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A STATISTICAL ANALYSIS OF TRENDS IN OCCUPANCY RATES OF WOODLAND BIRDS IN THE ACT DECEMBER 1998 TO DECEMBER 2005

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Male Hooded Robin. Photo: Helen Fallow

Background

The Woodland Project undertaken by the Canberra Ornithologists Group commenced in 1998. The report 'A Statistical Analysis of Trends in Detection Rates of Woodland Birds in the ACT, 1998 to 2004' published in 2006, gives a comprehensive background to the Project, and longitudinal trends for a range of bird species (Cunningham & Rowell 2006).

A further analysis of Project data has been undertaken, including data collected during 2005. Statistician Ross Cunningham has carried out a statistical analysis of data on 64 species in the Woodland data set that appear in more than 1% of the surveys undertaken between December 1998 and December 2005, using the same statistical methods for the 1998 to 2004 analysis. Data for a further six species which occurred in less than 1% of surveys was also analysed, as these included several species of interest.

The analyses have been undertaken using data from a period that begins and ends with the same season, that is, from December 1998 to December 2005. This was suggested by Cunningham and Rowell (2006), to possibly reduce the effect of strong seasonal variation, evident in detection rates of some species, on the estimated linear trend.

Methods used are as described in Cunningham and Rowell (2006).

In the previous data analysis, Cunningham and Rowell (2006) used the term 'detection' for describing the recording of a bird's presence, and all graphs showed the 'probability of detection'. In line with more recent literature, the term 'occupancy' is used in this report. The 'probability of occupancy' is the likelihood that the species is present; the assumption being that the detection of a species, given it is present, is high and the same for all species.

The Project monitoring areas are as listed at Table 1, p.6 in Cunningham and Rowell (2006). The two areas listed at the bottom of Table 6, Naas and Kama, were first surveyed during 2005, and these data are included in the latest analysis. Several species of interest occur regularly at those sites, including Brown Treecreeper, Varied Sittella, Diamond Firetail, Crested Shrike-tit and Jacky Winter.

It is noted that the spring of 2005 produced good rainfall in the Canberra region, after four years of below average annual rainfall. The 648 mm rainfall for 2005 was above the long-term average (622mm), but notably the spring rains were very good (100 mm in September followed by 145 mm over October/November (*The Canberra Times*, 15 January 2007). These are critical breeding months for many birds. This essentially adds a good breeding year to the previous data set, and illustrates some 'recovery' in 2005 by some species which had shown declining or uncertain trends to 2004.

Mulligans Flat/Goorooyarroo North data analysis

In addition to the analysis of data from all Woodland Project areas, a comparison of longitudinal profiles for species has been undertaken for Mulligans Flat (MUL) and Goorooyarroo North (GOO) data for the period December 1998 to December 2005, using the same criteria and methods.

This is the first occasion an analysis has been undertaken for individual areas in the Woodland Project. It was decided to undertake this to 'test the waters' in terms of comparing different areas. Mulligans Flat and Goorooyarroo North were selected for this exercise, as they are large woodland areas adjacent to each other, with substantial data sets of surveys from 1998. While their histories are broadly similar, there are some differences, and there are some differences in topography. These reserves are also the subject of an ANU experimental research project on woodlands ecology.

It should be noted that Mulligans Flat has 24 monitoring sites, some of which are in dry forest, whereas Goorooyarroo North has 9 monitoring sites, all in grassy woodland. However, for the purpose of this analysis, it was decided to include all the Mulligans Flat data/sites.

A problem relating to analyzing individual area data is that the number of species which fits the criteria for analysis (occurring in more than 1% of surveys) is less, due to the smaller number of records. Nonetheless, this analysis gives some interesting comparisons of some species in the two reserves (refer Table 3 and Appendix 4).

Results

The summary statistics on longitudinal trends in occupancy rates for 61 species which occur in more than 1% of surveys, plus six less common species, is given in Appendix 1. The p-values provide a measure of the strength of evidence against a null hypothesis of no long-term linear trend. Three waterbirds (Australasian Grebe, Wood Duck, Pacific Black Duck) were removed from the analysis as they were mainly associated with small dams which occurred at some sites.

A summary table (Appendix 2) provides the trends and comments on the trends for each species. This updates a similar table (Table 6) in Cunningham and Rowell (2006), and follows the same order of species to enable easy comparison. Graphs showing the data with various representations of trends are given in Appendix 3 and Appendix 4. Appendix 3 has the trends for all areas and Appendix 4 has the trends for Mulligans Flat and Goorooyarroo North data. All graphs include a marker for the January 2003 bushfires.

All Woodland Project areas

A summary of those species where the data shows a significant change ($p \leq 0.05$) in occupancy rate is given in Table 1.

Table 1. Species showing a significant change (p≤0.05) in occupancy rate between December 1998 and December 2005

Species	p-value	Change in occupancy rate (%)
INCREASE		
Crested Pigeon	0.03	15
Sulphur-crested Cockatoo	0.01	9
Galah	0.02	7
Weebill	0.00	14
Speckled Warbler	0.01	15
Noisy Miner	0.00	17
White-winged Chough	0.01	15
Australian Raven	0.02	10
DECREASE		
Pallid Cuckoo	0.03	23
Shining Bronze-Cuckoo	0.00	27
Tree Martin	0.05	12
Grey Fantail	0.00	9
Scarlet Robin	0.01	12
Hooded Robin	0.01	24
Black-faced Cuckoo-shrike	0.00	12
White-throated Gerygone	0.02	10
Superb Fairy-wren	0.00	14
White-plumed Honeyeater	0.03	11
Noisy Friarbird	0.00	13
Grey Currawong	0.00	15
Common Myna	0.02	13
Common Starling	0.00	20

The analysis of data from September 1998 to June 2004 in Cunningham and Rowell (2006) listed 20 species showing trends of significance (p≤0.05) (Tables 4 and 5, pp.12-13). The addition of data to the end of 2005 has altered the trends for some of these species.

Table 2 shows these species and the trend after the analysis of data to December 2005.

Table 2. Species listed in Cunningham and Rowell (2006) as increasing or decreasing, and comparison with trend after analysis of data to December 2005

Unclear = non-significant, p>0.05

Species	Sept. 1998-June 2004		Dec. 1998-Dec. 2005	
	Trend	**p-value**	**Trend**	**p-value**
Eastern Rosella	Decrease	0.01	Unclear	
Red-rumped Parrot	Decrease	0.03	Unclear	
Tree Martin	Decrease	0.00	Decrease	0.05
Grey Fantail	Decrease	0.02	Decrease	0.00
Willie Wagtail	Decrease	0.00	Unclear	
Golden Whistler	Increase	0.00	Unclear	
Black-faced Cuckoo-shrike	Decrease	0.00	Decrease	0.00
Speckled Warbler	Increase	0.00	Increase	0.01
Superb Fairy-wren	Decrease	0.03	Decrease	0.00
Dusky Woodswallow	Decrease	0.05	Unclear	
Mistletoebird	Decrease	0.04	Unclear	
Yellow-faced Honeyeater	Increase	0.01	Unclear	
White-plumed Honeyeater	Decrease	0.00	Decrease	0.03
Noisy Friarbird	Decrease	0.00	Decrease	0.00
Olive-backed Oriole	Decrease	0.03	Unclear	
Grey Currawong	Decrease	0.01	Decrease	0.00
Striated Pardalote	Decrease	0.04	Unclear	
Common Myna	Decrease	0.03	Decrease	0.02
Common Starling	Decrease	0.00	Decrease	0.00

The change in trends for some species may be the result of several factors:

a) The current analysis used data that started and finished in the same season (summer) thus reducing the strong seasonal effect on probability of occupancy.

b) The good spring rains in 2005 may have resulted in successful breeding, increasing the occupancy rate of some species which had several previous poor breeding seasons. This could affect both the resident species (eg. Eastern Rosella, Red-rumped Parrot) and migrants (eg. Dusky Woodswallow, Mistletoebird, Olive-backed Oriole).

c) The occupancy rate of migratory species could be affected by climate or habitat factors outside the region (e.g. Golden Whistler and Yellow-faced Honeyeater which breed in the mountains).

For these and other reasons, inferences relating to long term trends based on simple linear effects should be made with caution. The longer the dataset, the more meaningful the trends become, and it is suggested that, to be able to say anything useful about long term trends, survey data should be long term, at least 10 years or more.

Mulligans Flat/Goorooyarroo North

Twenty-six species were recorded in 1% or more of surveys at both Mulligans Flat and Goorooyarroo North. In this analysis, a number of species showed differences in trends between the two areas. Table 3 lists those species where the significance level of the difference in slope of the linear fit between the two areas is $p \leq 0.10$, and gives an indication of the trend.

The 26 species are listed in Appendix 1 and graphs of the longitudinal trends are included in Appendix 4.

Table 3. Species in Mulligans Flat and Goorooyarroo North for which the significance level of the difference in slope of the linear fit between the two areas is $p \leq 0.10$

Species	p-value for difference in slope of linear fit	Trend for Mulligan's Flat	Trend for Gooroo Nth
Crimson Rosella	0.08	Slight decrease	Slight increase
Rufous Whistler	0.01	Stable	Steep decrease
Striated Thornbill	0.07	Stable	Steep increase
White-throated Treecreeper	0.08	Slight increase	Slight decrease
Striated Pardalote	0.07	Slight decrease	Slight increase
Red Wattlebird	0.02	Slight increase	Slight decrease
Noisy Friarbird	0.10	Stable	Decrease
White-winged Chough	0.06	Increase	Decrease

Reasons for the differences in trends of these species between the two areas are not immediately apparent and require a closer analysis of the data, particularly the habitat data.

Discussion

As noted by Cunningham and Rowell (2006), a number of species of concern appear in low numbers in the Woodland Project and there is insufficient data to detect population trends in these species. These include:

- Diamond Firetail
- Jacky Winter
- Crested Shrike-tit
- Varied Sittella.

Cunningham and Rowell (2006) noted that more targeted surveys appeared to be needed for such species, and the wider COG data base might assist in adding more sites to the survey. Given that the Woodland Project is probably at its maximum in terms of the locations and sites which can be coordinated and monitored four times a year by volunteers with resources available, adding more sites to the Woodland Project would not appear to be feasible.

An attempt was made in the past to identify sites in the general COG database with threatened and declining species and to have COG members

survey sites twice a year. However, this proved difficult to coordinate and sustain, and to ensure regular surveys occurred etc. It may be possible to undertake a comprehensive review of general COG data on some species, but this would probably need to be funded work. It should be noted that collection of general COG data is not necessarily systematic and may not provide adequate evidence of trends, vis a vis clear trends based on statistical analyses from systematic long-term surveys.

This is an important issue to resolve, as several species are thought to warrant listing as 'vulnerable' in the ACT, but obtaining clear, statistically-based evidence of declines in abundance is proving problematic. Four species (Diamond Firetail, Dusky Woodswallow, Crested Shrike-tit and Flame Robin) are under a 'watching brief'category under the ACTs threatened species legislation, after being nominated (unsuccessfully) by COG around four years ago. Those nominations drew largely on information in the general COG database as well as anecdotal information.

Flame Robin is rarely recorded in the woodland areas (fewer than ten records in the data set), as its core habitat is in the higher forests and ranges; for this species, analysis of records in the general COG database may prove more useful.

Despite an increase in sightings of Diamond Firetails in some burned and cleared areas post the January 2003 bushfires, there is a view that the Diamond Firetail is one species which should be listed as a 'vulnerable' species in the ACT (as it is in NSW), given its almost complete absence from the ACT's large woodland reserves and very low numbers in only a few known locations.

It is noted that new, more numerically stable statistical methods in current development which deal better with low species counts, have the potential to assist in determining clearer trends for threatened birds and other species of interest (R Cunningham pers comm.).

Of the threatened species listed in the ACT, Hooded Robin is obviously a species of ongoing concern, now showing a clearer decreasing linear trend, with a significant (24%) decrease in occupancy rate from 2004 to 2005. Very small groups of this species are found in only a few Woodland Project locations (Bounds 2006).

Although it is not on the ACT threatened list, Scarlet Robin is another species with a worrying linear trend, a steady decline from 1998 to 2004 and more sharper decline in 2005. Scarlet Robin was nominated (unsuccessfully) by COG for listing in the ACT around four years ago, and may warrant a review and re-nomination.

Other resident species showing significant decreasing linear trends are Superb Fairy-wren, White-plumed Honeyeater and Grey Currawong.

A more detailed species analysis and commentary is beyond the scope of the brief for this report. However, it is considered this should preferably wait

until there are several more years of data, at least ten years of data, which would be after the 2008 surveys. Alternatively, consideration could be given to doing this in conjunction with the next analysis in two years time, which would have nine years data to the end of 2007 (but not nine years data for all sites).

For some species showing strong trends, the latest COG general data (2005-06) particularly from the Garden Bird Survey, appears to have similar patterns for some species, e.g. Noisy Friarbird, Noisy Miner. This may warrant further investigation if more detailed species analysis is undertaken.

Recommendations

1. The Woodland Project now has a good foundation data set and data should continue to be collected at existing Project locations on an ongoing basis; if continued into the longer term, this data set could be particularly important in determining changes due to factors such as climate change.
2. Given the year to year variations in trends which can occur for some species, analysis of Project data every two years would be more cost-effective, rather than annual analyses. A short report and summary table of trends could be produced two yearly, with consideration of a more detailed report and commentary at longer intervals, as funding and resources permit.
3. Further analysis of the Woodland data set for threatened and declining species of interest could be undertaken as soon as new statistical methods for dealing with species of low numbers are available.

References

Bounds J (2006). The Status of Hooded Robins in the Hall to Newline Woodland Corridor. *Canberra Bird Notes* 31: 169-177.

Cunningham RA and Rowell AM (2006). A Statistical Analysis of Trends in Detection Rates of Woodland Birds in the ACT, 1998 to 2004. This report was also published by COG (2006) in *Canberra Bird Notes* 31: 73-110.

The Canberra Times (2007). 15 January: 4.

Appendix 1 (Overall % change)

Based on the linear fit in the odds of occupancy for species which occur in more than 1% of surveys, and 6 less common species, adjusted for imbalance in survey effort between sites. Associated approximate 95 % Confidence Intervals are given and the observed significance level (p-value). Bold figures are p≤ 0.05. The significance level of the difference in slope of the linear fit between Gooroo North and Mulligans Flat data is given for those species where p≤0.10. Where p>0.10, 'ns' is recorded.

Bird Name	%Change in odds per year	Lower 95% Confidence Interval	Upper 95% Confidence Interval	Observed Significance Level of Linear Trend	Significance level of difference in slope between Goo and Mull
Common Bronzewing	9.45	-4.00	24.78	0.17	
Crested Pigeon	15.04	0.86	31.22	**0.03**	
Nankeen Kestrel	-1.03	-18.51	20.19	0.91	
Sulphur-crested Cockatoo	9.31	1.96	17.19	**0.01**	ns
Galah	6.80	0.90	13.05	**0.02**	ns
Australian King-Parrot	1.40	-13.66	19.09	0.86	
Crimson Rosella	-2.00	-6.39	2.60	0.38	0.08
Eastern Rosella	-2.41	-7.54	3.00	0.37	ns
Red-rumped Parrot	0.77	-10.04	12.87	0.89	
Laughing Kookaburra	4.67	-6.13	16.71	0.40	
Pallid Cuckoo	-23.53	-40.33	-1.99	**0.03**	
Shining Bronze-cuckoo	-27.21	-40.23	11.35	**0.00**	
Welcome Swallow	-2.21	-19.33	18.54	0.82	
Tree Martin	-12.43	-23.65	0.45	**0.05**	
Grey Fantail	-9.23	-14.05	-4.15	**0.00**	ns
Willie Wagtail	-8.57	-18.62	2.72	0.12	
Leaden Flycatcher	-10.60	-21.96	2.41	0.10	
Scarlet Robin	-12.38	-20.55	-3.37	**0.01**	ns
Hooded Robin	-24.51	-39.95	-5.10	**0.01**	
Golden Whistler	7.49	-4.36	20.80	0.22	
Rufous Whistler	0.98	-5.76	8.21	0.78	0.01
Grey Shrike-thrush	-0.84	-11.55	11.16	0.88	
Magpie-lark	-5.96	-14.97	4.01	0.22	ns
Black-faced Cuckoo-shrike	-11.76	-17.69	-5.40	**0.00**	ns

Bird Name	%Change in odds per year	Lower 95% Confidence Interval	Upper 95% Confidence Interval	Observed Significance Level of Linear Trend	Significance level of difference in slope between Goo and Mull
White-winged Triller	1.40	-11.74	16.48	0.00	
White-throated Gerygone	-9.60	-17.35	-1.13	**0.02**	ns
Western Gerygone	3.74	-7.42	16.25	0.52	ns
Weebill	14.34	8.68	20.30	**0.00**	ns
Striated Thornbill	5.09	-2.17	12.89	0.17	0.07
Brown Thornbill	-9.88	-19.73	1.18	0.07	
Buff-rumped Thornbill	-5.24	-10.63	0.47	0.07	ns
Yellow-rumped Thornbill	1.31	-6.22	9.45	0.74	ns
Speckled Warbler	14.65	3.41	27.10	**0.01**	
Superb Fairy-wren	-13.91	-19.39	-8.05	**0.00**	
Dusky Woodswallow	2.92	-11.71	19.97	0.71	
Varied Sittella	1.12	-14.99	20.27	0.90	
Brown Treecreeper	4.19	-14.27	26.62	0.67	
White-throated Treecreeper	-2.31	-9.32	5.25	0.53	0.08
Mistletoebird	-4.49	-12.37	4.09	0.29	ns
Spotted Pardalote	1.10	-5.20	7.82	0.73	ns
Striated Pardalote	3.57	-1.32	8.71	0.15	0.07
Silvereye	0.69	-9.73	12.31	0.90	
White-naped Honeyeater	-33.14	-48.47	-13.25	0.00	
Brown-headed Honeyeater	11.43	-1.46	26.00	0.08	ns
Eastern Spinebill	-9.47	-23.32	6.88	0.23	
Yellow-faced Honeyeater	5.49	-2.58	14.22	0.18	ns
White-eared Honeyeater	-7.66	-19.73	6.22	0.25	
White-plumed Honeyeater	-11.21	-20.32	-1.06	**0.03**	
Noisy Miner	17.39	7.18	28.58	**0.00**	ns
Red Wattlebird	-4.95	-11.27	1.81	0.14	0.02
Noisy Friarbird	-12.92	-19.01	-6.37	**0.00**	0.10
Red-browed Finch	-15.98	-33.28	5.80	0.13	
Olive-backed Oriole	-4.88	-16.96	8.95	0.46	
White-winged Chough	15.32	4.00	27.88	**0.01**	0.06
Pied Currawong	6.84	-0.66	14.92	0.07	
Grey Currawong	-22.12	-33.29	-9.07	**0.00**	

Bird Name	%Change in odds per year	Lower 95% Confidence Interval	Upper 95% Confidence Interval	Observed Significance Level of Linear Trend	Significance level of difference in slope between Goo and Mull
Grey Butcherbird	5.59	-9.00	22.53	0.46	
Australian Magpie	4.28	-0.68	9.49	0.09	ns
Australian Raven	9.74	1.29	18.89	**0.02**	
Common Myna	-12.83	-22.40	-2.08	**0.02**	
Common Starling	-20.21	-26.53	-13.36	**0.00**	
Less Common Birds					
Brown Goshawk	11.91	-11.78	41.96	0.34	
Gang-gang Cockatoo	14.53	-5.93	39.44	0.17	
Crested Shrike-tit	24.67	-12.09	76.81	0.21	
White-browed Scrubwren	-34.45	-53.22	-8.17	0.01	
Diamond Firetail	17.87	-9.21	53.02	0.21	
Double-barred Finch	21.35	-7.75	59.62	0.16	

Appendix 2 (Summary of trends)
Summary of trends for 61 species which occurred in more than 1% of surveys, and 6 less common species.

'Unclear' trend = non-significant trend or irregular occupancy rates.

Species	**Trends in occupancy rate** **Bold** = ACT threatened species # = species on ACT 'watching brief' (nominated by COG for 'vulnerable' status but not accepted for threatened species listing)	**Linear Trend**
Common Bronzewing	Low occupancy rate; fairly steady with increase in 2003-4 and decrease in 2005.	Unclear
Crested Pigeon	Occupancy rate fairly steady, increase in 2004, followed by slight decrease in 2005	Increase
Nankeen Kestrel	Low occupancy rate, lowest in 2002-4 followed by increase in 2005.	Unclear
Sulphur-crested Cockatoo	Occupancy rate high and steady, decrease in autumn-winter 2004, sharp increase in 2005.	Increase
Galah	High occupancy rate; decrease from 1998-2001, increase during 2002-2005, highest in 2004.	Increase
Australian King-Parrot	Typically forest-dwelling. Low occupancy rate, steady 1999-2002, increase in 2003 post-fire, sharp decrease 2004-5	Unclear
Crimson Rosella	Very high occupancy rate, overall steady trend.	Stable
Eastern Rosella	High occupancy rate, slight decline 1998-2003, then increase to highest rate in 2005.	Unclear
Red-rumped Parrot	Low occupancy rate, decrease from 1998-2002, increase from 2003 to highest level in 2005.	Unclear
Laughing Kookaburra	Occupancy rate high in 1999-2000, declining to 2001 then steady increase. Occupancy peaks in winter and summer.	Unclear
Pallid Cuckoo	Spring-summer migrant. Highest occupancy rates in spring 2001 and 2002, low in spring 2003/04, very low in 2005.	Decrease
Shining Bronze-cuckoo	Spring-summer migrant. Highest rate in spring 2000, almost total absence in 2002/03, very low 2004, increase in 2005	Decrease
Welcome Swallow	Low, variable occupancy rate.	Unclear
Tree Martin	Spring-summer migrant. Highest occupancy rate in summer 1999 and 2001, slight decline since 2001 to lowest in 2003.	Decrease
Grey Fantail	Spring-summer migrant with high occupancy rate, highest in 2001, lowest in 2004 with slight increase over this in 2005.	Decrease

Species	**Trends in occupancy rate** **Bold** = ACT threatened species # = species on ACT 'watching brief' (nominated by COG for 'vulnerable' status but not accepted for threatened species listing)	**Linear Trend**
Willie Wagtail	Moderate occupancy rate, decrease from 1998-2003, then increase to highest level in 2005.	Unclear
Leaden Flycatcher	Spring-summer migrant, moderate occupancy rate, fairly steady overall, lowest rates in 2003 and 2005	Stable
Scarlet Robin	Moderate occupancy rate, highest in winter, steady decline from 1998-2004 with sharp decline in 2005.	Decrease
Hooded Robin	**Low, irregular occupancy rate. Highest in 1999, lowest in 2004-5.**	**Decrease**
Golden Whistler	Altitudinal migrant, peaks in autumn-winter. Increase in occupancy in winters 2000-3, then steep decline 2004-5.	Unclear
Rufous Whistler	Spring-summer migrant with high and relatively steady occupancy rate.	Stable
Grey Shrike-thrush	Variable occupancy rate, steep increase from 1999-2002, then decrease to 2004 and increase again in 2005.	Unclear
Magpie-lark	Moderate, relatively steady occupancy rate.	Stable
Black-faced Cuckoo-shrike	Mostly a spring-summer migrant. High occupancy rate, decrease from 1998-2003 with slight increase to 2005.	Decrease
White-winged Triller	**Spring-summer migrant. Low occupancy rate, highest in first summer of surveys 1998/99, sharp decrease to lowest rate in 2000/01 with gentle increase thereafter.**	**Unclear**
White-throated Gerygone	Spring-summer migrant. Moderate occupancy rate, highest in summer 1999, variable but generally decreasing since.	Decrease
Western Gerygone	Mostly a spring-summer migrant. Variable occupancy rate, peaks in 1999, 2002, 2005, highest in summer 2005.	Unclear
Weebill	High occupancy rate, steady from 1999-2003, then sharp increase 2004-05.	Increase
Striated Thornbill	Moderate, somewhat variable occupancy rate with peaks in spring and autumn, highest rate in 2005.	Stable
Brown Thornbill	Low to moderate occupancy rate, peaks in winter. Steady decline from highest rate in 2000.	Unclear
Buff-rumped Thornbill	High occupancy rate, steady decline from highest rate in 1999 to lowest in 2004, with slight increase in 2005.	Unclear
Yellow-rumped Thornbill	Moderate occupancy rate, increase from low level in 1999, steady from 2001-4 then decrease in 2005.	Unclear

Species	**Trends in occupancy rate** **Bold** = ACT threatened species # = species on ACT 'watching brief' (nominated by COG for 'vulnerable' status but not accepted for threatened species listing)	**Linear Trend**
Speckled Warbler	Low occupancy rate with peaks in summer and winter. Increase from lowest rate in 1999 to highest in 2003, with slight decrease since.	Increase
Superb Fairy-wren	High occupancy rate. Steady decline from highest levels in 1999-2000 to lowest in 2004. Slight increase in 2005.	Decrease
Dusky Woodswallow #	Spring-summer migrant, low occupancy rate since a peak in 1999, lowest rate in 2003/04, but has evened out since. More data needed to clarify trend.	Unclear
Varied Sittella	**Low variable occupancy rate, lowest in 1999, highest in 2004.**	**Unclear**
Brown Treecreeper	**Low variable occupancy rate, highest in 1999, steep decrease the following year, increasing to peak at end 2002. Overall, fairly steady since 2001, but long-term trend unclear due to very low numbers.**	**Unclear**
White-throated Treecreeper	Moderate occupancy rate, lowest in 1999, sharp increase in 2000, steady decrease since.	Unclear
Mistletoebird	Spring-summer migrant. Moderate to high occupancy rate. Lowest rate in 2002, highest in 2005.	Unclear
Spotted Pardalote	Moderate occupancy rate, winter/spring peaks. Steady decline from 1999-2003, then sharp increase to highest level in 2005 (post-fire recovery?).	Unclear
Striated Pardalote	Partial altitudinal migrant. High occupancy rate, spring and autumn peaks. Lowest levels in 2003 after fires, increasing to highest rate in 2005.	Unclear
Silvereye	Partial passage migrant, peaks during autumn and spring. Low occupancy rate, highest in 2001, gentle decline to 2005.	Unclear
White-naped Honeyeater	Typically forest-dwelling, passage migrant in woodlands, peaks in autumn and spring. Irregular occupancy rate, highest in 2002 and 2003.	Unclear
Brown-headed Honeyeater	Low occupancy rate, irregular, non-seasonal. Sharp increase in summer 2005.	Unclear
Eastern Spinebill	Low occupancy rate, irregular. Highest rate in autumn 2004 followed by sharp decline to lowest level in 2005.	Unclear
Yellow-faced Honeyeater	Passage migrant in woodlands, peaks in autumn and spring. Moderate occupancy rate, highest in spring 2002/3, decline since.	Unclear

Species	**Trends in occupancy rate** **Bold=**ACT threatened species #=species on ACT 'watching brief' (nominated by COG for 'vulnerable' status but not accepted for threatened species listing	**Linear Trend**
White-eared Honeyeater	Altitudinal migrant, peaks in winter. Moderate but irregular occupancy rate, highest in 1999 & 2003, lowest in 2005.	Unclear
White-plumed Honeyeater	Moderate occupancy rate, peaks in winter and summer. Gentle decline from 1999-2004, slight increase in 2005.	Decrease
Noisy Miner	Moderate occupancy rate, non-seasonal, steady until sharp increase in 2005.	Increase
Red Wattlebird	Moderate occupancy rate, highest in 1999, steep decrease to 2001 then fairly steady to 2005.	Unclear
Noisy Friarbird	Spring-summer migrant. High occupancy rate, highest in 1999-2000, steady decline since with slight peak in 2004.	Decrease
Red-browed Finch	Low irregular occupancy rate. Highest rate in autumn 2002, virtually absent in 2005.	Unclear
Olive-backed Oriole	Spring-summer migrant. Irregular occupancy rate, highest in 1999-2000, lowest 2003, increase again 2004/5.	Unclear
White-winged Chough	Low to moderate occupancy rate, peaks in spring. Increase from lowest level in 2000 to highest rate in 2005.	Increase
Pied Currawong	Moderate occupancy rate, steady after sharp decrease from highest level in 1999.	Stable
Grey Currawong	Low occupancy rate, autumn-winter peaks. Steady decline from highest level in 1999 to lowest in 2004, slight increase in 2005	Decrease
Grey Butcherbird	Low occupancy rate, peaks in autumn. Lowest rate in 1999, steep increase to 2001, slight decrease to 2005.	Unclear
Australian Magpie	Occupancy rate high and steady.	Stable
Australian Raven	Moderate occupancy rate, peaks in autumn. Steady increase from 1999 to highest level in 2005.	Increase
Common Myna	Moderate occupancy rate, peaks in spring-summer. Steady decrease from 2000-4 with sharp increase in spring 2005.	Decrease
Common Starling	High occupancy rate, peaks in spring. Steady decrease from 2000-3 with sharp increase in 2004-5.	Decrease

Species	**Trends in occupancy rate** **Bold=**ACT threatened species #=species on ACT 'watching brief' (nominated by COG for 'vulnerable' status but not accepted for threatened species listing	**Linear Trend**
Less Common Species	**All have low occupancy rates**	
Brown Goshawk	Peaks in spring. General increase from very low level in 1999 to highest in 2004-5.	Unclear
Gang gang Cockatoo	Typically forest-dwelling. Sharp peak in 1999 then low steady rate since.	Unclear
Crested Shrike-tit #	Irregular occupancy rate. Peaks mostly spring/summer. Lowest rates 2000 and 2001, highest 1999, 2002/03, 2004. More data needed to clarify trend.	Unclear
White-browed Scrubwren	Highest occupancy rate at start of surveys in 1999, steady decline to almost complete absence in 2005.	Decrease
Diamond Firetail #	Irregular occupancy rate, with summer-autumn peaks. Sharp decrease from summer 2003, then steep increase to highest peak autumn 2005 (post fire effects?).	Unclear
Double-barred Finch	Irregular occupancy rate, peaks in summer and winter. Highest level in winter 2005	Unclear

Appendix 3 (Graphs all Woodland Project areas)

Graphs of longitudinal trends for some of the 61 species recorded in at least 1% of surveys between December 1998 and December 2005, plus 6 less common species of interest.
[**Editor's note.** Ony a selection of graphs is presented in this reproduction of the paper. For all graphs, please consult the COG website www.canberrabirds.org.au]

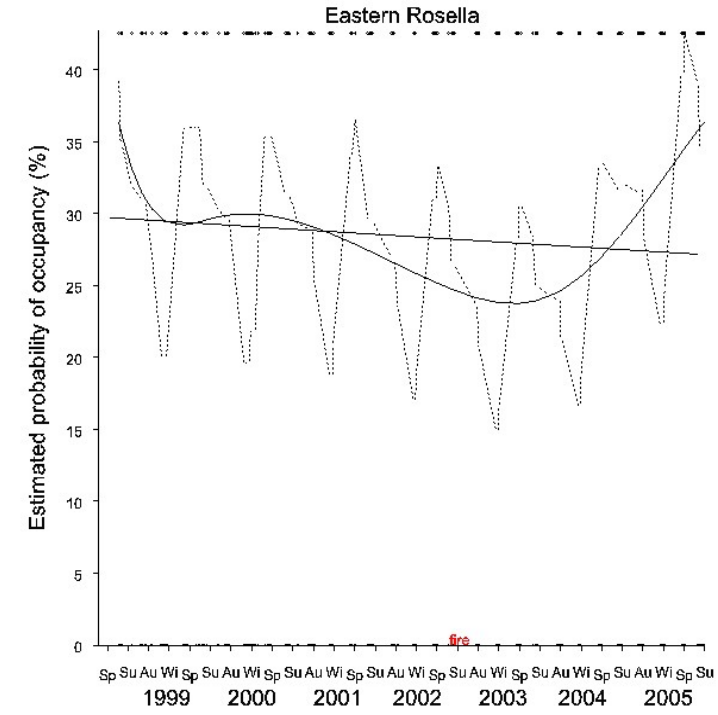
* The smoothed trend was determined using a regression spline, the seasonal component by a second order harmonic, and the 'linear' trend by fitting a straight line. The scale for analysis was logistic and so the linear line on the natural scale will be slightly curved. Statistical adjustments have been made to correct for the lack of balance in the data set, due to the changing numbers of sites being surveyed during the period. The model(s) are a special case of a general statistical framework for analysis known as generalized linear models(GLM) and/or generalized linear mixed models (GLMM).

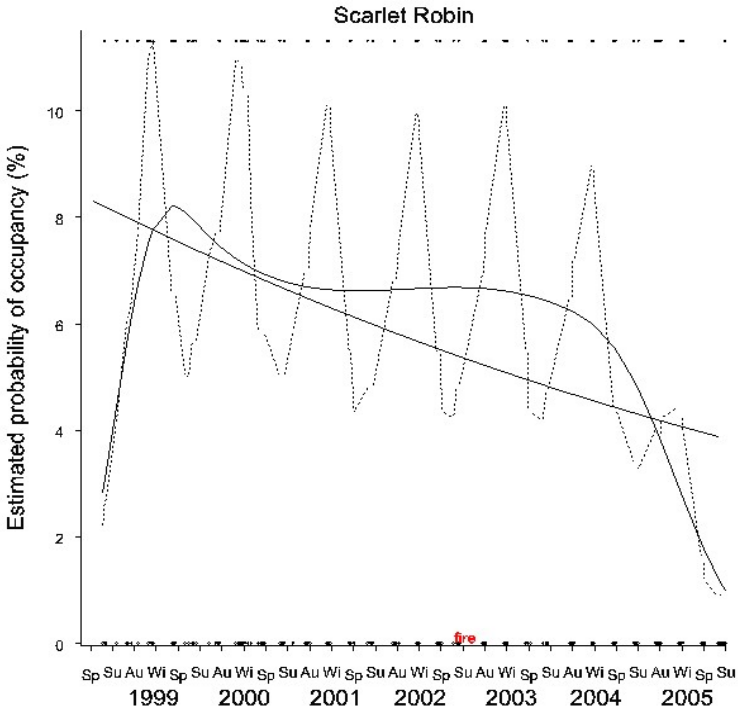
*Graphs show:
_____ linear trend. (straight/slightly curved line)

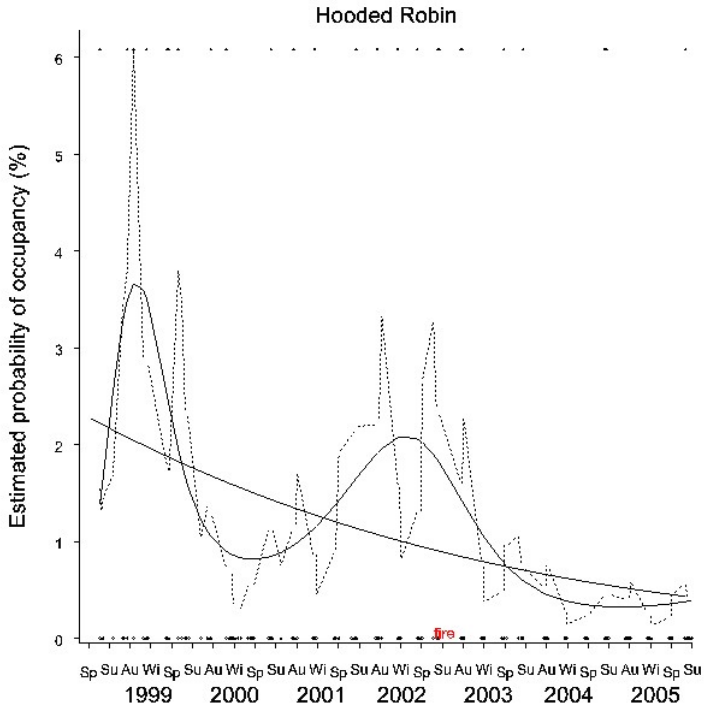
…..... smoothed trend + seasonal component

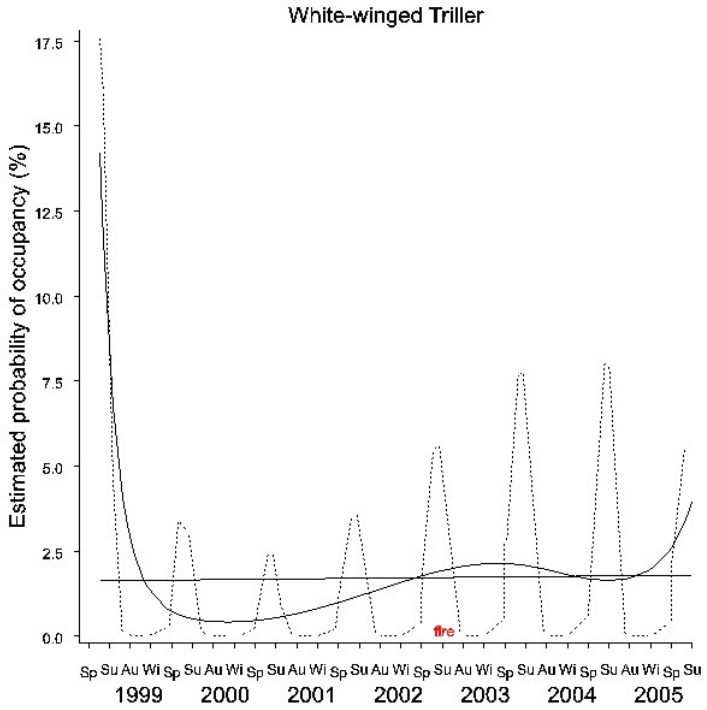
_____ smoothed trend

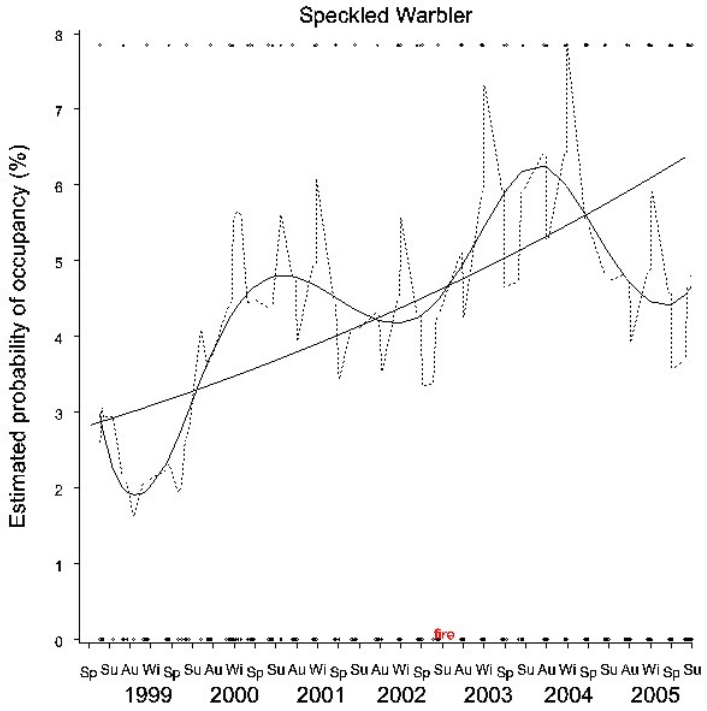
* Smoothed curves show high inter-year and high intra-year variability, which seems common to most 'long' term bird data I've looked at. For these reasons inferences relating to long term trends based on simple linear effects may not be meaningful. That is, to be able to say anything useful about long term trends survey data should be long term, say 10 years or more.

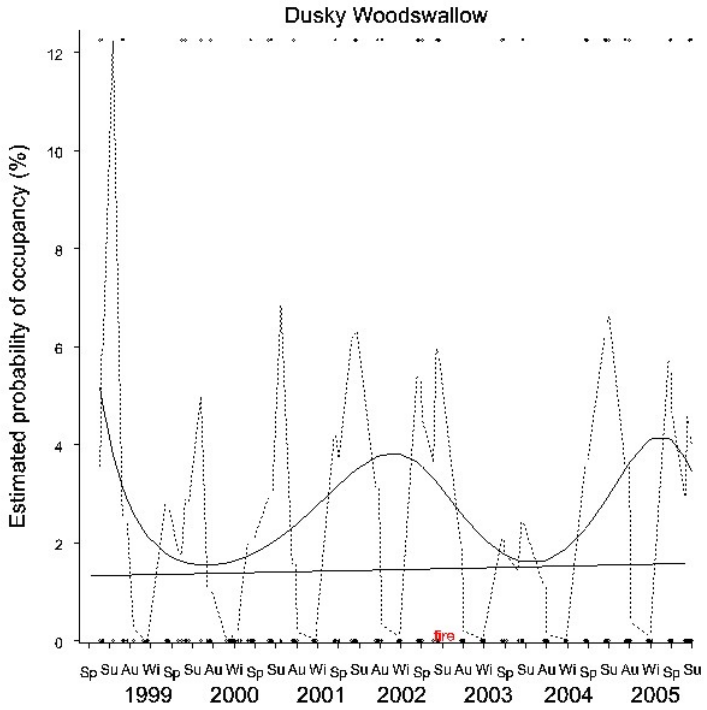

Eastern Rosella
Estimated probability of occupancy (%)
0
5
10
15
20
25
30
35
40
fire
Sp Su Au Wi Sp Su Au Wi Sp Su Au Wi Sp Su Au Wi Sp Su Au Wi Sp Su Au Wi Sp Su Au Wi Sp Su
1999
2000
2001
2002
2003
2004
2005

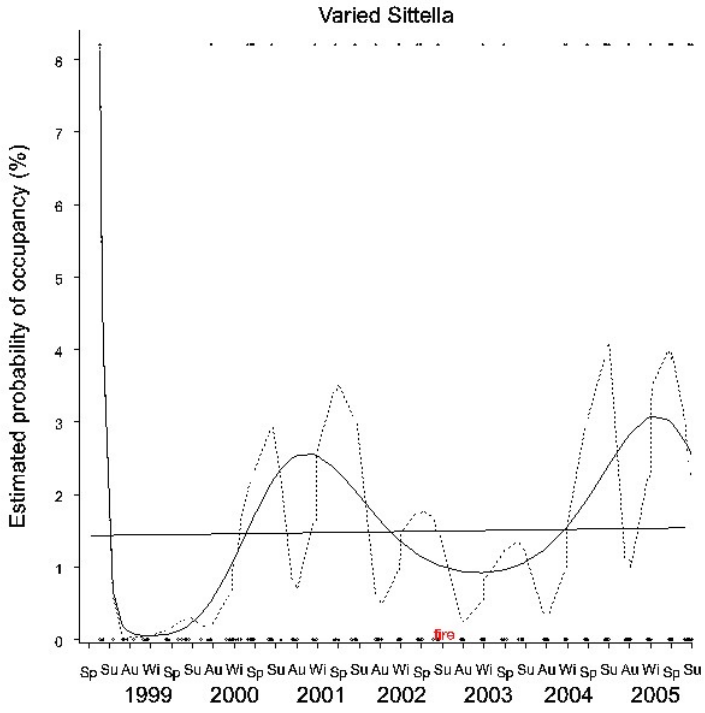

Scarlet Robin
Estimated probability of occupancy (%)
0
2
4
6
8
10
fire
Sp Su Au Wi Sp Su Au Wi Sp Su Au Wi Sp Su Au Wi Sp Su Au Wi Sp Su Au Wi Sp Su Au Wi Sp Su
1999
2000
2001
2002
2003
2004
2005

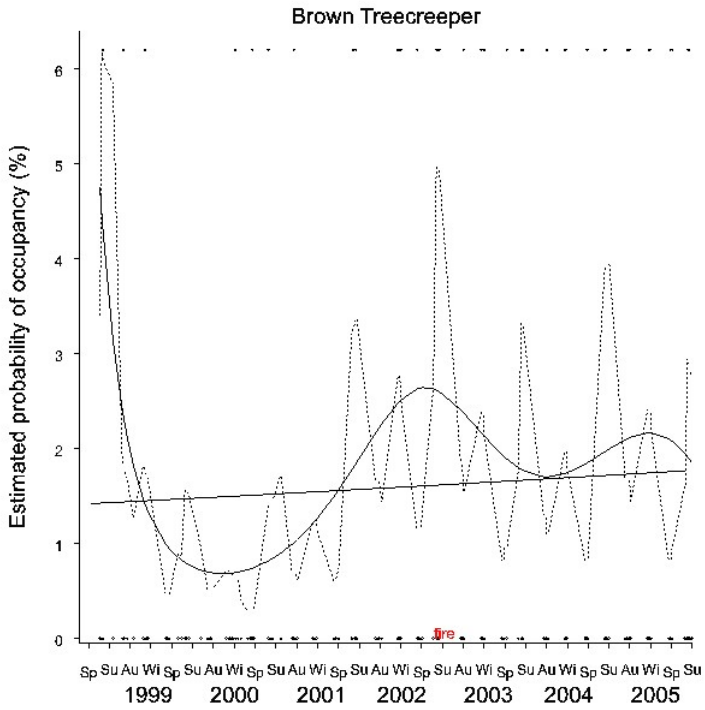

Hooded Robin
Estimated probability of occupancy (%)
0
1
2
3
4
5
6
fire
Sp Su Au Wi Sp Su Au Wi Sp Su Au Wi Sp Su Au Wi Sp Su Au Wi Sp Su Au Wi Sp Su Au Wi Sp Su
1999
2000
2001
2002
2003
2004
2005

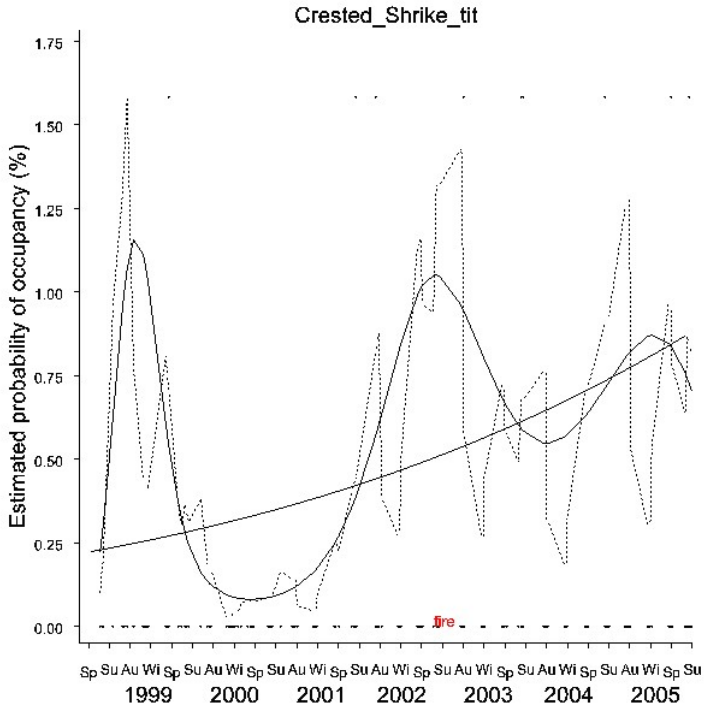

White-winged Triller
Estimated probability of occupancy (%)
0.0
2.5
5.0
7.5
10.0
12.5
15.0
17.5
fire
Sp Su Au Wi Sp Su Au Wi Sp Su Au Wi Sp Su Au Wi Sp Su Au Wi Sp Su Au Wi Sp Su Au Wi Sp Su
1999
2000
2001
2002
2003
2004
2005

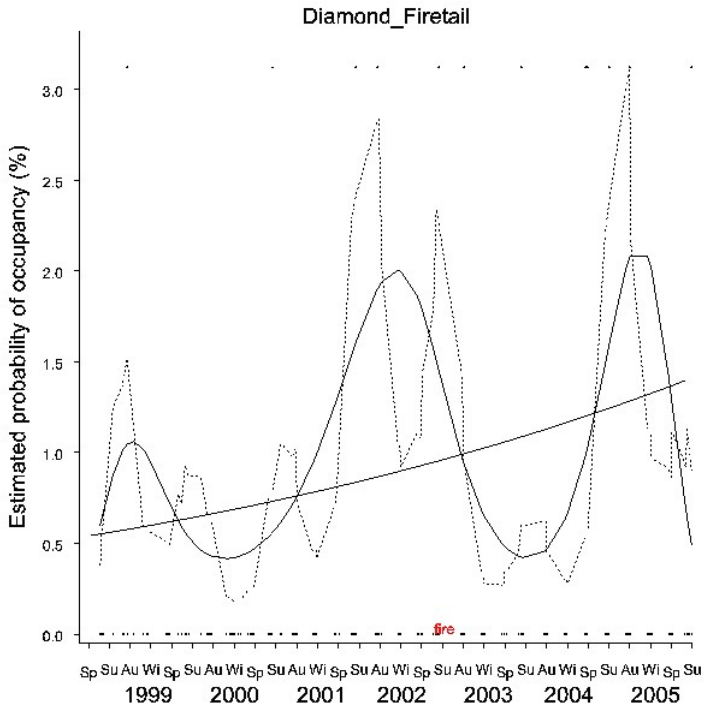

Speckled Warbler
Estimated probability of occupancy (%)
0
1
2
3
4
5
6
7
8
fire
Sp Su Au Wi Sp Su Au Wi Sp Su Au Wi Sp Su Au Wi Sp Su Au Wi Sp Su Au Wi Sp Su Au Wi Sp Su
1999
2000
2001
2002
2003
2004
2005


Dusky Woodswallow
Estimated probability of occupancy (%)
0
2
4
6
8
10
12
fire
Sp Su Au Wi Sp Su Au Wi Sp Su Au Wi Sp Su Au Wi Sp Su Au Wi Sp Su Au Wi Sp Su Au Wi Sp Su
1999
2000
2001
2002
2003
2004
2005


Varied Sittella
Estimated probability of occupancy (%)
0
1
2
3
4
5
6
7
8
fire
Sp Su Au Wi Sp Su Au Wi Sp Su Au Wi Sp Su Au Wi Sp Su Au Wi Sp Su Au Wi Sp Su Au Wi Sp Su
1999
2000
2001
2002
2003
2004
2005


Brown Treecreeper
Estimated probability of occupancy (%)
0
1
2
3
4
5
6
fire
Sp Su Au Wi Sp Su Au Wi Sp Su Au Wi Sp Su Au Wi Sp Su Au Wi Sp Su Au Wi Sp Su Au Wi Sp Su
1999
2000
2001
2002
2003
2004
2005


Crested_Shrike_tit
Estimated probability of occupancy (%)
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
fire
Sp Su Au Wi Sp Su Au Wi Sp Su Au Wi Sp Su Au Wi Sp Su Au Wi Sp Su Au Wi Sp Su Au Wi Sp Su
1999 2000 2001 2002 2003 2004 2005

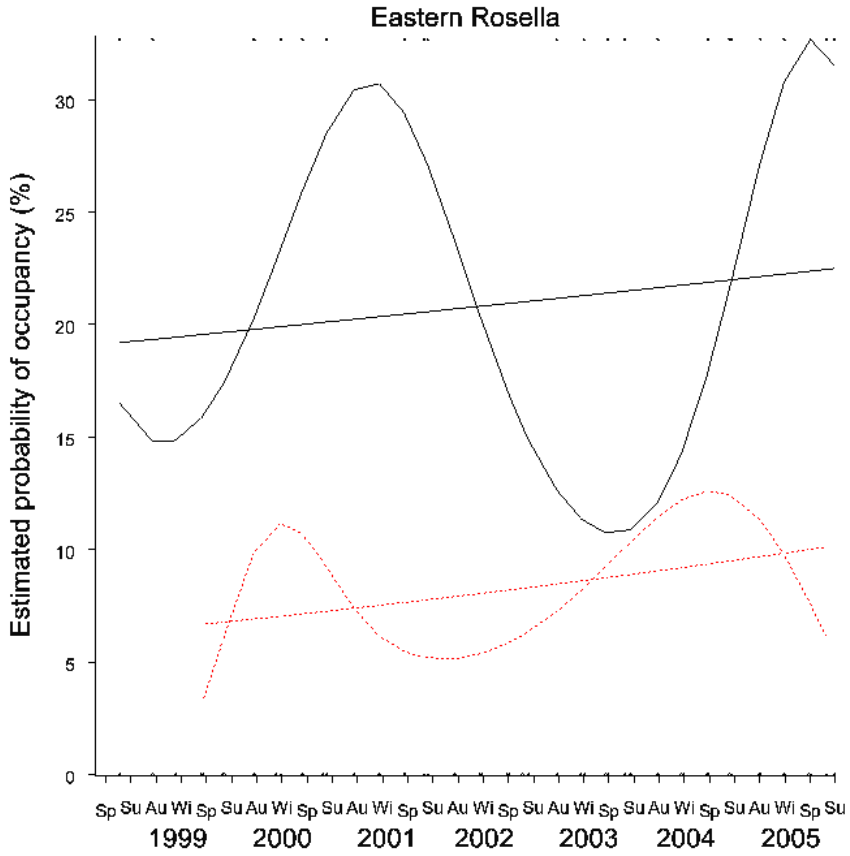

Diamond_Firetail
Estimated probability of occupancy (%)
3.0
2.5
2.0
1.5
1.0
0.5
0.0
fire
Sp Su Au Wi Sp Su Au Wi Sp Su Au Wi Sp Su Au Wi Sp Su Au Wi Sp Su Au Wi Sp Su Au Wi Sp Su
1999 2000 2001 2002 2003 2004 2005

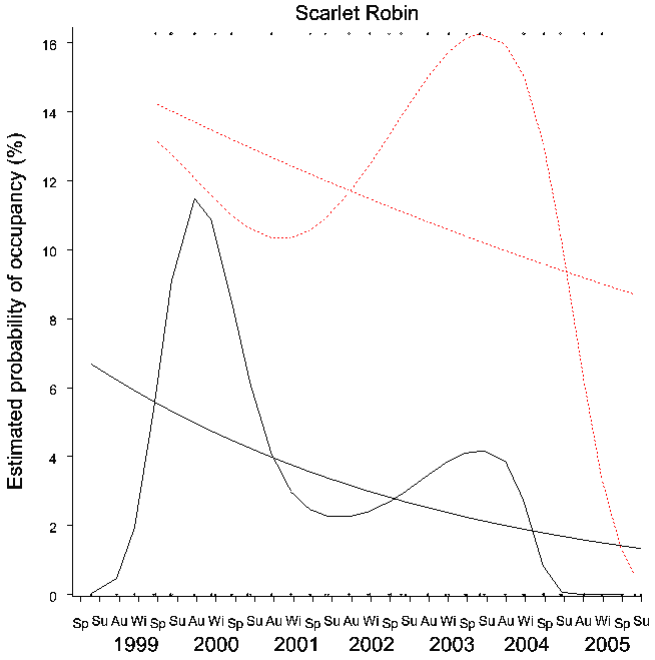
Appendix 4 (Graphs Mulligans Flat/Goorooyarroo North)

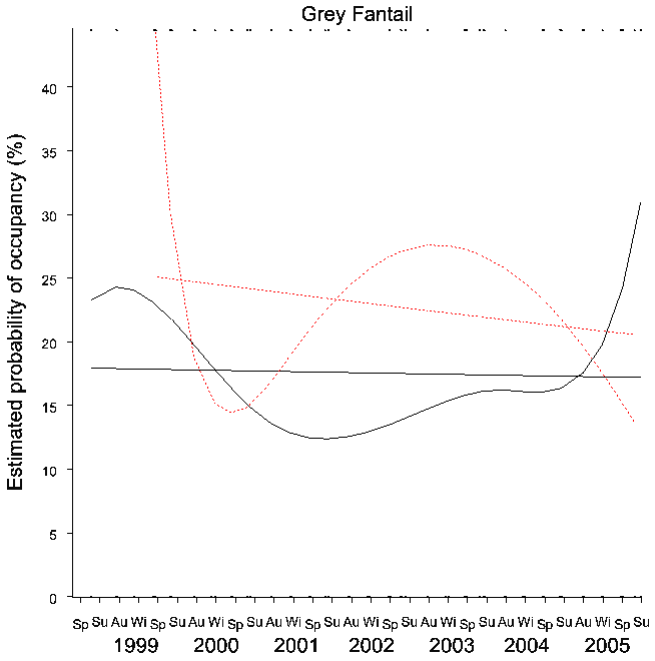
Graphs of longitudinal trends for data from Mulligans Flat and Goorooyarroo North, December 1998 to December 2005.

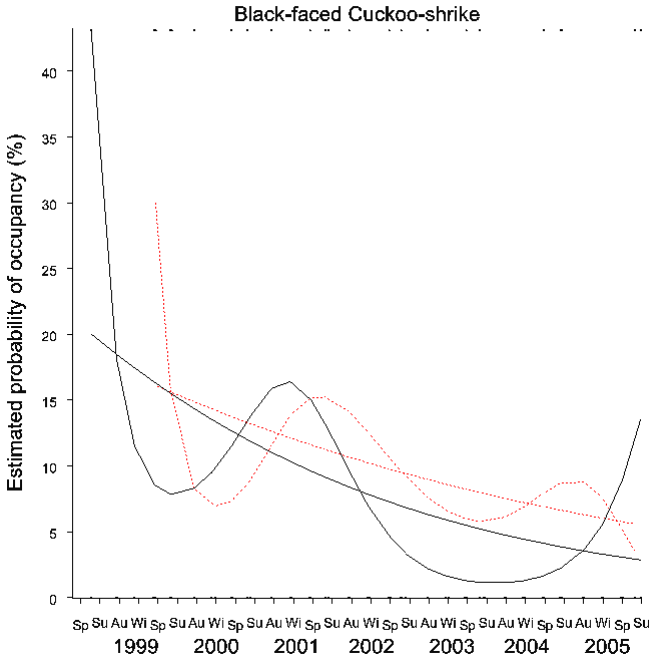
Dotted line is Mulligans Flat, solid line is Goorooyarroo North.

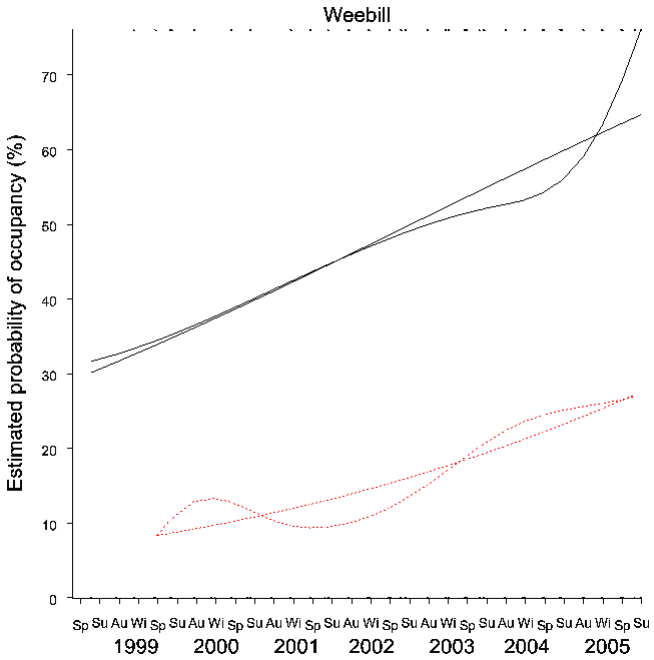
[**Editor's note:** A selection of graphs only. For the full set, see the version of this report on the COG website http://www.canberrabirds.org.au/conservingwoodlandbirds/woodlandbirdmonitoring.htm]

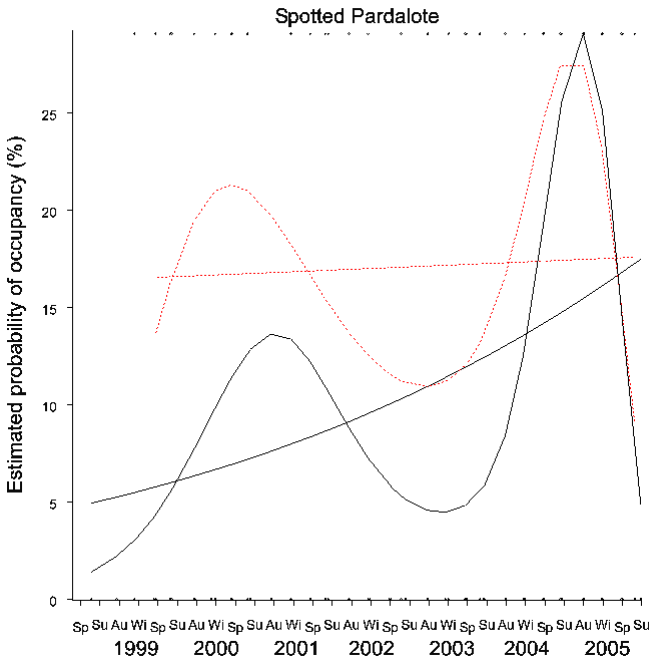


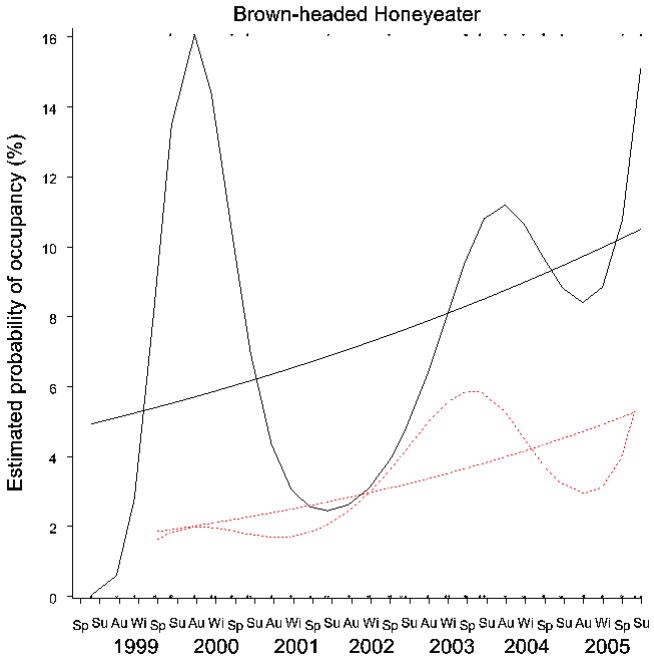

Scarlet Robin
Estimated probability of occupancy (%)
0
2
4
6
8
10
12
14
16
Sp Su Au Wi Sp Su Au Wi Sp Su Au Wi Sp Su Au Wi Sp Su Au Wi Sp Su Au Wi Sp Su Au Wi Sp Su
1999 2000 2001 2002 2003 2004 2005


Grey Fantail
Estimated probability of occupancy (%)
0
5
10
15
20
25
30
35
40
Sp Su Au Wi Sp Su Au Wi Sp Su Au Wi Sp Su Au Wi Sp Su Au Wi Sp Su Au Wi Sp Su Au Wi Sp Su
1999 2000 2001 2002 2003 2004 2005


Black-faced Cuckoo-shrike
Estimated probability of occupancy (%)
0
5
10
15
20
25
30
35
40
Sp Su Au Wi Sp Su Au Wi Sp Su Au Wi Sp Su Au Wi Sp Su Au Wi Sp Su Au Wi Sp Su
1999 2000 2001 2002 2003 2004 2005


Weebill
Estimated probability of occupancy (%)
0
10
20
30
40
50
60
70
Sp Su Au Wi Sp Su Au Wi Sp Su Au Wi Sp Su Au Wi Sp Su Au Wi Sp Su Au Wi Sp Su
1999 2000 2001 2002 2003 2004 2005


Spotted Pardalote
Estimated probability of occupancy (%)
0
5
10
15
20
25
Sp Su Au Wi Sp Su Au Wi Sp Su Au Wi Sp Su Au Wi Sp Su Au Wi Sp Su Au Wi Sp Su Au Wi Sp Su
1999
2000
2001
2002
2003
2004
2005


Brown-headed Honeyeater
Estimated probability of occupancy (%)
0
2
4
6
8
10
12
14
16
Sp Su Au Wi Sp Su Au Wi Sp Su Au Wi Sp Su Au Wi Sp Su Au Wi Sp Su Au Wi Sp Su Au Wi Sp Su
1999
2000
2001
2002
2003
2004
2005

WHAT DETERMINES HORSFIELD'S BRONZE-CUCKOO NUMBERS IN CANBERRA?

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Introduction

If you've been birding in Canberra for a few years, you might have noticed that the onset of spring is sometimes marked by an influx of large numbers of cuckoos, whereas in other years they are few and far between. Cuckoos in our region are migratory, but little is known about their movements or what factors influence their choice of a breeding site.

I've been studying Horsfield's Bronze-Cuckoos *Chalcites basalis* in Campbell Park, Canberra since 1999, in collaboration with Rebecca Kilner (University of Cambridge). Horsfield's Bronze-Cuckoos are specialist parasites of fairy-wrens, although they also parasitize a range of secondary hosts including thornbills. We attempted to find every nest of the Superb Fairy-wren *Malurus cyaneus* each breeding season and also as many thornbill nests as possible to gain accurate estimates of parasitism rates by cuckoos, and thereby to gain insights into the factors that influence annual parasitism rates.

Two factors are likely to influence choice of a breeding site by Horsfield's Bronze-Cuckoos. First, host density is likely to be critical. Cuckoos lay a single egg in each host nest, during the host's laying period. In order to have sufficient host nests that are ready for parasitism when the cuckoo has an egg to lay, there must be plenty of hosts breeding. Pairs of Horsfield's Bronze-Cuckoos are territorial (Langmore *et al*. in press), so sufficient host territories must be contained within a defendable area. Second, Brooker *et al*. (1979) records that Horsfield's Bronze-Cuckoos tend to appear in regions following heavy rainfall. Good spring rains could have two benefits: not only would they be likely to improve food availability for cuckoos (primarily caterpillars); but they also result in higher breeding productivity and a longer breeding season in the host fairy-wrens (Cockburn pers. comm., Brooker & Brooker 2001).

We explored the influence of these two variables on parasitism rates in Campbell Park.

Results

Of 639 Superb Fairy-wren nests in which eggs were laid, 104 (15.8%) were parasitised by Horsfield's Bronze-Cuckoos (Langmore & Kilner, in press). However, annual parasitism rates varied dramatically, ranging from 0 – 37% of fairy-wren nests. No thornbill nests were parasitised by Horsfield's Bronze-Cuckoos, although they suffered similar rates of parasitism by Shining Bronze-Cuckoos *Chalcites lucidus* (15.6% of 77 the nest of Buff-rumped Thornbills *Acanthiza reguloides* were parasitised, and 21% of 62 nests of Yellow-rumped Thornbills *Acanthiza chrysorrhoa* were parasitised).

We found highly significant effects of both host density (Generalized Linear Mixed Model, $\chi^2_1 = 76.97$, $P < 0.0001$) and breeding season rainfall ($\chi^2_1 = 29.51$, $P < 0.0001$) on Horsfield's Bronze-Cuckoo parasitism rates in Campbell Park (Fig. 1).

Figure 1 illustrates that from 1999 to 2002, parasitism rates reflected breeding season rainfall almost exactly. Then in 2003 parasitism rates decline to zero, despite an increase in rainfall. This decline in parasitism reflects a dramatic decline in host density. Fairy-wren numbers declined by 50% in Campbell Park between 2002 and 2003, perhaps partly related to the comprehensive clearing of sweet briar *Rosa rubigonosa*, which had been the main fairy-wren nest site in the Park. With a gradual increase in host density in 2006, one pair of cuckoos returned to the Park. The importance of host density is reflected in a significant interaction between host density and rainfall ($\chi^2_1 = 14.95$, $P = 0.0001$), indicating that cuckoo parasitism rates were closely related to breeding season rainfall, but only while host density remained high (Fig. 1).

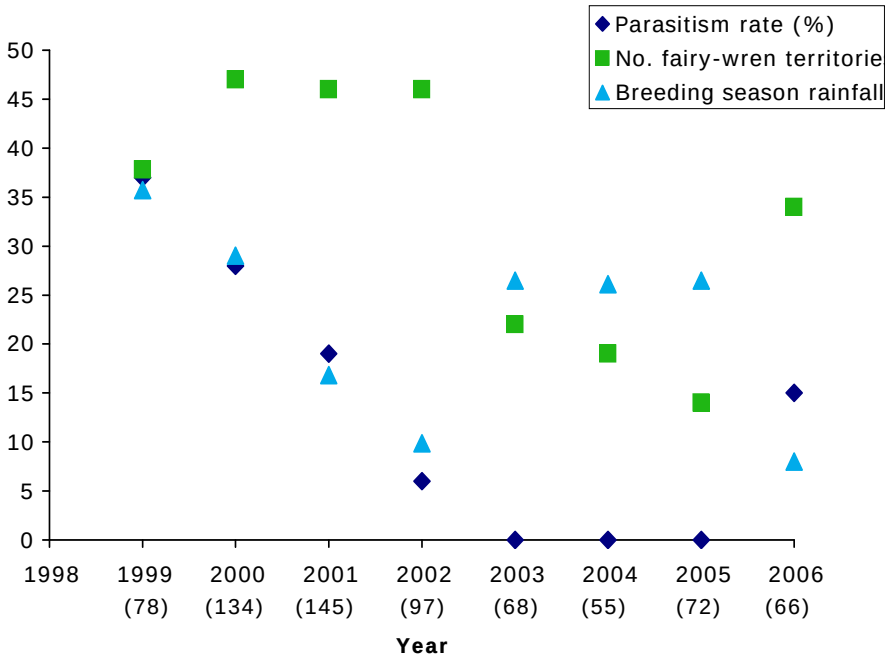

Fig. 1. Parasitism rate (% Superb Fairy-wren nests in which eggs were laid that were parasitised by a Horsfield's Bronze-Cuckoo. Number of Superb Fairy-wren nests in which eggs were laid in each year is given in parentheses below the x axis), host density (no. of Superb Fairy-wren groups in the study area) and rainfall (cm) during the breeding season from 1999 to 2006 in Campbell Park, Canberra. From Langmore & Kilner (2007).

Discussion

Horsfield's Bronze-Cuckoos appear to be both migratory and nomadic. None of our colour-banded cuckoo fledglings ever returned to Campbell Park to breed, and our genetic data indicated that none of 43 adults or juveniles returned to the study site to breed in subsequent years (Langmore *et al*, in press). Thus we have no evidence to suggest that Horsfield's Bronze-Cuckoos ever return to their natal or breeding sites in subsequent years. A highly transitory and nomadic pattern of movements is further suggested by the discovery that early in the season females occupied their breeding territories for less than six weeks, before being replaced by a second round of females that then continued to breed for a further two to three months (Langmore *et al*. in press).

Such nomadism appears to allow Horsfield's Bronze-Cuckoos to 'follow the rains' to some extent and to choose a breeding site entirely based on its suitability for breeding. Host density appears to be the most critical factor that influences the cuckoo's decision to settle at a site. Campbell Park supported a maximum of two pairs of Horsfield's Bronze-Cuckoos at any one time. Cuckoo territory size ranged from two to 27 ha and usually encompassed 10-15 fairy-wren territories. (Langmore *et al*. in press). When host density declined to less than 25 groups within the Park, no Horsfield's Bronze-Cuckoo pairs settled to breed, although a few individuals passed through in early spring each year.

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Brooker MG & Brooker LC (2001). Breeding biology, reproductive success and survival of blue-breasted fairy-wrens in fragmented habitat in the Western Australian wheatbelt. *Wildlife Research* **28:** 205-214.

Langmore NE, Adcock GJ & Kilner RM (2007). The spatial organization and mating system of Horsfield's bronze-cuckoos *Chalcites basalis*. *Animal Behaviour*, in press.

Langmore NE & Kilner RM (2007). Breeding site and host selection by Horsfield's bronze-cuckoos *Chalcites basalis*. *Animal Behaviour*, in press.

LATE BREEDING RECORDS FOR THE AUSTRALASIAN GREBE FROM THE CANBERRA REGION

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The Australasian Grebe *Tachybaptus novaehollandiae* is a common breeding resident throughout the ACT and surrounding country. It is found on many wetlands with still water, including many small farm dams (Frith 1984; Taylor and Canberra Ornithologists Group 1992; Wilson 1999).

Birds on smaller permanent waters in SE Australia can produce clutches over a ten to 12 week period (September to November). After flooding events opportunistic breeding has been recorded from August to April (Marchant and Higgins 1990). The breeding season for Canberra is given from early October to mid-January (Frith 1984), while the *Birds of the Canberra Region* Field List (COG 1966) indicates a more extended period from September to March. However, both references include observations of pairs with dependent young, rather than indicating that clutches can be found over such long periods.

The key features of the breeding biology of the Australian Grebe according to Marchant and Higgins (1990) are: The nest is constructed in about one week; clutches contain two to six eggs; and incubation commences once the first egg is laid. The laying interval between eggs can be up to 48 hours or irregular: as a result the young hatch asynchronously. The incubation is shared between both parents and takes 23 days and young are independent at eight weeks. Pairs could start a second clutch when the young of the first brood are about three weeks old and feed independently.

This note provides details of two late broods of the Australasian Grebe in the 2006-07 breeding season from the Canberra region.

(1) *Stormwater pond along Katoomba Street in the new Canberra suburb of Harrison in Gungahlin*

- 4 February 2007: I noted an active nest with one bird incubating; the nest was only about 1.5 m out from the shore: in addition to the pair, a group of six immature birds was present. There were no interactions between the adults and the immatures. The latter could potentially have been the offspring from an earlier brood of the pair or flown in from other sites.
- 11 February 2007: The same; with falling water level, nest now only about 1 m from shore.
- 16 February 2007: Pair with one very small young, probably hatched within the previous 48 hours, on water; one adult warned (clicking calls) as I approached the nest, the young slid up the back and under cover of the wings of the other parent. Careful lifting of the plant

matter on top of the nest platform with a stick revealed one further egg. I covered it up again and left the area quickly and watched the nest from a distance. The adult with the young on its back swam very soon back to the nest, removed the plant material covering the remaining egg and settled down to brood.

- 19 February 2007: Pair with the young riding on the back of one adult; birds showed no further interest in the nest; there was no sign of the second egg in the nest, and there was only the one young with the parents.
- 21 February 2007: Pair present, one partner with young on its back; as a dog runs along the shore the parent with the young lets it slip on to the water and dives repeatedly; the young swims for a while and also dives a couple of times; the young is picked up again a few minutes later; 3 immature birds also present.
- 23 February 2007: Pair with 1 young; 3 immature birds.
- 12 March 2007: Pair, and the 1 young swimming and diving on its own; a third adult is vigorously chased by the pair (on and under water and in low pursuit flight over the pond surface), no sign of immature birds.
- 13 April 2007: Pair present; the young, now 8 weeks old, feeding close to the shore in shallow water; another immature (a bit larger, striping on head and neck less marked and neck and flanks more buff than on the resident young) follows it closely and drives it off, several times forcing it to run on land along the shore. Finally after another intense pursuit of the younger bird on water, an adult swims close and drives the older immature bird away. Otherwise no interactions between the adults and their offspring. The pair swims together for a little while and then decides to chase a Eurasian Coot *Fulica atra* - the first time that the species was noted during my visits - forcing the Coot to fly low over the water in order to gain more distance between it and its pursuers.

Calculating back from a hatching date of the young around 15/16 February, the nest would have been constructed in the week of 15 January, incubation (23 days) commencing a week later around 22/23 January.

(2) *Jerrabombera Lake in Greater Queanbeyan.*

On 11 April 2007 Rhonda and Lindsay Hansch sent an email to the COG chat line with a photo of an adult Australasian Grebe and four still very downy young. The photo was taken in the morning of the same day. To judge by the size of the young, they would have been no older than two weeks. The picture also nicely illustrates that the young hatched asynchronously over a few days with one bird much smaller than its siblings.

Again calculating back from the estimated age of the brood at the time the photo was taken, nest construction may have commenced in the last days of February, and incubation initiated around 5 March. The young would be fully independent in the later part of

May. No earlier observations from this pair/family were available (Rhonda and Lindsay Hansch, pers. comm).

Discussion

The Gungahlin observation, and notably the one from Jerrabombera, extend the breeding season for the Australasian Grebe in the Canberra region by several weeks, although it is difficult to have a proper reference time of what is the 'normal' breeding season for the species in our region (Frith 1984; COG 1966). These publications do not differentiate the periods over which clutches are found from the overall time of nesting, to raising broods to independence. Defining the 'breeding period' of a given species may not always be straightforward, an issue brought into focus in the context of the GBS by the example of so-called late breeding records for some parrot species when young birds may still solicit food from their parents in the midst of winter. Hence, using the core time over which clutches are found in the Australasian Grebe in south-eastern Australia may be the best way to demonstrate the lateness of the two breeding records reported here.

If we take the general trend for SE Australian birds, then the laying period extends for 12 weeks from September to November. The calculated times for the start of incubation of the two broods from the Canberra region were end of January and early March, i.e. two to four months beyond the normal range, but within the time frame for opportunistic breeding in SE Australia (August to April).

Initiation of clutches outside the standard period can happen on recently flooded bodies of water (Dann 1981; Marchant and Higgins 1990). However, this scenario does not seem to apply to the observations from the Canberra area. Both, the pond in Harrison and Jerrabomberra Lake, were filled with water and showed only limited fluctuations in water level. Nevertheless, the event of rain *per se* in January-February 2007 after a long dry spell may still have triggered breeding, or the food supply in these permanent waters and the warm weather may have allowed late breeding. Unfortunately, no observations were available for either pair of their earlier 2006 breeding history from the core period September to November.

My general impression from the 2006-2007 breeding season was that on the water bodies that held enough water through the drought period the Australasian Grebe bred successfully at a number of places. Examples from my own observations include the following: on 4 February 2007 two pairs, one of those with three young (about two-thirds the size of the adults) and one with two young, nearly fully grown, on a larger pond a few hundred metres down from the pond at Katoomba Road in Harrison, close to Flemington Road; and at Mulligans Flat on 18 December 2006 a pair had reared three young close to fledging stage on a dam near the stockyard, and on the large dam a pair was tending to five young (about half the size of the adults).

Stormwater ponds and lakes in the new suburbs are certainly providing a new habitat which may allow the species to

realise greater breeding potential than on other wetlands.

Acknowledgment

I am grateful to Rhonda and Lindsay Hansch for allowing me to include their observation from Lake Jerrabombera and for making the photo of the family of Australian Grebes available for this note.

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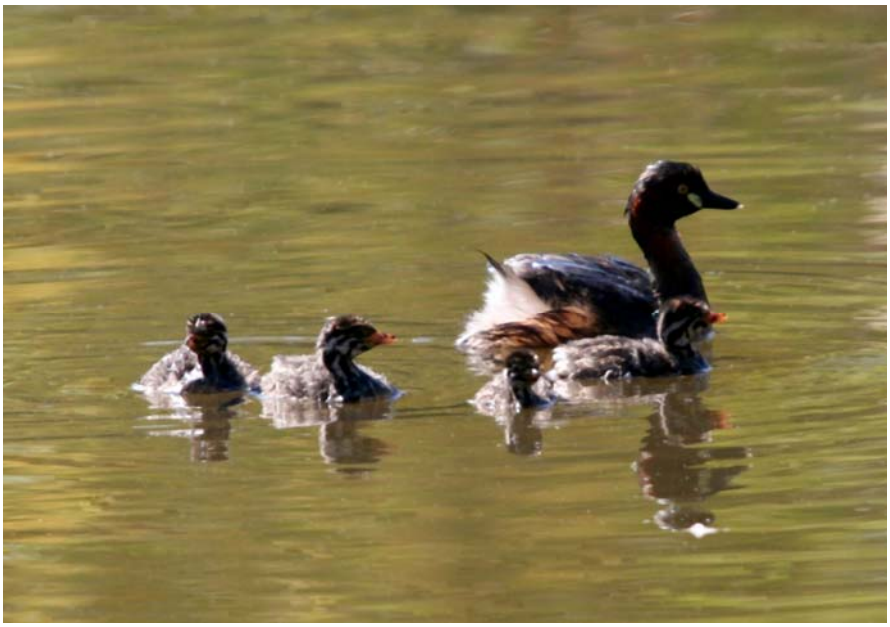

Photo: Lindsay Hansch

A POWERFUL OWL RECORD FOR CANBERRA

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Introduction

On Sunday 13 May 2007 I led a COG outing – 'Birdwatching for beginners' – at the Australian National Botanic Gardens (ANBG). Approximately ten minutes into the walk I was drawn to a cacophony of bird calls from one spot in section 12 of the gardens. I assumed that the Crimson Rosellas *Platycercus elegans*, Satin Bowerbirds *Ptilonorhynchus violaceus* and Common Blackbirds *Turdus merula* gathered there were upset by the presence of some sort of raptor.

I quickly led the group to the location of the noise, expecting to see a Collared Sparrowhawk *Accipiter cirrhocephalus* or Southern Boobook *Ninox novaeseelandiae* being harassed by the alarm-calling birds. I looked up, and was astonished to see a Powerful Owl *Ninox strenua*, roosting in a paperbark *Melaleuca* sp., approximately five metres above the edge of the path.

According to the COG database, this is the first record of a Powerful Owl in suburban Canberra.

Distribution and status in the ACT region

Pizzey and Knight (1997) states that the Powerful Owl inhabits 'mountain forests, gullies and forest margins; sparser hilly woodlands; coastal forests, woodlands, scrubs; exotic pine plantations; large trees in private/public gardens, some in cities'. Powerful Owl home ranges can vary from 300-1500 hectares, depending on habitat quality and density of prey (Higgins 1999).

In the ACT region, the Powerful Owl inhabits the forests to the south and west of Canberra. The species is also present and well known from state forests and nature reserves to the east of the ACT.

The Powerful Owl is considered Vulnerable in New South Wales (under the NSW *Threatened Species Conservation Act 1995*), and is listed as a threatened species in Victoria (in Schedule 2 of the *Fauna and Flora Guarantee Act 1988)*. The species is not listed as threatened in the ACT, though the Flora and Fauna Committee has listed it as Rare, a non-statutory category.

Records from Namadgi National Park

In COG's databases, there are 21 records of Powerful Owls from the Namadgi National Park to the west and south of Canberra, and from Tidbinbilla Nature Reserve also to the south. The majority of these records were obtained during the ACT Bird Atlas period. Seven pairs were located during the Atlas data collection period at Devil's Peak, Lees Creek, Mt Aggie, Tidbinbilla Nature Reserve, Corin Dam, the Orroral Valley and Shanahans Mountain (Taylor and COG 1992).

It is most likely that the number of pairs of Powerful Owls in the ACT until January 2003 did not exceed ten (Taylor and COG 1992).

The 2003 bushfires are likely to have had a significant impact on Powerful Owls, including destruction of nesting trees, significant reduction of suitable habitat for the owl's major prey species, and probable death of the owls. The status of the species in the ranges after the 2003 bushfires is still uncertain. However, Nicki Taws heard a single Powerful Owl calling near the Mt Clear campground in the early hours of 19 March 2007 (Nicki Taws pers. comm.). Other records of the species in the ranges would be most welcome. It is also an ideal opportunity for COG, with support from the ACT Government, to begin a survey and monitoring program to establish the status of the species.

Records from Tallaganda

There are many Powerful Owl records from Tallaganda State Forest and the more recently established Tallaganda National Park. There are also recent records from Yanununbeyan Nature Reserve (Doug Mills pers. comm.).

In recent years, COG has conducted outings to Tallaganda State Forest to see Powerful Owls. Tom Green led an outing in April 2005 where the group observed one bird; then he and I led an outing in April 2006 where the group observed one bird. The April 2007 outing was less successful, with no birds seen or heard. However, after some convincing, I led a smaller group back to the state forest on 12 May 2007, where we observed one bird and heard another two.

Records from Wamboin

On 18 March 2007 Ian Fraser reported to the COG chat line that a colleague, Geoff Butler, had heard a Powerful Owl at Wamboin. There seemed to be little doubt about the identity of the calling bird.

On 17 May 2007, David and Kathy Cook reported finding the remains of a Common Brushtail Possum *Trichosurus vulpecula* at their property. The hind quarters of the possum were intact, which is consistent with the method of prey consumption by Powerful Owls (Higgins 1999). However, it is also possible that the possum was predated by the locally common Red Fox *Vulpes vulpes*. The Cook property is some three kilometres from the Butler property where the Powerful Owl had been heard in March.

In April 2005, Chris Hastir reported finding a large owl in Kowen Forest, roosting in pines near the railway line. Mark Clayton suggested that, based on the description provided, the bird in question was most likely an immature Powerful Owl, and proposed that the bird may have been displaced by the bushfires in the ranges to Canberra's west in 2003.

Previous unconfirmed records in Canberra

There are no confirmed records of the Powerful Owl in suburban Canberra. However, a number of unconfirmed records have surfaced as a result of the

awareness raised by the presence of the owl at the ANBG.

Year 24 (2004) of the Garden Bird Survey included a report of a Powerful Owl from the site at CSIRO in Crace. The observer advised that he did not personally see the bird but was told about it by reliable observers and that it was roosting in some dense pine trees.

The current head ranger at the ANBG suggested that a Powerful Owl was present at the gardens approximately 15 years ago (Greg Sattler pers. comm.).

Earlier in 2007, a Powerful Owl was reportedly seen at an orchard in Pialligo (Jonathan Banks pers. comm.). A Powerful Owl was also reportedly seen in Campbell in late January 2007 (Caroline Giddings pers. comm.). These records were not submitted to COG and could not be verified. However, there is speculation that these records, and the ANBG record, could be of the one bird.

Other suburban Powerful Owls

Powerful Owl records are not uncommon in some outer suburban, or 'green wedge' areas of cities such as Melbourne, Sydney and Brisbane. The presence of a pair of birds in central Sydney's Centennial Park several years ago gained some media attention. Recently there have been sightings in parts of western Sydney, including Cumberland State Forest.

A single Powerful Owl roosted in inner Melbourne's Fitzroy Gardens during 2006. More recently, a single Powerful Owl was observed roosting in Flagstaff Gardens in Melbourne's CBD, on Sunday 6 May. This was reported in *The Age* on 10 May 2007.

Age and sex

The age and sex of the ANBG bird was very difficult to determine. The bird was in what appeared to be adult plumage, with no trace of juvenile down. Higgins (1999) suggested that age and sex is difficult to determine from field observation, with only subtle differences between adult and immature plumages. Adults also cannot be sexed reliably on plumage alone.

Fiona Hogan, a PhD student from Deakin University conducting research on Powerful Owls, suggested that the ANBG owl is likely to be more than three years old and probably a female.

Diet

Powerful Owl diet has been well studied and documented (Higgins 1999). Diet is predominantly mammals, supplemented with birds and insects. The dominant prey item varies according to local availability of prey. In montane habitats the dominant prey is the Greater Glider *Petauroides volans*, while in some forests the dominant prey is the Common Ringtail Possum *Pseudocheirus peregrinus*. Flying foxes *Pteropus* spp. are an important dietary item at particular times of the year in northern parts of the species' range (Higgins 1999).

The ANBG has a reasonably high density of Common Ringtail Possum and Sugar Glider *Petaurus breviceps* (Greg Sattler pers comm). It appears that the owl at the ANBG is taking

advantage of these particular food sources.

It was suggested that the owl at the ANBG may be ill due to the fact that, over a four day period, there was little in the way of excreta or regurgitated pellets at the roost, and that the only evidence of excreta was greenish in colour, indicating a possible gastro-intestinal condition. Additionally, several observers including myself were concerned that the owl had not been observed holding onto any partially eaten prey items captured on the previous night. Studies summarised in Higgins (1999) suggested that an adult Powerful Owl would need one major prey item (e.g. Common Ringtail Possum) once every few days (one study suggested every 1.4 days, another suggested every 3-4 days). A Powerful Owl may eat two or three Sugar Gliders in one night (Jerry Olsen pers comm).

On 16 May, Leo Berzins reported to the COG chat line that an ANBG gardener had found the remains of a Sugar Glider under the Powerful Owl earlier that morning and 'cleaned them up'. The ANBG Director also found a tail and other remains of a possum elsewhere in the gardens (Anne Duncan pers. comm.). Peter Miller reported to the COG chat line that, on 15 June, he observed a headless Sugar Glider being held in the owl's talons. Leo Berzins also reported to the COG chat line that, on 15 June, he observed the owl eating the Sugar Glider remains just on sunset.

In addition to the removal of prey remains by staff, it is possible that the owl was casting its pellets away from its roost. A regurgitated pellet was collected for analysis to determine what the bird had been eating in the gardens. The pellet contained the remains of two Sugar Gliders (Michael Lenz pers. comm.).

Interest created

The presence of the Powerful Owl at the ANBG, a mere 100 m north of the busy café, created a great deal of public interest. Its presence was discussed on two occasions on local ABC radio and a photograph of the bird by Julian Robinson featured in the *Canberra Times*. In the first few days after its discovery, a significant number of people visited the ANBG to see the bird.

Debate about advertising the presence of the bird

The presence of the bird and the subsequent flocks of visitors created some debate as to the merits of advertising the presence of such a creature. The increased number of visitors, some 400 extra people over four days, also created a few problems for ANBG staff (Con Boekel pers comm).

There was much concern for the welfare of the bird, and several people feared that its apparent disappearance after four days was due to harassment by visitors.

I had several discussions with colleagues about whether the presence of the bird should have been advertised. My colleagues, particularly Ian Fraser, and I determined that the bird was probably passing through, and so was providing an ideal opportunity for people to see it. We also concluded that

if the bird was significantly disturbed it would move roosts; in fact it was regularly returning to the same two roosts, including at the period of greatest visitor numbers. We also determined that, as we did not believe the bird was being unduly disturbed, the benefits to conservation and education arising from a 'personal experience' and the feeling of 'ownership' engendered by it were considerable.

My observations over the first five days since the discovery of the bird are as follows:

- 13 May – The owl was roosting low in a paperbark over the edge of the path.
- 14 May – The owl was roosting much higher in an adjacent paperbark with a denser crown. It was suggested that the bird may have moved roost in response to the attention it received on Day 1.
- 15 May – The owl was back roosting in the paperbark over the edge of the path. This suggested that the bird was not disturbed at its original roost.
- 16 May – The owl was roosting in the taller paperbark again.
- 17 May – The owl could not be located.

In the month since it was first observed the bird has been seen regularly, though with absences of four or five days. The owl's subsequent return suggests that the bird had not been forced from the gardens through human disturbance. At the time of writing (18 June) the bird had been sighted the previous day.

Some bird observers indicated that they would have been disappointed if the presence of the bird had not been announced to the wider birding community. Graeme Clifton, in an email to me on 24 May 2007, stated:

> You couldn't imagine the pleasure that I got from seeing this species for the first time and I suspect that many others were in a similar situation to me. I would have been so upset if the opportunity to see the Powerful Owl was not available because its location had been kept secret.

Other observers suggested that the bird was unperturbed by human visitors, paying more attention to other bird species that approached closely. John Cummings, in an email to the COG chat line on 25 May, stated:

> Interestingly half a dozen 15 year young men walked under the bird behaving their age and the bird took no notice of them leaping about and yelling. It did however take a lot of interest in 6 crimson rosellas who set up a racket a few yards from it.

John Gordon, in an email to the COG chat line on 25 May, suggested that the bird was not put off by the attention of visitors:

> yesterday I wandered up to the site where the owl had been roosting and sure enough it had returned. Clearly it had not been totally put off by the recent attention. I alerted a couple of non-birding friends who were delighted to go and see it later in the day.

Ruth Parker, in an email to the COG chat line on 16 May, also suggested that

other birds worried the owl more than human visitors:

> The bird appeared to pay more attention to the alarm call of a magpie nearby – this elicited two open eyes and a turn of the head – than to the visitors present at the time of my visit.

Kathy Cook, in an email to the COG chat line on 15 May, discussed the benefits of seeing such an impressive bird:

> I believe the most important thing is to get the general public interested and excited about having such an unusual and special bird in the middle of our city. This is likely to have a much greater flow-on effect in terms of conservation etc, and Ian [Fraser] and [local ABC radio station] 666 are doing the community an excellent service in this regard. Ian was also encouraging callers to let him know of other owl sightings, which will provide another source of invaluable knowledge about the movements of these little known birds.

Problems

The increased number of visitors to the ANBG created a few problems for gardens staff. Young children made noises in an attempt to wake the bird, with some children reported to have thrown sticks at it. Many people also walked on the garden beds to get a better look at the bird, particularly when it roosted in the taller paperbark. Con Boekel, a branch manager with the federal Department of Environment and Water Resources who oversees the operation of the ANBG, stated in an email to the COG chat line:

> Children in particular tried to make the Owl react. Some visitors trampled the garden beds in order to get that special shot or a closer look. Dedicated horticulturalists can get upset when they see others trampling their work.

It is noted that a naturally occurring fungal pathogen, *Armillaria luteobubalina*, is known to occur on site and is responsible for areas of tree decline and death. Other pathogens such as the water-borne fungus, *Phytophthora cinnamomi*, are also known on site (ANBG 2002). Trampling of garden beds may contribute to the spread of these particular pathogens across the ANBG.

Obviously, COG considers poor behaviour as described above to be regrettable. COG has taken steps to work in partnership with the ANBG in the future to ensure that an 'event' such as the Powerful Owl is managed in a way that allows people to appreciate the bird without detriment to the ANBG and its staff.

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ODD OBS

A White-fronted Honeyeater in the ACT

On the morning of 21 June 2007 I was birdwatching at the Jerrabomberra Wetlands Nature Reserve in Canberra. In the vicinity of Fulica hide, just west of a large bridge over Jerrabomberra Creek, I found quite a few honeyeaters feeding in flowering eucalypts. The vegetation at this site consists largely of planted areas with a variety of trees and shrubs adjacent to the wetlands. Many of the planted species are not indigenous to Canberra. Honeyeater species present were White-plumed *Lichenostomus penicillatus*, White-eared *L. leucotis*, Fuscous *L. fuscus*, Yellow-tufted *L. melanops* and New Holland Honeyeaters *Phylidonyris novaehollandiae*, Eastern Spinebills *Acanthorhynchus tenuirostris* and Red Wattlebirds *Anthochaera carunculata*. I was watching a Yellow-tufted, normally a rather rare visitor to Canberra that had been reported much more widely than usual in 2007, when I heard a distinctive, single note, metallic call. It sounded very much like the call of the White-fronted Honeyeater *Phylidonyris albifrons*, a species with which I am familiar from travels in the drier parts of Australia. I decided I must have been mistaken but then a movement in a nearby flowering Yellow Gum *Eucalyptus leucoxylon* caught my eye. To my surprise it *was* a White-fronted Honeyeater. Within seconds the bird had departed, apparently frightened by a Collared Sparrowhawk that flew past. I searched the area for another twenty minutes but failed to relocate the bird, then headed home to alert other birders to the honeyeater's presence.

Within a few hours it had been found by several other observers, and was still present the following day, when many more people saw it, and Geoffrey Dabb and Stuart Harris obtained images. I visited the site again on 22 June, and found a group of people watching the bird in the same area where I had seen it the previous day. We were able to view the bird for nearly ten minutes from as close as 15 metres, as it busily fed at flowers in a variety of eucalypts. A couple of times it chased an Eastern Spinebill that was feeding in the same trees. There were further sightings of the bird later on the same day, but despite many people looking it was not reported on 23 June or subsequently.

All sightings were within a couple of hundred metres of the original observation. Several times it was seen perching for short periods in the tops of nearby exotic trees, including a willow *Salix* sp and a Black Alder *Alnus glutinosa*. While I was watching the bird it mainly appeared to feed at the flowers of various eucalypt species. As well as Yellow Gum, it was seen foraging in flowering Red Box *Eucalyptus polyanthemos* and in a non-flowering Mealy Stringybark *E. cinerea*. Other observers noted that it was also possibly feeding on insects.

The bird could not be aged as adults and immatures of this species are apparently not separable in the field. Nor can they be sexed on plumage characters (Higgins *et al* 2001). The latter point

contradicts information in some field guides; for example Pizzey (1997) states that females are browner. One feature that proved difficult to see in the field was a small reddish patch of bare skin behind the eye. However, an image of the bird's head sent to me by Geoffrey Dabb shows it clearly.

This appears to be the first record of a White-fronted Honeyeater in the ACT. This is not too surprising as according to HANZAB (Higgins *et al* 2001) the nearest parts of its range are probably just to the west of Griffith, some 350 km to the northwest of Canberra. However, the species has been recorded well outside its usual range on occasions, and fluctuates widely in numbers from year to year in many areas. The presence of this individual in Canberra is likely to be drought-related.

Thanks to Barbara Allan, Martin Butterfield, Geoffrey Dabb, Peter Milburn and Yarden Oren for advice and/or information, and everyone who posted sightings on the COG email list.

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Photos: Geoffrey Dabb

Partial albino Eurasian Coot at Lake Burley Griffin

In the first half of 2007 a partially albinistic Eurasian Coot *Fulica atra* was seen several times on the western shore of East Basin, Lake Burley Griffin, at the reserve known as Bowen Park.

It was first reported by Martin Butterfield on 2 January, and then by Leo Berzins on 3 May. Another 'pied coot' seen by two observers in February and March on the northern side of Lake Ginninderra, Belconnen, might or might not have been the same bird. The Bowen Park bird was present

throughout May and was still present at time of writing (10 June).

The bird is white except for black wings, face, head and throat. Black and white feathers are interspersed on the nape, the back of the neck and the lower throat. A few black feathers occur on the mantle, flanks and undertail coverts. The bill and frontal shield are the normal whitish, the legs and feet dark grey. The iris is the normal orange-red. In January, a photo taken by Martin Butterfield showed a rather greyer bird, with differentiation between black and white areas much less clear, although the May plumage pattern was emerging.

Twenty to 30 normally plumaged coots frequent the same area, which is a bread handout point for swans and other waterbirds. The albinistic coot is at the lower end of the size range for the coots, so is probably a female. It has some tendency to swim, rest and graze by itself, but it is quick to join any group feeding at the handouts, when it associates with other coots.

HANZAB has two Australian records of partial albino coots (Marchant and Higgins 1993). An internet search brings to light a few reports from elsewhere of partial albinos of this widespread species. However, the present bird appears to be distinctive by reason of its clear and relatively symmetrical marking.

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Photo: Geoffrey Dabb

COLUMNISTS' CORNER

Canberra's exotic species

Stentoreus might have mentioned before that he was a childhood birdwatcher. However, the usual birds I saw in the backyard in that Victorian coastal town were introduced ones. This followed from the work of the Victorian Acclimatization Society, nearly one hundred years beforehand.

I became very familiar with turtledoves, blackbirds, song thrushes, sparrows (of the 'House' kind), starlings, goldfinches and 'homing pigeons', which I once briefly kept myself. There were no 'mynas' at that time; you had to go to Melbourne to see those. Native birds were less frequent, but the good thing about those was that you could find them in your Cayley, which did not have any pictures of introduced birds until a later edition.

To be eligible for inclusion on the Australian (Christidis & Boles) list, introduced species must have populations within Australia that are 'naturally self-sustaining without the need for additional releases or escapees to remain viable'. There are 21 such species on the Australian list: Ostrich, Red Junglefowl, Common Pheasant, Indian Peafowl, Wild Turkey, California Quail, Mallard, Rock Dove, Laughing Turtle-Dove, Spotted Turtle-Dove, Skylark, House Sparrow, Eurasian Tree Sparrow, Nutmeg Mannikin, European Greenfinch, European Goldfinch, Red-whiskered Bulbul, Common Blackbird, Song Thrush, Common Starling and Common Myna.

In relation to any one Australian locality (e.g. the ACT), the 'naturally self-sustaining population' test does not make much sense. Many listed *native* visitors do not have a 'naturally self-sustaining population' in the ACT. It is curious that the Spotted Turtle-Dove was excluded on the grounds (1) all birds were regarded 'as having been released or escaped' and (2) 'there is no established population'. As to (1), the presence of a breeding population in Queanbeyan, and Atlas records for sites surrounding the ACT, tend to support the opposite assumption. As to (2), why does it matter if there is no established population in the ACT? (The birds might well originate from an established population in Goulburn or Queanbeyan.) Surely breeding in the ACT is immaterial, as it is for the Striped Honeyeater, which qualifies for the ACT list on one appearance.

On any reasonable test, nine introduced species would qualify to be on the local list: Rock Dove, Spotted Turtle-Dove, Skylark, House Sparrow, European Greenfinch, European Goldfinch, Common Blackbird, Common Starling and Common Myna.

The Common Starling is one of the more successful introductions world-wide. However, it has certainly declined in Canberra suburbs in recent years. According to the garden bird survey returns for 2005-2006, it was not found at any time during the year in 20 of the 67 sites. At number 24 in the 'occurrence' list, it is behind the House Sparrow and blackbird, and, of course, the rapidly spreading Common Myna,

which was absent from only two sites in that year.

The decline in gardens of the starling, if that is what it is, does not seem to have affected overall numbers. In the current winter, the usual seasonal flocks of many hundreds can be seen decorating the powerlines along that obsolete thoroughfare, Dairy Flat Road. Despite their different rates of spread, both the starling and myna were among the birds released in Melbourne in the 1850s and 1860s by the Victorian Acclimatization Society. The aim was to make market-gardening possible.

Eric Rolls (*They All Ran Wild*) quotes the Society's report in 1864:

> Hundreds of industrious farmers have even this year been ruined by the caterpillars. ... The introduction of insect destroying birds has therefore been carefully attended to ... The thrush, the blackbird, the skylark, the starling, the chaffinch, the sparrow, the Chinese sparrow, the Java sparrow and a most active and interesting bird, the Indian mino, may now be considered thoroughly established.

Introduction of the starling into North America, in Central Park in New York City, came some 30 years later, allegedly through the agency of a lover of the theatre, who aimed to introduce all the birds mentioned in the works of Shakespeare. (A serious environmental problem might have been averted had Shakespeare not written in *Henry IV*: 'I'll have a starling shall be taught nothing but "Mortimer", and give it him to keep his anger still in motion'.)

Although often mentioned by Canberrans in the same breath, the starling and myna have quite different climatic and habitat preferences. Apart from its Indian homeland, the myna has done best in tropical or at least fairly warm locations. It has had a particular affinity with the British Empire, spreading down the Malay Peninsula to Singapore, and being spread to Australia, New Zealand, South Africa, Fiji, Mauritius, the Seychelles, and St Helena, all in colonial times.

By contrast, the starling's natural spread has been across temperate Eurasia and, after introduction, across temperate North America. It seems unable to colonise the tropics, the second BA atlas showing few records in the tropical zone of Australia, while the town-loving myna has thrived at suitable localities in north Queensland.

John Long (*Introduced Birds of the World*) lists 17 parrot species successfully transplanted beyond their native countries, and many 'possibly successfuls'. Curiously, although Monk Parrakeets are established in the US, and Rose-ringed Parrakeets in England, no foreign parrot has established itself in Australia. Members of the Galliformes have done slightly better, and certainly much more effort has been expended on their behalf. However none of the five on the Australian list appears on the ACT list.

There have been a few teasing appearances here and there, suggesting that small secret populations might be flourishing somewhere: California Quail in Belconnen, and guineafowl in Ainslie. Some years ago I was asked to

confirm the identity of a street-walking 'bird of paradise' in suburban Hughes, which proved to be a fine example of a male Golden Pheasant.

The most persistent example of this trend is perhaps the various peafowl of Narrabundah, the origin of which, so far as *Stentoreus* is aware, has never been ascertained. 'Indian Peafowl' is on the Australian list by reason of a few small scattered populations, notably on islands such as King and Rottnest. HANZAB notes: 'Widely kept, usually free-ranging; few truly feral populations. Small populations establish occasionally but usually die out quickly.'

An equally interesting species is the Common Pheasant, which is on the Australian list by virtue of populations in Bass Strait and on Rottnest Island. This species is one of the world's most experienced introducees, having been transplanted from its native Asia to many countries. The Romans brought it to western Europe, and either they or the Normans introduced it to Britain. The first European subspecies lacked the neck-ring, being *P colchicus colchicus*, which ranges to the east of the Black Sea.

That subspecies, known as the 'Old English Blackneck', was in Great Britain greatly reduced by shooting in the 18th century, leading to restocking with other subspecies and hybrids, including 'Chinese Ringnecks'. Estimates in 1988, according to Colin Harrison (*The History of the Birds of Britain*), were that there were eight million wild pheasants contributing to the annual shoot, these being augmented by about 15 million released annually of which three million might survive the shooting season.

This was a bird that many people loved to shoot, colonials among them. In Australia, several attempts were made to establish pheasants and other game-birds, including at Barwon Park, Winchelsea (near Geelong), by Thomas Austin, who is remembered for his spectacular success with his rabbits. At most points of release the half-tame birds were easy victims for illegal shooters.

And so back to Canberra. In his book *Birds of the ACT: Two Centuries of Change*, Steve Wilson applies square brackets to the entry for the Common Pheasant, excluding it from his ACT list as 'not established'. On his way to that conclusion, Steve mentions a 1966 record with the arresting title 'Pheasants in the ACT'. This was a note in the annual report of the (pre-COG) ACT branch of RAOU by the then chairman of the branch, Stephen Marchant. The note describes how a female and male pheasant arrived separately in a garden in Dominion Circuit, Forrest, flourishing there briefly, the female producing one infertile egg. Investigations at the time uncovered reports of pheasants in the Gudgenby Valley and near Captains Flat leading to speculation that there might have been a 'small, scattered population around the ACT'. This possibility did not find its way into the smattering of Australian occurrences listed in HANZAB vol 2, which Marchant co-edited.

As with so many bird species, the introductions picture is different in New Zealand. HANZAB gives a NZ

pheasant population of *c.* 250,000 birds with up to 50,000 cocks being shot per year. The pheasants must feel quite at home over there, with feral cats, ferrets, and stoats preying on them as well.

A. stentoreus

Birding in cyberspace, Canberra-style

Back in the good old days when we used to have a proper April outward migration of honeyeaters, many COGites would use their uncanny abilities to estimate the number of birds in each passing flock. I was never 100 per cent confident, thought I might be a couple of per cent out, but that does not matter. So, it was with confidence that I tried out the online resource at which one can test one's skills at counting flocks of birds that pass across the screen: the **Bird Counting Game** http://www.stigc.dk/projects/countinggame/index.asp. You can compare the accuracy of your count with that of other players. I won't tell you my accuracy level, but will admit that it was a somewhat sobering experience.

Ethnobiology is an important academic discipline, defined by the European Commission http://ec.europa.eu/research/biosociety/library/glossarylist_en.cfm?Init=E as '[the] study of the way plants, animals and micro-organisms are used by humans'. Within this discipline is Ethno-ornithology. Ethnobiologist/ Ethno-ornithologist Robert Gosford (email:birdknowledge@gmail.com), who many COGites will recall gave us an excellent talk on this topic last year, and who is now based at Yuendumu in the NT, recently announced to Birding-Aus, the national email birding list, that he has commenced work on a book, to be published next year by CSIRO Press, with the working title ***Aboriginal Bird Knowledge***. Robert explains that he will:

> examine, for the first time in any systematic and (hopefully) comprehensive way, the bird knowledge of Australian Aboriginal and Torres Strait Islander peoples…I plan to present historical information (from the oral traditions, anthropological and linguistic records and ornithological material etc., of which I've already gathered a lot of material), alongside contemporary information gathered through contacts and meetings with Aboriginal people and groups over the course of the next 9 months or so. I plan to do two long road-trips covering most of the country meeting and talking with people. I'll also do a few smaller trips to places that I can't reach easily by car.

Readers interested in the special ethical issues involved in Indigenous research in any discipline will be pleased to see how seriously, and sensitively, Robert is dealing with this aspect of the project. He has documented his strategies, basing them on the Code of Ethics of the International Society of Ethnobiology. For details, see his post in the Birding-Aus archives for 27 May 2007 http://bioacoustics.cse.unsw.edu.au/archives/html/birding-aus/2007-05/msg00419.html. In that email he requests information that others may be able to share with him on the topic. The book will be well worth looking out for next year.

The bird routes or bird trail phenomenon has been with us for quite a few years now. What is a bird trail?

One bird route or bird trail (http://www.noosaparks.org.au/noosabirdtrail/whatis.htm) is described as follows:

> The Noosa Bird Trail is an initiative of the Noosa Parks Association Bird Observers Group. It is a route through Noosa shire to sites which have been selected because they are valuable to the birds of this part of south-east Queensland. The Noosa Bird Trail has been created to encourage visitors to enjoy the natural attributes of this area and to promote the ongoing protection of these places.
>
> It is hoped that the Noosa Bird Trail will provide interstate and international visitors who would like to see some of our special birds with a convenient and efficient way of locating prime birding sites when they are visiting our shire.
>
> It is also hoped that the presence of Noosa Bird Trail signs and information will alert local citizens to the presence of places that are valuable for our birds and that they, too, may find exciting new places to visit.

Many birders' initial acquaintance with this innovation a decade or more ago was the Bird Routes of Barraba: 'Follow The Bird Routes Of Barraba Along The Travelling Stock Routes And Reserves', now conveniently available online at http://members.optusnet.com.au/~barrababirds/The%20Routes.html. While the bird routes/bird trails were initially promoted by means of signposts cum maps and printed brochures—and these resources continue to be used well—the internet has also become a prominent source of information on the trails. Google returns 18,300 hits from a search on 'bird trail', with 234 from Australia. No, that does not mean we have 234 formally identified bird trails in Australia, but it does remind us of the growth of the phenomenon.

Closer to home is Chiltern, a wonderful woodland area near Albury Wodonga with a reputation as a 'must visit' spot for Australian and overseas birders alike. The Chiltern web site http://www.tourisminternet.com.au/chbird.htm has details of the bird trails there, pointing out that the box/ironbark forest sometimes has some particularly sought-after species including the Regent Honeyeater, Swift Parrot, Turquoise Parrot and Square-tailed Kite. It lists four half-day self-guided bird tours which 'have been designed for an approximate three to four hour tour. However, all can be done at greater or less speed, depending on your time availability and what the birds are doing on the day. Most of the locations given are in the Chiltern National Park or the Mt Pilot Park'.

The tours are as follows:

Tour 1: Honeyeaters and Small Birds
Tour 2: A Bush Paddock and a Brewery
Tour 3: Wetlands Tour
Tour 4: Mt Pilot and Barambogie Granite Country

and the web site also contains information on 'The Best Seasonal Spots for Birdwatching', 'Notes on Finding Particular Species', 'The Complete Chiltern Birdwatching List' and a 'Listing of Bird Park and Preserved Birds' (I'll leave you to work out what the last of these means!).

I wonder if COG might consider producing a brochure and a web page on the bird trails of the National Capital Region? If so, it might raise questions about any downsides of the bird trail phenomenon. For example, does this type of publicity cause increased pressure on the birds? Does it result in birders being concentrated on a few hot spots leading to fewer reports for the data bases covering less well-known areas? Considering that they are typically routes (oops, trails) followed by car rather than on foot, does this promote greenhouse gas emissions and reduced physical activity among the trailers? All food for thought.

While following your favourite bird trail you may be caught short, a term defined in the online edition of the Oxford Dictionary of Idioms http://www.oup.com/uk/catalogue/?ci=9780198527114&view=ask as (a) be put at a disadvantage and (b) urgently need to urinate or defecate. It is that latter sense to which we now turn, and do so using one of the Australian Government's more useful online resources, the **National Public Toilet Map** http://www.toiletmap.gov.au. Within a click or two at that web site you can find a public toilet near an address that you specify, at a particular point of interest or, for GPS users, at a given latitude/longitude. What's more, you can create your own toilet map and, I imagine, creatively link it to your bird route.

In all, 14,586 public toilets are listed nationally, 73 per 100,000 population. The level of provision of these valuable facilities in the ACT, 187 toilets or just 58 per 100,000 population, falls well short of the national figure. I'm sure that the editor will welcome letters presenting your views on this apparent lacuna.

Does it really matter if you write Yellow-tailed Blackcockatoo and the CSIRO List of Australian Vertebrates writes Yellow-tailed Black-Cockatoo? Or if your country friend calls a species Happy Families but you use Apostlebird? Well, the International Ornithological Congress (IOC) people think so, and have made a huge effort to have us standardise the avian nomenclature globally. First we had the publication of the book Gill, FB & Wright, MT 2006, ***Birds of the world: recommended English names***, Princeton University Press, New Jersey, described by the publisher in these terms (http://press.princeton.edu/titles/8271.html):

> This book provides the first standardized English-language nomenclature for all living birds of the world. While previous checklists, including those by Sibley and Monroe, Clements, and Howard and Moore, were primarily taxonomic works, *Birds of the World* provides English-language names based on the rules and principles developed by leading ornithologists worldwide and endorsed by members of the preeminent International Ornithological Congress.
> The book's introduction includes background material on the project and discusses the authors' rationale for naming conventions. The list of over 10,000 names follows, in taxonomic order, with relevant scientific names and a brief description of the birds' breeding range.

- The first standardized English-language nomenclature for all living birds
- 10,000+ names, in taxonomic order
- Includes scientific names and descriptions of birds' breeding range
- Accompanying CD contains full text and additional information on species distribution.

Not content to leave it at that, the IOC has developed a fine web site http://www.worldbirdnames.org addressing the matter. Quoting 'an old Chinese proverb', Gill and Wright remind us that 'Wisdom begins with putting the right name on a thing', and proceed to advise us of the goal of the project and the web site's contents:

> Our goal on behalf of the International Ornithological Congress (IOC) is to promote the use of a standard set of the English names of the birds of the world. This Website provides
>
> - An overview of the project and its participants
> - The value of standardization of English bird names
> - Spelling rules for English bird names, including hyphens
> - Lists of the names of the birds of the world
> - Downloadable Excel files of these lists (1.3 Mb)
> - Corrections and updates to the world list (Version 1.0)
> - Reviews and suggestions for improvement.

Interestingly, the authors point out that 'The selection of names proved to be easier than was agreement on how to spell them.' They explain 'This was a volunteer, community effort on behalf of the International Ornithological Congress (IOC). Commissioned in 1991, the project took 15 years to complete. All participants gave freely and generously of their valuable time and resources. We waived royalty rights and subsidized the publication of the work to maximize its quality and affordability.'

Those nice ducks that nest in trees and walk their babies across the highways, unpleasantly known nowadays as Australian Wood Ducks, have their previous name Maned Duck (which is much nicer) reinstated in this list. So what about those black-coloured cockatoos with yellow in their tails? The list specifies Yellow-tailed Black Cockatoo *Calyptorhynchus funereus*, inconsistent with Mason et al.'s fine 2006 CSIRO list and the awfully-out-of-date official 1994 Birds Australia list by Christidis & Boles. What is more, I searched and found Apostlebird *Struthidea cinerea* but no sign of Happy Families. That's a shame, I like the name and the idea of Happy Families.

Lest any reader thinks that your columnist is taking the mickey out of the Australian Government with respect to the National Public Toilet Map, I really do think it is a commendable initiative, and plan to make use of it next time I prepare to lead a COG field trip. So I'll close by drawing your attention to another Australian Government web site, the one that I use the most for matters birding and related purposes: **Geoscience Australia http://www.ga.gov.au**. It is a wonderful resource, just the sort of thing the Government should be doing with our tax contributions. The valuable things there are too numerous to cover

comprehensively, but do look at some of these:

- Place name search: find the location, co-ordinates (lat/long and UTM) and on which maps the place is found
- Distance calculator: called 'As the cocky flies'
- Convert from latitude and longitude to UTM (grid reference) coordinates
- Calculate the geoid-ellipsoid separation, that is, the difference (for a given location) between the altitude given by your GPS receiver and that shown on your map
- And lots of online astronomical calculators, including your own sunrise and sunset times, moonrise and moonset times, sun and moon azimuth and elevation, moon phase data and planet data for the major Australian cities, including Canberra.

T. alba

Details on how to subscribe to *Birding-Aus*, the Australian birding email discussion list, are on the web at http://www.birding-aus.org/. A comprehensive searchable archive of the messages that have been posted to the list is at <http://bioacoustics.cse.unsw.edu.au/archives/html/birding-aus>.

To join the *CanberraBirds* email discussion list, send an empty email message to canberrabirds-subscribe@canberrabirds.org.au.
The list's searchable archive is at <http://bioacoustics.cse.unsw.edu.au/archives/html/canberrabirds>.

RARITIES PANEL NEWS

The Rarities Panel welcomes former member Dick Schodde back to its ranks, and former member Mark Clayton has agreed to act as consultant. In its most recent meetings, the Panel was unable to endorse five records, three of which were based on calls. The Panel acknowledges that it is highly possible that the records were correct but finds difficulty in endorsing records based solely on calls when the description of the call is limited. It does not wish to deter members from submitting records based on calls alone but encourages every effort, where possible, to locate the bird. External advice is still being sought on one record.

The endorsed list on this occasion comprises many of our occasional visitors, plus three highly unusual honeyeaters, in the Black-chinned, White-fronted and Black. A single male Black Honeyeater has been recorded and photographed in the ACT previously, in the northern suburb of Charnwood in January 1991. On this more recent occasion, up to four birds were recorded in late December and early January at Mulligans Flat, with other records coming from further north and west. One previous record exists for the Black-chinned Honeyeater in the ACT, but this is almost certainly an error, so the observations listed here are, in the Panel's view, probably 'firsts' for our region. They were discovered when an observer followed up a chatline posting of a group of the species heading south-east from Campbell Park; further anecdotal evidence suggests that others may have observed the group. Canberra is well east of the normal distribution of this species. The White-fronted Honeyeater has never been recorded in the ACT region previously and, while we are far to the east of their normal distribution, the species is noted for its nomadism.

Another 'unusual' to note is the White-throated Nightjar observed on a rock at the Jerrabomberra Wetlands in March. Though the location surprised many observers, the species' affinity with rocks has been noted in the literature.

The Panel continues its work on a revision of the 'unusuals' list. Many of the species on the current list have not been recorded for so long that they probably need to be removed from the list (which should ensure that they are promptly seen again!). The problem remains of how to deal in a satisfactory manner with species which are not uncommon in an extremely limited locality, but rarely seen elsewhere. The Panel reminds readers that it welcomes reports on *any* species which the observer believes is unusual, or seen in unusual numbers or an unusual locality. It welcomed, for example, but did not list below, reports of the Powerful Owl in the Australian National Botanic Gardens – clearly a 'rare' bird but one that has not figured on the 'unusuals' list merely because it is so easy to identify and so hard to confuse with any other species, at least by birdwatchers of some experience.

ENDORSED LIST 70

Intermediate Egret *Ardea intermedia*
1; 14 Mar 07; Martin Butterfield; Jerrabomberra Wetlands NR GrL14
1; 22 Mar 07; Matthew Frawley; Jerrabomberra Wetlands NR GrL14
Grey Goshawk *Accipiter movaehollandiae*
1; 10 Feb 07; Peter Mellor; Aranda GrK13
Black Falcon *Falco subniger*
1; 20 Jan 07; Michael Lenz; Lake Bathurst GrZ8
1; 18 Feb 07; Michael Lenz; Lake Bathurst village GrX7
Spotless Crake *Porzana tabuensis*
2; 14 Jan 07 ; Steve Holliday; Acacia Inlet GrK13
Banded Lapwing *Vanellus tricolor*
5; 27 Jan 07; Matthew Frawley; The Morass GrZ8
6; 9 Apr 07; Ian Anderson & Tony Willis; The Morass GrZ7
Musk Lorikeet *Glossopsitta concinna*
2; 16 Sep 06; Brendan Lepschi; Weston GrJ15
3; 31 Dec 06; Michael Lenz; Lake Bathurst GrZ8
3; 18 Jan 07; John Goldie & Kathy Walter; Watson GrL12
2; 19 Jan 07; Steve Holliday; Ainslie GrL13
2; 4 Mar 07; Michael Lenz; TSR 48 GrN5
Swift Parrot *Lathamus discolor*
4; 1 May 07; Matthew Frawley; Kambah GrJ16
White-throated Nightjar *Eurostopodus mystacalis*
1; 20 Mar 07; Matthew Frawley; Jerrabomberra Wetlands NR GrL14
Little Friarbird *Philemon citreogularis*
2; 18 Jan 07; Matthew Frawley; Mulligans Flat GrL10
Black-chinned Honeyeater *Melithreptus gularis*
1-2; 16 Jun 07; Alastair Smith; Newline Quarry GrN14
1; 16 Jun 07; Martin Butterfield; Newline Quarry GrN14
1; 17 Jun 07; Geoffrey Dabb; Newline Quarry GrN14
Painted Honeyeater *Grantiella picta*
1; 7 Jan 07; Michael Lenz; TSR 48 GrN5
White-fronted Honeyeater *Phylidonyris albifrons*
1; 21-22 Jun 07; Steve Holliday; Jerrabomberra Wetlands GrL14
1; 21 Jun 07; Geoffrey Dabb; Jerrabomberra Wetlands GrL14
Black Honeyeater *Certhionyx niger*
4; 26 Dec 06; Michael Lenz; Mulligans Flat GrL10
2; 29 Dec 06; Matthew Frawley; Mulligans Flat GrL10
1; 30 Dec 06; Ian Anderson & Tony Willis; TSR48 GrN5
1; 6 Jan 07; Vick Kowalski; Karabar GrN15
Pied Butcherbird *Cracticus nigrogularis*
1; 2 Oct 06; Nicki Taws; Gunning GrL2
1; 8 Apr 07; Steve Holliday et al; Goorooyarroo NR GrM11
2; 14 Apr 07; Jack Holland; Cooleman Ridge GrI15
Singing Bushlark *Mirafra javanica*
1; 6 Nov 06; Sue Lashko; Coppins Crossing Rd GrJ13
2; 10 Nov 06; Matthew Frawley; Coppins Crossing Rd GrJ13

Canberra Bird Notes is published quarterly by the Canberra Ornithologists Group Inc. This is the final issue to be edited by Barbara Allan. Major articles of up to 5000 words are welcomed on matters relating to the distribution, identification or behaviour of birds in the Australian Capital Territory and surrounding region. Please discuss any proposed major contribution in advance. Shorter notes, book reviews or correspondence are also encouraged. All contributions should be sent to cbn@canberrabirds.org.au .

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Columnists' Corner

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