CORELLA
Journal of the Australian Bird Study Association

Volume 28 Number 1 March 2004

Corella, 2004, 28(1): 1–3

A SURVEY OF THE SUPERB PARROT *Polytelis swainsonii* AND POTENTIAL NESTING TREE HOLLOWS ALONG ROADS OF THE SOUTH-WESTERN SLOPES, NEW SOUTH WALES

CHRIS DAVEY[1] and DAVID PURCHASE[2]

[1]24 Bardsley Place, Holt, Australian Capital Territory 2615
[2]5 Orchard Place, Melba, Australian Capital Territory 2615

Received: 29 July 2001

Action Plans for the management of Superb Parrot *Polytelis swainsonii* populations have been developed yet measures of abundance are lacking. We present a series of counts to determine the abundance of Superb Parrots and the number of potential nesting trees along road verges on the south-western slopes New South Wales. There were 2.5 possible nesting trees per kilometre whilst just prior to the start of the breeding season there were 0.62 birds per kilometre. Birds were reported throughout the survey area but their distribution did not correspond to an increase in the number of trees with potential nesting hollows. The survey provides benchmark data for future reference on the number of potential nesting trees and, due to the lack of correlation between Superb Parrot numbers and nesting trees, highlights the importance of retaining all trees whether isolated or not along road verges.

INTRODUCTION

The range of the threatened Superb Parrot *Polytelis swainsonii*, apart from a slight incursion into Victoria at the Barmah Forest along the Murray River, is restricted to New South Wales. Although its distribution within New South Wales is well documented (Blakers *et al.* 1984; Webster 1988) there are no published estimates of abundance.

In New South Wales the range of the Superb Parrot is restricted to the western slopes of the Great Dividing Range and plains within greatly altered landscapes now dominated by sheep grazing and cereal growing. Nearly all of the parrot's distribution is on private land, thus increasing the logistic difficulties of any large-scale survey. Whilst recognizing the limitations of the method, road counts are one way to reduce the logistic problems and to determine the distribution and abundance of Superb Parrots over a relatively large area.

The Superb Parrot requires tree hollows in which to breed. The number of hollow-bearing trees within its range has been greatly reduced with clearing and agricultural practices. Road verges are often the only remaining areas that contain trees old enough to provide a quantity of hollows of sufficient diameter and depth to provide suitable breeding habitat.

The Superb Parrot is listed as vulnerable in Australia (Environment Protection and Biodiversity Conservation Act 1999), in Victoria (Flora and Fauna Guarantee Act 1988), New South Wales (Threatened Species Conservation Act 1995) and the ACT (Nature Conservation Act 1980). Action Plans for the management of the Superb Parrot have been developed yet there appears to be a surprising lack of information on their abundance, information that is critical to the monitoring of any management plan.

The aim of this paper is to provide a measure of the relative abundance of Superb Parrots within part of their breeding range between Canberra, Australian Capital Territory (35°17'S, 149°13'E) and Boorowa, New South Wales (34°27'S, 148°44'E) on the western slopes of the southern tablelands, and to determine whether there is a relationship between the number of Superb Parrots and the number of potential breeding hollows along road verges.

METHODS

On 25 October 1995 and again on 30 September 1998 the authors travelled between Canberra and Boorowa and returned by vehicle along 223 kilometres of roads that varied from unsealed country roads to major highways (Fig. 1). The vehicle travelled at about 40 kilometres per hour although on major roads the speed was increased on occasions to prevent a back-up of traffic.

For the 1995 survey all trees within 50 metres of each side of the road were visually assessed by the driver (CD) and the location of the trees containing hollows suitable for nesting were marked on a 1:100 000 scale map by the passenger (DP). Experience in assessing potential nesting trees had been gained previously by CD during a survey conducted within the local area over three breeding seasons (Davey 1997). All trees possessing hollows were similar to those described by Webster (1988) as typical nest trees found on the south-western slopes. The process was repeated in 1998 at a similar time of the year. Any clearing of road vegetation between the two surveys was noted.

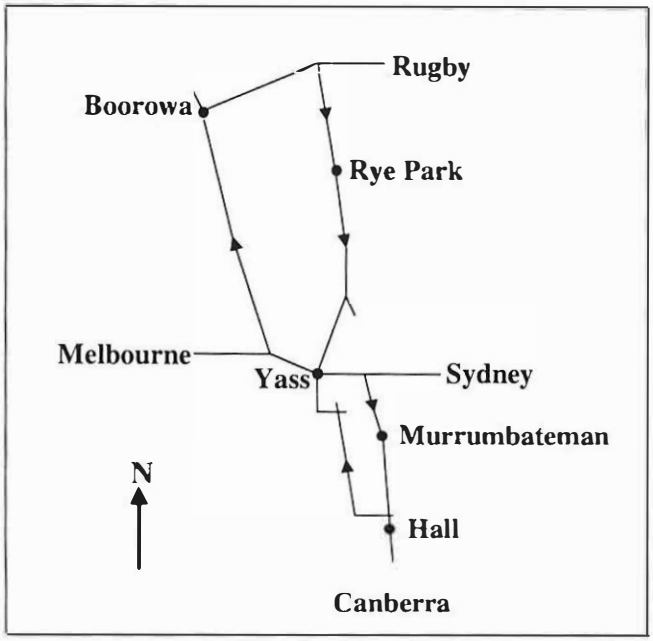

Figure 1. *Schematic map of the survey route from Canberra to Boorowa and return via Rye Park and Murrumbateman.*

The interval between surveys ensured the driver had no memory of the first survey, thus providing independent counts. The two surveys three years apart allowed for an assessment of the repeatability of surveying potential nest hollows and provided the opportunity to document any changes in nest hollow abundance during the intervening period.

The location and abundance of Superb Parrots along the survey route were assessed on 3–5 October 2000 when CD cycled the route. The survey was undertaken at the optimal time to count Superb Parrots, as they were actively engaged in inspecting tree hollows before the start of egg-laying. The location and number of birds seen were recorded. For birds that were heard but not seen the number was taken to be the seen average group size.

RESULTS

In 1998 there were no signs of road works that may have removed roadside vegetation over the intervening period. Any differences in estimates of tree hollows therefore were due to either slight differences in the start of sections or differences in assessment of trees.

There were 554 trees with hollows counted along the route in 1995 and 553 in 1998. The intraclass correlation coefficient R is a repeatability measure ranging from 0 to 1.0 for exact repeatability (Krebs 1989). The high measure of repeatability between the two surveys (R = 0.78, 95% c.l. 0.72, 0.83) infers that there was little difference between the counts and the average of 2.5 potential nesting trees for each

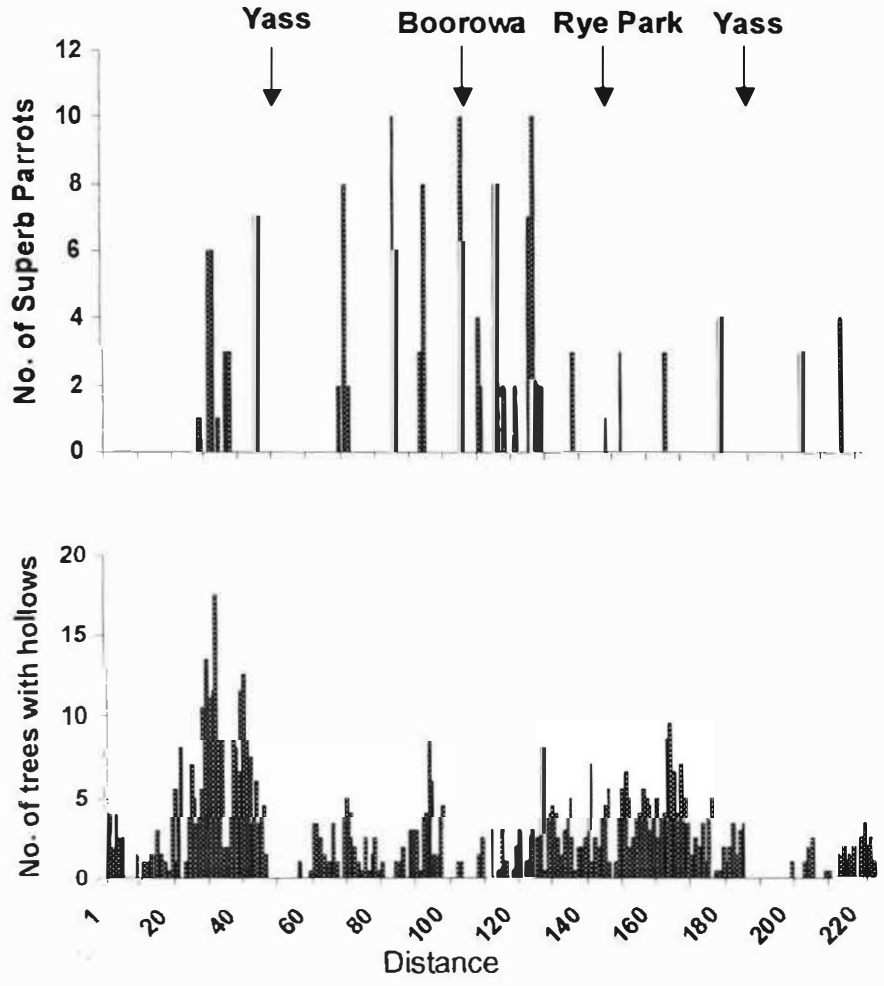

Figure 2. *Number of Superb Parrots in October 2000 and average number of trees per kilometre with potential Superb Parrot nesting hollows along a 223 kilometre survey transect between Canberra, Australian Capital Territory, Boorowa, New South Wales and return.*

one-kilometre section can be taken. The number of trees with hollows suitable as Superb Parrot nest sites varied from 56 one-kilometre sections with no such trees to a maximum of 17.5 trees in section 33 (Fig. 2). Sections with the highest number of potential nest trees were found between sections 29 and 42 lying south of Yass and between sections 163 and 167 between Rye Park and Yass. The sections with the least number of hollow-bearing trees lay between Canberra and Yass (sections 48–60), around Boorowa (sections 99–108) and between Yass and Boorowa (sections 187–203).

For the bicycle survey in October 2000, Superb Parrots were recorded from 32 of the 223 one-kilometre sections (Fig. 2). Birds were recorded throughout the day up to a maximum of 250 metres from the observer. One hundred and 38 birds from 41 groups ranging in size from one to ten birds were recorded. The relative abundance of birds was 0.62 individuals per kilometre with an abundance of 0.18 groups per kilometre. The bicycle survey was conducted in October at a time when birds had returned to their breeding grounds and were nest searching therefore, the abundance estimate would represent the size of the population at its lowest numbers. There was no relationship between number of birds per kilometre observed and abundance of trees per kilometre with hollows ($R^2 = 0.009$).

DISCUSSION

There are few studies that relate the number of possible nest hollows to the number of actual nest hollows. This can only be done by either felling the tree (Gibbons and Lindenmayer 1996) or by checking the interior of the standing hollow, which is both time consuming and dangerous. Mackowski (1987), who estimated the number of Blackbutt (*Eucalyptus pilularis*) hollows from the ground and compared once the trees were felled, correctly estimated 90 per cent of main stem hollows and 70 per cent of branch hollows. Harper *et al.* (*in prep.*) counted the number of *E. leucoxylon* with hollows from the ground and compared these with counts obtained from climbing the trees. Eighty-one per cent of the trees with hollows were identified from the ground counts.

Wesolowski (2001) demonstrated that in primaeval northern hemisphere temperate forests useable hollows was overestimated by just under 14 per cent whilst the occupancy rate varied between 36–52 per cent. From felled trees in temperate eucalypt forests in south-eastern Australia, Gibbons *et al.* (2002) found vertebrate fauna occupied 57 per cent of hollow-bearing trees. The number of hollows in trees with evidence of occupancy by fauna was positively associated with the total number of hollows in a tree, the percentage of the crown that contained dead branches, tree diameter and differences occurring between some tree species; all attributes used in assessing trees in the present study.

From these limited data it would appear that ground surveys underestimate the number of trees with hollows by about 20 per cent whilst about 50 per cent of hollows were utilized by vertebrate fauna.

Although it is not possible to estimate the proportion of potential Superb Parrot nesting trees with the number of observed trees with hollows, assuming the proportion of observed to useable trees is similar throughout the survey route then the number of trees observed with hollows provides an index of potential nest-bearing trees.

Birds were observed in areas irrespective of the number of potential hollow-bearing trees. Davey (1997) noted that there were many areas without Superb Parrots that appeared suitable for breeding. There is no obvious reason why there are Superb Parrots in some areas and not in others. This presumably indicates that there are insufficient birds to occupy all available breeding habitat, or factors not associated with tree hollows determine the distribution of Superb Parrots during the breeding season.

It is not possible to predict from the type of data we have collected those areas along roadside verges in which Superb Parrots are likely to be found. Thus, any road verge maintenance that involves the removal of trees similar to those defined by Webster (1988) should not occur unless a survey is undertaken for the presence of Superb Parrots during the breeding season, i.e. between September and December.

Roadside vegetation represents important habitats for many species (Bennett 1991) especially in those areas cleared for agriculture usually favoured by the Superb Parrot. There is no published information on the density of potential breeding habitat for hollow-nesting bird species along road verges and even less information on the removal of the habitat. The surveys reported here provide some preliminary information for an area on the south-west slopes and will provide a benchmark for future reference.

ACKNOWLEDGMENTS

The authors wish to thank Damon Oliver, Rick Webster, Don Franklin and Annette Cam for their contribution in improving the manuscript.

REFERENCES

Bennett, A. F. (1991). Roads, roadsides and wildlife conservation: a review. In 'Nature Conservation 2: The Role of Corridors'. (Eds D. A. Saunders and R. J. Hobbs) Pp. 99–117 (Surrey Beatty & Sons: Sydney.)

Blakers, M., Davies, S. J. J. F. and Reilly, P N. (1984). 'The Atlas of Australian Birds'. (Melbourne University Press: Melbourne.)

Davey, C. (1997). Observations on the Superb Parrot within the Canberra District. *Canberra Bird Notes* **22:** 1–14.

Gibbons, P. and Lindenmayer, D. B. (1996). Issues associated with the retention of hollow-bearing trees within eucalypt forests managed for wood production. *Forest Ecol. Manag.* **83:** 245–279.

Gibbons, P., Lindenmayer, D. B., Barry, S. C. and Tanton, M. T. (2002). Hollow selection by vertebrate fauna in forests of southeastern Australia and implications for forest management. *Biol. Cons.* **103:** 1–12.

Harper, M. J., McCarthy, M. A., van der Ree, R. and Fox, J. C. (*in prep.*). ●vercoming bias in ground-based surveys of hollow-bearing trees using double sampling.

Krebs, C. J. (1989). 'Ecological Methodology'. (Harper and Row, New York.)

Mackowski, C. M. (1987). Wildlife hollows and timber management in Blackbutt forest. MSc. thesis, University of New England, Armidale, New South Wales.

Webster, R. (1988). 'The Superb Parrot. A survey of the breeding distribution and habitat requirements'. Report Series No. 12. (Australian National Parks and Wildlife Service: Canberra.)

Wesolowski, T. (2001). Ground checks — an efficient and reliable method to monitor holes' fate. *Ornis Fennica* **78:** 193–197.