

**SCIENCE & RESEARCH SERIES NO.78**

**WANDERING ALBATROSS  
ON ADAMS ISLAND:  
CENSUS, NESTING DATA,  
AND BODY MEASUREMENTS,**

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# WANDERING ALBATROSS ON ADAMS ISLAND: CENSUS, NESTING DATA, AND BODY MEASUREMENTS,

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by  
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## ABSTRACT

During February 1993, part of Adams Island was searched for Wandering Albatross nests, and information was gathered about birds in a banded study colony as part of a five year investigation into adult mortality rates. About 4344 breeding pairs were present, a similar figure to that recorded in 1991. A large number of non-breeding albatross were also present. An aborted attempt to census albatross on Adams Island in 1992 is described.

## 1. INTRODUCTION

Wandering Albatross (*Diomedea exulans*) is a circumpolar species which breeds largely on South Georgia and Gough Islands in the South Atlantic, Marion, Prince Edward, Crozet and Kerguelen Islands in the Southern Indian Ocean, and Antipodes Island and Adams Island in New Zealand's subantarctic region. A number of subspecies have been recognized, including one, *D. e. gibsoni*, confined to the Auckland Island group (Robertson and Warham, 1992)

There is growing evidence of a significant albatross by-catch by the blue-fin tuna long-line fishery in the New Zealand region (Murray *et al.* 1993, Imber 1994). In the Southern Indian ocean and South Atlantic, similar by-catch problems have caused dramatic population declines of other Wandering Albatross subspecies (Weimerskirch and Jouventin 1978; Croxal *et al.* 1990).

While an estimate in 1973 suggested that Adams Island (in the Auckland Island group) supported a large proportion of the total world population of Wandering Albatross, no counts had been carried out there, and we had little idea how the fisheries by-catch was affecting this important population.

Accordingly, in 1991 the Department of Conservation (DOC) began a five year project to count the number of breeding pairs present each season on Adams Island, and to estimate adult mortality rates in a smaller banded study group.

In February 1991, Kath Walker, Graeme Elliott, Peter Dilks and Jean-Claude Stahl carried out the first counts and established a study area of banded birds. Travel for the 1991 expedition was provided by the New Zealand Navy oceanographic ship, HMNZS Monowai, which departed from Auckland on 31 January and arrived at Adams Island on 5 February. The team on Adams Island was returned to the Monowai via helicopter on 25 February, and after a very rough voyage, arrived in Dunedin on 1 March. The Adams Island team was part of a larger DOC expedition to the Auckland Islands which was attempting to eliminate goats from the main Auckland Island and cattle from Enderby Island. Interim results from the 20 days spent working on Wandering Albatross on Adams Island in 1991 were presented in Walker *et al.* (1991).

On 2 February 1992, Kath Walker, Graeme Elliott, Peter Dilks, Paul Pearson and Jane Hare left Bluff for Adams Island aboard the small MAF vessel, the Kaharoa, which had been chartered by DOC for the albatross expedition. Three hours short of the Auckland Islands, after a very rough voyage down in a south-westerly gale, the Kaharoa cracked an oil sump. Only temporary repairs could be made to the engine and it was considered too dangerous to do anything other than limp back to Bluff. The Kaharoa was available for only two weeks, and by the time the ship was repaired there was too little time left for a second attempt to be worthwhile, so efforts to gather albatross data for the 1992 season were abandoned.

The expedition in 1993 was more successful, and was even able to salvage some information on the outcome of the 1991 nesting attempts. Kath Walker, Graeme Elliott, Peter McClelland and Alison Davis were landed on Adams Island by a small tourist ship, the Pacific Ruby, on 28 January 1993. The first three team members came via 10 days on another island in the Aucklands group - Disappointment Island - while Alison Davis sailed direct from Bluff.

Twenty-four days were spent on Adams Island, largely working from the old campsite in Magnetic Bay, but also spending three days fly camping south-west of Fly Harbour. Unfortunately, the exposed nature of the albatross grounds means camping on the tops for anything other than a few days at a time is impractical, so there is no alternative to the two hour climb up 668 metres from Magnetic Bay each morning, before dropping down the southern slopes 300 metres to the albatross fields. This limits the time available to spend in the albatross colony and so the amount of data that can be gathered.

Five of the 24 days spent on the island were lost to bad weather, mostly northerly rain and mist which made both handling and counting birds impossible. The weather was cold with strong squally southerly winds, hail and snow for much of the rest of the time. However, the last few days of the expedition and for the entire return voyage to Bluff in the icebreaker Kapitan Klebnikov, the weather was calm, hot and sunny.

## 2. METHODS

### 2.1 Census

Most of the Wandering Albatross population in 1991 nested in two areas: Astrolabe Basin, and the slopes between Fly Harbour and Lake Turbott (88% of the total in 1991); and in 1993 we concentrated on counting those blocks. The remainder of the island supported 12% of the total in 1991, but because of a shortage of time we counted only the area between Fairchilds Garden and Fall Bay which had been missed in the otherwise comprehensive 1991 count, and the small colony (y) on the southern slopes of Mt Dick (Figure 1).

Twenty-three person days were spent on the albatross census (includes a day spent getting to and from Fly Basin and establishing a camp there). Census methods were the same as those described in Walker *et al.* 1991, except that an accurate tally was kept of the number of birds approached closely enough to be checked for bands.

As in 1991, as well as counting nesting pairs, we kept a separate tally of all birds on the ground which were not breeding. Even at the same time of year, the number of non-breeders present at the nesting colony apparently varies according to time of day and weather conditions (C.J.R. Robertson pers. comm.). However, we made no allowance for these differences and counted non-breeders on the ground from about 0900 hours until 2000 hours in all weather conditions, as we traversed the island counting nesting pairs.

### 2.2 Study Population

**2.2.1 Nesting Success** In February 1991, 108 occupied nests were marked and the incubating birds banded in a study area just west of Amherst Stream (see Walker *et al.* 1991 for methods; Figure 1 for a location map, and Appendix I for a map of the marked nests occupied in 1991). The 108 nests marked comprised most of the nests in use in the study area in 1991. In 1993 we attempted to relocate all of the marked nests to determine whether they had successfully fledged a chick in the 1991 season. Nests were judged successful if there was down and/or black squid beaks (the main diet in the last few weeks before fledging, C.J.R. Robertson pers. comm.) present, and a large trampled, urea-burnt area around the nest. Unsuccessful nests were those which had chick bones, or eggshell present and none of the signs of success. If there were no signs of success or failure, or the nest site was being re-used, or the nest could not be found, the nesting success was not judged.

**2.2.2 Adult Mortality** We checked all Wandering Albatross nesting within the study area. Nesting birds which had no bands were banded, bill measurements were taken and plumage described using the Gibson Plumage Index standard (Battam and Smith, 1993). Birds which were not nesting but which were on the ground in the study area were checked for bands when possible. A list of all birds banded so far in the study area is given in Appendix 2.

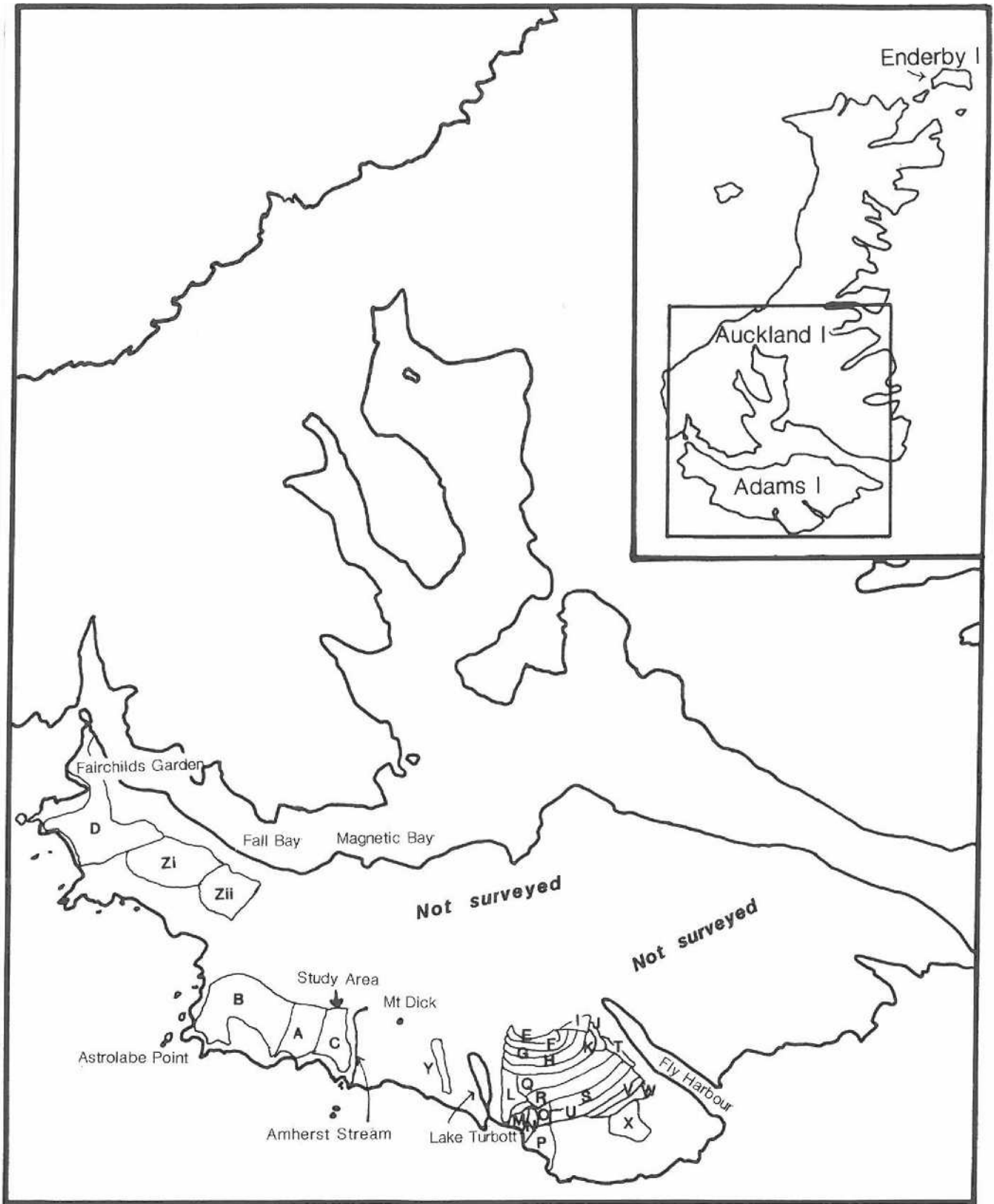


Figure 1: Units surveyed in census of Wandering Albatross on Adams Island, February 1993.



**2.2.3 Nest Site Fidelity** Using a 10 metre tape we measured the distance between the old and new nests of those birds banded in 1991 which were re-nesting in 1993.

In 1993, all nests in use which were not marked were given a numbered metal tag and the distance and bearing from an already marked nest recorded. This differed from the 1991 season in which only a sample of the nests in the study area were marked. A map of all nests marked in 1993 is shown in Appendix 3 and a list of all the nests marked so far is given in Appendix 2.

### 3 RESULTS

#### 3.1 Census

We counted 3 874 nesting pairs, slightly less in total than we counted in 1991 (see Table 1, Figure 2 and Appendix 4), though the areas counted were not directly comparable.

**Table 1**

Counted Areas	Number of Nesting Pairs	
	1991	1993
Astrolabe - Amherst Block	1056	1054
Fly Harbour - Lake Turbott Block	2475	2695
Mt Dick	30	42
Fairchilds Garden - Fall Bay	Not Counted	83
All other spurs	469	Not Counted
<b>TOTAL</b>	<b>4030</b>	<b>3874</b>

If only the three areas counted **in both** 1991 and 1993 are compared (the two big blocks and the small Mt Dick colony), slightly more nesting pairs were counted in 1993 (3791) than in 1991 (3561).

At this early stage in the study, it is not helpful to draw conclusions from these two figures. If breeding success is constant from year to year, numbers of Wandering Albatross attempting to breed each year should remain the same. However, at this stage we do not have a reliable estimate of breeding success, so we can not interpret the difference between the years.

Though we started the counts in 1993 on 29 January, about a week earlier in the breeding season than in 1991, and were concerned that not all the breeders would have laid, we found no birds on fully formed nests which did not have eggs.

A total of 43 unfledged chicks from the previous season were counted in the Astrolabe-Amherst and Fly Harbour-Lake Turbott blocks. In the same areas in 1991, we counted 31 unfledged chicks.

In total, 2000 Birds were counted On the Ground, but off nests (BOGs), considerably less than the 3013 BOGS counted in 1991. Rather than totals, a more appropriate comparison is the number of BOG'S counted in areas checked **in both** 1991 and 1993; 2499 were counted in the Astrolabe-Amherst and Fly Harbour-Lake Turbott blocks in 1991 compared to 1980 in 1993. While the time of day and season were very similar between years, the weather conditions were not directly comparable, so the number of BOG'S is probably meaningless.

We checked 3858 birds for bands, 1414 (38%) of which were BOGs. Of these, 24 birds had been banded prior to 1991 on Adams Island, and 34 had been banded off the New South Wales Coast by the Wollongong Seabird Study Group.

## **3.2 Study Population**

**3.2.1 Success of 1991 Breeding Attempts** It was possible to determine the outcome of 88 of the 108 active nests marked in 1991: the remaining 20 nests were either being reused by an albatross, or the signs of success or failure were equivocal. Of the 88 determinable nests, 59 (67%) appeared successful and 29 (33%) appeared to have failed. These results should be treated with caution, however, because it was at least 12 months since the 1991 season nests we were checking had been occupied: if the nest had failed earlier, there was up to two years regrowth smothering occupation signs.

Despite the limitations, it seemed worthwhile to attempt this estimate of the breeding success in the 1991 season, in case the 1994 or 1995 expeditions failed for any reason and it was the only estimate we were left with.

**3.2.2 Adult Mortality** Of the 91 nests marked in 1991 in which both partners were banded, 56 **pairs** (61%) were definitely still alive two years later, although two of the pairs, though present on Adams Island, were not breeding.

One partner from a further nine (10%) of the 91 pairs was recorded breeding in 1993. It is likely that at least some of these nine still have their original partner which did not return to the nest when we were present, as five of the nine apparently successfully fledged a chick in 1991. However, a few may have lost their partner and re-mated, though for other subspecies it usually takes about two seasons to do this. For *D. e. chionoptera* on South Georgia the pair-bond takes one to three seasons to establish, with most (75% of 28 pairs) taking two seasons (Marchant and Higgins, 1990).

A further seven birds (8%) from the 91 pairs banded in 1991 were back in 1993 as lone, non-breeding birds; six of the missing partners were female.

Neither partner from the remaining 19 (21%) pairs banded in 1991 were seen in 1993.

Only one partner was banded at a further 17 nests marked in 1991. In 1993, 12 of these 17 birds were seen alive; all except one were nesting. If these individuals, plus the nine birds whose partners were banded in 1991, but not seen in 1993 are considered, in addition to the seven lone birds and the 112 individuals (56 pairs) mentioned above,

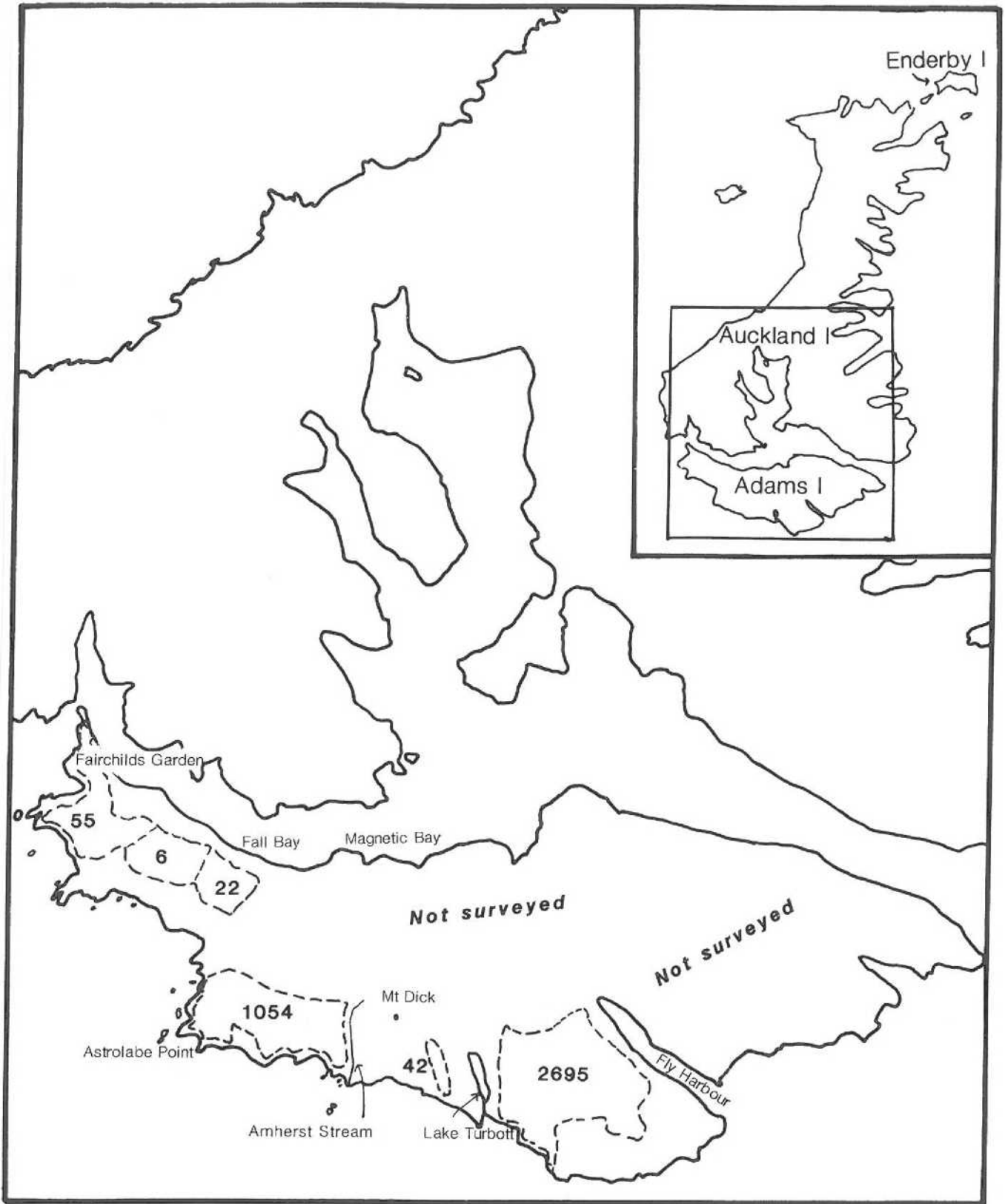


Figure 2: Numbers of Wandering Albatross (breeding pairs) on Adams Island, February 1993.

140 (71%) of the 197 **individual** birds banded in 1991 were seen alive in 1993.

In February 1993 we banded birds at a further 77 nests. At 48 of the nests we banded both partners. At nine of the nests we banded only one bird because its partner had already been banded in 1991. For the remaining 20 nests, we only banded one bird because its partner did not return to the nest while we were there.

**3.2.3 Nest Site Fidelity** Of the 74 pairs which nested in 1991 and again in 1993, all except two had moved their nest site, often a considerable distance. The average distance moved was 29.9 metres (SD = 46.265) and one pair had moved 390 metres, but some of these pairs may have also nested in 1992 so the distances recorded represented two movements. There were 47 pairs that we judged successful in 1991 that nested again 1993, presumably for the first time. Of these "successful" 1991 breeders, one pair used the same nest site, while the rest moved an average 23.4 metres (maximum 85 metres; SD = 18.8). This differs markedly from Wandering Albatross nesting on South Georgia where 20% use the same nest and the rest moved an average of seven metres (maximum 23 metres), and Iles Crozet where 23.3% use the same nest (Marchant and Higgins, 1990).

#### **4 FUTURE WORK**

There are many problems associated with studying population changes and mortality rates of long-lived, biennial breeders such as Wandering Albatross, particularly when only a brief glimpse of the population is possible each year (and not even that in 1992). Few conclusions can be made from these results at this early stage in the project. Rather, our intention here was to draw together the data gathered since 1991 to ensure it was accessible and interpretable to the 1994 expedition. A successful trip was carried out in January/February 1994, and a two month expedition is planned for 1995.

A full discussion, incorporating results from each of the four trips to Adams Island since 1991, will be presented in a published paper on completion of the study in 1995.

#### **ACKNOWLEDGEMENTS**

Thanks to Peter Dilks, Paul Pearson and Jane Hare who suffered an appalling trip to the Auckland Islands in 1992 in vain, and to Lou Sanson and Andy Cox for their invaluable assistance arranging transport and equipment. Janice Molloy and Peter Dilks provided helpful advice on the study and Chris Robertson useful comments on an earlier draft of this report.

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**APPENDIX 2:** Wandering albatross banded and recovered in the study area, Adams Island in 1991 and 1993. Mate is the band number of the bird's mate. Nest is the number on the tag placed at their nest. Pair is a number we gave to each pair of birds. Max is the maximum bill depth measured at its base in mm. Min is the minimum bill depth measured at its shallowest point in mm. Tip is the depth of the bill at its tip. Length is the length of the bill in mm. Toe is the length of the middle toe in mm. Head, back, wing and tail are Gibson (1967) scores for plumage colour. Fledge records the success of a nesting attempt- 1 denoting the successful fledging of a chick - 0 denoting a failed nesting attempt - ? denoting a nest where we could not judge the success. Checked is the year in which the nest was checked for success.

Band no	Mate	Nest	Date	Pair	max	min	tip	length	toe	head	back	wing	tail	Comments	Fledge	Checked
R29131	R42691	20144	09/02/91	108											1	1993
R29131	R42691	13063	13/02/93	108												
R29294	R42963	11672	17/02/93	135												
R42601	R42779	15025	11/02/91	1		40.3									0	1993
R42601	R42779	11950	10/02/93	1												
R42602	R42780	15026	11/02/91	2		36.1									1	1993
R42602		11953	30/01/93	2	56.8	30.3	37.2	144.6		4	4	3	2			
R42603	R42781	15027	11/02/91	3		31.9									?	1993
R42604	R42713	15028	11/02/91	4		34.3									?	1993
R42605	R42782	15029	11/02/91	5		31.9									1	1993
R42605	R42782	11958	30/01/93	5	57.1	31.2	37.7	140.5		3	4h	2.75	1.75			
R42606	R42714	15030	11/02/91	6		42.6									0	1993
R42606	R42714	11959	06/02/93	6												
R42607	R42715	15031	11/02/91	7		33.8									0	1993
R42608	R42783	15032	11/02/91	8		35.9									?	1993
R42608	R42783	11819	17/02/93	8												
R42609	R42610	15033	11/02/91	9		33.5									1	1993
R42609	R42610	11961	30/01/93	9	59.6	33.7	38.2	148.0	155	4	4	2.5	1.25			
R42610	R42609	15033	11/02/91	9		34.7									1	1993
R42610	R42609	11961	06/02/93	9												
R42611	R42612	15034	11/02/91	10		37.1									0	1993
R42611	R42612	93915	17/02/93	10												
R42612	R42611	15034	11/02/91	10		31.1									0	1993
R42612	R42611	93915	10/02/93	10						3	2.5	2	1.25			
R42613		15035	11/02/91	11		32.9									1	1993
R42613	R43073	11962	30/01/93	11	55.8	33.2	38.8	149.5	152	2	2	1	1			
R42614		15036	11/02/91	12		32.3									1	1993
R42615	R42716	15037	11/02/91	13		34.9									0	1993
R42615	R42716	11956	30/01/93	13	60.8	35.0	42.7	15.5		5.5	4.7	3.75	3			
R42616	R42717	15038	11/02/91	14		33.5									1	1993

Band no	Mate	Nest	Date	Pair	max	min	tip	length	toe	head	back	wing	tail	Comments	Fledge	Checked
R42616	R42717	11964	06/02/93	14												
R42617		15039	11/02/91	15		30.5									0	1993
R42618	R42718	15040	11/02/91	16		35.6									1	1993
R42618	R42718	11968	17/02/93	16												
R42619		15041	11/02/91	17		37.2									0	1993
R42620	R42719	15042	11/02/91	18		32.3									0	1993
R42620	R42719	11969	30/01/93	18	58.5	32.5	38.2	143.8	152	4	4	3	2			
R42621	R42720	15043	11/02/91	19		30.7									1	1993
R42621	R42720	11970	10/02/93	19												
R42622	R42721	15044	11/02/91	20		35.9									0	1993
R42622	R42721	11972	10/02/93	20												
R42623	R42722	15045	11/02/91	21		35.0									1	1993
R42623	R42722	11971	17/02/93	21												
R42624	R42723	15046	11/02/91	22		36.6									1	1993
R42624	R42723	11976	10/02/93	22												
R42625		15047	11/02/91	23		36.9									0	1993
R42625		15047	02/02/93	23												
R42626	R42784	15048	11/02/91	24		36.5									1	1993
R42626	R42784	11977	02/02/93	24						6	5	3.5	2.5			
R42627	R42628	15049	11/02/91	25		37.4									0	1993
R42628	R42627	15049	11/02/91	25		32.8									0	1993
R42629	R42724	15050	11/02/91	26		34.1									1	1993
R42629	R42724	11978	17/02/93	26												
R42630	R42725	15051	11/02/91	27		34.4									0	1993
R42630	R42725	11979	17/02/93	27												
R42631	R42726	15052	11/02/91	28		35.9									1	1993
R42631			02/02/93	28						5	4	4	2	bog		
R42632	R42727	15053	11/02/91	29		37.2									1	1993
R42632	R42727	15054	17/02/93	29												
R42633		15054	11/02/91	30		35.9									?	1993
R42633			10/02/93	30										bog with unbanded mate, on nest with no egg		
R42634	R42728	15055	11/02/91	31		35.5									1	1993
R42635	R42729	15056	11/02/91	32		33.7									1	1993
R42636	R42637	15057	11/02/91	33		35.2									1	1993
R42636	R42637	11983	02/02/93	33						3.5	3	2	1			
R42637	R42636	15057	11/02/91	33		35.8									1	1993



Band no	Mate	Nest	Date	Pair	max	min	tip	length	toe	head	back	wing	tail	Comments	Fledge	Checked
R42659	R42746	16409	11/02/91	55		36.3									0	1993
R42660	R42786	16410	11/02/91	56		34.6									?	1993
R42660	R42786	11658	10/02/93	56												
R42661	R42747	16411	11/02/91	57		31.9									0	1993
R42661	R42747	16410	03/02/93	57						3	4	1	2			
R42662	R42748	16412	11/02/91	58		31.7									1	1993
R42662	R42748	11662	10/02/93	58												
R42663	R42749	16413	11/02/91	59		29.8									1	1993
R42663	R42749	11670	17/02/93	59												
R42664	R42750	16414	11/02/91	60		34.4									0	1993
R42665	R42751	16415	11/02/91	61		38.8									1	1993
R42665	R42751	11688	10/02/93	61												
R42666	R42787	16416	11/02/91	62		34.5									1	1993
R42666	R42787	11690	17/02/93	62												
R42667	R42752	16417	11/02/91	63		31.7									1	1993
R42667	R42752	18012	10/02/93	63												
R42668		16418	11/02/91	64		36.5									1	1993
R42668	R42996	11693	10/02/93	64												
R42669	R42753	16419	11/02/91	65		32.7									1	1993
R42669	R42753	11692	05/02/93	65						3	4h	2	1			
R42670	R42788	16420	11/02/91	66		35.8									1	1993
R42670	R42788		05/02/93	66						5	5	4	2.75	bog courting on nest 16424		
R42671		16421	11/02/91	67		31.8									?	1993
R42671		18016	05/02/93	67						4	4	3	1.5			
R42672	R42754	16422	11/02/91	68		32.7									?	1993
R42672	R42754	18011	05/02/93	68						3.5	3	1.5	1			
R42673	R42789	16423	11/02/91	69		36.4									?	1993
R42673	R42789	18013	10/02/93	69						5.5	5	4	2			
R42674	R42755	16424	11/02/91	70		34.0									?	1993
R42675		16425	11/02/91	71		28.9									1	1993
R42675	R42981	18018	17/02/93	71												
R42676	R42756	16426	11/02/91	72		34.5									0	1993
R42676	R42756	18025	17/02/93	72												
R42677	R42757	16427	11/02/91	73		31.7									1	1993
R42678	R42798	16428	11/02/91	74		34.2									1	1993
R42678	R42798	18019	05/02/93	74						4	4h	2.5				
R42679	R42758	16429	11/02/91	75		34.9									?	1993

Band no	Mate	Nest	Date	Pair	max	min	tip	length	toe	head	back	wing	tail	Comments	Fledge	Checked
R42679	R42758	18020	05/02/93	75						5	5	4	2.5			
R42680	R42759	16430	11/02/91	76		35.0									?	1993
R42680			05/02/93	76										bog		
R42681	R42790	16431	11/02/91	77		35.0									1	1993
R42681	R42790	18028	17/02/93	77												
R42682	R42791	16432	11/02/91	78		34.2									0	1993
R42682	R42791	18026	05/02/93	78						4	4	2.5	1			
R42683	R42792	16433	11/02/91	79		30.8									?	1993
R42683	R42792	18022	05/02/93	79						4	4h	2	1	egg broken		
R42684	R42760	16434	11/02/91	80		37.3									1	1993
R42684	R42760	16434	02/02/93	80						4	4	3.75	2			
R42685	R42761	16435	11/02/91	81		35.5									1	1993
R42685		18030	05/02/93	81						4.5	4.5	3	2			
R42686	R42762	16436	11/02/91	82		34.1									1	1993
R42686	R42762	18031	17/02/93	82												
R42687	R42793	16437	11/02/91	83		34.6									1	1993
R42688	R42763	16438	11/02/91	84		37.3									1	1993
R42689	R42794	16439	11/02/91	85		33.1									?	1993
R42689	R42794	18027	05/02/93	85						5	5	4	2			
R42690		16440	11/02/91	86		32.6									1	1993
R42691	R29131	20144	12/02/91	108											1	1993
R42691	R29131	13063	17/02/93	108												
R42692		20121	12/02/91	87		32.7									0	1993
R42692	R43063	18032	05/02/93	87						2.5	3	1.5	1			
R42693	R42764	20122	12/02/91	88		31.2									0	1993
R42694	R42765	20123	12/02/91	89		35.5									0	1993
R42695	R42766	20124	12/02/91	90		35.7									1	1993
R42695	R42766	18036	06/02/93	90						5.5	5.5	4	2.5			
R42696	R42767	20125	12/02/91	91		39.4									?	1993
R42697	R42795	20126	12/02/91	92		34.9									0	1993
R42698	R42768	20127	12/02/91	93		33.2									?	1993
R42699	R42796	20128	12/02/91	94		33.7									?	1993
R42700	R42769	20129	12/02/91	95		37.3									1	1993
R42700	R42769	18039	10/02/93	95												
R42701	R42770	20130	12/02/91	96		34.2									1	1993
R42701		18038	06/02/93	96						3.5	4.5	3	1.75			
R42702	R42771	20131	12/02/91	97		36.6									1	1993

Band no	Mate	Nest	Date	Pair	max	min	tip	length	toe	head	back	wing	tail	Comments	Fledge	Checked
R42703		20132	12/02/91	98		33.9									?	1993
R42703	R42891	18046	06/02/93	98						4.5	4	2.5	2			
R42704	R42772	20133	12/02/91	99		32.8									?	1993
R42704	R42772		06/02/93	99						3	3	2	1	bog with 42772		
R42705	R42773	20134	12/02/91	100		29.7									0	1993
R42706	R42774	20135	12/02/91	101		35.5									1	1993
R42707	R42775	20136	12/02/91	102		32.0									1	1993
R42707	R42775	18041	06/02/93	102						3	4	3	2			
R42708	R42776	20137	12/02/91	103		36.6									1	1993
R42709		20138	12/02/91	104		34.5									?	1993
R42709	R42884	11803	06/02/93	104						3	2.5	2	1			
R42710	R42777	20139	12/02/91	105		36.9									1	1993
R42710	R42777	18042	06/02/93	105						4.75	4	3	2			
R42711	R42797	20140	12/02/91	106		33.1									1	1993
R42711	R42797	18043	06/02/93	106						3	4h	2	1			
R42712	R42778	20143	12/02/91	107		37.9									1	1993
R42713	R42604	15028	20/02/91	4		31.4									?	1993
R42714	R42606	15030	20/02/91	6		32.4									0	1993
R42714	R42606	11959	30/01/93	6	56.3	33.5	38.3	140.2	153	4	3.5	1.5	1			
R42715	R42607	15031	20/02/91	7		36.0									0	1993
R42716	R42615	15037	20/02/91	13		31.8									0	1993
R42716	R42615	11956	06/02/93	13												
R42717	R42616	15038	20/02/91	14		34.9									1	1993
R42717	R42616	11964	30/01/93	14	62.0	35.3	41.3	148.2	155	4	4h	2.5	1.75			
R42718	R42618	15040	20/02/91	16		32.1									1	1993
R42718	R42618	11968	30/01/93	16	57.9	32.4	38.3	144.8	151	3	2	2	1.25			
R42719	R42620	15042	20/02/91	18		35.8									0	1993
R42719	R42620	11969	06/02/93	18												
R42720	R42621	15043	20/02/91	19		35.3									1	1993
R42720	R42621	11970	30/01/93	19	60.9	35.1	41.4	154.7	162	5	4	3.5	2.5			
R42721	R42622	15044	20/02/91	20		30.8									0	1993
R42721	R42622	11972	30/01/93	20	58.5	31.0	37.7	147.6	149	3	3	1	1			
R42722	R42623	15045	20/02/91	21		34.6									1	1993
R42722	R42623	11971	30/01/93	21	58.1	33.5	39.0	137.7	147	3	3	2	1			
R42723	R42624	15046	20/02/91	22		34.0									1	1993
R42723	R42624	11976	02/02/93	22						3	4h	2	2			
R42724	R42629	15050	20/02/91	26		32.9									1	1993

Band no	Mate	Nest	Date	Pair	max	min	tip	length	toe	head	back	wing	tail	Comments	Fledge	Checked
R42724	R42629	11978	02/02/93	26						5	4h	3	1			
R42725	R42630	15051	20/02/91	27		36.1									0	1993
R42725	R42630	11979	02/02/93	27						5	4.75	3.75	2			
R42726	R42631	15052	20/02/91	28		36.6									1	1993
R42727	R42632	15053	20/02/91	29		33.7									1	1993
R42727	R42632	15054	02/02/93	29												
R42728	R42634	15055	20/02/91	31		32.0									1	1993
R42728		11820	10/02/93	31						3	4h	2.5	1			
R42729	R42635	15056	20/02/91	32		36.2									1	1993
R42729			17/02/93	32										bog		
R42730	R42638	15058	20/02/91	34		35.8									1	1993
R42730	R42638	11984	02/02/93	34						4.75	4.75	3.75	2			
R42731	R42640	15060	20/02/91	36		31.3									1	1993
R42732	R42642	15062	20/02/91	38		36.7									1	1993
R42732	R42642	11988	02/02/93	38						3.5	4	1.25	3			
R42733	R42643	15063	20/02/91	39		36.4									1	1993
R42733	R42643	11989	17/02/93	39												
R42734	R42644	15064	20/02/91	40		33.7									0	1991
R42735	R42647	15067	21/02/91	43		35.9									1	1993
R42735	R42647	11992	10/02/93	43												
R42736	R42649	15068	21/02/91	44		37.7									0	1993
R42737	R42650	16400	21/02/91	46		33.9									1	1993
R42737	R42650	11994	10/02/93	46												
R42738	R42651	16401	21/02/91	47		34.7									0	1993
R42739	R42652	16402	21/02/91	48		36.8									0	1993
R42739	R42652	11973	10/02/93	48												
R42740	R42653	16403	21/02/91	49		32.0									1	1993
R42740	R42653	11999	02/02/93	49						4	4h	2	1			
R42741	R42654	16404	21/02/91	50		34.3									?	1993
R42742	R42655	16405	21/02/91	51		35.1									0	1993
R42743	R42656	16406	21/02/91	52		33.1									1	1993
R42743	R42656	11975	10/02/93	52												
R42744	R42657	16407	21/02/91	53		36.5									1	1993
R42744	R42657	11655	02/02/93	53						5	4	4	2			
R42745	R42658	16408	21/02/91	54		33.3									1	1993
R42745	R42658	11657	02/02/93	54						4.75	4h	3	1.75			
R42746	R42659	16409	21/02/91	55		32.3									0	1993

Band no	Mate	Nest	Date	Pair	max	min	tip	length	toe	head	back	wing	tail	Comments	Fledge	Checked
R42747	R42661	16411	21/02/91	57		35.9									0	1993
R42747	R42661	16410	10/02/93	57												
R42748	R42662	16412	21/02/91	58		37.7									1	1993
R42748	R42662	11662	05/02/93	58						3.5	4	3	1.25			
R42749	R42663	16413	21/02/91	59		37.1									1	1993
R42749	R42663	11670	05/02/93	59						5	5	4	2			
R42750	R42664	16414	21/02/91	60		32.7									0	1993
R42751	R42665	16415	21/02/91	61		33.2									1	1993
R42751	R42665	11688	05/02/93	61						5	4h	3	1			
R42752	R42667	16417	21/02/91	63		35.9									1	1993
R42752	R42667	18012	05/02/93	63						4	4	2	1			
R42753	R42669	16419	21/02/91	65		34.9									1	1993
R42753	R42669	11692	17/02/93	65												
R42754	R42672	16422	21/02/91	68		35.8									?	1993
R42754	R42672	18011	10/02/93	68												
R42755	R42674	16424	21/02/91	70		34.3									?	1993
R42756	R42676	16426	21/02/91	72		32.5									0	1993
R42756	R42676	18025	05/02/93	72						3	2	1.5	1			
R42757	R42677	16427	21/02/91	73		35.5									1	1993
R42757			05/02/93	73										bog		
R42758	R42679	16429	21/02/91	75		33.6									?	1993
R42758	R42679	18020	17/02/93	75												
R42759	R42680	16430	21/02/91	76		33.0									?	1993
R42760	R42684	16434	21/02/91	80		31.3									1	1993
R42760	R42684	16434	17/02/93	80												
R42761	R42685	16435	21/02/91	81		32.4									1	1993
R42762	R42686	16436	21/02/91	82		32.7									1	1993
R42762	R42686	18031	05/02/93	82						4.75	3	2.5	1			
R42763	R42688	16438	21/02/91	84		33.6									1	1993
R42764	R42693	20122	21/02/91	88		36.6									0	1993
R42764			17/02/93	88										bog on old nest		
R42765	R42694	20123	21/02/91	89		32.7									0	1993
R42765		18035	05/02/93	89						4	2.5	1.5	1			
R42766	R42695	20124	21/02/91	90		32.3									1	1993
R42766	R42695	18036	17/02/93	90												
R42767	R42696	20125	21/02/91	91		33.6									?	1993
R42767		18037	06/02/93	91						5	4.5	3	1.5			





Band no	Mate	Nest	Date	Pair	max	min	tip	length	toe	head	back	wing	tail	Comments	Fledge	Checked
R42790	R42681	16431	23/02/91	77		32.8									1	1993
R42790	R42681	18028	05/02/93	77						4	4	3	1			
R42791	R42682	16432	23/02/91	78		33.7									0	1993
R42791	R42682	18026	10/02/93	78												
R42792	R42683	16433	23/02/91	79		37.3									?	1993
R42792	R42683	18022	10/02/93	79										egg broken		
R42793	R42687	16437	23/02/91	83		32.7									1	1993
R42794	R42689	16439	23/02/91	85		33.2									?	1993
R42794	R42689	18027	17/02/93	85												
R42795	R42697	20126	23/02/91	92		38.0									0	1993
R42796	R42699	20128	23/02/91	94		35.0									?	1993
R42797	R42711	20140	23/02/91	106		36.0									1	1993
R42797	R42711	18043	17/02/93	106												
R42798	R42678	16428	23/02/91	74												
R42798	R42678	18019	10/02/93	74											1	1993
R42851	R43061	13051	10/02/93	166		34.7				5	4	3	2			
R42852	R43094	13052	10/02/93	167		32.2				4	4	2	2			
R42853		13053	10/02/93	168		35.7				4	4h	2.5	1.25			
R42854		13054	10/02/93	169		30.7				3	2.5	2	1			
R42855		13055	10/02/93	170		33.4				4.5	4	2.5	1			
R42856	R42966	11660	10/02/93	138		34.6				4	4	4	2.5			
R42857	R43019	11997	10/02/93	127		35.0				4.5	4	3	1.25			
R42858	R43020	11998	10/02/93	128		35.6				5	4.75	4	2			
R42859	R42994	11689	10/02/93	146		38.8				4	4	3	1.5			
R42860	R42992	11684	10/02/93	144		35.2				3.5	4	2	1.75			
R42861	R42964	11673	10/02/93	136		34.7				4	4	3	1.5			
R42862	R42993	11685	10/02/93	145		35.8				4	4	3	1.25			
R42863	R42971	11974	10/02/93	129		31.4				2	1.5	2	1			
R42864	R42961	11659	10/02/93	133		33.8				4.25	3	2	1			
R42865	R42962	11671	10/02/93	134		30.4				4	3	2	1			
R42866	R42998	18014	10/02/93	149		31.6				4.5	4	3	1			
R42867	R42983	18023	10/02/93	153		32.6				3.75	2.75	1.5	1			
R42868	R42982	18021	10/02/93	152		34.2				5	4	3	2			
R42869	R42985	18029	10/02/93	155		31.1				3.75	3	2	1			
R42870	R42988	18040	10/02/93	158		34.5				4.75	5	3.5	2			
R42881	R42999	18015	17/02/93	150		35.4										
R42882		13060	17/02/93	171		37.6										

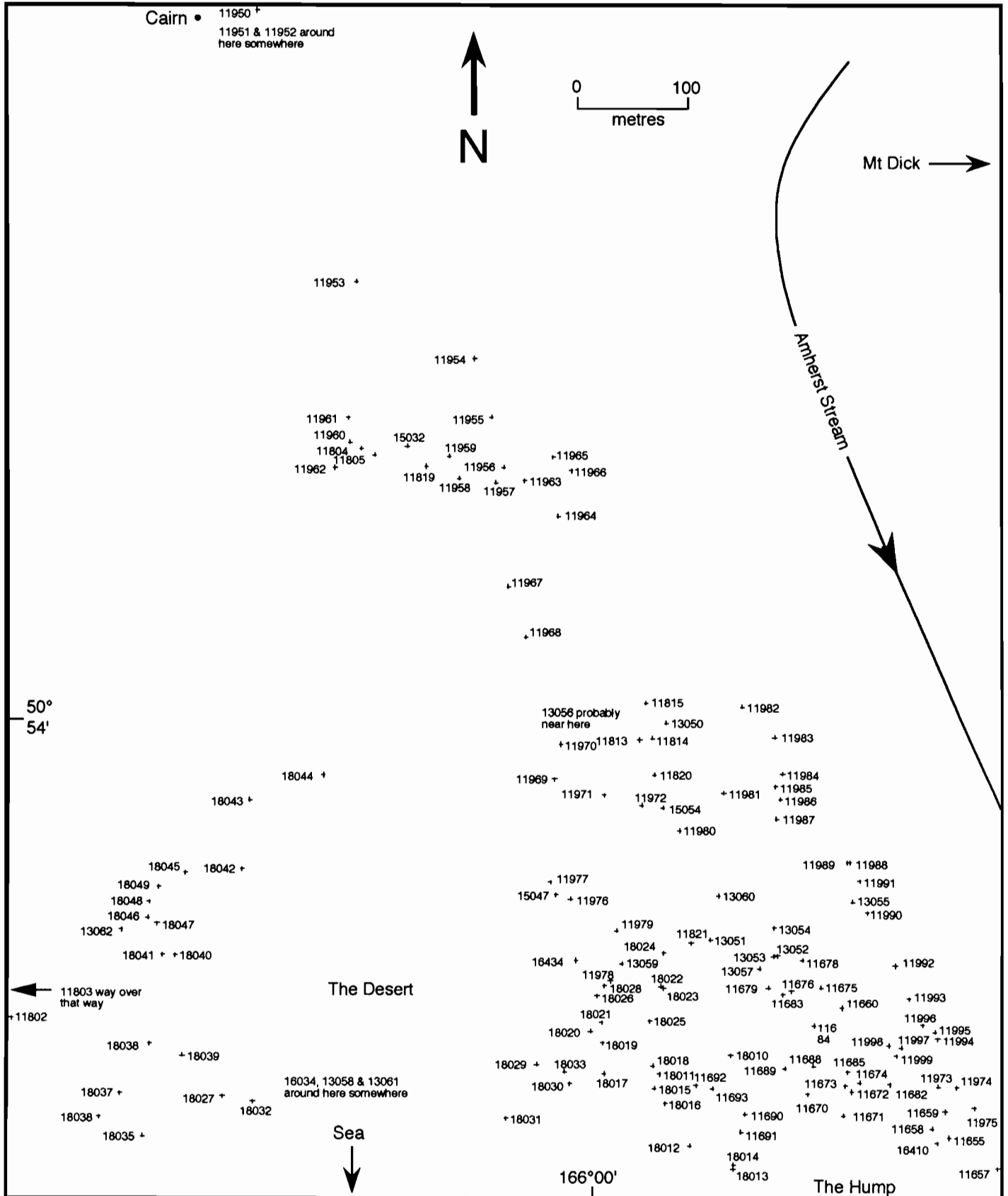
Band no	Mate	Nest	Date	Pair	max	min	tip	length	toe	head	back	wing	tail	Comments	Fledge	Checked
R42883		13061	17/02/93	172		33.8										
R42884	R42709	11803	17/02/93	104		36.2										
R42885	R42990	18047	17/02/93	160		31.6										
R42886	R42887	13062	17/02/93	173		34.0										
R42887	R42886	13062	17/02/93	173		31.8										
R42891	R42703	18046	10/02/93	98		32.5				4	4.5	2.5	1.25			
R42892	R43072	18049	10/02/93	162		32.7				4	4	2	1.25			
R42893	R43038	11951	17/02/93	109		32.5				3	3	2	1			
R42894	R43009	15032	17/02/93	113		36.1										
R42895	R42972	11805	17/02/93	130		33.6										
R42896	R43005	11980	17/02/93	119		31.9										
R42897	R43016	11991	17/02/93	124		33.7										
R42898	R43017	11995	17/02/93	125		35.4										
R42899	R42965	11674	17/02/93	137		35.4										
R42900	R42995	11691	17/02/93	147		34.0										
R42961	R42664	11659	05/02/93	133		33.6				3	3	2	1			
R42962	R42865	11671	05/02/93	134		35.7				4	4	4	2			
R42963	R29294	11672	05/02/93	135		34.2				4	4	3	1.5			
R42964	R42861	11673	05/02/93	136		32.0				3	3	1.5	1			
R42965	R42899	11674	05/02/93	137		32.4				3.75	4h	2	1			
R42966	R42856	11660	05/02/93	138		32.5				3	3	2	1			
R42967	R43096	11675	05/02/93	139		33.9				4	4h	3	1.25			
R42968		11676	05/02/93	140		35.6				4	4.5	4	2			
R42969		11678	05/02/93	141		32.8				3	4h	2	1			
R42970		11679	05/02/93	142		31.6				4	4h	2	1			
R42971	R42863	11974	02/02/93	129		35.7				3.75	4h	3	2			
R42972	R42895	11805	06/02/93	130		34.9				4.5	4h	2.5	2			
R42973	R43043	11963	06/02/93	115		35.8				4	4	3	1.5			
R42974	R43046	11965	06/02/93	116		35.7				5	4.5	3.5	2.5			
R42975	R43047	11966	06/02/93	117		32.2				3.75	4h	1.5	1			
R42976		11813	06/02/93	131		32.1				4.75	4	3.25	2			
R42977		11814	06/02/93	132		32.2				5	4	3.25	1.25			
R42978	R43040	11954	06/02/93	111		32.4				4	4h	2.5	1.25			
R42979	R43001	11952	06/02/93	110		35.7				4	4	2.5	1			
R42980	R43011	11981	10/02/93	120		36.2				5	4	3	3			
R42981	R42675	18018	05/02/93	71		34.8				5.75	5	5	3			
R42982	R42868	18021	05/02/93	152		33.4				3.5	3	2	1			





Band no	Mate	Nest	Date	Pair	max	min	tip	length	toe	head	back	wing	tail	Comments	Fledge	Checked
R43099	R42984	18024	17/02/93	154												
R43100		13059	17/02/93	176												
140-25115		13056	17/02/93	174												
140-41344	R42648	11993	02/02/93	45		32.5				4	4h	3	1			

**Appendix 3: Relative positions of marked, occupied Wandering Albatross nests in the study area, Adams Island, February 1993.**



**APPENDIX 4: Total number of Wandering Albatross counted in arbitrary units on Adams Island, February 1993.**

Unit	Location	Date Surveyed	No. of Nesting Pairs	Non-breeding Birds on the Ground (BOG's)	Previous Season's Fledglings	Comments
A	Study area to Astrolabe Basin	31.1.93	260	182	6	
B	Astrolabe Basin	7.2.93	648	191	3	
C	Wanderer Study Area	Feb. 93	146	50	2	
Subtotal: Amherst Stm - Astrolabe Basin			1054	425	11	
E	Fly Harbour - Lake Turbott	14.2.93	161	123	1	
F	Fly Harbour - Lake Turbott	14.2.93	210	110	-	
G	Fly Harbour - Lake Turbott	14.2.93	151	116	1	
H	Fly Harbour - Lake Turbott	14.2.93	191	193	3	
I	Fly Harbour - Lake Turbott	14.2.93	66	54	-	Binoc'd from GR 936-743
J	Fly Harbour - Lake Turbott	14.2.93	142	86	1	
K	Fly Harbour - Lake Turbott	15.2.93	257	88	4	
L	Fly Harbour - Lake Turbott	15.2.93	67	59	-	
M	Fly Harbour - Lake Turbott	15.2.93	36	6	-	Binoc'd from GR 924-724
N	Fly Harbour - Lake Turbott	15.2.93	70	10	-	Binoc'd from GR 924-724
O	Fly Harbour - Lake Turbott	15.2.93	13	12	-	Binoc'd from GR 244-724
P	Fly Harbour - Lake Turbott	15.2.93	22	5	-	Binoc'd from GR 244-724
Q	Fly Harbour - Lake Turbott	15.2.93	267	159	3	
R	Fly Harbour - Lake Turbott	15.2.93	166	149	8	
S	Fly Harbour - Lake Turbott	15.2.93	168	120	3	
T	Fly Harbour - Lake Turbott	16.2.93	142	15	2	
U	Fly Harbour - Lake Turbott	16.2.93	232	92	3	
V	Fly Harbour - Lake Turbott	16.2.93	158	46	3	
W	Fly Harbour - Lake Turbott	16.2.93	150	89	-	Binoc'd eastern end
X	Fly Harbour - Lake Turbott	16.2.93	26	23	-	Binoc'd from GR 945-723 & 948-723
Subtotal: Fly Harbour - Lake Turbott			2695	1555	32	
Y	SE of Mt Dick	15.2.93	42	2	-	Binoc'd from GR 921-732
D	Fairchilds Garden: SW Adams	9/2/93	55	12	-	
2(1)	Harris Bay Basin		6	5	-	Binoc'd from GR 838-774
2(2)	Fall Bay Basin		22	3	-	Binoc'd from GR 859-772
Subtotal: Fairchilds Garden - Fall Bay			84	20	-	
<b>TOTAL - 3874 breeding pairs / 2002 BOG's / 43 Fledglings</b>						