

## Notes on the tagging of seals on Marion and Gough Islands

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Various marking methods have been used on seals to facilitate studies on aspects of their life histories, population biology and behaviour, growth and development, dispersal from and fidelity to birth sites, and to provide a reservoir of seals of known age to check the accuracy of age determining techniques.

Tags have been applied to southern elephant seals *Mirounga leonina* (Laws, 1953) and South African fur seals *Arctocephalus pusillus* (Rand, 1959) and more recently to northern elephant seals *Mirounga angustirostris* (Odell, 1974; Le Bouef, Ainley & Lewis, 1974), Weddell seals *Leptonychotes weddelli* (Stirling, 1974), grey seals *Halichoerus grypus* (Jewell & Smith, 1965; Cameron, 1970), common seals *Phoca vitulina vitulina* (Bonner & Witthames, 1974), northern fur seals *Callorhinus ursinus* (Roppel & Kozloff, 1975), New Zealand fur seals *Arctocephalus forsteri* (Csordas & Ingham, 1965; Stirling 1971; Crawley & Brown, 1971), and Kerguelen fur seals *A. gazella* (Bonner, 1968; Laws, 1973; Payne, 1975 pers. comm.). Other methods of marking include hot branding (Rand, 1950; Carrick & Ingham, 1962; Jewell & Smith, 1965; Ingham, 1967; Nicholls, 1970), the use of paints and dyes (Carrick & Ingham, 1962; Peterson & Bartholomew, 1967; Le Bouef & Peterson, 1969), and hair clipping (Peterson & Bartholomew, 1967).

A programme of seal tagging was first carried out on Marion Island (46° 52' S, 37° 51' E) in 1973, and was repeated in 1974. The immediate objective of the tagging was to determine the local movement of pups of the southern elephant seal *M. leonina* and the Amsterdam Island fur seal *Arctocephalus tropicalis* during the winter season following their birth. Elephant seal pups on the uninhabited Prince Edward Island (19 km NNE of Marion Island) were tagged in May 1974, six months after their birth, to determine the extent of movement between the two islands. In 1974 tagging also began on Gough Island (40° 21' S, 9° 52' W) with the same immediate objectives but with emphasis on the fur seals (*A. tropicalis*) because the elephant seal breeding colonies are few and inaccessible overland.

On Marion and Gough Islands the long term objectives of the tagging programme are to provide a future reservoir of known aged seals for life history studies and a sample of known aged skulls with which the accuracy of age determining techniques can be checked, and to provide information on the fidelity of

parturient cows and territorial bulls to their birth sites. It is hoped that tagged animals will also provide information on the long distance movement of both species.

### Fieldwork

The selection of a marking method was strongly influenced by logistic considerations. Rugged terrain, long distances between breeding colonies and the absence of motorized land or sea transport meant that marking equipment had to be light and easily carried on foot. Normally only two men are involved in the seal research programmes on Marion and Gough Islands. To ensure a satisfactory balance between effort required and information returned as many as possible of the annual pup crop required marking. Tagging was considered the most suitable method of providing the information required over a long period.

Hasco 1005 monel metal tags (size 49 for elephant seals and size 681 for fur seals) were selected and stamped with the words Marion Island or Gough Island on the outside face of one flange of each tag. The letters RSA (Republic of South Africa) followed by an identification number of one to four digits were stamped onto the outside face of the opposite flange.

Two tags are attached to each animal, both tags bearing the same identification number. On elephant seals, tags are attached to the posterior edge of the interdigital web, usually between the third and fourth digits of each hind flipper. Tags on fur seals are attached through the connective tissue on the posterior edge of each fore flipper, midway between the body of the seal and the distal extension of fur on the dorsal surface of the flipper.

Most fur seal rookeries on both islands are inaccessible by land, so tagging was confined to the few accessible ones where efforts were made to tag at least 90 per cent of pups over two months of age. Each tagged fur seal pup is weighed and injected subcutaneously with oxytetracycline hydrochloride at a dose rate of 10 mg oxytetracycline hydrochloride activity per kilogram body weight. This chemical acts as a bone and dentine marker (Payne 1974, pers. comm.) which is visible under ultraviolet light. By using this chemical it is hoped that the age of specimens collected from the study rookeries can still be accurately determined in

the event of tag loss and indistinct scars resulting from the application of tags.

Elephant seal pups were tagged after weaning, when they tend to congregate at the periphery of breeding beaches. They are accessible and can be tagged with minimum interference to the harems from which they originate. Usually these congregations occur in the surf zone and regular drenching by the salty water prevents infection and assists the healing of tag wounds.

At the time of tagging the date, locality, sex and tag numbers are recorded. This information is stored on record cards, one card per animal, and the cards are on file at the Mammal Research Institute in Pretoria.

## Previous tagging

Prior to this programme, no seal marking was done on Marion and Prince Edward Islands. Two branded elephant seals from Heard Island (53° S, 73° 30' E) are the only known records of previously marked seals occurring on Marion Island (Carrick, Csordas, Ingham & Keith, 1962).

On Gough Island 19 elephant seals and 74 fur seals were tagged with monel metal tags in 1973, as described elsewhere in this Journal (Shaughnessy, 1975). Records from this tagging are on file at the Marine Mammal Laboratory, Sea Fisheries Branch, Cape Town.

## Results

The numbers of seals tagged by April 1975 on Marion and Prince Edward Islands, and by November 1975 on Gough Island, are shown in Tables 1 and 2.

Tagging on Marion Island is to be continued through 1975 and 1976 and thereafter whenever the possibility arises. On Gough Island tagging will be continued through the 1975-76 summer season.

Resightings are still being collected but from the records at present available it appears that pups of both species on Marion Island remain at the island for the first year of life. Movement between beaches in the vicinity of birthsites occurs commonly. This may assist in orientating individuals at a young age, but the fidelity of adults to birthsites has yet to be elucidated. Occasional appearances at considerable distances from birthsites have been recorded, and one nine month old male elephant seal yearling tagged in May 1974 on the east coast of Prince Edward Island was observed the following August on the east coast of Marion Island, some 23 km from the tagging site.

A detailed assessment of the dispersal of pups from their birthsites, and the success of the tagging operation, will be presented later.

## Information required

Observations of tagged seals will yield valuable information; we therefore request that any observations of seals bearing tags from Marion or Gough Islands be reported to the Director, Mammal Research Institute, University of Pretoria, Pretoria 0002, South Africa. Reports on observations should include the date of observation, locality, tag identification numbers and number of tags, and sex. In addition, information on whether the seal is breeding or moulting, and the social status of males, will be valuable.

Table 1

Elephant seals, *Mirounga leonina*, tagged on Marion, Prince Edward and Gough Islands

Age class	Adults		Subadults		Yearlings		Pups		Total
	♂	♀	♂	♀	♂	♀	♂	♀	
Marion Island	13	70	28	1 34	29	6 40	286	18 272	797
Prince Edward Island	1		3		6		20	3 12	45
Gough Island*	1						9	2 7	19
Total	15	70	31	1 34	35	6 40	315	23 291	861

\*Tagged by Shaughnessy in 1973

Table 2

Fur seals, *Arctocephalus tropicalis*, tagged on Marion and Gough Islands

Age class	Adults		Subadults		Yearlings		Pups		Total
	♂	♀	♂	♀	♂	♀	♂	♀	
Marion Island	1		3	2	1		38	22	67
Gough Island			7		19	1 3			30
Gough Island*			26	3 5	31	1 8			74
Total	1		36	3 7	50	2 12	38	22	171

\*Tagged by Shaughnessy in 1973

## Acknowledgements

We thank the South African Scientific Committee for Antarctic Research, the Department of Transport, and Professor J.D. Skinner, Director of the Mammal Research Institute, for their support of the seal research programme on Marion and Gough Islands, and Dr J.A.J. Nel, Mammal Research Institute, for his assistance throughout the programme. Mr M.R. Payne, British Antarctic Survey, has made valuable suggestions and the exchange of information on techniques and results has been of great assistance.

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(Received 25 September 1975; revised 8 December 1975)