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INCREASED NUMBERS OF ADÉLIE PENGUINS *Pygoscelis adeliae* BREEDING NEAR CASEY, WILKES LAND, EAST ANTARCTICA

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Fourteen colonies of Adélie Penguins at Whitney Point, near Casey Station, Wilkes Land, which had been censused between 1959/60 and 1961/62, were censused again during late 1983. Of the 14 colonies, 13 were still recognizable, and all had increased in size. One very small colony, which had originally comprised two pairs, was no longer extant. Another 15 colonies had become established, ranging in size from 22 to 419 pairs. The total breeding population at Whitney Point has increased from 1 122 pairs in 1959/60 to 4 199±420 pairs in the 1983/84 summer.

INTRODUCTION

The distribution and abundance of breeding colonies of Adélie Penguins *Pygoscelis adeliae* at Whitney Point (66°15'S, 110°32'E) in Wilkes Land was described by Penney (1968), from the two summers of 1959/60 and 1960/61. The 14 colonies present during that study were photographed from vantage points and nest counts were derived from the photographs. The colonies were again photographed and nests counted on 15 December 1961 by Dr M. N. Orton (Penney 1968). On 19 December, 1971 a further nest count was made by J. Ackerley (Horne 1983).

Here we report the results of a census of the Adélie Penguin colonies at Whitney Point, made in December 1983.

METHODS

Penney (1968) numbered the colonies I to XIV. These colony numbers were painted on a rock face next to each cairn which marked the photographic sites used between 1959/60 and 1960/61.

On 30 October, 1983 MRM visited Whitney Point; searches for the marker cairns and painted colony numbers were only partially successful, due to the extensive snow cover.

The colonies were visited again on 15 December 1983. The area was virtually snow-free except for several permanent snow slopes, and all of the old colony markers, except for colony XIV, were located. All of the old cairns were rebuilt, and the colony numbers repainted next to the cairn at the photographic point. Each of Penney's colonies I to XIII was photographed from the same point used by Penney. The number of incubating birds in each colony was counted twice using a hand-tally counter. Birds, which were present in the colonies and obviously not incubating, were excluded from the counts. The accuracy of the counts was ±10%.

In addition to the 13 colonies studied by Penney, another 15 were present at Whitney Point in 1983/84. These were designated A to O and photographed and the number of nests with eggs counted. The point from which each was photographed was marked with a rock cairn with the letter of the colony painted on a nearby rock. Because of the shortage of time it was only possible to count each colony twice.

RESULTS

The total number of breeding pairs of Adélie Penguins at Whitney Point increased from 1 122 pairs to 4 199±420 pairs between 1959 and 1983, (Table 1). Fifteen new colonies became established in that time, ranging in size from 22 to 419 pairs. Five of these colonies had been established by the 1971/72 breeding season.

The 14 original colonies at Whitney Point have increased from 1 122 pairs in 1959/60 to 1 840±184 pairs in 1971/72, and to 2 859±285 pairs in 1983/84. These represent increases of 64.0 per cent between 1959/60 and 1971/72, and 153.9 per cent by 1983/84 and are equivalent to mean rates of 4.1 per cent per annum and 3.7 per cent per annum respectively.

Five new colonies which were present in 1971/72, had increased from 203 pairs in 1971/72 to 826±83 pairs in 1983/84; an increase of 307 per cent or a mean rate of 11.7 per cent per annum.

Ten colonies have become established sometime between 1971/72 and 1983/84 on Whitney Point. Although the dates when these colonies first appeared were not recorded, there were 514±52 nests in these colonies in 1983/84.

Colonies I to VIII on the western side of Whitney Point have shown the greatest stability, both in numbers and in the relative lack of formation of new colonies. Over the 24 years, the number of pairs increased by 33.7 per cent from 839 to 1 122. If the four new colonies (A to D) are included, then the total number of pairs on the western side was 1 327, an increase of 58.2 per cent.

TABLE 1

Nest counts of Adélie Penguin colonies at Whitney Point, Clark Peninsula, Wilkes Land.

Colony	1959/60	1960/61	1961/62	Average 1959–1962	1971/72	1983/84 1st count	1983/84 2nd count	1983/84 Average
I	322	388	301	337	311	371	363	367
II	17	19	17	18	23	33	33	33
III	311	377	275	321	272	345	396	371
IV	29	26	27	27	20	28	28	28
V	73	69	61	68	54	107	109	108
VI	23	26	19	22	24	68	66	67
VII	40	54	51	48	77	113	119	116
VIII	24	22	22	23	15	30	30	30
IX	175	178	190	181	222	403	366	385
X	31	49	46	42	61	108	110	109
XI	69	88	91	83	406	617	675	646
XII	5	18	44	22	142	237	255	246
XIII	1	7	8	5	213	306	399	353
XIV	2	2	3	2			NOT LOCATED	
A						26	26	26
B						104	102	103
C					35	42	42	42
D						30	30	30
E					38	129	132	130
F						141	146	144
G						22	22	22
H						25	25	25
I						52	53	52
J						40	42	41
K						43	43	43
L						28	28	28
M					52	419	419	419
N					47	84	90	87
O					31	148	149	148
Totals	1 122	1 323	1 155	1 201	2 043			4 199

Far greater changes have occurred in the colonies on the eastern side of Whitney Point. Colonies IX to XIII have increased dramatically in size and 11 new colonies have become established. The total number of breeding pairs in colonies IX to XIII has increased by 519 per cent from 281 to 1 739. If the new colonies E to O are included, then the total number of nests on the eastern side was 2 878, an increase of 924 per cent.

DISCUSSION

In describing the avifauna of the Windmill Islands area, including Whitney Point, Orton (1963) recorded and mapped two mainland colonies of Adélie Penguins on the Clark Peninsula, comprising 1 300 and 3 500 occupied nests. His map shows the colonies at Whitney Point and Blakeney Point (66°14′S, 110°35′E). A review of penguin census data for the Australian Antarctic Territory (Horne 1983) attributed Orton's counts solely to the colonies at Whitney Point and the total of 4 800 occupied Adélie Penguin nests on 15 December 1961 is incorrect. Orton's counts from December 1961 were also used by Penney (1968), and these confirm that only 1 155 occupied nests were present at Whitney Point.

Figure 1 also shows the positions of 19 relict Adélie Penguin colonies at Whitney Point, identified by Penney (1968) in October 1960. There are no data to indicate either that Adélie Penguin numbers were higher before 1960 or that the colonies had changed locations. Since 1960, five of the areas identified as relict colonies have been re-established.

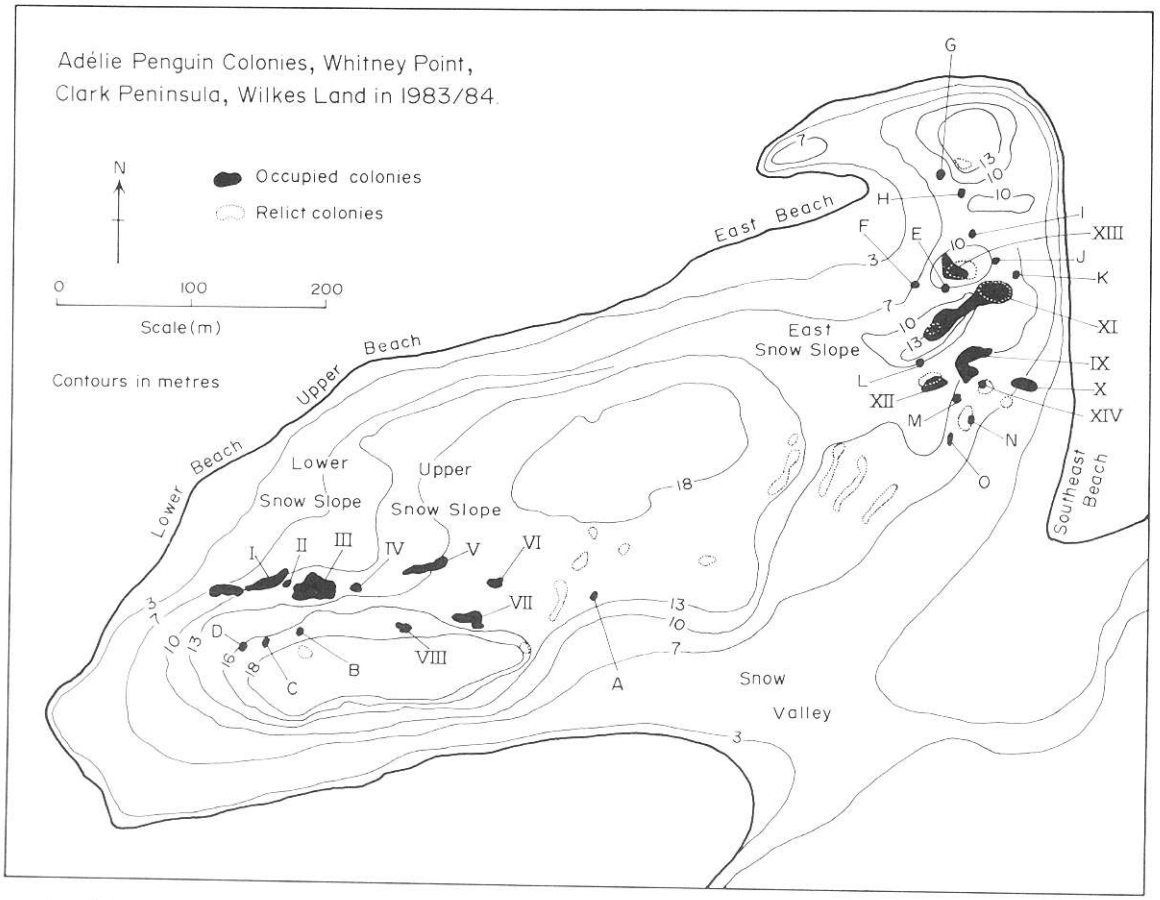

Figure 1. *Adélie Penguin colonies, occupied and relict, at Whitney Point, Wilkes Land, Antarctica, December 1983.*

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.