



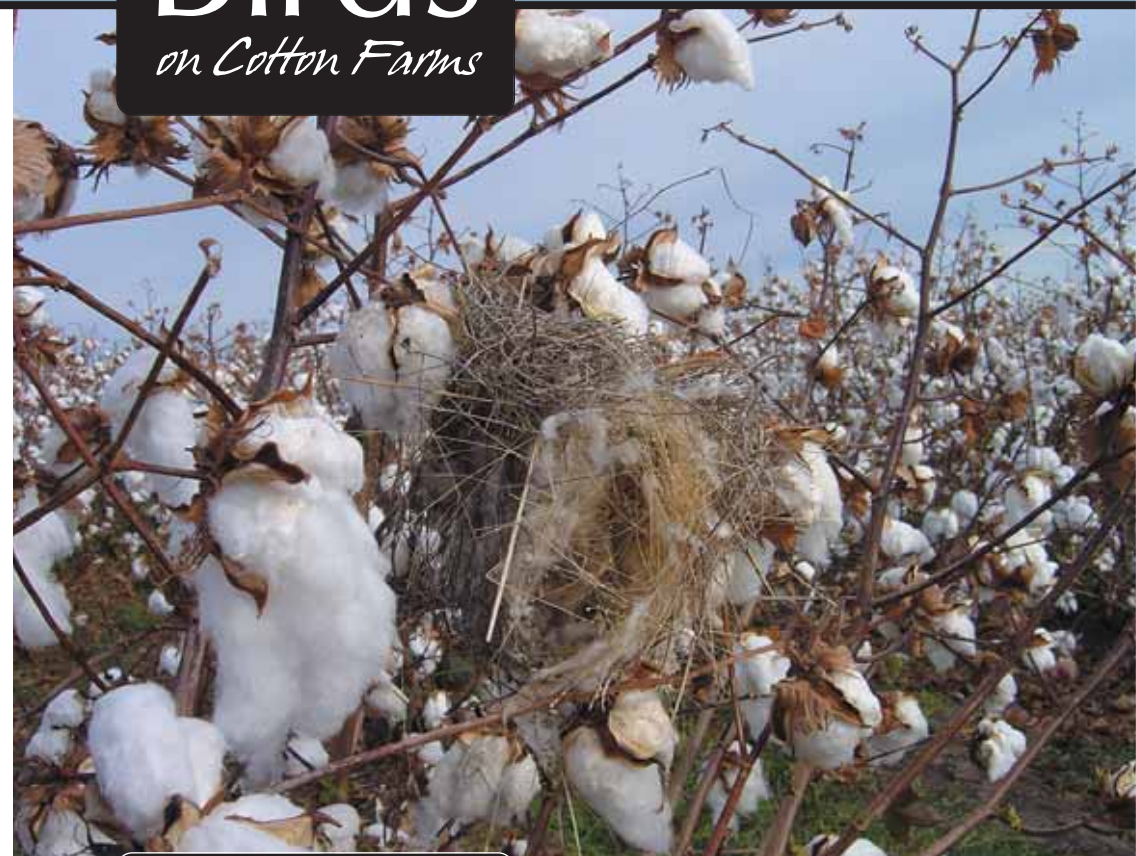
Greg Ford has been observing and learning about birds in rural landscapes for more than 25 years. His passion for birds and their bush habitats developed early during his childhood on a mixed farming/grazing property in northern New South Wales. Tertiary studies in zoology and ecology led into career roles in rangeland management, wetlands and wildlife research and extension in various locations in the Northern Territory and Queensland. Greg has been working on biodiversity research and extension for the Landcare and Catchment Management network and Birds Australia in southern inland Queensland since 2001. He is currently Regional Ecologist with the Queensland Murray Darling Committee in Toowoomba.

Nicci Thompson has been a resident of the Darling Downs all her life. Her formative childhood years were spent on a grazing property on the south-west Downs where her passion for birds and bush landscapes developed. Following retirement from the teaching profession she enrolled in the inaugural Post Graduate Certificate in Ornithology offered by Charles Sturt University from which she graduated in 1998. She became the Regional Organiser for Southern Inland Queensland of the Birds Australia Atlas Project in 1998 which position she still fills. Nicci is currently the Convenor of Birds Australia Southern Queensland and is a member of the Birds Australia Council.

Birds

on Cotton Farms

A GUIDE TO COMMON SPECIES
AND HABITAT MANAGEMENT



Greg Ford & Nicci Thompson

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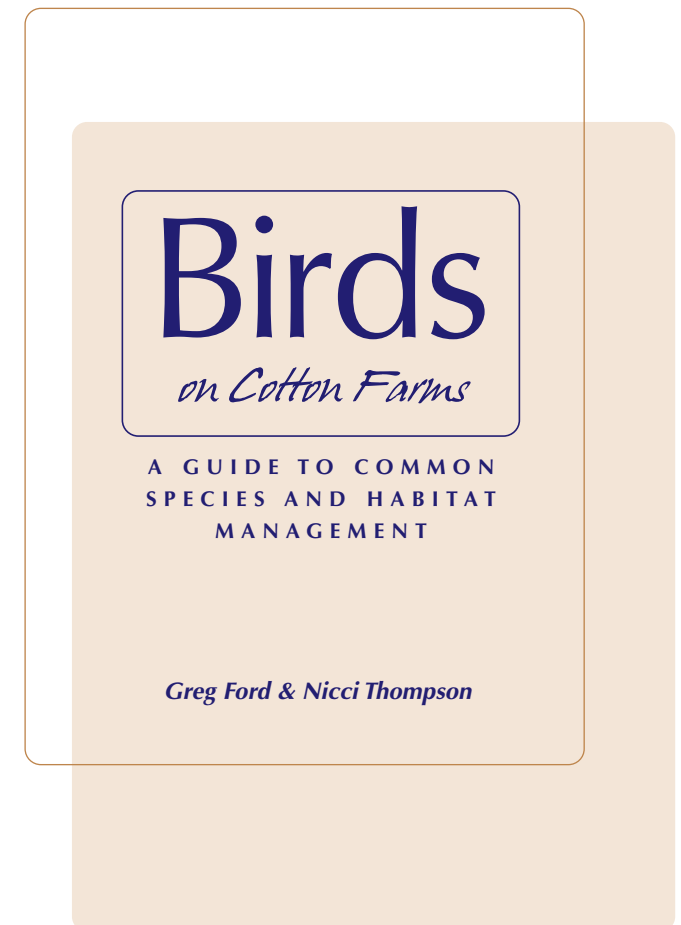
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DISCLAIMER: Management recommendations described in this publication are based on the best available information and research at the time of publication. The views expressed are those of the authors and do not necessarily represent the position of the Australian Government, Birds Australia, Cotton Catchment Communities CRC, Australian Cotton Growers Research Association, Queensland Murray Darling Committee, Gwydir Catchment Management Authority or Namoi Catchment Management Authority.



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Foreword

"Cotton farms are good for the environment" is a headline I would love to see splashed across the front pages of our daily newspapers. The fact that I won't see this headline soon says a great deal about perceptions. Some in the conservation movement like to cite cotton growing as the archetype of unsustainable agriculture, unfairly in my opinion. Unfortunately, the general perception gained by our poorly-informed and largely urban public is of a resource-hungry industry living beyond its natural resource means.

And the reality? In the broadest sense, western agriculture, including cotton growing, practiced in Australia has been highly detrimental to our flora and fauna especially in its impacts on woodlands and wetlands. However, in recent years the cotton industry has made significant steps to address, and rectify its impacts on the environment as evidenced by the most recent environmental audit, and the wider adoption of the BMP Program. The conservation movement must acknowledge, encourage and support the cotton industry's clear intention to achieve ecologically sustainable production.

Birds Australia's motto is "conservation through knowledge." This book is all about helping cotton growers to increase their knowledge and understanding of our native birds, the habitats on which they depend and the threats they face. Birds are important and give great joy in their own right, but they are also indicators of environmental health. Armed with this knowledge we are confident that cotton growers will see birds in a new light and will realise that there is much they, individually and collectively, can do to conserve our birds and more broadly our unique flora and fauna.

Congratulations to Greg and Nicci for this most useful book and thank you to everyone who has contributed and funded its production.

Dr Graeme Hamilton

CEO Birds Australia

Preface

Much is said about the plight of biodiversity in agricultural lands, and much is being done by land managers to ensure that biodiversity is maintained amidst profitable production systems. The Australian cotton industry is at the fore-front of developing sustainable best management practices for cotton lands, ensuring a positive future for both their industry and the natural systems that support it.

In developing and engaging in best management practices, landholders are becoming acutely aware of the need to better understand the ecosystems and native species that play such a vital role in sustainable production. Many farmers are now looking for guidelines on appropriate management of natural systems and the species and communities that live within them.

Recent research and long-term observations on birds in agricultural landscapes have shown that our feathered friends are very good indicators of the health of ecosystems from landscape to farm scale. This knowledge, and the fact that most farmers are keen observers of the birds in their landscape, means that bird monitoring can provide an excellent insight into the progress of farm enterprises along the road to best management practice.



Amanda Platt

The intention of this book is to provide an easy-to-use guide to who's who among the birds, what some of them can tell us about landscape health and some practical information on what can be done to ensure the birds have places to live, eat and breed for generations to come.

We expect the guide to become an important tool for farmers who are developing best management practices and monitoring the outcomes of their improving land management.

We hope it finds a place on many a kitchen table, as well as becoming a permanent fixture in the glove-box of farm utes across the cotton production region of central-eastern Australia.

Please, enjoy using this book as you find delight in the colourful diversity of birds on your place and become comfortable in the knowledge that you can provide a secure future for them. And do pass on this deep understanding and appreciation to your peers and future farming generations.

Greg Ford
Nicci Thompson

APRIL 2006

Dedication

For Rohan, Callum, Stuart,
Erin and all the children of
the floodplains.

May they inherit a living
landscape, alive with
wonderful biodiversity and
brimming with profitable
agricultural ecosystems.

G.F.



Greg Kauter

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J. Palmer



Introduction

The birds that inhabit rural landscapes often do so in harmony with productive farming and grazing enterprises. However, some species are sensitive to certain land management practices and their abundance can wax and wane as land use changes over years and decades. As such, the variety and abundance of birds in rural landscapes can tell us a lot about the health of remnant bush and the sustainability of agricultural practices.

In other words, birds are useful ecological indicators for land managers who want to monitor the effects of their land use practices on nature at the farm, catchment or landscape scale.

By developing knowledge of the birds that inhabit your landscape, and observing what birds live where, and when they come and go, you will build an understanding of the habitat requirements of those birds. Such understanding will be invaluable in helping you to plan and manage land use change over coming years. Perhaps of even greater significance is the mere pleasure you will derive from being able to recognise and name more of the birds you see every day.

ABOUT THIS BOOK

Following the success of a similar book, "Birds of the Darling Downs: a land-manager's guide" (Ford and Thompson 2005), the Cotton Catchment Communities CRC and ACGRA approached the authors to produce a field guide to complement the management guidelines in the Australian Cotton Best Management Practices (BMP) Manual.



The cotton-producing regions of eastern Australia. Circle indicates the regions covered by this book. Map courtesy of Cotton Catchment Communities CRC.

The aim of this book is to provide the cotton producers of northern New South Wales and southern Queensland with an easy-to-use field-guide to birds and their habitat requirements in farming landscapes. We envisage the book being part of a toolkit that growers will use in monitoring the health of their natural resources as they implement BMP across their landscape.

THE REGION

This guide covers the birds likely to be found in the cotton-growing regions of south-eastern Australia, from the Balonne River valley in Queensland, through the Border Rivers, and across the Gwydir, Namoi and Macquarie valleys in New South Wales.

The landscapes of this region are dominated by fertile floodplains, big rivers lined with magnificent red-gum communities, and diverse open woodlands on lighter soils. Rugged ranges, such as the Nandewar and Warrumbungle Mountains form a spectacular backdrop to parts of the region, and are a source of many of the birds that farmers in those areas enjoy.

Extensive areas are devoted to the production of cotton and grains on the floodplains, while grazing of native pastures in riparian and woodland communities plays an important role in maintaining an ecological and economic balance in the production system.



The Nandewar Range forms a spectacular backdrop to cotton fields in the Namoi Valley of New South Wales. Photo: Greg Kauter.

MAKING IT MANAGEABLE

Australia has over 800 species of birds, more than one-third of which may be found in the cotton regions of central-eastern Australia. While there are many good guides to this enormous variety of avian wildlife, finding the right bird in a traditional field guide can be a daunting task to the uninitiated. What's more, the thought of trying to understand the taxonomic ordering of the species is a chore even for some birders!

This book eliminates the need to search through scores of species that don't even occur in your region in order to find the one you're looking at on the fence-post. It includes a photographic guide to 118 common and significant bird species of the region, plus a checklist of more than 300 birds known to occur in the region.

MORE THAN JUST A FIELD GUIDE

In addition to the common species guide, this book provides a series of guiding principles for landscape management to maintain and enhance bird habitats whilst ensuring



Greg Kauter

sustainable agricultural production. The principles are based on knowledge acquired from research in agricultural landscapes throughout eastern Australia. Management actions described under each principle are closely aligned to the management guidelines presented in the Land and Water Management module of the Cotton BMP Manual.

There is also a detailed guide to bird species that we consider are useful indicators of ecological condition in farming landscapes. These are the birds to watch out for in your farm remnants - their presence would suggest your management practices are providing suitable habitat for some of the more sensitive wildlife in the area. Each species description in this section includes a guide to the management practices that can be adjusted to bring back or retain that species in the landscape.

When you undertake property planning and monitoring activities for BMP, you may wish to refer to these sections to get some ideas for the future enhancement of the natural areas on your property. By keeping an eye out for the indicator species, you will be able to monitor the positive results of your improving land management for years to come.

BUT WAIT, THERE'S MORE...

To find out more about birds, their habitats or land management for birds and biodiversity, you may wish to track down some of the reference material listed in the "Further Reading" section. If you prefer to speak to someone knowledgeable about such things, then try getting in touch with one or more of the people and organisations listed in the "Contacts" section.

How to use the field guide

The layout of the “Common species” field guide section is described in the diagram below. “Indicator species” are laid out in a similar manner, but with more detailed descriptions for each species.

Size icon - indicating relative size of the bird compared with several well-known species (see explanation below).

Recommended common name - standardised name for the bird as used by Birds Australia and the name used in most field guides.

Habitat icon - the habitat where you are most likely to see the bird (and by which the birds are ordered in this book). For an indication of other habitats likely to be used by a species, turn to the checklist at the back of the book.

Food icon - shows the preferred diet of the species; refer to the icon guide on the following page for detail.

Habitat usage icon - indicates where in the habitat you are most likely to see the bird, such as in the outer foliage, on the trunk of a tree, or on the ground under the tree.

Description of the bird's appearance, behaviour and habitat preferences - more detail provided for indicator species than common species.



Guy Roth

Order of species

Most field guides arrange birds in taxonomic order (i.e. by their scientific classification groups). While this is easy to navigate for practiced bird-watchers, it can be a nightmare for the uninitiated.

We have chosen to arrange the birds according to the primary habitat in which they are likely to be found (farmlands, grasslands, wetlands and woodlands) or by specialist behaviour (aerial and night-birds). The primary habitat and behaviour sections are colour-coded with an icon on the page margin to make it easy for you to quickly turn to the section of your choosing.

The specialist behaviour categories are included for birds which are mostly seen in flight (e.g. eagles and swallows) or at night time (e.g. owls). Since these two groups include birds readily seen in farmlands and other open habitats, they are placed between the “wetlands” and “woodlands” sections.

HABITAT ICONS



FARMLAND



GRASSLAND



WETLANDS



AERIAL



NIGHT BIRDS



WOODLANDS

Habitats and vegetation communities

The primary habitat categories, into which the birds are ordered, each include a range of different habitats and these vary from region to region. These are described below in more detail.

Some birds occur in more than one habitat type. The checklist at the rear of the book shows all additional (or “secondary”) habitats that a particular bird is likely to be found in.

FARMLANDS

Even the most intensively-used parts of the landscape provide habitat value to a range of birds.

Farmland habitats include cultivation paddocks (bare or cropped, dry or irrigated), grassy verges, roadways, infrastructure and buildings. Most of the birds found in these habitats are “generalists”; they are highly tolerant of agricultural activity and have no particular habitat preferences.



Rebecca Partridge

GRASSLANDS

Blue-grass and Mitchell grass native grasslands and sown pastures, provide a distinctive habitat type. These are less-frequently disturbed, with a more constant cover of vegetation.

This country supports many of the birds that use farmland habitats, plus a suite of “specialist” grassland species that are less tolerant of regular disturbance.



Gill Hogendyk

WETLANDS

Include natural water-bodies, seasonally-flooded swamps, farm dams, ponds, large storages, drains and ditches. Flooded paddocks also provide a wetland resource when crops are being irrigated. Some wetland “specialists” (e.g. cormorants and grebes) prefer more natural or permanent wetlands, while others (e.g. ibis and herons) readily utilise temporarily flooded paddocks and drains.



Greg Kauter

WOODLANDS

These communities range from widely-spaced trees with a grassy understorey, to denser woodlands with a distinct shrub layer. They are usually dominated by one or two tree species, depending on the location in the landscape. Typical communities include river red-gum woodlands on watercourses, poplar box and carbeen grassy open woodlands, and brigalow-belah shrubby woodlands. Typically, woodlands support a greater diversity of birds than farmland and grassland habitats, with diversity higher the shrubbier the woodland is.



Rebecca Partridge



Greg Ford

FOOD ICONS



Soft fruit, berries



Leaves and shoots,
also roots and
rhizomes



Small aquatic or
terrestrial insects
and their larvae



Cereals, grains,
seeds of herbaceous
plants and grasses



Flowers, nectar



Larger insects and
their larvae, other
invertebrates



Spiders and other soft
bodied invertebrates



Frogs, amphibians



Fish



Crayfish, shrimps,
snails and molluscs



Snakes, lizards,
other reptiles



Smaller mammals
e.g. Rodents



Larger mammals



Small birds,
eggs and young

Food Preferences

With each bird description is a set of “Food” icons, representing the diet of each species. These are intended as a general guide to preferred food items and are by no means definitive. The icons you will find are shown at left, with a description of the food they represent.

Size Guides

Within each habitat category, the birds are ordered by size, from largest to smallest. The size of each bird relative to well-known species is indicated by a silhouette adjacent to the species description. The meaning and indicative size range of the silhouettes is as follows:

SIZE ICONS



FAIRY-WREN
less than 15 cm



WILLIE WAGTAIL
15 to 25 cm



PEE-WEE
25 to 40 cm



CROW
40 to 60 cm



IBIS
larger than 60 cm



© Chris Cameron

Common Birds on cotton farms

Over 300 native bird species have been recorded in the cotton-growing regions of northern New South Wales and southern Queensland. This represents more than one-third of all Australian land birds.

This section contains photos and brief descriptions of more than 100 of the most commonly observed birds in the region. These are the birds that you are most likely to see on your farm and as you travel around the region.

A complete list of species known to occur in the region appears in the “Checklist” near the back of this book. The checklist is derived from data collected for “The New Atlas of Australian Birds”, published in 2003 by Birds Australia.



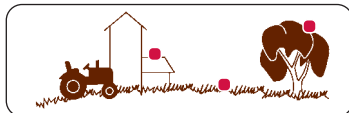
© Chris Cameron

Sulphur-crested Cockatoo



APPEARANCE: Large, white cockatoo with bright, yellow crest and strong deep grey bill.

BEHAVIOUR & HABITAT: Occurs in small to large flocks, sometimes with Little Corellas and Galahs; feeds on the ground in cultivations and short, grassy areas and on roadsides. Gathers in large noisy flocks near water.



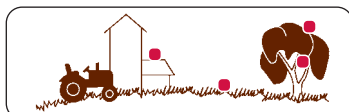
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Torresian Crow Australian Raven



APPEARANCE: Crows and ravens are difficult to tell apart in the field unless one is very familiar with their calls so here they are treated together. Both are large, black birds with a heavy bill and white eye (dark when young). They may or may not have throat hackles (longer loose feathers hanging-pouch like from throat).

BEHAVIOUR & HABITAT: Crows and Ravens occur in most habitats singly or in flocks. They take a wide variety of foods and are scavengers.



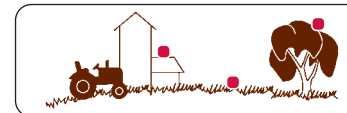
© Geoff Dennis

Little Corella



APPEARANCE: An all white cockatoo with circular, blue skin patch around its eye and soft pinkish markings between bill and eye. It has a small white crest which is not always raised.

BEHAVIOUR & HABITAT: Occurs in open grasslands, croplands and along watercourses where it congregates in immense flocks at times. It feeds on the ground, sometimes in mixed flocks with Sulphur-crested Cockatoos or Galahs.



© Chris Cameron

Rock Dove



APPEARANCE: Large heavy pigeon that is most commonly blue-grey with shimmering green/purple neck feathers, but colours range from pure white through sandy colours to almost black.

BEHAVIOUR & HABITAT: Occurs in pairs and flocks on city buildings, around houses, barns, silos, under bridges and in dead trees. Feeds on the ground; rises in large wheeling flocks that stay airborne for sometime.





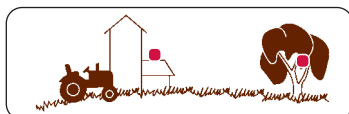
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Laughing Kookaburra



APPEARANCE: The largest Australian Kingfisher with a long pale-coloured bill; brown head, white collar, throat and belly; a dark brown streak through and beyond its eye; brown back, brown wings with blue scalloping.

BEHAVIOUR & HABITAT: Sits on high perches peering at ground for prey upon which it makes a sloping pounce flight. Family groups gather at dusk at roosts or territory corners. Their famous 'laughing' call is heard at these times.



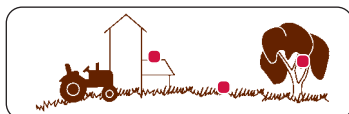
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Galah



APPEARANCE: Pale grey above with grey tail; head and small crest are white; neck, shoulders and belly are rose-pink.

BEHAVIOUR & HABITAT: In pairs or noisy flocks feeds on the ground in cultivation, crops, grasslands parks etc. It is common, also, along watercourses and congregates around silos or grain spills and in noisy roosting spots in the evening. Often indulges in acrobatic antics from overhead wires or branches.



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Australian Magpie



APPEARANCE: Largish black and white bird - white on back of neck, wings and rump. It has a strong, pointed bill.

BEHAVIOUR & HABITAT: The magpie is essentially a bird of open grasslands, crops and parklands but requires tall trees for nesting. It feeds on the ground. Magpies are territorial and there are often raucous disputes between groups defending territories. Some males are aggressive during the nesting season.



© Chris Cameron

Masked Lapwing



APPEARANCE: Brown back, white underparts and chest; black shoulder bars extend on to chest; conspicuous yellow facial flaps and long yellow legs.

BEHAVIOUR & HABITAT: Forages in pairs or flocks on short grasslands and along the bare margins of water bodies. It is common on ovals. When disturbed it flies regularly with noisy complaints. It can be aggressive when protecting eggs or young.





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Pied Butcherbird



APPEARANCE: Glossy, black head and throat above a broad white collar; back is black with white markings as is the tail. Its belly is white. Young birds are brownish.

BEHAVIOUR & HABITAT: It is a bird of the open woodlands, farmlands, parks and gardens. Singly or in groups it sits on exposed branches and overhead wires waiting to pounce on prey.



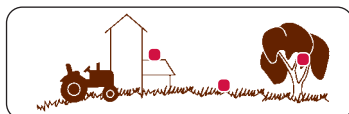
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Crested Pigeon



APPEARANCE: Soft brown and grey pigeon with prominent black crest and red eye-ring; small bronze green/purple wing patch and a long dark tail. Wing-whistle is obvious when it flies.

BEHAVIOUR & HABITAT: It is a bird of open areas where it feeds quietly on the ground singly or in flocks. When flying it alternates wing flaps with long sloping glides. On landing it tips forward with tail high before settling.



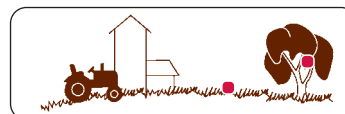
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Magpie-lark



APPEARANCE: Black head, back, tail and chest. Sides of head, neck and belly are white. Male and females have different facial and chest markings. The male has a white eyebrow.

BEHAVIOUR & HABITAT: Magpie-larks need trees and mud for nests so they are usually close to water but are found in all habitats. They feed on the ground where they walk about purposefully with a peculiar nodding head motion. Pairs keep in touch with frequent calling.



© Chris Cameron

Apostlebird



APPEARANCE: Dark grey bird with brownish wings and long black tail.

BEHAVIOUR & HABITAT: Lives in family groups of six or more. Noisy groups feed on ground. If disturbed, they fly to the nearest tree where they hop from branch to branch, calling aggressively. Prefers open woodlands but is often tame around farm houses.



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Black-faced Cuckoo-shrike



APPEARANCE: Medium-sized blue-grey bird with black face and upper chest. Wing tips are black. Underparts fade from grey to white.

BEHAVIOUR & HABITAT: Common bird of farms, towns and open woodland. It occurs in pairs, loose family groups or small flocks. It has an easy undulating flight. As it lands or when sitting it shuffles its wings.



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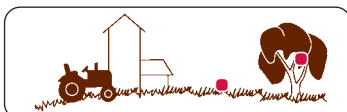
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Cockatiel



APPEARANCE: Small, slender parrot with yellow crest and cheeks and small red ear patch; rest of the bird is grey except for white patches on both wings.

BEHAVIOUR & HABITAT: Cockatiels are birds of the open woodlands, grasslands and croplands. They are often seen in small to very large flocks on overhead wires or swooping over cultivation paddocks.



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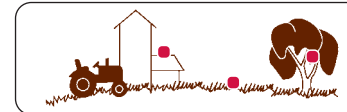
Common Myna



APPEARANCE: Upright, stocky, rich brown bird with yellow beak, eye-ring and legs; head and throat are black; lower edge of the wing is white; large white patch on wings is obvious during flight.

BEHAVIOUR & HABITAT: Towns, farms and rural areas especially along highways and roads. It is a scavenger, but takes fruit, berries etc as well. It is often seen in pairs or flocks strutting and hopping along the ground.

NOTE: This bird is rapidly becoming a major pest in the region. It poses a serious threat to native birds because it tosses eggs and chicks out of nests and takes over all available hollows for its own breeding purposes.



© Chris Cameron

Noisy Miner Yellow-throated Miner



APPEARANCE: A generally grey bird with pale belly; bright yellow bill, legs and eye patch; black band on top of the head extends to just below the eye patches on each side of the head. Yellow-throated Miner: Very similar species, but noticeably paler all over; rump is white; there is a soft yellow wash on sides of throat and no black band on top of the head.

BEHAVIOUR & HABITAT: Aggressive, territorial honeyeater which occurs in groups in most habitats. Groups mob other birds, especially owls and hawks or indulge in noisy stand-offs with other groups of Noisy and/or Yellow-throated Miners.



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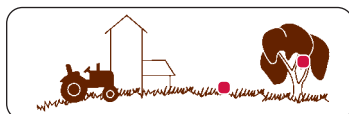
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Red-rumped Parrot



APPEARANCE: Small green parrot with red rump, dark tail and dark blue wing tips; chest is light green and belly is yellow. The female is basically greenish brown with long dark tail and blue wing tips.

BEHAVIOUR & HABITAT: Feed on the ground in pairs or small flocks. It flies when disturbed to fence lines, overhead wires or nearby trees with swift undulating flight. These parrots are most common in paddocks with trees or along watercourses.



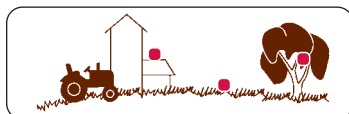
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Common Starling



APPEARANCE: Shiny, iridescent, black bird with yellow bill and yellow-orange legs. In autumn feathers appear to be spotted white. Young birds are brown.

BEHAVIOUR & HABITAT: Singly or in flocks in open woodland, farmlands, towns, garden and parks. It congregates in large flocks at food sources and in winter. It can be a pest in fruit areas but is beneficial in pastures. Often sits in large flocks along overhead powerlines.



© Chris Cameron

Willie Wagtail



APPEARANCE: Black head, back, tail and throat; white belly and eyebrow.

BEHAVIOUR & HABITAT: Feeds singly or in pairs along fence lines, bushes or from the backs of animals. From these vantage points it launches out to chase insects. It returns to perch where it is seldom still as it wags and fans its tail. It also chases insects by running swiftly across very low grass, lawns etc.



© Chris Cameron

House Sparrow



APPEARANCE: Male has strong black bill and bib; head is grey but face is white below the eye; back and wings are a reddish brown streaked black; lower wings and tail are brown; belly is pale. The female is soft brown with pale eyebrow and black wing and back markings.

BEHAVIOUR & HABITAT: House Sparrows have adapted to living with people and are usually found in the vicinity of human dwellings, either around urban or rural dwellings where they can become very tame and are destructive among new plantings.



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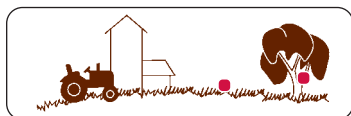
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Yellow-rumped Thornbill



APPEARANCE: Black head fine-spotted with white; fine, sharp bill like a thorn, brown back; deep yellow rump and black tail with white tip; belly is pale.

BEHAVIOUR & HABITAT: Usually seen in small flocks hopping over short grass but does feed in trees. It flies, calling, with bouncing flight that displays the bright yellow rump. Flocks become semi-tame around farm houses and in parks.



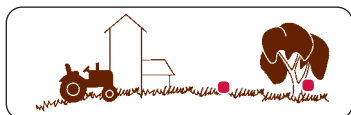
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Red-backed Fairy-wren



APPEARANCE: Tiny, black, long-tailed wren, with flame red saddle-shaped patch on back; wing feathers are a dark brown. The female is a warm brown above; pale underneath.

BEHAVIOUR & HABITAT: Red-backed Fairy-wrens prefer ranker grasses along water courses and embankments but are wide-spread in lantana areas and thicker under-storey. They flit swiftly along the tops of the grass before diving for cover.



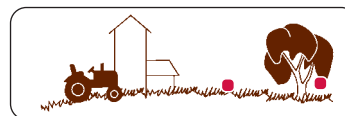
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Superb Fairy-wren



APPEARANCE: Pale blue cap; cheek patch and small saddle divided by black; long cocked tail is dark blue; throat navy blue; wings brown and belly white; Female brown with pale underparts and almost white throat.

BEHAVIOUR & HABITAT: In family parties or small flocks, it hops around feeding on short grass close to thick undergrowth or small dense bushes to which they flee if they sense danger.





© Chris Cameron

Pheasant Coucal



APPEARANCE: Long-tailed bird with intricately patterned brown plumage. In the breeding season head, neck and belly are glossy black and the back is a rich chestnut.

BEHAVIOUR & HABITAT: Prefers long rank grasslands, especially along watercourses or thick undergrowth. It flies heavily but runs nimbly, lizard like, up the branches of a tree. It is frequently seen with head outstretched running across roads and as a result is a common road-kill.



© Chris Cameron

Brown Quail



APPEARANCE: Large, brown quail with pattern of dark V-bars on underparts. It has a small dark patch just behind the eye on an otherwise plain face.

BEHAVIOUR & HABITAT: Most commonly in small flocks in long grass along watercourses or in crops. Early morning or late afternoon feeds along edges of cover. When disturbed it flushes with a chattering call; flies fast and lands some distance away.



© Chris Cameron

Singing Bushlark



APPEARANCE: Stocky, brown bird with black markings on back and head; thick short bill; pale eyebrow; belly is pale, streaked with black. Outer white tail feathers are seen during flight.

BEHAVIOUR & HABITAT: Feeds on the ground in grasslands and stubble fields. Runs along the ground; perches on fence posts or wires beside croplands; hovers over fields singing.



© Chris Cameron

Richard's Pipit



APPEARANCE: Brownish bird with dark markings on upper body; belly is white with strong black dotted stripes; eyebrow and cheek are pale. In flight the white outer tail feathers are clearly seen.

BEHAVIOUR & HABITAT: Feeds in short grass along roadsides, in parks and along tracks or in stubble. It runs a few paces, stops with head in the air and bobs up and down before running another few paces. When disturbed it flies up from the ground but quickly drops into nearby vegetation or sits on fences, posts or rails.





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Rufous Songlark



APPEARANCE: Upper parts are light brown with darker patterning; underparts paler shading to almost white throat; pale eyebrow extending from base of bill; rump and base of tail are rufous. Female is generally paler than male.

BEHAVIOUR & HABITAT: Summer breeding migrant to southern Australia. Its arrival is announced by almost continuous song from vantage points or in flight in the early part of the breeding season. Forages and nests in grasslands and open woody grasslands. Once breeding is established birds are quiet and unobtrusive.



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Plum-headed Finch



APPEARANCE: From a distance appears to be plain brown; closer view shows plum-coloured forehead; brown and white barring on chest and belly, white spots on back and wings and white barring above a black tail. Male has a plum-coloured throat.

BEHAVIOUR & HABITAT: Locally and seasonally nomadic; occurs in small groups/large flocks in the tall grasses of open pasture, reeds of wetland fringes and grain crops. Forages on the ground; climbs long stalks to swing from seed heads; flight is undulating and strong.



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Chestnut-breasted Mannikin



APPEARANCE: Chunky finch with heavy silvery-blue bill, black face and breast band emphasise the chestnut breast; stomach is white; greyish head blends to brown back and chestnut rump. Female is similar but duller.

BEHAVIOUR & HABITAT: Seasonally nomadic, foraging in tall seeding grasses on wasteland, grasslands near water, or roadsides; also crops such as sorghum or millet; occurs in pairs or large flocks; disturbed flocks fly swiftly to another part of the grassland; often roost in reed beds.



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Golden-headed Cisticola



APPEARANCE: Small, warm brown bird with black markings on wings and shoulders; breeding male has a small 'golden' crest. Females and non-breeding males have dark streaks on top of head. Both are whitish underneath.

BEHAVIOUR & HABITAT: Frequents rank grasses along creeks, other wetlands, roadsides and railway lines. The tiny male calls almost incessantly with raised crest from overhead wires or from high in the air during the breeding season.





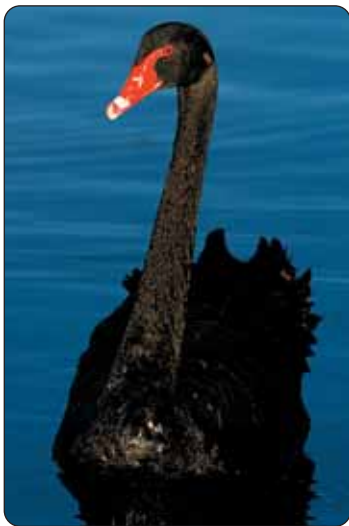
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Australian Pelican



APPEARANCE: Unmistakable, large black and white bird with huge pinkish bill and associated bill pouch.

BEHAVIOUR & HABITAT: Prefers large shallow wetlands where it hunts singly or in flocks for fish; perches on log piles, dead trees etc. In flight pulls its bill back against chest; flocks can be seen circling to great heights.



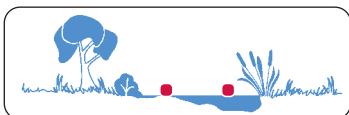
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Black Swan



APPEARANCE: Large black bird with long neck, small head and bright red bill; it has large webbed feet on short legs but walks well on dry land. In flight the white flight feathers are conspicuous.

BEHAVIOUR & HABITAT: Widespread and common on larger lakes; also occurs on smaller wetlands and lagoons and in flooded pastures and green crops. Single birds, pairs or small groups are common but it can occur in flocks of thousands on larger lakes especially during its moulting season when the birds become flightless.



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White-necked Heron



APPEARANCE: Large heron with slate grey back; long white neck and head; underside of neck is marked with double line of dark spots when not breeding. In flight it tucks its head back; the two white spots on the bend of each wing which are prominent in flight are distinctive.

BEHAVIOUR & HABITAT: Single birds and loose groups inhabit a variety of wetlands - flooded roadsides, small waterholes, dams, margins of large inland lakes; appears in large numbers after flooding of grasslands and swampy areas. When surprised it flies up and circles the area, often landing on an elevated perch where it can watch.



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Great Egret



APPEARANCE: Largest egret; all white with yellow bill; long curved neck and head are longer than body when stretched out but this egret often stands with its neck curved back towards the body; bill changes to black in breeding season; facial skin turns green and graceful plumes develop on back only.

BEHAVIOUR & HABITAT: Often seen alone standing in shallow water waiting motionlessly for its prey or stalking slowly through water and aquatic vegetation; inhabits a variety of wetlands - creeks, dams, flooded marshlands and crops and larger lakes and lagoons.





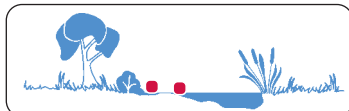
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Yellow-billed Spoonbill



APPEARANCE: White bird with long, yellow, spoon-shaped, bill and long yellow legs.

BEHAVIOUR & HABITAT: It is often observed singly or in small groups feeding along the margins of dams or shallow waterholes. It feeds by sweeping its bill from side to side. Often loafs on shore in groups with head tucked back under wing.



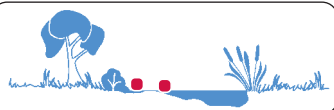
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Royal Spoonbill



APPEARANCE: Similar to Yellow-billed Spoonbill but legs and bill are black; when breeding has red patch on forehead and long plumes hang from the back of the head.

BEHAVIOUR & HABITAT: Less often seen on small dams than the Yellow-billed Spoonbill; occurs singly or in loose flocks on larger wetlands where it feeds in shallow waters with the same sweeping motion as the Yellow-billed. Frequently loafs in groups with other water-fowl on shore-line.



© Chris Cameron

Straw-necked Ibis



APPEARANCE: Large, long-legged bird with black back and white underparts; the long white neck has loose straw-coloured feathers hanging from below; bill is long and down-curved.

BEHAVIOUR & HABITAT: Usually observed in large flocks in open paddocks, cultivation along irrigation channels or town ovals where it feeds by probing the ground for ground-dwelling grasshoppers and other small creatures.



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Australian White Ibis



APPEARANCE: Body almost completely white - often soiled - except for black wing tips; long curved bill and bare skin of head are black.

BEHAVIOUR & HABITAT: Occurs singly or in flocks; frequents wetlands of all sizes, open pasture, rubbish dumps and town parks; often associates with Straw-necked Ibis.





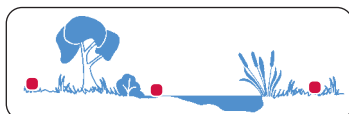
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White-faced Heron



APPEARANCE: Tall, slaty-blue, long-legged bird with white face. When flying, its large wings are flapped slowly and it hunches its long neck into its shoulders.

BEHAVIOUR & HABITAT: It is most often seen singly or in small groups. It feeds in open paddocks or along streams and dams where it often stands motionless waiting for prey on which it pounces. When loafing it perches on exposed limbs or other suitable waterside perches.



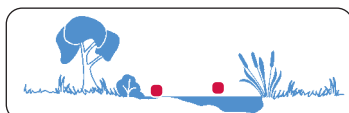
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Darter



APPEARANCE: Cormorant-like bird with a long sharp bill and a kinked neck; its tail is longer than that of cormorants. The male is black with a white neck stripe; when breeding a chestnut flush appears on the underside of the neck; female has light grey throat above whitish underparts; back is black.

BEHAVIOUR & HABITAT: Prefers larger shallow wetlands where it hunts for fish; body is completely submerged showing only snake-like neck and head above surface; sits on rocks, dead trees, edges of wetlands with wings held out to dry; when airborne has shallow wing-beat broken by glides; it often soars high with its long tail fanned.



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Great Cormorant



APPEARANCE: Large black cormorant with hooked horn-coloured bill; skin of throat pouch and facial patch is yellow; when breeding it has white markings on cheek behind facial patch and on flanks.

BEHAVIOUR & HABITAT: Appears to prefer larger wetlands and irrigation dams. It usually fishes alone in clear water diving smoothly from the surface to chase prey. Groups sit in trees, on fallen logs and other prominent perches to dry wings after swimming. Flocks fly in v-formation; they alternate strong slow wing-beats with periods of gliding.



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Purple Swamphen



APPEARANCE: Heavily built waterbird with conspicuous strong red bill and fore-head shield; dark, blue head, neck and breast; back, wings and belly are dark grey; under tail is white; strong legs and large feet are red.

BEHAVIOUR & HABITAT: Occurs in groups along the margins of vegetated wetlands - ornamental ponds, lakes, shallow waterholes, irrigation dams and channels. Forages in wetland vegetation and nearby paddocks. Continuously flicks tail showing the white under-tail feathers. Flies heavily but strongly. Swims.

Note: An indicator species - further information in that section.





© Chris Cameron

Pacific Black Duck



APPEARANCE: Large brown duck with distinctive dark eye markings, which pass through and above the eye. It has a shimmering green patch in both wings.

BEHAVIOUR & HABITAT: Pacific Black Ducks are common ducks of most farm dams and streams. They dabble in the shallower parts for food or loaf along the edges.



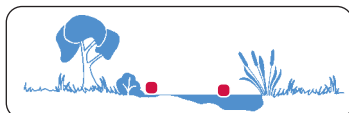
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Hardhead



APPEARANCE: A rich brown duck with whitish belly and a very short tail. The male has a distinct white eye.

BEHAVIOUR & HABITAT: It is found on wetlands and farm dams in pairs or small flocks. It dives for its food in the deeper parts of the water body but can be seen dabbling in the shallows. When loafing, its white belly is often very obvious.



© Chris Cameron

Australian Wood Duck



APPEARANCE: A medium-sized, neat duck. Male and female are different. The male has a dark brown head and neck with a small mane or crest; grey back and wings with black markings along the centre of its back blending into the black tail; belly is mottled. The female is similar but the brown head is much lighter, the mane is absent and the mottling extends further up the sides.

BEHAVIOUR & HABITAT: Wood ducks occur in pairs or large flocks around wetlands, especially farm dams that have a surrounding area of short green grass. They swim and feed on the water but spend a lot of time grazing on surrounding vegetation or loafing on dam walls.



© Michael Todd www.wildlifing.com

Pink-eared Duck



APPEARANCE: Its large square-tipped grey bill and heavily barred belly and flanks are far more obvious than the insignificant pink spot above the irregular large brown eye-patch; upper parts are brown.

BEHAVIOUR & HABITAT: Occurs in pairs or large flocks on a wide variety of wetlands; common on effluent dams. When feeding it swims with its bill submerged filtering organisms from the water; often seen feeding head to tail in locked pairs or rotating groups that disturb the organisms on which it feeds; dabbles in shallows and perches on logs and dead trees; loafs on banks with other ducks.





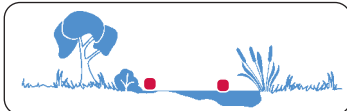
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Grey Teal



APPEARANCE: Small, neat brownish duck with slightly, upturned bill. It has a white patch in its wing and shows white strips in the underwing when it flies. It floats high on the water rather like the traditional 'rubber ducky'.

BEHAVIOUR & HABITAT: It is found on watercourses and farm dams in pairs or small flocks. It dabbles, head down, tail and legs up, in the shallower parts of the water and takes flight readily when disturbed.



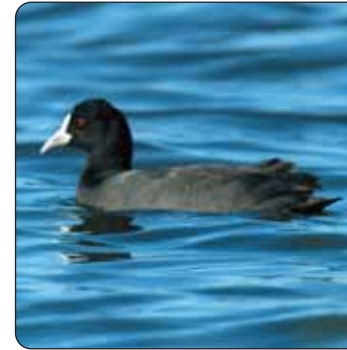
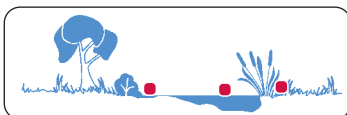
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Dusky Moorhen



APPEARANCE: Moorhens appear black from a distance but are actually brownish on top and slaty-grey below. They have a red face shield and bill with a yellow tip; red legs; the under edges of their black tail are white.

BEHAVIOUR & HABITAT: Moorhens occur on well vegetated wetlands, such as natural waterholes, farm dams and irrigation channels. They feed both in the water and along the edges. When disturbed they run quickly or fly to the nearest thick vegetation.



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Eurasian Coot



APPEARANCE: Deep slate-grey waterfowl with a striking white bill and facial shield; red eye.

BEHAVIOUR & HABITAT: Occurs in pairs to large flocks on a variety of wetlands; feeds along shorelines in shallows or on edges and far out in deep water where it dives repeatedly to feed on plants; when disturbed it half-runs half-flies across the water surface before becoming airborne.



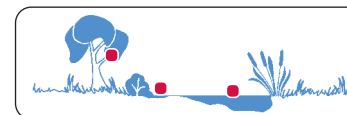
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Little Pied Cormorant



APPEARANCE: Upright bird with black back and top of head; white belly and face; obvious yellow bill.

BEHAVIOUR & HABITAT: Often singly along streams, dams and other watercourses. It often sits motionless on exposed logs or other structures beside these waterbodies or swims low in the water. After swimming or feeding it sits on the bank with wings hung out to dry.





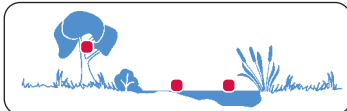
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Little Black Cormorant



APPEARANCE: Similar in size to Little Pied Cormorant but plumage is a glossy black; bill is black.

BEHAVIOUR & HABITAT: Often singly along streams, dams and other watercourses; in flocks on larger wetlands where it feeds in groups that move quickly with individuals diving and often leap-frogging birds in front. After swimming or feeding it sits on banks, logs, rocks with wings hung out to dry.



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Black-winged Stilt



APPEARANCE: It is a neat white bird with black back, upper neck and wings; the large black eye stands out in the unmarked white face; the black bill is long and straight, tapering to a point. When flying it trails its long pinkish-red legs almost horizontally behind it.

APPEARANCE & BEHAVIOUR: It frequents shallow waters on the margins of wetlands; flooded overflows and flood plains. In groups or singly forages along shorelines and in water; often appears after good rain.



© Chris Cameron

Australasian Grebe



APPEARANCE: A small, brownish waterbird with an upright carriage; dark head and back fading to a reddish-brown on the sides; soft grey, fluffy, short tail. During the breeding season it has an oval yellow mark below its yellow eye.

BEHAVIOUR & HABITAT: Australasian Grebes occur in pairs or family parties on farm dams and other still water bodies, preferably those that have some emergent and/or surrounding vegetation. They feed underwater by diving and remaining there for 1-1½ minutes. If startled they dive rather than fly.



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Black-fronted Dotterel



APPEARANCE: Head and back brown; a black band beneath a white line passes through the eye which is encircled by a red ring; bill is red; underparts are white with a black y-shaped band across the breast; wings are surprisingly large for such a small bird; the white wing-bar is displayed in flight.

BEHAVIOUR & HABITAT: Occurs singly, in pairs or small flocks on shorelines of wetlands where it runs quickly across the mud pausing to bob and feed. Also forages in short grass or gravel areas close to wetlands.





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Clamorous Reed-Warbler



APPEARANCE: Upper parts are brown; it has a pale fawn eyebrow; underparts are a softer brown fading to white. In flight it has a tawny rump; when singing it displays its yellow mouth.

BEHAVIOUR & HABITAT: Frequents reed-beds, long riparian grasses, river red gum saplings; vegetation along irrigation channels and town ponds; it clings sideways on reed stems calling loudly and often in summer.



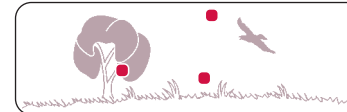
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Wedge-tailed Eagle



APPEARANCE: The largest Australian bird of prey. It varies in colour from golden brown with obvious cream markings on its wings to almost black. In flight it raises its wings high and the diamond or wedge-shaped tail is obvious.

BEHAVIOUR & HABITAT: It is often seen circling very high on thermals above the surrounding country or following local ridge-lines. As it hunts from a great height it occurs across a wide range of country. It is frequently seen at road-kills where it is vulnerable as it needs time to lift from the ground especially if it has been gorging.



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White-bellied Sea-Eagle



APPEARANCE: Large two coloured eagle - back and upper wings are grey, head and belly are white; in flight the upswept wings are black and white beneath and the short tail has a broad white terminal band.

BEHAVIOUR & HABITAT: Despite the Sea-Eagle name this eagle frequents inland waterways, lakes and irrigation storages where it can be seen singly, in pairs or small family groups watching from high perches or soaring high over the water.





© Bill Jolly www.abberton.org

Spotted Harrier



APPEARANCE: Large bird with long silvery-grey wings tipped with black “fingers”; salmon coloured face and belly; belly is spotted white; long yellow legs; long grey tail, barred with darker stripes.

BEHAVIOUR & HABITAT: Spotted Harriers often fly only a few metres above crops and grasslands following the contour of the land on their long upswept wings. Their flight seems effortless as they lift to cross a fence and drop back to follow the contours of the next paddock. Harriers also hover and soar high.



© Peter Fuller www.peterfuller.com.au

Swamp Harrier



APPEARANCE: Large, long-legged bird; mid-brown with a distinctive white rump and subtly streaked breast; it has a distinct facial disc. The long wings are upswept in flight.

BEHAVIOUR & HABITAT: While the Swamp Harrier can be observed in a wide variety of habitats it is chiefly associated with wetlands, riparian grassland and crops where it hunts low following the contours of the land.



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Black Kite



APPEARANCE: Dark brown bird with hooked beak; dark markings on face give eyes a deep-set appearance; in flight the forked-tail and deeply fingered wings are obvious; extremely manoeuvrable in the air, they use their tail like a ‘rudder’ to change or adjust flight.

BEHAVIOUR & HABITAT: Common over inland towns, where they congregate in high spirals over rubbish dumps and stockyards; they scavenge along roads; attracted by smoke to bushfires, they take prey escaping from the flames.



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Whistling Kite



APPEARANCE: Soft brown hawk with darker wings and long pale brown tail; in the air the bowed wings and pale underwing markings distinguish it from the Black Kite.

BEHAVIOUR & HABITAT: Can be observed in most habitats but is most often seen over larger wetlands or following treed river courses where it hunts for live prey; sometimes joins Black Kite spirals; scavenges road-kill.





© Chris Cameron

Brown Falcon



APPEARANCE: A variable brown falcon. The colour ranges from almost black through to light beige above, cream below. All Brown Falcons have a facial mask - a darker area on the sides of the face and a double tear-drop below the eye. Tail feathers are lightly barred.

BEHAVIOUR & HABITAT: Brown Falcons are seen perched upright on exposed branches, fence posts or overhead lines in open country. They often circle above open paddocks on slightly upswept pointed wings. They are one of the most vocal hawks and their wide range of strident calls can be heard from a considerable distance when mating or disputing territory.



© Chris Cameron

Channel-billed Cuckoo



APPEARANCE: Large bird with a huge, curved, horn coloured bill and red ringed eye. Head, neck and upper front are pale grey; wings and tail are a darker grey.

BEHAVIOUR & HABITAT: Channel-billed Cuckoos are summer migrants to Australia, arriving in late September. Their return is usually announced by their loud, raucous call. They fly slowly with heavy wing beats. They parasitise the nests of crows and currawongs.



© Chris Cameron

Black-shouldered Kite



APPEARANCE: A small, mainly white and grey kite with black shoulders on wing. The wing tips are black in flight when viewed from below. When perched the black 'shoulders' are distinctive. Young birds are mottled with reddish-brown.

BEHAVIOUR & HABITAT: Usually seen in open country. It sits on exposed branches or overhead wires. It is most commonly seen hunting in the early morning or late afternoon but does so at any time of the day. When hovering, the Black-shouldered Kite raises its wings very high and hangs in the sky.



Note: Susceptible to accidental poisoning because of the high intake of rodents in its diet.

© Tom & Marie Tarrant www.aviceda.org

Australian Hobby



APPEARANCE: Small, fast-flying falcon; black hood around face and head blends into the deep grey back and upper wings; throat is pale to white blending into deep red-brown underparts.

BEHAVIOUR & HABITAT: Actively hunts on the wing for its prey along watercourses and over wetlands and pastures (not usually open grasslands and crops); flies swiftly and runs down prey.





© Chris Cameron

Nankeen Kestrel



APPEARANCE: The smallest falcon with a reddish back, black wingtips, black tail band and creamy underneath. It has a dark tear drop through the eye. Males have grey heads and tails. During flight or when the bird is hovering, the black tail band is visible from below.

BEHAVIOUR & HABITAT: Kestrels are often seen over open country hovering with tail-fanned and hanging down or circling over open paddocks. On windy days it hovers into the wind with bent wings. It also hunts from such bases as overhead lines, fence posts, raised earth mounds or stumps.



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White-breasted Woodswallow



APPEARANCE: Neat bird with dark grey head, throat, back and upper wings; dark throat finishes cleanly above white breast and belly; rump is white as are underwings. In flight these colourings are distinctive.

BEHAVIOUR & HABITAT: Usually in small flocks near water; uses trees beside rivers and wetlands; flies out over the water or high over riparian areas to forage; resting birds sit shoulder to shoulder on horizontal branches (telephone lines in towns).



© Geoff Dennis

Welcome Swallow



APPEARANCE: Glossy blue-black back; rusty brown forehead and throat, long forked tail; belly is pale grey.

BEHAVIOUR & HABITAT: Sits, often in flocks on overhead wires; flies over water, creek-lines and open fields catching insects. In flight it is swift and incredibly acrobatic. It builds its mud nest on verandahs, in barns, under eaves etc.



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Fairy Martin



APPEARANCE: Small bird of the swallow family with slightly forked tail; dark back and wings with white belly; head and neck are rusty red. Its white rump is conspicuous in flight.

BEHAVIOUR & HABITAT: Nests in colonies in large culverts, under bridges and in caves where it builds bottle-shaped, mud nests. It flies out from colonies to feed, often quite high over surrounding country and water bodies.





© Chris Cameron

Barn Owl



APPEARANCE: Medium-sized owl with soft, brownish back and pale belly. It has the round dish-shaped face that is traditionally associated with this bird.

BEHAVIOUR & HABITAT: Barn Owls hunt at night in open, grassy paddocks or cultivations. From fence-posts, electricity poles, struts or tree branches they wait for their prey - often rodents or other small animals.



© Chris Cameron

Tawny Frogmouth



APPEARANCE: Mottled in shades of brown and grey but pale below. It has a very wide bill from which its name is derived.

BEHAVIOUR & HABITAT: Frogmouths hunt at night and rest during the day. They perch close to the main trunk of the roost tree and if danger is perceived do their well-known imitation of a broken branch.



© Chris Cameron

Southern Boobook



APPEARANCE: A small, dark, brown owl; belly is paler, marked with darker streaks that run lengthways.

BEHAVIOUR & HABITAT: Boobooks hunt from exposed perches in open woodland, grasslands and cultivations. During the mating season their call is a familiar part of the Australian night. If exposed during daylight hours they are harassed by Currawongs, Noisy Miners, Butcherbirds and the like.



© Ian Montgomery birdway.com.au

Barking Owl



APPEARANCE: Medium-sized owl; overall shape similar to Boobook but more robust; eyes are very yellow and lack the dark surrounding patches of the Boobook; upper parts are grey-brown; whitish underparts are heavily streaked with a more reddish-brown.

BEHAVIOUR & HABITAT: Roosts during day, often in pairs, in leafy trees along watercourses or gullies; hunts in near-by woodlands, river red gum forests and along watercourses from dusk. It is named for its distinctive woof-woof call.





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Emu

APPEARANCE: Largest Australian bird; flightless; small head on long neck; soft grey-brown, loose plumage hangs over body; long, powerful legs.

BEHAVIOUR & HABITAT: Singly or in loose groups, forages through grassy woodlands, open grasslands and cropping lands; runs swiftly with long strides; head and neck stretched forward.



© Chris Cameron

Red-tailed Black-Cockatoo

APPEARANCE: Large, black cockatoo with long tail and black crest. Males have a red panel in their tails which is conspicuous during flight. Females have yellow speckling on head and shoulders; fine yellow barring on belly. Their tail panels are orange with black bars.

BEHAVIOUR & HABITAT: Seen in small groups or large flocks. They fly high with slow wing beats, announcing their passing with far carrying calls. They descend to feed in favoured trees or on the ground. They are dependent on large tree hollows for breeding.



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Pied Currawong

APPEARANCE: Large, black bird with a heavy bill and yellow eye. In flight, white wing markings, rump and tail tip are clearly visible.

BEHAVIOUR & HABITAT: It is a bird of the open woodlands but has learnt to take advantage of the food sources offered by man. It is often seen feeding in fruiting trees and on the fruit of tree-pear, but takes just about anything, including the young of other birds.



© Chris Cameron

White-winged Chough

APPEARANCE: Slim, black bird with down curved bill and red eye. In flight the white panes in the wings are conspicuous.

BEHAVIOUR & HABITAT: Feeds in family groups on the ground, turning over sticks, cow pats and litter as it searches for food. Moves forward with a rolling gait and up and down tail movements. If disturbed it flies on broad, flat, wings to nearby trees which it ascends in flapping bounds, before gliding down to a more distant spot.





© Chris Cameron

Common Bronzewing



APPEARANCE: Heavy pigeon with bronze/orange/green patches in wings; generally a soft grey elsewhere with a distinctive white line from below the bill to behind the eye. Male has a yellowish forehead.

BEHAVIOUR & HABITAT: Essentially a bird of woodlands or scrubs but feeds singly or in pairs on the ground along edges of vegetation. It is a wary bird and flies quickly with wing-whistle when approached. Perches nearby and is sometimes surprisingly difficult to locate.



© Chris Cameron

Red-winged Parrot



APPEARANCE: Bright, almost fluorescent green with red bill and scarlet wing patch; back, wings and tail are darker; its rump is blue. The female is paler overall with a smaller red wing patch.

BEHAVIOUR & HABITAT: Feeds in pairs or small groups in woodlands, gardens and orchards. Flies with a distinctive high wing action; often calls as it flies. It is very much a bird of wooded country especially near water.



© Chris Cameron

Bar-shouldered Dove



APPEARANCE: Plump pigeon with soft brown head, back and wings; back of neck is a rich copper colour as are wing feathers in flight; face, throat and upper chest are grey; belly is creamy; white tips on tail feathers are conspicuous in flight.

BEHAVIOUR & HABITAT: Prefers thicker scrubs, especially near water. It feeds, in pairs or small flocks, along the edges of scrub, on paths and roadsides in the late afternoon or early morning.



© Chris Cameron

Grey Butcherbird



APPEARANCE: Crisply marked bird with grey back and wings; black head, back of neck, wing edges and tail; white throat and partial collar, wing markings and tail tip. It is smaller than the Pied Butcherbird.

BEHAVIOUR & HABITAT: It is an inhabitant of woodlands, parks, gardens and farmlands. Often sits quietly on the edge of foliage watching the ground. It moves efficiently in straight flight through treed areas.





© Chris Cameron

Noisy Friarbird



APPEARANCE: The head is covered with bare black skin and it has a knob on the top of its bill. Back and tail are brownish. On its throat it has soft white feathers that curve around to form a loose 'cravat'.

BEHAVIOUR & HABITAT: It follows blossoms and fruit where it feeds noisily, its varied loud calls announcing its presence. It is an aggressive honeyeater and regularly chases small birds away.



© Chris Cameron

Little Friarbird



APPEARANCE: Honeyeater with brown head, back and tail; underparts are white with some light brown streaking on the upper breast; the grey-blue patch of facial skin extends from the black bill to below the eye.

BEHAVIOUR & HABITAT: Singly or in small flocks it feeds on nectar or darts out after flying insects in open woodlands and in parks and gardens when suitable trees occur. It sometimes occurs here in large numbers. At other times it is quite hard to find.



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Spotted Bowerbird



APPEARANCE: Robust bird with brown back patterned by buff spotting; underparts are buff with darker buff scalloped patterning; it has a pink crest on the nape that can be raised but is often almost concealed in the greyish feathers surrounding it.

BEHAVIOUR & HABITAT: Occurs singly or in small flocks in inland woodlands often around homesteads or camps. Feeds in the foliage; swoops between trees with wing-tips upswept. Builds a stick bower in low foliage which it decorates with red, white and shiny objects.



© Chris Cameron

Olive-backed Oriole



APPEARANCE: The male has a green head, throat and upper back shading to dark grey wings and tail; strong red bill and eye; belly is white, streaked black. The female is grey above with white throat and belly, streaked black; bill is grey.

BEHAVIOUR & HABITAT: Feeds in the treetops in farmlands, woodlands, gardens and parks. It is often heard before it is seen as it calls frequently. It travels between clumps with a strong undulating flight.





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Eastern Rosella



APPEARANCE: Small parrot with scarlet head, neck and chest; white cheek patch; back and wings are patterned yellow and blue; rump, tail and underparts are varying shades of green; a red patch under the tail.

BEHAVIOUR & HABITAT: It feeds in pairs or small flocks in bushes, grasses, or on the ground. Its flight with long undulations is distinctive. Pairs breed in small hollows.



© Chris Cameron

Grey Shrike-thrush



APPEARANCE: Medium sized bird which appears grey from a distance; small white patch between eye and strong black bill; wings and back have a brownish hue; belly is light grey; darker streaking on the throat is variable.

BEHAVIOUR & HABITAT: Occurs in woodlands and open forests and in nearby parklands, gardens or farmlands. It feeds in pairs or small groups along branches, on trunks and logs or on the ground.



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Australian Ringneck



APPEARANCE: The eastern race of the Australian Ringneck is a medium sized brilliant green-blue parrot; upper back is blue; its deep blue wing feathers and shoulders are displayed in flight; it has a narrow yellow ring around the nape of its neck and variable yellow patches on belly.

HABITAT & BEHAVIOUR: It feeds in small flocks or pairs on the ground and in trees in open eucalypt, cypress, bullock and mulga woodlands; river red gums along watercourses and nearby farmlands; when disturbed flies to trees uttering its far carrying clanging alarm call.



© Robert Ingliss

Blue Bonnet



APPEARANCE: Medium sized brown parrot with blue forehead and face and shoulders; upper wings are mottled with red and light yellow; wing feathers are blue; brown of upperparts extends to chest; belly is yellow with variable red mottling.

HABITAT & BEHAVIOUR: Feeds mainly on the ground in small flocks or pairs; uses a variety of habitats and is often seen far from water; it is a hollow nester so woodlands are a core habitat; often a wary bird that flies rapidly to trees when disturbed.





© Chris Cameron

Dollarbird



APPEARANCE: Thick-set greenish bird with dark head and red bill. From a distance appears to be uniformly dark but close-up the varying hues of green and blue on the lower body can be distinguished.

BEHAVIOUR & HABITAT: Summer migrant to Australia, returning in early October. They are often seen sitting on overhead wires or exposed branches from which they chase insects. On long wings with white under-wing spots they make long looping flights from these vantage points.



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Spiny-cheeked Honeyeater



APPEARANCE: Brown back; curved reddish bill with black tip; dark band through eye; apricot throat and bib; belly creamy streaked with brown.

BEHAVIOUR & HABITAT: Feeds singly, in pairs or small groups in flowering trees and shrubs and in mistletoe. It has a swooping flight from tree to tree; often sits on the top of a dead tree or branch to call before flying on.

Note: An indicator species - further information in that section.



© Chris Cameron

Grey-crowned Babbler



APPEARANCE: Generally brown bird with pale crown and underparts; strong dark line through eyes gives the bird the appearance of a bandit. The long bill is down curved. In flight the white tips on the tail are conspicuous.

BEHAVIOUR & HABITAT: Mostly occurs in noisy family groups which forage together on the ground and in trees. Often huddles in excited groups when a food source is located. When at rest the birds sit close to each other and often preen the one next to them. When disturbed, they float on broad wings away from the disturbance or scamper quickly up through tall trees before floating down at a distance.

Note: An indicator species - further information in that section.



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Blue-faced Honeyeater



APPEARANCE: Dark head with a striking blue (greenish in young bird) patch of facial skin around the eye; back, wings and tail are olive-green; belly is white with a black bib.

BEHAVIOUR & HABITAT: Often seen in small parties foraging for nectar or insects around farms, parks, gardens and in open woodland. It is an aggressive honeyeater and becomes involved in disputes with other honeyeaters or in harassing owls and small hawks.





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Crested Bellbird



APPEARANCE: Forehead and throat white bordered by black band connecting black bib and crest which is usually flat; greyish head; brown back and wings; underparts are a softer brown. Female is a generally pale version of the male.

BEHAVIOUR & HABITAT: Forages on ground in small parties, family groups or singly where it runs and hops through the ground layer of drier open woodland; its distinctive, bell-like, one-one-one call is far carrying. The call is made from the ground and from high perches.



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White-winged Triller



APPEARANCE: In breeding plumage it is a sharply marked bird with black head, back and tail; wings are criss-crossed black and white; throat, chest and belly are a clean white. Female is soft brown with pale eyebrow and dark line through eye, two-toned criss-cross pattern on wings. Non-breeding male resembles female but retains black and white wings.

BEHAVIOUR & HABITAT: Trillers are spring/summer migrants to southern Australia where they breed in woodlands and riparian vegetation. They forage on the ground and in foliage.



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Sacred Kingfisher



APPEARANCE: Small kingfisher with greeny-blue head, back and tail; has a black band through eye above whitish collar. Its belly can vary from white with light tints of soft warm tan to almost completely soft, warm tan.

BEHAVIOUR & HABITAT: Summer migrant, returning late September to open woodlands and margins of water bodies, gardens, parks etc. It hunts from exposed perches by pouncing on prey on ground. It commonly nests in hollows or termite nests in trees.



© Chris Cameron

Scaly-breasted Lorikeet



APPEARANCE: Red bill; green head, wings back and tail; chest and belly are scalloped with yellow; scalloping extends to the back of the neck. Red underwing is conspicuous in flight.

BEHAVIOUR & HABITAT: Feeds in noisy groups, often with other lorikeet species, in fruiting and flowering trees. It flies fast, swooping between trees and across roads. It roosts communally in tall trees, to which the birds return at dusk.





© Geoff Dennis

Rainbow Bee-eater



APPEARANCE: Slim, multi-coloured (hues of green, blue, orange and yellow) bird with long curved black bill; a black line runs through the eye. Two black shafts extend beyond end of tail feathers. During the breeding season these shafts may become so worn that they are no longer discernible.

BEHAVIOUR & HABITAT: Summer migrant which is often seen hawking on pointed wings for insects from exposed positions, especially near water or in open woodland associated with sandy loam. It nests in a burrow in the ground.



© Chris Cameron

Peaceful Dove



APPEARANCE: Small grey dove with a grey blue collar across breast and shoulders; collar is marked with fine black scallops; pale grey underparts.

BEHAVIOUR & HABITAT: Feeds on the ground, usually in pairs or small flocks. When disturbed flies swiftly on pointed wings to nearest perch where it sits very quietly watching. It frequents woodlands, farmlands, gardens and parks.



© Chris Cameron

Rufous Whistler



APPEARANCE: Grey back; white throat edged by clear back band; rich reddish brown chest and belly. Female is paler grey above, with soft white throat and pale rufous belly; throat and belly are streaked grey.

BEHAVIOUR & HABITAT: Feeds singularly or in pairs in foliage and probes along branches of trees and shrubs. It flies quickly and strongly in a straight flight from tree to tree to resume its search.



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White-throated Treecreeper



APPEARANCE: Dark brown back; conspicuous white throat; dark cream belly heavily marked with white and black streaks.

BEHAVIOUR & HABITAT: Singly or in pairs, forages on trunks of trees. Usually starts low on trunk and hops upwards, spiralling around the trunk probing bark, cracks and hollows as it goes. From the top it flies quickly down to next trunk.



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Brown Treecreeper



APPEARANCE: Sturdy bird with short tail; greyish head, brown back; fawn eyebrow; lightly streaked breast is pale above darkly striped belly; under-tail feathers are patterned black and white. In flight shows lighter wing-bar.

BEHAVIOUR & HABITAT: In pairs or small family groups in drier woodlands where it forages on tree trunks, fallen timber and the ground. Flight is undulating interspersed with fast gliding.

Note: An indicator species - further information in that section.



© Chris Cameron

Restless Flycatcher



APPEARANCE: Head, tail and upper parts are black; throat and belly are white but sometimes there is a pale, orange shading across the breast. Is able to raise crown feathers to resemble a tiny crest.

BEHAVIOUR & HABITAT: Most common in vegetation near water but does live in drier woodlands, parks, gardens etc. Swoops from one perch to another catching insects; hovers with tail down above grassy areas for short times.



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Singing Honeyeater



APPEARANCE: Upper parts are brownish grey; strong black line runs through eye, then curves down side of neck; narrow yellow line below eye is edged by a broader silvery-white mark; under parts are a soft grey finely streaked with brown.

BEHAVIOUR & HABITAT: Most often solitary, feeding in low shrubs, woodland trees, orchards and fairly open areas. Moves between feeding spots with a rapid flickering flight; calls frequently.



© Chris Cameron

Striped Honeyeater



APPEARANCE: Pale head and back of neck, heavily streaked black; brown back; belly is almost white with some streaking on sides of breast.

BEHAVIOUR & HABITAT: Forages singly or in pairs in flowering trees, shrubs and mistletoe. It is often heard before it is seen as it tends to feed in taller trees and shrubs where it moves efficiently through the foliage without flying.

Note: An indicator species - further information in that section.





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Yellow-faced Honeyeater



APPEARANCE: Grey-brown back and head; belly is a softer grey-brown; strong yellow marking from bill to behind eye is edged with black.

BEHAVIOUR & HABITAT: Forages, singly, in pairs and flocks in flowering trees and shrubs, mistletoe and amongst foliage; very high or quite low to the ground. It feeds busily when alone, but when it is in flocks there is much chasing through the foliage by pairs.



© Chris Cameron

Eastern Yellow Robin



APPEARANCE: Dark grey upper parts; brilliant yellow underparts and rump.

BEHAVIOUR & HABITAT: Clings sideways to trunk of tree or sits on low branch of shrubs on edges of thick vegetation waiting to pounce on prey. It flees into thick cover if startled.

Note: An indicator species - further information in that section.



© Helen Fallow



© Helen Fallow



© Glen Threlfo



Hooded Robin



APPEARANCE: The male is the only black and white robin. Head, neck, upper chest and back are black above white underparts and white surrounds on the back giving this robin a hooded appearance; wings are black with a white bar; tail is black with white side panels. The female is grey brown, fading to almost white on lower belly; wings are dark grey with white wing bars; tail is dark grey with white side panels.

BEHAVIOUR & HABITAT: Prefers drier woodlands (eucalypt, cypress pine, mulga) with fallen logs, stumps and ground litter. Uses open paddocks that have stumps, dead trees and re-growth. Perches on logs, stumps etc to watch for prey which it captures by ground-pouncing or hawking after flying insects.

Note: An indicator species - further information in that section.



Golden Whistler



APPEARANCE: Black head and breast band enclosing white throat; rich yellow belly and collar which sharply divides head and belly from brown back and wings. Female is brown with pale belly.

BEHAVIOUR & HABITAT: Forages singly or in pairs through the canopy and foliage of mid-storey shrubs. Often heard rather than seen. It prefers thicker woodlands and scrubs.

Note: An indicator species - further information in that section.





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White-plumed Honeyeater



APPEARANCE: Brownish back, face yellow edged with a white streak (plume) on the side of the throat; white streak is marked on the top by a black line of varying distinctness.

BEHAVIOUR & HABITAT: This aggressive honeyeater is the common honeyeater in western areas of the region, especially along creeks and other water bodies. It is very active, feeding from ground level to the very top of tall trees. It noisily mobs other species.



© Chris Cameron

Brown Honeyeater



APPEARANCE: Plain, brown honeyeater with a longish, slightly down-curved bill; small silvery yellow patch behind its eye; yellow shading on wing and tail feathers can be distinguished in a good light.

BEHAVIOUR & HABITAT: Common in open woodlands, along watercourses and in parks and gardens. It is a very busy bird which calls frequently. Often seen in pairs or small flocks around flowering trees or shrubs.



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Grey Fantail



APPEARANCE: Small grey bird with long white-tipped and white-edged tail which it fans frequently; dark facial patch; white throat and eyebrow above a dark breast band; belly can vary from almost white to fawn.

BEHAVIOUR & HABITAT: Inhabits woodlands, parks, gardens, and farmlands. It is a busy little bird, flitting from branch to branch, continually fanning its tail or shooting away from the foliage to chase an insect. It moves rapidly from undergrowth to high in the tallest trees.

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Jacky Winter



APPEARANCE: Small, neat bird with grey-brown head and back; has a soft white eyebrow above a dark eye line; breast is white blending to softly brownish belly; white outer edges of tail feathers are conspicuous in flight.

BEHAVIOUR & HABITAT: Perches on stumps, dead logs, salt bushes and tree branches where it sits motionless watching for prey which it gleans from bark, catches in mid-air or snatches from the ground; flicks tail from side to side when it returns to perch.





© Chris Cameron

Speckled Warbler



APPEARANCE: Back brown, streaked with lighter shades; face is creamy white and stands out against dark head and the heavily black streaked cream belly.

BEHAVIOUR & HABITAT: Feeds mostly in pairs or small family groups, rarely singly. Feeds in shrubs but most often in the leaf litter under shrubs where there is an understorey; in leaf litter and grass clumps, around logs and rocks in more open woodland.

Note: An indicator species - further information in that section.



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White-throated Gerygone



APPEARANCE: Small grey bird with white throat; small white dot between bill and red eye; belly is a vibrant lemon-yellow.

BEHAVIOUR & HABITAT: It feeds busily in the outer canopy with quick rather erratic movements, rarely sitting still. Its rather beautiful descending song usually draws attention to its presence in an area.

Note: An indicator species - further information in that section.



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Inland Thornbill



APPEARANCE: Small bird with brown back, rufous rump blending into dark white-tipped tail; whitish underparts; chest is heavily striated. Unlike the closely related Brown Thornbill it does not have a rusty brown forehead.

BEHAVIOUR & HABITAT: Singly, in pairs or small groups forages through canopy and mid-storey of inland forests often in company with other small woodland birds. It often carries its tail cocked. Dashing in and out of the foliage with feathers puffed and tail cocked, it will noisily scold an intruder.



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Yellow Thornbill



APPEARANCE: Head and back yellow brown; wings darker; underparts yellow. Fine streaks radiate from below and behind the dark eye.

BEHAVIOUR & HABITAT: Most often in pairs, but sometimes singly or in small flocks, feeds in foliage and along bark; hops busily up through the branches before flying to the next tree. Seems to prefer cypress and casuarinas where they exist.



© Glen Threlfo





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Silveryeye



APPEARANCE: Yellow brown head with conspicuous white/silver ring around dark eye; back is grey shading to olive. Belly is greyish; some birds have peachy coloured flanks.

BEHAVIOUR & HABITAT: Usually in small to medium flocks which feed through the foliage of trees and bushes, taking small soft fruit and piercing larger fruit. It is a common garden bird.



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Diamond Firetail



APPEARANCE: Red bill and rump; grey head; brown back and wings; belly is white with solid black breast band and flanks; the black flanks are white-spotted.

BEHAVIOUR & HABITAT: Occurs singly; in pairs or flocks, feeding on the ground amongst long native grasses. When it is disturbed it flies to safe perches with a bouncing flight that shows red rump. Usually perches on high tree branch near water before coming in to drink.

Note: An indicator species - further information in that section.



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Red-capped Robin



APPEARANCE: The tiny male is glossy black with red cap and breast; has distinct white wing markings, tail edges and under parts are white. Female is brown above with soft red wash on forehead and occasionally on generally whitish breast; white wing marks and tail edges are less distinct than those of male.

BEHAVIOUR & HABITAT: Occurs singly or in pairs in open inland woodlands where it perches on low branches or dead stumps before pouncing on or snatching prey; wings are often drooped when it is perched.



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Zebra Finch



APPEARANCE: Brown back, chunky orange bill, and black and white striped tail; Male has orange cheek patch, black streaks on breast and white-spotted orange markings below wings.

BEHAVIOUR & HABITAT: Usually in small flocks which feed on the ground. When disturbed they fly calling to a nearby leafy shrub from where they continue to call while hopping from branch to branch, peering out to assess danger.



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Double-barred Finch



APPEARANCE: Small, brown finch with white face, rump and belly; two thick black bars cross throat and chest; black tail; black wing edges are dotted with white.

BEHAVIOUR & HABITAT: It favours understorey foliage in woodlands and farmlands. It feeds on the ground in flocks and takes refuge in thick bushes when disturbed. It is usually fairly close to a water source.



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Varied Sittella



APPEARANCE: Small, brown bird with very short black tail; white head and rump; belly is pale streaked in brown. During flight a band of orange on wings is displayed.

BEHAVIOUR & HABITAT: In small parties or flocks, it forages in tree tops with short rocking movements up and down the trunk and along branches probing under bark and into cracks and crevices.



© Chris Cameron

Variegated Fairy-wren



APPEARANCE: Iridescent blue cap, eye-patch, back and tail; black throat, breast and neck; brown wings with chestnut coloured patch near shoulder. Female is brown with creamy coloured belly and a blue tail.

BEHAVIOUR & HABITAT: Lives and forages in family groups in understorey bushes. Moves through understorey foliage, occasionally feeding in taller trees above; forages on ground under shrubs or in open close to shrubbery.

Note: An indicator species - further information in that section.



© Nevil Lazarus

White-winged Fairy-wren



APPEARANCE: Breeding male is unmistakable with royal blue body and white wings; non-breeding male and female are the palest and least marked of all the fairy-wrens; back and head soft brown; underparts almost white; tail grey blue.

BEHAVIOUR & HABITAT: Occur in small flocks of mostly brown birds in long grasses, around scattered low, dense, woody shrubs such as saltbush, acacia and lignum in otherwise open areas. When disturbed they fly low across the habitat using vegetation clumps as 'stepping-stones'.

Note: An indicator species - further information in that section.



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Mistletoebird



APPEARANCE: Tiny bird with glossy, black upper parts; brilliant red throat and chest; white belly with a black stripe down the centre. The female has grey back; whitish belly with a pink patch below the tail.

BEHAVIOUR & HABITAT: Feeds in fruiting mistletoe. Its high pitched call indicates its presence but it is often difficult to see if it is high in the tree. It flies quickly from one tree to the next. When perched it moves restlessly.



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Spotted Pardalote



APPEARANCE: Tiny, grey bird with white spotted black head and wing tips; white eyebrow and red rump; belly is orange-yellow; its tail is quite short.

BEHAVIOUR & HABITAT: It forages in the foliage of trees and bushes, hopping around quickly. It nests in a long burrow in banks, earth mounds or other similar locations.



© Chris Cameron

Striated Pardalote



APPEARANCE: Tiny grey bird with black cap; the wide eyebrow shades from rich yellow to white; wings edges are patterned in black and white; throat is a rich yellow; belly shades from yellow at the sides to whitish below.

BEHAVIOUR & HABITAT: Feeds singly, in pairs or small parties in trees and bushes; moves constantly. Pairs nest in a burrow in banks, earth-mounds, road cuttings or similar spots.



© Chris Cameron

Weebill



APPEARANCE: Tiny bird, in fact, Australia's smallest bird, with brown back and lemon coloured underparts. It has a short horn-coloured bill.

BEHAVIOUR & HABITAT: Feeds in foliage in small groups which keep contact by calling. It forages rapidly through the canopy where it often hangs from the tips of branchlets or flutters along the very edges.



Indicator Species

The birds described in this section have been shown by research to be particularly sensitive to one or more aspects of landscape management. As such, they are useful indicators for biodiversity condition at farm and landscape scales.

The on-going presence of these birds on your farm, or in your catchment, is a sign that you and your neighbours are employing land management practices that help maintain a balance between production and biodiversity.

Most of these species belong to a group of declining woodland birds that were once common throughout the temperate and sub-tropical woodlands of eastern Australia. However, their populations are now in serious decline, due mainly to habitat loss through clearing, and deteriorating condition of the habitat that remains.

Several of the birds listed here are still relatively common, yet long-term data and local studies have shown that they may be adversely impacted by certain aspects of landscape management. For example, the striped honeyeater is common and widespread through inland areas, but it is becoming less common in small patches of remnant vegetation, especially where those patches are isolated from more extensive areas of woodland.



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BIRD MONITORING FOR IMPROVED LANDSCAPE MANAGEMENT

The indicator species described in this section are the birds to watch if you wish to monitor the effects of your farm management practices on bird diversity.

If you have the right types of habitat for each of these birds, and they are present on your farm, then your management practices are probably sympathetic to retaining biodiversity values of native vegetation.

If suitable habitat patches are available for one or more of these species, and they aren't present (or your monitoring indicates a decline in their abundance) then it may be time to consider changing the way you manage those habitats in order to make them more favourable for birds.

To help you make some of those management decisions, we have provided a list of management options beneath each species account. These options are related to the management principles described in the following section of this guide: "Achieving a bird-friendly farming landscape".

Management options, graded from low (♦) to high (♦♦♦) priority, for a particular species are prioritised according to the primary habitat requirements of the species.



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Diamond Firetail



APPEARANCE: Red bill and rump; grey head; brown back and wings; belly is white with solid black breast band and flanks; the black flanks are white-spotted.

BEHAVIOUR & HABITAT: Occurs singly; in pairs or flocks, feeding on the ground amongst long native grasses. When it is disturbed it flies to safe perches with a bouncing flight that shows red rump. Usually perches on high tree branch near water before coming in to drink.

FOOD: Ripe and part-ripe seeds and occasionally, insects and their larvae.

SIGNIFICANCE: Populations have declined significantly in woodlands across south-eastern Australia, largely due to habitat destruction and fragmentation for rural development. They have virtually disappeared from more intensively farmed areas where they were known to occur historically.

WHAT CAN I DO TO HELP?

PRIORITY	MANAGEMENT OPTION
♦♦	Maintain and protect large and diverse areas of remnant vegetation
♦♦	Maintain and/or establish corridors & stepping stones of native vegetation between remnants
♦♦♦	Maintain and/or re-establish complex understorey & ground cover of litter & logs
	Maintain hollow-bearing trees (alive & dead) & ensure range of tree ages coming through
♦♦♦	Maintain healthy native pastures and woodlands & protect from high intensity grazing and inappropriate fire regimes.
♦	Control feral predators (cats and foxes)
♦	Maintain healthy well vegetated riparian zones and protect from high usage.
	Maintain healthy, diverse natural wetlands and enhance artificial ones.



© Chris Cameron



Eastern Yellow Robin



APPEARANCE: Dark grey upper parts; brilliant yellow underparts and rump.

BEHAVIOUR & HABITAT: Clings sideways to trunk of tree or sits on low branch of shrubs on edges of thick vegetation waiting to pounce on prey. It flees into thick cover if startled.

SIGNIFICANCE: Bird surveys in many agricultural areas have shown that this species is restricted to more intact landscapes with complex woodland remnants in good condition. It no longer occurs in areas where remnant woodlands are degraded, small or widely separated by land that has been cleared for rural development.

FOOD: Insects, spiders and other small arthropods.

WHAT CAN I DO TO HELP?

PRIORITY	MANAGEMENT OPTION
♦♦♦	Maintain and protect large and diverse areas of remnant vegetation
♦♦♦	Maintain and/or establish corridors & stepping stones of native vegetation between remnants
♦♦♦	Maintain and/or re-establish complex understorey & ground cover of litter & logs
	Maintain hollow-bearing trees (alive & dead) & ensure range of tree ages coming through
♦♦♦	Maintain healthy native pastures and woodlands & protect from high intensity grazing and inappropriate fire regimes.
♦	Control feral predators (cats and foxes)
	Maintain healthy well vegetated riparian zones and protect from high usage.
	Maintain healthy, diverse natural wetlands and enhance artificial



© Helen Fallow



© Helen Fallow



Hooded Robin



APPEARANCE: The male is the only black and white robin. Head, neck, upper chest and back are black above white underparts and white surrounds on the back giving this robin a hooded appearance; wings are black with a white bar; tail is black with white side panels. The female is grey brown, fading to almost white on lower belly; wings are dark grey with white wing bars; tail is dark grey with white side panels.

BEHAVIOUR & HABITAT: Prefers drier woodlands (eucalypt, cypress pine, mulga) with fallen logs, stumps and ground litter. Uses open paddocks that have stumps, dead trees and re-growth. Perches on logs, stumps etc to watch for prey which it captures by ground-pouncing or hawking after flying insects.

SIGNIFICANCE: The Hooded Robin is declining in settled areas right across its range. It has disappeared from some larger reserves. This species is very sensitive to habitat alteration and appears to require large intact areas of good woodland for survival.

WHAT CAN I DO TO HELP?

PRIORITY	MANAGEMENT OPTION
♦♦♦	Maintain and protect large and diverse areas of remnant vegetation
♦♦♦	Maintain and/or establish corridors & stepping stones of native vegetation between remnants
♦♦♦	Maintain and/or re-establish complex understorey & ground cover of litter & logs
	Maintain hollow-bearing trees (alive & dead) & ensure range of tree ages coming through
♦♦♦	Maintain healthy native pastures and woodlands & protect from high intensity grazing and inappropriate fire regimes.
♦	Control feral predators (cats and foxes)
	Maintain healthy well vegetated riparian zones and protect from high usage.
	Maintain healthy, diverse natural wetlands and enhance artificial



© Glen Threlfo



Golden Whistler



APPEARANCE: Black head and breast band enclosing white throat; rich yellow belly and collar which sharply divides head and belly from brown back and wings. Female is brown with pale belly.

BEHAVIOUR & HABITAT: Forages singly or in pairs through the canopy and foliage of mid-storey shrubs. Often heard rather than seen. It prefers thicker woodlands and scrubs.

FOOD: Invertebrates, mainly insects; occasionally fruit, and, rarely, seeds.

SIGNIFICANCE: Bird surveys on Queensland's Darling Downs indicated that this species is restricted mainly to larger woodland remnants in good condition. It no longer occurs in areas where remnant woodlands are degraded, small or widely separated by land that has been cleared for rural development. Anecdotal evidence suggests that this is the case in other intensively farmed areas as well.

WHAT CAN I DO TO HELP?

PRIORITY	MANAGEMENT OPTION
♦♦♦	Maintain and protect large and diverse areas of remnant vegetation
♦♦♦	Maintain and/or establish corridors & stepping stones of native vegetation between remnants
♦♦♦	Maintain and/or re-establish complex understorey & ground cover of litter & logs
	Maintain hollow-bearing trees (alive & dead) & ensure range of tree ages coming through
♦♦♦	Maintain healthy native pastures and woodlands & protect from high intensity grazing and inappropriate fire regimes.
♦	Control feral predators (cats and foxes)
	Maintain healthy well vegetated riparian zones and protect from high usage.
	Maintain healthy, diverse natural wetlands and enhance artificial



© Chris Cameron

Grey-crowned Babbler



APPEARANCE: Generally brown bird with pale crown and underparts; strong dark line through eyes gives the bird the appearance of a bandit. The long bill is down curved. In flight the white tips on the tail are conspicuous.

BEHAVIOUR & HABITAT: Mostly occurs in noisy family groups which forage together on the ground and in trees. Often huddles in excited groups when a food source is located. When at rest the birds sit close to each other and often preen the one next to them. When disturbed, they float on broad wings away from the disturbance or scamper quickly up through tall trees before floating down at a distance.

FOOD: Invertebrates, mainly insects; occasionally seeds.

SIGNIFICANCE: Habitat destruction and fragmentation through clearing have caused significant population declines across southern Australia. In some regions they are now locally extinct. They are still reasonably common in some cotton districts, but long-term data shows continuing declines, with disappearance from some of the more intensively-managed farming areas.



WHAT CAN I DO TO HELP?

PRIORITY	MANAGEMENT OPTION
♦♦♦	Maintain and protect large and diverse areas of remnant vegetation
♦♦♦	Maintain and/or establish corridors & stepping stones of native vegetation between remnants
♦♦♦	Maintain and/or re-establish complex understorey & ground cover of litter & logs
♦	Maintain hollow-bearing trees (alive & dead) & ensure range of tree ages coming through
♦♦♦	Maintain healthy native pastures and woodlands & protect from high intensity grazing and inappropriate fire regimes.
♦♦♦	Control feral predators (cats and foxes)
♦	Maintain healthy well vegetated riparian zones and protect from high usage.
	Maintain healthy, diverse natural wetlands and enhance artificial



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Speckled Warbler



APPEARANCE: Back brown, streaked with lighter shades; face is creamy white and stands out against dark head and the heavily black streaked cream belly.

BEHAVIOUR & HABITAT: Feeds mostly in pairs or small family groups, rarely singly. Feeds in shrubs but most often in the leaf litter under shrubs where there is an understorey; in leaf litter and grass clumps, around logs and rocks in more open woodland.

FOOD: Mainly insectivorous, but also take seeds and other plant material.

SIGNIFICANCE: Significant population declines have occurred in woodlands across southern Australia, primarily due to loss and fragmentation of habitat related to clearing of woodlands for agricultural development. They have virtually disappeared from the more intensively farmed areas of the region where they were known to occur historically.



WHAT CAN I DO TO HELP?

PRIORITY	MANAGEMENT OPTION
♦♦♦	Maintain and protect large and diverse areas of remnant vegetation
♦♦♦	Maintain and/or establish corridors & stepping stones of native vegetation between remnants
♦♦♦	Maintain and/or re-establish complex understorey & ground cover of litter & logs
	Maintain hollow-bearing trees (alive & dead) & ensure range of tree ages coming through
♦♦♦	Maintain healthy native pastures and woodlands & protect from high intensity grazing and inappropriate fire regimes.
♦♦	Control feral predators (cats and foxes)
	Maintain healthy well vegetated riparian zones and protect from high usage.
	Maintain healthy, diverse natural wetlands and enhance artificial



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Spiny-cheeked Honeyeater



APPEARANCE: Brown back; curved reddish bill with black tip; dark band through eye; apricot throat and bib; belly creamy streaked with brown.

BEHAVIOUR & HABITAT: Feeds singly, in pairs or small groups in flowering trees and shrubs and in mistletoe. It has a swooping flight from tree to tree; often sits on very top of tree or a dead branch to call before flying on.

SIGNIFICANCE: Results of bird surveys on the Darling Downs indicate that this species occurs mainly in larger woodland remnants that have been maintained in good condition. It seldom occurs in areas where bushland is degraded or the remnants are very small and widely scattered. The species is likely to behave similarly in response to agricultural development throughout the cotton-growing region of central-eastern Australia.

FOOD: Nectar, fruit, seeds and invertebrates, occasionally lizards and nesting birds.

WHAT CAN I DO TO HELP?

PRIORITY	MANAGEMENT OPTION
♦♦	Maintain and protect large and diverse areas of remnant vegetation
♦♦♦	Maintain and/or establish corridors & stepping stones of native vegetation between remnants
♦♦♦	Maintain and/or re-establish complex understorey & ground cover of litter & logs
	Maintain hollow-bearing trees (alive & dead) & ensure range of tree ages coming through
♦♦	Maintain healthy native pastures and woodlands & protect from high intensity grazing and inappropriate fire regimes.
♦	Control feral predators (cats and foxes)
♦	Maintain healthy well vegetated riparian zones and protect from high usage.
	Maintain healthy, diverse natural wetlands and enhance artificial



© Chris Cameron



Striped Honeyeater



APPEARANCE: Pale head and back of neck, heavily streaked black; brown back; belly is almost white with some streaking on sides of breast.

BEHAVIOUR & HABITAT: Forages singly or in pairs in flowering trees, shrubs and mistletoe. It is often heard before it is seen as it tends to feed in taller trees and shrubs where it moves efficiently through the foliage without flying.

FOOD: Nectar, seeds, fruits and invertebrates, mainly insects and their larvae.

SIGNIFICANCE: Results of bird surveys on the Darling Downs indicate that this species occurs mainly in larger woodland remnants that have been maintained in good condition. It seldom occurs in areas where bushland is degraded or the remnants are very small and widely scattered. The species is likely to behave similarly in response to agricultural development throughout the cotton-growing region of central-eastern Australia.

WHAT CAN I DO TO HELP?

PRIORITY	MANAGEMENT OPTION
♦♦♦	Maintain and protect large and diverse areas of remnant vegetation
♦♦	Maintain and/or establish corridors & stepping stones of native vegetation between remnants
♦♦♦	Maintain and/or re-establish complex understorey & ground cover of litter & logs
	Maintain hollow-bearing trees (alive & dead) & ensure range of tree ages coming through
♦♦	Maintain healthy native pastures and woodlands & protect from high intensity grazing and inappropriate fire regimes.
♦	Control feral predators (cats and foxes)
♦	Maintain healthy well vegetated riparian zones and protect from high usage.
	Maintain healthy, diverse natural wetlands and enhance artificial



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White-winged Fairy-wren



APPEARANCE: Breeding male is unmistakable with royal blue body and white wings; non-breeding male and female are the palest and least marked of all the fairy-wrens; back and head soft brown; underparts almost white; tail grey blue.

BEHAVIOUR & HABITAT: Occur in small flocks of mostly brown birds in long grasses, around scattered low, dense, woody shrubs such as saltbush, acacia and lignum in otherwise open areas. When disturbed fly low across habitat using vegetation clumps as 'stepping-stones'.

FOOD: Insectivorous, taking mainly beetles; occasionally eat seeds and fruits.

SIGNIFICANCE: Occur in riparian and floodplain areas with saltbush, cottonbush, lignum and other dense, low native vegetation; or along fences and banks that have clumps of tangled vegetation. They disappear from areas where dense, low shrubby vegetation has been removed.

WHAT CAN I DO TO HELP?

PRIORITY	MANAGEMENT OPTION
♦♦♦	Maintain and protect large and diverse areas of remnant vegetation
♦♦♦	Maintain and/or establish corridors & stepping stones of native vegetation between remnants
♦♦♦	Maintain and/or re-establish complex understorey & ground cover of litter & logs
	Maintain hollow-bearing trees (alive & dead) & ensure range of tree ages coming through
♦♦♦	Maintain healthy native pastures and woodlands & protect from high intensity grazing and inappropriate fire regimes.
♦	Control feral predators (cats and foxes)
♦	Maintain healthy well vegetated riparian zones and protect from high usage.
	Maintain healthy, diverse natural wetlands and enhance artificial



© Chris Cameron



Variegated Fairy-wren



APPEARANCE: Iridescent blue cap, eye-patch, back and tail; black throat, breast and neck; brown wings with chestnut coloured patch near shoulder. Female is brown with creamy coloured belly and a blue tail.

BEHAVIOUR & HABITAT: Lives and forages in family groups in understorey bushes. Moves through understorey foliage, occasionally feeding in taller trees above; forages on ground under shrubs or in open close to shrubbery.

FOOD: Mainly insects, occasionally seeds.

SIGNIFICANCE: This species is most commonly found in structurally complex woodlands (i.e. with good understorey). Populations will decline, or even disappear, if the understorey is continually disturbed or removed (e.g. by stick-raking or burning).

WHAT CAN I DO TO HELP?

PRIORITY	MANAGEMENT OPTION
♦♦♦	Maintain and protect large and diverse areas of remnant vegetation
♦♦♦	Maintain and/or establish corridors & stepping stones of native vegetation between remnants
♦♦♦	Maintain and/or re-establish complex understorey & ground cover of litter & logs
	Maintain hollow-bearing trees (alive & dead) & ensure range of tree ages coming through
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♦♦	Control feral predators (cats and foxes)
♦	Maintain healthy well vegetated riparian zones and protect from high usage.
	Maintain healthy, diverse natural wetlands and enhance artificial



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Brown Treecreeper



APPEARANCE: Sturdy bird with short tail; greyish head, brown back; fawn eyebrow; lightly streaked breast is pale above darkly striped belly; under-tail feathers are patterned black and white. In flight shows lighter wing-bar.

BEHAVIOUR & HABITAT: In pairs or small family groups in drier woodlands where it forages on tree trunks, fallen timber and the ground. Flight is undulating interspersed with fast gliding.

FOOD: Almost entirely insectivorous, mainly ants and beetles; occasionally take some plant material, such as nectar.

SIGNIFICANCE: Makes extensive use of fallen timber, stumps, dead trees and ground-litter for foraging. Nests in hollows of dead trees and in stumps. This species is disappearing from the more intensively managed production areas where standing dead timber, fallen timber and ground litter have been removed.



WHAT CAN I DO TO HELP?

PRIORITY	MANAGEMENT OPTION
♦♦♦	Maintain and protect large and diverse areas of remnant vegetation
♦♦♦	Maintain and/or establish corridors & stepping stones of native vegetation between remnants
♦♦♦	Maintain and/or re-establish complex understorey & ground cover of litter & logs
♦♦♦	Maintain hollow-bearing trees (alive & dead) & ensure range of tree ages coming through
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Purple Swamphen



APPEARANCE: Heavily built waterbird with conspicuous strong red bill and fore-head shield; dark, blue head, neck and breast; back, wings and belly are dark grey; under tail is white; strong legs and large feet are red.

BEHAVIOUR & HABITAT: Occurs in groups along the margins of vegetated wetlands - ornamental ponds, lakes, shallow waterholes, irrigation dams and channels. Forages in wetland vegetation and nearby paddocks. Continuously flicks tail showing the white under-tail feathers. Flies heavily but strongly. Swims.

FOOD: Mainly aquatic vegetation: also seeds, fruits, insects, frogs, lizards, fish, young birds, eggs and small mammals.

SIGNIFICANCE: Inhabits wetlands that have well-vegetated margins and clumps of emergent aquatic vegetation. Roosts at night in overhanging branches of trees. It builds feeding platforms and also breeds in dense reedy areas. Disappears from degraded wetlands; does not occur on newer storages until suitable vegetation has been established.



WHAT CAN I DO TO HELP?

PRIORITY	MANAGEMENT OPTION
	Maintain and protect large and diverse areas of remnant vegetation
	Maintain and/or establish corridors & stepping stones of native vegetation between remnants
	Maintain and/or re-establish complex understorey & ground cover of litter & logs
	Maintain hollow-bearing trees (alive & dead) & ensure range of tree ages coming through
♦♦♦	Maintain healthy native pastures and woodlands & protect from high intensity grazing and inappropriate fire regimes.
♦♦	Control feral predators (cats and foxes)
♦♦♦	Maintain healthy well vegetated riparian zones and protect from high usage.
♦♦♦	Maintain healthy, diverse natural wetlands and enhance artificial

Achieving a bird-friendly farming landscape

The management of flora and fauna habitats is a complex issue, and your approach to the task will vary with your property management objectives. There are, however, a few simple principles which, when observed in developing a farm or catchment plan, can enhance the suitability of farming landscapes for a whole range of birds and other wildlife.

This section provides technical information to support the implementation of the *Australian Cotton Industry Best Management Practices Manual Land and Water Management module*, in relation to *Objective 7 Good Native Vegetation Management* and *Objective 8 Good Riparian Land Management*.

Additional information and guidelines on riparian and wetland management are available in *Managing Riparian Lands in the Cotton Industry* (Lovett *et al.* 2003).



Greg Kauter



Greg Kauter

MANAGEMENT PRINCIPLES BACKED BY SCIENCE

A number of detailed studies have been conducted across Australia on the relationship between birds and the distribution and condition of native vegetation in agricultural landscapes. The results of these studies are also supported by the long-term records of numerous bird observers, which show consistent declines in diversity and abundance of many bird species as landscapes have been developed for grazing and cropping.

In essence these studies have shown that bird species diversity and abundance is reduced where native vegetation patches are small and widely separated, and where habitats have been modified through agricultural practices (e.g. by removing understorey shrubs or replacing native pastures with introduced pastures). They also show that changes in the bird community often take many years to become apparent, and when they do occur the change may happen quite quickly (*see Box "Key Concept - Extinction Debt"*).

These observations form the basis for scientists and land-managers to develop a set of management principles for agricultural landscapes which will help protect, maintain and enhance bird communities.

The principles are all inter-related, and work together to achieve maximum available habitat for birds and other wildlife within the context of a productive agricultural landscape. Applying any one principle by itself is unlikely to be adequate to maintain or enhance the bird diversity in your landscape.

Patch Size

PRINCIPLE 1

The bigger the better - but small remnants are better than no remnants at all!

The **minimum viable patch size** for most bird populations is about ten to twenty hectares, but some species can only survive in patches that are larger than fifty or even 100 hectares.

Smaller patches are less able to provide the resources necessary to support some species; particularly those that normally live in large family groups (e.g. grey-crowned babbler). This is magnified by the length of time the patch has been **isolated** (see *Principle 2*) from surrounding vegetation. Some species may persist for many years in a small patch, but their population size will gradually decline to the point where they no longer breed successfully and eventually die out. This phenomenon is known as **extinction debt** (see "Key Concept" box).

Despite this, it is often surprising just how many bird species can be found in roadside or on-farm patches as small as one or two hectares. The diversity of birds in these smaller patches is often related to the structural **complexity** (see *Principle 3*) of the habitat available and how well they are connected to adjoining areas of bush (*Principle 2*).

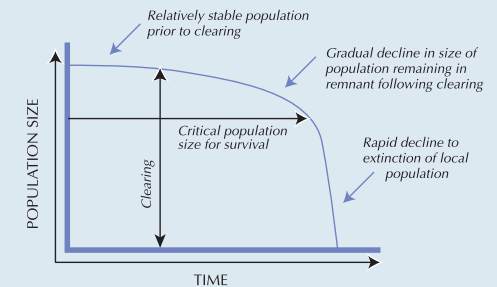
MANAGEMENT OPTIONS:

- ✓ Maintain and/or re-establish large patches (10 hectares or more) of indigenous vegetation
- ✓ Protect small patches and strive to enlarge some of them

MANAGEMENT ACTIONS:

- ✓ Enlarge small patches by allowing regrowth to establish and remain around them
- ✓ Plant additional indigenous trees, shrubs and grasses adjacent to small patches
- ✓ Enhance the size of small roadside remnant patches by revegetating or allowing natural regeneration on your side of the boundary fence
- ✓ When managing regrowth, leave some patches for the birds
- ✓ Protect smaller remnants from serious disturbance like wild-fire, clearing and heavy grazing

KEY CONCEPT - EXTINCTION DEBT



The blue line tracks the declining population of a hypothetical bird species in a small remnant following clearing of the surrounding landscape. The population size drops gradually at first, but eventually reaches a point where breeding and recruitment of new birds to the population is unsuccessful. As a result, the population rapidly declines and is lost from the remnant.



Grey-crowned babbler.

© Chris Cameron

Isolation and connectivity

PRINCIPLE 2

Well-connected habitat patches assist bird movement and ensure long-term survival

MANAGEMENT OPTIONS:

- ✓ Provide corridors and other areas of indigenous vegetation to improve connectivity between isolated large remnants of native vegetation.

MANAGEMENT ACTIONS:

- ✓ Leave strips and/or clumps of regrowth between larger remnants
- ✓ Protect riparian vegetation by fencing and re-establish native species if necessary
- ✓ Plant corridors and clumps of native trees and shrubs in open country between remnants
- ✓ Broaden existing road-side corridors by re-vegetating strips on your side of the boundary
- ✓ Encourage road management authorities to protect remnant and regrowth in the road reserve

Many of the smaller bush birds are unable or unwilling to cross large open spaces in search of new or additional habitat to support their population. To do so may exhaust their energy supplies and expose them to high risk of predation (e.g. by feral cats or birds of prey). This reduces the survival rate of individuals, lessens the chance of interbreeding, and hinders dispersal of young birds from their home territory in search of food and shelter.

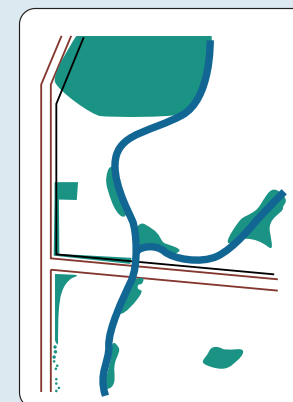
Consequently, native vegetation patches that are **isolated** from other native vegetation will generally contain fewer species and smaller populations of birds. Scientific evidence shows that some birds are absent from otherwise suitable habitat patches that are more than **500 metres** from surrounding habitat areas. What's more, patches that are isolated by more than **one kilometre** have significantly fewer species than less isolated and large intact patches.

Connectivity, the degree to which native vegetation is linked across the landscape, is usually spoken of in terms of **corridors**. These are continuous and more-or-less linear strips of vegetation, most commonly seen along watercourses, fence-lines and roads. They may be natural areas of remnant or regrowth vegetation, or strips that are revegetated using native plants from the local area.

Connectivity is also provided by **stepping stones** - small patches of remnant, regrowth or re-planted vegetation, strategically placed between larger remnants. These patches reduce the amount of open-space that small birds have to fly across between areas of shelter, as they move between large patches.

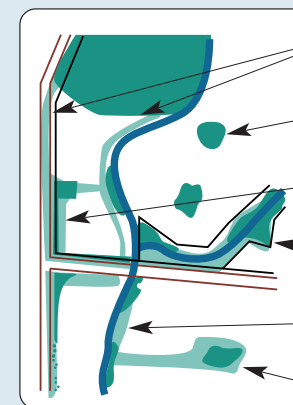
Significant connectivity is also provided for some birds by **scattered paddock trees** and shrubs. Corridors and stepping stone patches also provide productivity benefits to the farm in the form of shade and shelter for livestock and crops. They also harbour significant populations of beneficial insects, birds and bats that help to reduce pest populations in crops and pastures. Riparian corridors along watercourses help improve water quality by reducing erosion and minimising the entry of sediment and nutrients into the stream.

KEY CONCEPT - CREATE CONNECTIVITY IN THE LANDSCAPE



The diagram on the left represents a relatively poorly connected landscape, with substantial gaps between vegetation remnants (green).

On the diagram below, the remnants are better connected, with new and enhanced corridors plus stepping stones between the large remnant and smaller ones.



Create corridor linkages between remnants

Create "stepping stone" clumps of vegetation

Widen roadside corridors inside your boundary

Fence to help manage corridors and remnants

Fill in gaps in existing corridors

Enlarge small remnants

Habitat complexity

PRINCIPLE 3

Maintain, enhance or re-establish areas of complex habitat - the K.I.M.M. principle



Grassy woodlands, with their single tree layer, grassy ground layer and lack of shrubs, provide habitat of relatively low complexity.

Photo: Guy Roth.

We've all heard of the K.I.S.S. principle - Keep it Simple, Stupid. Well, here's a new one to help you with your bird habitat management: the K.I.M.M. principle - Keep It Messy, Mate.

The term "**habitat complexity**" refers to the variety of food and shelter resources available for birds and other wildlife in a given patch of vegetation. In simple terms, it refers to the "messiness" of the vegetation.

Less complex habitats have a **simple structure** with few layers of vegetation (e.g. a scattered tree layer plus grassy ground layer, but few or no shrubs). Simple habitats generally have a lower diversity of plant species and little or no accumulation of logs and litter (fallen leaves, twigs, etc.) on the ground.

Complex habitats contain a greater variety of places for many different animals to live, breed and feed. They include a number of vegetation layers (**complex structure**), usually a large variety of plant species and abundant logs and litter on the ground.

In many agricultural landscapes, there is a tendency to "clean up" complex vegetation patches by removing shrubs, dead trees and logs to make livestock, weed and pest management easier. Logs, dead trees and shrubs are often viewed as "messy" - hence the principle Keep it Messy, Mate.

This tendency to clean up is sometimes referred to as "**habitat simplification**". Such activities reduce the suitability of these habitats for birds that are adapted to life in the shrubby layer, or those that feed on the insects and small reptiles that live amongst logs and leaf litter.

MANAGEMENT OPTIONS:

- ✓ Manage 10% of the property to provide core wildlife habitat
- ✓ Try to maintain habitat values in all vegetation types on the property

MANAGEMENT ACTIONS:

- ✓ Apply the KIMM principle - retain "messy" areas of bush with complex vegetation structure
- ✓ Protect habitat areas by fencing to control grazing pressure
- ✓ Resist the temptation to "clean up" logs and shrubby understorey
- ✓ If removing logs and rocks from paddocks, place them in bush areas to provide more habitat
- ✓ Allow regrowth shrubs and ground layer to establish in areas that have been "cleaned up"
- ✓ Re-establish understorey and ground layer by planting indigenous shrubs and grasses



Belah woodlands (left) and some riparian woodlands (right) often provide highly complex habitat, with several layers of shrubs beneath the main tree canopy plus logs and grassy ground layer. Photos: Greg Ford (L); Guy Roth (R).

It also removes potential homes for those species, such as parrots and owls that nest in hollows in old and dead trees.

Another form of habitat simplification occurs when native pastures are replaced by introduced pastures or crops. Native grasslands and grassy woodlands, whilst having a simple structure, usually contain a wide variety of plant species and growth forms (grasses, herbs, creepers, etc.) in the ground layer. The more diverse that ground layer, the more birds and other animals it is likely to provide homes and food for. When these native pastures are replaced by "improved" pasture or crops containing only one or a few plant types, the diversity of native flora is diminished and fewer bird species can survive in the long term.



Stand structure

PRINCIPLE 4

Retain hollow trees and stags and encourage regeneration of trees

This principle is closely related to habitat complexity (above), but deserves special mention.

Old trees and dead standing trees (stags) are often referred to as “habitat trees”, because they provide an array of hollows of varying dimensions in which birds and other native fauna can shelter and breed. It is vital that these old trees are maintained in the landscape as it takes most eucalypts over 100 years to start forming hollows.

Equally important is the promotion of stand regeneration and a mixed age structure of trees within the stand. The germination, establishment and ongoing health of younger trees are vital to ensure the long-term viability of any patch of native vegetation. This will provide a continual recruitment of new hollow-bearing trees to replace old trees as they die and eventually fall over.

MANAGEMENT OPTIONS:

- ✓ Protect and maintain a range of old hollow-bearing trees, including dead ones, in remnant patches
- ✓ Ensure that new trees are being recruited to create mixed-age stands
- ✓ Consider providing artificial hollows if few or no natural ones are available

MANAGEMENT ACTIONS:

- ✓ Avoid cutting down old hollow trees - leave at least five per hectare in remnants
- ✓ Ensure that firewood collectors leave some dead hollow trees standing
- ✓ Manage grazing pressure to allow tree seedlings to establish and mature
- ✓ Plant locally occurring tree species (e.g. eucalypts) that will provide future hollows
- ✓ Manage fire to maintain a balance of young trees and productive pasture
- ✓ Where hollow-bearing trees are scarce, try to protect them from destruction by fire
- ✓ Consider installing nest boxes in woodland areas where hollow trees have been lost

KEY CONCEPT - BIRDS NEED OLD TREES



One third of all woodland bird species require hollows for nesting and roosting, including barn owls, tree-creepers, glossy black cockatoos and parrots. Photo: Guy Roth.



Old trees produce more nectar per area of foliage, so they are a vital food source for many species, such as honeyeaters and lorikeets. Photo: Ross Miller

Grazing and fire

PRINCIPLE 5

Manage grazing and fire to minimise impacts on native pastures and woodlands

Frequent or continuous heavy grazing can have long-term impacts on the diversity of native plants and on the complexity of native vegetation patches. Heavily grazed native pastures offer few refuges for birds that nest on the ground (e.g. quails), and rarely produce sufficient food for seed-eaters like pigeons and finches. They are also likely to contain a lower diversity of insects and small vertebrates (e.g. lizards and native rodents), which means less food for insect-eaters and birds of prey.



Overgrazing can lead to ground cover decline and loss of habitat structure, as has occurred in this riparian area where stock access is unrestricted. Too-frequent burning can have similar consequences. Photo: Guy Roth.

MANAGEMENT OPTIONS:

- ✓ Adjust grazing regime to improve and maintain the health and productivity of native pastures
- ✓ Manage fire to maintain habitat values as well as improve productivity and protect infrastructure

MANAGEMENT ACTIONS:

- ✓ Fence off remnant areas to allow strategic, low-intensity grazing of bird habitats
- ✓ Spell some pasture area through the growing season to allow sufficient seed production
- ✓ Prepare a fire management plan for the property that aims to maintain some open areas with regular burning as well as shrubby areas in less-frequently burnt patches
- ✓ Burn outwards from the perimeter of scrubs, rather than letting fire sweep into them



Controlled burning can help to maintain open grassy woodland structure. Photo: Ross Miller.

structural complexity of native vegetation across modern landscapes.

Grasslands and grassy woodlands are fire resilient, and adapted to being burnt by natural fires every few years. Where fires are excluded from these environments, shrub encroachment is often encountered and the habitats become more complex. While this may be a good thing for birds adapted to complex habitats (e.g. wrens and robins), it can be detrimental to those that require extensive open grassy areas to meet their food, shelter and breeding requirements (eg finches and quails). Such shrub encroachment also reduces production potential from commercial grazing.

On the other hand, brigalow/belah scrubs have largely evolved in the absence of fire and are fire-sensitive. Where scrub patches are surrounded by dense grassy pastures or woodlands, frequent hot fires can “crash” into the scrubs, gradually reducing their size and diversity. Pasture encroachment of shade tolerant species such as green panic into the scrub margins can further increase fire impacts. Eventually, such scrub patches may die out, returning the land to open forest or woodland.

Between these two extremes, there is a wide range of vegetation with varying degrees of structural complexity. The challenge is to try and create burning regimes that will protect grasslands from woody vegetation encroachment, maintain woodlands with a range of understorey complexity, and also protect fire sensitive communities like softwood scrubs.

Feral animals

PRINCIPLE 6

Control introduced animal predators and competitors

Introduced predators, such as foxes and cats, have detrimental impacts on a range of native birds, and non-native bird species, such as mynahs and starlings, have demonstrated a capacity to out-compete native species for food and shelter resources.

Predation by feral cats and foxes is a nationally significant threatening process, and is especially detrimental to birds that feed and nest on the ground. Foxes have been implicated in the decline of the bush-stone curlew across the woodlands of south-eastern Australia, and cats are well-known for their ability to capture ground-feeding birds like quail and red-rumped parrots. Cats are also known to climb into tree hollows and other elevated bird nests, completely devouring whole generations of nestlings.

Introduced bird species compete against native species for food resources and nesting space. Of particular concern is the rapidly-expanding population of the Common Myna. This species is an aggressive competitor for nesting space in hollow trees, and will readily dislodge eggs and chicks from the nests of native birds like rosellas and other parrots. Once the eggs or young are ejected from the nest, the mynas will prevent the parent birds from accessing the nest or attempting to breed, even to the point of blocking the nest hollow with plastic bags and other material.

MANAGEMENT ACTIONS:

- ✓ Manage introduced predators to reduce predation risks to native birds
- ✓ Control or prevent invasion of exotic, competitive bird species

MANAGEMENT ACTIONS:

- ✓ Control cat and fox populations with regular baiting and shooting campaigns
- ✓ Initiate a strategic feral animal control program in association with your neighbours
- ✓ Keep house cats well fed to encourage them to remain in and around the house or farm buildings
- ✓ If not employing your cat in rodent control around farm buildings, keep it enclosed in a “cat run” attached to the house
- ✓ Take action to remove and prevent the spread of Common Mynas in your area



Foxes are a major predator of many ground-nesting birds. Photo: Kate Steel.



The Common Myna is aggressively competes for food and displaces many native species from their nest hollows. See species details on page 18. Photo: Chris Cameron.

Riparian management

PRINCIPLE 7

Maintain healthy riparian zones for production and biodiversity



Riparian areas are the arteries of the landscape. Photo: P. Barrett

MANAGEMENT ACTIONS:

- ✓ Maintain and improve riparian habitat quality
- ✓ Enlarge riparian buffer zones
- ✓ Maintain and improve in-stream habitat

Riparian areas are the arteries of the landscape, providing essential connectivity between other habitats, as well as vital refuge in times of drought. The riparian zone also provides an important buffer between agricultural activity and the waterway, helping to maintain water quality and protect aquatic habitats.

Riparian areas in cotton country are subject to a range of pressures, including grazing, traffic movement, chemical drift, weed invasion and infrastructure installations (e.g. pumps). They are often very narrow as a result of the need to maximise production returns on the adjacent high-value floodplain farming land. Any measure that can be taken to reduce these pressures will not only benefit the birds of the riparian area, but improve whole-farm ecology and downstream impacts (e.g. water quality).

Management of stock pressure by strategic fencing and provision of off-stream watering points is probably the most common and effective riparian management action. This promotes healthier ground cover, thereby reducing sedimentation of the stream and providing good cover and food sources for ground-dwelling birds. It also allows natural regeneration of canopy trees and understorey species, thus enhancing the sustainability of the tree population and enhancing habitat quality for understorey birds.



Protect riparian vegetation and stabilise banks by fencing to control stock access. Photo: Annie Spora.

MANAGEMENT ACTIONS:

- ✓ Fence off riparian areas to control stock access
- ✓ Allow understorey shrubs and young trees to regrow
- ✓ Reduce or prevent traffic access in the riparian zone
- ✓ Leave a grassy buffer zone between the paddock and riparian area
- ✓ Widen riparian area by allowing natural regeneration of trees and shrubs in buffer zone
- ✓ Retain or replace natural snags in the stream
- ✓ Maintain and re-establish riparian trees to shade the stream

Many farmers are now also maintaining a wider riparian area, or at least a buffer of grassland between crop paddocks and the riparian zone. This dramatically improves the chemical and nutrient run-off filtration function of the riparian zone. It also benefits the production system by providing a significant grazing reserve and a harbour for beneficial insects in the non-growing season. The wide buffer further reduces the risk of damage to in-stream and riparian habitat from weed invasion, traffic movement and chemical drift.



Leave a wide buffer adjacent to riparian areas and allow natural vegetation to re-establish in the buffer and along banks. Photos: Julie O'Halloran (L); Guy Roth (R).

PRINCIPLE 8

Maintain healthy natural wetlands and enhance artificial ones



Wetlands with both deep water and shallow vegetated areas provide a range of habitat for different waterbirds. Photo: Gill Hogendyk.

MANAGEMENT OPTIONS:

- ✓ Maintain and improve wetland habitat quality
- ✓ Design habitat features for new artificial wetland areas
- ✓ Enhance existing artificial wetlands

Wetland management

Most cotton farms support a variety of natural and artificial wetlands, including streams, billabongs, floodplain swamps, storages and irrigation structures (ditches, drains, etc.). These wetlands offer a wide range of habitats for many waterbirds and other wetland fauna, and some provide essential filtration services, reducing the entry of sediment and chemicals to streams.

The key to managing wetland habitats is to ensure a variety of water depths, vegetation and edge types to optimise the diversity of birds and other fauna able to use them.

Deep water areas with little or no aquatic vegetation, no shallows and no surrounding trees for perching may support pelicans and a few species of ducks, but many other birds will avoid these wetlands. In contrast, a storage that includes deep and shallow areas, various floating and emergent aquatic plants, areas of exposed mud at low water level, and trees for perching may be inhabited by egrets, herons, spoonbills, rails, grebes, ducks, cormorants, swans and many more.

Similarly, well-vegetated storm-water drains and overflows will provide significantly better habitat for waterbirds than un-vegetated ones. Reeds, sedges and grasses in such areas also help slow down the flow of water, reducing erosion potential and trapping sediment and chemical residue.

MANAGEMENT ACTIONS:

- ✓ Ensure sufficient flow goes into natural wetlands to maintain vegetation and wildlife
- ✓ Protect natural swamps from grazing during critical periods (e.g. inundation, flowering, bird breeding)
- ✓ Include islands, shallow-water, mud-flats, and open water of varying depths in storages
- ✓ Leave standing and fallen dead trees in or around storages to provide perches for waterbirds (and hollows for some bush-birds to nest in)
- ✓ Leave or replace snags in billabongs and streams to provide submerged habitat for fish and other aquatic animals
- ✓ Plant or encourage the growth of aquatic vegetation, such as waterlilies, reeds and sedges, in and around the edges of storages and billabongs
- ✓ Design storm-water drains to reduce flow rates and encourage vegetation with sedges, grasses and reeds



Perches for waterbirds are important features of wetlands and may be achieved through retaining (or adding) fallen or standing dead trees. Photos: Greg Kauter.



The drain below this storm-water blow-out is well-vegetated and runs parallel to the creek for some distance before draining into it, thus filtering sediment and chemical residue and offering significant wetland habitat. Photo: K. Rourke.

Further Reading

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Field Guide to the Birds of Australia, Sixth Edition.
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LAND MANAGEMENT FOR BIRDS AND BIODIVERSITY

*Australian Cotton Industry Best Management
Practices Manual, Land and Water Module*
Cotton Research and Development Corporation,
Narrabri, NSW, 2004.

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for agricultural sustainability.*
Supplement to *Wingspan*, vol. 10, no. 4, December 2000.
Geoff Barrett
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CSIRO Publishing, Melbourne, 2002.

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Damian Michael, Mason Crane,
Christopher MacGregor and Ross Cunningham
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Attracting Birds to Your Garden in Australia
John Dengate
New Holland Publishers, Sydney, 2000.

*The Australian Bird Garden:
creating havens for native birds.*
Graham Pizzey
Harper Collins Publishers, Sydney, 2000.

Birdscaping Your Garden
George Adams
New Holland Publishers, Sydney.

OTHER USEFUL REFERENCES ON AUSTRALIAN BIRDS

Complete Book of Australian Birds
Richard Schodde and Sonia Tidemann
Reader's Digest (Australia), Sydney, 1993.

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Geoff Barrett, Andrew Silcocks, Simon Barry,
Ross Cunningham and Rory Poulter
Royal Australasian Ornithologists Union
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Where do all the bush birds go?
Supplement to *Wingspan*, vol. 9, no. 4,
December 1999
Michael Clarke, Peter Griffioen and Richard Loyn
Birds Australia, Melbourne, 1999.

Community contacts

BIRDS AND BIRDING

Birds Australia (National Office)
415 Riversdale Rd, Hawthorn East VIC 3123
Phone 1300 730 075
<http://www.birdsaustralia.com.au>

Birds Australia Southern Queensland Group
Secretary, P.O. Box 224, Crows Nest, Qld 4355
<http://www.users.bigpond.com/basqld>

Birds Australia Northern NSW Group
Secretary, 4 Virginia Close, Armidale, NSW 1586

Tamworth Birdwatchers Club
Phone: 026765 6070 or 02 6767 0283

CATCHMENT MANAGEMENT AND LANDCARE

Toowoomba Bird Observers Inc.
P.O. Box 4730, Toowoomba East, Qld 4350
<http://www.toowoombabirdobservers.org/>

Border Rivers Catchment Management
and Landcare Centre
Waggamba Square, Brook Street
Locked Bag 3, Goondiwindi, Qld 4390
Phone: 07 4671 7900 Fax: 07 4671 2966;
Email: info@brctl.org.au

NATURAL HISTORY GROUPS

Border Rivers -
Gwydir Catchment Management Authority
7023 Gwydir Highway
Inverell NSW 2360
Phone: 6721 9810
Email: brg@cma.nsw.gov.au
Website: brg@cma.nsw.gov.au

Chinchilla Field Naturalists Club
P.O. Box 368, Chinchilla, Qld 4413

Wildlife Preservation Society of Queensland
Dalby Branch, P.O. Box 338, Dalby Qld 4405
Toowoomba Branch, P.O. Box 2337,
Toowoomba, Qld 4350
<http://www.wildlife.org.au/>

Central West Catchment Management Authority
141 Percy Street WELLINGTON NSW 2820
Phone: 02 6840 7800 Fax: 02 6840 7801
Email: cw@cma.nsw.gov.au
Website: <http://www.cw.cma.nsw.gov.au>

LANDCARE AND CATCHMENT MANAGEMENT

Landcare Discovery Centre
127b Campbell Street (Cnr Bellevue St),
Toowoomba, Qld 4350
P.O. Box 6243, Toowoomba West, Qld 4350
Phone: 07 4637 6270; Fax: 07 4632 8062
Email: ldc@landcare.org.au

Maranoa Balonne Landcare and Catchment Centre
95 Arthur St PO Box 1078, Roma, Qld 4455
Phone: 07 4622 8446; Fax 07 4622 6060
Email: mblcc@mbfcc.org.au

North East Downs Landcare
P.O. Box 1078, Roma199, Oakey, Qld 44554401
Phone: 07 4622 8446; Fax: 07 4622 6060;
Email: mblcc@mbfcc.org.au

Namoi Catchment Management Authority
35-37 Abbott Street Gunnedah
Phone: 02 6742 9220
Email: mailto:namoi@cma.nsw.gov.au
Website: www.namoi.cma.nsw.gov.au

Queensland Murray Darling Committee Inc
127b Cnr Campbell and Bellvue Streets
Toowoomba, Qld 4350
P.O. Box 6243, Toowoomba West, Qld 4350
Phone: 07 4637 6201; Fax 07 4632 8062;
Email: qmdc@landcare.org.au
<http://www.qmdc.org.au>

COTTON INDUSTRY BEST PRACTICE AND NRM

Environmental extension officer (cotton)
Department of Primary Industries and Fisheries
St George, Qld
Phone: 07 4620 8103

Cotton Catchment Communities CRC
Locked Bag 1001
Narrabri NSW 2390
Phone: 02 6799 1500

OTHER ORGANISATIONS

NatureSearch Coordinator
Queensland Parks and Wildlife Service
P.O. Box 731, Toowoomba, Qld 4350
Phone: 07 4699 4333

New South Wales Parks Narrabri
Phone: 02 6792 7300 Fax: 02 6792 1133
Street address: 1/100 Maitland Street,
Narrabri NSW
Postal address: PO Box 72, Narrabri NSW 2390

New South Wales Parks, Dubbo
Phone: 02 6883 5330 Fax: 02 6884 8675
Street address: 48-52 Wingewarra Street,
Dubbo NSW
Postal address: PO Box 2111, Dubbo NSW 2830

Greening Australia (Qld) Inc.
P.O. Box 338, Dalby, Qld 4405
Phone: 07 4669 95 78

Checklist of Birds across the Cotton Production Regions

This list is derived from the ongoing Birds Australia Atlas database, used to develop the New Atlas of Australian Birds.

A closed symbol (■) indicates the habitat where you are most likely to find a species or habitats used equally by those species that don't occur predominantly in one habitat. Open symbols (□) indicate additional habitats in which the species may be found.

The status of each species in this region is coded as follows: C common; U uncommon; R rare; and V vagrant (seen occasionally). Also in the status column, a D indicates woodland species that are suffering population decline in eastern Australia. Migratory species are only present for part of the year, and are indicated thus: S summer migrant; W winter migrant. An asterisk (*) denotes introduced species.

COMMON NAME	SCIENTIFIC NAME	FARMLANDS	GRASSLANDS	WETLANDS	AERIAL	NIGHTBIRDS	WOODLANDS	STATUS
Emu	<i>Dromaius novaehollandiae</i>	□	□				□	C
Australian Brush-turkey	<i>Alectura lathamii</i>						■	R
Malleefowl	<i>Leipoa ocellata</i>						■	R
Stubble Quail	<i>Coturnix pectoralis</i>	■	■				□	U
Brown Quail	<i>Coturnix ypsilophora</i>	■	■					U
Maggie Goose	<i>Anseranas semipalmata</i>			■				U
Plumed Whistling-Duck	<i>Dendrocygna eytoni</i>			■				U
Wandering Whistling-Duck	<i>Dendrocygna arcuata</i>			■				U
Blue-billed Duck	<i>Oxyura australis</i>			■				U
Musk Duck	<i>Biziura lobata</i>			■				U
Freckled Duck	<i>Stictonetta naevosa</i>			■				R
Black Swan	<i>Cygnus atratus</i>	□		■				U
Australian Shelduck	<i>Tadorna tadornoides</i>			■				U
Australian Wood Duck	<i>Chenonetta jubata</i>	■		■				C
Cotton Pygmy-goose	<i>Nettapus coromandelianus</i>			■				R
Green Pygmy-goose	<i>Nettapus pulchellus</i>			■				V
Mallard	<i>Anas platyrhynchos</i>			■				U*
Pacific Black Duck	<i>Anas superciliosa</i>			■				C

C common; U uncommon; R rare; V vagrant; D woodland species in population decline; S summer migrant; W winter migrant; (*) introduced species

COMMON NAME	SCIENTIFIC NAME	FARMLANDS	GRASSLANDS	WETLANDS	AERIAL	NIGHTBIRDS	WOODLANDS	STATUS
Australasian Shoveler	<i>Anas rhynchotis</i>			■				U
Grey Teal	<i>Anas gracilis</i>			■				C
Chestnut Teal	<i>Anas castanea</i>			■				U
Pink-eared Duck	<i>Malacorhynchus membranaceus</i>			■				U
Hardhead	<i>Aythya australis</i>			■				U
Australasian Grebe	<i>Tachybaptus novaehollandiae</i>			■				C
Hoary-headed Grebe	<i>Poliocephalus poliocephalus</i>			■				U
Great Crested Grebe	<i>Podiceps cristatus</i>			■				U
Darter	<i>Anhinga melanogaster</i>			■				C
Little Pied Cormorant	<i>Phalacrocorax melanoleucos</i>			■				C
Pied Cormorant	<i>Phalacrocorax varius</i>			■				U
Little Black Cormorant	<i>Phalacrocorax sulcirostris</i>			■				U
Great Cormorant	<i>Phalacrocorax carbo</i>			■				U
Australian Pelican	<i>Pelecanus conspicillatus</i>			■				U
White-faced Heron	<i>Egretta novaehollandiae</i>	■		■				C
Little Egret	<i>Egretta garzetta</i>			■				U
White-necked Heron	<i>Ardea pacifica</i>			■				C
Pied Heron	<i>Ardea picata</i>			■				V
Great Egret	<i>Ardea alba</i>			■				U
Intermediate Egret	<i>Ardea intermedia</i>			■				U
Cattle Egret	<i>Ardea ibis</i>	■	□	■				U
Nankeen Night Heron	<i>Nycticorax caledonicus</i>			■				U
Little Bittern	<i>Ixobrychus minutus</i>			■				R
Australasian Bittern	<i>Botaurus poiciloptilus</i>			■				U
Glossy Ibis	<i>Plegadis falcinellus</i>			■				U
Australian White Ibis	<i>Threskiornis molucca</i>	■		■				C
Straw-necked Ibis	<i>Threskiornis spinicollis</i>	■	□	■				C
Royal Spoonbill	<i>Platelea regia</i>			■				U
Yellow-billed Spoonbill	<i>Platelea flavipes</i>			■				C
Black-necked Stork	<i>Ephippiorhynchus asiaticus</i>			■				U
Osprey	<i>Pandion haliaetus</i>			■	■			R
Pacific Baza	<i>Aviceda subcristata</i>				■		□	U

C common; U uncommon; R rare; V vagrant; D woodland species in population decline; S summer migrant; W winter migrant; (*) introduced species

CHECKLIST

COMMON NAME	SCIENTIFIC NAME	FARMLANDS	GRASSLANDS	WETLANDS	AERIAL	NIGHTBIRDS	WOODLANDS	STATUS
Black-shouldered Kite	<i>Elanus notatus</i>	□	□		■			C
Letter-winged Kite	<i>Elanus scriptus</i>				■			R
Square-tailed Kite	<i>Lophoictinia isura</i>				■		□	U
Black-breasted Buzzard	<i>Hamirostra melanosternon</i>				■			R
Black Kite	<i>Milvus migrans</i>	■	■		■			U
Whistling Kite	<i>Haliastur sphenurus</i>	□	□	■	■			C
White-bellied Sea-Eagle	<i>Haliaeetus leucogaster</i>			■	■			U
Spotted Harrier	<i>Circus assimilis</i>	□	□		■			U
Swamp Harrier	<i>Circus approximans</i>		□	■	■			U
Brown Goshawk	<i>Accipiter fasciatus</i>				■		■	U
Grey Goshawk	<i>Accipiter novaehollandiae</i>				■		■	R
Collared Sparrowhawk	<i>Accipiter cirrhocephalus</i>				■		■	U
Wedge-tailed Eagle	<i>Aquila audax</i>				■			C
Little Eagle	<i>Hieraaetus morphnoides</i>				■			U
Brown Falcon	<i>Falco berigora</i>	■	■		■			U
Australian Hobby	<i>Falco longipennis</i>	■	■		■			U
Grey Falcon	<i>Falco hypoleucos</i>				■			R
Black Falcon	<i>Falco subniger</i>	■	■		■			U
Peregrine Falcon	<i>Falco peregrinus</i>				■			U
Nankeen Kestrel	<i>Falco cenchroides</i>	■	■		■			C
Brolga	<i>Grus rubicunda</i>	□	□	■				U
Buff-banded Rail	<i>Gallirallus philippensis</i>			■				U
Lewin's Rail	<i>Rallus pectoralis</i>			■				R
Baillon's Crake	<i>Porzana pusilla</i>			■				U
Australian Spotted Crake	<i>Porzana fluminea</i>			■				U
Spotless Crake	<i>Porzana tabuensis</i>			■				R
Purple Swampphen	<i>Porphyrio porphyrio</i>			■				U
Dusky Moorhen	<i>Gallinula tenebrosa</i>			■				C
Black-tailed Native-hen	<i>Gallinula ventralis</i>		□	■				U
Eurasian Coot	<i>Fulica atra</i>			■				U
Australian Bustard	<i>Ardeotis australis</i>	□	■					U
Little Button-quail	<i>Turnix velox</i>	■	■				□	U

C common; U uncommon; R rare; V vagrant; D woodland species in population decline;
S summer migrant; W winter migrant; (*) introduced species

COMMON NAME	SCIENTIFIC NAME	FARMLANDS	GRASSLANDS	WETLANDS	AERIAL	NIGHTBIRDS	WOODLANDS	STATUS
Red-chested Button-quail	<i>Turnix pyrrhorostrax</i>	□	■					U
Painted Button-quail	<i>Turnix varia</i>						■	U
Latham's Snipe	<i>Gallinago hardwickii</i>			■				U
Black-tailed Godwit	<i>Limosa limosa</i>			■				R
Marsh Sandpiper	<i>Tringa stagnatilis</i>			■				U
Common Greenshank	<i>Tringa nebularia</i>			■				R
Wood Sandpiper	<i>Tringa glareola</i>			■				R
Sharp-tailed Sandpiper	<i>Calidris acuminata</i>			■				U
Curlew Sandpiper	<i>Calidris ferruginea</i>			■				R
Painted Snipe	<i>Rostratula benghalensis</i>			■				R
Comb-crested Jacana	<i>Irediparra gallinacea</i>			■				R
Bush Stone-curlew	<i>Burhinus magnirostris</i>	□	■				□	UD
Black-winged Stilt	<i>Himantopus himantopus</i>			■				U
Red-necked Avocet	<i>Recurvirostra novaehollandiae</i>			■				U
Red-capped Plover	<i>Charadrius ruficapillus</i>			■				R
Black-fronted Dotterel	<i>Eseyornis melanops</i>			■				U
Red-kneed Dotterel	<i>Erythronyx cinctus</i>			■				U
Banded Lapwing	<i>Vanellus tricolor</i>	■						U
Masked Lapwing	<i>Vanellus miles</i>	■	□	■				C
Australian Pratincole	<i>Stiltia isabella</i>	□	□	■				V
Silver Gull	<i>Larus novaehollandiae</i>			■				U
Gull-billed Tern	<i>Sterna nilotica</i>			■				R
Caspian Tern	<i>Sterna caspia</i>			■				R
Whiskered Tern	<i>Chlidonias hybridus</i>			■				U
White-winged Black Tern	<i>Chlidonias leucopterus</i>			■				SR
Rock Dove	<i>Columba livia</i>	■						U*
Spotted Turtle-Dove	<i>Streptopelia chinensis</i>	■						U*
Brown Cuckoo-Dove	<i>Macropygia amboinensis</i>						■	R
Common Bronzewing	<i>Phaps chalcoptera</i>		□				■	C
Crested Pigeon	<i>Ocyphaps lophotes</i>	□	□				■	C
Squatter Pigeon	<i>Geophaps scripta</i>		■					RD
Diamond Dove	<i>Geopelia cuneata</i>						■	U

C common; U uncommon; R rare; V vagrant; D woodland species in population decline;
S summer migrant; W winter migrant; (*) introduced species

CHECKLIST

COMMON NAME	SCIENTIFIC NAME	FARMLANDS	GRASSLANDS	WETLANDS	AERIAL	NIGHTBIRDS	WOODLANDS	STATUS
Peaceful Dove	<i>Geopelia striata</i>						■	C
Bar-shouldered Dove	<i>Geopelia humeralis</i>						■	U
Wonga Pigeon	<i>Leucosarcia melanoleuca</i>						■	R
Red-tailed Black-Cockatoo	<i>Calyptorhynchus banksii</i>	■	□	□			■	U
Glossy Black-Cockatoo	<i>Calyptorhynchus lathami</i>						■	UD
Yellow-tailed Black-Cockatoo	<i>Calyptorhynchus funereus</i>						■	U
Galah	<i>Cacatua roseicapilla</i>	□	□				■	C
Long-billed Corella	<i>Cacatua tenuirostris</i>	□	□				■	R
Little Corella	<i>Cacatua sanguinea</i>	□	□				■	U
Major Mitchell's Cockatoo	<i>Cacatua leadbeateri</i>						■	U
Sulphur-crested Cockatoo	<i>Cacatua galerita</i>	□	□				■	C
Cockatiel	<i>Nymphicus hollandicus</i>	□	□				■	C
Rainbow Lorikeet	<i>Trichoglossus haematodus</i>						■	U
Scaly-breasted Lorikeet	<i>Trichoglossus chlorolepidotus</i>						■	RD
Musk Lorikeet	<i>Glossopsitta concinna</i>						■	U
Little Lorikeet	<i>Glossopsitta pusilla</i>						■	U
Australian King-Parrot	<i>Alisterus scapularis</i>						■	C
Red-winged Parrot	<i>Aprosmictus erythropterus</i>						■	C
Superb Parrot	<i>Polytelis swainsonii</i>						■	U
Crimson Rosella	<i>Platycercus elegans</i>						■	C
Eastern Rosella	<i>Platycercus eximius</i>	□	■				□	C
Pale-headed Rosella	<i>Platycercus adscitus</i>	□	■				□	C
Australian Ringneck	<i>Barnardius zonarius</i>	□	■				■	C
Blue Bonnet	<i>Northiella haematogaster</i>	□	■				■	C
Swift Parrot	<i>Lathamus discolor</i>						■	RD
Red-rumped Parrot	<i>Psephotus haematonotus</i>	□	□				■	C
Mulga Parrot	<i>Psephotus varius</i>						■	U
Budgerigar	<i>Melopsittacus undulatus</i>	□	□				■	U
Bourke's Parrot	<i>Neosephotus bourkii</i>		□				■	V
Blue-winged Parrot	<i>Neophema chrysostoma</i>		□				■	R
Turquoise Parrot	<i>Neophema pulchella</i>		□				■	U
Pallid Cuckoo	<i>Cuculus pallidus</i>	□					■	US

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Brush Cuckoo	<i>Cacomantis variolosus</i>						■	US
Fan-tailed Cuckoo	<i>Cacomantis flabelliformis</i>						■	US
Black-eared Cuckoo	<i>Chrysococcyx osculans</i>						■	U
Horsfield's Bronze-Cuckoo	<i>Chrysococcyx basalis</i>						■	U
Shining Bronze-Cuckoo	<i>Chrysococcyx lucidus</i>						■	U
Common Koel	<i>Eudynamis scolopacea</i>	□					■	US
Channel-billed Cuckoo	<i>Scythrops novaehollandiae</i>	□			■		■	US
Pheasant Coucal	<i>Centropus phasianinus</i>	□	■	■				U
Powerful Owl	<i>Ninox strenua</i>					■	■	R
Barking Owl	<i>Ninox connivens</i>					■	■	U
Southern Boobook	<i>Ninox novaeseelandiae</i>	□	□			■	■	U
Masked Owl	<i>Tyto novaehollandiae</i>					■	■	R
Barn Owl	<i>Tyto alba</i>	□	□			■		U
Tawny Frogmouth	<i>Podargus strigoides</i>	□	□			■	■	U
White-throated Nightjar	<i>Eurostopodus mystacalis</i>					■	■	U
Spotted Nightjar	<i>Eurostopodus argus</i>					■	■	U
Australian Owlet-nightjar	<i>Aegotheles cristatus</i>					■	■	U
White-throated Needletail	<i>Hirundapus caudacutus</i>				■			US
Fork-tailed Swift	<i>Apus pacificus</i>				■			RS
Azure Kingfisher	<i>Ceyx azurea</i>			■				U
Laughing Kookaburra	<i>Dacelo novaeguineae</i>	□	□				■	C
Forest Kingfisher	<i>Todiramphus macleayii</i>						■	V
Red-backed Kingfisher	<i>Todiramphus pyrrhopygia</i>	□					■	U
Sacred Kingfisher	<i>Todiramphus sanctus</i>			□			■	CS
Rainbow Bee-eater	<i>Merops ornatus</i>	□		□			■	CS
Dollarbird	<i>Eurystomus orientalis</i>	□	□				■	US
Superb Lyrebird	<i>Menura novaehollandiae</i>						■	R
White-throated Treecreeper	<i>Corombates leucophaeus</i>						■	C
White-browed Treecreeper	<i>Climacteris affinis</i>						■	R
Red-browed Treecreeper	<i>Climacteris erythrops</i>						■	U
Brown Treecreeper	<i>Climacteris picumnus</i>						■	C
Superb Fairy-wren	<i>Malurus cyaneus</i>	□	□				■	C

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Splendid Fairy-wren	<i>Malurus splendens</i>		□				■	U
Variegated Fairy-wren	<i>Malurus lamberti</i>						■	U
White-winged Fairy-wren	<i>Malurus leucopterus</i>	□	■					U
Spotted Pardalote	<i>Pardalotus punctatus</i>						■	C
Red-browed Pardalote	<i>Pardalotus rubricatus</i>						■	R
Striated Pardalote	<i>Pardalotus striatus</i>						■	C
White-browed Scrubwren	<i>Sericornis frontalis</i>						■	U
Chestnut-rumped Heathwren	<i>Hylacola pyrrhopygia</i>						■	U
Speckled Warbler	<i>Chthonicola sagittata</i>						■	UD
Weebill	<i>Smicromis brevirostris</i>						■	C
Brown Gerygone	<i>Gerygone mouki</i>						■	R
Western Gerygone	<i>Gerygone fusca</i>						■	U
White-throated Gerygone	<i>Gerygone olivacea</i>						■	C
Brown Thornbill	<i>Acanthiza pusilla</i>						■	U
Inland Thornbill	<i>Acanthiza apicalis</i>						■	U
Chestnut-rumped Thornbill	<i>Acanthiza uropygialis</i>						■	U
Buff-rumped Thornbill	<i>Acanthiza reguloides</i>						■	C
Yellow-rumped Thornbill	<i>Acanthiza chrysorrhoa</i>	□	□				■	C
Yellow Thornbill	<i>Acanthiza nana</i>						■	C
Striated Thornbill	<i>Acanthiza lineata</i>						■	U
Southern Whiteface	<i>Aphelocephala leucopsis</i>	□	□				■	U
Red Wattlebird	<i>Anthochaera carunculata</i>	□					■	U
Little Wattlebird	<i>Anthochaera chrysoptera</i>	□					■	R
Spiny-cheeked Honeyeater	<i>Acanthagenys rufogularis</i>	□					■	C
Striped Honeyeater	<i>Plectorhyncha lanceolata</i>	□					■	C
Noisy Friarbird	<i>Philemon corniculatus</i>	□					■	C
Little Friarbird	<i>Philemon citreogularis</i>	□					■	C
Regent Honeyeater	<i>Xanthomyza phrygia</i>						■	UD
Blue-faced Honeyeater	<i>Entomyzon cyanotis</i>	□					■	C
Noisy Miner	<i>Manorina melanocephala</i>	□					■	C
Yellow-throated Miner	<i>Manorina flavigula</i>	□					■	C
Lewin's Honeyeater	<i>Meliphaga lewinii</i>						■	U

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Yellow-faced Honeyeater	<i>Lichenostomus chrysops</i>						■	C
Singing Honeyeater	<i>Lichenostomus virescens</i>		□				■	U
White-eared Honeyeater	<i>Lichenostomus leucotis</i>						■	C
Yellow-tufted Honeyeater	<i>Lichenostomus melanops</i>						■	U
Fuscous Honeyeater	<i>Lichenostomus fuscus</i>						■	U
White-plumed Honeyeater	<i>Lichenostomus penicillatus</i>	□		□			■	C
Black-chinned Honeyeater	<i>Melithreptus gularis</i>						■	U
Brown-headed Honeyeater	<i>Melithreptus brevirostris</i>						■	U
White-naped Honeyeater	<i>Melithreptus lunatus</i>						■	U
Brown Honeyeater	<i>Lichmera indistincta</i>						■	U
Painted Honeyeater	<i>Grantiella picta</i>						■	UD
Eastern Spinebill	<i>Acanthorhynchus tenuirostris</i>						■	U
Black Honeyeater	<i>Certhionyx niger</i>						■	R
Pied Honeyeater	<i>Certhionyx variegatus</i>						■	R
Scarlet Honeyeater	<i>Myzomela sanguinolenta</i>						■	U
Crimson Chat	<i>Ephthianura tricolor</i>		□				■	U
Orange Chat	<i>Ephthianura aurifrons</i>		■				□	V
White-fronted Chat	<i>Ephthianura albigula</i>	□	■	□				U
Jacky Winter	<i>Microeca leucophaea</i>		□				■	C
Scarlet Robin	<i>Petroica multicolor</i>						■	U
Red-capped Robin	<i>Petroica goodenovii</i>						■	UD
Flame Robin	<i>Petroica phoenicea</i>						■	RW
Rose Robin	<i>Petroica rosea</i>						■	UW
Hooded Robin	<i>Melanodryas cucullata</i>						■	UD
Eastern Yellow Robin	<i>Eopsaltria australis</i>						■	CD
Grey-crowned Babbler	<i>Pomatostomus temporalis</i>						■	CD
White-browed Babbler	<i>Pomatostomus superciliosus</i>						■	U
Chestnut-crowned Babbler	<i>Pomatostomus ruficeps</i>						■	U
Eastern Whipbird	<i>Psophodes olivaceus</i>						■	R
Spotted Quail-thrush	<i>Cinclosoma punctatum</i>						■	U
Varied Sittella	<i>Daphoenositta chrysoptera</i>						■	U
Crested Shrike-tit	<i>Falcunculus frontatus</i>						■	UD

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Crested Bellbird	<i>Oreocia gutturalis</i>		■				■	U
Golden Whistler	<i>Pachycephala pectoralis</i>						■	C
Rufous Whistler	<i>Pachycephala rufiventris</i>						■	C
Grey Shrike-thrush	<i>Colluricincla harmonica</i>						■	C
Leaden Flycatcher	<i>Myiagra rubecula</i>						■	U
Satin Flycatcher	<i>Myiagra cyanoleuca</i>						■	U
Restless Flycatcher	<i>Myiagra inquieta</i>	■		■			■	C
Magpie-Lark	<i>Grallina cyanoleuca</i>	■	■	■			■	C
Rufous Fantail	<i>Rhipidura rufifrons</i>						■	US
Grey Fantail	<i>Rhipidura fuliginosa</i>						■	C
Willie Wagtail	<i>Rhipidura leucophrys</i>	■	■				■	C
Spangled Drongo	<i>Dicrurus hottentottus</i>						■	RS
Black-faced Cuckoo-Shrike	<i>Coracina novaehollandiae</i>	■	■				■	C
White-bellied Cuckoo-Shrike	<i>Coracina papuensis</i>						■	U
Cicadabird	<i>Coracina tenuirostris</i>						■	US
Ground Cuckoo-Shrike	<i>Coracina maxima</i>		■				■	U
White-winged Triller	<i>Lalage sueurii</i>		■				■	US
Olive-backed Oriole	<i>Oriolus sagittatus</i>						■	U
Figbird	<i>Sphecotheres viridis</i>						■	R
White-breasted Woodswallow	<i>Artamus leucorhynchus</i>			■	■		■	U
Masked Woodswallow	<i>Artamus personatus</i>				■		■	U
White-browed Woodswallow	<i>Artamus superciliosus</i>				■		■	U
Black-faced Woodswallow	<i>Artamus cinereus</i>				■		■	U
Dusky Woodswallow	<i>Artamus cyanopterus</i>				■		■	C
Little Woodswallow	<i>Artamus minor</i>				■		■	RS
Grey Butcherbird	<i>Cracticus torquatus</i>	■					■	C
Pied Butcherbird	<i>Cracticus nigrogulari</i>	■					■	C
Australian Magpie	<i>Gymnorhina tibicen</i>	■	■				■	C
Pied Currawong	<i>Strepera graculina</i>	■					■	C
Australian Raven	<i>Corvus coronoides</i>	■	■				■	C
Little Raven	<i>Corvus mellori</i>	■	■				■	U
Little Crow	<i>Corvus bennetti</i>	■	■				■	U

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Torresian Crow	<i>Corvus orru</i>	■	■				■	U
White-winged Chough	<i>Corcorax melanorhamphos</i>	■	■				■	CD
Apostlebird	<i>Struthidea cinerea</i>	■	■				■	C
Satin Bowerbird	<i>Ptilonorhynchus violaceus</i>						■	U
Spotted Bowerbird	<i>Chlamydera maculata</i>						■	U
Singing Bushlark	<i>Mirafra javanica</i>		■					U
Richard's Pipit	<i>Anthus novaeseelandiae</i>		■					UD
House Sparrow	<i>Passer domesticus</i>	■	■					C*
Zebra Finch	<i>Taeniopygia guttata</i>		■				■	U
Double-barred Finch	<i>Taeniopygia bichenovii</i>	■	■				■	C
Plum-headed Finch	<i>Neochmia modesta</i>	■	■					U
Red-browed Finch	<i>Neochmia temporalis</i>						■	C
Diamond Firetail	<i>Stagonopleura guttata</i>						■	U
Chestnut-breasted Mannikin	<i>Lonchura castaneothorax</i>		■					U
European Goldfinch	<i>Carduelis carduelis</i>	■	■					V*
Mistletoebird	<i>Dicaeum hirundinaceum</i>						■	C
White-backed Swallow	<i>Cheramoeca leucosternum</i>			■	■			U
Welcome Swallow	<i>Hirundo neoxena</i>	■	■	■	■			C
Tree Martin	<i>Hirundo nigricans</i>	■	■	■	■			U
Fairy Martin	<i>Hirundo ariel</i>	■	■	■	■			C
Clamorous Reed-Warbler	<i>Acrocephalus stentoreus</i>			■				U
Tawny Grassbird	<i>Megalurus timoriensis</i>		■	■				R
Little Grassbird	<i>Megalurus gramineus</i>		■	■				U
Rufous Songlark	<i>Cincloramphus mathewsi</i>		■					US
Brown Songlark	<i>Cincloramphus cruralis</i>		■					US
Golden-headed Cisticola	<i>Cisticola exilis</i>		■					U
Silvereye	<i>Zosterops lateralis</i>	■					■	C
Bassian Thrush	<i>Zoothera lunulata</i>						■	R
Common Blackbird	<i>Turdus merula</i>	■					■	U*
Common Starling	<i>Sturnus vulgaris</i>	■	■					C*
Common Myna	<i>Acridotheres tristis</i>	■	■					U*

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Apostlebird	16	Pink-eared Duck	34	Spiny-cheeked	57, 85	Raven, Australian	11
Babbler, Grey-crowned.....	58,83	Eagle, Wedge-tailed	40	Striped.....	64, 86	regeneration	99
Bee-eater, Rainbow	61	Egret, Great	28	White-plumed	67	Reed-Warbler, Clamorous	39
Bellbird, Crested	59	Emu	49	Yellow-faced	65	Ringneck, Australian	56
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Bushlark, Singing.....	24	Fantail, Grey	68	Black-shouldered.....	44	Shrike-thrush, Grey	55
Butcherbird, Grey	52	feral animals	103	Whistling.....	42	Silvereye	71
Pied.....	15	Finch, Double-barred	73	Kookaburra, Laughing	13	Sittella, Varied	73
Chough, White-winged	50	Plum-headed.....	25	Lapwing, Masked	14	Songlark, Rufous	25
Cisticola, Golden-headed	26	Zebra.....	72	Lorikeet, Scaly-breasted.....	60	Sparrow, House	20
Cockatiel	17	fire management	101	Magpie, Australian.....	14	Spoonbill, Royal	29
Cockatoo, Red-tailed Black	49	Firetail, Diamond	71, 79	Magpie-lark	16	Yellow-billed	29
Sulphur-crested	11	Flycatcher, Restless	63	Mannikin, Chestnut-breasted	26	stand structure.....	99
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Cormorant, Great	32	Galah	13	Mistletoebird	75	Swallow, Welcome	46
Little Black	37	Gerygone, White-throated	69	Moorhen, Dusky	35	Swamphen, Purple	32, 90
Little Pied	36	grazing	101	Myna, Common	18	Swan, Black.....	27
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Coucal, Pheasant.....	23	habitat complexity.....	97	Owl, Barking	48	Thornbill, Inland	70
Crow, Torresian	11	habitat simplification	97	Barn	47	Yellow	70
Cuckoo, Channel-billed.....	43	habitat trees.....	99	paddock trees	95	Yellow-rumped	21
Cuckoo-shrike, Black-faced.....	17	Hardhead	34	Pardalote, Spotted	75	Treecreeper, Brown	63, 89
Currawong, Pied	50	Harrier, Spotted	41	Striated	76	White-throated	62
Darter	31	Swamp	41	Parrot, Red-rumped	19	Triller, White-winged.....	59
Dollarbird	57	Heron, White-faced.....	31	Red-winged.....	51	Wagtail, Willie.....	20
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				Quail, Brown.....	23	Woodswallow, White-breasted	45

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