

## THE OCCURRENCE OF THE SLENDER-BILLED THORNBILL *Acanthiza iredalei* IN THE NORTHERN TERRITORY

CHRIS R. PAVEY and LEO JOSEPH

### ABSTRACT

The known occurrence of the nominate subspecies of the Slender-billed Thornbill *Acanthiza iredalei iredalei* in the southern Northern Territory (NT) and northern South Australia (north of approximately 30°S) is based almost exclusively on three specimens collected by S.A. White in 1913 and 1914. The only NT record is a specimen collected on the lower Finke River (now part of Idracowra Station) on 21 August 1913, although the specimen's original label data indicate that the species was 'plentiful' at that time.

Here we present the results of both a re-examination of White's Idracowra specimen and of bird surveys carried out in 2001 within *Maireana* (bluebush, cotton-bush) dominated vegetation in the Finke bioregion, including Idracowra Station. Our examination of White's specimen from Idracowra and the two northern South Australian specimens confirm that all are *A. iredalei*. No records of *A. iredalei* were obtained during the surveys in the Finke bioregion. The existence of only a single NT specimen and the absence of other nearby locality records of the species make the pattern of decline of *A. iredalei* in the southern NT very difficult to understand. The species is now classified as 'regionally extinct' in the NT.

### INTRODUCTION

The Slender-billed Thornbill *Acanthiza iredalei* has a wide range across the arid- and semi-arid zones of southern Australia (reviews in Matthew 1994; Schodde and Mason 1999; Higgins and Peter 2002; Barrett *et al.* 2003). Three subspecies are normally recognised. The nominate subspecies *A.i. iredalei*, which is the focus of the present article, has a wide range in southern Australia, mostly in chenopod shrubland. From around Shark Bay in Western Australia, its range arcs south and east across Western Australia and South Australia to northern Eyre Peninsula and the north-western sector of Spencer Gulf. *A.i. rosinae* is found in saltmarsh near tidal channels in Gulf St Vincent. We note that Matthew (1994) ascribes records from the north-east side of Spencer Gulf near Port Pirie, Port Broughton and Redcliff Point to *A.i. iredalei* in his Table 3 but to *A.i. rosinae* in his Figure 2 and Table 5. Schodde and Mason (1999), however, considered these localities (except Redcliff Point) and the Port Clinton–Price area at the head of the Gulf St Vincent, to be parts of a zone of intergradation between these subspecies. *A.i. hedleyi* occurs in low heathland in drier parts of south-eastern South Australia and south-western Victoria.

The known occurrence of *A.i. iredalei* in southern Northern Territory (NT) and northern South Australia north of approximately 30°S, which is well to the north and north-east of its current range, is based almost exclusively on three specimens collected by S.A. White in 1913 and 1914. Matthew (1994) noted some possible recent sight records from east of Marree and south-west of William Creek in South Australia. In the NT, White collected a single specimen on the lower Finke River on 21 August 1913 (Storr 1977). Based on White's botanical material from the same expedition, Parker (1971) fixed the locality as Idracowra Station (24°59'S, 133°47'E). The specimen is now held in the American Museum of Natural History (AMNH), New York (AMNH 600801). Its original label data indicate that the species was 'plentiful' at that time (also discussed in Parker 1971). Shane Parker and David Howe of the Northern Territory Reserves Board (now the Parks and Wildlife Commission of the Northern Territory, hereafter PWCNT) searched the Idracowra locality during May 1970 without success, although Parker (1971) noted that extensive areas of suitable habitat occur in the vicinity. There have been no further records of the species in the NT. White also collected two specimens in northern South Australia; a female at Wantapella Swamp (27°01'S, 133°27'E) on 9 July 1914 and a male 47 miles [75 km] west of Moorilyanna Well (26°51'S, 133°01'E) on 16 July 1914. (The spelling of both of these localities varies in the literature. Here we use orthography recommended by Geoscience Australia (2003)). White reported the species as being rare at Wantapella Swamp (White 1915 cited in Matthew 1994).

*A.i. iredalei* was previously classified as endangered in the NT (Parks and Wildlife Service of the Northern Territory, unpubl. data). However, despite the search effort by Parker and Howe, the lack of records since 1913 suggests that the species may be extinct in the region. Coupling this to concern expressed for *A.i. iredalei* throughout its range by Reid and Fleming (1992), we decided to reassess the conservation status of

the species in the northern parts of its range. In this article we attempt that reassessment but restrict our focus primarily to the NT. Matthew (1994) further discussed the part of its range that is in northern South Australia.

Our study had two components. First, the extraordinary localities of White's three specimens, together with no other proven records from the region, prompted us to expand Parker's (1971) notes on the NT specimen. We re-examined all three specimens and present the results of that re-examination. Second, a detailed fauna and flora survey of the Finke biogeographic region, which includes the collection site on Idracowra Station (Figure), was carried out in 2001. Among the sites surveyed were 12 that consisted of potentially optimum habitat for *A.i. iredalei* in *Maireana* (bluebush, cotton-bush) dominated vegetation associations. Transects surveying birds at these sites provided a useful opportunity to establish whether the species was extant. We also provide results of those surveys.

## METHODS

### Museum specimens

Inspection of digital images of White's Idracowra specimen alongside specimens of two

species that occur in the region with which the species might conceivably be confused (Southern Whiteface *Aphelocephala leucopsis* and Chestnut-rumped Thornbill *Acanthiza uropygialis*) initially 'confirmed' the identity of White's specimen as *A. iredalei*. LJ borrowed the AMNH specimen for closer study and comparison with three specimens of *A.i. iredalei* at the Academy of Natural Sciences, Philadelphia (ANSP), namely ANSP 190377 from near Carnarvon, Western Australia, and ANSP 189648 and 189649 from the Gawler Ranges, South Australia. Dr Philippa Horton, South Australian Museum, Adelaide (SAM), kindly supplied observations on S.A. White's specimens from Moorilyanna Bore and Wantapella Swamp in northern South Australia and her notes are presented below. We have not attempted a thorough morphometric study because only one NT and two northern South Australian specimens exist. To incorporate observer variability, LJ made three replicate measurements of the maxilla (from tip to the base of skull) of each specimen over a month (Table 1). To minimise handling of the obviously fragile AMNH specimen, other measurements were made only once (wing as a flattened chord of folded right wing; tail from tip to base of rectrices).

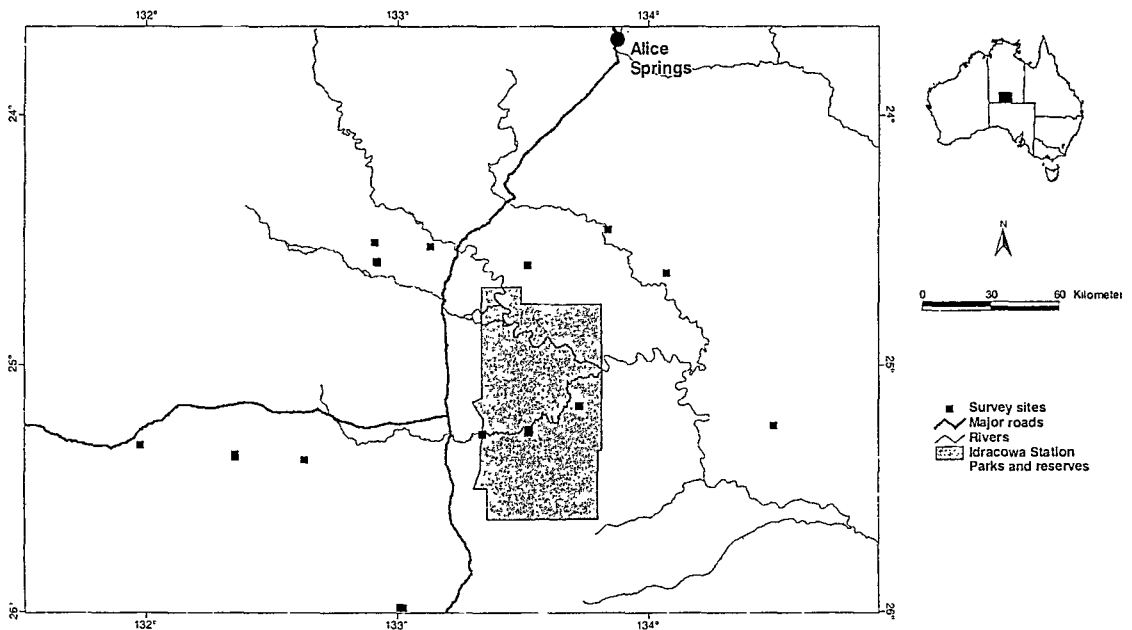


Figure. The location of Idracowra Station and bird survey sites in the Finke biogeographic region, southern Northern Territory.

Table 1. Measurements (in mm) of AMNH 600801, three other *A. i. iredalei* specimens from South Australia and Western Australia examined and measured by LJ (\*see Methods), and comparative measurements of *A. i. iredalei* and *A. i. rosinae* from Higgins and Peter (2002), which are given in the following format: mean  $\pm$  standard deviation, sample size.

| Specimen/Taxon        | Locality  | Sex     | Maxilla*            | Wing                | Tail                |
|-----------------------|---|---------|---------------------|---------------------|---------------------|
| ANSP 190377           | 8 km SE Carnarvon, Western Australia<br>(25°03'S, 113°41'E)               | Male    | 8.53 $\pm$ 0.21     | 46                  | 39                  |
| ANSP 189648           | Gawler Ranges, South Australia<br>(32°40'S, 137°05'E)                     | Female  | 9.3 $\pm$ 0.15      | 47                  | –                   |
| ANSP 189649           | Gawler Ranges, South Australia<br>(32°40'S, 137°05'E)                     | Male    | 9.2 $\pm$ 0.20      | 45                  | 38                  |
| AMNH 600801           | Finke River, Idracowra Station,<br>Northern Territory (24°59'S, 133°47'E) | Male    | 6.9 $\pm$ 0.55      | 50                  | 36                  |
| <i>A. i. iredalei</i> | South Australia and Western Australia                                     | Males   | 9.7 $\pm$ 0.61, 28  | 48.8 $\pm$ 1.59, 29 | 40.6 $\pm$ 1.54, 28 |
|                       |   | Females | 9.6 $\pm$ 0.45, 24  | 47.5 $\pm$ 1.47, 25 | 39.6 $\pm$ 1.68, 25 |
| <i>A. i. rosinae</i>  | Gulf St Vincent, South Australia  | Males   | 10.2 $\pm$ 0.55, 27 | 48.8 $\pm$ 1.40, 27 | 40.0 $\pm$ 1.74, 27 |
|                       |   | Females | 10.0 $\pm$ 0.60, 8  | 47.6 $\pm$ 1.01, 9  | 39.7 $\pm$ 2.64, 9  |

### Field surveys

Twelve fauna survey sites were in *Maireana* dominated vegetation associations (Table 2). All sites were located either on alluvial plains (including clay flats), salt pans, or gently rising slopes. These sites were either on ( $n = 5$ ) or within a maximum distance of 150 km of Idracowra Station (Figure). The species also occurs in other types of chenopod shrubland and in acacia shrubland (Recher and Davis 2000; Higgins and Peter 2002) and many such sites were censused during the Finke study. However, we present data only for the expected preferred habitat of *A. i. iredalei* based on Matthew's (1994) emphasis on sites dominated by the genus *Maireana*, particularly pearl bluebush *M. sedifolia*, with a perennial plant cover of 15% or more. *Maireana sedifolia* does not occur in the Finke bioregion, where it is replaced by grey bluebush *M. astrotricha* (Table 2), which resembles it and occupies similar habitat (Cunningham *et al.* 1992).

The 12 sites were visited from March to November 2001. The survey of each site consisted of morning and evening censuses, each of 15 minutes, on three consecutive days. Observers walked along a quadrat-based transect 250 m long and 100 m wide, recording all bird species seen. In addition, opportunistic observations of species were made outside of transect times. Only one observer had previous field experience with the species, however, all observers were familiar with the small passerines of the region.

### RESULTS

#### The AMNH specimen

The following notes on the AMNH specimen confirm its identity as *A. i. iredalei*. Colour photographs of this specimen alongside specimens of other *Acanthiza* species that could be expected to occur sympatrically with it can be seen at an electronic appendix on the web site of Academy of Natural Sciences, Philadelphia (<http://www.acnatsci.org/publication/appendix6.html>).

White's original label is still attached to the specimen AMNH 600801 and has the following data: Locality: Finke River; Date: 21.8.13 [21 August 1913]; Sex: male symbol [male]; Iris: dull white [this word difficult to read]; Feet: brownish black; Bill: do [= ditto = brownish black]. Original Number: 1357. Also handwritten on the label are the following remarks: 'Plentiful, met with in small parties in scrub and open country alike, procuring most of their food on the ground.' An additional label indicates that the specimen was originally part of G.M. Mathews' collection until acquired by Lord Rothschild and then by AMNH. This label has the abbreviation 'immat' [= immature] added in pencil, though whether this was done before or after the AMNH acquired the specimen is not known. Parker (1971) has also discussed the specimen.

AMNH 600801 is distinguishable by several characters from Inland Thornbill *A. apicalis* of Upper Eyre Peninsula, South Australia. First, it

Table 2. Description of vegetation at the 12 survey sites in the Finke biogeographic region that contained potentially suitable habitat for *A. iredalei*.

| Vegetation type   | No. of sites |
|---|--------------|
| <i>Maireana aphylla</i> (cotton-bush) low-shrubland   | 2            |
| <i>Maireana aphylla</i> and <i>Eremophila maculata</i> (spotted emu-bush) low-shrubland   | 3            |
| <i>Maireana astrotricha</i> low-shrubland   | 5            |
| <i>Maireana turbinata</i> (top-fruit bluebush), <i>Sclerostegia tenuis</i> (slender glasswort) and <i>Atriplex vesicaria</i> herbland | 2            |

has more yellowish-buff underparts and more yellowish colour about the flanks and lower belly, rather than the pale grey belly and rufescent flanks and under-tail coverts of *A. apicalis*. Second, it has no streaking or spotting on the chest as in *A. apicalis*. Third, AMNH 600801's chest is yellowish-buff in ground colour, not greyish or creamy as in *A. apicalis* or *A. uropygialis*.

Extending the comparisons to include other specimens of *A. iredalei*, we note that dorsally AMNH 600801, as well as two South Australian and one Western Australian *A.i. iredalei* at ANSP, all have a noticeably more olive cast than the darker grey or rufescent-buff tinge seen in *A. uropygialis* and *A. apicalis*. Distinctive, pale sandy buff upper-tail coverts are evident in AMNH 600801. Unfortunately, this character could not be reliably scored in the two South Australian *A.i. iredalei* that we examined, but the same colour is evident in the Western Australian bird. The bill of AMNH 600801 is noticeably more brownish than the recent specimens collected in 2001 and 2002, which are black-billed. Given the specimen's label data (see above), the brownish rather than black colour is almost certainly due to the age of the specimen, e.g. the nineteenth century specimens of the Yellow-rumped Thornbill *A. chrysorrhoa* held in the ANSP also have this brownish bill colour, whereas recently collected birds have black bills. The frons and forehead of AMNH 600801 are scalloped as in all *Acanthiza* species examined. However, the dark and pale components of the scalloping do not contrast so clearly as in *A. uropygialis* and *A. apicalis*. In the South Australian and Western Australian *A.i. iredalei* we examined, the dark component of individual feathers of the frons and forehead resembles the general sandy buff upperparts of AMNH 600801. In contrast, the pale component of these feathers in AMNH 600801 is more sandy cream than in the other three *A.i. iredalei*. Outermost rectrices

of AMNH 600801, especially on the left hand side, are the most conspicuously pale-tipped (6 mm tip on outermost left rectrix). Last, the bill of AMNH 600801 is noticeably shorter and thicker than in the other three *A.i. iredalei* we examined (see Table 1).

#### SAM specimens (per Dr P. Horton)

The Moorilyanna Bore and Wantapella Swamp birds are a little paler/creamier ventrally than most other SAM specimens from South Australia (SA) and Western Australia, though some are equally creamy; some from Port Augusta (SA) are, if anything, even creamier. Dorsally the birds are indistinguishable. The Moorilyanna Bore specimen's bill is damaged and cannot be measured. The Wantapella Swamp specimen's bill is no shorter or stouter than bills of specimens from the Leigh Creek area, Eyre Peninsula and Nullarbor Plain (SA) or Western Australia. Bills of *A.i. rosinae* from Gulf St Vincent (Port Pirie and Port Broughton, SA) specimens are on average slightly longer than those of *A.i. iredalei* (see Table 1 and Higgins and Peter 2002).

#### Field surveys

A total of 33 bird species was observed during quadrat-based censuses at the 12 *Maireana* dominated sites during the Finke survey. *Acanthiza iredalei* was not seen. Among the small passerines recorded were Southern Whiteface, Banded Whiteface *Aphelocephala nigricincta*, White-winged Fairy-wren *Malurus leucopterus* and Crimson Chat *Epthianura tricolor*. None of these species is easily confused with *A. iredalei* in the field.

#### DISCUSSION

Our examination of White's specimen collected on the lower Finke River (at Idracowra Station) in 1913 confirmed that it was *A. iredalei*. After

examination of the images at <http://www.acnatsci.org/publication/appendix6.html>, J. Matthew (pers. comm.) agrees and notes that the colour of the specimen's underparts is entirely consistent with it being of the nominate subspecies. The bird was originally sexed as a male. A later annotation on the specimen's label says that it is an immature but this conflicts with the specimen's forehead scalloping, which indicates the bird is more likely an adult. We conclude that *A. iredalei* was once part of the avifauna of what is now the NT. Further, based on White's collection notes, it was plentiful in the area at the time. The variation in bill length and underparts colour that we observed, while intriguing and suggestive of minor differentiation of some or all of the more northern populations, is at present best considered to be individual variation (see also Higgins and Peter 2002).

We have found no evidence that *A. iredalei* still occurs at the collection site or elsewhere in the NT. The survey reported here involved intense quadrat-based censuses at 12 sites supporting optimum habitat for the subspecies (Matthew 1994). In addition, quadrat-based bird censuses were completed at another 152 sites stratified across all vegetation types in the Finke biogeographic region including chenopod shrubland dominated by samphire *Sclerostegia* and *Halosarcia* spp. and bladder saltbush *Atriplex vesicaria*. A previous search of suitable habitat on Idracowra Station was carried out in May 1970 (Parker 1971) and a more detailed survey of the Finke River floodout to the south and east of Idracowra Station assessed 30 sites during April 1994 (Eldridge and Reid 2000). The completion of these surveys fulfils the IUCN criterion of '...exhaustive surveys in known and/or expected habitat, at appropriate times (diurnal, seasonal, annual), throughout its historic range...' for assessing a taxon as extinct (IUCN 2001). Given that populations occur elsewhere in Australia, the status of the species in the NT has changed from endangered to regionally extinct (DIPE 2002).

The existence of only a single NT specimen and the absence of other nearby locality records of the species make the pattern of decline of *A. iredalei* in the southern NT very difficult to understand. However, White's observation that the species was abundant at the collection site indicates that it likely occupied suitable habitat elsewhere in the region. We are unable to determine if the loss of this species from the area was

associated with land use practices that radically altered the available habitat on Idracowra Station after 1913. However, cattle grazing in the Finke bioregion, including Idracowra Station, has clearly degraded chenopod shrubland and herbland (C. Pavey, pers. obs.).

Significantly, *A. iredalei* has also undergone local extinctions in adjacent regions of South Australia. The specimens collected by White in July 1914 at both Wantapella Swamp and near Moorilyanna Bore, the identities of which have similarly been confirmed by Dr P. Horton, are the only specimen-based records of the species in north-central South Australia (Matthew 1994). Sightings have been reported from near Marree and south-west of William Creek (see Matthew 1994). Although both of these localities are well to the south-east of where White collected his specimens, the records go some way to bridging the gap between the present and past ranges of this bird.

In addition to its evident extinction in the NT and far north South Australia, *A. iredalei* has undergone local extinctions or population declines at several sites in southern Australia. Specifically, it has disappeared from the Leigh Creek and Lyndhurst areas of South Australia (Matthew 1994), and the far north-east of south-west Western Australia (Storr 1991), and it has declined in abundance along the Nullarbor Plain (Brooker *et al.* 1979). The decline in both abundance and range of the subspecies *A. i. iredalei* since European settlement has resulted in it being regarded as nationally vulnerable (Federal *Environment Protection and Biodiversity Conservation Act, 1999*) and a species of major conservation concern in the arid zone (Reid and Fleming 1992). Declines of the species are associated with habitat alteration and destruction caused by grazing by introduced herbivores, especially cattle and rabbits (Brooker *et al.* 1979; Storr 1991; Matthew 1994).

#### ACKNOWLEDGMENTS

We gratefully acknowledge the assistance provided by Shannon Kenney (American Museum of Natural History, New York), Philippa Horton (South Australian Museum, Adelaide), and Catherine Nano (Natural Systems, DIPE, Alice Springs). Bretan Clifford (Natural Systems, DIPE, Alice Springs) kindly prepared the Figure. Jeff Cole (Natural Systems, DIPE, Alice Springs)

skilfully organised and supervised the field survey teams. We are grateful to Jamie Matthew and Julian Reid for constructive comments on an earlier draft of the manuscript.

#### REFERENCES

- Barrett, G., Silcocks, A., Barry, S., Cunningham, R. and Poulter, R. 2003. *The new atlas of Australian birds*. Birds Australia, Melbourne.
- Brooker, M.G., Ridpath, M.G., Estbergs, A.J., Bywater, J., Hart, D.S. and Jones, M.S. 1979. Bird observations on the north-western Nullarbor Plain and neighbouring regions, 1967-1978. *Emu*, 79, 176-190.
- Cunningham, G.M., Mulham, W.E., Milthorpe, P.L. and Leigh, J.H. 1992. *Plants of western New South Wales*. Inkata Press, Melbourne.
- DIPE. 2002. *Threatened species of the Northern Territory information package*. Department of Infrastructure, Planning and Environment, Northern Territory Government, Darwin.
- Eldridge, S. and Reid, J. 2000. *A biological survey of the Finke floodout region, Northern Territory*. Arid Land Environment Centre and Australian Heritage Commission, Alice Springs.
- Geoscience Australia. 2003. *Geoscience Australia website* [Internet] Commonwealth of Australia. Available from: <http://www.ga.gov.au/> [Accessed 2 December, 2003].
- Higgins, P.J. and Peter, J.M. (eds). 2002. *Handbook of Australian, New Zealand and Antarctic birds. Volume 6: pardalotes to shrike-thrushes*. Oxford University Press, Melbourne.
- IUCN. 2001. *IUCN Red List categories and criteria: Version 3.1*. IUCN Species survival Commission. IUCN, Gland, Switzerland and Cambridge, UK.
- Matthew, J. 1994. The status, distribution and habitat of the Slender-billed Thornbill *Acanthiza iredalei* in South Australia. *South Australian Ornithologist*, 32 (1), 1-19.
- Parker, S.A. 1971. Critical notes on the status of some central Australian birds. *Emu*, 71, 99-102.
- Recher, H.F. and Davis, W.E. Jr. 2000. A contribution to the natural history of the Slender-billed Thornbill *Acanthiza iredalei* in Western Australia. *Australian Bird Watcher*, 18, 297-305.
- Reid, J. and Fleming, M. 1992. The conservation status of birds in arid Australia. *Rangeland Journal*, 14, 65-91.
- Schodde, R. and I.J. Mason. 1999. *The directory of Australian birds: passerines*. CSIRO, Canberra.
- Storr, G.M. 1977. *Birds of the Northern Territory. Records of the Western Australian Museum*, Special Publication No. 4, Perth.
- Storr, G.M. 1991. *Birds of the South-west division of Western Australia. Records of the Western Australian Museum*, Supplement No. 35, Perth.
- Chris R. Pavey: Parks and Wildlife Service, Department of Infrastructure, Planning and Environment, PO Box 2130, Alice Springs, Northern Territory 0871, Australia
- Leo Joseph: Department of Ornithology, Academy of Natural Sciences, 1900 Benjamin Franklin Parkway, Philadelphia, Pennsylvania 19103-1195, USA

Received 5 May 2004; accepted 7 February 2004