

# Comparative Bird Surveys for the Mulyungarie and Bulgunnia Pastoral Properties in Northern South Australia

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*Debus et al. (2006) published a list of birds observed during surveys of Mulyungarie and Bulgunnia Stations between November 1997 and May 2005, including expanded comments on some rare species. This paper corroborates most of those observations and presents additional survey data and detailed bird notes from opportunistic sightings over an eight-year period between September 1993 and August 2001. Species lists from both of these surveys are compared and differences between them discussed. Thirty-four new species are added to the bird survey list of Debus et al. (2006). The increased species diversity is accounted for almost entirely by higher rainfall during the period of the current survey.*

## INTRODUCTION

In the December 2006 edition of the *South Australian Ornithologist*, Debus *et al.* (2006) presented a paper on bird species observed on Mulyungarie and Bulgunnia stations whilst undertaking kangaroo research surveys during the period November 1997 to May 2005. It described the results of seven visits to each station, each trip being about one week duration. This paper presents additional data from a series of similar surveys undertaken on these stations between July 1993 and August 2001. These mainly opportunistic observations were made during kangaroo management duties for National Parks and Wildlife South Australia (NPW SA) – a division of the Department for Environment and Natural Resources (DENR).

Many of the species observed were common species that are regularly observed in the region. However, there were significant differences

between the two surveys with 54 additional species observed on Mulyungarie and eight on Bulgunnia during the current survey. There were 34 additional species overall. Conversely, Debus *et al.* (2006) recorded six species on Mulyungarie and nine on Bulgunnia that were not seen during the current survey – with a total of eight more species on the composite list. The results of the two surveys are discussed in some detail to explain significant differences with additional comments on two endangered taxa: Plains Wanderer and Grey Flacon.

## METHODS

Field trips to Mulyungarie and Bulgunnia were chiefly for the purpose of kangaroo *Macropus spp.* surveys. This was part of an overall NPWSA annual site census for the purpose of setting quotas for the sustainable commercial harvesting of kangaroos. A 20 + km long vehicle transect/census was carried out during early morning and late afternoon/dusk each day for five days. A 10+ km walk was also conducted each day across a predetermined wilderness transect using a compass to maintain a correct bearing. The vehicle and walking transects (particularly the latter) were an excellent means of collecting valuable bird data.

The remainder of the day was taken up with travel from one camp site to the next, meeting with station personnel and if time permitted, bird watching. These observations were a valuable supplement to the opportunistic sightings gleaned elsewhere. On almost all occasions I was accompanied on these field trips by fellow NPWSA ranger, Rod Henderson (RH). The eleven field trips to Mulyungarie were in all

**Table 1. Number of field trips and total days spent at each station by respective survey teams.**

SURVEYS	Debus	Baxter
<b>Mulyungarie</b>	7 (40 days)	11 (27 days)
<b>Bulgunnia</b>	7 (51 days)	5 (17 days)
<b>Total</b>	14 (91 days)	16 (44 days)

seasons, albeit for only one day during summer. Most survey days were during winter (15), seven during spring and four during autumn for a total of 27. The five field trips to Bulgunnia were all during winter, comprising 17 survey days in all. Total survey days totalled 44.

Debus *et. al* (2006) spent 51 days on Bulgunnia and 40 on Mulyungarie for a total of 91 survey days, generally equally distributed throughout spring and autumn. The number of trips and days are summarized in Table 1.

## STUDY SITES

The location of the two study sites is marked on the map in Figure 1.

### Mulyungarie Station

Mulyungarie station lies about 600 km ESE of Bulgunnia, is similar in size and is situated along the W side of the NSW border. (See Fig. 1). Its S boundary is c.30 km N of Cockburn, a small town on the Barrier Highway about 50 km W of Broken Hill. Contrary to Debus *et al.* (2006) who state - "the vegetation is mainly non eucalypt, apart from planted eucalypts around the homestead" - gums feature quite significantly in the make-up of the flora of Mulyungarie. Black box *Eucalyptus largiflorens* and coolabah *E. coolabah* occur along and around ephemeral watercourses and swamps and on clay flats between sandy rises. River red gums *E. camaldulensis* line the Mingary Creek on S Mulyungarie, something not mentioned by Debus *et al.* (2006). White cypress-pine *Callitris glaucophylla* is quite common and widespread. Sparse mulga *Acacia aneura* is scattered throughout, along with patches of black

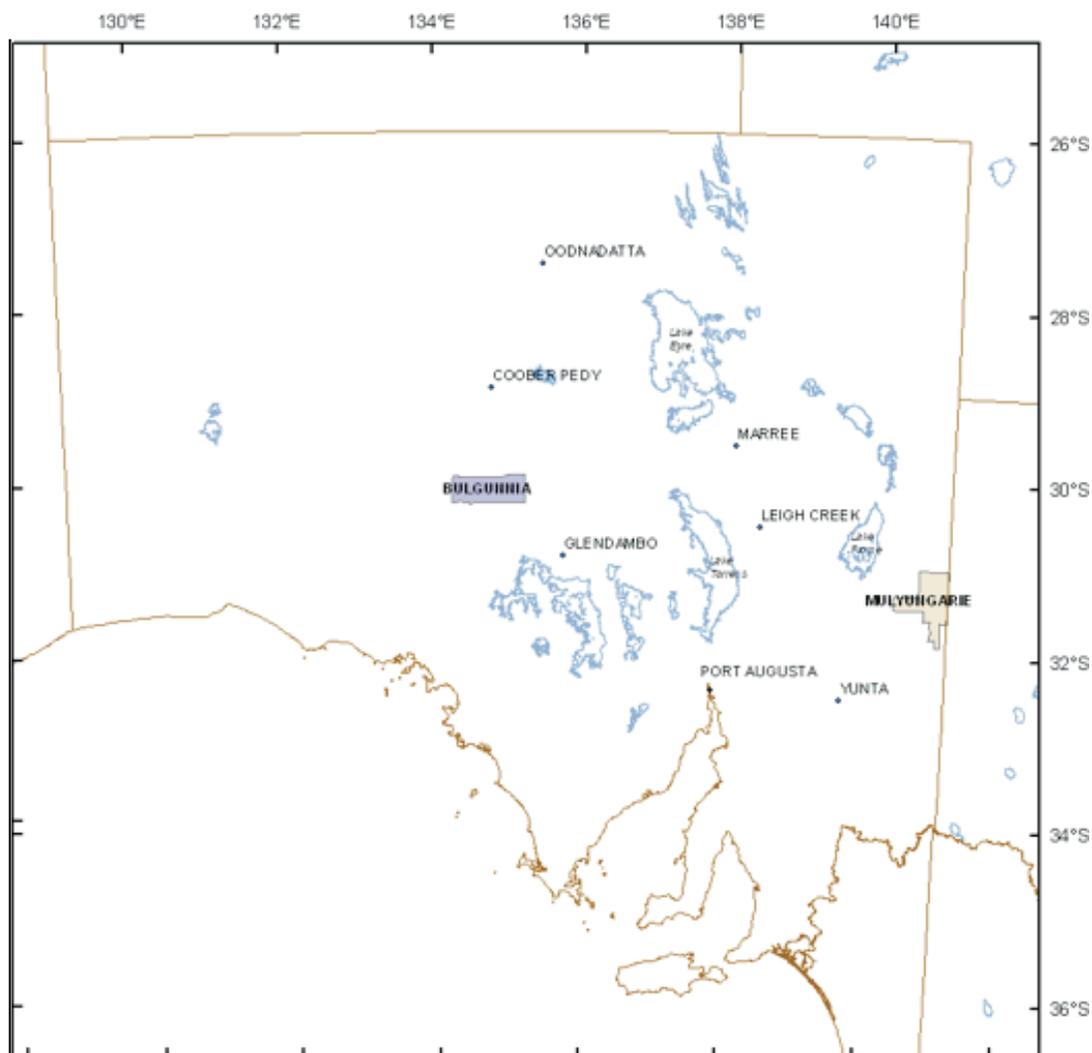
oak *Casuarina pauper* and bullock bush *Alectryon oleifolius*.

Second storey bushes comprises a wide variety of species of which turpentine *Eremophila sturtii* and narrow-leaved hop-bush *Dodonaea viscosa* are the most common and widespread. Attractive stands of needle bush *Hakea leucoptera*, *Acacia spp.* (including the rare purple wood wattle *A. carneorum*), *Senna spp.*, *Santalum*, native apricot *Pittosporum angustifolium* and a *Grevillea sp.* also occur. A rich variety of emu bushes *Eremophila spp.* provide an important nectar source for honeyeaters when flowering.

Chenopod shrubland (*Maireana spp.* and *Atriplex spp.*) occurs throughout the station, but is most conspicuous in the S and W where it forms vast open plains with few trees. Bladder saltbush *Atriplex vesicaria* is prominent as is cotton bush *M. aphylla*, the dominant shrub growing in and around ephemeral wetlands and low lying clay soils. In some ephemeral swamps (eg: Cartspring Swamp) it grows in close association with swamp canegrass *Eragrostis australasica* (not lignum as suggested by Debus *et al.* (2006)). There are isolated, monospecific patches of old man saltbush *Atriplex nummularia* on clay flats next to several dams (eg: Stirling Dam), which provides closed habitat for Redthroat *Pyrrholaemus brunneus*. Bindyi *Sclerolaena spp.* form a significant part of the shrubland flora and samphire *Tecticornia sp.* is restricted to a few ephemeral wetlands, including Lake Charles.

### Bulgunnia Station

It is not necessary for me to describe in detail the Bulgunnia study site as this has already been adequately carried out by Debus *et al.* (2006). Suffice to say that Bulgunnia is a sheep station of c. 3,000 sq. km, situated on the W side of the Stuart Highway about halfway between Glendambo and Coober Pedy. (Figure 1). It is chiefly covered in mulga *Acacia aneura* woodland and chenopod *Maireana* shrubland. Emu bushes *Eremophila spp.* are a significant nectar source for honeyeaters when flowering. There are



**Figure 1. Map of NE South Australia showing the location of Bulgunnia and Mulyungarie Stations.**

no dams, water being gleaned from bores. Ephemeral Bulgunnia Swamp in the NE corner of Bulgunnia provides temporary water bird habitat after rain.

### CLIMATE

Bulgunnia is on a latitude c. 130 km further N than Mulyungarie and therefore experiences a slightly more arid climate. Tables 2 and 3 present a comparison of Broken Hill and Tarcoola climate averages, these weather stations being in close proximity to Mulyungarie

and Bulgunnia respectively.

### ANALYSIS OF SPECIES LISTS

One hundred and thirty eight bird species were seen on Mulyungarie and 95 species on Bulgunnia during the current survey. Due to a considerable overlap of species, a total of 145 species were seen overall. This is a significant increase on the number of species recorded by Debus et al. (2006). However, on analysis it can be seen that many of the additional species observed on Mulyungarie during the current

**Table 2. Average temperature and rainfall figures for Broken Hill -75 km SE of Mulyungarie Station (Bureau of Meterology)**

Statistics	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Years
<b>Mean max temp</b>														
C	33	32	29	24	19	16	15	17	21	25	29	31	24	113
<b>Mean min. temp</b>														
C	19	18	16	12	9	6	5	6	9	12	15	17	12	113
<b>Mean Rainfall</b>														
mm	25	26	21	17	23	22	19	19	20	25	21	22	258	116

**Table 3. Average Temperature and rainfall figures from Tarcoola - 70 km SSW of Bulgunnia Station (Bureau of Meterology)**

Statistics	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Years
<b>Mean max temp</b>														
C	35	35	32	26	22	18	18	20	24	28	31	34	27	72
<b>Mean min. temp</b>														
C	18	18	16	11	8	5	4	5	8	11	14	17	11	72
<b>Mean Rainfall</b>														
mm	10	21	11	10	16	17	13	16	15	17	14	14	174	92

survey were water birds (or species with a close affinity with water) that are sporadic in occurrence and are often only present during times of heavy rainfall and inundation of ephemeral swamps and dams. Moreover, Debus stated that observers taking part in their survey possessed varying degrees of ornithological experience and that bird observations were largely an opportunistic aside to their main duties. It is therefore likely that observer inexperience and more limited time constraints may have contributed to fewer species observed/identified by them.

### Mulyungarie Station

The Debus *et al.* (2006) Mulyungarie bird survey spanned 40 days from November 1997 to May 2005, recording a total of 90 species. The current Mulyungarie survey comprised 27 days from September 1993 - January 2001 and recorded 54 more species than Debus *et al.* (2006). Total bird list for Mulyungarie was 138 species.

Flooded Mudros Swamp and Cart Spring Swamp

on Mulyungarie provided ideal waterbird habitat during the current survey. Additional species to that of Debus are the following 24 wetland species: Blue-billed Duck *Oxyura australis*, Australasian Shoveler *Anas rhynchotis*, Chestnut Teal *Anas castanea*, Little Black Cormorant *Phalacrocorax sulcirostris*, White-necked Heron *Ardea pacifica*, Intermediate Egret *Ardea intermedia*, Nankeen Night Heron *Nycticorax caledonicus*, Glossy Ibis *Plegadis falcinellus*, Australian White Ibis *Threskiornis molucca*, Straw-necked Ibis *Threskiornis spinicollis*, Australian Spotted Crake *Porzana fluminea*, Latham's Snipe *Gallinago hardwickii*, Marsh Sandpiper *Tringa stagnatilis*, Common Greenshank *Tringa nebularia*, Great Knot *Calidris tenuirostris*, Sharp-tailed Sandpiper *Calidris acuminata*, Black-winged Stilt *Himantopus himantopus*, Red-kneed Dotterel *Erythrogonys cinctus*, Red-capped Plover *Charadrius ruficapillus*, Silver Gull *Chroicocephalus novaehollandiae*, Gull-billed Tern *Gelochelidon nilotica*, Whiskered Tern *Chilidonas hybridus*, White-fronted Chat *Epthianura albifrons* and Little Grassbird *Megalurus gramineus*.

Stubble Quail *Coturnix pectoralis* and Australian Bustard *Ardeotis australis* were also observed at this time due to onset of lush ephemeral growth. An additional twelve species were observed only once or twice on Mulyungarie and these were perhaps not surprising omissions from the Debus *et al.* (2006) survey list. They comprised Plains Wanderer *Pedionomus torquatus*, Spotted Harrier *Circus assimilis*, Peregrine Falcon *Falco peregrinus*, Black Falcon *Falco subniger*, Blue-winged Parrot *Neophema chrysostoma*, Black-eared Cuckoo *Chalcites osculans*, Southern Boobook *Ninox novaeseelandiae*, Spotted Nightjar *Eurostopodus argus*, Black Honeyeater *Sugomel niger*, Grey Shrike-thrush *Colluricincla harmonica*, Pied Butcherbird *Cracticus nigrogularis* and Rufous Songlark *Cincloramphus mathewsi*. Of the remainder, Australian Ringneck *Barnardius zonarius* appears to be restricted to river red gum habitat on the Mingary Creek of S Mulyungarie. Its absence from the Debus *et al.* (2006) bird list (plus the omission of river red gum habitat from the Debus *et al.* (2006) vegetation description), suggests that they did not visit this S part of Mulyungarie and consequently did not record this species. Moreover, the only evidence of Common Starling *Sturnus vulgaris* during the current survey was the discovery of two fledgling birds, lying dead beneath deserted nests in derelict huts at Lakes Charles Bore and Lockhart Bore. Mulyungarie responded favourably to soaking rains during the early 1990s and lush ephemeral growth provided ideal habitat for a wide variety of terrestrial birds, including the secretive Little Button-quail *Turnix velox* and Rufous Fieldwren *Calamanthus campestris*. These species are easily overlooked if one does not spend time searching (walking) in suitable habitat. The latter species was observed breeding in chenopod covered gibber plains of Benagerie, Blueshirt and Sullivans Paddocks on W Mulyungarie. Surprising omissions from the Debus survey list included Australian Hobby *Falco longipennis*, Banded Lapwing *Vanellus tricolor*, Diamond Dove *Geopelia cuneata*, Horsfield's Bronze-Cuckoo *Chalcites basalis*, Redthroat *Pyrrholaemus*

*brunneus*, Yellow-rumped Thornbill *Acanthiza chrysorrhoa*, Pied Honeyeater *Certhionyx variegatus*, Fairy Martin *Hirundo ariel* and Brown Songlark *Cincloramphus cruralis*. These species were seen on multiple occasions. Five of them were confirmed breeding and two suspected of breeding. A resident pair of Australian Hobby bred several times in black box woodland at Chocolate Dam; Banded Lapwing and Yellow-rumped Thornbill were moderately common, widespread and breeding; the mobile opportunistic Pied Honeyeaters were attracted to profuse flowering *Eremophila spp.* and gave every indication they were about to breed (courtship and copulation); Fairy Martins bred in huts at Lake Charles Bore and Lockhart Bore and Brown Songlarks were singing over open chenopod plains of S and W Mulyungarie. Redthroats were reasonably conspicuous (often by call) and suspected of breeding (individual carrying nest material) over widespread areas of mostly S and W Mulyungarie, wherever moderately healthy chenopod and other shrubs provided suitable habitat for this semi-secretive species.

Most surprising is the absence of Ground Cuckoo-shrike *Coracina maxima*, White-browed Woodswallow *Artamus superciliosus* and Little Crow *Corvus bennetti* from the Debus *et al.* (2006) Mulyungarie survey list. The former species was observed on three trips to Mulyungarie, which included a breeding pair. Although not common, this species is quite conspicuous as it often calls in flight and has eye-catching black wings and tail contrasting with paler body parts. The omission of White-browed Woodswallow is also a little puzzling, particularly as Masked Woodswallows were observed by Debus *et al.* (2006) on two trips to Mulyungarie. These two closely related woodswallows frequently occur in mixed flocks, as was the case with all current survey sightings. Little Crow was observed on ten separate field trips (including breeding) during the current survey and AB recorded it during his one trip to Mulyungarie in May 2001. Debus *et al.* (2006) recorded six species on

Mulyungarie Station during survey period November 1997 - May 2005 that were not seen on that station during the current survey. They comprised the following passerines: Grey Fantail *Rhipidura albiscapa*, Little Raven *Corvus mellori*, White-browed Babbler *Pomatostomus superciliosus*, Inland Thornbill *Acanthiza apicalis*, Splendid Fairy-wren *Malurus splendens* and White-browed Treecreeper *Climacteris affinis*.

Grey Fantail was a one-off sighting on Mulyungarie by Debus *et al.* (2006) and is seldom reported from the North Olary Plains (NOP) (Blakers *et al.* 1984; Playfair *et al.* 1997). The author saw this species only three times during ten years of field trips to the lower north-east region of SA, chiefly to Mulyungarie, Plumbago and Bimbowrie stations. The latter two stations are situated about 70 km south-west of Mulyungarie. Sightings included two pairs in river red gum forest with a dense understorey of African box thorn *Lycium ferocissimum* on the Ocalia Creek, Manunda Station, South Olary Plains (SOP), 26 May 2000; a pair foraging in and around pepper trees *Schinus molle* on the Tombstone Creek, Plumbago, 18 May 2000; one in the Plumbago homestead garden, 15 July 2000. Further to this, the Department of Environment and Natural Resources (DENR) conducted a comprehensive biological bird survey of the 45,864 sq. km. NOP from 1995 – 1997 (Playfair and Robinson 1997). The NOP cover a large part of the E sheep pastoral country in SA, stretching from just S of the Barrier Highway north to Lake Frome and Moolawatana Station, and is bounded in the W by the E edge of the Flinders Ranges and in the E by the SA/NSW border. Mulyungarie, Plumbago and Bimbowrie stations are part of the NOP. DENR undertook flora and landform surveys at 381 sites throughout the NOP, 48 of these sites were intensively sampled for birds and other vertebrates. Systematic and opportunistic observations of birds were collected throughout all areas of the NOP (Playfair *et al.* 1997). DENR recorded Grey Fantail only once, an opportunistic observation from near Bindyi, the Arid Flora Research Station

within the confines of Koonamore Station, c.150 km. SW of Mulyungarie.

Little Raven was recorded only once by Debus *et al.* (1996). Several birds were identified on call alone, amongst a flock of Australian Ravens *Corvus coronoides*, near a water point on S Mulyungarie. During the current survey period, Little Raven was seen only once in the NOP when 50+ birds visited SW Bimbowrie Station, 26 May 2000. It was not recorded at all by DENR during their biological survey of the NOP. Of the remaining four species, White-browed Babbler is perhaps the most perplexing species reported by Debus *et al.* (2006). Generally widespread and common throughout most of SA, this species is largely absent from the NE pastoral districts where the closely related Chestnut-crowned Babbler is common. The latter species is a signature species of Mulyungarie Station, being extremely common, widespread and generally one of the first species detected. During ten years of bird observation on Mulyungarie, Plumbago and Bimbowrie Stations, the author observed White-browed Babbler on only two occasions. Both observations were of six to eight birds in sparse mallee habitat in rocky hills of S Bimbowrie. Outside of the NOP, a total of 40 birds were seen in riparian river red gum habitat with an infestation of box thorns along the Ocalia Creek, Manunda Station on 31 March 1999. This location is in the northern part of the SOP, just S of the Barrier Highway. Other likely White-browed Babbler habitat, in the form of extensive mallee woodland on stations such as Weekeroo, were not surveyed.

It is interesting to note that the DENR biological bird survey of the entire NOP (1995-1997), recorded White-browed Babbler at only two of the 48 vertebrate sample sites and not at all opportunistically. Conversely, the Chestnut-crowned Babbler was recorded at 12 vertebrate sampling sites and four opportunistic sightings for a total of 16 locality records in all. The White-browed Babbler sightings were 150 km or more from Mulyungarie, both records coming from sites on the W side of the NOP. One was in

mallee in the Bibliando Hills on the E side of the Flinders Ranges and the other on Wooltana Station in the NW part of the region (R. Brandle, pers. comm.).

The seven field trips by Debus *et al.* (2006) to Mulyungarie resulted in White-browed Babbler being reported on five visits and Chestnut-crowned Babbler on only two. Incredibly, the abundant Chestnut-crowned Babbler was not reported at all during the first four field trips. Without due care and experience, Chestnut-crowned Babbler is easily confused with White-browed Babbler, they are very similar in appearance and both have prominent white eyebrow stripes. Chestnut-crowned Babbler's chestnut cap is not always obvious to the naked eye, its distinctive chuckling calls and white wing-covert markings are both important distinguishing features in the field. On questioning Greg Lollback, a member of Debus *et al.* (2006) survey team, about White-browed Babbler occurrence on Mulyungarie, he expressed genuine surprise that I had not seen it there. He commented that the species was very common and that he saw it frequently when driving along station tracks, particularly where shrubs were one to two metres tall. In closing, he added that the Chestnut-crowned Babbler was rare on Mulyungarie, himself having seen it only once during April 2004. This appears to be a case of mistaken identity. With this in mind, I feel compelled for the sake of future correctness, to question the validity of the White-browed Babbler observations on Mulyungarie by Debus *et al.* (2006).

The Inland Thornbill observation by Debus *et al.* (2006) also warrants further analysis. In ten years of bird observation on Mulyungarie, Plumbago and Bimbowrie, the author saw the Inland Thornbill only twice. On both occasions, two birds were seen in the same patch of mallee as the White-browed Babbler observations, in rocky hills habitat on S Bimbowrie. Moreover, the comprehensive DENR survey of the entire NOP recorded Inland Thornbill only once, from

a vertebrate sample site containing black oak and upland eucalypt woodland in the Bibliando Hills some 150 km to the W of Mulyungarie. Interestingly, White-browed Babbler was also recorded at the Bibliando site by DENR, a scenario mirroring the author's observations of these two species together in mallee covered rocky hills habitat of the Olary Spur of S Bimbowrie.

Interestingly, Debus *et al.* (2006) did not report the extremely common, widespread and easily detected (often by call) Chestnut-rumped Thornbill during the first four field trips of their survey. This is another signature species of Mulyungarie and it is hard to imagine how it was missed, only being reported on the fifth and seventh trips. Incredibly, the only thornbill species reported at all during the first four field trips (no Yellow-rumped Thornbill either) was the Inland Thornbill. Questioned further on this observation, Lollback said that bird observation was secondary to the primary purpose of kangaroo surveying and that he had no recollection or substantiating notes on this unusual observation (G. Lollback, pers. comm.). A similar scenario exists for the Splendid Fairy-wren. The author did not see this species on Mulyungarie, Plumbago or Bimbowrie during ten years of visits to those stations. The only observations comprised three separate parties of 12 birds in total on the Ocalia Creek, Manunda Station, south of the Barrier Highway in the N part of the SOP. Each party contained an eclipse male with pronounced blue on the wing coverts and tail. Here a lush and dense micro habitat, somewhat similar to regions further south, still persisted in the form of riparian river red gum forest with a dense infestation of introduced box thorn and other native shrubs in the understory. DENR recorded a total of 125 species during the NOP survey and of these, White-winged Fairy-wren was the fourth most common species, the Variegated Fairy-wren the nineteenth most common species - and significantly, the Splendid Fairy-wren was not recorded at all.

Debus *et al.* (2006) record of Splendid Fairy-wren was during the fifth field trip of their survey in April 2004. Up until that time, the moderately common and widespread Variegated Fairy-wren had only been reported once (fourth trip), and the abundant and widespread White-winged Fairy-wren only twice (second and fifth trip). Lollback (pers comm.) stated that he saw a breeding plumaged male Splendid Fairy-wren and recalled from memory that it may have been observed in shrubby vegetation surrounding the Mulyungarie Homestead Dam. It is indeed a pity that pertinent field notes, including description and location were not taken at this time.

Given that a breeding plumaged male Splendid Fairy-wren is quite distinctive and difficult too confuse with any other species, credibility must be given to this observation. However, in light of several other unsubstantiated unusual record reports by Debus *et al.* (2006), between November 2003 and April 2004, I believe that this record must be treated with some caution until further confirmation is forthcoming. The Homestead Dam site would seem a logical starting point in future searches for this species on Mulyungarie. The White-browed Treecreeper record from Mulyungarie was a single bird in coolabah woodland habitat (Lollback, pers. comm.). This species is not generally expected to be found in eucalyptus habitat, that niche generally being occupied on Mulyungarie by the closely related Brown Treecreeper *Climacteris picumnus*. Mulga woodland, the preferred habitat of the White-browed Treecreeper is widespread on Mulyungarie, albeit the live trees are quite sparse and many others are dead. As both acacia and eucalypt habitats exist alongside one another throughout Mulyungarie, it would seem quite plausible that the White-browed Treecreeper may sometimes venture from degraded mulga into eucalypt woodland. However, these two species are very similar in appearance and it is quite possible (in light of questionable species identification mentioned previously) that a Brown Treecreeper may have been mis-identified. To my knowledge, all past observations of

treecreepers in eucalypt habitat on Mulyungarie have been Brown Treecreepers. DENR recorded Brown Treecreeper only twice during the NOP survey, both observations were in mallee *Eucalyptus socialis* habitat at vertebrate sample sites on Koonamore Station and the Bibliando Hills. Significantly, White-browed Treecreeper was not recorded at all.

To overlook these more common species and report closely related (same genus) species that are either extremely rare or possibly altogether absent from Mulyungarie Station, indicates to me a lack of experience and expertise on the part of the observers, particularly Lollback and Oliver who were involved in the first five field trips. Debus *et al.* (2006) stated that "the observers had different levels of experience" and I believe that this is borne out by the anomalies in species sightings as outlined above. It is indeed a pity that the species observations under scrutiny here were not recognised as unusual sightings for Mulyungarie Station by Debus *et al.* (2006). If so, they may have given them the due consideration they deserved and furnished full species descriptions and other relevant details in order to fully substantiate them.

Australian Hobby, Banded Lapwing, Red-kneed Dotterel and Grey Shrike-thrush were added to the Debus *et al.* (2006) Mulyungarie bird list post survey. Others were contributed by independent observers: AB added Straw-necked Ibis, Diamond Dove, Redthroat, Yellow-rumped Thornbill, Little Crow and Pied Butcherbird; GK added White-necked Heron, Common Greenshank and Black-winged Stilt; PA added Australian Bustard.

### **Bulgunnia Station**

The Debus *et al.* (2006) Bulgunnia survey spanned 51 days from November 1997 - May 2005, recording a total of 91 species. The current Bulgunnia survey comprised 17 days from September 1993 - January 2001 and recorded five more species overall with a total of 96.

In all, eight different species were seen on Bulgunna compared to that of Debus *et al.* (2006). Of the eight additional species recorded during the current survey, Australian Wood Duck *Chenonetta jubata*, Grey Teal *Anas gracilis* and White-faced Heron *Egretta novaehollandiae* were vagrant water birds that appeared shortly after heavy rainfall and minor flooding. Water bird habitat is a rare commodity on Bulgunna as it has no dams, relying solely on bores for its water supply. The Black-breasted Buzzard *Hamirostra melanosternon* and Whistling Kite *Haliastur spenurus* were one-off sightings. Black-breasted Buzzard is a transient species at this locality and although very distinctive when soaring overhead, is not often seen. Whistling Kite is not really suited to Bulgunna's arid acacia and chenopod habitat, generally occurring in riparian habitat associated with watercourses and other wetlands. Little Button-quail is a nomadic/irruptive species whose presence at any one locality is dictated by seasonal conditions.

Perhaps the most surprising omissions from the Debus *et al.* (2006) Bulgunna list are Ground Cuckoo-shrike and White-browed Woodswallow. The former was observed during four out of five trips to Bulgunna and is well suited to its arid acacia and grassland habitat. Debus *et al.* (2006) recorded Masked Woodswallow on four of their seven trips to Bulgunna and it is a little surprising, given that Masked and White-browed Woodswallows often form mixed flocks, that White-browed Woodswallow was not seen at all. The two species were observed together during the current survey.

Debus *et al.* (2006) recorded nine species on Bulgunna Station during survey period November 1997- May 2005 that were not seen on that station during the current survey. Six were confirmed sightings and comprised the following: Little Black Cormorant; Brown Goshawk *Accipiter fasciatus*; Peregrine Falcon *Falco peregrinus*; Fork-tailed Swift *Apus pacificus*;

Sacred Kingfisher *Todiramphus sanctus* and Chestnut-breasted Whiteface *Aphelocephala pectoralis*. Three were unconfirmed observations: Peaceful Dove *Geopelia striata*; Grasswren sp. *Amytornis sp.* and Chestnut Quail-thrush *Cinclosoma castanotum*.

Little Black Cormorant is a rare visitor to Bulgunna's ephemeral wetlands and a vagrant such as this is not a surprising omission from the current survey list. In the arid N, Brown Goshawk is not generally found in low profile mulga woodland habitat, favouring taller forested associations such as river red gum *E. camaldulensis* lined watercourses. Mulga is more suited to the smaller, closely related and very similar Collared Sparrowhawk *Accipiter cirrhocephalus*. Peregrine Falcons favour mountain ranges and wetlands (waterbird prey) more so than Bulgunna's open plains of mulga and chenopod shrubland. Interestingly, Debus *et al.* (2006) recorded Peregrine Falcon on the same field trip as the introduced Rock Dove (racing pigeon) *Columba livia*, a favourite prey item of that species.

Fork-tailed Swift is an uncommon summer migrant from the Northern Hemisphere. As all but one of the current survey days were outside of the summer period, it was not expected to be seen. Sacred Kingfisher is rarely reported from arid mulga woodland, preferring eucalypt forest and woodland, watercourses, wetlands and coastal areas as its preferred habitat. The Debus *et al.* (2006) sighting was of a single bird in ornamental eucalypts growing in the Bulgunna homestead garden. The grasswren observation is quite interesting, unfortunately having been seen well enough to be sure it was an *Amytornis*, but not well enough to ascertain the species. It is suggested by Debus *et al.* (2006) that it was possibly a Striated Grasswren *Amytornis striatus*. This would seem most unlikely as Bulgunna does not support Spinifex *Trodia*, the preferred habitat of this species. The chenopod association present is more suited to Thick-billed Grasswren, *Amytornis modestus* or

SA's race of the Western Grasswren, *Amytornis textilis myall*.

Chestnut Quail-thrush has been reported from Bulgunnia previously (Higgins and Peter 2003, Debus *et al.* 2006). This species is known to inhabit mulga woodland and it would not surprise if this unconfirmed observation is validated in the future. The one remaining species, Chestnut-breasted Whiteface, is an extremely rare SA endemic inhabiting remote gibber plains and stony rises with low sparse chenopod vegetation (Pedler 1992, 1999, Blakers *et al.* 1984). The few observations of this species on Bulgunnia have been in the vicinity of Lena, Marie and Grace Bores on the E part of the station (Pedler, 1999; Debus *et al.* 2006). The current survey included a small amount of time in and around Grace Bore, but unfortunately this species was not seen.

An unconfirmed report of a single Peaceful Dove on Bulgunnia seems quite plausible. This species has been observed in similar habitat to the SE of Bulgunnia (pers. obs.). It appears nowadays that permanent bores and other artificial watering points have allowed a variety of water dependent seed eating species such as the Peaceful Dove to expand their range by penetrating more readily into arid outback areas.

NB: Independent observer GK added Grey Teal and Pink-eared Duck *Malacorhynchus membranaceus* to the Bulgunnia bird list of Debus *et al.* (2006) post survey.

### THREATENED TAXA

#### **Plains-wanderer** *Pedionomus torquatus*

This nationally threatened species is listed as an endangered species under the national Environment Protection and Biodiversity Conservation (EPBC) Act; the SA NP&W Act (1972) and The Action Plan for Australian Birds (Garnett and Crowley 2000). It has a long history of decline attributed to altered habitat and predation since European settlement – namely cultivation of native grasses, introduced

grasses, land clearance, pesticides, predation and overgrazing by introduced stock, feral rabbits, goats and artificially inflated populations of native herbivores such as kangaroos (Baker-Gabb *et al.* 1990; Playfair *et al.* 2000; Garnett and Crowley 2000). Plains-wanderers are difficult to locate and study due to their secretive nature, cryptic colouring and nocturnal behaviour. Its preferred habitat appears to be native grasslands with Mitchell Grass *Astrebla spp.* and chenopod shrubland (Playfair *et al.* 1997).

This species was tentatively identified during the current survey when an upright quail-like bird was flushed from the main road, East Bundera Paddock, S Mulyungarie, 15 August 2001. It was seen briefly in car head lights and although not 100% positively identified it was certainly thought to be this species. This locality is in close proximity to previous sightings of this species on E Boolcoomatta and Wompinnie Stations. Earlier spotlight searches on Mulyungarie and several other NOP stations to the S (Boolcoomatta, Bimbowrie, Plumbago) failed to locate this species despite Bundera Dam and East Station paddocks on Boolcoomatta promoted as likely locations to find this bird (P. Absolom pers. comm.). In personal communication with Kangaroo Field Processors (KFP - formerly kangaroo shooters) and station owners throughout the current survey period, the following important observations were gleaned about this rare and seldom seen species on the NOP during the period 1992 - 2002.

A female was spotlighted and captured by KFP Ray "Tuffy" Martin whilst shooting on Kalability Station, 8 October 1989. The bird was later confiscated by NPWSA personell and returned to the wild. A pair was spotlighted by KFP Mick Hanrahan on Wompinnie Station, 10 March 2001 and a female flew up from open grassland into Mick Hanrahan's spotlight beam, East Folly Paddock, Wompinnie, 22 November 2001. After it landed, he drove towards it and eventually viewed the bird from as close as three metres. KFP Peter Absolom has taken a particular

interest in Plains-wanderers and consequently contributed most of the observations of this species. He estimates he has seen Plains-wanderer on approximately thirty different occasions whilst spotlighting on Strathearn, Boolcoomatta, Kalkaroo (McLennan's Paddock), Yarramba, Wompinnie and Mulyungarie Stations from 1992-2000. Unfortunately details of some of these observations were not available. However, those that were are included here. A distraction display by a male alongside a nest with eggs, in Mitchell Grass *Astrebla sp.* habitat, Bundera Paddock, Boolcoomatta, during 1996; two spotlighted in North Eagle Paddock, Yarramba, 1996; a male performing a distraction display at a nest with three eggs, Wompinnie Station, 1996; a pair in Mitchell grass, Bundera Dam Paddock, Boolcoomatta Station, 20 October 2000; a female photographed in Mitchell Grass, Bundera Dam Paddock, Boolcoomatta, March 2001; a female photographed in Bundera Dam Paddock, Boolcoomatta, August 2001; two females photographed in East Station Paddock, Boolcoomatta, 8 July 2001.

Limited observations of Plains Wanderer on the NOP suggests that preferred habitat seems to be Mitchell grass and chenopod habitat, as occurs in Bundera Dam and East Station Paddocks on Boolcoomatta Station and McLennan's Paddock on Kalkaroo (P. Absalom, pers. comm.).

There is a definite need for further research into this species. A good starting point would be to question Peter Absalom further about his observations of this species on the NOP. It is encouraging that, in more recent years, both Bimbowrie and Boolcoomatta Stations have been set aside as reserves under the management of the SA Department for Environment and Natural Resources and Australian Wildlife Conservancy (AWC) respectively.

### **Grey Falcon** *Falco hypoleucos*

This species is widespread and sparsely distributed throughout the arid and semi-arid

areas of Australia. It is scheduled Rare under the NPWSA Act (1972) and Near Threatened in The Action Plan for Australian Birds (Garnett and Crowley 2000).

Debus *et al.* (2006) recorded a pair of Grey Falcons at a water tank on N Mulyungarie during May 2005. The current survey produced one sighting, an adult male hunting over a flooded lagoon and surrounding eucalypt woodland on Mulyungarie, 20 September 1994. Earlier reports of a breeding pair on Mulyungarie date back to 1980 onwards (Bill Lewis, pers. comm.). Personal observations of this species also occurred slightly further S on Bimbowrie Station during the period 1990-2000 (now Bimbowrie CP). These observations suggest the NOP to be of some significance to this rare species and certainly a locality requiring further conservation research and management. It is certainly a positive that Bimbowrie and Boolcoomatta are now managed as conservation reserves by DENR and AWC respectively.

### **CONCLUSION**

This paper compares the results from markedly different habitats. It shows how sensitive survey results in South Australia are to changing climatic and particularly rainfall conditions. As South Australia experiences long climate cycles, even surveys conducted over a ten-year period may fail to detect the potential avian species diversity for any location in the arid interior. The significant increase in the species list for Mulyungarie Station during the current survey relative to the earlier Debus (2006) surveys, clearly illustrates this point. Not only do good rains attract water birds but they also initiate a food chain that attracts additional species that may not have been recorded for decades.

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## APPENDIX

Selected annotated list of significant species recorded during the current survey of Mulyungarie and Bulgunnia Stations, July 1993 - August 2001.

(+) Denotes a species not recorded on either station by Debus *et al.* (2006).

(M) denotes a species observed on Mulyungarie during the current survey but was not seen there by Debus *et al.* (2006).

(B) denotes a species observed on Bulgunnia during the current survey but was not seen there by Debus *et al.* (2006).

Species without a symbol before their name were observed by both survey parties. They are included here as a matter of interest. They are generally rarer species of conservation significance (eg: Freckled Duck, Grey Falcon, Plains Wanderer).

### ANNOTATED LIST

**(+ M) Blue-billed Duck** *Oxyura australis*

A single breeding plumaged male was on flooded Cart Spring Swamp, Mulyungarie, 10 August 1996.

**Freckled Duck** *Stictonetta naevosa*

Fifty three were on flooded Mudros Swamp, Mulyungarie, 30 July 1994; 20 on Mudros Swamp, Mulyungarie, 23 September 1994; a pair on flooded Cart Spring Swamp, Mulyungarie, 13 August 1996.

**(+M) Australasian Shoveler** *Anas rhynchos*

Two breeding plumaged males and a female on Mudros Swamp, Mulyungarie, 30 July 1994; a breeding plumaged pair on Mudros Swamp, Mulyungarie, 23 September 1994; one breeding plumaged male on Cart Spring Swamp, 13 August 1996; two breeding plumaged males on flooded Chocolate Dam, Mulyungarie, 21 August 1997.

**Pink-eared Duck** *Malacorhynchus membranaceus*

c. 800 on Mudros Swamp, Mulyungarie, 30 July 1994; c. 400 on Mudros Swamp, Mulyungarie, 23 September 1994; c.100 on Cart Spring Swamp, Mulyungarie, 13 August 1996.

**Hardhead** *Aythya australis*

104 on Mudros Swamp, Mulyungarie, 30 July 1994; 54 on Mudros Swamp, Mulyungarie, 23 September 1994; 23 on Cart Spring Swamp, Mulyungarie, 13 August 1996.

**Hoary-headed Grebe** *Poliiocephalus poliocephalus*

A raft of c.100 on Mudros Swamp, Mulyungarie, 30 July 1994.

**(+M) Intermediate Egret** *Ardea intermedia*

One resting on the bank of Stirling Dam, Mulyungarie, 24 September 1994.

**(+M) Glossy Ibis** *Plegadis falcinellus*

One feeding in shallows of Mudros Swamp, Mulyungarie, 21 August 1997.

**(+B) Black-breasted Buzzard** *Hamirostra melanosternon*

One soaring over Bulgunnia Homestead, Bulgunnia, 15 July 1995.

**(M) Australian Hobby** *Falco longipennis*

An adult female hunting in black box woodland at Chocolate Dam, Mulyungarie, 30 July 1994; a pair nesting at Chocolate Dam, Mulyungarie, 16 August 1995; a nesting pair at Chocolate Dam, Mulyungarie, 13-14 August 1996; one hunting at dusk over Mudros Swamp, Mulyungarie, 21 August 1997.

**(+M) Black Falcon** *Falco subniger*

An adult female hunting low over waterfowl covered Mudros Swamp, Mulyungarie, 29 July 1994.

**(M) Peregrine Falcon** *Falco peregrinus*

An adult female over Chocolate Dam and surrounding black box woodland, 30 July 1994;

an adult female perched in black box tree and launching surprise attacks on Galahs coming to drink at dusk, Kalkaroo Dam/Sara Dam complex, S Mulyungarie, 15 August 2001.

**(+M) Australian Spotted Crake** *Porzana fluminea*

Two feeding in mud and shallows alongside dense canegrass *Eragrostis australasica* and cotton bush *Maireana aphylla* shrubland, Cart Spring Swamp, Mulyungarie, 13 August 1996.

**(M) Australian Bustard** *Ardeotis australis*

Five in chenopod shrubland, Bundera East Paddock, Mulyungarie, 10 August 1996; two in chenopod at Jacks Paddock, Mulyungarie, 11 September 2000.

**(+M) Latham's Snipe** *Gallinago hardwickii*

One probing its bill into mud and shallows at Buckland Dam (next to Watsons Bore), Mulyungarie, 15 August 1995.

**(+M) Marsh Sandpiper** *Tringa stagnatilis*

One feeding in muddy shallows of Mudros Swamp, Mulyungarie, 30 July 1994.

**(+M) Common Greenshank** *Tringa nebularia*

One feeding in shallows and mud of Cart Spring Swamp, Mulyungarie, 13 August 1996.

**(+M) Great Knot** *Calidris tenuirostris*

Three roosting on southern shore of Mudros Swamp, Mulyungarie, 23 September 1994.

**(+M) Sharp-tailed Sandpiper** *Calidris acuminata*

Twenty feeding in mud and shallows of Mudros Swamp, Mulyungarie, 30 July 1994.

**Banded Stilt** *Cladorhynchus leucocephalus*

Two roosting with 11 Red-necked Avocets *Recurvirostra novaehollandiae* in shallows of flooded Cart Spring Swamp, Mulyungarie, 13 August 1996.

**Red-necked Avocet** *Recurvirostra novaehollandiae*

Twelve feeding in shallows of Mudros Swamp, Mulyungarie, 30 July 1994; three feeding in

shallows of Mudros Swamp, Mulyungarie, 23 September 1994; 11 feeding in shallows of flooded Cart Spring Swamp, Mulyungarie, 13 August 1996; three feeding in shallows of a cane-grass swamp near Benagerie Outstation, Mulyungarie, 11 March 2000.

**(+M) Red-kneed Dotterel** *Erythrogonys cinctus*

One on muddy shore of Mudros Swamp, Mulyungarie, 30 July 1994; one at

Mudros Dam, Mulyungarie, 23 September 1994; eight scattered around perimeter of flooded Cart Spring Swamp, Mulyungarie, 13 August 1996.

**(+M) Gull-billed Tern** *Gelochelidon nilotica*

Two foraging over Mudros Swamp, Mulyungarie, 20 September 1993.

**(+M) Whiskered Tern** *Chilidionias hybridus*

Twelve foraging over Mudros Swamp, Mulyungarie, 20 September 1993; 100+ in pronounced breeding plumage, feeding over and roosting on Mudros Swamp, Mulyungarie, 23 September 1994.

**Major Mitchell's Cockatoo** *Cacatua leadbeateri*

Two at deserted Ooraminna outstation, Bulgunnia, 26 July 1996. Previous manager, Marcus Moore (pers. comm.) reported flocks of 20 - 30 occasionally visited Bulgunnia, mostly during summer months.

**Bourke's Parrot** *Neopsephotus bourkii*

Observed on all field trips to Bulgunnia: most prevalent on initial field trip when 100+ were present in grassy mulga woodland, 9-12 July 1993; several heard calling after dark as came to water at Lockhart Bore, Mulyungarie, 22 September 1994; six perched in mulga at Lockhart Bore, Mulyungarie, 15 August 2001; several feeding in ephemeral and chenopod shrubland, Puzzle and Dunns Paddocks, Mulyungarie, 15 August 2001.

**(+M) Blue-winged Parrot** *Neophema chrysostoma*

Two foraging in seeding grasses and chenopod

near Sullivan Dam, Benagerie, W Mulyungarie, 29 July 1994.

**(M) Spotted Nightjar** *Eurostopodus argus*

One in vehicle headlights near Lockhart Bore, Mulyungarie, 22 September 1994; one in vehicle headlights 3km E of Johns Outstation, Bulgunnia, 14 July 1995.

**(+M) Rufous Fieldwren** *Calamanthus campestris*

A pair nesting in chenopod shrubland on gibber plain S of Sullivans Dam, Mulyungarie, 22 September 1994; one calling from sparse chenopod on gibber plain, S of Sullivans Dam, Mulyungarie, 17 August 1995.

**(M) Redthroat** *Pyrholaemus brunneus*

One heard calling in chenopod shrubland E of Togo Dam, Mulyungarie, 16 August 1995; several (one carrying nesting material) in chenopod on gibber plain S of Sullivans Dam, Mulyungarie, 17 August 1995; a pair in old man saltbush at Stirling Dam, Mulyungarie, 15 August, 2001; a pair in hop bush, turpentine and chenopod association near Kalkaroo Waterhole, Mulyungarie, 15 August 2001.

**(+M) Black Honeyeater** *Sugomel niger*

Two males and one female in association with 100+ Pied Honeyeaters feeding on nectar of profuse flowering spotted emu-bush *Eremophila maculata*, c. five km W of Mulyungarie Homestead, Mulyungarie, 12-13 August 1996.

**(M) Pied Honeyeater** *Certhionyx variegatus*

Ten (five pairs) in grassy mulga woodland with flowering *Eremophila spp.*, N of J. E. Bore, Bulgunnia, 15 July 1995; 100+ feeding on nectar of profuse flowering *Eremophila maculata* c. five km W of Mulyungarie Homestead, Mulyungarie, 12-13 August 1996 (courtship flights and copulation gave every indication that a significant nesting event was about to occur); a single adult male calling from top of dead *Callitris* tree on barren sand plain with hop bush, turpentine and chenopod, S of Togo Dam, Mulyungarie, 12 August 1996; a pair calling,

flying about and perching on top of flooded cane-grass and cotton bushes at Cart Spring Swamp, Mulyungarie, 13 August 1996; six pairs actively calling and feeding on flowering *E. oppositifolia*, NW of Kalkaroo Main Dam, Mulyungarie, 13 August 1996.

**White-breasted Woodswallow** *Artamus leucorhynchus*

A pair perched atop a black box tree W of Togo Dam, Mulyungarie, 14 August 1996; 12, a mixture of adults and immatures clustered together in black box trees near Sullivans Dam, Mulyungarie, 15 January 1997.

**(+M) Pied Butcherbird** *Cracticus torquatus*

One observed after first hearing its beautiful melodic song during dawn chorus in black box woodland at Chocolate Dam, Mulyungarie, 12 August 1996.

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