

The mean annual rates of increase in the numbers of occupied nests at Whitney Point over the period 1959/60 to 1971/72 (5% per annum) is similar to that between 1971/72 and 1983/84 (6% per annum). Both of these rates are similar to the rate over the 24 years between 1959/60 and 1983/84 (5.5% per annum), suggesting that the mean rate of increase in nest numbers at Whitney Point was linear over the 24 year period.

Increases in breeding populations of Adélie Penguins have been recorded at other locations in the Antarctic. Woehler *et al.* (1989) recorded an increase at the Rookery Islands Specially Protected Area near Mawson (67°36'S, 62°53'E) between 1972/73 and 1988/89. Thomas (1986) documented an increase at Dumont d'Urville (66°40'S, 140°01'E) in Terre Adélie between 1958/59 and 1983/84. Breeding populations have also increased in the Vestfold Hills area (68°33'S, 78°15'E) (M. D. Whitehead, pers. comm.), the Antarctic Peninsula (70°00'S, 65°00'W), (Croxall *et al.* 1983), and on the South Orkney Islands (60°40'S, 40°00'W) in the Atlantic sector of the Southern Ocean (Poncet and Poncet 1985).

There are no data presently available for the entire Windmill Islands region collected in one season. Horne (1983) compiled the available census data for the region, collected between 1960 and 1980, and estimated a total of approximately 77 700 breeding pairs. Murray and Luders (1990) estimated 80 000 breeding pairs in the region in the late 1970s. In view of the increases reported at other Adélie Penguin breeding localities, and the lack of a survey conducted over one season of all their colonies in the Windmill Islands, such a survey is required in order to determine their current population status in this region.

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### OBSERVATION OF BURROW COVERING ACTIVITY BY A WEDGE-TAILED SHEARWATER

During the course of data collection for a project on pattern analysis of the burrows of Wedge-tailed Shearwater *Puffinus pacificus* in the Capricorn Group, Great Barrier Reef (Dyer and Hill) the author and Johanna Rosier observed an activity which has not previously been recorded in the literature for the Wedge-tailed Shearwater. It was recorded at Heron Island approximately two hours after sunset on 18 November, 1987, a month after the birds had returned to the island for breeding purposes. The Shearwaters were in the throes of pre-laying activities at this time, mating by another pair being witnessed on the same night.

An adult bird of unidentified sex and age was seen to cover the entrance of its burrow with dead leaves. It remained in the entrance of the burrow reaching out with its beak to pull nearby *Pisonia grandis* leaves over the entrance. The activity, which continued for about ten minutes, appeared to be deliberate and resulted in a burrow which looked inactive. This behaviour was only seen once.

Shallenberger (1973) noted occasional cases where the entrances of Wedge-tailed Shearwater burrows on Manana Island, in the Hawaiian Group, were covered by overhanging vegetation, but he did not witness the activity described here and could not confirm that the blocking of burrow entrances was a result of this activity. Donahoe (1986) commented on the problem of accuracy of counts because she witnessed birds emerging from blocked, and apparently unoccupied, burrows.

The deliberate covering of the burrow entrance with dead leaves has been noted in other Procellariiform species with suggested explanations being related to preference for darkness, though blocking of entrances to longer burrows occurred (Warham 1960), and concealment from predators (Bartle 1968). Warham, however, did not witness this activity in Short-tailed Shearwaters, while Bartle stated that Pycroft's Petrels collect the leaves and kick them into place, a notable difference from the behaviour described here.

Some studies have based census methods for Wedge-tailed Shearwaters on 'visible burrows' (Kepler and Kepler 1980), or 'active burrow' counts (Donahoe 1986; Dyer 1988; Hill and Barnes 1989; Hill and Rosier 1989; Walker 1989). Burrows were considered to be occupied if they were clear of litter and/or had evidence of digging. Evidence of digging, may in some cases, be camouflaged by the birds, making it essential to look beyond a 'clear entrance' for footprints and other evidence to assess whether a burrow is active or not. Camouflaging of burrows could have caused some active burrows to be omitted from the data in earlier studies, leading to biased estimates. However, because this is the first recording of such an activity for this species, it is unlikely to be a major concern, but it is worth noting.

Because of the different behaviour of Wedge-tailed Shearwaters in various environments, the recorded activity could be an exception or a local adaptation. Several burrows with similarly 'camouflaged' entrances were noted and care was taken to seek further evidence of this activity before assuming a burrow to be 'inactive'. More direct observations at the appropriate time of year are required.

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