

**BANDING PROJECT REPORT****No.4****Nurragingy Reserve, New South Wales**(Abridged version – complete paper can be accessed at [www.absa.asn.au](http://www.absa.asn.au))

**Aim:** Avian research at Nurragingy Reserve (in conjunction with Scheyville National Park, and, Agnes Banks, Windsor Downs, Prospect and Wianamatta nature reserves) is an ongoing component of a larger longitudinal study to document and monitor the avian faunas of remnant areas of Cumberland Plain Woodland in the north-western sector of the Cumberland Plain.

**Location:** 33°45'23"S; 150°51'43"E. Situated in the western Sydney suburb of Doonside.

**Description:** Nurragingy Reserve (Fig. 1) is located on a small flood plain adjacent to Eastern Creek and covers an area of 68 hectares. The underlying rock strata consist mainly of shale. To the immediate north and south of the Reserve, Eastern Creek runs through predominantly open grassland. A large industrial area is to the west and residential areas are to the east. The southern section of the Reserve has been partially cleared with many grassed picnic areas and a small artificial lake established. The vegetation in the northern part has remained relatively intact although several walking and vehicle tracks crisscross the area. The banding site was in the far northern section of the Reserve that is fenced off from general public access. The main tree species are Grey Box *Eucalyptus molucana*, Forest

Red Gum *E. tereticornis* and Cabbage Gum *E. amplifolia* with an understorey of predominantly Blackthorn *Bursaria spinosa* (Smith and Smith 2013). The dominant community has been classified as Cumberland Shale Plains Woodland and is a form of Cumberland Plain Woodland (Smith and Smith 2013). It is listed as a *critically endangered* ecological community both at state and commonwealth level (NSW Scientific Committee 2009; Threatened Species Scientific Committee 2008).

**Status History:** 1970 – purchased by NSW Government as part of an open space corridor along Eastern Creek; 1981 – leased to Blacktown City Council for development as a passive recreational area; 2001 – ownership transferred to Blacktown City Council (Blacktown City Council 2011; Fairly and Waterhouse 2005).

**Previous Records:** Bird lists have been compiled by Keast (1995) (sightings from 1930 to 1960 listed under 'Doonside Woodland') and Limburg (1994) (sightings from 1984–1994 specifically at Nurragingy Reserve).

**Duration of Project:** July 2001 – June 2003 and August 2009 – May 2010. Visits were not made in May and August 2002, May 2003 and September 2009 due to inclement weather.



Figure 1. Satellite image of banding site.

Image courtesy of Google Earth

## METHODS

Banding took place once each month, weather permitting. On most occasions 15 nets were erected, total length averaging 192 metres (range 90–246 metres) and were open from sunrise for an average of 5.25 hours (range 4–6 hours). Nets were erected in the same positions each banding session. Birds were individually marked using bands supplied by the Australian Bird and Bat Banding Scheme (ABBBS). Capture rates are presented as the number of birds trapped per hour per 100 metres of net erected. To calculate the percentage of species re-trapped a 're-trap' designation was assigned to a bird that was caught subsequent to banding, ignoring the number of times that bird was caught or the length of time elapsed. Records were also maintained of all species incidentally observed or heard at the study site on each banding day.

## RESULTS AND DISCUSSION

A total of 1021 birds, comprising 43 species, was trapped over the two study periods. Overall, a total of 93 bird species was recorded but this did not include waterbirds that were observed flying over the site.

The major peaks in overall capture rates in October 2002, April 2003, October 2009 and May 2010 are attributed to the influx of flocks of Red-browed Finches *Neochmia temporalis* into the banding area, although the capture rates of White-plumed Honeyeaters *Lichenostomus penicillatus* (Oct. 2002), Superb Fairy-wrens *Malurus cyaneus* (Oct. 2009) and Silvereyes (May 2010) also contributed. The White-plumed Honeyeater is a locally nomadic species that moves in and out of the Reserve although some appear to be resident. Some minor peaks reflect the movement of migratory species (particularly Silvereyes *Zosterops lateralis* and Yellow-faced Honeyeaters *Lichenostomus chrysops*) during their northward passage in May–August.

The most frequently trapped species overall were the Red-browed Finch, White-plumed Honeyeater, Silvereye and Superb Fairy-wren. When the percentage proportion that these species comprise the overall trapped community is examined for October–April in 2001–02, 2002–03 and 2009–10 it can be seen that: the Superb Fairy-wren percentage declined in 2002–03 as did their capture rate; the number of Silvereyes visiting the reserve showed an overall decline; the percentages of Red-browed Finches and Eastern Yellow Robins *Eopsaltria australis* remained fairly constant while the population of White-plumed Honeyeaters showed a marked increase in 2002–03.

### Re-traps

For the duration of this study 231 individuals from 13 species were re-trapped.

Only three birds caught in the first banding period were re-trapped in the second period: a White-plumed Honeyeater with a minimum age of 7 years and 2 months, and two Eastern Yellow Robins, 7 years 11 months and 8 years 5 months respectively.

Superb Fairy-wrens were caught regularly in both banding periods, with the maximum time elapsed between banding and recapture of 23 months. The lack of any re-trapped Superb Fairy-wrens from the first to the second banding period was of interest as this species is known to live in the wild for longer than six years (ABBBS – longevity data) – the time gap between the first and second banding period. It seems that there may have been a complete turnover of the population of this species during our absence.

The maximum time elapsed for another common resident, the Red-browed Finch, was 17 months. This species is rarely re-trapped more than two years after banding.

### Movements

Only two banded birds have been reported to the ABBBS from outside the Reserve. An Olive-backed Oriole *Oriolus sagittatus* was found injured on a road bordering the Reserve and a White-plumed Honeyeater was found dead two kilometres away in a north-westerly direction.

### Migrant species

Apart from Yellow-faced Honeyeaters and Silvereyes, whose populations consist of both local and migrant individuals, ten 'summer' migratory species have been recorded visiting the site. They include six species of cuckoo (Channel-billed *Scythrops novaehollandiae*, Fan-tailed *Cacomantis flabelliformis*, Pallid *Cacomantis pallidus*, Horsfield's *Chalcites basalis* and Shining *Chalcites lucidus* Bronze-Cuckoos, and Eastern Koel *Eudynamis orientalis*), Pacific Baza *Aviceda subcristata*, White-throated Gerygone *Gerygone albogularis*, Rufous Whistler *Pachycephala rufiventris* and Rufous Fantail *Rhipidura rufifrons*. Only the Shining Bronze-Cuckoo, Fan-tailed Cuckoo, Rufous Whistler and Rufous Fantail were captured during this study. The Scarlet Honeyeater *Myzomela sanguinolenta* mainly frequents the site from late spring/summer although it was sighted up until April in 2002.

The Rose Robin *Petroica rosea* is an autumn/winter altitudinal migrant (Higgins and Peter 2002) and is seen regularly on the Cumberland Plain. It was recorded at the Reserve from early April to September.

Golden Whistlers *Pachycephala pectoralis*, a partial migrant, arrived as early as January and departed in October while Rufous Whistlers arrived in September/October and left as late as March the following year. These two species are not mutually exclusive at the site as an overlap of three months was recorded in 2009.

### Exotic species

A number of exotic species has become established in the Reserve: House Sparrow *Passer domesticus*, Rock Dove *Columba livia*, Spotted Dove *Streptopelia chinensis*, Red-whiskered Bulbul *Pycnonotus jocosus*, Common Blackbird *Turdus merula*, Common Starling *Sturnus vulgaris* and Common Myna *Sturnus tristis* (the latter four are frequently sighted and/or trapped at the banding site).

### Changes in avian community

Several species that were captured in the first banding period but not trapped, sighted or heard during the second period were: White-winged Chough *Corcorax melanorhamphos*, White-cheeked Honeyeaters *Phylidonyris niger*, Azure Kingfisher *Ceyx azureus*, and Nutmeg Mannikin *Lonchura punctulata*.

A Brown Honeyeater *Lichmera indistincta*, captured in the second period, was the only species not previously banded.

A number of species were recorded during the second period that were not observed during the first period: Peaceful Dove *Geopelia striata*, Pacific Baza *Aviceda subcristata*, Peregrine Falcon *Falco peregrinus*, Long-billed Corella *Cacatua tenuirostris*, Channel-billed Cuckoo *Scythrops novaehollandiae*, Satin Bowerbird *Ptilinorhynchus violaceus*, Striated Thornbill



*Acanthiza lineata*, Lewin's Honeyeater *Meliphaga lewinii*, Fuscous Honeyeater *Lichenostomus fuscus*, Regent Honeyeater *Anthochaera phrygia* and Restless Flycatcher *Myiagra inquieta*. Of particular note was the sighting of the Regent Honeyeater which is now rarely recorded on the Cumberland Plain and is listed as *critically endangered* (Garnett *et al.* 2011). Other sightings were mostly single occurrences.

No Double-barred Finches *Taeniopygia bichenovii* were trapped during this study although several were observed during the first period. Their disappearance from June 2002 at this site and from Agnes Banks Nature Reserve from August 2008 to July 2009 where, during a previous project, they were regularly captured (Farrell *et al.* 2012) must raise concerns about the continued viability of this species in small areas of native vegetation on the Cumberland Plain.

#### *Historical changes in the avian community*

Utilising data from the present study and from Keast (1995) and Limburg (1994) a picture of the avian community over 80 years can be outlined. A number of species listed by Keast have not been sighted at Nurragingy Reserve for many years and are thought to be locally extinct in the north-west sector of the Cumberland Plain.

These include: Bush Stone-curlew *Burhinus grallarius*, Brown Treecreeper *Climacteris picumnus*, Hooded Robin *Melanodryas cucullata*, Painted Honeyeater *Grantiella picta*, Diamond Firetail *Stagonopleura guttata*, Southern Whiteface *Aphelocephala leucopsis*, and Black-eared Cuckoo *Chalcites osculans*.

Others species, listed in Keast (1995), that have disappeared or occur infrequently at Nurragingy Reserve are: Brown *Acanthiza pusilla*, Buff-rumped *A. reguloides* and Yellow-rumped *A. chrysorrhoa* thornbills, Red-capped Robin *Petroica goodenovii* and Speckled Warbler *Chthonicola sagittata*.

The loss or decline of the species listed above can be attributed to the change in or disappearance of their natural habitat (Hoskins 1991; Egan *et al.* 1997; Recher 2010). It is therefore essential that reserves such as Nurragingy, in conjunction with native vegetation on private land, are continually preserved as urbanisation continues to encroach on the remaining remnants across the Cumberland Plain.

### ACKNOWLEDGEMENTS

The authors wish to thank the following people for their contribution to this research: Blacktown City Council for access to the site; Edwin Vella for checking sighting records; the staff of the ABBBS for supplying bands used in this study and Keith Brandwood from Cumberland Bird Observers' Club who checked sightings on the club's database. We would also like to acknowledge the assistance of all the trainee banders who have accompanied us over the years. Both reviewers of this paper are thanked for their very worthwhile suggestions which went to improve its quality. The impetus for our research came about through discussions with the late Keith Egan who was a member of the original Cumberland Plain Avian Study team.

### REFERENCES

ABBBS – Australian Bird and Bat Banding Scheme. Accessed 21 September 2013

- Blacktown City Council website. Accessed 29 January 2011. [http://www.blacktown.nsw.gov.au/visitors/attractions/nurragingy/nurragingy\\_home.cfm](http://www.blacktown.nsw.gov.au/visitors/attractions/nurragingy/nurragingy_home.cfm)
- Benson, D. H. (1992). The natural vegetation of the Penrith 1:100 000 map sheet. *Cunninghamia* **2**: 541–596.
- Egan, K. H., Farrell, J. R. and Pepper-Edwards, D. L. (1997). Historical and seasonal changes in the community of forest birds at Longneck Lagoon Nature Reserve, Scheyville, New South Wales. *Corella* **21**: 1–16.
- Fairly, A. and Waterhouse, D. (2005). 'Exploring Nature in Sydney's Western Suburbs: West Sydney Wild'. (Rosenberg Publishing Pty Ltd: Dural, NSW.)
- Farrell, J. R., Hardy, J. W., McKay, D. and Gover, K. (2012). Banding Project Report No. 1. Agnes Banks Nature Reserve, New South Wales. *Corella* **36**: 55–56. (Abridged version).
- Farrell, J. R., Hardy, J. W., McKay, D. and Gover, K. (2012). Banding Project Report No. 1. Agnes Banks Nature Reserve, New South Wales. (Full report [www.absa.asn.au](http://www.absa.asn.au))
- Garnett, S.T., Szabo, J.K. and Dutson, G. (2011). 'The action plan for Australian birds 2010'. (CSIRO Publishing: Collingwood, Victoria.)
- Higgins, P. J. and Peter, J. M. (Eds) (2002). 'Handbook of Australian, New Zealand and Antarctic Birds. Vol. 6: Pardalotes to Shrike-thrushes.' (Oxford University Press: Melbourne)
- Hoskins, E. S. (1991). 'The Birds of Sydney, County of Cumberland, New South Wales, 1770–1989'. 2<sup>nd</sup> Ed. (Surrey Beatty and Sons Pty Ltd: Chipping Norton, NSW.)
- Keast, A. (1995). Habitat loss and species loss: the birds of Sydney 50 years ago and now. *Australian Zoologist* **30**: 3–25.
- Limburg, G. E. (1994). 'List of birds observed at Nurragingy Reserve to 19<sup>th</sup> August 1994'. Report to Blacktown City Council. (Indigenous Regeneration Company: Sydney.)
- NSW Scientific Committee (2009). Final Determination to list the Cumberland Plain Woodland in the Sydney Basin Bioregion as a Critically Endangered Ecological Community, December 2009. NSW Scientific Committee, Hurstville.
- Recher, H. F. (2010). A not so natural history: the vertebrate fauna of Sydney. In 'The Natural History of Sydney'. (Eds D. Lunney, P. Hutchings and D. Hochuli). Pp. 125–142. (Royal Zoological Society of NSW: Mosman, NSW.)
- Smith, P. and Smith, J. (2013). 'Flora and fauna survey of the northern Nurragingy Reserve, Doonside'. Report prepared for Blacktown City Council. (P. and J. Smith, Ecological Consultants: Blaxland).
- Threatened Species Scientific Committee (2008). Listing advice for Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest ecological community. Threatened Species Scientific Committee, Canberra.

#### *Compilers:*

*J. R. Farrell, 73 Ellison Road, Springwood NSW 2777*

*E-mail: jfarrell@pnc.com.au*

*J. W. Hardy, 23 Lindsay Avenue, Ermington, NSW 2115*

*E-mail: jw.hardy@knightgraphics.com.au*

*D. McKay, 79 Fenwick Street, Bankstown NSW 2200*

*E-mail: sternaalbifrons@hotmail.com*

*K. Gover, 31 Kerry Road, Blacktown NSW 2148*

*E-mail: rosie4321@bigpond.com*

*D. L. Pepper-Edwards, 239 Carbine Road, Forest Reefs NSW 2798*

*E-mail: mdpepper@bigpond.com*