

SEABIRD ISLANDS

No. 3/1

Belowla Island, New South Wales

Location: 35°33'S, 150°24'E. Located 520 metres offshore from Butlers Point, near Kioloa, on the south coast of New South Wales.

Status: Belowla Island Nature Reserve is administered by the NSW National Parks and Wildlife Service (NPWS), Ulladulla Area, Office of Environment and Heritage. Entry permit required.

Description: The total area of the rock platform is ~ 4.48 hectares, 380 metres long by 170 metres across. A 1.57 hectare area supports soil and vegetation, with seabirds breeding in 1.31 hectares (81%) of this area. The island geology is part of the Termeil Essexite Formation, providing skeletal basaltic soils.

Vegetation on Belowla Island is dominated by maritime grassland of Sand Couch *Sporobolus virginicus* and succulent hermland of Pigface *Carpobrotus glaucescens*, with thickets of shrubland comprised mainly of Boobialla *Myoporum acuminatum* and Seaberry Salt Bush *Rhagodia candolleana*. Other species not mentioned by Lane⁸ are Boobialla *M. boninense*, Coastal Rosemary *Westringia fruticosa*, *Isolepis nodosa*, Sea Rush *Juncus krausii*, Hydrocotyle *bonariensis*, Snake Vine *Stephania japonica*, *Senecio* sp., *Viola* sp., Prickly Sowthistle *Sonchus asper* subsp. *glaucescens*, Cockspur Flower *Plectranthus parviflorus*, Glossy Nightshade *Solanum*

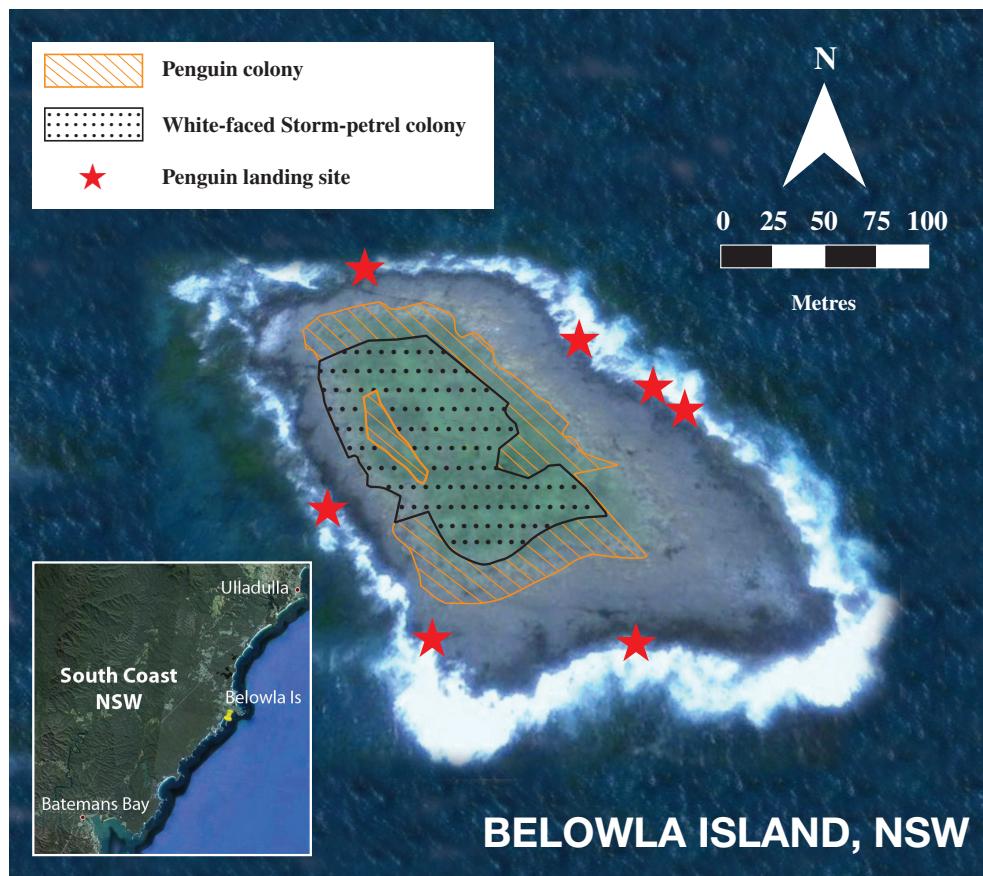
americanum and the declared noxious weed Beach Morning Glory *Ipomea cairica*.

Landing: Prior approval is required from the National Parks and Wildlife Service to land on the island. Landing is onto rocks on the western coast and requires calm conditions.

Ornithological History: H. Battam, R. Badham and S. G. Lane visited Belowla Island for two hours on 17 December 1972⁸. L. Smith and others visited the island on the 2 November 2004¹² and 10 November 2005 and determined there were ‘possibly more than 100 breeding pairs of White-faced Storm-petrels’¹³. C. Blackmore, M. Jarman and R. Perry surveyed seabird colonies and undertook penguin landing counts during an overnight visit on 19 October 2009. A further two-hour visit was made in February 2010 to characterise vegetation and search for shearwater species.

Breeding Seabirds and Status

Eudyptula minor Little Penguin – Penguin colonies occupied from the edge of the vegetated area on the north, east and south sides of the island, to ~15 metres inland, and in two large Boobialla thickets where rocks and a steeper gradient increased burrowing opportunities (Figure 1), a total area of 5.2 hectares. Burrows were sparsely scattered elsewhere on the vegetated area.



Images courtesy of Google Earth

A 3 metre x 156.4 metre transect across the entire vegetated area was surveyed to estimate seabird numbers. Thirteen active burrows were counted in the 469.2 square metre transect area, giving a density of 0.03 burrows per square metre. This suggests a population of 363 breeding pairs. Our estimate of 363 pairs is a dramatic decline from Lane's⁸ estimate of 800 to 1000 pairs in 1972. However, Lane's estimate was based on the appearance of a mostly empty colony during one two-hour trip to band White-faced Storm-petrels, and did not factor in occupancy rates of less than 100%. We suspect that the discrepancy in numbers is due to sampling error, rather than a decline in the breeding population, especially as numbers on Brush, Wasp and Grasshopper Islands to the near north and south have remained stable or increased^{1,2,4}.

Ardenna spp. Shearwater spp. — Lane⁸ found two shearwater eggs on Belowla Island and concluded that Wedge-tailed Shearwaters *Ardenna pacificus* may breed there. One burrow that may have been consistent with those of shearwater species was found in this study, and one shearwater (species unknown) was observed to land during the night of 19 October. No shearwaters were found in searches during the breeding season. It is possible, but unlikely, that *Ardenna spp.* breed on Belowla Island in very small numbers.

Pelagodroma marina White-faced Storm-petrel — Burrows were thickly distributed across the 0.79 hectare Storm-petrel colony area, and scattered throughout the penguin colonies. In the 496.2 square metre transect, 193 Storm-petrel burrows were counted, a density of 0.41 burrows per square metre. Based on an occupancy rate of 50%³, we estimate 1626 pairs breed on Belowla Island. This is consistent with the earlier estimate by Lane⁸ of over 1000 breeding pairs, indicating the species has remained stable over the past 38 years.

Factors Affecting Status

In its current state, there is no evidence that the vegetation communities or associated seabird colonies on Belowla Island are under threat. Plant density is high and weeds limited to only a few specimens. However, vegetation loss and subsequent erosion is believed to be associated with the decline of White-faced Storm-petrel colonies on nearby Wasp Island². The species may avoid bare ground and areas of Boobialla and Acacia shrubland⁵. Factors that increase the proportion of bare earth, such as drought, and the encroachment of Boobialla thickets on grassland or hermland, are likely to reduce future Storm-petrel habitat on Belowla Island and increase competition from larger species such as Wedge-tailed Shearwaters.

Extremely vulnerable when on land, White-faced Storm-petrels only visit the breeding colony nocturnally⁹. Birds may be discouraged from landing in bright moonlight¹¹, although the extent to which light discourages birds with active nests is unclear. High intensity lights on the nearby mainland attract newly fledged chicks; several have been found on the ground attracted by security lights over the past ten years (unpubl. data). Further development that results in an increase in light pollution on this part of the coast could discourage breeding or impact on fledgling survival on Belowla Island.

None of the avian predators observed on Belowla Island have been recorded to prey particularly on White-faced Storm-

petrels, but Swamp Harriers *Circus approximans*¹⁰, Silver Gulls *Chroicocephalus novaehollandiae*⁶ and Australian Ravens *Corvus coronoides*⁷ may take adults, eggs or nestlings from colonies.

Other Seabirds Recorded

<i>Microcarbo melanoleucus</i>	Little Pied Cormorant
<i>Phalacrocorax carbo</i>	Great Cormorant
<i>P. sulcirostris</i>	Little Black Cormorant
<i>P. varius</i>	Pied Cormorant
<i>Pelecanus conspicillatus</i>	Australian Pelican
<i>Ardea novaehollandiae</i>	White-faced Heron
<i>Haematopus fuliginosus</i>	Sooty Oystercatcher
<i>Arenaria interpres</i>	Ruddy Turnstone
	Silver Gull

Other Vertebrates Recorded

Four species of land bird were recorded:

<i>Gymnorhina tibicen</i>	Swamp Harrier
<i>Anthus novaeseelandiae</i>	Australian Magpie
	Australian Raven
	Australasian Pipit

One Common Garden Skink *Lampropholis guichenoti* was the only non-avian vertebrate observed.

Banding

From Lane⁸, 17 November 1972:

P. marina — 11 adults, 19 nestlings. No recoveries to date.

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

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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.