

AUSTRALIAN NATIONAL ANTARCTIC RESEARCH EXPEDITIONS

...the following table shows the range of distribution of the various species of birds recorded from the coast of George V Land during the Australian National Antarctic Research Expedition through this area.

A N A R E

R E S E A R C H

N O T E S

50

The breeding status of Adélie penguins and other birds on the coast of George V Land, Antarctica

Paul H. Ensor and Jennifer A. Bassett

ANTARCTIC DIVISION  
DEPARTMENT OF SCIENCE

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TABLE

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THE BREEDING STATUS OF ADELIE PENGUINS AND OTHER BIRDS  
ON THE COAST OF GEORGE V LAND, ANTARCTICA

by

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ABSTRACT

A census by counts and estimates of Adélie penguin chicks on the George V Land coast of Antarctica between Commonwealth Bay and Buchanan Bay was undertaken during January 1982. Sections of colonies were photographed for comparison with photographs taken in 1913 during the Australasian Antarctic Expedition; positions and sizes of sub-colonies appeared unchanged after an interval of 68 years. Observations on the distribution of breeding Antarctic fulmars, Cape petrels, Snow petrels, Wilson's storm-petrels and South polar skuas are presented.

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AN ABSTRACT OF THE RESEARCH REPORT OF THE HAWAIIAN AND OTHER ISLANDS  
ON THE EAST OF GREAT BAY, HAWAII

By  
Paul H. Baker and Jennifer A. Baker

ABSTRACT

A series of counts and estimates of Aditi pedunculus on the East of Great Bay of Hawaii between December 1981 and January 1982. The counts were taken during January 1982. Several of the colonies were photographed and identified with photographs taken in 1971 during the Hawaiian Islands Survey. The counts and sizes of the colonies appeared to be similar to those reported in the literature on the distribution of Aditi pedunculus in Hawaii. The counts, size, and distribution of Aditi pedunculus in Hawaii are presented.

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## 1. INTRODUCTION

This report describes the breeding status of seabirds, particularly Adélie penguins, on the George V Land coast of Antarctica between Commonwealth Bay (67°00'S, 142°30'E) and Buchanan Bay (67°07'S, 144°40'E) (Map 1). The area was visited in January 1982 during the Mawson anniversary expedition of the Oceanic Research Foundation (ORF) on the schooner Dick Smith Explorer. The observations on the breeding of seabirds were conducted as a contribution to the International Survey of Antarctic Seabirds (ISAS) designed to investigate the abundance and distribution of seabirds in the Southern Ocean ecosystem. Of particular interest to this program is the population status of Adélie penguins Pygoscelis adeliae.

The George V Land coast has seldom been visited. The main expeditions to the area have been the 1911-13 Australasian Antarctic Expedition (AAE) and the 1929-31 British, Australian and New Zealand Antarctic Research Expedition (BANZARE). Falla (1937) summarised the biological observations made during these expeditions, including estimates of the numbers of Adélie penguins breeding in the Cape Denison area (67°00'S, 142°40'E). The Australian National Antarctic Research Expeditions and Expéditions Polaires Francaises have also made visits.

The present observations provide a recent estimate of the breeding population of Adélie penguins in the area. Since the authors' visit to the colonies was late in the breeding season, estimates of numbers were restricted to chicks. The number of chicks gives an approximation of the number of pairs of penguins breeding but due to annual variations in breeding success, these estimates are not as reliable as the direct counts of occupied nests that can be made during the incubation period.

The 1981-82 ORF expedition was based at Cape Denison between 11 and 30 January 1982 where a census of Adélie penguin chicks and observations on the breeding of other birds was conducted. A camp was established on the Mackellar Islands (66°58'S, 142°39'E) from 12 to 14 January to enable a census of penguin chicks to be made.

On 30 January the expedition departed Cape Denison towards the Mertz Glacier tongue (154°20'E). The cruise track of the vessel followed approximately the outer limit of islets of the Way Archipelago (143°40'E) and passed close to Moyes Islands (143°51'E) and Hodgeman Islands (144°15'E). Brief visits were made to two islets in the Way Archipelago, Stillwell Island (143°48'E) and an unnamed islet near Garnet Point (143°46'E).

En route to the Mertz Glacier, a planned landing at Cape Hunter (66°57'S, 142°20'E) to investigate the breeding population of seabirds including a large colony of Antarctic petrels Thalassoica antarctica (Falla 1937), had to be abandoned due to the onset of high winds.

LOCATION	DATE	COLONIES VISITED	COLONIES NOT VISITED
		Colonies mapped and chicks counted during visit	Counts or estimates of numbers of chicks conducted from the vessel or from a nearby island.
		Chicks counted from photos	Chicks counted, approx. 50% of islets' surface visible
		Chicks counted, most of islets' surface visible	Chick numbers estimated, colonies distant or visibility poor
Cape Denison	16-17 Jan	4898	
Mackellar Islands			
Lesser	14 Jan	13970	
Greater	13 Jan	13160	
Small Islets near Mackellar Islands	13-14 Jan		30
Cape Gray	31 Jan		100
Way Archipelago Islets near Cape Gray	31 Jan		2000
Stillwell Island		1868	
Unnamed Islet			480
7 islets			4186
10 islets			
Garnet point	31 Jan		2395
Cape Pigeon rocks	31 Jan		680
Moyes Islands	31 Jan		705
Hodgeman Island	31 Jan		875
			975
		33896	510
		4186	5730
			10920
			TOTAL 55242

Table 1. Adélie penguin colonies on the George V Land coast - counts and estimates of numbers of chicks, January 1982.



## 2. PRESENTATION OF DATA

### 2.1 ADÉLIE PENGUIN, *Pygoscelis adeliae*

Locations of Adélie penguin colonies and counts and estimates of the numbers of chicks in each colony are given in Table 1. The total numbers of Adélie penguin chicks on the coast between Cape Denison and Buchanan Bay was 55 242.

At Cape Denison, on the Mackellar Islets and on Stillwell Island, direct counts of chicks were made. Counts were replicated until a 5% accuracy was achieved. To aid the counting, the distribution of guano (which approximates to the extent of the sub-colonies) was mapped (Maps 2-6).

On 12 January, at Cape Denison, the first day of the authors' counts, chicks were not yet in creches and were still protected by adults at their nest sites. It was possible therefore to count the number of occupied nests, the number of single chicks and pairs of chicks. These counts were obtained for 14 sub-colonies and in 297 nests 413 chicks were recorded. The 4898 chicks counted in the whole of the Cape Denison colony should therefore represent  $4898 \times 297/413 = 3522$  nests at this stage of the breeding season. The original number of pairs of penguins that bred at Cape Denison in the 1981-82 season was greater than 3522 by an unknown number. A more accurate estimate of the actual number of pairs of penguins that bred at Cape Denison in the 1981-82 season could not be made because the authors have no knowledge of breeding failure prior to their visit. Previous estimates for Cape Denison were over 5000 pairs in January 1931 (Falla 1937) and 2000 pairs in January 1974 (Horne 1983).

The authors have not adjusted the number of breeding pairs at colonies other than Cape Denison because it appears there is a difference in the breeding success between colonies in this area. Circumstantial evidence for this was the retarded development of chicks observed at Cape Denison. On 12 January chicks were still protected by adults at their nest sites, while the following day on the Mackellar Islets 7 km away, large creches of chicks were present. Also, at Cape Denison, the remains of dead penguin chicks from previous breeding seasons were far more abundant than at any of the other colonies visited, suggesting a higher mortality of chicks at this colony. A probable factor inducing retardation of breeding and higher chick mortality at Cape Denison is the severe weather characteristic of this locality (Mawson 1915). The strong katabatic winds that prevail at Cape Denison lose much of their force before reaching the offshore islands.

Photographs were taken at Cape Denison and on Greater Mackellar Islet and compared with those taken in the 1912-13 breeding season during the AAE (Falla 1937) (Plates 1-4). The relative positions and sizes of the sub-colonies were very similar after an interval of 68 years. Unfortunately the authors did not have the opportunity to take a photograph to match that taken by Falla on Lesser Mackellar Islet in 1931 but comparison with the authors' sketch maps of the sub-colonies indicates that the sizes and positions of the sub-colonies are similar.

Although the authors have no knowledge of the numbers of penguins that bred in other parts of these colonies in the 1912-13 and 1929-31 breeding seasons, the similarity of the sizes and positions of the sub-colonies suggests that the current breeding population at Cape Denison and on the

Mackellar Islets is comparable to that present in 1911-13 and 1929-31. This implies that the breeding population of penguins on this part of the Antarctic coast has been relatively stable over some 70 years.

On this basis it is likely that the previous estimates of numbers of breeding penguins on the Mackellar Islets, 100 000 pairs in the 1913-14 season and 200 000 pairs in 1930-31 (Fallá 1937), were too high, as the authors' count was 27 130 chicks.

During the authors' visit to the unnamed islet in the Way Archipelago there was insufficient time to conduct a census of chicks and so photographs were taken from which chicks were subsequently counted.

Counts and estimates of chicks in breeding colonies at Cape Gray (66°51'S, 143°22'E), Moyes Islands, Hodgeman Islands and islets of the Way Archipelago (apart from the two on which the authors landed) were conducted from the vessel and the colonies were not mapped in detail. Chicks on islets near to the vessel were counted individually and estimates of chick numbers were made only when the colonies were too distant and individual chicks could not be counted. The accuracy of counts and estimates of chick numbers conducted from the vessel depended on the vessel's distance from the colonies, the terrain and aspect of the breeding areas and visibility. Sun glare and obstruction of view by other islets and icebergs sometimes affected visibility. Use of binoculars was restricted by vibrations of the vessel. Therefore the counts and estimates of number of chicks conducted from the vessel, during which only the colonies in view were considered, underestimate the actual number of chicks, since substantial proportions of some colonies were probably hidden from view. Cape Pigeon Rocks, for example, most probably have relatively large numbers of penguins nesting on their landward facing slopes. This is evidenced by well-defined penguin tracks heading up the snow slopes on the seaward facing aspect.

Some islets were several miles from the vessel and although the identification of penguins breeding on them was not always possible, we assumed all were Adélie penguins.

Photographs of the islets were taken for comparison with the authors' field notes and a selection of these have been lodged with the Australian Antarctic Division.

No penguins were observed breeding on the Laseron Islands (66°59'S, 142°48'E), Blair Islands (66°50'S, 143°09'E), Fletcher Island (66°53'S, 143°05'E), Hannam Islands (66°55'S, 142°57'E) or on the Close Islands (67°03'S, 144°33'E).

There appears to be a medium-sized colony of Adélie penguins at Cape Hunter, but weather conditions prevented getting close enough to make an estimate of the number of chicks present.

## 2.2 ANTARCTIC FULMAR, Fulmarus glacialisoides

About 190 Antarctic fulmar nests with chicks were found on Stillwell Island. Fulmars on nests were seen from the vessel on two other islands in the Way Archipelago. These islands had about 75 and 20 nests.

### 2.3 CAPE PETREL, Daption capense

A single Cape petrel nest, containing one chick, was found on Stillwell Island.

### 2.4 SNOW PETREL, Pagodroma nivea

Thirty occupied nests were found at Cape Denison, 4 on the Mackellar Islets and 10 on Stillwell Island. More nests certainly would have been present at Cape Denison, but nest sites are restricted on the islands.

### 2.5 WILSON'S STORM-PETREL, Oceanites oceanicus

During a brief search at Cape Denison 5 nests of Wilson's storm-petrels were located. Apparently suitable breeding habitat occurs over large areas at Cape Denison and many more nests probably exist.

On Greater Mackellar Islet 4 nests were found and on Lesser Mackellar Islet the authors found 7. More nests probably exist on each of these islets although suitable habitat is restricted.

No nests were found on Stillwell Island but many storm-petrels were seen flying about the island in the evening.

### 2.6 ANTARCTIC PRION, Pachyptila desolata

Antarctic prions were found nesting at Cape Denison in 1913 during the AAE, in the vicinity of 'John O'Groats' near the 'eastern barrier'. A pair was shot on 3 December and the specimens (no. 22083 and 22084) are now in the Australian Museum, Sydney. One member of a second pair was shot on 10 December, but the specimen was lost in the water. On 11 December, a prion was found in a crevice under a rock, with bones and an egg, evidently from a previous season. On 16 December, two more eggs were found (Falla 1937).

This is the only record of Antarctic prions breeding at the Antarctic continent, apart from the Peninsula region.

During the evacuation of an ANARE party in February 1978, a small bird was found tangled in the radio aerial during disassembly. It was badly injured and was killed to prevent further suffering. It was placed under a rock. Early in 1981, it was retrieved and identified as an Antarctic prion (G.W. Johnstone, pers. comm.). The radio aerials were on the hill south of the Mertz memorial cross. This is the only record of an Antarctic prion at Cape Denison since the AAE.

The authors spent several evenings watching for prions in the vicinity by 'John O'Groats', and searched for nests but saw no birds and found no nests. The status of Antarctic prions at Cape Denison remains enigmatic.

### 2.7 SOUTH POLAR SKUA Catharacta maccormicki

South polar skuas were found breeding at all areas visited. Nests at Cape Denison (4), Greater Mackellar Islet (3), Lesser Mackellar Islet (3), Stillwell Island (3) and the unnamed islet in the Way Archipelago (3) each contained one chick. Two of the birds breeding at Cape Denison and one on Lesser Mackellar Islet were banded. Two of these had Paris Museum bands and had been banded by French biologists at Dumont d'Urville 150 km to the west. The other bird was timid and its band number could not be read.

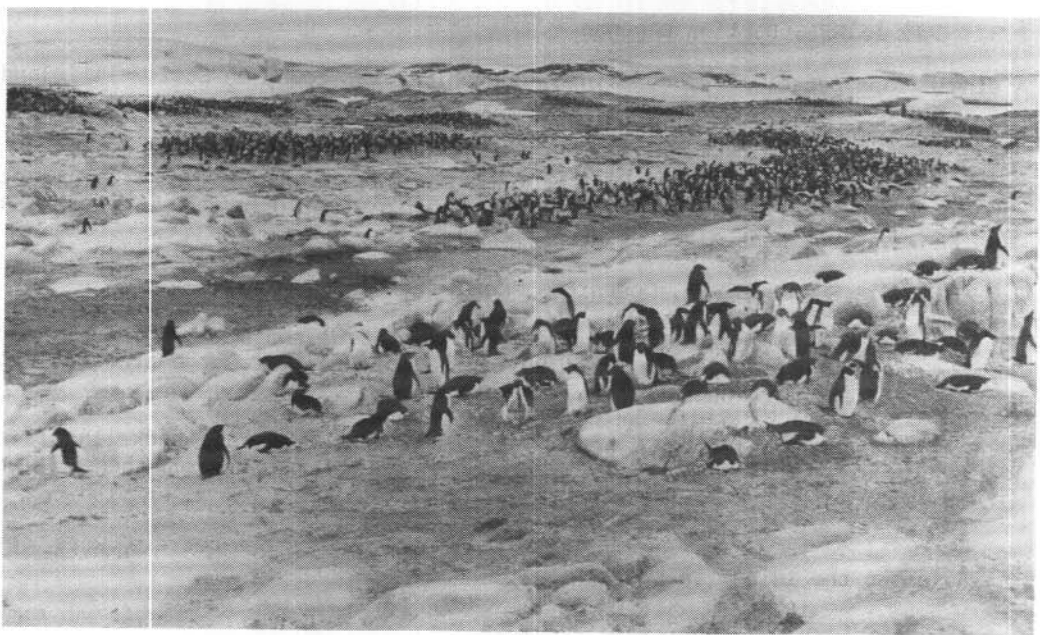


Plate 1. A section of the penguin colonies on Greater Mackellar Islet in 1913.

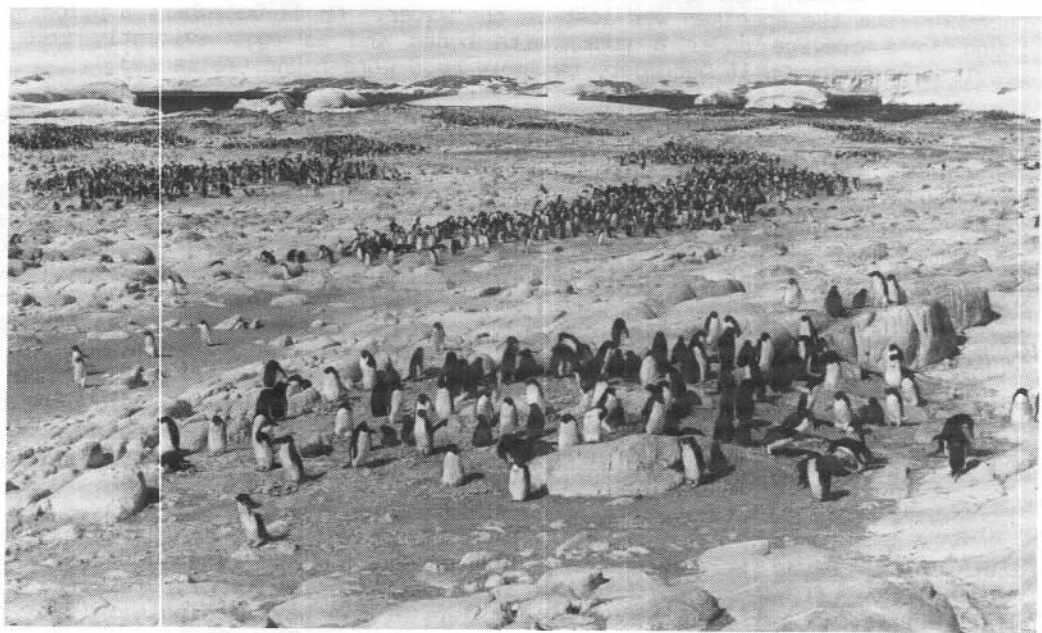


Plate 2. Taken from the same position as for Plate 1, a section of the penguin colonies on Greater Mackellar Islet in 1982.

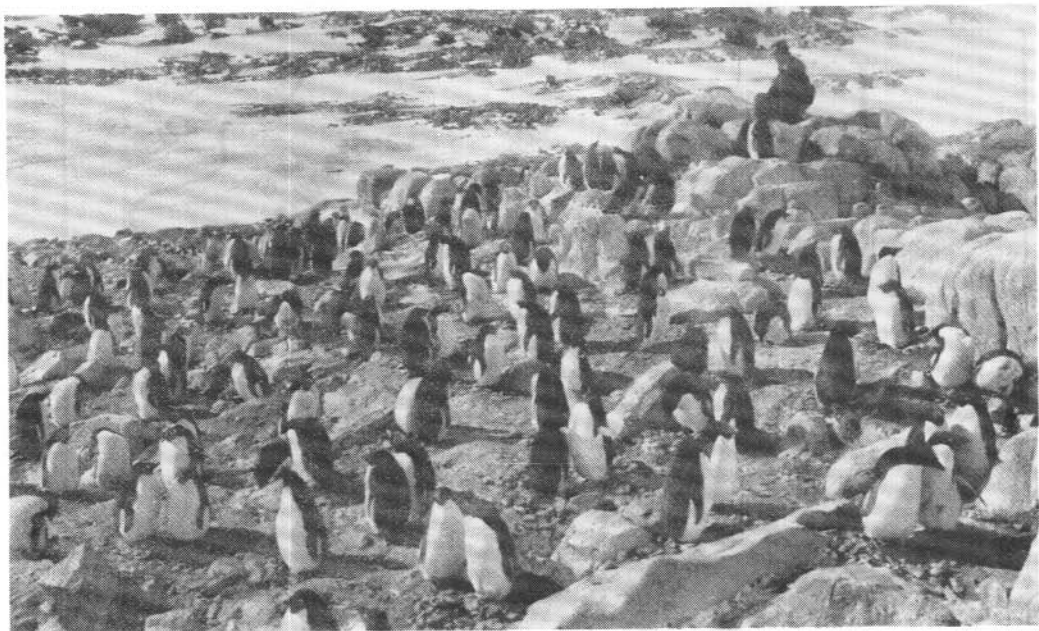


Plate 3. A section of the penguin colonies at Cape Denison in 1913.

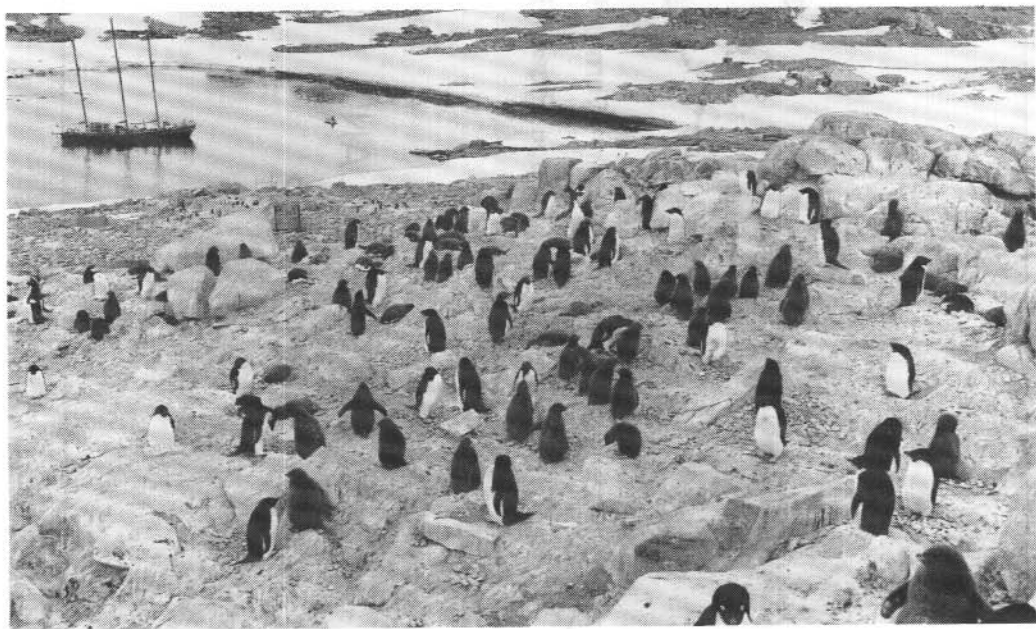
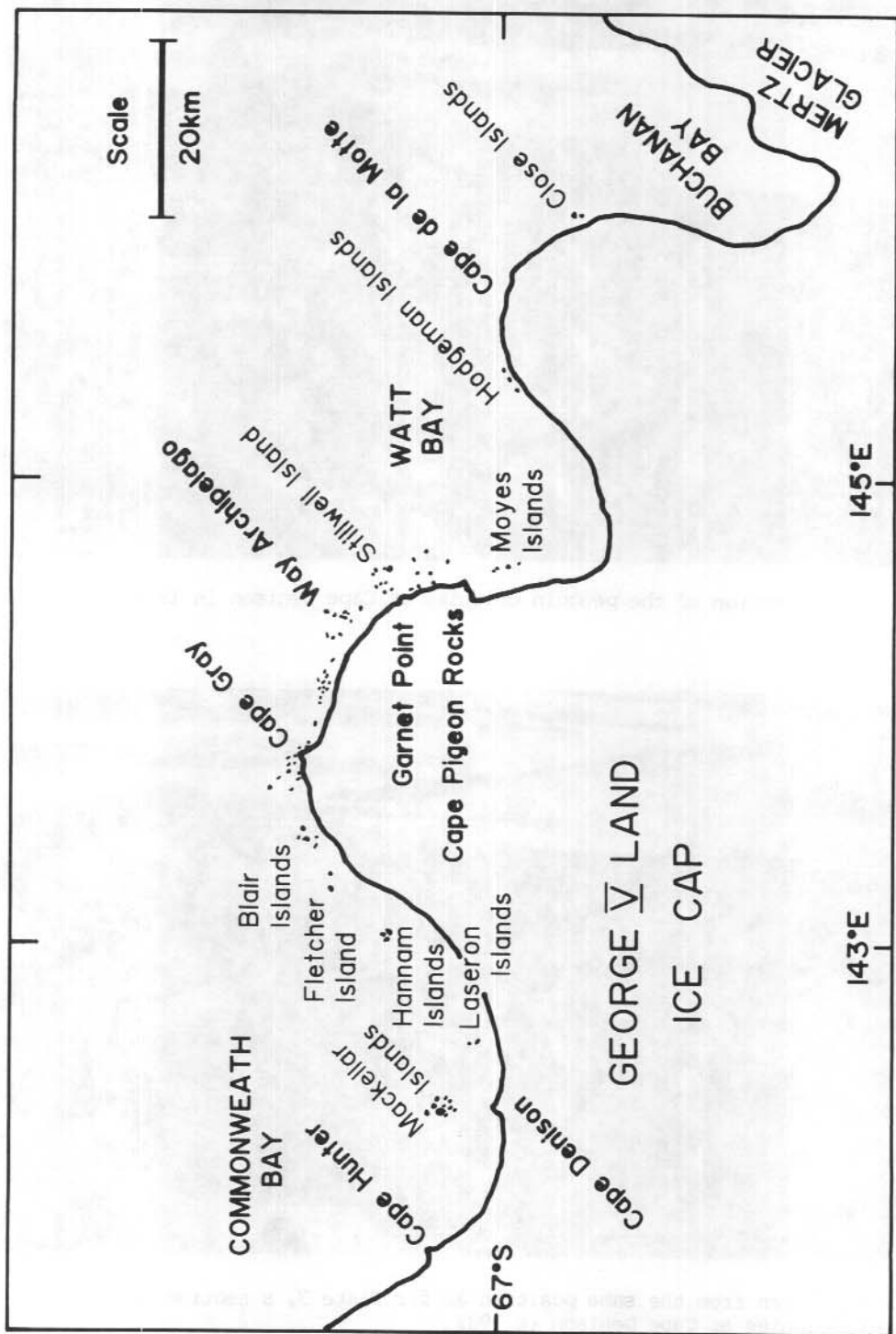
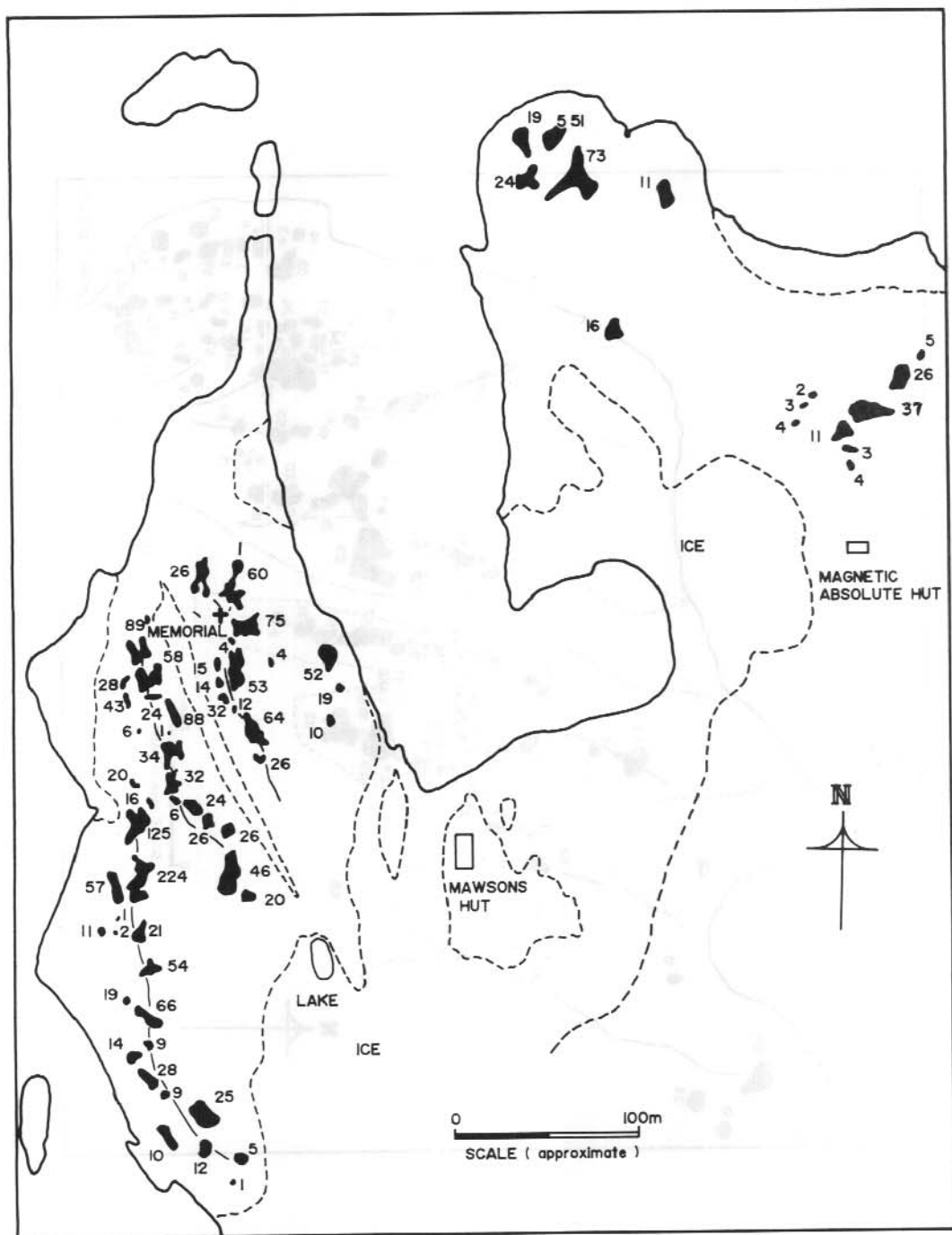


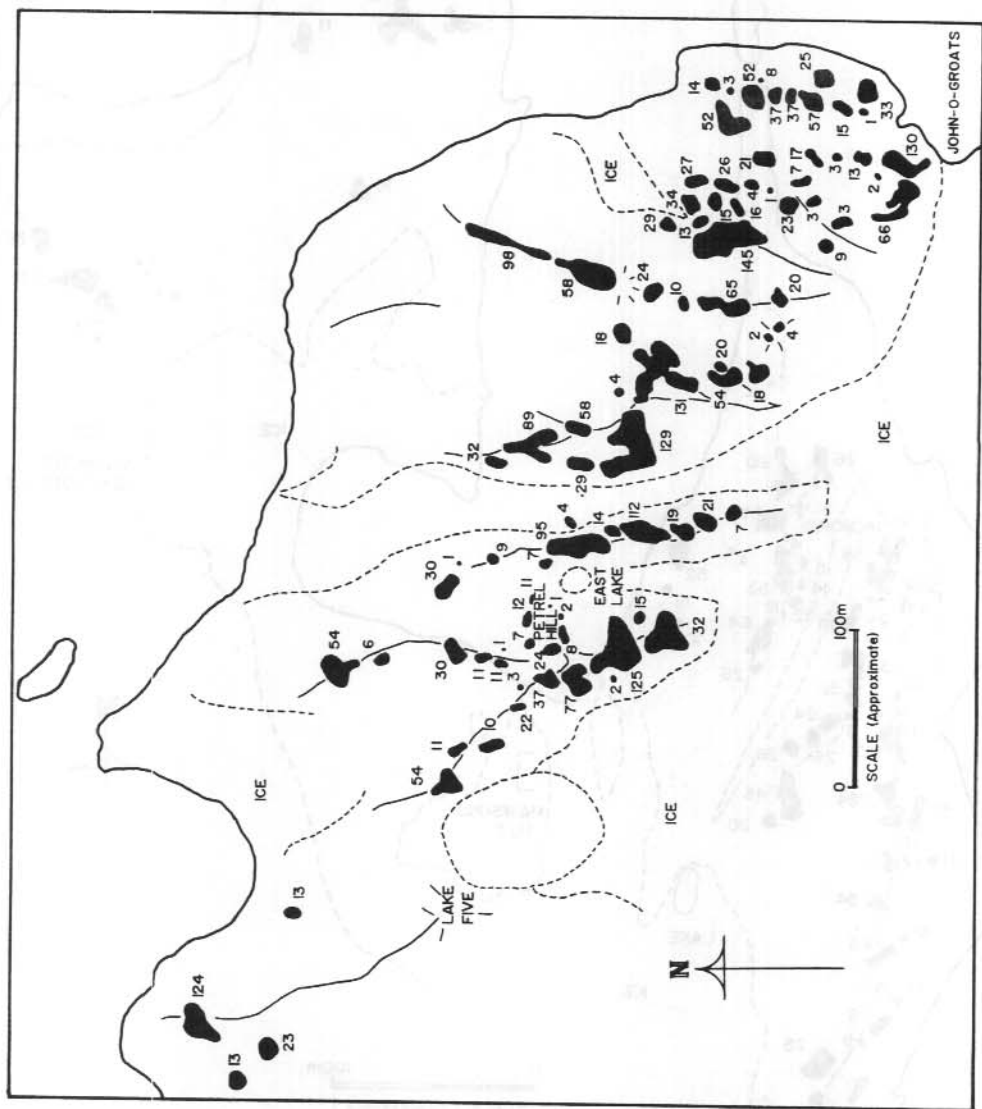
Plate 4. Taken from the same position as for Plate 3, a section of the penguin colonies at Cape Denison in 1982.



Map 1. George V Land coast.



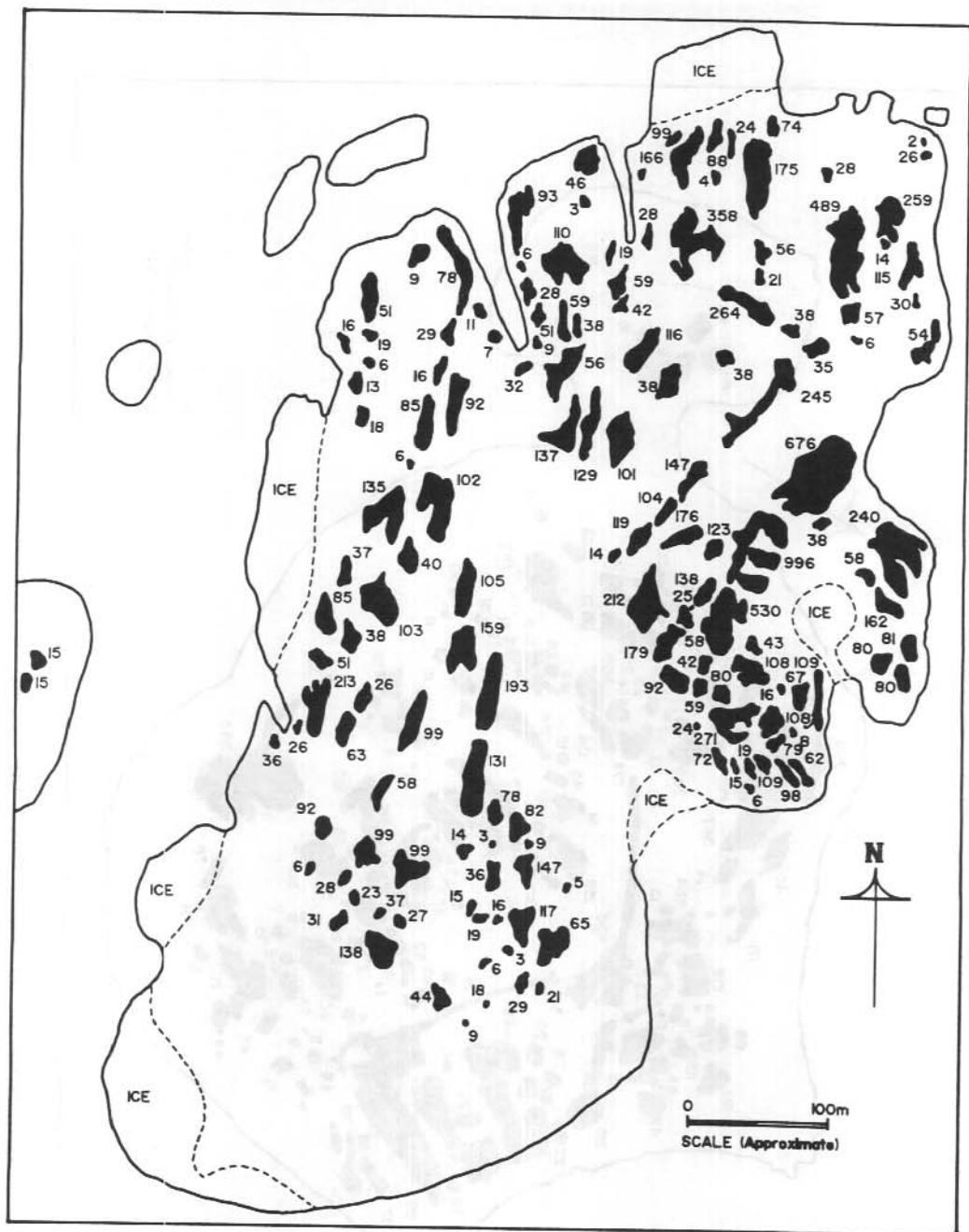
Map 2. Adélie penguin colonies at Cape Denison (western section).



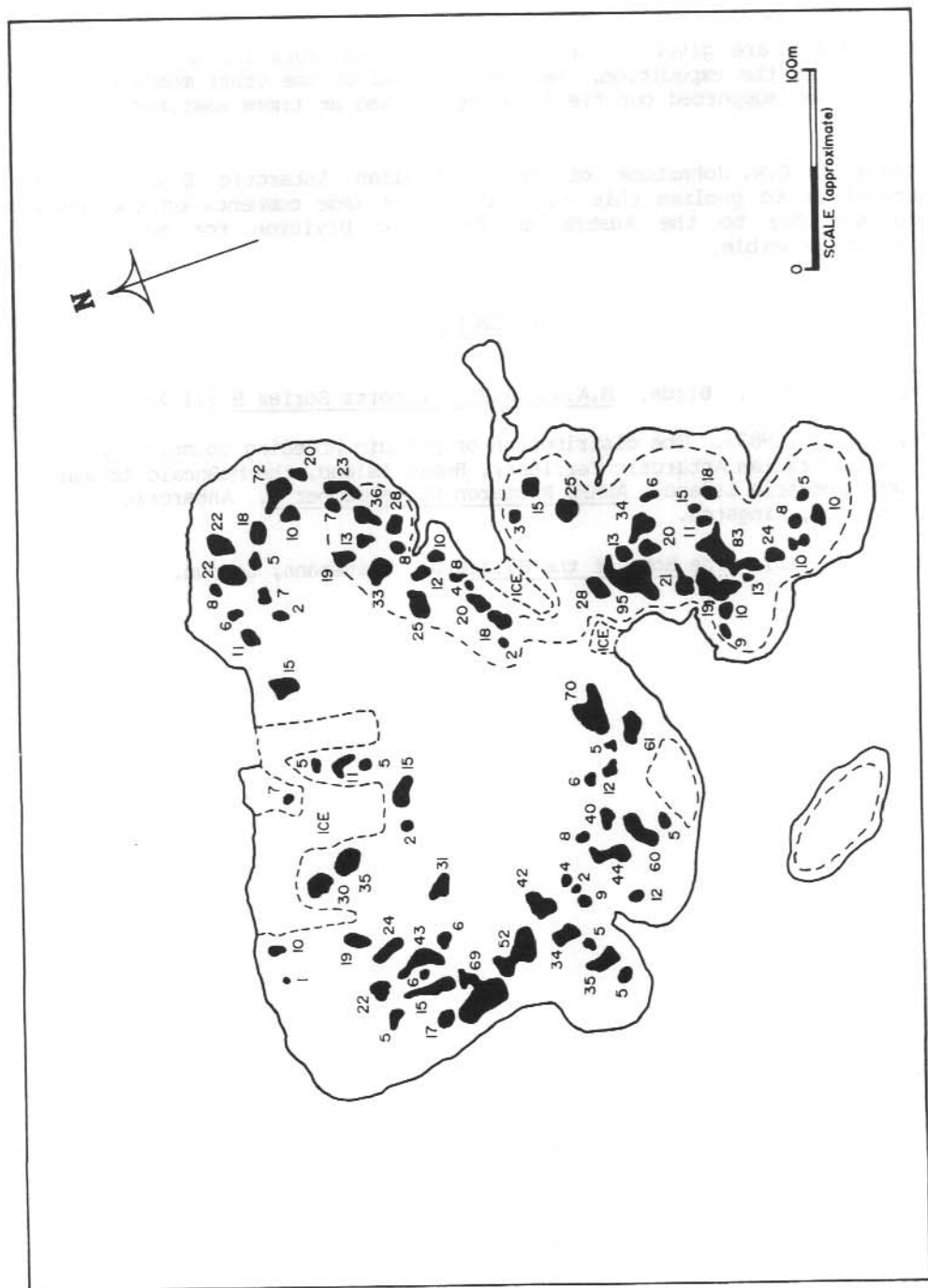
Map 3. Adélie penguin colonies at Cape Denison (eastern section).







Map 5. Adélie penguin colonies on Greater Mackellar Islet.



Map 6. Adélie penguin colonies on Stillwell Island.

#### ACKNOWLEDGEMENTS

Special thanks are given to the ORF and its sponsors for allowing us to participate in the expedition. We are indebted to the other members of the expedition who supported our field operations and at times assisted with the census.

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