Red-capped Robin, Dwarf Skink and Curl Snake.

Conservation of the remaining stands of Boree is crucially important for the Berriquin area. Controlling stock grazing to allow regrowth of young Boree trees and shrubs, retaining fallen timber and encouraging native grasses can make a huge difference.



D. Webb

The **Painted Honeyeater** is a rare woodland bird that is dependent on mistletoe. They were found at two sites east of Conargo feeding on Grey Mistletoe fruits in Boree.

This male **Mistletoebird** is just about to swallow a mistletoe fruit and within half an hour or so it will pass through the bird, potentially landing on a suitable branch and germinating into a new mistletoe clump.

Brilliant Boree ... High quality Boree stands like this site in between Jerilderie and Conargo are not just rich in fauna but also flora and contain a range of wildflowers like these Swainsona peas. This site yielded a pair of Bush Stone-curlews, several Painted Honeyeaters and other threatened species. The **Emu** nest pictured below is at the same Boree site, which is only crash-grazed, then rested for months at a time, allowing young trees, shrubs and ground covers to regenerate. An increasing number of landholders in Berriquin are using fencing incentives to manage grazing and encourage regrowth of native vegetation.



M. Herring



M.Herring

A typical Grassy Box Woodland remnant where resting the site from grazing for long enough to allow the regeneration of trees, shrubs and native grasses will dramatically improve habitat for wildlife.

Grassy Box Woodland includes any stands of White Cypress-Pine, Murray Cypress-Pine, Yellow Box, Grey Box, Buloke and Needlewood, that aren't on sandhills. Two hundred years ago this was the most widespread vegetation type in Berriquin.

Originally, these woodlands contained a great variety of understorey shrubs such as wattles, saltbushes and hobbushes, together with open grassy areas. The soils found in Grassy Box Woodland were favoured for agriculture and on most farms approximately 95% of the original area has disappeared.

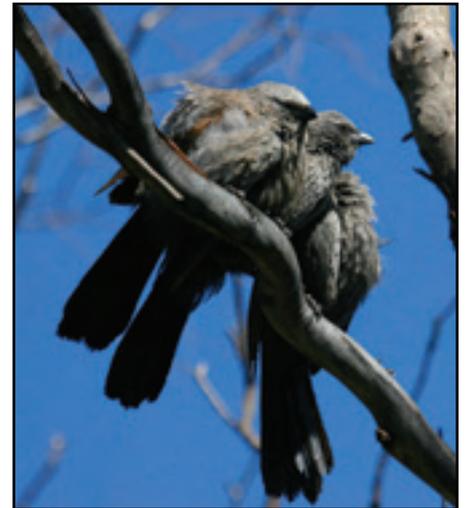
Today, the wildlife found in these woodlands usually consists of common species like the Eastern Brown Snake, Australian Magpie, Noisy Miner and Galah that can persist in landscapes that are mostly cleared. However, sites in Berriquin that contained good habitat supported sensitive species like the Varied Sittella, Olive-backed Oriole, Red-capped Robin, Jacky Winter, Dusky Woodswallow, Brown-headed Honeyeater and Diamond Fire-tail.



D.Webb

Superb Parrots breed in the red gum forests of the Murray, Edward and other Rivers but rely on different vegetation types to feed in. The Berriquin area is an important stronghold for the species.

Apostlebirds were exclusively found in Berriquin during the study and Grassy Box and Sandhill Woodland comprised 14 of the 15 sites where they were recorded.



D.Webb

Merging vegetation types. This stand of native pine south of Blighty is unusual because the understorey is Lignum, which is usually associated with Black Box. The merging of two soil types has enabled these vegetation types to mix and this site supports both suites of wildlife.



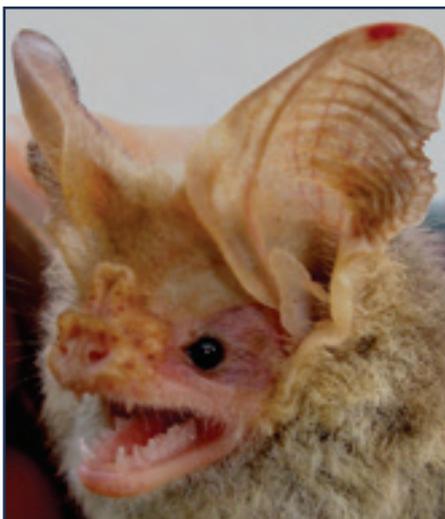
M.Herring

REVEGETATION



This agroforestry site near Deniliquin supported a range of thornbills (including breeding by Striated and Buff-rumped Thornbills), whistlers, honeyeaters and many other small birds, mainly because it is situated near extensive remnant habitat along the Edward River.

Over the last decade it has become clear that many wildlife species, particularly birds and bats, are readily able to return to suitable revegetation patches that landholders have planted. Other less mobile species, like many reptiles and small mammals will only benefit from revegetation that is situated adjacent to existing remnants. Large plantings greater than five hectares that have a mix of tree and shrub species and are located adjacent to good remnant vegetation are the best



M.Herring

and provide habitat for much more wildlife than single-species plantings in thin strips in isolated paddocks.

Eucalypt plantations for timber or firewood and Old Man Saltbush plantings for grazing value and salinity mitigation are a much better 'crop' for most wildlife than conventional agriculture. Some farm forestry sites in the Cadell LWMP area that incorporated an Old Man Saltbush understorey were outstanding for bird diversity with a range of thornbills, honeyeaters, whistlers, robins and other small birds.

Old sheets of corrugated iron, fence posts and roofing tiles can provide homes for a range of skinks, geckos and legless

The **Lesser Long-eared Bat** and **Superb Fairy-wren** respond quickly to revegetation, usually making use of plantings within the first few years.



M.Herring

David Webb conducting a bird survey at this diverse Berriquin planting. It includes a great range of tree and shrub species and although it is very isolated it will eventually attract many woodland birds and other wildlife.

lizards that will otherwise have to wait many decades for fallen logs and branches to accumulate. Similarly, nest boxes designed for bats, possums, gliders, parrots, owls or other hollow-nesting wildlife can provide shelter and nest sites well before hollow formation takes place decades down the track.

For information on the range of incentives available for managing, restoring and establishing native vegetation, please contact your Berriquin LWMP officer on 03 5883 9100



D.Webb

How can I attract more wildlife to my farm?

The most important thing that Berriquin landholders can do for wildlife conservation is identify the most significant remnant vegetation sites on their properties and manage them in a way that will maintain or improve the quality of habitat. Keeping areas messy by avoiding continuous grazing pressure, not 'cleaning up' fallen timber and ensuring that there is at least some areas that have shrubs and young trees are three simple ways to improve your wildlife habitat.

For those lucky enough to still have good stands of Boree, Native Pine, Grey Box, Yellow Box or Needlewood, these are some of the most valuable assets on your property. For those with River Red Gum or Black Box along the Edward River, Tuppal Creek, Billabong Creek or other major water way, your sites contribute to major wildlife 'highways' through the landscape. Flooding Black Box, River Red Gum and other wetland sites from time to time will help maintain the health of the floodplain and greatly improve wildlife habitat.

Revegetated sites attract the most species when they are 5 or more hectares in area, incorporate a range of tree and shrub species and are situated adjacent to remnant vegetation. Simple changes to irrigation and stock water storage dams that create shallows with waterplants and mudflats can also dramatically increase wildlife diversity on your farm.

Recommended Reading

Lindenmayer, D., Claridge, A., Hazell, D., Michael, D., Crane, M., MacGregor, C. and Cunningham, R. (2003) *Wildlife on Farms – how to conserve native animals*. CSIRO Publishing, Melbourne.

Kent, K., Earl, G., Mullins, B., Lunt, I & Webster, R. Editors. (2002) *Native Vegetation Guide for the Riverina; notes for land managers on its management and revegetation*, Charles Sturt University, Albury.



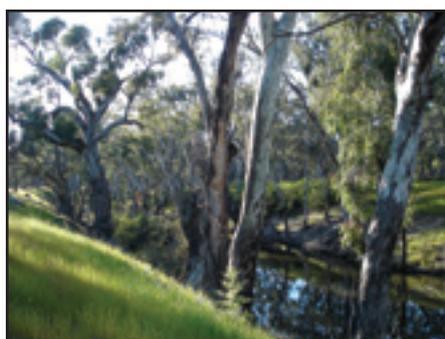
Keeping remnant vegetation messy, like this Boree patch, will benefit wildlife.



Linking patches of bush within and between properties creates corridors.



Reducing grazing pressure will encourage an understorey of shrubs.



Flooding of black box and red gum is vital for the health of the floodplain.

M.Herring

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For further information contact:
Murray Irrigation Limited
443 Charlotte Street
Deniliquin NSW 2710

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