

BIRDS OF THE WAITE ARBORETUM

PART 3

by Max Possingham

A plan for monitoring bird species in the Waite Arboretum was developed by Field (2000) and a preliminary article on the birds likely to be recorded, based on historic data and current knowledge, was published by Possingham (2000). This article reports the results of this monitoring of the Waite Arboretum from January 2000 to November 2002.

The Arboretum was divided into ten patches, each about 2 hectares in area (see Map), and ten observers recorded the birds observed in 20 minutes on standard record sheets. Birds occupying a site, flying overhead or in another site were recorded together with other observations such as breeding or immature birds present. Those actually occupying the site being surveyed are termed "on-site", flying overhead and not utilising the site are termed "overhead-transients (OHT)", and those heard or seen in another site, ie the site not being surveyed, are termed "off-site".

A useful statistic for birdwatchers is the probability or chance of recording a species in the Arboretum. A probability greater than 0.5 means that there is a greater than a 50% chance of recording the species on a visit to the Arboretum. It is calculated from the number of site visits on which the species was recorded (regardless of the numbers recorded) divided by the total number of visits made in the survey. This statistic refers to the conditions that occurred during the survey, ie a single 20 minute visit made to any site on any month at any time of the day. The accuracy of this calculation assumes that all sites, months and times-of-day are uniformly covered by the survey. See the next paragraph for details of how well (or poorly) these conditions are met.

Ten observers participated, submitting 104 record sheets containing 899 observations. Most observers submitted from one to 5 sheets, with Janice Menz excelling with 74. Coverage of the sites is fairly uniform with seven sites visited from 10 to 14 times and three from 7 to 8 times. Coverage by month is less uniform with two months visited less than 5 times, seven from 6 to 10 and three greater than 10. The month most often visited is September with 18 visits. Coverage during the day is quite uniform with 29 visits from 8:00 to 10:00 hours, 32 from 11:00 to 13:00, 32 from 14:00 to 16:00 and 11 from 17:00 to 19:00. The times with lowest visits are 8:00 with 4, 13:00 to 14:00 with 4 and 18:00 to 19:00 with 3 visits.

The results of this survey are presented in two tables, Table 1 shows the species recorded and total visits on each site and Table 2, the same information categorised by month of recording. In addition, Table 1 also gives the total number of birds recorded on-site, overhead transients and off-site and Table 2 gives the probability of recording each species. The recordings of Corella Species (i.e. when the observer could not distinguish which corella species was observed) has been removed from the analysis.

The tables show that the six species most likely to be recorded are the Noisy Miner, White-backed Magpie, Eastern Rosella, Rainbow Lorikeet, Galah and Adelaide Rosella; they were recorded on all sites, on all 12 months and have a probability of recording greater than 50%. In contrast to these five species, there are 9 species very unlikely to be recorded with a probability less than 1%. In between are 10 species with probabilities between 50% and 10% and 14 species between 10% and 1%.

Table 2 also indicates how different species favour different seasons. The wetland species are mainly present in Autumn, Winter and early Spring. The large numbers of Australian Wood Duck, Mallard and Pacific Black Duck are attracted by the good breeding sites near the dam, Site 4. Water birds might also be expected over summer, but the

records show large numbers only in December. A more detailed examination of the records shows no visits to the dam in January and February.

The month most favoured by birds appears to be July, with 26 species recorded, although August, September and December are almost as good. Site 4, the dam, has the highest species total with 26 (because of the water birds); Site 1, with the watercourse running through it, is near with 21 (four being water birds) while remaining 8 sites slowly decrease from 18 to 11 species. It is difficult to be precise about these observations, as the visit numbers are not uniform over the month or site, precluding more definite conclusions.

The bird fauna of the Arboretum is substantially impoverished compared with the nearby Waite Conservation Reserve, where over 60 species have been recorded in recent years. For example, as noted in Part 1 of this series of articles, there is a notable lack of honeyeaters in the Arboretum. One would expect four common honeyeaters on the Adelaide Plains, the Red Wattlebird, New Holland Honeyeater, Little Wattlebird and White-plumed Honeyeater to be present. All could make good use of the food (nectar and insects on the eucalypts) in the Arboretum. This situation is common across south-eastern Australia and is usually attributed to the Noisy Miner, the most commonly reported species during the survey with an average of 6.5 birds per site. Noisy miners form large aggressive colonies and harass other honeyeaters (and indeed any possible competitor species), often to their exclusion from the habitat. One observer recently reported Noisy Miners harassing a Red Wattlebird. They can also often be seen chasing Striated Pardalotes, which occasionally venture into the suburbs from the foothills, and which would otherwise probably be much more common in the Arboretum, where the large eucalypts provide ideal habitat.

If more honeyeaters and small insectivorous birds are to be recorded in the Arboretum, two options are available. One is the removal and ongoing control of the Noisy Miners. Another is the reinstatement of an understorey, as being carried out in the Grey Box woodland restoration in Site 8. Noisy Miners tend not to dominate in areas with substantial understorey plantings. This can be seen in the Urrbrae Wetland, where the abundance of young eucalypts has created dense cover near the ground layer, resulting in White-plumed Honeyeaters being very abundant and Noisy Miners relatively scarce.

Other species, already present in the nearby foothills, might move into the Arboretum when the Grey Box woodland habitat planned for site 8 is fully mature (possibly in 10 years). These include the Brown Thornbill, Superb Fairy-wren, Grey Fantail, Red-browed Finch and Yellow-rumped Thornbill might find the habitat acceptable. They may, however, find it hard to negotiate the intervening suburban development and require a larger area of habitat than this small section would provide. Control of predators (mainly cats and foxes) would also be necessary for them to maintain a successful breeding population.

After some 100 visits to the Arboretum, some 38 on-site species have been recorded. An analysis shows, that as the survey progressed, the species count increased by 20, 8, 3, 5 and 3 as the visit count increased from 0 to 20, 20 to 40, 40 to 60, 60 to 80 and 80 to 100. Thus we have a process of diminishing returns in the Arboretum survey and I suggest that most of the future effort be transferred to the Conservation Reserve. A small, low level of survey effort could be retained in the Arboretum to record any unusual species that visit, perhaps because of habitat change or reduction of the Noisy Miner population.

The author acknowledges useful comments on this article made by Dr Scott Field.

References

- Field, S. A. (2000). Waite Conservation Reserve and Waite Arboretum Bird Monitoring Project. *The Friends of the Waite Arboretum Newsletter*, No 24, Winter, 2000.
- Possingham, M. L. (2000). Birds of the Waite Arboretum and the Waite Conservation Reserve Part 1. *The Friends of the Waite Arboretum Newsletter*, No 25, Spring, 2000.

Table 1 Birds recorded on-site categorised by site

| COMMON NAME | Site number | | | | | | | | | | Total On-Site | Total OHT | Total Off-Site |
|--------------------------|-------------|-----|----|-----|----|----|-----|-----|----|----|---------------|-----------|----------------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | | | |
| Australian Wood Duck | 88 | 107 | 28 | 130 | 6 | | | | 1 | | 360 | 4 | 80 |
| Mallard | 5 | 1 | | 64 | 5 | | | | | | 75 | | 2 |
| Feral Duck | | | | 3 | | | | | | | 3 | | |
| Pacific Black Duck | 18 | 8 | | 160 | 6 | | | | | | 192 | 1 | 22 |
| Hardhead | | | | 2 | | | | | | | 2 | | |
| Australasian Grebe | | | | 18 | | | | | | | 18 | | |
| Little Pied Cormorant | 1 | | | 6 | | | | | | | 7 | | |
| Little Black Cormorant | | | | 1 | | | | | | | 1 | | |
| Australian Pelican | | | | | | | | | | | | 2 | |
| White-faced Heron | | 1 | 2 | 4 | | | | | | | 7 | 1 | 17 |
| Brown Falcon | | | | 1 | | | | | | | 1 | | |
| Australian Hobby | 1 | | | | | 1 | 3 | 2 | | | 7 | | 1 |
| Nankeen Kestrel | | | | | | | | | | | | 1 | |
| Dusky Moorhen | | | | 3 | | | | | | | 3 | | |
| Black-tailed Native-hen | | | | 6 | | | | | | | 6 | | |
| Masked Lapwing | | | | 4 | | | | | | | 4 | 1 | 3 |
| Rock Dove | | | | | | | | | 9 | | 9 | 5 | 100 |
| Spotted Turtle-Dove | | | | 6 | | | | | 1 | | 7 | | 3 |
| Crested Pigeon | 8 | 9 | 20 | 37 | 7 | 7 | 6 | 6 | | 14 | 114 | 6 | 24 |
| Galah | 16 | 41 | 3 | 3 | 52 | 47 | 31 | 96 | 39 | 24 | 352 | 96 | 102 |
| Long-billed Corella | | 37 | 8 | 7 | 25 | 14 | 56 | 41 | | 1 | 189 | 208 | 165 |
| Corella Species | | 4 | | | | | | 1 | | | 5 | | 1 |
| Little Corella | | 4 | | | | | 17 | | 2 | | 23 | 5 | 2 |
| Sulphur-crested Cockatoo | | | | | | | 1 | 1 | | | 2 | 1 | 2 |
| Rainbow Lorikeet | 70 | 57 | 25 | 28 | 20 | 28 | 38 | 106 | 27 | 17 | 416 | 218 | 104 |
| Musk Lorikeet | 7 | 10 | | | 2 | 4 | | 7 | 2 | 1 | 33 | 34 | 15 |
| Purple-crowned Lorikeet | | | | | | | | | 2 | | 2 | | |
| Adelaide Rosella | 8 | 14 | 13 | 12 | 26 | 40 | 10 | 21 | 4 | 5 | 153 | 9 | 36 |
| Eastern Rosella | 64 | 52 | 18 | 11 | 32 | 58 | 31 | 26 | 22 | 39 | 353 | 30 | 40 |
| Red-rumped Parrot | | | | | | | | | | | | | 1 |
| Elegant Parrot | | | | | | | | | | | | 5 | |
| Tawny Frogmouth | | | | | | | | 1 | | | 1 | | |
| Laughing Kookaburra | 4 | 2 | 4 | 3 | | 1 | | 2 | 1 | | 17 | 4 | 4 |
| Red Wattlebird | 1 | | | | | 1 | | 2 | | 1 | 5 | 4 | 1 |
| Noisy Miner | 71 | 64 | 20 | 48 | 55 | 73 | 117 | 98 | 67 | 71 | 684 | 53 | 42 |
| New Holland Honeyeater | | | | | | | | | 4 | | 4 | | 1 |
| Magpie-lark | 2 | 7 | | 12 | | | | | | 4 | 25 | 4 | 62 |
| Willie Wagtail | 1 | | | | | | | | | | 1 | | 1 |
| White-backed Magpie | 43 | 52 | 22 | 16 | 26 | 26 | 33 | 16 | 14 | 35 | 283 | 19 | 92 |
| Little Raven | 5 | 6 | 1 | 6 | 7 | 1 | 4 | 1 | 2 | | 33 | 17 | 29 |
| House Sparrow | 3 | | | | | | | | | | 3 | | 1 |
| Welcome Swallow | 18 | 5 | 7 | 23 | | | 2 | | 5 | | 60 | 7 | 1 |
| Tree Martin | | | 2 | | | | | | 1 | | 3 | | |
| Common Starling | 2 | | | | 5 | | | | | | 7 | 28 | 25 |
| Total Species | 43 | 21 | 18 | 14 | 26 | 14 | 13 | 13 | 15 | 17 | 39 | 25 | 28 |
| Total Visits | 104 | 13 | 10 | 7 | 11 | 10 | 12 | 12 | 14 | 8 | 7 | | |

Table 2 Birds recorded on-site categorised by month

| COMMON NAME | Total On-Site | Month of Year | | | | | | | | | | | | Prob. of Rec |
|-------------------------|---------------|---------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------------|
| | | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| Australian Wood Duck | 360 | | | 17 | 72 | 34 | 39 | 38 | 18 | 87 | | | 55 | 0.32 |
| Mallard | 75 | | | | 3 | 2 | | 6 | 14 | 21 | | | 29 | 0.12 |
| Feral Duck | 3 | | | | | | | 3 | | | | | | 0.01 |
| Pacific Black Duck | 192 | | | 32 | 12 | 17 | 8 | 49 | 25 | 10 | | 1 | 38 | 0.20 |
| Hardhead | 2 | | | | | | | | 2 | | | | | 0.01 |
| Australasian Grebe | 18 | | | 4 | | 2 | | 2 | 3 | 1 | | | 6 | 0.08 |
| Little Pied Cormorant | 7 | | | 1 | | 1 | | 1 | 1 | 1 | | | 2 | 0.07 |
| Little Black Cormorant | 1 | | | | | | | | | | | | 1 | 0.01 |
| White-faced Heron | 7 | | | 1 | 1 | | | 3 | 2 | | | | | 0.04 |
| Brown Falcon | 1 | | | | | | | | | | | | 1 | 0.01 |
| Australian Hobby | 7 | 1 | | | 2 | 1 | 1 | | | 1 | 1 | | | 0.07 |
| Dusky Moorhen | 3 | | | | | | | 1 | 1 | | | | 1 | 0.03 |
| Black-tailed Native-hen | 6 | | | | 4 | | | | 1 | | | | 1 | 0.03 |
| Masked Lapwing | 4 | | | | 2 | | | | | | | | 2 | 0.02 |
| Rock Dove | 9 | | | | | | 8 | 1 | | | | | | 0.02 |
| Spotted Turtle-Dove | 7 | | 1 | 6 | | | | | | | | | | 0.02 |
| Crested Pigeon | 114 | 7 | 7 | 2 | 9 | 9 | 14 | 29 | 13 | 7 | 2 | 5 | 10 | 0.37 |
| Galah | 352 | 7 | 6 | 7 | 55 | 31 | 2 | 18 | 61 | 59 | 57 | 42 | 7 | 0.54 |
| Long-billed Corella | 189 | 2 | 5 | 1 | 41 | | | 2 | 33 | 33 | 9 | 49 | 14 | 0.24 |
| Corella Species | 5 | | | 1 | 4 | | | | | | | | | 0.02 |
| Little Corella | 23 | | 17 | | | | | 2 | | 4 | | | | 0.04 |
| Sulphur-crested | 2 | | | | | | | | | 1 | | 1 | | 0.02 |
| Rainbow Lorikeet | 416 | 14 | 20 | 36 | 34 | 24 | 12 | 25 | 43 | 134 | 19 | 29 | 26 | 0.67 |
| Musk Lorikeet | 33 | | | 6 | 9 | 1 | | 7 | 1 | 9 | | | | 0.13 |
| Purple-crowned | 2 | | | | | | | | | 2 | | | | 0.01 |
| Adelaide Rosella | 153 | 5 | 6 | 5 | 24 | 5 | 3 | 14 | 26 | 38 | 18 | 7 | 2 | 0.52 |
| Eastern Rosella | 353 | 13 | 12 | 21 | 30 | 18 | 65 | 39 | 45 | 46 | 30 | 22 | 12 | 0.70 |
| Tawny Frogmouth | 1 | | 1 | | | | | | | | | | | 0.01 |
| Laughing Kookaburra | 17 | | | | 2 | 2 | 2 | 7 | 2 | 1 | | | 1 | 0.11 |
| Red Wattlebird | 5 | | | | 1 | | | | | 1 | | 3 | | 0.05 |
| Noisy Miner | 684 | 30 | 32 | 25 | 46 | 36 | 44 | 93 | 102 | 89 | 81 | 78 | 28 | 0.95 |
| New Holland | 4 | | | | | | 4 | | | | | | | 0.01 |
| Magpie-lark | 25 | | | 4 | | 2 | 1 | 4 | 4 | 2 | | | 8 | 0.13 |
| Willie Wagtail | 1 | | | | | | | 1 | | | | | | 0.01 |
| White-backed Magpie | 283 | 5 | 16 | 20 | 22 | 11 | 26 | 32 | 34 | 54 | 29 | 18 | 16 | 0.76 |
| Little Raven | 33 | 2 | 2 | 3 | 12 | 2 | 4 | 3 | 1 | 3 | | | 1 | 0.20 |
| House Sparrow | 3 | | | | | | | 3 | | | | | | 0.01 |
| Welcome Swallow | 60 | | | 2 | 6 | 4 | | 10 | 18 | 15 | | | 5 | 0.19 |
| Tree Martin | 3 | | | | | | | 2 | | | | | 1 | 0.02 |
| Common Starling | 7 | | | | | | 7 | | | | | | | 0.02 |
| Total Species | 38 | 10 | 12 | 18 | 20 | 18 | 16 | 26 | 22 | 23 | 9 | 11 | 23 | |
| Total Visits | | 4 | 8 | 4 | 7 | 8 | 8 | 11 | 14 | 18 | 9 | 7 | 6 | |