



Denimein Wildlife

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

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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 and 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 Denimein Land & Water Management Plan (LWMP) Working Group and is the largest and most extensive ever undertaken in the area. Denimein 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 wild life 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 20 of these in Denimein.

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: Bush Stone-curlew (D. Webb), high quality Black Box habitat at the Pretty Pine TSR (M. Herring) and people gather to inspect one of the bat species found at a Denimein field day on the Edward River (D. Webb).

Back Cover: Glossy Ibis (P. Merritt), Revegetation in Denimein (M. Herring).

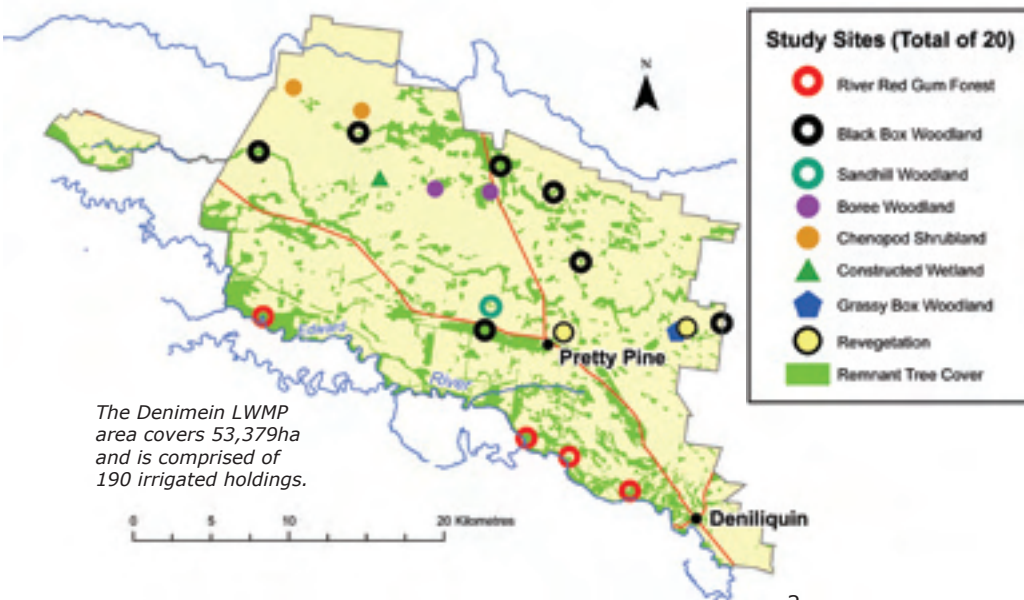


D.Webb

The Black Wallaby was an excellent find! This shy species loves thick undergrowth and is one of the rarest mammals in Denimein.

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M.Herring

Log-rolling conducted as part of the wildlife survey.

REPTILES & FROGS

Summary of Results

There were 273 species (203 Birds, 33 Reptiles, 28 Mammals and 9 Frogs) found across the entire study area. Of these, 140 species were found in Denimein.

Reptiles

A total of 12 reptiles were found in Denimein. The major highlight for reptiles was the discovery of two locally rare skinks in Chenopod Shrubland in the north-western part of Denimein: the Chenopod Morethia and the Spotted-backed Ctenotus. The Tessellated Gecko, considered rare regionally, was also found at this Chenopod Shrubland site, as well as a Boree Woodland site in Denimein. Sandhill Woodland was the most important vegetation type for reptiles across the four Murray LWMP areas. The South-eastern Slider and Southern Blind Snake, also both regionally rare, were recorded just outside the Denimein area. A Carpet Python was found further west in the Wakool LWMP area along the Niemur River and they are known to occur in other nearby areas including the Edward River around Moulamein. The most common Denimein reptiles were the Boulenger's Skink, Carnaby's Wall Skink and Robust Ctenotus.

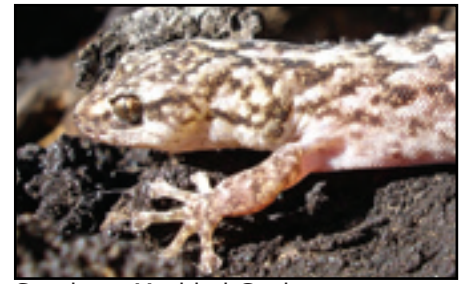
Frogs

By far the most common frogs recorded 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. These common frogs provide a great food source for waterbirds. 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 Denimein, 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.



Peron's Tree Frog

P. Merriitt



Southern Marbled Gecko

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 R
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 U
• Eastern Brown Snake C
Curl Snake U

FROGS

Peron's Tree Frog U
(t) Southern Bell Frog R
• 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 carnabyi
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 Denimein
- Introduced species
(t) - Listed as threatened in NSW

BIRDS & MAMMALS

Birds

A total of 107 bird species were found in Denimein. River Red Gum sites along the Edward River and the Pretty Pine Traveling Stock Reserve Black Box site had the highest diversity of birds including local rarities like Red-capped Robin, Painted Button-quail, Eastern Shrike-tit, Azure Kingfisher and Budgerigar. Many other sites were dominated by common species because continuous grazing, removal of fallen timber and a lack of flooding has reduced available habitat for the more sensitive birds.

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.

A major highlight in Denimein was finding two of the three pairs of Bush Stone-curlews for the entire Murray LWMP study. The Inland Dotterel (one site, Deni-Moulamein Rd) was the only record for the whole study and Yellow-throated Miner (3 sites) were found in Denimein more than any other area. A Little Eagle (Oro Rd), Glossy Ibis (on rice north of Pretty Pine), Black-faced Woodswallows (2 sites) and a group of ten Superb Parrots in Boree (north of Pretty Pine) are also noteworthy sightings. Grey-crowned Babblers are considered threatened in NSW but we found them at 11 of the 20 Denimein sites, making them one of the most common local bird species in the area!

Mammals

A total of 18 mammals were found in Denimein, 13 of these being native. Most of the native

species were bats, with eight species recorded in Denimein including 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.

The Eastern Grey Kangaroo and Brush-tailed Possum were the most commonly found marsupials whereas the Yellow-footed Antechinus was only found amongst fallen timber in red gum country along the Edward River. One of the most exciting finds was a Black Wallaby recorded near the corner of Nisbett's and Stud Park Roads.

Other native mammals not recorded in Denimein but found nearby included the Common Ringtail Possum, Little Pied Bat and Southern Forest Bat. Further west along the Edward River in the Wakool LWMP area a Platypus was found. Additional recent sightings from local landholders suggest there are several in that area. It is possible that Platypus still occur on the Edward River in Denimein. No Echidnas were recorded for the entire study. Historically, early settlers recorded the Eastern Quoll, Rufous Bettong, Bilby, Northern Hairy-nosed Wombat and White-footed Rabbit Rat, now all extinct in the Murray region.

There were 5 introduced mammals recorded in Denimein during the study. In a joint effort with the Rural Lands Protection Board, many landholders in Denimein 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
- (t) Squirrel Glider R
- Eastern Grey Kangaroo C
- Western Grey Kangaroo R
- Red Kangaroo R
- Black Wallaby R
- Common Wombat R
- Gould's Wattled Bat C
- (t) Little Pied Bat R
- 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 R
- Southern Freetail Bat C
- White-striped Freetail Bat U
- Water Rat R
- #House Mouse U
- #Fox C
- #Cat R
- #Rabbit C
- #Hare C
- #Pig R

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Lesser Long-eared Bat

D. Webb

BIRDS

- Emu R
- Brown Quail R
- Stubble Quail R
- Plumed Whistling-duck R
- Australian Wood Duck U
- (t) Freckled Duck R
- (t) Blue-billed Duck R
- 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
- (t) Magpie Goose R
- 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 R
- Cattle Egret R
- Little Egret R
- Great Egret R
- Intermediate Egret R
- Nankeen Night Heron R
- 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
- (t) Brolga R
- Buff-banded Rail R
- Australian Spotted Crake R
- Spotless Crake R
- Dusky Moorhen R
- Purple Swampphen R
- Eurasian Coot R
- Black-tailed Native-hen R
- (t) Bush Stone-curlew R
- Painted Button-quail R
- Little Button-quail R
- Latham's Snipe R
- (t) Black-tailed Godwit R
- 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
- (t) Superb Parrot R
- 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 R
- Noisy Friarbird R
- Noisy Miner C
- Yellow-throated Miner R
- Blue-faced Honeyeater R
- Spiny-cheeked Honeyeater R
- Striped Honeyeater R
- (t) Painted Honeyeater R
- Singing Honeyeater R
- White-plumed Honeyeater C
- (t) Black-chinned Honeyeater R
- 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

- (t) Hooded Robin R
- (t) Grey-crowned Babbler C
- White-browed babbler R
- Chestnut-crowned Babbler R
- Varied Sittella R
- Eastern Shrike Tit R
- (t) Gilbert's Whistler R
- 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 U
- White-winged Chough C
- Richards Pipit R
- Singing Bushlark R
- Zebra Finch U
- Red-browed Finch R
- (t) Diamond Firetail R
- # 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

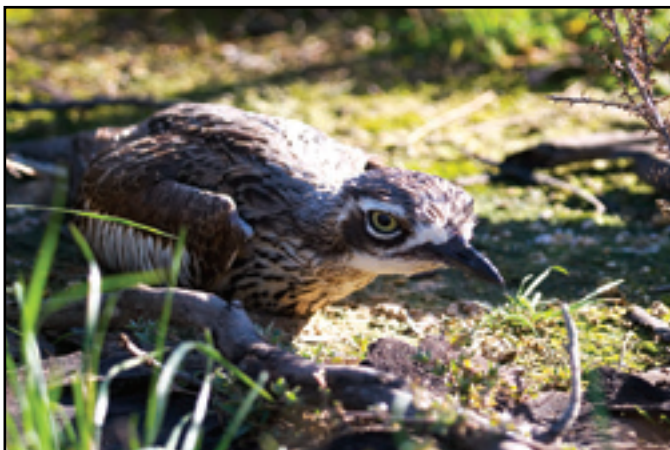
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Inland Dotterel

P. Merritt

RIVER RED GUM FOREST



D. Webb



D. Webb

The **Bush Stone-curlew** is just one of many birds, mammals, reptiles and frogs that are attracted to the Edward River. They were recorded in River Red Gum adjacent to the Edward River and in Black Box just north of the Box Creek. Other recent sightings from Denimein landholders suggest there might be up to five different local pairs in the area. Increased fox and feral cat control and retention of fallen timber will help improve breeding success in the threatened curlew.

There are six main vegetation types in Denimein. These include River Red Gum Forest, Black Box Woodland, Grassy Box Woodland, Sandhill Woodland, Boree Woodland and Chenopod Shrubland. 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 **Gould's Wattled Bat** is easily recognised by its distinctive black 'boofhead'. It is one of the most abundant mammals in the Denimein area.



D. Webb

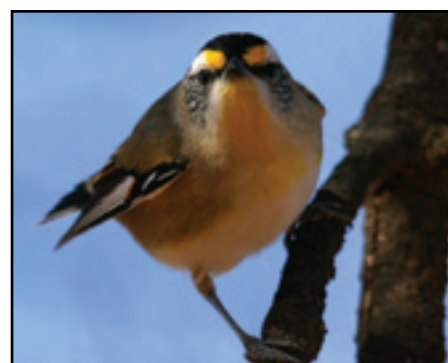
Good quality red gum habitat booms with wildlife, particularly birds and mammals. Large, old River Red Gums are the equivalent of 5-star hotels for wildlife because they are filled with a range of hollows and crevices. Bats, possums, gliders, parrots, pardalotes, owls, the Tree-crevice Skink and numerous 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 River Cooba, 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 70 species were found in red gum in Denimein across the four sites. Across all four LWMP areas, some of the species most strongly associated with red gum compared to other vegetation types were the Nankeen Night Heron, Long-billed Corella, Sulphur-crested

Cockatoo, Yellow 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 and a range of bats and frogs.

Intermittent flooding directly benefits waterbirds and frogs but also maintains the overall health of the system. Great Egrets, White-necked Herons and several other tree-nesting waterbirds were all found breeding in red gums along the Edward River.

Common but easily overlooked, the **Striated Pardalote** is usually the only small bird that persists in poor habitat dominated by Noisy Miners.



D. Webb

BLACK BOX WOODLAND



D. Webb

The **White-browed Woodswallow** arrives in the woodlands of Denimein each spring and summer, hoping local conditions favour a good breeding season. They are often heard and seen in large overhead flocks with Masked Woodswallows.

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 Goosefoot, 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 60 species of animals were found in Black Box across the 7 Denimein sites. 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, Eastern Grey Kangaroo and Eastern Brown Snake. Increasing the cover of native perennial grasses, retaining fallen timber and reinstating native shrubs will benefit locally rare species like the Diamond Firetail, Red-capped Robin and Yellow-footed Antechinus. Fenc-

The **Brush-tailed Possum** was the most common of the tree-dwelling marsupials and was recorded five times more frequently than the smaller Ringtail Possum. The Sugar Glider, Squirrel Glider and Feathertail Glider are now all rare across the farming landscape.



D. Webb

ing off remnant stands and controlling grazing to allow young trees, shrubs and various ground covers to regenerate is usually the most practical first step. Black Box along the Box Creek is an important wildlife corridor and has excellent potential for being further restored to improve its habitat.

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.



M. Herring

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.



Black Box Woodland with shrubs.
M. Herring

DENIMEIN HIGHLIGHTS



Involving the community...

The six Denimein field days and seminars were well attended with an average of more than 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 with Southern Blind Snake (*MIL*)

Top Right: Locals with Southern Blind Snake (*MIL*)

Middle: Latham's Snipe (*P. Merritt*)

Bottom Right: One of the three seminars held at the Pretty Pine Hall (*MIL*)

Next Page, Top Left: Lesser Long-eared Bat (*M. Herring*)

Top Right: Yellow-footed Antechinus (*P. Merritt*)

Middle Left: Nankeen Night Heron (*P. Merritt*)

Middle Right: Matthew Herring holding Yellow-footed Antechinus found on Edward River during field day (*D. Webb*)

Bottom Left: Checking a harp trap for bats at a Denimein field day. (*D. Webb*)

Bottom Right: Budgerigar breeding in old Fairy Martin (Bottle Swallow) nests. (*P. Merritt*)



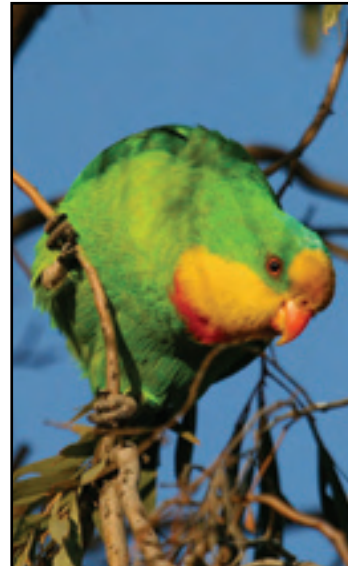


BOREE WOODLAND

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

A total of 48 species were found at the 2 Denimein sites. The Blue Bonnet and Singing Honeyeater were closely associated with Boree across all four LWMP areas. Tessellated Geckos and Superb Parrots were also found in Denimein Boree, whilst Painted Honeyeaters and Bush Stone-curlews were found in Boree just to the east in the Berriquin LWMP area.

Conservation of the remaining stands of Boree is crucially important for the Denimein 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 (near Denimein) feeding on Grey Mistletoe fruits in Boree. Their distinctive "georgie" call heralds their arrival each spring.

Male **Superb Parrot** in Boree at a Denimein TSR. These striking parrots breed in the red gum forests along the Murray, Edward and other rivers but rely on other vegetation types like Boree to feed in.

The 'furnished house' on the right is the only option for most prospective wildlife tenants. This comparison between two Boree stands illustrates the role that continuous grazing can have on the loss of this vegetation type from the landscape. The stand on the left is a classic case of the 'living dead' because it isn't rested from grazing for long enough to allow the regeneration of young Boree, various shrubs and ground covers. The stand on the right is only crash-grazed, then rested for months at a time. An increasing number of landholders in Denimein are using fencing incentives to manage grazing and encourage regrowth of native vegetation.



M. Herring

GRASSY BOX WOODLAND



M.Herring

Grassy Box Woodland includes any stands of White Cypress-Pine, Murray Cypress-Pine, Yellow Box, Grey Box, Buloke or Needlewood, that aren't on sandhills. Originally, these woodlands contained a great variety of understorey shrubs such as wattles, saltbushes and hopbushes, together with open grassy areas.

The soils found in Grassy Box Woodland were favoured for agriculture and in most areas 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. The good news is that once a site has plenty of shrubs, fallen timber and other habitat there are many species capable of returning.

Kristin Goudie and Bruce Simpson at a Yellow Box patch on "Coolowie" that has been fenced-off and had a patchy understorey of shrubs reinstated – grassy box woodland restoration in progress!



D.Webb

The **Eastern Brown Snake**, one of only four reptiles assigned to the Common category for regional status, is the most frequently recorded snake in Denimein and has coped well with European settlement.

The **Australian Magpie** (with two **House Mice**) was one of only 14 bird species recorded at more than half of the 150 study sites.



P.Merritt

Neat and Tidy versus Messy and Lively! Tidying up the farm by piling up logs and branches and burning them is bad news for wildlife. The habitat value of this stand of Grey Box has plummeted after being "cleaned up". Retaining fallen timber and reinstating a patchy understorey of shrubs will improve wildlife habitat. Even junk such as old fence posts and sheets of corrugated iron can be valuable habitat.



M.Herring

SANDHILL WOODLAND

Sandhill woodland includes vegetation capable of growing in sandy soils and often merges with Grassy Box Woodland. Large trees include White and Murray Cypress-Pine, Buloke, Yellow Box and Needlewood. 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.

Only one sandhill site was surveyed in Denimein, however based on sites in neighboring LWMP areas we know they have a 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



M.Herring



D.Webb

The **Southern Blind Snake** (above left), one of three blind snake species found across the Murray LWMP areas, is right at home in the loose soil of sandhill woodland. The beautiful **Robust Ctenotus** (above right) is locally common on sandhills. The **Wood Mulch Slider** (below), a tiny slider skink, is most often found under rotting logs on sandhills. These and other reptile species avoid heavy soils like those found in River Red Gum and Black Box areas.



D.Webb



Typical Sandhill Woodland

M.Herring

were either exclusively found on sandhills with good quality remnant vegetation or were only rarely found in other 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 were the Superb Parrot, Hooded Robin and Apostlebird.

Parts of Denimein 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 Murray Cypress-Pine is an example of remnant sandhill woodland that is excellent starting block for future restoration. This can be done by fencing out stock, controlling common weeds and replanting with shrubs. Controlling rabbits, hares, foxes and cats will also make a site more attractive to native wildlife.

The **Common Spade-foot** has distinctive dark 'spades' on each foot. This burrowing frog is usually only found when it surfaces after rain. Up to 1000 eggs are laid, at or near the surface of the water, often entwined among vegetation.



M.Herring

CONSTRUCTED WETLANDS



D. Webb



M. Herring

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 on a number of occasions, 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.

CHENOPOD SHRUBLAND



D. Webb

The **Chenopod Morethia**, **Spotted-backed Ctenotus** and **White-winged Fairy-wren** are all closely associated with Chenopod Shrubland. These species are only rarely found in areas where there are trees but scattered stands of Boree in Chenopod Shrubland increase habitat diversity and mean more species are able to take advantage of the shrubs.

For many people Chenopod Shrubland is simply a shrubby paddock. Cottonbush, Mat-rush, various saltbushes, bluebushes, Dillonbush and other shrubby plants found in Chenopod Shrubland offer many wildlife species with habitat that isn't otherwise available. Only a handful of birds are closely associated with Chenopod Shrubland like the White-winged Fairy-wren, Orange Chat and White-fronted Chat. Unlike most birds and mammals, many reptiles do well in treeless habitats like Chenopod Shrubland, providing there is some cover from native shrubs, grass tussocks or cracking soils.



M. Herring

REVEGETATION



D. Webb

The **Yellow Thornbill** is one of the first species to colonise revegetation patches. These tiny birds move through the trees in groups feeding on insects, helping to maintain tree health.

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



D. Webb



M. Herring

This 1993 planting on 'Union Plain' has already attracted back a range of birds such as the Spiny-cheeked Honeyeater, Grey-crowned Babbler and three Thornbill species, despite there being very little remnant vegetation in the surrounding landscape. The propagation of five mistletoe species into this planting has further increased habitat diversity, providing important nest sites, fruit and nectar.

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.

Two hundred years ago the **Red-capped Robin** would have been one of the most common birds in the Denimein area but it is now locally rare, being found at only 2 Denimein sites during the study, both along the Edward River. Fortunately, this appealing bird, together with the **Grey-crowned Babbler**, is known to readily colonise revegetation patches and return to restored remnant vegetation.

Old sheets of corrugated iron, fence posts and roofing tiles can provide homes for a range of skinks, geckos and legless 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 Denimein LWMP officer on 03 5881 9300.



D. Webb

How can I attract more wildlife to my farm?

The most important thing that Denimein 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 the most valuable. For those with River Red Gum along the Edward River or Black Box along the Box Creek, 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.

Platt, S. J. (2002) *How to plan wildlife landscapes: a guide for community organisations*. Department of Natural Resources and Environment, Melbourne.



Reducing grazing pressure will encourage an understorey of shrubs.



Linking patches of bush within and between properties creates corridors.



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



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

M. Herring

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