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Birds of Two Important Bird Areas of Western Australia — Lake Magenta and Dunn Rock & Lake King

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Summary

The Important Bird Areas (IBAs) of Lake Magenta and Dunn Rock & Lake King comprise two of the largest remnants of native vegetation in the extensively cleared Western Australian Wheatbelt. Focussing on the species that contribute to these areas meeting IBA criteria, I summarise recent records of birds in these two areas, and compare them with historical records from Lake Magenta. Many species of birds vulnerable to local extinction in fragmented landscapes persist in both areas, including the endangered Carnaby's Black-Cockatoo *Calyptorhynchus latirostris*. Furthermore, there is no evidence for substantial changes in the composition of the bird community present at Lake Magenta between the 1970s and recently. Lake Magenta supports a significant population of Malleefowl *Leipoa ocellata*, and Malleefowl were also regularly recorded from the fragmented landscape of remnants on private land, road reserves and nature reserves south-west of Newdegate. This suggests that Malleefowl conservation is best addressed at a regional or landscape scale encompassing remnants of native vegetation of a range of sizes and tenures.

Introduction

Lake Magenta Nature Reserve (NR) (107 812 ha) and adjoining unallocated Crown Land (UCL) (~33 000 ha) comprise the largest remnant of native vegetation remaining in the Western Australian (WA) Wheatbelt. Native vegetation also connects Lake Magenta NR, along the Fitzgerald River corridor, to the Fitzgerald River National Park (~330 000 ha) 25 km to the south (Wilkins *et al.* 2006). Lake Magenta NR was dedicated in 1958, primarily to conserve a representative example of southern mallee vegetation and its constituent fauna, particularly the Malleefowl *Leipoa ocellata* (Crook & Burbidge 1982). Nearby Dunn Rock (27 349 ha) and Lake King (40 096 ha) NRs and adjoining UCL (~22 000 ha) also comprise one of the largest blocks of continuous native vegetation in the Wheatbelt. These reserves contribute to the Newdegate region retaining a much higher proportion of native vegetation than most of the Wheatbelt, from which most native vegetation has been cleared (Saunders 1989).

Largely as a consequence of the presence of significant populations of Malleefowl, Lake Magenta and Dunn Rock & Lake King have been recognised as Important Bird Areas (IBAs) (Birds Australia 2009). IBAs are places of international significance for the conservation of birds that meet at least one of a number of internationally agreed criteria (Dutson *et al.* 2009). The total area of the Lake Magenta IBA, which encompasses the Lake Magenta NR and adjoining UCL but excludes the part of the nature reserve covered by the salt lake of Lake Magenta itself, is 132 688 ha. The total area of the Dunn Rock & Lake King IBA is 75 855 ha, and encompasses Dunn Rock and Lake King NRs and adjoining UCL, but excludes the area of the Lake King salt lake within the nature reserve (Birds Australia 2009). In addition to the Malleefowl, which is considered vulnerable nationally (Garnett & Crowley 2000; DEWHA 2010), the IBAs support the endangered Carnaby's Black-Cockatoo *Calyptorhynchus latirostris*, the near-threatened Western Whipbird

(western mallee) *Psophodes nigrogularis oberon* (not known from Dunn Rock & Lake King IBA), and six species restricted to the Mallee and South-western Biome: Regent Parrot *Polytelis anthopeplus*, Western Rosella *Platycercus icterotis*, Red-capped Parrot *Purpureicephalus spurius*, Blue-breasted Fairy-wren *Malurus pulcherrimus*, Purple-gaped Honeyeater *Lichenostomus cratitius* and Western Yellow Robin *Eopsaltria griseogularis* (Birds Australia 2009). Biomes used in the IBA process have been delineated on the basis of the climatic bioregionalisation of Australia of Hutchinson *et al.* (2005) (Birds Australia 2007).

There is little published on the birds of either IBA, including population trends in key species such as the Malleefowl. Dell (1976) surveyed the birds of Lake Magenta NR and the surrounding region in 1972, including notes on the unpublished records of other observers who visited the area in 1953, 1963 and 1971. The Atlas of Australian Birds (Birds Australia 2009) also has records from the Lake Magenta and Dunn Rock & Lake King IBAs.

The aim of this study is to provide recent sightings of birds in the two IBAs, focussing on those species that contribute to these areas meeting IBA criteria, specifically species of conservation concern or restricted to the Mallee and South-western Biome. Further, I compare the results of recent surveys at Lake Magenta IBA with data collected up to and including 1972. The study asks, as two large remnants of native vegetation in a landscape that has been largely cleared and in which widespread decline and loss of birds have been documented (Saunders 1989; Brooker 2002), how have the avifauna of the Lake Magenta and Dunn Rock & Lake King IBAs fared?

Methods

Lake Magenta and Dunn Rock & Lake King IBAs are in the south-eastern Wheatbelt of WA, south and east of Newdegate (33°04′S, 119°04′E). The region has a dry Mediterranean climate, with average annual rainfall at Lake Grace (the nearest long-term weather-station) of 354 mm, mainly falling in winter. Mean monthly daily temperature maxima range from 15.4°C to 31.4°C, and mean monthly minima from 5.6°C to 15.1°C (Bureau of Meteorology 2008). The region supports a mosaic of mallee, mallee–heath and woodlands, with vegetation type determined by climatic and edaphic factors (Dirnböck *et al.* 2002).

The region was visited 14 times between April 2007 and December 2009. Visits spanned all months, with the exception of mid summer (January–February) and July. Incidental observations of birds were collected as fieldwork was being conducted for other purposes. Most time was spent in the two dominant vegetation communities: closed mallee and mallee–heath. Closed mallee consisted of a canopy of *Eucalyptus* (most frequently Goblet Mallee *E. scyphocalyx*, *E. phaenophylla* and Merrit *E. flocktoniae*), over a sparse layer of shrubs (most often broombush *Melaleuca* spp.) and sedges (Parsons & Gosper 2011). Mallee–heath consisted of a diverse heath shrub layer, dominated by Proteaceae and Myrtaceae, with scattered emergent mallees, most frequently Tallerack *E. pleurocarpa* (Gosper *et al.* 2010). Little time was spent in thickets of Moort *E. platypus*, mallet (medium-sized trees of a variety of species with a steep branching habit and a dense terminal crown) woodlands, or in the small occurrences of Salmon Gum *E. salmonophloia* and Swamp Yate *E. occidentalis* woodlands; and no time was spent at the salt lakes or adjoining chenopod and *Melaleuca* scrub communities (Crook & Burbidge 1982).

I compared my records with those of Dell (1976), who examined Lake Magenta only, and those in the Atlas of Australian Birds in Birdata for each of the IBAs (Birds Australia 2009). The records from the Atlas of Australian Birds comprised 37 surveys at 36 sites in the Lake Magenta IBA, and 31 surveys at 31 sites in the Dunn Rock & Lake King IBA, from 1998 on (unless indicated otherwise, all data from the Atlas of Australian Birds and Birdata include only data collected from the start of the New Atlas of Australian Birds (Barrett *et al*. 2003), which began in 1998). Dell (1976) conducted surveys in 1972, and summarised earlier records from 1953, 1963 and 1971. In comparing my data with the

observations of Dell (1976), I have excluded species that Dell recorded in the Newdegate–Pingrup district but outside the Lake Magenta NR. To put records of certain species in context, a search for these species (by name) was conducted in NatureMap (WA Department of Environment & Conservation 2011) using all data sources (which include the first and second Atlases of Australian Birds: Blakers *et al*. 1984; Barrett *et al*. 2003). Individual records of interest were examined to determine their source and date.

Results and discussion

The avifauna of Lake Magenta and Dunn Rock & Lake King IBAs

Combining the three sources of data, a total of 126 species of birds has been recorded at Lake Magenta and Dunn Rock & Lake King (Appendix 1). I recorded a total of 82 species for the combined IBAs in surveys between 2007 and 2009: 79 species in the Lake Magenta IBA and 52 species in the Dunn Rock & Lake King IBA. Dell (1976) listed 89 species for Lake Magenta NR, with a further nine species recorded in the surrounding Newdegate region, from observations between 1953 and 1972. The Atlas of Australian Birds has records of 74 species in the Lake Magenta IBA, and 97 species in the Dunn Rock & Lake King IBA (Appendix 1).

The avifauna of the two IBAs was similar, with 92 species (73%) recorded in both. Of the 126 species, 21 (17%) were recorded only at Lake Magenta, mainly cryptic species or species occurring at low densities and associated with woodland and mallee habitats; and 13 (10%) species were recorded only at Dunn Rock & Lake King, mostly species associated with wetlands.

Although there are limitations in comparing surveys with variable effort and locations, such comparisons potentially provide an indication of changes in the avifauna of a region over space and time. There is little evidence to suggest a substantial change in the numbers of species or species composition of the Lake Magenta avifauna between 1953–72 and 1998–2009. For Lake Magenta, the number of species recorded by Dell (1976), the Atlas of Australian Birds, and this study were 89, 75 and 79 species, respectively. Of the total of 113 species recorded at Lake Magenta, 61% were recorded both by Dell (1976) and recent surveys (Atlas of Australian Birds and the present study), 18% were recorded only by Dell (1976), and 21% were recorded only in recent surveys. Half of the species recorded only by Dell (1976) were waterbirds or species associated with salt lakes. These are habitats that I did not visit, were largely excluded from the IBA area (thus may not be included in the data extracted from the Atlas of Australian Birds) and, in the case of the wetlands of the study areas, are largely ephemeral. In contrast, slightly less than half of the species recorded only in recent surveys are those typical of agricultural landscapes, and include species such as the Stubble Quail *Coturnix pectoralis*, Crested Pigeon *Ocyphaps lophotes* and Galah *Eolophus roseicapillus*, which have increased in occurrence throughout the Wheatbelt (Saunders 1989; Saunders & Ingram 1995). These species appear to have increased their penetration into the less disturbed habitats within the nature reserve since the 1970s.

Many species likely to be lost from fragmented landscapes, such as the Blue-breasted Fairy-wren, Restless Flycatcher *Myiagra inquieta;* Crested Bellbird *Oreoica gutturalis* and Western Yellow Robin (see Saunders 1989; Brooker 2002); have persisted at Lake Magenta since the surrounding region was cleared between the 1950s and 1980s (Crook & Burbidge 1982). Presumably the large size of the nature reserve has contributed to the resilience of the avifauna, although the fairly

short period of isolation cautions against assuming that local extinctions related to fragmentation will not occur in the future (Recher & Serventy 1991; Ford *et al.* 2009). Among woodland and shrubland species particularly vulnerable to the effects of fragmentation (Saunders 1989), only the Rufous Treecreeper *Climacteris rufa* and Dusky Woodswallow *Artamus cyanopterus* were recorded by Dell (1976) but not recorded recently. Further targetted searches for these species might be valuable, as I did not conduct extensive sampling in their preferred woodland habitats. Further, Lake Magenta supports very little woodland overall (Crook & Burbidge 1982), so the effective size of this remnant for woodland-dependent species is likely to be small.

In contrast, species vulnerable to the effects of habitat fragmentation and degradation recorded in recent surveys, but not by Dell (1976), include the Southern Emu-wren *Stipiturus malachurus*, Western Whipbird, Gilbert's Whistler *Pachycephala inornata* and Hooded Robin *Melanodryas cucullata*. These species are not always easy to detect, especially when at low densities, so perhaps little can be drawn from their absence in particular surveys. The Western Whipbird and Southern Emu-wren, however, are likely to have more suitable habitat available at Lake Magenta now than during Dell's visit (although on a regional scale habitat availability would have declined, as clearing of private lands surrounding the nature reserve continued up until the 1980s: Crook & Burbidge 1982). These two species prefer long-unburnt vegetation or can be threatened by fire (Garnett & Crowley 2000). As Dell's visit was preceded by large fires in 1960–64 and 1972 (Crook & Burbidge 1982) much of the vegetation along the main access route (Halls Track) to Lake Magenta would have been regenerating not long after fire. Over the period covered by recent surveys most of the vegetation was fairly mature as there had been no major fires in Lake Magenta NR since 1976–77 (but small fires in 1979, 1984 and 2003). Large sections of the UCL east of Lake Magenta burned in 2001, in prescribed burns and fires started by lightning, and a prescribed fire burned a portion of Lake Magenta NR towards the end of this study, in 2008 (McClusky *et al.* 2003; Mitchell Davies, WA Department of Environment & Conservation, pers. comm.).

The records of Gilbert's Whistler are significant, as Saunders (1989) listed this as one of only two bird species presumed to have become extinct across the whole of the Wheatbelt. This species was recorded twice in mallee–heath at Lake Magenta during this study, at nearly identical locations 16 months apart. There is also a record from the Dunn Rock & Lake King IBA in the Atlas of Australian Birds (Appendix 1) among the few recent records of this species from the Wheatbelt (Saunders & Ingram 1995; Brooker 2002; Higgins & Peter 2002; WA Department of Environment & Conservation 2011).

Malleefowl

Malleefowl were recorded on most visits, with nearly all sightings being on roads, while observers were driving. An active and an inactive mound were found in Lake Magenta IBA (Figure 1). The active mound was in *Eucalyptus tenera* mallee shrubland, with an open understory of *Melaleuca* spp. (Plate 2). This area was last burnt in a wildfire in the summer of 1976–77 (Crook & Burbidge 1982), indicating that sufficient leaf-litter for construction of nesting mounds had accumulated within 30 years. Cover of deep (>1 cm depth) leaf-litter increases over time after fire in mallee habitat, reaching a maximum 30–35 years post-fire (Parsons & Gosper 2011). Most sight records of Malleefowl were in mallee, from 4 years post-fire to unburnt (i.e. >50 years post-fire). Two records were of Malleefowl

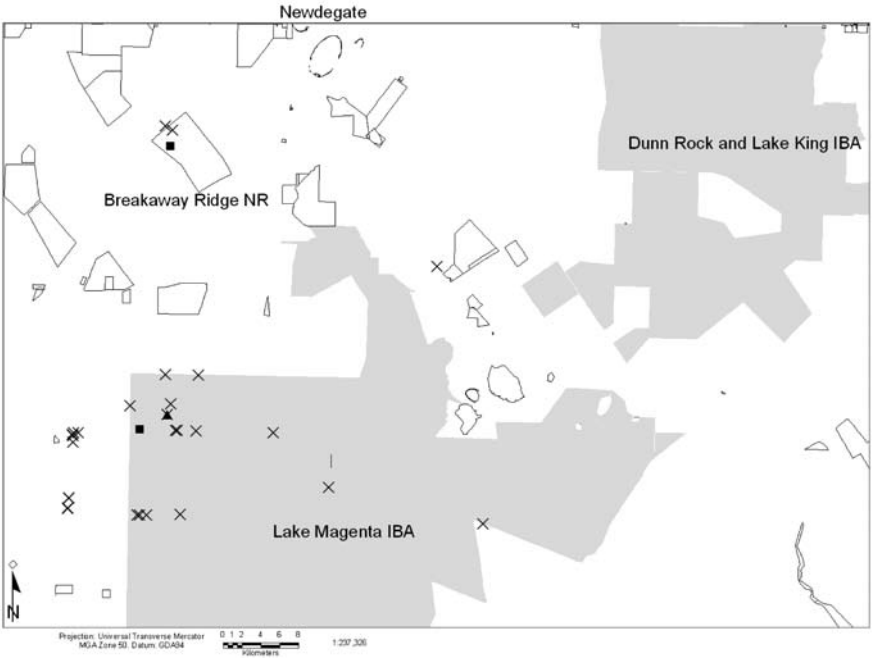

Figure 1. Location of Malleefowl records in and around Lake Magenta and Dunn Rock & Lake King IBAs (grey shading, though note this includes parts of nature reserves covered by salt lakes and not included in the IBAs). Other public lands, including other nature reserves and UCL, are outlined in black. × = Malleefowl sighting, ▲ = active mound, ■ = inactive mound.

leaving narrow strips of mallee that had been chained and burnt (see Gosper *et al.* 2010) 4 years previously, but surrounded by long-unburnt vegetation. At Lake Magenta IBA, Malleefowl were also recorded at the edges of the nature reserve adjoining cleared cultivated land, and on roads through thickets of Moort and open, sandy mallee–heath.

In the Newdegate region more broadly, Malleefowl were regularly sighted outside Lake Magenta IBA. Most sightings were in two areas: in Breakaway Ridge NR (where an inactive mound was also found), and in native vegetation in road reserves along Needilup Road, west of Lake Magenta IBA (Figure 1). This area south and west of Newdegate and west of Lake Magenta includes a number of remnants of >500 ha, a size of remnant identified as a predictor of Malleefowl occurrence (Parsons *et al.* 2009). These remnants include four nature reserves of 500–2000 ha and two of 2000–5000 ha (McCluskey *et al.* 2003), and other native-vegetation remnants in road reserves, other public lands and on private property. Malleefowl have also been recorded in these areas by other observers (Ecoscape & Land Assessment 2001; WA Department of Environment & Conservation 2011).

No Malleefowl were recorded in Dunn Rock & Lake King IBA, despite fieldwork similar to that at Lake Magenta (at similar times of day and involving similar patterns of travel). Dunn Rock & Lake King IBA has been identified as an IBA primarily because Malleefowl were considered to occur there, based on

Malleefowl mound in mallee ~30 years post-fire, Lake Magenta IBA

Plate 2 Photo: Carl R. Gosper

expert knowledge, habitat and population modelling, and known records (Birds Australia 2009; Blair C. Parsons pers. comm.). Furthermore, the bird list for the Dunn Rock & Lake King IBA from the Atlas of Australian Birds (Appendix 1) does not include Malleefowl, nor was this species recorded there by Morris *et al.* (2010). WA Department of Environment & Conservation (2011) listed only six Malleefowl records from Dunn Rock & Lake King compared with over 30 for Lake Magenta. Although I do not suggest that Malleefowl do not occur in Dunn Rock & Lake King IBA, my observations indicate that they are substantially less numerous there than in Lake Magenta IBA (Figure 1). This paucity of Malleefowl records from Dunn Rock & Lake King is even more surprising, given the fairly good access (several public roads pass through) to this IBA compared with other parts of the region. Why Dunn Rock & Lake King IBA appears to support many fewer Malleefowl than does Lake Magenta IBA is not known, although its relatively greater area of mallet woodland (rather than mallee) and differences in intensity of predator control may be relevant. Lake Magenta NR has been regularly baited with 1080 for control of Red Foxes *Vulpes vulpes* since 1996, whereas Dunn Rock & Lake King NRs have not (Morris *et al.* 2010).

My records of Malleefowl were made available during the IBA assessment process, but the case for including smaller reserves (i.e. small compared with Lake Magenta and Dunn Rock & Lake King NRs, although it is worth noting that some of these 'smaller' reserves are of moderate size in the context of the Wheatbelt as a whole) and other land tenures into an expanded IBA for Malleefowl and other mallee birds received little support. Thus, the current boundaries of the IBAs align with those of the largest blocks of public land managed for conservation. This appears to be in contrast with the approach taken elsewhere in Australia,

as at least some mallee IBAs appear to have been delineated on the basis of the distribution of suitable habitat, not land tenure (e.g. Southern New South Wales Mallee IBA: Birds Australia 2009). Furthermore, recognising the existence of significant numbers of Malleefowl across fragmented landscapes, Short & Parsons (2008) described the importance of focussing conservation efforts for Malleefowl at a regional scale ('neighbourhoods'), rather than on individual sites (such as IBAs based on single blocks). Such neighbourhoods comprise areas of private land and remnant vegetation, in which the Malleefowl population is likely to form an interconnected whole (Short & Parsons 2008).

Other species of conservation concern

In addition to the Malleefowl, a further seven taxa recorded in Lake Magenta or Dunn Rock & Lake King IBAs are regarded as of national or state conservation concern. Five of these were recorded during the present study: Carnaby's Black-Cockatoo, Western Rosella (wheatbelt) *Platycercus icterotis xanthogenys*, Shy Heathwren (western) *Hylacola cauta whitlocki*, White-browed Babbler (western wheatbelt) *Pomatostomus superciliosus ashbyi* and Western Whipbird (western mallee) *Psophodes nigrogularis oberon*. Two species were not recorded: Hooded Plover *Thinornis rubricollis* and Australian Bustard *Ardeotis australis* (see Appendix 1). The preferred habitat of Hooded Plovers in inland parts of WA, the margins of salt lakes (Marchant & Higgins 1993), was scarcely visited in this study, but this species still occurs in the area (Appendix 1). Australian Bustards are thought to have declined throughout the Wheatbelt (Saunders 1989; Saunders & Ingram 1995), and are not listed on the species lists for the Lake Magenta and Dunn Rock & Lake King IBAs in the Atlas of Australian Birds (Appendix 1).

The endangered Carnaby's Black-Cockatoo was occasionally recorded in both IBAs and surrounding areas between August and December, mostly in small flocks of 6–12, but occasionally in pairs or flocks of up to 40. These cockatoos were mostly seen in flight, but were also observed foraging in mallee–heath. Close observation on one occasion revealed them feeding on seeds in maturing capsules of Red Toothbrushes *Grevillea cagiana*.

Near-threatened taxa recorded were the Western Rosella (wheatbelt), Shy Heathwren (western), White-browed Babbler (western wheatbelt) and Western Whipbird (western mallee). Each of these was recorded regularly but sparsely through both IBAs, with the exception of the Western Whipbird, which was recorded only at Lake Magenta.

Species restricted to the Mallee and South-western Biome

Six biome-restricted species are known from Lake Magenta and Dunn Rock & Lake King IBAs (Birds Australia 2009). Purple-gaped Honeyeaters were common at Lake Magenta and nearby smaller reserves in mallee communities, and also occurred in adjoining Swamp Yate woodlands when these trees were flowering prolifically. Flowers of the following plant species were probed by Purple-gaped Honeyeaters: *Eucalyptus tenera*, Merrit *E. flocktoniae flocktoniae*, Swamp Yate, Goblet Mallee*, E. sporadica, E. phaenophylla,* Red Toothbrushes*, Grevillea oligantha,* Pincushion Hakea *Hakea laurina* and *Nematolepis phebalioides.* The remaining biome-restricted species—Regent Parrot, Western Rosella, Red-capped Parrot, Blue-breasted Fairy-wren and Western Yellow Robin—were recorded regularly across both IBAs.

Conclusion

Both Lake Magenta and Dunn Rock & Lake King IBAs continue to support a range of bird species that are vulnerable to the effects of habitat fragmentation and that have declined across the WA Wheatbelt. Significantly, both IBAs have recent sightings of Gilbert's Whistler, which was regarded by Saunders (1989) as probably extinct in the Wheatbelt. Malleefowl were regularly recorded in Lake Magenta IBA and in the fragmented landscape of native-vegetation remnants on private property, road reserves and nature reserves south and south-west of Newdegate, but not in Dunn Rock & Lake King IBA. This suggests that, mirroring the conclusions of Short & Parsons (2008), conservation management for the Malleefowl should be applied at a regional scale, including small and medium-sized remnants of native vegetation, across a range of land tenures.

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Appendix 1

Bird species of the Important Bird Areas of Lake Magenta, and Dunn Rock & Lake King. Dell = Dell (1976); Atlas = Atlas of Australian Birds data, post-1998 (Birds Australia 2009); see Methods). Status given, respectively, under (1) Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* **(DEWHA 2010), (2)** *The Action Plan for Australian Birds 2000* **(Garnett & Crowley 2000), and (3) schedules of the WA** *Wildlife Conservation Act 1950***. E = endangered, V = vulnerable, NT = near-threatened, 1 = Schedule 1 (fauna that is rare or likely to become extinct), – = not listed. Introduced species are indicated with an asterisk (*). A = Recorded in Lake Magenta IBA during the second Atlas of Australian Birds by Allan H. Burbidge (pers. comm.).**

Common name	*Scientific name*	*Lake Magenta*			*Dunn Rock & Lake King*		*Status*
		Dell	*Atlas*	*This study*	*Atlas*	*This study*	
Emu	*Dromaius novaehollandiae*	×	×	×		×	
Malleefowl	*Leipoa ocellata*	×		×			V, V, 1

Appendix 1 continued

Common name	*Scientific name*	*Lake Magenta*			*Dunn Rock & Lake King*		*Status*
		Dell	*Atlas*	*This study*	*Atlas*	*This study*	
Stubble Quail	*Coturnix pectoralis*			×		×	
Musk Duck	*Biziura lobata*	×			×		
Black Swan	*Cygnus atratus*	×			×		
Australian Shelduck	*Tadorna tadornoides*	×		×	×		
Australian Wood Duck	*Chenonetta jubata*	×	A		×		
Australasian Shoveler	*Anas rhynchotis*	×			×		
Grey Teal	*Anas gracilis*	×			×		
Pacific Black Duck	*Anas superciliosa*	×			×		
Hardhead	*Aythya australis*				×		
Blue-billed Duck	*Oxyura australis*				×		
Hoary-headed Grebe	*Poliocephalus poliocephalus*	×			×		
Common Bronzewing	*Phaps chalcoptera*	×	×	×	×	×	
Brush Bronzewing	*Phaps elegans*		×	×	×		
Crested Pigeon	*Ocyphaps lophotes*		×	×	×	×	
Tawny Frogmouth	*Podargus strigoides*	×					
Spotted Nightjar	*Eurostopodus argus*		×	×			
Australian Owlet-nightjar	*Aegotheles cristatus*	×	×		×		
Little Pied Cormorant	*Microcarbo melanoleucos*				×		
Great Cormorant	*Phalacrocorax carbo*				×		
White-necked Heron	*Ardea pacifica*				×		
White-faced Heron	*Egretta novaehollandiae*	×	×		×		
Square-tailed Kite	*Lophoictinia isura*	×	×	×			
Whistling Kite	*Haliastur sphenurus*	×		×			
Brown Goshawk	*Accipiter fasciatus*	×		×	×		
Collared Sparrowhawk	*Accipiter cirrocephalus*		×				

Appendix 1 continued

Common name	*Scientific name*	*Lake Magenta*			*Dunn Rock & Lake King*		*Status*
		Dell	*Atlas*	*This study*	*Atlas*	*This study*	
Spotted Harrier	*Circus assimilis*			×			
Wedge-tailed Eagle	*Aquila audax*	×	×	×	×	×	
Little Eagle	*Hieraaetus morphnoides*	×				×	
Nankeen Kestrel	*Falco cenchroides*	×	×	×		×	
Brown Falcon	*Falco berigora*	×	×	×	×	×	
Australian Hobby	*Falco longipennis*	×			×		
Eurasian Coot	*Fulica atra*	×			×		
Australian Bustard	*Ardeotis australis*	×					–, NT, –
Black-winged Silt	*Himantopus himantopus*				×		
Red-necked Avocet	*Recurvirostra novaehollandiae*				×		
Banded Stilt	*Cladorhynchus leucocephalus*				×		
Red-capped Plover	*Charadrius ruficapillus*	×			×		
Black-fronted Dotterel	*Elseyornis melanops*	×					
Hooded Plover (western)	*Thinornis rubricollis tregellasi*	×	×		×		–, NT, –
Red-kneed Dotterel	*Erythrogonys cinctus*				×		
Banded Lapwing	*Vanellus tricolor*			×	×		
Common Greenshank	*Tringa nebularia*				×		
Painted Button-quail	*Turnix varius*		×	×			
Little Button-quail	*Turnix velox*	×					
Silver Gull	*Chroicocephalus novaehollandiae*				×		
Carnaby's Black-Cockatoo	*Calyptorhynchus latirostris*	×	×	×	×	×	E, E, 1
Galah	*Eolophus roseicapillus*		×	×	×		
Purple-crowned Lorikeet	*Glossopsitta porphyrocephala*	×	×	×	×	×	
Regent Parrot	*Polytelis anthopeplus*	×	×	×	×	×	
Western Rosella (wheatbelt)	*Platycercus icterotis xanthogenys*	×	×	×	×	×	–, NT, 1

Appendix 1 continued

Common name	*Scientific name*	*Lake Magenta*			*Dunn Rock & Lake King*		*Status*
		Dell	*Atlas*	*This study*	*Atlas*	*This study*	
Australian Ringneck	*Barnardius zonarius*	×	×	×	×	×	
Red-capped Parrot	*Purpureicephalus spurius*		×	×	×	×	
Mulga Parrot	*Psephotus varius*			×			
Elegant Parrot	*Neophema elegans*		×	×	×	×	
Horsfield's Bronze-Cuckoo	*Chalcites basalis*	×	×	×	×	×	
Black-eared Cuckoo	*Chalcites osculans*				×		
Shining Bronze-Cuckoo	*Chalcites lucidus*	×	×		×		
Pallid Cuckoo	*Cacomantis pallidus*	×	×	×			
Fan-tailed Cuckoo	*Cacomantis flabelliformis*	×	×	×	×		
Southern Boobook	*Ninox novaeseelandiae*	×	×		×		
Laughing Kookaburra*	*Dacelo novaeguineae*	×			×		
Sacred Kingfisher	*Todiramphus sanctus*		×				
Rainbow Bee-eater	*Merops ornatus*	×		×	×		
Rufous Treecreeper	*Climacteris rufa*	×					
Blue-breasted Fairy-wren	*Malurus pulcherrimus*	×	×	×	×	×	
Southern Emu-wren	*Stipiturus malachurus*		×	×	×	×	
White-browed Scrubwren	*Sericornis frontalis*	×	×	×		×	
Shy Heathwren (western)	*Hylacola cauta whitlocki*	×	×	×	×	×	–, NT, –
Rufous Fieldwren	*Calamanthus campestris*	×	×				
Redthroat	*Pyrrholaemus brunneus*				×		
Weebill	*Smicrornis brevirostris*	×	×	×	×	×	
Western Gerygone	*Gerygone fusca*	×		×	×		
Yellow-rumped Thornbill	*Acanthiza chrysorrhoa*	×	×	×	×	×	
Chestnut-rumped Thornbill	*Acanthiza uropygialis*	×					

Appendix 1 continued

Common name	*Scientific name*	*Lake Magenta*			*Dunn Rock & Lake King*		*Status*
		Dell	*Atlas*	*This study*	*Atlas*	*This study*	
Inland Thornbill	*Acanthiza apicalis*	×	×	×	×	×	
Spotted Pardalote	*Pardalotus punctatus*	×	×	×	×	×	
Striated Pardalote	*Pardalotus striatus*	×	×	×	×		
Singing Honeyeater	*Lichenostomus virescens*	×	×	×	×		
White-eared Honeyeater	*Lichenostomus leucotis*	×	×	×	×	×	
Purple-gaped Honeyeater	*Lichenostomus cratitius*	×	×	×	×		
Yellow-plumed Honeyeater	*Lichenostomus ornatus*	×	×		×		
Yellow-throated Miner	*Manorina flavigula*	×	×	×	×	×	
Spiny-cheeked Honeyeater	*Acanthagenys rufogularis*		×	×	×		
Red Wattlebird	*Anthochaera carunculata*	×	×	×	×	×	
White-fronted Chat	*Epthianura albifrons*	×	×	×	×	×	
Tawny-crowned Honeyeater	*Glyciphila melanops*	×	×	×	×	×	
Brown Honeyeater	*Lichmera indistincta*	×	×	×	×	×	
New Holland Honeyeater	*Phylidonyris novaehollandiae*	×	×		×		
White-cheeked Honeyeater	*Phylidonyris niger*		×	×	×	×	
Brown-headed Honeyeater	*Melithreptus brevirostris*	×	×	×	×	×	
White-browed Babbler (western wheatbelt)	*Pomatostomus superciliosus ashbyi*	×	×	×	×	×	–, NT, –
Western Whipbird (western mallee)	*Psophodes nigrogularis oberon*		×	×			–, NT, –
Varied Sittella	*Daphoenositta chrysoptera*	×		×	×		
Black-faced Cuckoo-shrike	*Coracina novaehollandiae*	×	×	×	×	×	
White-winged Triller	*Lalage sueurii*	×		×	×		
Gilbert's Whistler	*Pachycephala inornata*			×	×		
Golden Whistler	*Pachycephala pectoralis*	×	×	×	×	×	
Rufous Whistler	*Pachycephala rufiventris*	×		×	×	×	

Appendix 1 continued

Common name	*Scientific name*	*Lake Magenta*			*Dunn Rock & Lake King*		*Status*
		Dell	*Atlas*	*This study*	*Atlas*	*This study*	
Grey Shrike-thrush	*Colluricincla harmonica*	×	×	×	×	×	
Crested Bellbird	*Oreoica gutturalis*	×	×	×	×	×	
Masked Woodswallow	*Artamus personatus*			×			
Black-faced Woodswallow	*Artamus cinereus*		×	×		×	
Dusky Woodswallow	*Artamus cyanopterus*	×			×		
Grey Butcherbird	*Cracticus torquatus*	×	×	×	×	×	
Pied Butcherbird	*Cracticus nigrogularis*		×		×		
Australian Magpie	*Cracticus tibicen*	×	×	×	×	×	
Grey Currawong	*Strepera versicolor*	×	×	×	×	×	
Grey Fantail	*Rhipidura albiscapa*	×	×	×	×	×	
Willie Wagtail	*Rhipidura leucophrys*	×	×	×	×	×	
Australian Raven	*Corvus coronoides*	×	×	×	×	×	
Little Crow	*Corvus bennetti*	×				×	
Restless Flycatcher	*Myiagra inquieta*	×	×	×	×		
Magpie-lark	*Grallina cyanoleuca*	×	×		×	×	
Jacky Winter	*Microeca fascinans*	×		×	×		
Red-capped Robin	*Petroica goodenovii*	×	×		×		
Hooded Robin	*Melanodryas cucullata*		×	×		×	
Western Yellow Robin	*Eopsaltria griseogularis*	×	×	×	×	×	
Southern Scrub-robin	*Drymodes brunneopygia*	×	×	×	×	×	
Brown Songlark	*Cincloramphus cruralis*			×			
Silvereye	*Zosterops lateralis*	×	×	×	×		
Welcome Swallow	*Hirundo neoxena*			×	×		
Tree Martin	*Petrochelidon nigricans*	×	×	×	×		
Mistletoebird	*Dicaeum hirundinaceum*	×					
Australasian Pipit	*Anthus novaeseelandiae*	×	×	×	×	×	
Total no. of species	126	89	75	79	97	52	