

SEABIRD ISLANDS

No. 14/1

South Solitary Group, New South Wales

Location: 30°12'22" S, 153°16'01" E; eight kilometres east of Emerald Beach, between the mouths of the Bellinger and Clarence Rivers, and 17 km from Coffs Harbour, New South Wales (NSW).

Status: South Solitary Island Historic Site is controlled by the NSW National Parks and Wildlife Service (NPWS) and was gazetted in 2010. The island lies within the Solitary Islands Marine Park that was proclaimed in 1998.

Other Names: South Solitary Island is known as Bunyungudi (Gumbaynggirr traditional lands) by traditional owners. The associated small island 'Birdie' is sometimes referred to as Green Island. The islet 'Archie' is described in the Geographical Names Register of New South Wales as Arch Rock because its dominant form is an arch over the sea, although it is not formally named.

Description: South Solitary is a group of three islands, South Solitary Island, 'Birdie' (an islet unnamed or described within

the Geographical Names Register of NSW) and 'Archie'. South Solitary Island, 45 m long and 175 m wide, is aligned approximately north-south, with moderate to steep cliffs encompassing a gently rounded plateau containing a swale between the summit (41 m asl) to the south and a lesser rise to the north. The island covers 6.5 ha, with a vegetated area of 4 ha mostly on skeletal soils. The island plateau is dominated by the historic lighthouse and is connected by concrete paths sheltered with a wall to the lighthouse residences and infrastructure. There are ruins of an old, elevated gantry on the north-western side of the island. A concrete helicopter landing pad is located just north of the lighthouse. Whilst the lighthouse is kept in working order, only a few parts of the main housing structures have been restored to facilitate access to the public and NPWS maintenance crews. To the north of the main island is Birdie Island (~ 24 m asl; 1.6 ha), separated by a flooded, eroded dyke 15 – 30 m wide. This island, 140 m long and 130 m wide, contains 0.7 ha of vegetation cover on skeletal soils, with the fallen walls of a basic structure located above the northern

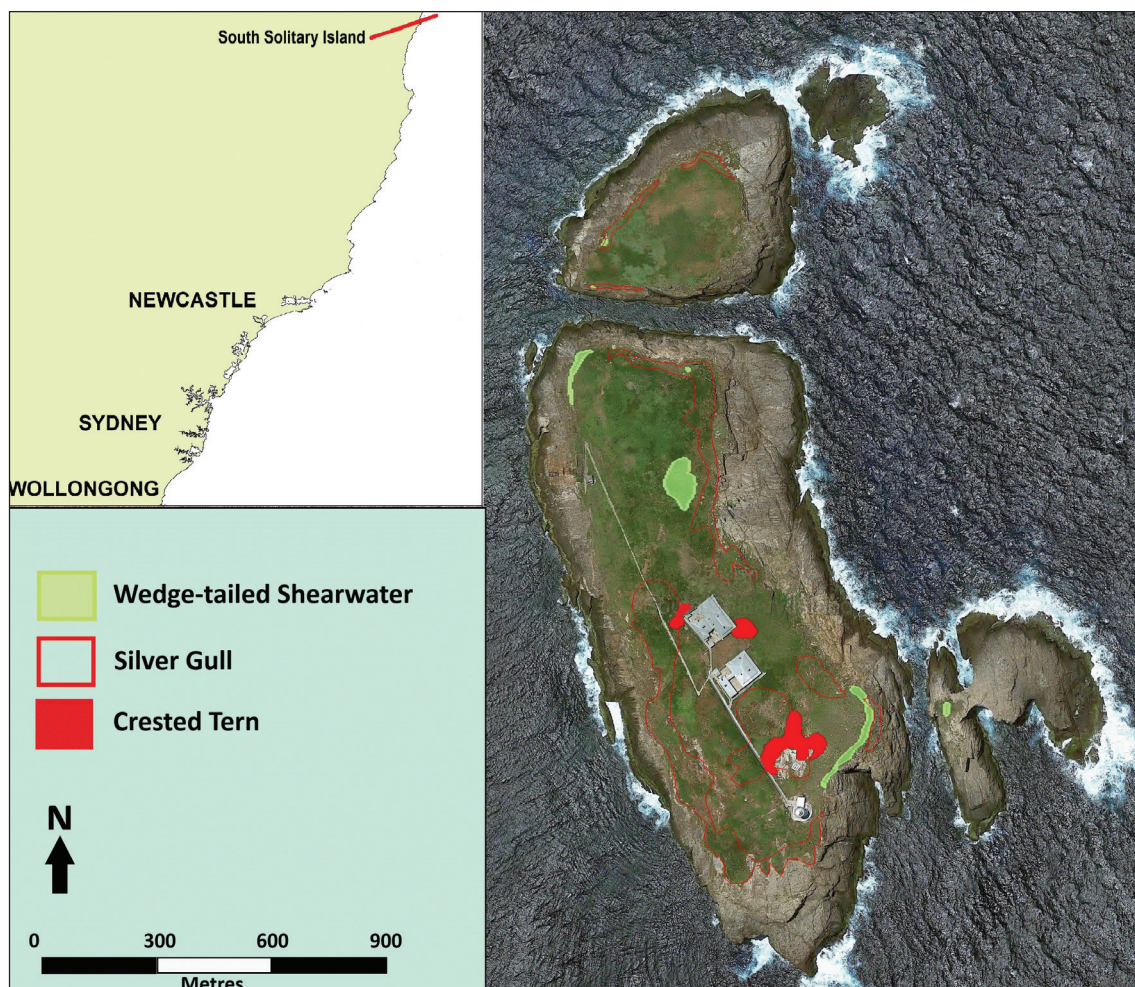


Figure 1. South Solitary Island, New South Wales.

shoreline. The irregularly shaped islet of Archie lies to the east, separated by a short gap of 10 m from South Solitary Island, and is 120 m long and 105 m wide. The islet is mostly bare rock (0.8 ha) and contains a small, vegetated area of 230 m² around the summit (~ 25 m asl) that persists on the arch formation near the western shore.

The vegetation on both South Solitary and Birdie is approximately 50% weed species, principally Kikuyu Grass *Pennisetum clandestinum* and, on South Solitary, Madeira Vine *Anredera cordifolia* surrounding the former lighthouse keepers' quarters and dominating there. This constitutes a significant change to the 1974 description of the vegetation², which recorded primarily native species with neither of the above invasive species listed. South Solitary Island lacks shrub species, probably the result of European Rabbit *Oryctolagus cuniculus* presence here for almost 100 years and the more recent removal of the weed Groundsel Bush *Baccharis halimifolia*.

Landing: By helicopter only and strictly controlled.

Ornithological History: Lane² summarised the known ornithological history up to 1975. Since then, difficulty of access combined with the automation of the light, means that there has been very little human presence on the island, and that mostly in the form of day visits. Australian Bird and Bat Banding Scheme (ABBBS) records indicate that since 1975 Narelle Swanson visited on single days annually from 1976 – 1982, focusing on the Wedge-tailed Shearwater *Ardenna pacifica*, and Lane on single days in 1977 and 1984 who banded all accessible seabird species. Several day visits have also been made by Swanson up to 2008 (NPWS unpubl.). Tourist helicopter flights to the island have occurred during school holidays in July and September annually since 2009; these have avoided the tern and gull nesting periods, as the area around the helicopter landing pad is a favoured breeding site for these species. The present authors mapped seabird habitat in 2014 during the eradication of the House Mouse *Mus musculus* from the island, with visits from 29 – 31 July and 12 – 13 August 2014. These visits were followed up by Carlile and others on 1 October 2014, 23 July and 26 – 27 October 2015 and 6 August 2016 to monitor the success of the baiting operation and survey seabirds.

Breeding Seabirds and Status

Ardenna pacifica Wedge-tailed Shearwater — This species breeds in three distinct areas on South Solitary Island: on eroded slopes on the vegetated section above the north-west shoreline, in a swale between the island's northern end and the former lighthouse keepers' residence, and directly to the east of the lighthouse itself, again on heavily eroded, vegetated cliffs (Figure 1). A large proportion of the burrows in these areas appear to be disused and highly eroded. Direct counts of potential burrows during soil surveys on South Solitary in early October 2015 (Brian Wilson pers. comm.) revealed 42 burrow structures, but no measure of occupation was made. Based on night observations in late October 2015, when only Wedge-tailed Shearwater calls were detected, a total of 15 birds was seen on the ground at all sites combined. A thorough search of Birdie during the same visit found only three potential burrows, two near the fallen walls of a former shelter above the northern

shoreline and a third in a soil pocket at the southern cliff edge opposite the breeding site on South Solitary Island (Figure 1). Other burrows observed were badly eroded and unlikely to be usable. The remaining areas of the island with deeper soils were thickly carpeted with Kikuyu Grass. A 45-minute visit to Archie in October 2015 determined that the current breeding area was identical to that on Lane's² 1974 map and restricted to the only vegetated area on the rock; it contained 45 mostly usable burrows. It is unlikely that the islands in combination contain more than 50 breeding pairs. This is less than half the population estimated previously². Short-tailed *A. tenuirostris* and Sooty Shearwaters *A. grisea* were also reported here in the 1960s and 1970s². Their calls and other evidence of occurrence were not recorded during the recent surveys.

Chroicocephalus novaehollandiae Silver Gull — This species was breeding on South Solitary Island in October 2014 in a diffuse colony covering 0.95 ha, the perimeter being measured with a GPS (Figure 1). Seven transects of 30 m x 2 m revealed a nesting density of 8.3 ± 2.3 (S.E.) nests per m², yielding a population estimate of 221 ± 90 breeding pairs. On Birdie, a direct count of 96 nests with eggs was made from aerial photographs (from exposed nests and assuming sitting birds were on eggs, as recorded on South Solitary), with nesting being spread over the fringes of the vegetated area of the islet. This total is similar to the 'few hundred pairs' reported by Lane after his visit in 1974². At that time, Silver Gulls were only known to occasionally breed on Birdie, and then only when Crested Terns *Thalasseus bergii* also nested. A helicopter survey of all islands in the Solitary Group in October 2014 confirmed that approximately 100 breeding pairs of Silver Gulls were also breeding on North Solitary Island (29°55'46" S, 153°23'29" E). Gulls nested again on South Solitary in 2015 during the Crested Tern breeding event reported below.

Thalasseus bergii Crested Tern — The species was found breeding in 2015 in tight, discrete colonies around the buildings and in the swale north of the lighthouse keeper's former dwellings (Figure 1); this was determined from aerial images supplied to the authors. An October 2014 aerial survey of all the islands in the Solitary group recorded no terns breeding on any of the islands. Ground images obtained of the colonies of terns nesting here on 26 October 2015 allowed a count of incubating birds (approximately 65% of all individuals present), which was an estimated 690 pairs. This is significantly more than the 'few hundred pairs' noted a year after Lane's visit in 1974².

Eudyptula minor Little Penguin — In October 2015, searches of all rock crevices, soil burrows and rock piles above the only potential landing sites found no sign of current or recent breeding on South Solitary or Birdie. Lane² reported that lighthouse keepers had located a few pairs breeding on Birdie in the 1960s, but his searches in April 1974 found only a single bird in a potential burrow. It is unlikely that this species breeds here currently.

Factors affecting status

The removal of dogs from the island when the lighthouse became automated in 1975 should have allowed the Wedge-tailed Shearwater to expand across the available habitat;

however, the extensive cover of Kikuyu Grass and Madeira Vine is probably restricting burrow access and occupation in the swale area. The eroded state of the burrows above both the north-western and south-eastern shorelines suggest that they have been used for long periods by shearwaters. Lane did not record a southern colony during his brief survey in 1974², indicating that the species may have become established here since that time. The House Mouse was eradicated from South Solitary in 2014 by hand-baiting with cereal-based brodifacoum poison. This, together with continuing efforts by NPWS to restore native vegetation in weed-infested areas, may allow the island to eventually recover deeper soils and provide a more stable burrowing environment for the shearwaters to maintain a colony here. The most significant threats to the native vegetation of the Nature Reserve are competition from introduced weeds, fire, occasional drought periods and climate change¹.

The lack of dogs, and possibly the rarity of human presence, have allowed the gulls and terns to expand their breeding onto the larger South Solitary Island rather than Birdie Island only.

Other seabirds recorded

Other seabirds and shorebirds observed onshore during the most recent surveys were: Ruddy Turnstone *Arenaria interpres*, Eastern Reef Egret *Egretta sacra*, Sooty Oystercatcher *Haematopus fuliginosus* and Great Cormorant *Phalacrocorax carbo*.

Other vertebrates recorded

The European Rabbit was eradicated in 1975² and the House Mouse in 2014 (confirmed in August 2016). The Delicate Skink *Lampropholis delicata* was seen on South Solitary during two visits in 2014, but was uncommon. Burton's Snake Lizard *Lialis burtonis* was listed in 1974², but not seen on recent visits. Additionally, 16 land birds were recorded.

Banding

All banding records commencing from 2 September 1958 are as follows:

- Ardenna pacifica* – 183 adults and 19 nestlings. One adult recovery on Flinders Islet, off Port Kembla.
- Chroicocephalus novaehollandiae* – 1 adult and 105 nestlings. With the exception of nearby coastal recoveries, two fledglings were found at Lake Cathie near Port Macquarie 160 km south and Sandgate, Queensland, 315 km north, respectively.
- Thalasseus bergii* – 80 nestlings, with no recoveries.

Bibliography

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