



BIRDS OF PARA WIRRA NATIONAL PARK

By GORDON CLARKE

INTRODUCTION

This paper summarises the history, geology, physiography, climate and plant associations of Para Wirra National Park, and records the results of a survey of the avifauna undertaken during the 18 month period October 6, 1963 to March 31, 1965, with additional information from several exploratory visits prior to starting the survey, and visits by the writer and others after its completion.

Ninety-nine species of birds were recorded during the survey, with four additional species outside the study period, or by other observers.

The Para Wirra Wild Life Reserve was not included in the study area for various reasons, the two most important being: it was considered that the present area was quite large enough to be handled by one person effectively, any extra area being against the interests of accurate recording; and the habitats are primarily of the same character in both areas.

PREVIOUS WORK

Tom Paine Bellchambers who arrived in South Australia from England on the vessel 'Lightning' in July, 1876, provides the main reference to the species previously recorded in the study area in his *Nature-Lover's Notebook* published posthumously in 1931. His work covers the Humbug Scrub area generally. Other short notes were published by him in the *South Australian Ornithologist*, Volumes 2 to 4.

A great portion of Bellchambers' later years was spent at Humbug Scrub where he founded the Wild Life Sanctuary, and in his *Nature Lover's Notebook* notes on 90 species are given. Those not recorded during the present study are given at the end of this paper. Of those noted recently comments

are made in the species list where there appears to have been a change in status, distribution, frequency, etc.

Daley (1961) records 37 species from the Park, all of which have been seen during the present study.

HISTORICAL

On July 21, 1960, Sir Thomas Playford, the South Australian Premier, announced that the Government had decided to buy 1,200 acres of land near Humbug Scrub for recreational purposes; and, on April 29, 1961, it was further announced that this area would be known as the Para Wirra National Park. The aborigines knew it as the "River Forest." In 1962, the Commissioners of National Parks and Wild Life Reserves were vested with 1,615 acres of land, adjoining the South Para River, Mt. Lofty Ranges (Section 423, Hundred of Para Wirra), and situated 19 miles NNE of Adelaide.

In September, 1963, a further 702 acres were purchased adjacent to the Park. This area, Sect. 271-4, to the south of the original Park, and separated from it by the Bellchambers Wild Life Sanctuary and the road to the South Para Reservoir and Williamstown, has now been designated as the Para Wirra Wild Life Reserve. Recent additions to the National Park are 248 acres in the south-eastern corner (Sect. 282-3), and 45 acres in the south-western corner bringing the total acreage to 1908, or 2610 including the Wild Life Reserve.

[In a letter dated December 14, 1966, Mr. D. W. Chinner, Administrative Officer, National Parks and Wild Life Reserves, stated that the present total area is 2,616 acres, and upon the proclamation of the new National Parks Act in early 1967 the whole area, including the Wild Life Reserve, will be known as the Para Wirra National Park.—Ed.]

The South Para River was discovered by a party under B. T. Finnis in 1837, and later Johann Menge traced it to its source. The river forms the northern boundary of the Park.

Gold was discovered in quantity in 1871, but some three years previously a find was

made in the Barossa field $1\frac{1}{2}$ to 2 miles to the north at Spike's Gully. A number of mines was worked in the area. Copper was also extracted.

The place names used in this paper are those originally in use as far as can be determined, e.g. Wild Dog Creek, Hamlin Gully, etc. Others have been ascertained from a B.P. Australia Ltd. publication issued in conjunction with the Commissioners of National Parks and Wild Life Reserves, and are Tipperary Lodge and The Knob. The remainder have been coined by the writer (after consultation with the Commissioners) and are descriptive of the topography of the Park.

References to this section are Brown (1885), Cockburn (1908), Lauke (1960), and Williams (1919).

GEOLOGY AND PHYSIOGRAPHY

For a description of the geological features of the area Hossfeld (1964) has been freely drawn upon, it being re-arranged slightly to suit present circumstances.

The rocks underlying the whole of the Park belong to old Precambrian formations, the oldest in that part of South Australia which lies to the east of Yorke Peninsula. These very ancient rocks are overlain to the east and to the west by former sediments which, although much younger, are considered to be between 500 and 600 million years old and form parts of the Adelaide Super-Group.

The South Para River forms the present northern boundary. In its vicinity the tributary streams are vigorous and youthful and together with the river have produced a picturesque, rugged topography. To the west the Park is bounded by a quartzite ridge which is very resistant to erosion. Where the South Para River has cut through the ridge, it has formed a rugged gorge and a spectacular feature known as the Devil's Nose, seen best from the northern bank. The quartzite which forms the ridge is considered to be the oldest formation of these younger, but still very ancient rocks.

The central and southern parts of the Park have, in the main, a gentle undulating topography and consist of that part of the Para Fault Block known as the Humbug Scrub. This area is part of a former very extensive peneplain which during its long period of development experienced very deep decom-

position of the rocks and prolonged leaching of the soils produced from them. As a result, the soils of the Park are impoverished and this is reflected by the types of native vegetation, which shows great variety. Over most of the Park the nearly level surface of the former peneplain still exists.

In altitude the Park ranges from 450 feet above sea level immediately below the Devil's Nose, to just over 1,075 feet in the south-east. In general the land rises from the north-west to the south-east, with a high outlier at the south end of the west ridge. The great majority of the Park, 1,404 acres or 73.6%, lies above the 800 feet contour.

In its winding westward course of approximately 3 miles through the Park the South Para River falls about 225 feet, from just over 675 ft. to 450 ft.

CLIMATE

Southern South Australia enjoys a temperate climate in which the winters are generally cool to cold and wet, and the summers fine, warm to hot and dry. Considerable variation occurs from year to year. Specht, Brownell and Hewitt (1961) have shown that the Park falls within the 20-25 inch isohyets, the 25" isohyet lying approximately along the Park's southern boundary. In view of the widespread distribution of *Eucalyptus gonio-calyx* and the actual rainfall figures for 1963 and 1964 (see Table 1.) this estimate is thought to be a little low.

	1963	1964	Long-term average
Adelaide	2443	2189	2092
Williamstown	2905	2794	2613
Para Wirra N.P.	3262	2768	—

Table 1: Comparative rainfall data (in points).

Meteorological data for Adelaide, Williamstown and Para Wirra National Park were studied, but as the latter two stations were equipped with rain gauges only, other data from Adelaide had to be used. As most of the Park lies above the 800 ft. contour line, the temperatures are likely to be in the region of 4-5° cooler than those recorded at Adelaide, temperature decreasing at a rate of approximately one degree for every 200 feet of altitude.

Graphs of monthly rainfall, mean, maximum and minimum temperatures, relative humidity and hours of sunshine were com-

piled in an attempt to relate certain bird movements with weather conditions. Although some correlation was indicated, the period of study was far too short for definite conclusions to be drawn, so reproducing these figures in the current paper was not considered warranted.

Weather during survey period:—

1963 had a cold, very wet winter, April to September all having more than 200 points, with the bulk falling between May and August. Spring was warm and dry, October in particular being hot and generally dry.

1964 had a cooler than average summer with below average rainfall; autumn had normal temperatures, but rainfall was still below normal; winter was warm with only July having very heavy rainfall whilst spring provided almost winter-like conditions with low temperatures and heavy, above normal rainfall.

HABITAT

Specht and Cleland (1961) have set out the plant formations of the State, and it is upon their paper that the present habitats have been based.

The vegetation of the Park falls under two of the major plant formations, namely the dry sclerophyll forest formation, and the savannah woodland formation. Five habitats have been recognised within these formations, and these are dealt with individually below. For ease of classification they have been loosely grouped about their parent associations, and are as follows:—

- A. Aquatic.
- B. Dry Sclerophyll Forest Formation.
- C. Savannah Woodland Formation.
- D. Riverain (Savannah Woodland Formation base).
- E. Cleared Areas (Consisting of originally either B or C, or both).

Much clearing and grazing had been done before the area became a National Park and relatively few areas remain in their near pristine state. Those that remain comparatively untouched are concentrated mainly in the more rugged, inaccessible areas, such as along the West Creek, and in Saplin Gully, being predominately of the dry sclerophyll forest formation.

Aquatic

Excluding the South Para River this habitat is entirely man-made in the form of seven earth dams built across creekbeds. The largest and by far the most important, is that situated on Wild Dog Creek, and has an estimated area of $2\frac{1}{2}$ acres when full. The water level falls during summer but is not likely ever to dry out. The remainder are comparatively small constructions, being only a few yards in diameter, and most if not all normally dry out towards the end of the summer. Wild Dog Creek dam therefore provides a most important all-the-year-round watering place, such as is matched only by a few pools along the South Para River. Some small seeps along Wild Dog, Saplin and Running Creeks, are secondary sources of supply.

The South Para River contains a number of fine pools after the rains, and these gradually contract as the dry season progresses, but the volume of water now passing must be considerably reduced since the erection of the South Para Reservoir. In a dry year, and most normal years also, the only water reaching the lower river would be that which falls below the reservoir catchment area.

Dry Sclerophyll Forest Formation

The dry sclerophyll forest formation is described by Specht and Cleland (1961) as being 'a community of plants dominated by trees of forest form, i.e. with flat crowns and the bole usually greater in height than the depth of the crown, the crowns mainly continuous. A well-developed layer of shrubs is present but grasses and herbs are rare or absent.'

This formation predominates within the Park, occurring over large areas of the higher ground on shallow soils, usually occupying the steeper slopes. Some mixture with the savannah woodland formation occurs, but often the division is sharp and clear-cut.

The species associations forming this formation are as follows: (1) *Eucalyptus gonio-calyx* (= *E. elaeophora*) (Long-leafed Box) dominated associations, often with *E. fasciculosa* (Pink Gum). (2) *Eucalyptus fasciculosa* dominated associations, usually with *E. gonio-calyx*.

Note:— (1) graduates through to (2).

(3) Also included in this formation for the

purposes of this paper are the few small, almost pure stands of *Eucalyptus odorata*, var. *angustifolia* (Peppermint) see Specht, Brownell, and Hewitt (1961).

Small areas of sclerophyllous mallee heath occur in that *Casuarina muelleriana* forms part of the understory to this formation in the higher, wetter, areas. The Yacca, *Xanthorrhoea semiplana*; is abundant throughout the formation, and *Eucalyptus goniocalyx* is probably the dominant species.

Savannah Woodland Formation

Essentially, Specht and Cleland's (1961) description of the savannah woodland formation is as follows, 'Savannah woodland is dominated by trees of woodland form, i.e. with rounded crowns and with boles in which the height is usually less than the depth of the crown. The crowns are not continuous, but tree distribution is mid-dense to open. Small trees and shrubs are poorly developed or absent, but a herbaceous stratum in which grasses are prominent is well established.'

This formation occurs mainly in the north of the Park at lower elevations but where conditions are suitable it will be found at all altitudes, extending into the dry sclerophyll forest along the creeks; and also occupying the deeper soils with a high watertable on the fairly level uplands of the south-east.

The species associations in this formation are as follows:—

- (1) *Eucalyptus camaldulensis* (Red Gum) association.
- (2) *Eucalyptus leucoxylon* (S.A. Blue Gum) association.
- (3) *Casuarina stricta* (She-Oak) association.
- (4) *Callitris preissii* (Native Pine) association.

Note:—All intergrade to some extent, whilst (3) and (4) are only of minor importance.

As stated earlier much of this formation has been cleared, or partly cleared, particularly in the north central region. The Yacca *Xanthorrhoea quadrangulata* occurs along the northern end of the West Ridge, with a few specimens being found elsewhere mainly about creeks. *Eucalyptus leucoxylon* is the dominant species of the formation.

Riverain Formation

This formation is basically that described under the savannah woodland type, and is found only along the South Para River. As many species of plants occur in this association and nowhere-else, it has been found necessary to classify it as a distinct habitat.

All the associations named in the savannah woodland formation occur, together with such species as the honey-myrtle *Melaleuca neglecta* and the bottlebrush *Callistemon salignus*, which form dense thickets. Large concentrations of the hop-bush *Dodonaea viscosa* occur on the south-north facing bank of the river, but is also found elsewhere in moist areas. The introduced Blackberry, *Rubus fruticosus*; Dog Rose, *Rosa canina*; and Gorse, *Ulex europaeus* occur rather sporadically along the river bed, but only the Dog Rose has been found elsewhere.

Cleared Areas

Large areas in the south-east and north central regions have been cleared, or largely cleared, what trees being left are mainly in the creek beds and therefore difficult of access. Much of this area is now covered in dense Yacca, *Xanthorrhoea semiplana*; and it is possible that originally it may have been only lightly timbered, being more of a sclerophyllous mallee heath type formation, there being remnants of this association nearby. Other areas have been cut through, and much coppice is evident.

A great deal of regeneration is taking place, the most noticeable species being Golden Wattle (*Acacia pycnantha*), which has taken over some quite considerable areas of previously cleared land. Many sapling eucalypts, casuarinas and hopbush, *Dodonaea* sp., have also been noted and this is surely attributable to the recent closure of the land to domestic stock.

METHOD OF STUDY

In an area such as Para Wirra it is impossible to cover the whole at one visit, and therefore it was found necessary to cover smaller different areas in turn. No strict rotation was kept to, but areas visited were varied as much as possible. One such typical walk would cover the Wild Dog Creek Dam area, the whole length of the West Ridge, dropping down into the South Para River, and returning to the Dam by walking up Wild Dog Creek. This usually occupied

four to six hours. In the later stages of the study all birds seen were noted, together with habitat details and time, whereas before only the species was noted, unless particular notice was taken of the habitat for any reason.

The Dam area was the most intensely watched as this was visited on all daylight visits except one, it usually being the starting point of the walk.

Visits were made once a week on average, each lasting approximately five hours. 62% of the visits were made between dawn and midday, 25% between midday and dusk, 7% at night, and the remaining 6% being full day affairs covering the majority of the daylight hours.

The early morning was found to be the most productive period of the day for bird observing, followed by a lull from mid-morning to mid-afternoon when activity again increased towards dusk. The weather was found to have a profound effect upon the numbers of birds and numbers of species recorded, the extremes in both directions slowing down activity and causing the birds to sit tight.

The longest period elapsing between any two visits during the study period was seventeen days over January-February, 1965.

The South Australian Ornithological Association conducted three visits to the Park during 1964-65, the object of which was to record all species seen, their habitat, and breeding where applicable. The results of these visits have been incorporated within this paper.

OBSERVATIONS AND DISCUSSION

Status.

About half of the species, at least, are resident in the area. Of eight queried as resident some may prove to be sporadic. I have classified the species as follows:

Resident	49	+?8
Summer visitors	21	+?1
Winter visitors	3	
Transient	2	
Vagrant	12	
Sporadic	2	
Undetermined	1	

Five of the resident species are also thought to be transients, the Welcome Swallow, Tree Martin, House Sparrow and Raven passing through in autumn and the Golden Whistler

in spring and autumn. Also the numbers of Yellow-faced Honey-eaters have been noted to increase in winter indicating an influx.

Frequency.

Of the 99 species recorded during the survey 6 were considered to be abundant, 33 common, 29 frequent, 18 occasional and 13 rare in their most favoured habitat. These terms are explained in the introduction to the species list. Most species were recorded in more than one habitat, and the frequency of occurrence in the various habitats is shown in Table 2.

	Indefinite	Aquatic	Dry Sclerophyll Forest	Savannah Woodland	Riverain	Cleared
Abundant			1	5		2
Common		2	15	16	5	3
Frequent		7	24	27	17	9
Occasional		6	32	27	37	38
Rare	6	2	3	1		1
Total	6	17	75	76	59	53

Table 2. Frequency of occurrence of bird species in the various habitats.

It will be seen that the number of species recorded in the dry sclerophyll forest and savannah woodland were about the same, although the latter had 8 more in the frequent to abundant category. Savannah woodland is particularly conducive to supporting a large avifauna because of the large number of ecological niches provided, especially if there are cleared areas in it as there are at Para Wirra.

In the dry sclerophyll forest large areas of *Eucalyptus goniocalyx/Xanthorrhoea semiplana* dominated habitat occurs, the number of species inhabiting which being limited, and it is only in the more varied *Euc. goniocalyx/fasciculosa* areas where a greater variety of ground flora persists that a more varied bird structure is found. This habitat attracts a large proportion (42%) of the species only recorded as occasional or rare, and from this one may deduce that this area, which is on the edge of the dry sclerophyll forest distribution pattern, is constantly drawing species to it that are not quite environmentally suited.

Limited variety of habitat restricts the number of species in the frequent to abun-

dant class in the cleared areas, whilst the small total area of riverain and aquatic habitats no doubt has a similar effect.

Breeding.

As no serious attempt was made to obtain all the breeding data possible, analysis of the breeding species was not considered feasible. All information obtained has been given in the species list. Late breeding took place in the White-plumed Honeyeater, the birds building at the end of February. This occurred after two months in which no rain fell, but in which the Pink Gum flowered profusely. See also Yellow-winged Honeyeater.

Roosts.

The huge bottlebrush (*Callistemon macro-punctatus*) on the north plains is known to be a small roost, although its full use has not been studied. The following birds were found using it on September 16, 1964:— Whiteface 3, Blue Wren 3, Willie Wagtail 2, Yellow-winged Honeyeater 1, House Sparrow 15 and Starling 1.

Residents' Movements.

Eight of the species classed as residents were not recorded during one, two or three of the winter months. They were the Black Duck, Brown Goshawk, Peaceful Dove, Welcome Swallow, Tree Martin, Shrike-Tit, Black-capped Sittella and Silvereye. In the case of the Black Duck, Welcome Swallow and Tree Martin it is thought that these species make 'hard weather' movements out of the area, all of them being rather conspicuous species. The Black Duck, however, is partly domesticated—in Para Wirra they eagerly approach one for food—and may only move to the Wild Life Sanctuary adjacent to the Park where food is more readily available.

The Goshawk, Peaceful Dove and Silvereye are not conspicuous species and could very well have been missed, particularly when not in song (Peaceful Dove), or when bad weather causes the birds to be more secretive (Goshawk, Silvereye) these last two living as they do in the thicker vegetation. The Shrike-Tit and Sittella are only few in numbers at any time and could easily have been missed.

Honeyeater Movements.

Various honeyeater movements were noted; the reasons for these are not known with

certainty, though they would appear to be connected with food and roosting habits. They are described in the species list.

Irregular Bird Movements.

In comparing the records for 1963 and 1964 some striking differences were noted amongst the nomadic and/or migratory species occurring during the spring. Below are listed those species listed in only one of these years. With the exception of the Red-capped Robin all the 1963 species were commented upon regarding their unusual abundance by Jenkin, Pomeroy and Richards (1964).

1963.

Budgerygah
Red-backed Kingfisher
White-winged Triller
Rufous Songlark
Red-capped Robin
Black Honeyeater
Masked Wood-Swallow
White-browed Wood-Swallow

1964

Brown Thornbill
Little Wattle-Bird
Greenfinch.
Grey Butcher-Bird.

The two years differed markedly in weather conditions (see under Climate) and it is thought that this may be the prime factor affecting the appearance, or non-appearance of these species.

Five of the 1963 species were recorded for the first time on October 6 (previous visit September 18), the other three on October 11. (October, 1963, was hot and dry after a cold wet winter). Of these species the Triller and Songlark were thought to have bred, although this was not proved, but the White-browed Wood-Swallow certainly did so. The Budgerygah, Red-backed Kingfisher and Red-capped Robin were seen on one occasion only, with the Black Honeyeater seen on two dates. Trillers were not seen after November, the Rufous Songlark disappearing after December 1, the Masked Wood-Swallow was not seen after October 20, and the White-browed Wood-Swallow remained until at least November 13.

The 1964 species are discussed in the species list.

The Para Wirra National Park, lying as it were halfway between the upper reaches of

the Mt. Lofty Ranges and the low hot plains to the east and west, may provide the environment to which the 'wet' species move down whilst the 'dry' species reach up.

FURTHER WORK

It was not possible for the present survey to be continued after March, 1965, yet much further work requires to be done on the Para Wirra avifauna as many interesting and unanswered problems still remain to be solved, and this paper pretends to have no more than scratched the surface.

The results of the habitat study can at best be regarded as exploratory, as this facet was only undertaken seriously in the last six months or so. This is not a satisfactory length of time by any means, particularly when it is realised that some species such as the lorikeets and honeyeaters vary their habitat according to food supply, and so may be found in the dry sclerophyll forest when the Long-leafed Box is flowering and later on in the savannah woodland when the Blue Gum flowers.

Much more work needs to be done in correlating bird movements with weather conditions. This should be done over many years and include weather conditions throughout the range of the species concerned.

There are problems such as the direction and frequency of movements, both irregular and normal, which can often be solved by banding; breeding studies, and the ecology of the various closely related species such as in the honeyeater, warbler and fly-catcher families. Each year perceptibly changes the face of the countryside, particularly so now in Para Wirra where the exclusion of domestic animals is allowing most of the Park to regain something like its former vegetational mantle.

It is felt that a study along similar lines to that described here, with refinements, over a period of seven to ten years would provide a fund of knowledge of the local avifauna, Para Wirra being an ideal site for such a study.

THE BIRDS OF THE PARA WIRRA NATIONAL PARK

Below are listed the 99 species recorded during the survey period, plus three others whose specific identification was not determined, and four more recorded outside the

survey period or by other observers, (viz. Whistling Kite, Fairy Martin, Purple-backed Wren and Noisy Miner). All records are sight records, no collecting having been undertaken.

The information has been condensed as much as possible and is arranged as follows, the classification used being based on Elgood & Sibley (1964).

The number preceding a species and the nomenclature are those of Condon (1962), but with modification of some vernacular names to retain names in common usage (e.g. Welcome Swallow).

Following 'Habitat Preference' is an abbreviation of those habitats in which a species has been recorded followed by a number referring to the habitat preference as follows:

1. recorded in this habitat
 2. recorded occasionally in this habitat
 3. frequently recorded in this habitat
 4. most frequently recorded in this habitat
 5. exclusive to this habitat
- Br. breeding recorded in this habitat.

Habitats:

- Aq Aquatic.
 DSF Dry Sclerophyll Forest.
 SW Savannah Woodland.
 R Riverain.
 C Cleared.

Most species were categorised as regards habitat preference fairly easily but such wide-ranging species as the Wedge-tailed Eagle have proved difficult. Unfortunately the habitats of the Brush Bronzewing and Budgerygah were not recorded at the time of sighting.

Status:

This includes frequency and breeding.

The following categories have been used:

- Resident:* Species normally present in the study area throughout the year.
Summer visitors: Species occurring during the summer months when, in most cases, they breed.
Winter visitors: Species which winter in the Park only.
Transients: Species occurring on passage to and from summer-winter quarters; and also those species which make small local movements through the area.

Vagrants: Species outside their normal range.

Sporadic: Species which are liable to sudden movements, usually in winter, as a result mainly of severe weather.

Note: The status of some species has proved rather difficult to determine, notably the wide-ranging birds of prey and the nomadic parrots and honeyeaters.

Frequency:

The following categories have been used.

Abundant: Species that can be met with without search.

Common: Can be sought with fair certainty in the appropriate habitat.

Frequent: Regularly met with in the appropriate habitat.

Occasional: Met with irregularly, and possibly not recently.

Rare: Met with on only one or two occasions. This does not necessarily mean that the species is rare in the surrounding countryside in different habitat.

Breeding:

Br. indicates that a species has been found breeding in the area. The months in which breeding has been noted are included. ?Br. indicates that a species almost certainly bred, good reasons being held for assuming this.

Bellchambers' records:

(B) indicates that this species was noted by Bellchambers (1931), (B-Br.) that he recorded it breeding. There are some surprising omissions in Bellchambers' notes showing that possibly some species were not specifically identified, or lumped together for convenience, as for instance the thornbills.

Some additional material collected after the first draft of this paper had been completed has been incorporated in the following list.

SPECIES RECORDED

8. LITTLE GREBE (*Podiceps novae-hollandiae*).

Habitat preference: Aq5 Br.

Status: Frequent; summer visitor; Br. (Oct.-Mar.); (B-Br.)

See 'Breeding of the Little Grebe,' *South Australian Ornithologist*, 24, 1966, pp. 109-110.

9. HOARY-HEADED GREBE (*P. poliocephalus*).

Status: Rare; sporadic; (aquatic); (B).

38. LITTLE BLACK CORMORANT (*Phalacrocorax sulcirostris*).

Habitat pref.: Aq4, SW1.

Status: Occasional; vagrant.

41. LITTLE PIED CORMORANT (*P. melanoleucos*).

Habitat pref.: Aq4, SW2.

Status: Frequent; summer visitor.

47. WHITE-FACED HERON (*Ardea novaehollandiae*).

Habitat pref.: Aq4, SF1, SW3 Br., R1, C1.

Status: Frequent; summer visitor; Br. (Sept.); (B-Br.).

62. GREY TEAL (*Anas gibberifrons*).

Status: Rare; sporadic; (aquatic); (B).

64. BLACK DUCK (*A. superciliosa*).

Habitat pref.: Aq4, R1 Br.

Status: Frequent; resident; Br. (Oct.); (B-Br.). Recorded all months except June. DUCKS (*Anas* sp.)

Six ducks, thought to be Chestnut Teal (*A. castanea*) seen on Wild Dog Creek Dam during January, 1965.

70. MANED GOOSE (*Chenonetta jubata*).

Habitat pref.: Aq5 Br.

Status: Occasional; summer visitor; Br. (Nov.); (B).

79. WHISTLING KITE (*Haliastur sphenurus*).

Not recorded during survey by author but reported by B. Blaylock during February, 1965.

81. BROWN GOSHAWK (*Accipiter fasciatus*).

Habitat pref.: SF1, SW4, R3, C1.

Status: Frequent; resident; Br.; (B). Has been noted feeding the young on half-grown rabbits. Although thought to be resident has not definitely been recorded during the months April to June.

83. LITTLE EAGLE (*Hieraaetus morphnoides*).

Habitat pref.: SF4, SW2, R1, C1.

Status: Frequent; ?resident; ?Br.; (B-Br.). Was noted taking a rabbit.

84. WEDGE-TAILED EAGLE (*Aquila audax*).
Habitat pref.: SF3, SW3, R2, C2.
Status: Frequent; ?resident; ?Br.; (B-Br.).
91. BROWN FALCON (*Falco berigora*).
Habitat pref.: SF4, SW2, R1, C3.
Status: Frequent; summer visitor; ?Br.
93. PEREGRINE FALCON (*F. peregrinus*).
Habitat pref.: SW2, R1.
Status: Occasional.
94. NANKEEN KESTREL (*F. cenchroides*).
Status: Rare; vagrant; (cleared). One October and one November record.
QUAIL sp.
Quail, thought to be Painted Quail (*Turnix varia*), were noted on a number of occasions in both dry sclerophyll forest and savannah woodland during December to May.
117. SPUR-WINGED PLOVER (*Lobibyx novaehollandiae*).
Habitat pref.: Aq4, C3.
Status: Frequent; summer visitor; (B). Noted once as late as April. Said by Bellchambers to be an occasional visitor.
127. BLACK-FRONTED DOTTEREL (*Charadrius melanops*).
Habitat pref.: Aq4, SW2, C1 Br.
Status: Frequent; summer visitor; Br. (Nov.-Dec.); (B-Br.).
168. PEACEFUL DOVE (*Geopelia striata*).
Habitat pref.: SF2, SW4, R3, C1.
Status: Common; resident; (B-Br.). Not recorded during July or August.
170. COMMON BRONZEWING (*Phaps chalcoptera*).
Habitat pref.: SF3, SW4, Br., R1, C2.
Status: Common; resident; Br. (Nov.-Feb.); (B-Br.).
171. BRUSH BRONZEWING (*P. elegans*).
Status: Rare; vagrant. Recorded in April. Also noted in the adjacent Kersbrook Forest during early summer 1964.
175. ROCK PIGEON (*Columba livia*).
Status: Rare; vagrant (dry sclerophyll forest).
178. MUSK LORIKEET (*Glossopsitta concinna*).
Habitat pref.: SF1, SW4.
Status: Frequent; ?resident.
179. PURPLE-CROWNED LORIKEET (*G. porphyrocephala*).
Habitat pref.: SF3, SW4, R2 Br., C1.
Status: Common; ?resident; Br. (Dec.).
Numbers and habitat fluctuate according to the blossoming of the eucalypts.
185. WHITE COCKATOO (*Cacatua galerita*).
Status: Rare; vagrant; (B). Noted feeding on the flower spikes of the Yacca (*Xanthorrhoea semiplana*) in December. Considered as an unusual visitor by Bellchambers (September 1916).
189. GALAH (*C. roseicapilla*).
Habitat pref.: SF1, SW4 Br., R3, C2.
Status: Common, resident, ?Br. (Sept.); (B).
Few pairs noted in the Park in comparison with the numbers seen nearby in savannah woodland south to One Tree Hill. Bellchambers noted only odd pairs.
190. COCKATIEL (*Nymphicus hollandicus*).
Habitat pref.: SF3, SW4.
Status: Frequent; summer visitor; (B). Bellchambers considered this to be a dry season visitor; however it did appear in the wet spring of 1964.
194. ADELAIDE ROSELLA (*Platycercus elegans*).
Habitat pref.: SF3, SW4 Br., R2, C1.
Status: Abundant; resident; ?Br. (Sept.-Nov.); (B-Br.).
198. RED-RUMPED PARROT (*Psephotus haematonotus*).
Habitat pref.: SF1, SW4 Br., R2, C3.
Status: Common; resident; ?Br. (Oct.-Nov.); (B). Small movements of this species were noted on a number of occasions, presumably to roosts or feeding grounds.
- PARROTS (*Neophema* sp.).
Four located in savannah woodland on banks of the South Para River on December 26, 1964, feeding on the ground in grass.
208. BUDGERYGAH (*Melopsittacus undulatus*).
Status: Rare; vagrant; (B). Regarded by Bellchambers as a dry season visitor.

212. FANTAILED CUCKOO (*Cacomantis pyrrhophanus*).
Habitat pref.: R5.
Status: Occasional; autumn transient; (B).
Noted only in March and April. Bellchambers records it as rare.
214. HORSFIELD BRONZE-CUCKOO (*Chrysococcyx basalis*).
Habitat pref.: SF3, SW4, R3, C1.
Status: Common; summer visitor; Br. (Dec.-Jan.).
219. BOOBOOK OWL (*Ninox novaeseelandiae*).
Habitat pref.: SF4, SW2.
Status: Occasional; resident; (B). Noted by Bellchambers as becoming rare.
222. TAWNY FROGMOUTH (*Podargus strigoides*).
Habitat pref.: SF2, SW4 Br.
Status: Occasional; ?resident; Br. (Oct.); (B).
223. OWLET NIGHTJAR (*Aegotheles cristatus*).
Habitat pref.: SF4, SW1, R2.
Status: Occasional; resident.
224. SPOTTED NIGHTJAR (*Eurostopodus guttatus*).
Status: Rare; vagrant. One March record.
228. KOOKABURRA (*Dacelo novaeguinae*).
Habitat pref.: Aq1, SF1 Br., SW4, R3, C2.
Status: Common; resident; Br. (Oct.-Nov.); (B-Br.).
229. RED-BACKED KINGFISHER (*Halcyon pyrrhopygia*).
Status: Rare; vagrant; (dry sclerophyll forest).
230. SACRED KINGFISHER (*H. sancta*).
Habitat pref.: SW4 Br., R2.
Status: Frequent; summer visitor; ?Br., (B-Br.).
231. RAINBOW BIRD (*Merops ornatus*).
Habitat pref.: SF4, SW3, R2, C1.
Status: Frequent, autumn transient, (B). Has been reported to me once on spring passage by P. Martinsen. Regarded by Bellchambers as an autumn visitor.
235. WELCOME SWALLOW (*Hirundo tahitica*).
Habitat pref.: Aq3, SF1, SW1, R2 Br., C4 Br.
Status: Common; resident and autumn transient; Br. (Oct.), (B).
Transients noted moving through in late February and March. Not recorded between July 4 and September 2, 1964.
237. TREE MARTIN (*Petrochelidon nigricans*).
Habitat pref.: Aq4, SF1 Br., SW3 Br., R2, C2.
Status: Common; resident and autumn transient; Br. (Sept.-Jan.).
Although thought to be an autumn transient the gathering of the surrounding countryside's population into one roost cannot be dismissed. Counts revealed maxima of 221 on March 1, 1964, and an estimated 400-425 on March 13, 1965. Numbers dropped decisively after these dates, no birds being seen between June 19 and August 1, 1964.
238. FAIRY MARTIN (*P. ariel*).
Despite careful watches on a large number of occasions this species was not recorded during the survey although odd birds could easily have been missed amongst the normal population of Tree Martins. On May 12, 1965, the Foreman of the Para Wirra N.P., Mr. J. Hilton, and his son J. J. Hilton, reported that on December 6, 1962, they had observed birds attending mud nests in a culvert in Hamlin Gully. On investigation the remains of a colony of four nests of this species was found. The culvert is constructed of five circular concrete pipes, 4 ft. in diameter and 7' 6" long, placed end to end. The nests were 11 ft. in from the uphill opening, and attached along and above a horizontal crack, the spouts of the nests being 3' 5" above the floor of the pipe.
239. PIPIT (*Anthus novaeseelandiae*).
Habitat pref.: SF2, C4 Br.
Status: Frequent; summer visitor; ?Br. (Oct.); (B-Br.).
241. BLACK-FACED CUCKOO-SHRIKE (*Coracina novaehollandiae*).
Habitat pref.: SF2, SW4, R1.
Status: Frequent; resident; (B).
243. WHITE-WINGED TRILLER (*Lalage suerii*).
Habitat pref.: SF1, SW1, R1, C2.
Status: Occasional; summer visitor; (B).

244. BLACKBIRD (*Turdus merula*).
Habitat pref.: SW1, R4.
Status: Frequent; resident; (B-Br.).
254. WHITE-BROWED BABBLER
(*Pomatostomus superciliosus*).
Habitat pref.: SF2, SW4 Br., R3.
Status: Common; resident; ?Br.; (B-Br.).
256. WHITE-FRONTED CHAT (*Eph-
thianura albifrons*).
Habitat pref.: SF2, C2.
Status: Occasional; ?summer visitor; (B).
262. WEEBILL (*Smicrornis brevirostris*).
Habitat pref.: SF5.
Status: Occasional; ?resident.
263. WHITEFACE (*Aphelocephala leu-
copsis*).
Habitat pref.: SF3, SW2.
Status: Common; resident.
266. STRIATED THORNBILL (*Acan-
thiza lineata*).
Habitat pref.: SF4 Br., SW2, R3.
Status: Common; resident; Br. (Sept.).
268. BROWN THORNBILL (*A. pusilla*).
Status: rare; vagrant. Two records only
during survey, on September 27 and Octo-
ber 4, 1964, both days of almost continual
rain. A third record after the survey had
been completed was of a single bird in dry
sclerophyll forest on April 25, 1965.
272. BUFF-TAILED THORNBILL (*A.
reguloides*).
Habitat pref.: SF4 Br., SW2, R2, C1.
Status: Common; resident; Br. (Oct.).
273. YELLOW-TAILED THORNBILL
(*A. chrysorrhoa*).
Habitat pref.: SF2, SW3, C4.
Status: Common; resident; Br. (Sept.), (B-
Br.).
281. RUFIOUS SONGLARK (*Cincloram-
phus mathewsi*).
Habitat pref.: SW5.
Status: Occasional; summer visitor.
290. SUPERB BLUE WREN (*Malurus
cyaneus*).
Habitat pref.: SF4, SW2 Br., R3 Br., C1.
Status: Common; resident; Br. (Nov.-Dec.);
(B-Br). The Blue Wren's chief habitat
requirement appears to be sufficient ground
cover in the form of low shrubs, yacca,
etc., which is amply met with in the dry
sclerophyll forest and riverain habitats.
294. PURPLE-BACKED WREN (*M. lam-
berti*).
Not recorded during survey. Recorded by
R. Daley in September, 1964.
299. JACKY WINTER (*Microeca leuco-
phaea*).
Habitat pref.: SF2 Br., SW3, R1, C4.
Status: Common; resident; Br. (Nov.-Feb.);
(B-Br.).
300. SCARLET ROBIN (*Petroica multi-
color*).
Habitat pref.: SF4, SW3, R1, C2.
Status: Common; resident; (B).
301. RED-CAPPED ROBIN (*P. goode-
novii*).
Status: Rare; vagrant.
304. HOODED ROBIN (*P. cucullata*).
Habitat pref.: SF3, SW4, R2, C3.
Status: Common; resident, Br. (Oct.-Nov.);
(B-Br.). On ten occasions from June
through to March a three bird relationship
was recorded in which the sex division
was 2:1 in favour of males. In this rela-
tionship little or no animosity was noted
occurring between the males, both birds
often perching in the same bush within
two or three feet of each other and flying
off together when disturbed.
306. RESTLESS FLYCATCHER (*Seisura
inquieta*).
Habitat pref.: Aq1, SF3, SW4 Br., R4, C2.
Status: Common; resident; Br. (Nov.); (B).
307. GREY FANTAIL (*Rhipidura fuligi-
nosa*).
Habitat pref.: SF3, SW2, R4.
Status: Common; resident.
309. WILLIE WAGTAIL (*R. leucophrys*).
Habitat pref.: Aq1, SF3, SW4 Br., R2, C4.
Status: Abundant; resident; Br. (Dec.-Jan.);
(B).
310. GOLDEN WHISTLER (*Pachyce-
phala pectoralis*).
Habitat pref.: SF4, SW4, R3.
Status: Frequent; winter visitor and tran-
sient; (B). Most numerous between
February and April; also in September.
Only recorded twice between September
and February, in October and on Novem-
ber 21, 1964. On the latter occasion two
males were calling freely.

311. RUFIOUS WHISTLER (*P. rufiventris*).
Habitat pref.: SF4 Br.; SW3, R3.
Status: Common; summer visitor; Br. (Nov.-Feb.); (B-Br.). Odd records as late as the end of May.
315. GREY SHRIKE-THRUSH (*Colluricincla harmonica*).
Habitat pref.: SF3, SW4, R3.
Status: Common; resident; (B).
316. EASTERN SHRIKE-TIT (*Falcunculus frontatus*).
Habitat pref.: SF2, SW4, R1.
Status: Frequent; resident; (B). Recorded in all months except July and August.
318. BLACK-CAPPED SITTELLA (*Neositta chrysoptera*).
Habitat pref.: SF2, SW4.
Status: Frequent; resident; (B). Not recorded in June.
319. BROWN TREE-CREEPER (*Climacteris picumnus*).
Habitat pref.: SF3, SW4 Br., R2, C2.
Status: Abundant; residents; Br. (Sept.-Nov.).
321. WHITE-THROATED TREE-CREEPER (*C. leucophaea*).
Habitat pref.: SF4, SW2, R3.
Status: Common; resident; (B-Br.).
323. MISTLETOE-BIRD (*Dicaeum hirundinaceum*).
Habitat pref.: SF3, SW3, R4.
Status: Frequent; resident; (B-Br.).
324. SPOTTED PARDALOTE (*Pardalotus punctatus*).
Habitat pref.: SW1, R3.
Status: Occasional; winter visitor. Three records April to July and one in October, 1963; also two birds in the South Para river-bed on May 2, 1965.
326. STRIATED PARDALOTE (*P. substriatus*).
Habitat pref.: SF4 Br., SW3, R2, C1 Br.
Status: Common; resident; Br. (Oct.-Jan.).
328. GREY-BACKED SILVEREYE (*Zosterops lateralis*).
Habitat pref.: SF3, SW2, R4.
Status: Frequent; resident; (B-Br.). Not recorded in April or July during survey but seen twice in April, 1965.
331. BLACK HONEYEATER (*Myzomela nigra*).
Status: Rare; vagrant; (dry sclerophyll forest).
336. YELLOW-FACED HONEYEATER (*Meliphaga novaehollandiae*).
Habitat pref.: SF3, SW2, R4 Br., C2.
Status: Frequent; resident and winter visitor; Br. (Oct.-Nov.). In the late afternoon of July 15, 1964, a movement of this species was noted, the birds moving east across the north end of the Park. Some 60-70 individuals were involved, in parties of up to 23, and they were accompanied by an estimated 20 White-naped Honeyeaters in two parties.
340. WHITE-PLUMED HONEYEATER (*M. penicillata*).
Habitat pref.: SF3, SW4 Br., R3, C2.
Status: Abundant; resident; Br. (Feb.-March); (B-Br.). This species was found building nests (three found) as late as February 28, 1965, two eggs being found in one nest the following week.
343. WHITE-NAPED HONEYEATER (*Melithreptus lunatus*).
Habitat pref.: SF4, SW3, C2.
Status: Frequent; resident; (B). Not recorded between November 14, 1964, and March 20, 1965. Status uncertain. See note under Yellow-faced Honeyeater.
344. BLACK-CHINNED HONEYEATER (*M. gularis*).
Habitat pref.: SF2, SW2, R2, C1.
Status: Occasional; resident; (B-Br.). In almost all instances this species has been noted apparently moving through the Park, rarely stopping to feed. Not recorded in July, August, October or December.
346. BROWN-HEADED HONEYEATER (*M. brevirostris*).
Habitat pref.: SF4, SW3, R3, C2.
Status: Frequent; resident.
348. EASTERN SPINEBILL (*Acanthorhynchus tenuirostris*).
Habitat pref.: SF2, SW1, R4 Br.
Status: Occasional; resident; Br. (Dec.-Jan.); (B).
349. TAWNY-CROWNED HONEYEATER (*Glyciphila melanops*).
Habitat pref.: SF4, C4.
Status: Frequent; summer visitor; ?Br. (Dec.); (B).

350. CRESCENT HONEYEATER (*Phylidonyris pyrrhoptera*).
Habitat pref.: SF4; SW3, R2.
Status: Common; resident; (B).
352. YELLOW-WINGED HONEYEATER (*P. novaehollandiae*).
Habitat pref.: SF4; SW3; R3; C2.
Status: Abundant; resident; Br. (Sept.-March); (B-Br.). Late breeding observed on April 20, 1965, when two family parties were noted. The young showed bright yellow gapes, down still adhering to the plumage, and short tails.
354. NOISY MINER (*Myzantha melanocephala*).
Not recorded by me in study area although fairly common a few miles away to the south and north, my nearest record being of one about 600 yards southwest of the Park. However, has been recorded by others: M. B. Daley in March, 1964, and F. R. H. Chapman et al. in February, 1965.
358. RED WATTLEBIRD (*Anthochaera carunculata*).
Habitat pref.: SF3, SW4 Br., R2, C2.
Status: Common; resident; Br. (Sept.-Oct.); (B). A post breeding movement appears to take place in which all, or the large majority of, the birds leave the Park. None were noted between December 12, 1964, and February 14, 1965, and a similar pattern took place in 1963-64 when the birds appeared to be absent at the end of December. Very few were seen in January, numbers again increasing in February. The post-breeding moult period when most birds are quiet and secretive has not been overlooked, and the birds have been searched for without success. They are normally very active and vocal, impressing themselves upon the observer. Possibly allied to this disappearance is a small south-westerly movement noted immediately after their return to the Park in mid-February, 1965. This was recorded for a month, some birds leaving the Park between 0530 hrs. and 0700 hrs., the time advancing as the date progressed.
349. LITTLE WATTLEBIRD (*A. chrysoptera*).
Status: Rare; vagrant; (savannah woodland). One record only, on September 13, 1964, a hot, sunny day following a period of cold and wet weather.
362. GOLDFINCH (*Carduelis carduelis*).
Habitat pref.: SF2, SW3, R2, C4.
Status: Frequent; summer visitor; (B).
363. GREENFINCH (*C. chloris*).
Habitat pref.: SF3, SW2, C2.
Status: Occasional; summer visitor. First recorded in south-east corner of Park on October 18, 1964. It was heard three days later in dry sclerophyll scrub immediately west of the dam but not recorded again until November 14 and 21, again at the dam.
364. RED-BROWED FINCH (*Estrilda temporalis*).
Habitat pref.: SF2, SW2, R4, C1.
Status: Common; resident; ?Br.; (B).
367. DIAMOND FIRETAIL (*Zonaeginthus guttatus*).
Habitat pref.: SF4, SW3, R2, C3.
Status: Common; summer visitor; ?Br. (Jan.-Feb.); (B) After completing the survey, two additional records were made on May 2, 1965, and on August 4, 1965, when three birds were found attending a nest 12 ft. up in a Sheoak (*Casuarina stricta*). The male repeatedly returned to the tree whilst a person sat below. The nest was not examined. Savannah woodland formation.
369. HOUSE SPARROW (*Passer domesticus*).
Habitat pref.: SF2, SW4, C4.
Status: Frequent; resident and transient; (B). Although normally to be seen only at the Main Gate of the Park, this species has been noted flying in to roost in small numbers in a huge bottlebrush, *Callistemon macropunctatus*; in September. During late February and March, 1965; a larger roost of 100-120 birds was found in Olives at the Main Gate. It is not certain whether this roost had been used in previous years, but probably not.
371. STARLING (*Sturnus vulgaris*).
Habitat pref.: Aq1, SF3 Br., SW4 Br., R2, C2.
Status: Common; resident; Br. (Sept.-Nov.); (B). Present throughout the year but numbers appear to drop after the breeding season for a short period. The young appear to leave the area as soon as they are independent, and the large non-breeding flocks of the Adelaide Plains are not found in the Park, approximately thirty

being the largest number ever seen together.

374. MAGPIE-LARK (*Grallina cyano-leuca*).

Habitat pref.: Aq4, SW3 Br., C2.

Status: Common; resident; Br. (Sept.); (B).

376. WHITE-WINGED CHOUGH (*Corcorax melanorhamphus*).

Habitat pref.: SF3, SW4 Br., R2, C2.

Status: Common; resident; Br. (Aug.-Sept.); (B).

378. MASKED WOOD-SWALLOW (*Artamus personatus*).

Habitat pref.: SF5.

Status: Occasional; summer visitor.

379. WHITE-BROWED WOOD-SWALLOW (*A. superciliosus*).

Habitat pref.: SF4, C3 Br.

Status: Occasional; summer visitor; Br. (Oct.); (B-Br.).

381. DUSKY WOOD-SWALLOW (*A. cyanopterus*).

Habitat pref.: SF1, SW4, C1.

Status: Frequent; summer visitor; ?Br. (Dec.); (B-Br.).

382. BLACK-WINGED CURRAWONG (*Strepera versicolor*).

Habitat pref.: SF4, SW3 Br., R2, C2.

Status: Common, resident; Br. (Sept.); (B). Bellchambers considered that this species was fast diminishing in numbers.

384. GREY BUTCHER-BIRD (*Cracticus torquatus*).

Habitat pref.: SF4, SW3.

Status: Occasional; winter visitor. Noted from April to July, 1964. Eckert (1965) noted an irruption of this species into the Strathalbyn, Milang, and Langhorne Creek areas during this period, and the present writer noted one in the Morialta Reserve, Mt. Lofty Ranges, during May. It would therefore appear that the Para Wirra birds were part of this irruption, their status not being that of a regular winter visitor but that of a sporadic or vagrant. Further observations are required.

385. WHITE-BACKED MAGPIE (*Gymnorhina tibicen*).

Habitat pref.: SF3, SW4 Br., R2, C4.

Status: Abundant; resident; Br. (Aug.-Dec.); (B).

388. RAVEN (*Corvus coronoides*).

Habitat pref.: SF3, SW4 Br., R1, C2.

Status: Common; resident and transient; Br. (Sept.-Dec.); (B). In the Park some 5 to 6 pairs are thought to hold breeding territories. Far commoner outside the Park on cleared land. Described by Bellchambers as 'not often seen.'

SPECIES RECORDED FROM HUMBUG SCRUB IN THE LITERATURE BY BELLCHAMBERS BUT NOT MET WITH DURING THE PRESENT STUDY.

Habitats are given in brackets.

1. Emu (*Dromaius novaehollandiae*) (widespread). Extinct in the area. Bellchambers wrote 'and of the emu, which in olden times feasted on the abundance of native currants in their season, no sign is left but the fragments of the shells of their eggs (remnants of former native feasts), found in the ashes of camp fires.'
40. Pied Cormorant (*Phalacrocorax varius*) (aquatic). 'One bird here for several days' wrote Bellchambers in a letter to Capt. S.A. White dated October 23, 1915.
45. White Egret (*Egretta alba*) (aquatic). Noted as being an occasional visitor.
48. White-necked Heron (*Ardea pacifica*) (aquatic). 'Frequently noted this spring' but the year was not specified.
49. Nankeen Night Heron (*Nycticorax caldonicus*) (aquatic). 'Rarely heard.' One seen August 10, 1917.
57. Black Swan (*Cygnus atratus*) (aquatic). An occasional visitor, usually staying one to two days, also on occasion breeding on the dam.
60. Chestnut-breasted Shelduck (*Tadorna tadornoides*) (aquatic). A rare visitor.
69. White-eyed Duck (*Aythya australis*) (aquatic). An occasional visitor, staying one to two days at a time.
82. Collared Sparrowhawk (*Accipiter cirrhocephalus*) (woodland). Rarely noted.
- Ringneck Pheasant (*Phasianus colchicus*). Was said by Bellchambers to have done well then disappeared.

99. Painted Quail (*Turnix varia*) (savannah woodland). See Quail note in species list. Noted by Bellchambers.
101. Little Quail (*T. velox*) (arable). Bred in hay crops and herbs. Several nests of four eggs located, the birds replacing cover over the nest as soon as it was removed.
104. Lewin Water-Rail (*Rallus pectoralis*) (aquatic). An occasional visitor.
105. Banded Landrail (*R. philippensis*) (wet areas). Noted as being present on August 1, 1917.
109. Black-tailed Native Hen (*Tribonyx ventralis*) (wet areas). Of irregular occurrence, staying a few days; sometimes in large numbers.
110. Dusky Moorhen (*Gallinula tenebrosa*) (aquatic). Odd pairs visiting occasionally.
112. Coot (*Fulica atra*) (aquatic). Noted. All references are given under the native name 'toory.' 'Tuuri' was used for the Coot on the Coorong and River Murray Lakes (H. T. Condon pers. comm.). His use of the word would be understandable as Bellchambers spent his early period in South Australia on the Lakes.
147. White-headed Stilt. (*Himantopus himantopus*) (aquatic). A vagrant. Three birds noted on September 19, 19??.
150. Southern Stone-Curlew (*Burhinus magnirostris*) (possibly widespread or woodland). Bellchambers noted 'where once they were seen in fair sized flocks, they are now only found in widely scattered pairs.'
177. Rainbow Lorikeet (*Trichoglossus haematodus*) (possibly widespread or woodland). A visitor at times of honey-flow.
183. Yellow-tailed Black Cockatoo (*Calypterhynchus funereus*) (possibly widespread or woodland). Bellchambers wrote 'once in thousands, are now rarely seen; from three to six birds sometimes visit our district! Also noted to be partial to the larvae of the Goat Moth.'
211. Pallid Cuckoo (*Cuculus pallidus*) (woodland). A summer visitor, arriving in mid-July.
217. Barn Owl (*Tyto alba*) (woodland). A resident breeding bird.
221. Powerful Owl (*Ninox strenua*) (woodland). Bellchambers stated 'I have not heard the voice of the Powerful Owl for some years' (Bellchambers was almost certainly mistaken in his identification of this species, there being only one authentic record for South Australia—Ed.).
227. Azure Kingfisher (*Alcyon azurea*) (aquatic). Recorded by Bellchambers as nesting in holes in a bank.
248. Spotted Quail-Thrush (*Cinlosoma punctatum*) (woodland). Occasionally seen.
280. Brown Songlark (*Cinchorhamphus ruralis*) (grasslands). Bellchambers wrote 'It was noticed that the changing environment was bringing new birds on the scene, we observed a brown songlark, which made its first appearance last summer. This season it is here in increased numbers.' Breeding noted.
297. Reed Warbler (*Acrocephalus stentoreus*) (aquatic). A breeding summer visitor to the South Para River.
353. Regent Honeyeater (*Xanthomiza phrygia*) (woodland). A dry season breeding visitor.

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