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Caroline J. Blackmore, Origma Wildlife Research, 'Strathmore', Coonabarabran, New South Wales 2357.

Michael R. Jarman, National Parks and Wildlife Service, PO Box 72, Ulladulla, New South Wales 2539.

Phil Craven, National Parks and Wildlife Service, PO Box 707, Nowra 2541.

Nicholas Carlile, Office of Environment and Heritage, PO Box 1967, Hurstville BC, New South Wales 1481.

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Nest site selection of the White-winged Fairy-wren *Malurus leucopterus edouardi* on Barrow Island

M.J. Bamford[1] and D. Moro[2, 3]

[1]Bamford Consulting Ecologists, 23 Plover Way, Kingsley, WA, 6026.
[2]Chevron Australia, GPO Box S1580, Perth, Western Australia, 6845.
[3]Correspondence author. Email: dmmv@chevron.com

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This study of nest site selection of the White-winged Fairy-wren *Malurus leucopterus edouardi* on Barrow Island showed that they favoured vegetation that included *Melaleuca cardiophylla* shrubs but were observed in a range of vegetation types, some of which where *M. cardiophylla* was not well represented. Nests were found in *M. cardiophylla, Acacia bivenosa, A. coriacea, Hakea lorea, Grevillea pyramidalis, Triodia angusta* and *T. wiseana.* Crushed *Triodia* sp. leaves and flowers stalks were important nest-building materials, and shrubs such as *A. coriacea* and *A. bivenosa* offered good perches in an otherwise sparse to open vegetated arid environment. White-winged Fairy-wrens were also found to nest along roadways on Barrow Island in areas without *M. cardiophylla*. While sightings of White-winged Fairy-wrens were predominately among *M. cardiophylla*, it did not appear to be reliant upon this shrub for its nesting requirements, suggesting, that on Barrow Island this subspecies has generalist nesting requirements.

INTRODUCTION

The White-winged Fairy-wren *Malurus leucopterus* occurs as three subspecies around Australia (Barrett *et al.* 2003), with *Malurus leucopterus edouardi* endemic to Barrow Island. It has been the subject of a number of studies describing its foraging habitat, density, genetic distinctiveness to populations on the mainland and other islands, and incidentally, nest site selection (Sedgewick 1978; Pruett-Jones and Tarvin 2001; Driskell *et al.* 2002; Pruett-Jones and O'Donnell 2004). Of particular interest were observations by Pruett-Jones and Tarvin (2001), which showed the birds were abundant among open shrub habitats comprising *Melaleuca cardiophylla* and other shrubs such as *Acacia bivenosa* over a tussock grassland of *Triodia* sp. (typically *T. wiseana*). However, the importance of this habitat for nesting remains unclear: two nests reported by Pruett-Jones and Tarvin (2001) were found in *M. cardiophylla* and a third was constructed in a large *Solanum* shrub. Based on these three observations, *M. cardiophylla* has been informally afforded particular importance as nesting habitat for White-winged Fairy-wrens on Barrow Island by the state conservation agency and the industry, which operates on the island. However, the importance of this habitat for nesting remains uncertain because recent (M. Bamford, unpub. data) observations suggest the species occurs across various habitats and does not appear reliant on a single shrub habitat for its foraging nor nesting requirements. This information has implications when considering suitable translocation habitat for this subspecies and also how the current industry operator on the island, Chevron Australia, manages its vegetation for wildlife; e.g. should *M. cardiophylla* really be managed explicitly as critical habitat for the White-winged Fairy-wren to support its foraging and nesting requirements? The aim of this study was to understand whether the nesting habitat requirements and habitat use of the White-winged Fairy-wren on Barrow Island were specialised and consequently interpret the importance of *M. cardiophylla* as critical nesting habitat.

METHODS

Nest searches were conducted on Barrow Island (20° 45'S, 115° 20'E) by ornithologists over seven consecutive days from August into September 2005. The survey period was selected to coincide with the breeding season of this subspecies (Pruett-Jones and Tarvin 2001). Search effort totalled approximately 100 person-hours. Personnel had considerable experience in searching for nests generally, including those of fairy-wrens and of the White-winged Fairy-wren elsewhere in its range. The search area covered some 1000 hectares of the island.

Observers searched for nests by locating groups of birds and observing their behaviour for signs of breeding activity. Signs included carrying food or nesting material, birds with tails bent from incubating eggs and/or birds exhibiting behaviour to suggest a nest was close by. Focusing on the birds rather than on searching for nests avoided potential habitat bias associated with searching for nests in particular habitats. Records collected included: date, social group size, nest location (using GPS records), species of plant where nest was made, nest position in plant and vegetation type.

RESULTS AND DISCUSSION

Thirty-one groups of White-winged Fairy-wrens were observed, totalling 104 individual birds. Group sizes ranged from 2–5 birds (mean 3.2). Most groups of wrens (77%) were sighted in *M. cardiophylla* open shrubland over *Triodia* sp. on limestone rises, consistent with past observations (Pruett-Jones and O'Donnell 2004), but seven groups (22% of those observed) were among vegetation where *M. cardiophylla* was absent: shrubs present were *A. bivenosa, A. coriacea, H. lorea* and *G. pyramidalis.*

Fourteen groups of birds displayed signs of breeding activity and six were feeding dependent young that had left the nest. Five of these groups with fledglings were in vegetation consisting of *M. cardiophylla* shrubland over *Triodia* sp.. Of 30 fledglings observed, five were in vegetation consisting of *M. cardiophylla* shrubland over *Triodia* sp., 21 were in vegetation consisting of sparse *M. cardiophylla* over *Triodia* sp. and four were in sparse *A. coriacea* over *Triodia* sp..

There was considerable variation in the vegetation type within which nests were found (Table 1): one was solely in *M. cardiophylla*, one was in *M. cardiophylla* but supported by *T. wiseana*, and the remaining six nests were in *Triodia* sp. clumps. The location where nests were constructed also varied: three nests were in sparse vegetation with limestone rock at or close to the surface, one nest was on high open ground-cover on a limestone slope, one nest was in a valley and three were on a loam flat. Of particular interest, two nests were found in tall roadside *T. angusta* without *M. cardiophylla*. We suggest that past observations of nesting requirements may have been an artefact of focusing searches in *M. cardiophylla* shrubland where the birds are commonly seen, rather than following them to their nests. These observations suggest that while sightings of White-winged Fairy-wrens were predominately among *M. cardiophylla*, which is clearly an important component of the birds' environment, the species is not restricted or even largely restricted to this shrub for nest-site selection. In this it is like the two other subspecies of White-winged Fairy-wren, *M. l. leuconotus* on the mainland and *M. l. leucopterus* on Dirk Hartog Island, that also nest in a wide range of shrubs and tussock grasses (Higgins *et al.* 2001).

Nests of the White-winged Fairy-wren were moderately to well-concealed and were made of crushed spinifex leaves lined with spider webs, and were located 0.35–0.8 metres above ground within bushes or *Triodia* sp.. These habits align with those described for other White-winged Fairy-wren nests observed on the mainland and Dirk Hartog Island (Higgins *et al.* 2001). In this study, the breeding season was well advanced at the time of

Table 1

Nest site habit and associated vegetation for White-winged Fairy-wrens *Malurus leucopterus edouardi* on Barrow Island.

Primary nest plant	*n*	Height of nest above ground (m)	Nest material	Nest contents	Vegetation	Attending birds
T. wiseana	3	0.25-0.35	Leaves from *Triodia* flower stalks, seeds, spider webs	1 egg	Hummock grassland of *T wiseana* (60-80 %) and *T angusta* (10-30 %), and open shrubland (5 %) of *M cardiophylla, A. bivenosa* (10 %), and *A. coriacea*	1 coloured male, 1 uncoloured bird
				2 chicks		1 coloured male, 2 uncoloured birds
				3 eggs		1 coloured male, 2 uncoloured birds
T. angusta	3	0.3-0.8	Leaves from *Triodia* flower stalks, crushed *Triodia* leaves, seeds, spider webs	3 chicks	Hummock grassland of *T. angusta* (90 %) and open shrubland of *A. bivenosa* (10 %). 1 nest in hummock grassland on roadside with sparse *T. wiseana* nearby	1 coloured male, 1 uncoloured bird
				0 (under construction)		1 coloured male, 2 uncoloured birds
				1 egg		1 coloured male, 1 uncoloured bird, 1 fledgling
M. cardiophylla	1	0.7	Leaves from *Triodia* flower stalks, seeds, spider webs	Nil (under construction)	Hummock grassland of *T. wiseana* (70 %) and *T. angusta* (10 %) and open shrubland of *M. cardiophylla* (< 5 %)	1 coloured male, 4 uncoloured birds
T. wiseana with *M. cardiophylla*	1	0.45	Leaves from *Triodia* flower stalks, spider webs	Nil (under construction)	Hummock grassland with open shrubland of *M. cardiophylla, A. bivenosa,* and *A. coriacea*	1 coloured male, 3 uncoloured birds

the survey, indicating earlier breeding than reported by Rathburn and Montgomerie (2003) for either *M. l. leucopterus* or for *M. l. leuconotus*. Earlier breeding is consistent with a noted peak in breeding of landbirds on Barrow Island after rainfall events (Ambrose and Murphy 1994) following exceptional late autumn and early winter rains on the island prior to the survey.

We conclude by suggesting that current management decisions for the protection of *M. l. edouardi* that focus on protecting *M. cardiophylla* specifically as nesting habitat may be misdirected. The birds on Barrow Island are more generalists than previously believed in their use of vegetation and use *M. cardiophylla* for foraging and nesting along with other plant species in their environment.

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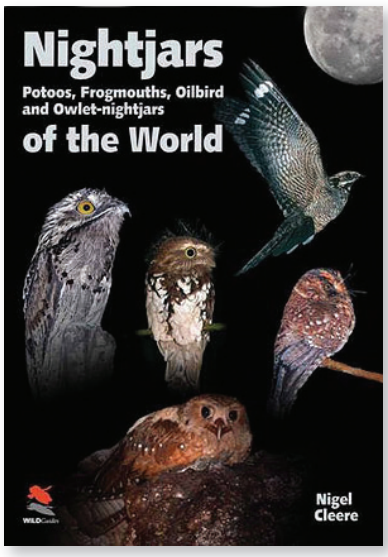
Book Review



Nightjars, Potoos, Frogmouths, Oilbird and Owlet-Nightjars of the World.

Cleere, Nigel, 2010.Wild*Guides* Ltd. Hardback, 464 pp, 580 colour illustrations. ISBN 978-1-903657-07-2. RRP $65.

Nightjars, Potoos, Frogmouths, Oilbird and Owlet-Nightjars of the World offers a remarkable compilation of high quality glossy photographs of all currently known species of Caprimulgiformes. It represents a remarkable effort and includes photos of little known species, threatened or near threatened species and recently described species taken in the wild. For several species of nightjar only described from a single specimen and not subsequently observed, photos of museum specimens are presented to offer a complete collection. The author must be commended for his effort in compiling an entire index of photos of an order of birds that, due to their cryptic and nocturnal nature, present a challenge to photographers.

Nigel Cleere is one of the world's foremost experts on nightjar taxonomy and biology and published the first comprehensive text on nightjars and their relatives in 1998 (Cleer and Nurney 1998). The current text is not an update to or a substitute for his previous book, but rather serves as an excellent accompaniment. This book is described as "*the first comprehensive photographic guide to the nightjars*". Like most field guides, brief details are provided for species identification, but a comprehensive account of each species is not presented. If readers are looking for detailed text describing habitat, behaviour, ecology and morphology of nightjars they should refer to Cleere's *Guide to Nightjars and Related Nightbirds* and David Holyoak's *Nightjars and their Allies*.

In the book's introduction Cleere indicates that "*the principle aim of this book is to present an easy-to-use guide to help identify nightjars and related birds*". However, I can't help but feel the book falls in the realm between a field guide and a glossy coffee table book. Although the brief species descriptions are written as such, it is certainly not a pocket field guide. And the global coverage of the guide makes it of limited use to the average regional bird watcher. For example, only seven of the