

waters (Nemoto 1966, Dzik & Jazdzewski 1978). *Thysanoessa macrura* occurs primarily south of the Antarctic Convergence and is generally thought to occur north of that convergence only in reduced numbers (Nemoto 1966, Dzik & Jazdzewski 1978). *T. vicina* has been recorded further north than *T. macrura* (Nemoto 1966). Its published range (58°S-43°S) means that its presence as prey of the rockhopper penguin at Gough Island (40°S) represents a northerly range extension of approximately 300 km.

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## Local movement of southern elephant seal pups *Mirounga leonina* (Linn.) at Marion Island

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*Southern elephant seal pups Mirounga leonina were counted and tagged at Marion Island (46°54'S, 37°45'E) between October 1980 and April 1981. The pups showed two distinct phases of movement, a post-weaning phase with eventual departure from the island in January, and a resting phase with pups returning to the island in March. Percentages of pups that moved during these phases were 16,9 and 18,9 respectively. There was no correlation between the stage of the season at which weaning occurred and the numbers that moved.*

*Tussen Oktober 1980 en April 1981 is welpies van die suidelike olifantrob Mirounga leonina op Marioneiland (46°54'S, 37°45'O) getel en gemerk. Olifantrobwelpies toon twee duidelik onderskeibare bewegings: die eerste fase is nadat hulle gespeen is, met uiteindelijke vertrek van die eiland in Januarie; die tweede is 'n rusfase wanneer hulle in Maart na die eiland terugkeer. Die persentasie welpies wat tydens die twee fases beweeg het, was onderskeidelik 16,9 en 18,9. Daar is geen korrelasie gevind tussen die stadium van die seisoen wanneer die welpies gespeen is en die getal wat beweeg het nie.*

### Introduction

The southern elephant seals (*Mirounga leonina*) on Marion Island were first studied by Rand (1955, 1962) and La Grange (1962) with limited data being supplied on population sizes and annual cycles. Since 1973 the South African Scientific Committee on Antarctic Research (SASCAR) initiated work on the southern elephant seal at Marion Island. This work (Condy 1977, 1978, 1979, 1980) provides detailed data on the elephant seals on the island.

The Prince Edward Islands, consisting of Marion Island (46°54'S, 37°45'E) and Prince Edward Island (46°38'S, 37°57'E), lie 2 300 km south-east of Cape Town in the South Indian Ocean. Apart from Prince Edward Island, the Crozets are the nearest land to Marion Island.

The synchronized haul-out sequences of the different age and sex classes are described by Condy (1979). The birth season at Marion Island is from early September to late November. Pregnant cows start to haul out in late August, and all have weaned their pups and departed by late

November. After weaning, at approximately 60 days post-partum, pups become completely pelagic with few remaining on the island. In order to obtain a better understanding of the complexity of behaviour of the population as a whole, seal tagging, primarily of pups, was carried out in 1973 and continued until 1977 (Condy & Bester 1975).

One little known aspect of the life of the elephant seals of Marion Island, is the extent of the post-weaning movement of pups from their birthsite and whether the stage of the season at which weaning occurred has any effect on the numbers that move. Local movement refers to the movement of weaned pups away from their birthsite beaches to other beaches on the island, and consists of two phases: a post-weaning phase, extending from the time pups are weaned in November to a time when they eventually become pelagic in January (Condy 1979, 1980); and a resting phase when pups haul-out on the island as from March (Condy 1978; present study).

## Methods

Elephant seal pups were tagged during the 1980/81 summer season on 16 beaches on the north and east coast of the island with most pups being tagged in the study area, namely Archway Bay, Macaroni Bay, Trypot Beach, Boulder Beach, Rockhopper Bay, Ship's Cove and Sealers Beach, established by Condy and Bester (1975). Elephant seals were censused once weekly at these beaches with daily counts at Boulder and Trypot Beaches. Five counts at different time periods were carried out at the remaining beaches during walks around the whole island. Pups were marked with paint at the time of birth, allowing for their separation into age groups as follows:

- Group I: The early weaners. This group comprised all pups born from the first birth detected in the study area to 6 days later.
- Group II: The intermediate weaners. Pups born 7 - 17 days from the first birth detected.
- Group III: The late weaners. Pups born 18 or more days after the first birth.

All pups were tagged using Hasco 1005 monel metal tags (National Band and Tag Co.). Two tags were attached to each pup (Condy & Bester 1975). Coloured polyvinyl covered nylon straps (Sterkolite) 3,5 × 6,0 cm were attached to one of the tags. Each beach within the study area where tagging occurred was identified with a unique colour code, enabling the movement of pups from their birthsite to be followed. The extent of pup movement on a particular beach was determined by recording all pups from other birthsite beaches and expressing these as a percentage of the total tagged within the study area.

## Results and Discussions

### Tagging

The total number of pups tagged and their separation into 'age-groups' is given in Table 1. Of a total of 280 pups counted within the study area, 260 (92,9%) were tagged, this representing 75,14 per cent of the whole island pup crop.

### Local Pup Movement

Pup movement is defined here as being local movements away from birthsite beaches to other beaches on the island, consisting of two phases: a post-weaning phase (Phase I) and a resting phase (Phase II). The first tagged pup resighted away

Table 1

Maximum pup counts, numbers of pups tagged and their separation into age-groups

Beach	Maximum Count	Number tagged	% tagged	Number of Pups per age-groups		
				I	II	III
1. Boulder	8	8	100	1	1	6
2. Trypot	45	42	91,3	2	13	27
3. Macaroni Bay	60	57	95,0	11	17	29
4. Archway Bay	76	73	96,1	8	30	35
5. Hansen Point	8	8	100	—	—	—
6. Bullard	22	8	36,4	—	—	—
7. Sealers' Cave	25	5	20,0	—	—	—
8. Kildalkey North	82	44	53,7	—	—	—
9. Kildalkey Bay	75	65	87,8	—	—	—
10. Crawford Bay	—	—	—	—	—	—
11. Goodhope Bay	14	10	71,4	—	—	—
12. Rockhopper Bay	5	5	100	2	1	2
13. Ships Cove	27	25	92,6	2	10	13
14. Sealers' South	14	10	71,4	2	4	4
15. Sealer's	45	40	88,9	7	9	24
16. Log	38	5	13,2	—	—	—
17. Sealer's - Cape Davis	8	8	100	—	—	—
	551	414	75,4	35	85	140

Table 2

Proportions of pups moved during the post-weaning (I) and resting phase (II).

Pup movement	Post-weaning (I)	Resting phase (II)
Number of pups that moved	44	49
Pups moving within study area (%)	16,9	13,5
Pups entering study area from other areas (%)	0,0	5,4

from its birthsite was recorded on 17 November 1980 and this is taken as the start of Phase I extending up to 14 January 1981 when the pups become completely pelagic (Condy 1979, present study), with no tagged pups remaining on the beaches within the study area after this date. The resting phase (Phase II) represents pups hauling-out in late March, when the first tagged pup was recorded, to the end of April 1981 when the study was ended. This haul-out corresponds with the haul-out of yearlings in March (Condy 1979) with many of these individuals overwintering on the island.

Pup movement during the two phases is given in Table 2, with 44 (16,9%) of all pups tagged within the study area moving to other beaches, with no immigrant pups from other beaches, outside the study area being recorded. During the 'resting' phase 13,5 per cent of all pups tagged showed movement within the study area, while another 5,4 per cent were pups tagged outside the study area, the total being 18,9 per cent. Additional pup movement was detected (Phase II) with the movement of five pups to Prince Edward Island (22 km). The numbers of pups that moved to sites other than their birthsites is illustrated in Fig. 1, with their birthsites (numbered) corresponding to those given in Table 1.

Local movement of pups following weaning has been described for Macquarie Island (Carrick *et al.* 1962a, 1962b), Gough Island (Bester 1980), Kerguelen Island (Angot 1954,



red within the proximity of their birthsites seems to suggest that on Marion Island, orientation to their birthsite after weaning does not seem necessary and is possibly learnt later in the seal's life.

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## The status of seabirds at Prince Edward Island

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*Evidence of breeding of storm petrel and burrowing petrel species at Prince Edward Island (46°38'S, 37°57'E) is given, including the first positive breeding record of black-bellied storm petrel *Fregetta tropica*, at this island group. Further records of white-phase southern giant petrel *Macronectes giganteus*, and revised population assessments of the yellow-nosed *Diomedea chlororhynchos* and grey-headed *D. chryso-stoma*, albatrosses are given.*

*Bewys van die broei van stormswawel en grawende stormvoël soorte by Prins Edward-eiland (46°38'S, 37°57'O) is gelewer, insluitend die eerste positief broei rekord van die swaripens stormswawel *Fregetta tropica*, by die eilande. Verder verslae van witgestalte suidelike nellie *Macronectes giganteus*, en hersiende bevolkings begrotinge van die geelbek-malmok *Diomedea chlororhynchos* en gryskop-malmok *D. chryso-stoma*, is gelewer.*

### Introduction

The Prince Edward Group of islands (46°54'S, 37°45'E) consists of two main islands, Prince Edward and Marion, and a few small stacks. The populations of surface-breeding species at Marion and Prince Edward islands have been censused (Williams *et al.* 1979). However, the status of burrow-

ing petrels is not as clear, particularly for Prince Edward Island, where the breeding of a number of species has yet to be confirmed. Differences in species composition of burrowing petrels breeding at the two islands may exist, because introduced populations of feral cats *Felis catus* and house mice *Mus musculus* exist at Marion Island. Cats kill adults and chicks of petrels (Van Aarde 1977, Williams 1978) while house mice might eat eggs and chicks of the smaller species. Furthermore, the two islands differ physiographically, so perhaps affecting nest-site availability. This report summarises evidence for breeding in storm petrels and burrowing petrels at Prince Edward Island, and presents new census data for two albatross species, and further records of the occurrence of white phase southern giant petrels *Macronectes giganteus*.

### Methods

Prince Edward Island is uninhabited, and parties landed by boat undertook field expeditions in April and September 1979. Specific searches were made for burrowing petrels during these two visits, which did not coincide with the egg and chick stages of most burrowing petrels. Estimates of the numbers of birds in mixed colonies of yellow-nosed (*Diomedea chlororhynchos*) and grey-headed (*D. chryso-stoma*) albatrosses were made in September.