

## SHEARWATERS BREEDING ON BOWEN ISLAND, JERVIS BAY TERRITORY

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Bowen Island is a small island of some 50 ha located at the entrance to Jervis Bay in southern New South Wales. It is a reserved area under the A.C.T. Nature Conservation Ordinance, which is administered by the Department of Arts, Sports, the Environment, Tourism and Territories, and public access is restricted. Until recently 4.5 ha of the island was privately leased.

The island is composed of sandstone, covered to varying depths by wind-blown sand, with precipitous cliffs approximately 25 to 30 m high on northern, southern and eastern sides. For a more comprehensive description of the island and its vegetation, see Lane (1976) and Ingwersen (1976).

There have been few studies of the birds of Bowen Island. Hull (1922) recorded that Bowen Island was "formerly the haunt of the Wedge-tailed Shearwater", but when he visited the island found "nothing worth recording". Lane (1975, 1976) recorded three species of shearwaters nesting on Bowen Island after examining some 130 burrows on the south-west side of the island.

As well as the colony inspected by Lane (1975, 1976), there was a group of burrows on the north-eastern side of the island, which were suspected to be a breeding site for shearwaters. These burrows were in low shrub and grasses at the top of 30 to 35 m cliffs, where Lane (1976) recorded two burrows in "an area which had been burnt a year or two previously".

An inspection of Bowen Island was made on 26 November 1982 by two staff of the A.C.T Parks and Conservation Service of the Department of Arts, Sport, the Environment, Tourism and Territories.

### METHODS

Approximately 18 shearwater burrows were excavated to determine contents. Excavation was necessary as most burrows were in excess of 1.4 m in length. Excavation was carried out by ascertaining the position of the nesting chamber and then digging a vertical shaft to examine the contents. This enabled the roof of the nesting chamber to be reconstructed after examination and minimized disturbance to the occupants. An estimate was made of burrow density in the north-eastern colony by counting the number of burrows present in two 10 m x 10 m plots.

S. G. Lane (pers. comm.) had previously recorded shearwaters breeding in an area at the north-western end of the island; however, owing to time constraints, this area was not examined.

The location of examined colonies is shown in Figure 1.

### RESULTS

Five shearwater burrows were excavated in the area examined by Lane (1975). This area is utilized heavily for nesting sites by both shearwaters and the Little Penguin *Eudyptula minor*,

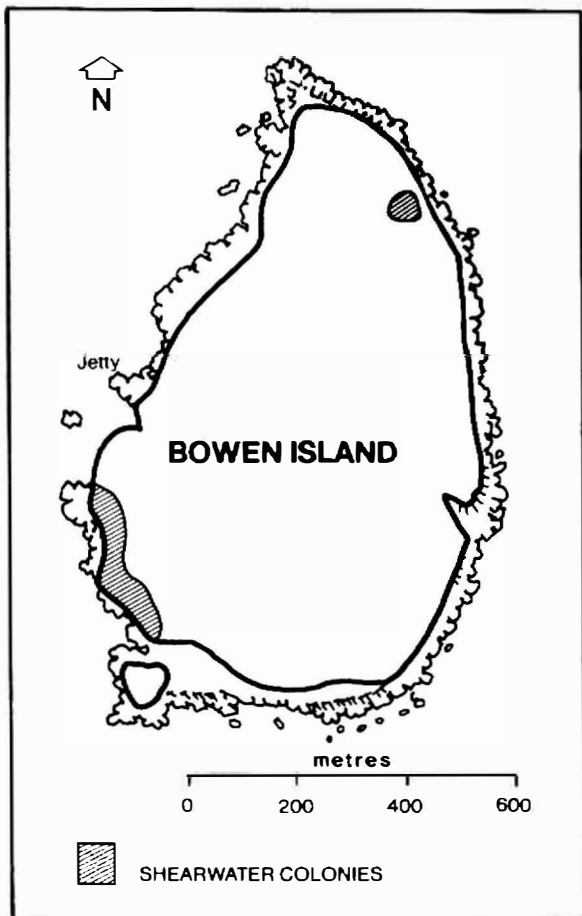


Figure 1. Bowen Island showing shearwater colonies.

as the soil is deep and sandy and supports a moderately dense cover of Mat-rush *Lomandra longifolia*. Only one Wedge-tailed Shearwater *Puffinus pacificus* was found here.

Twelve or 13 burrows were excavated in the cliff-top colony on the north-eastern side of the island. Of the five shearwaters found, three were Short-tailed Shearwaters *P. tenuirostris* and two were *P. pacificus*. One *P. tenuirostris* was sitting on an egg, as was one *P. pacificus*.

The number of burrows in the 10 m × 10 m plots in the north-eastern colony were 22 and 25, respectively. The total number of burrows in

colony was estimated to be 150. No estimate was made of the number of burrows in the south-western colony.

## DISCUSSION

Lane (1975, 1976) recorded three species of shearwater breeding on Bowen Island: *P. pacificus*, *P. tenuirostris* and the Sooty Shearwater *P. griseus*. This inspection did not record *P. griseus*, however, only a small number of burrows were inspected. Lane (1975) examined in excess of 130 burrows and only recorded one individual of *P. griseus* during that visit. However, on three subsequent visits, Lane (pers. comm.) banded another four nestling *P. griseus*, three in the south-west area and all in the lower part of the island. Lane and White (1983) noted that on Lion Island, most *P. griseus* burrows were on the higher part of the island, and Keast and McGill (1948) noted that *P. griseus* "usually selects the higher and more secluded parts of an island for its colonies".

The habitat on the north-eastern side of Bowen Island appears suitable for *P. griseus* in that it is both secluded and located on the top of cliffs, and further searching may reveal this species' presence at this site. Lane (1979) estimated there were 250 breeding pairs of *P. griseus* in New South Wales, with ten pairs possibly breeding on Bowen Island. Further studies are needed to ascertain the true status of *P. griseus* on Bowen Island. Both *P. pacificus* and *P. tenuirostris* appear to be abundant.

Lane (1979) estimated that there were 100 breeding pairs of *P. pacificus* and 200 breeding pairs of *P. tenuirostris* on Bowen Island, out of estimated New South Wales populations of 45 000 and 25 700 breeding pairs, respectively.

Both of these species appear to have benefited from the eradication of the European Rabbit *Oryctolagus cuniculus* from Bowen Island. The area where the north-eastern shearwater colony now exists was originally the site of a small rabbit colony. Action was commenced in 1979 to control rabbits on the island and no fresh sign of rabbits has been found since 1981 (Martin and Sobey 1983). The old rabbit burrows originally were

taken over by penguins and shearwaters with many new burrows evident in the area. During the November 1982 visit, no sign of *E. minor* was seen in this location, and it appears that the shearwaters may now be the sole occupants of the colony.

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#### REFERENCES

- Hull, A. F. B. (1922). The islands of New South Wales and their birds. *Aust. Mus. Mag.* 1: 139-146.
- Ingwersen, F. (1976). Vegetation of Jervis Bay Territory. Department of the Capital Territory, Conservation Series No.3. Australian Government Publishing Services, Canberra.
- Keast, J. A. and McGill, A. R. (1948). The Sooty Shearwater in Australia. *Emu* 47: 199-202.
- Lane, S. G. (1975). Breeding shearwaters on Bowen Island, Jervis Bay, NSW. *Aust. Birds* 9: 100.
- Lane, S. G. (1976). Seabird Islands No. 24, Bowen Island, Jervis Bay, NSW. *Aust. Bird Bander* 14: 24-26.
- Lane, S. G. (1979). Summary of the breeding seabirds on the New South Wales coastal islands. *Corella* 3: 7-10.
- Lane, S. G. and White, G. (1983). Nesting of the Sooty Shearwater in Australia. *Emu* 83: 117-118.
- Martin, W. and Sobey, W. (1983). Improvement of seabird nesting habitat on Bowen Island, NSW by eradication of rabbits. *Corella* 7: 40.

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Corella, 1988, 12(4): 124-126

## SELECTION OF MATES AND SEXUAL DIMORPHISM BY SIZE IN THE BROWN FALCON *Falco berigora*

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Reversed sexual dimorphism (RSD), where the female is heavier than the male, is the rule among Falconiformes (Newton 1979); however, researchers have rarely agreed on why this occurs (Mueller and Meyer 1985). The general trend is for species like the Peregrine Falcon *F. peregrinus* which hunt very mobile, hard-to-catch prey, such as flying birds, to have a high degree of RSD (Cade 1982).

Each falconiform species has an average RSD. However, within a population, variation in body size within a sex is usual, and if birds select mates at random, occasions could occur where males

have a body size the same as or greater than their mates. Overlap in sizes between sexes should be more common in species with small RSD, such as the Brown Falcon *F. berigora* (for indices of RSD, see Baker-Gabb 1982). Using this species, this paper examines data on RSD by body size to see if this presents evidence that mates are chosen at random.

#### METHODS

Seventeen breeding pairs of Brown Falcons were trapped in south-eastern Tasmania and their wing chords taken from the front of the carpels