

The Birds of Sandy Creek Conservation Park

By C. E. RIX, Glandore, South Australia

SUMMARY

The results of 71 visits to Sandy Creek Conservation Park over a ten year period — October 26, 1962, to October 25, 1972, are set out.

The location, soils, topography and rainfall of the Park are briefly described.

The vegetation is described in some detail and an outline of the history of the area since 1962 is given together with descriptions of some of the more notable bird concentrations over the period.

A total of 108 native and 7 introduced species have been recorded and their occurrences, numbers and habits are set out under each individual species.

LOCATION AND DESCRIPTION

Sandy Creek Conservation Park is situated about 500 m south of the Gawler-Lyndoch road approximately midway between the Sandy Creek Hotel and Lyndoch. It is about 56 km from Adelaide and has an average annual rainfall in the vicinity of 550 mm. The bulk of this is received during the winter months.

The park is roughly rectangular in shape with an appendage at the south-western corner which includes a short length of the watercourse from which the name Sandy Creek is derived. This latter portion is referred to in the text as the "annex". Its total area is 104 ha.

The terrain is flat to undulating with a predominance of deep sandy soils formed on highly leached Tertiary material and of poor agricultural value. There is a prominent east-west ridge through approximately the centre of the rectangular part which has very deep sandy soils and subsoils based on mottled Tertiary sands and clayey-sands. There is another east-west ridge of lesser height on the south boundary of the western part of the main body of the park and intersecting the "annex".

In the north-western corner is an area, about 4 ha. in extent, of red-brown sandy-loam over red-brown clay and lime with some residual lateritized material on the surface. There is a similar type of soil about 6 ha. in area in the north-eastern corner. Both of these areas are elevated above the general level of the adjoining soil types.

Approximately 13 ha. — about 7.5 ha. in the central northern part and 5.5 ha. adjoining the centre of the southern boundary — were cleared and planted with vines many years ago. Most of the vines have been removed and the majority of the remainder are dead. These plantings were made in broad, generally flat, drainage line areas of deep grey to greyish-white sands where the moisture status of the soils was superior to that of the soils on the more elevated country adjoining. A considerable amount

of regeneration of vegetation is occurring on parts of these former vineyards.

Apart from Sandy Creek, which flows only after heavy rains and which retains a few small waterholes for only short periods after a flow, the only water supplies were two scoop-holes adjoining the northern boundary near the entrance and a similar hole in the centre of the area. These holes are filled by seepage following the fall of substantial winter rains and retain water until the middle of January in good seasons, but earlier than this in dry years. With the onset of warmer weather, i.e. usually by early October, these waterholes were a focal point for many of the birds, particularly in the early morning and late afternoon. However once the waterholes dried up the only water available to the wildlife of the area was on adjacent farms and vineyards — dams, troughs, sprinklers, etc.

To offset this sudden cessation of water supply the members of the Adelaide Ornithologists Club arranged for a rainwater tank to be placed beside the galvanised iron roofed hut situated near the middle of the park. They then proceeded to construct a cement lined pond from local lateritic material in the scrub some hundred metres from the hut. A pipeline, donated by British Tube Mills, was laid from the tank to the pool and now there is a permanent water supply for the birds and other wildlife which includes several kangaroos which have since taken up residence.

VEGETATION

The vegetation of the park is varied and complex and it is these features which make it one of the outstanding bird refuges in South Australia. Four species viz. *Callitris preissii*, *Eucalyptus fasciculosa*, *Banksia marginata* and *Casuarina stricta* dominate or co-dominate in most of the plant associations. All of these species occur widely in the park but there are also five discrete areas where they do not occur. The dominant species in the last mentioned areas are *Eucalyptus odorata* (in three areas), *E. incrassata* and *E. leucoxylon*.

The major plant association is one in which *Eucalyptus fasciculosa* and *Callitris preissii* are co-dominant. However, due to variations in soils, aspect, topography and drainage, a wide variety of micro-climatic conditions occur and give rise to many changes in the vegetational profile. In a number of instances one or the other of the co-dominants become the dominant tree sometimes to the entire exclusion of the other. There are also areas where one or the other of the sub-dominants becomes locally dominant.

These variations have a major bearing on the composition and nature of the understories and thus on the habitat. This is particularly so where one of the dominants or subdominants is the only tree in a plant community. In most instances these individual communities are small in extent, ranging from a few hundred square metres to 2 to 2½ ha., but in a few instances

they reach greater proportions (about 4 ha. in one instance).

The principal components of the upper middle stratum in the *E. fasciculosa* — *C. preissii* association are *Baeckea behrii*, *Acacia calamifolia*, *Dodonaea viscosa* while in the lower middle stratum *Astroloma conostephioides*, *Calythrix tetragona*, *Grevillea lavandulacea*, *Leptospermum scoparium*, *Leucopogon cordifolius* and *Xanthorrhoea semiplana* are prominent. Other plants do occur but only as either odd scattered plants or in small communities covering a few square metres. They include *Hakea rostrata*, *Correa reflexa*, *Dillwynia hispida*, *Hibbertia stricta* and *Hybanthus floribundus*.

Where *E. fasciculosa* assumes dominance, the variety and the density of the understories is greatest while in those areas where *C. preissii* becomes the only member of the upper stratum the understories are at a minimum. A few scattered and frequently depauperate examples of *Astroloma conostephioides* and a few ephemerals are all that occur in the latter circumstances.

The northern slopes of the main east-west ridge has predominately the *E. fasciculosa* — *C. preissii* association but in one part near the centre is one of the discrete areas previously referred to. Here is a pure stand of *Eucalyptus incrassata* covering 0.5 hectares or more with practically no undergrowth. The majority of the *incrassata* are multi-stemmed and four to six metres in height. This area has a typical "mallee" appearance and is in contrast to the surrounding vegetation, particularly on one side where *E. fasciculosa* is dominant and the undershrubs, *Hakea rostrata*, *Xanthorrhoea semiplana* and *Calythrix tetragona*, are dense and fairly luxuriant.

The southern slope of the central ridge is largely dominated by *E. fasciculosa*. In some parts *Callitris preissii* achieves co-dominance but in most parts it occurs only as very scattered trees. The upper middle stratum is completely dominated by *Baeckea behrii*, frequently up to 3 metres in height while *Astroloma conostephioides* is very prevalent in the lower middle stratum. On the lower parts of this slope *Banksia marginata* is prominent and in places becomes the dominant tree.

On the sandy-loam soils in the north-western corner is one of the three areas dominated by *Eucalyptus odorata*. Here there is a rather sparse understory of *Cassineia aculeata*, *Helichrysum bilobum*, *Acacia rotundifolia*, *Bursaria spinosa* and *Pimelea stricta* while scattered among the *odorata* are a few tall but rather spindly *Myoporum platycarpum*.

A similar association, minus the *Myoporum* but having some *Casuarina stricta* and an occasional *Callitris preissii*, occurs in the north-eastern corner. Additional undershrubs in this part where the soils are rather more sandy than in the north-western corner include *Astroloma conostephioides*, *Calythrix tetragona*, *Daviesia brevifolia*, *Pultenea pedunculata* and *Hibbertia stricta*.

A further small patch of *Eucalyptus odorata* occurs near the

south-western corner of the main body of the park adjoining the "annex".

At the foot of the southern side of the central ridge is a small creek which has its source just outside the boundary of the park at the south-eastern corner. Along this creek *E. fasciculosa* is dominant with *Casuarina stricta* as the sub-dominant in many parts. The undergrowth consists almost entirely of a dense bank of *Callistemon macropunctatus* with a few *Casuarina stricta* along the outer edges but apart from these the only plants are some grasses and sedges and several varieties of orchids. There is only one exception to this *E. fasciculosa* — *C. macropunctatus* association which extends from a point on the southern boundary of the main body of the park about 250 metres from the south-eastern corner to a point on the northern boundary of the "annex" less than 100 metres east of the western end of that boundary, other than in the former vineyard area, and this is adjoining the eastern side of the old vineyard. Here the vegetation is dominated by two large *Eucalyptus camaldulensis* which dwarf all the surrounding trees. The understory consists entirely of *C. macropunctatus* with some sedges and orchids.

Adjacent to the *E. fasciculosa* — *C. macropunctatus* association near the south-western corner of the main body of the park is a small area dominated by *Baeckea behrii* with an *Astroloma conostephiodes* understory interspersed with patches of *Kunzea pomifera*.

The greater part of the "annex" has been cleared to a point where it had become an open *Eucalyptus fasciculosa* and *E. fasciculosa* — *Callitris preissii* "savannah". With the cessation of grazing however both *Baeckea* and *Astroloma* are increasing each year and it may be advantageous to discourage this to some extent particularly in respect of the former. The open nature of this area has been favoured by many of the birds occurring in the park and while an increase in the *Astroloma* would mean an increased food supply during autumn and winter, an increase in the *Baeckea* would only eventually "close up" the vegetation without providing much in way of food.

The southern part of the "annex" takes in the valley floor of Sandy Creek and provides another of the discrete areas previously referred to. Sandy Creek is a rejuvenated stream which has carved its present course some 10 m deep into an old valley fill. The floor is flat except where cut by the present stream and varies from about 150 m in width at the eastern boundary to less than 50 m at the western boundary. It supports a scattered stand of large *Eucalyptus leucoxylon* up to 15 m or more in height with few undershrubs. Most of these shrubs have appeared in the last four or five years since grazing ceased and consist mainly of *Acacia calamifolia* and *Astroloma*. Along the actual bank of the present stream and along the northern margin of the valley *Casuarina stricta* is prominent and in the latter part there is a narrow strip of *Callistemon*.

Mistletoes — *Loranthus spp.* — are fairly prevalent throughout the park particularly in *Eucalyptus fasciculosa* but do not appear to be causing any major damage. Several of the *fasciculosa* which a few years ago were badly infested are now flourishing trees with their former parasites all dead.

Three introduced plants have gained a foothold in the park and two of them occur widely and sometimes in dense patches. These are the South African composite *Chrysanthemoides monilifera* and the so-called Bridal Creeper, *Asparagus asparagoides* also from South Africa. The third, yet another South African, *Asclepias rotundifolia*, has established a colony in part of the "annex" and extending into the south-western corner of the main body of the park and another near the eastern boundary in the north-eastern corner of the park. The latter species could at this stage be fairly readily eradicated but the other two, and particularly the *Asparagus*, would present considerable difficulties.

The wide variation in the vegetation provides a wide variety in habitat. Except in some of the almost pure stands of *Callitris* the tree population is not dense but the undershrubs, which are frequently quite dense, include species which afford a copious supply of nectar both for the birds and for the insects upon which many of the birds feed. The variation in leaf canopy and in the density and type of undergrowth provide a variety of shelter and nest sites. There are some hollow trees and branches suitable as nest sites for some species but these are not numerous and the introduced Starling, *Sturnus vulgaris*, regularly occupies a goodly proportion of them.

HISTORY

It was on October 26, 1962 that I first "discovered" the patch of scrub which is now in part the Sandy Creek Conservation Park. There was a fairly strong north-east to north wind and it was one of those days which we occasionally have in the late Spring when, although the temperature is only in the upper 20's (C), it seems unpleasantly warm. It was about midday and I was looking for a quiet, shady spot to park my car and have lunch.

The Gawler-Lyndoch road along which I was travelling was lined with large Red Gums, *E. camaldulensis* but there was rather much traffic, and there was no shelter from the unpleasant wind. I could see some interesting looking scrub about half a kilometre away on my right and then came to a side road which brought me to about the middle of its northern boundary. The road ended just inside the scrub and from there a track led away to the right into small open area among some Pink Gums and Sheoaks and some large Native Pines. The pines gave a dense shade and provided a break to the wind and I stepped out of the car to "cool off."

Because of the nature of the weather I did not expect birds to be much in evidence, but to my surprise the trees and the

undergrowth surrounding this small open area were literally filled with birds. White-winged Trillers, Rufous Whistlers, Golden Whistlers, Peaceful Doves, Grey Thrushes, Red-capped Robins, Yellow-winged Honeyeaters, White-browed Babblers, Buff-tailed Thornbills and many others were singing, chattering, scolding and calling on all sides, while overhead some Bee Eaters and Masked Woodswallows were hawking to and fro. In a little over half an hour and without moving more than 100 m or so from the car I had recorded 29 species.

As I had some business to attend to in Tanunda I had to move on but I planned to have a more extensive look on the way home.

It was 1600 hours when I returned and parked in the same place as before. Birds were as numerous and, if anything, more vocal. I listed those that I could actually see from the car and in less than ten minutes had recorded 42 individuals comprising 15 species viz:

Yellow-winged Honeyeater	7
White-browed Babbler	7
Bee Eater	4
White-winged Triller	2 cocks, 2 hens
Rufous Whistler	2 cocks, 1 hen
Red-capped Robin	1 cock, 1 juvenile
Mistletoebird	1 cock, 1 hen
Yellow-tailed Thornbill	2
Peaceful Dove	2
Grey-backed Silvereye	2
Grey Thrush	2
Little Thornbill	2
Red Wattlebird	1
Golden Whistler	1 cock
Brown-headed Honeyeater	1

All of these were in view during most, if not all, of the ten minutes' period and as many additional species could be heard nearby.

I set off for a walk through portion of the scrub and found that birds were plentiful throughout. Time did not permit an extensive coverage of the area, but by about 1700 hours when I returned to the car, 46 species (including four introduced species) were recorded. Many of the 42 native species were in substantial numbers and many of them were breeding. Three nests were found, viz: White-winged Triller, Rufous Whistler and Common Bronze-wing. The latter had two eggs, but the contents of the others were not determined.

In addition to these, other species were observed feeding young. These included Red-capped, Scarlet and Hooded Robins, Yellow-winged and White-plumed Honeyeaters, Red Wattlebird, Mistletoebird and Yellow-tailed, Buff-tailed and Little Thornbills. Both Masked and White-browed Woodswallows were present but, as subsequent visits proved, they were only passing through.

The area was revisited on October 28, 1962 and the greater part of the scrub, which proved to be some 150 ha. in area, was traversed during the day. The total list for that day was 51 species which, when compared with that of the 26th, raised the overall total to 60 species.

In all 14 visits were made up to July 7, 1963, with at least one visit in each of the months involved and a total of 82 species, including six introduced, was recorded. The next visit was not made until September 29, 1963, due to the fact that I was absent from the State during the intervening period.

The bird population on this occasion was even greater than on any previous visit. Not only were 64 species recorded, but many of them were represented by large numbers of individuals. There were two to three hundred White-browed and Masked Woodswallows, Yellow-winged and White-plumed Honeyeaters were everywhere and there were scores of Red Wattlebirds, Brush Wattlebirds and many others. Three species "new" to the area were added to the overall total which then stood at 85.

Further excursions were made on October 2, 13 and 20, and November 24, 1963 and confirmed the wealth of birdlife occurring and, in most instances, breeding in the 150 ha. patch of scrub. The total number of species observed during the twelve months or so since I had first visited it, had increased to 87 (including six introduced) and of this total 57 native and five introduced species were known to have bred in the area during this period.

Six visits were made in 1964 and a similar number in 1965. By the end of this period the total had been increased to 96 (seven introduced), but more important was the fact that portion of the area had acquired a new status. Early in 1965, after several attempts, I persuaded the Government to purchase two portions, totalling about 51.4 ha., for a national park. These two portions formed the central part of the overall scrub area and contained some old vineyards. Most of the latter has since been uprooted, but the presence of these open spaces within the vegetated area created the conditions that so many birds seem to prefer, viz: the scrub margins bordering cleared or open country.

The purchase of this area, although in itself too small to provide a viable bird sanctuary, was a major step toward the preservation of a worthwhile unit. Within the next few months I was able to negotiate and obtain Government approval for the purchase of a further 36.4 ha. on the eastern side of the original purchase, and subsequently another 16.6 ha. or so adjoining the south-western corner of the original area. This latter piece constitutes the "annex" and its purchase brought the total area to 104.4 ha.

There are still about 24.3 ha. of scrub on the western side, 12.15 ha. in the north-eastern corner and about 30 ha. on the

eastern side, which should be added to the existing park to ensure the retention of one of the most interesting populations of "terrestrial" birds to be found in southern Australia. The term "terrestrial" is used to differentiate from waterfowl and sea-birds.

In 1966 twelve visits were made and in 1967 ten days or parts of days were spent in the area. By the end of this period the 104.4 ha. had been dedicated as National Park and the total number of species recorded therein and in the adjoining areas of scrub stood at 103. Of these only two, White-faced Heron and Spur-wing Plover could not be classed as strictly "terrestrial."

Over the next four years, i.e. up to the end of 1971, other commitments, involving the procuring of many other national parks in South Australia, prevented more than an occasional visit to Sandy Creek. In fact there were only seven visits during this period — once in 1968 and twice in each of 1969, 1970 and 1971. However these spasmodic visits added a further five species to the grand total, which then stood at 108.

Since the beginning of 1972 eleven visits have been made up to and including October 25, 1972. During this period the total species recorded for the area was increased to 114, and to this must be added one which has not been observed by the writer, viz: Diamond Dove, two of which were recorded by B. R. Hutchins in May 1969 (see *Bird Talk*, 1:9). This total of 115 species includes 7 introduced species.

An important aspect of the 1972 observations is that they cover 92 species (7 introduced) showing that the area is maintaining its viability as a bird haven.

The total number of visits made between October 26, 1962 and October 25, 1972, both dates included, is 71. The duration of these visits varied considerably and, while the majority occupied the greater part of the day, there were eleven occasions when only a short period — from a half to two hours — were spent there. (See Table 1). There were also two occasions when practically the whole of the time was taken up with repairing fences to exclude neighbouring sheep and cattle. The birds recorded on these days were only those that came within the immediate vicinity of where the work was being carried out. Despite these restrictions the average number of species listed per day over the 71 days is 49 (45 native and 4 introduced). The greatest number recorded in one day was 68 (6 introduced) between 1100 hours and 1600 hours on August 28, 1966. The lowest was 25 (3 introduced) between 1530 hours and 1700 hours on January 13, 1963. There were eight other occasions when the total was 60 or more for the day.

The words "full day" indicates that the area traversed included all major vegetational units and that the birds recorded represented a fair assessment of the birdlife of the park on that particular day. Where actual times are given there are significant

areas of the park which were not adequately covered. The letters "N.R." relating to introduced species mean that no records of these species were kept for these particular days.

Table 1

DETAILS OF VISITS

Date	Native Species	Introduced Species	Duration & Remarks
October 26, 1962	42	4	1½ hours
October 28	51	3	Full day
November 21	47	5	0900-1530 hours
December 18	38	5	0800-1200 hours
January 13, 1963	22	3	1530-1700 hours
January 16	40	4	Full day
January 19	37	5	0900-1630 hours
February 15	43	3	Full day
March 13	43	N.R.	Full day
March 27	41	2	1130-1630 hours
April 18	47	4	Full day
May 4	43	1	Full day
June 4	40	2	Full day
July 7	51	4	1000-1600 hours
September 29	58	6	0800-1630 hours
October 2	60	5	Full day
October 13	60	4	0715-1200 hours
October 20	47	6	Full day
November 24	47	N.R.	1430-1600 hours
February 26, 1964	35	5	1245-1700 hours
May 24	44	2	1145-1530 hours
September 2	56	3	Full day
September 23	35	2	1 hour (at noon)
October 1	55	6	Full day
October 25	41	6	Full day
July 4, 1965	54	3	0900-1600 hours
August 4	48	3	0930-1700 hours
September 5	61	6	0815-1630 hours
September 26	53	N.R.	Full day
November 7	47	N.R.	0700-1430 hours
December 17	42	2	Full day
April 23, 1966	34	N.R.	Full day
May 22	45	3	0900-1600 hours
June 20	26	N.R.	1100-1230 hours
July 10	40	2	0900-1600 hours
August 4	43	3	1100-1400 hours
August 17	48	3	Full day
August 23	53	4	1000-1400 hours
August 28	62	6	1100-1600 hours
September 14	48	4	1400-1700 hours

September 27	62	4	Full day
October 23	45	N.R.	Building drinking pool
December 11	52	4	0545-1000 hours
January 2, 1967	45	6	0800-1500 hours
January 29	23	N.R.	Fence repairs, etc.
February 7	33	4	0730-0930 hours
March 12	30	2	1030-1200 hours
April 2	38	1	0845-1015 hours
April 16	31	1	1145-1545 hours
June 10	40	4	1430-1600 hours
September 17	52	6	Full day
October 15	53	5	Full day
October 29	40	4	0700-1230 hours
November 3, 1968	54	6	1000-1630 hours
April 15, 1969	45	2	Full day
May 18	52	1	Full day
May 13, 1970	43	3	Full day
September 6	41	1	Full day
May 25, 1971	39	N.R.	Fence repairs, etc.
November 16	31	N.R.	1600-1630 hours
March 14, 1972	54	4	Full day
March 23	51	3	Full day
June 5	49	4	1000-1645 hours
June 14	50	4	1000-1600 hours
July 26	53	4	0900-1630 hours
August 17	50	5	Full day
August 21	31	N.R.	1330-1500 hours
August 30	52	4	1245-1545 hours
September 14	55	6	0930-1630 hours
October 16	48	4	1130-1645 hours
October 25	50	5	1000-1600 hours

THE BIRDS

Because of the variation in the extent of the period of each visit and of the area covered on any particular day, the absence from the day's list of any of the more regularly encountered species is of no significance. Even on the so-called "full days" there were some occasions when a species regarded as being a permanent resident has eluded the observer. Table 2 sets out the frequency with which the native species have been recorded.

Four species — *Pomatostomus superciliosus*, *Rhipidura leucophrys*, *Phylidonyris novaehollandiae* and *Anthochaera carunculata* — have been recorded on each of the 71 visits. Of the 108 native species recorded for the area, 69 have been observed on ten or more occasions and about half of these have been seen on 50 or more occasions. Table 3 sets out the species which have come to be regarded as permanent residents and number of days upon which each has been listed.

TABLE 2
Frequency of Occurrence

No. of Native Species	No. of Days Observed
19 species	60 to 71 days
15 "	50 to 59 "
4 "	40 to 49 "
11 "	30 to 39 "
10 "	20 to 29 "
10 "	10 to 19 "
10 "	6 to 9 "
4 "	5 days "
6 "	4 "
4 "	3 "
4 "	2 "
10 "	1 "

TABLE 3
Permanent Residents

Species	No. of days
<i>Geopelia striata</i>	68
<i>Phaps chalcoptera</i>	58
<i>Psephotus haematonotus</i>	65
<i>Pomatostomus superciliosus</i>	71
<i>Malurus cyaneus</i>	65
<i>Acanthiza nana</i>	67
<i>A. uropygialis</i>	68
<i>A. reguloides</i>	59
<i>A. chrysorrhoa</i>	61
<i>Petroica cucullata</i>	66
<i>Rhipidura leucophrys</i>	71
<i>Pachycephala pectoralis</i>	65
<i>Colluricincla harmonica</i>	69
<i>Pardalotus substriatus</i>	63
<i>Zosterops lateralis</i>	66
<i>Meliphaga penicillata</i>	70
<i>Phylidonyris novaehollandiae</i>	71
<i>Myzantha melanocephala</i>	62
<i>Anthochaera carunculata</i>	71
<i>Gymnorhina hypoleuca</i>	67
<i>Corvus coronoides</i> and/or <i>mellori</i>	64

In addition to the birds listed in Table 3 are such species as *Microeca leucophaea* (57 occasions), *Melithreptus laetior* (57), *Anthochaera chrysoptera* (58), *Platycercus flaveolus* (59) and *Strepera versicolor* (56) which are present on most occasions, but at times appear to move out for short periods in some seasons.

Many of the species recorded are seasonal visitors. These will be dealt with under the individual species.

The profuse flowering of the Flame Heath, *Astroloma conostephioides*, in the late autumn and winter usually results in a big influx of visitors, many of which depart again before the onset of the breeding season. At such times big concentrations of birds are encountered fairly frequently in one part of the park or another. An example of this occurred on June 14, 1972, when several members of each of the three species of *Melithreptus* viz: *brevirostris*, *lunatus* and *gularis* were in one medium sized Pink Gum which was in an area of heavily flowering *Astroloma*, while in the close vicinity and in clear view were several of each of the following: — *Meliphaga chrysoptera*, *M. penicillata*, *Phylidonyris pyrrhoptera*, *P. novaehollandiae*, *P. albifrons*, *Gliciphila melanops*, *Acanthorhynchus tenuirostris*, *Anthochaera carunculata*, *Zosterops lateralis* and four species of *Acanthiza* viz: *nana*, *chrysoptera*, *reguloides* and *uropygialis*.

Probably the greatest concentration of birds encountered at any time during the ten year period, was on May 25, 1971, when in an area of about 400 square metres there were in the vicinity of 600 individuals embracing 36 species. The vegetation consisted of a scattered mixture of *Eucalyptus odorata* and *E. fasciculosa* amid an understory of *Astroloma conostephioides*. Both the eucalypts and the heath were flowering heavily and the birds were busily feeding on nectar and insects. It was a bright sunny day and the birds and blossoms presented a bright and extremely animated scene; the air was filled with the calls and scoldings as the birds vied for "a place at the table". (See Appendix I for a list of the birds involved).

A concentration of another type occurred on June 5, 1972. This was more a passing parade than a static grouping of birds. The period 10 a.m. to 11.15 a.m. was spent in a fairly scattered mixture of *Callitris preissii*, *Casuarina stricta* and *Eucalyptus fasciculosa* with some *Astroloma* among the very sparse undergrowth. The Pink Gum and the Flame Heath were flowering, but not to any great extent and, while some birds were feeding among the blossoms, many more were frequenting the Pines and Sheoaks. During the 1½ hours involved, a total of 43 species was recorded. There were many "comings and goings" and most of the birds merely paused for a short period before moving on to other parts of the park. Some species were present during most, if not all of the time and there was always a substantial number of species in view, but the overall number was not comparable with that present on May 25, 1971. The site of the June 1972 incident had some cleared land on three sides and it appeared that the birds were using it as a staging post while moving from one part of the park to another. (See Appendix II for species recorded.)

NESTING

A considerable amount of nesting has been observed over the period, but it has been the policy to ensure the least disturbance to nesting birds. Intensive searching for nests has never been undertaken and, in the case of nests found in the course of a day's traversing, no attempts were made to determine the contents unless they were clearly visible without disturbing the foliage, and no climbing was done. The only photography of nesting species was confined to such species as are tolerant of humans, e.g. Willie Wagtail, White-browed Woodswallow etc.

Because of this policy, precise details of nesting materials, clutch sizes, egg descriptions and incubation periods are not available. It was considered preferable to ensure that breeding species were not subjected to human pressure.

THE INDIVIDUAL SPECIES

An analysis of the species constituting the avifauna of the park is set out in Table 4.

WHITE-FACED HERON

Ardea novaehollandiae

A single bird on three occasions, viz: August 20, 1966, July 26, 1972, and September 14, 1972. The birds seen on the first two dates were in the bed of Sandy Creek where it runs along the southern boundary of the park. The bird on the last date was in an open grassy area (former vineyard) near the northern boundary.

BLACK-SHOULDERED KITE

Elanus notatus

Observed on 12 occasions.

In July-August 1965 a pair nested on the top of an old *Corvus* nest in a *Eucalyptus leucoxylon* just outside the northern boundary of the park. Two young were reared.

All sightings have been in the period May to October and on most occasions two birds have been present.

WHISTLING KITE

Haliastur sphenurus

Observed on 33 occasions.

There appears to be no set pattern to the presence of this species. For example, between March 13, and October 2, 1963, it was recorded on seven of the eight visits made, and on five of these occasions there were two birds present. This was followed by a period extending to September 23, 1964, when none was observed on any of the seven visits.

Similarly there were no sightings between April 13, 1970, and June 14, 1972, (8 visits) but it was recorded on five of the seven visits up to October 25, 1972.

BROWN GOSHAWK

Accipiter fasciatus

Observed on 24 occasions.

There appears to be some pattern as 22 of the sightings have occurred in the period April to October inclusive. The other two occasions were February 26, 1964, and March 23, 1972. The species was present during some part of the April-October period in the years 1963 to 1967 inclusive, 1969, 1971 and 1972. No visit was made to the park during this period in 1968, but on two visits in the period in 1970 none was seen.

To be continued