



## Southern elephant seals breeding at Nelson Island, South Shetland Islands

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**ABSTRACT:** A population survey of southern elephant seals (*Mirounga leonina* Linnaeus, 1758) was conducted at Nelson Island, South Shetland Islands, Antarctica, during the 2001 breeding season. Two breeding sites were identified, one of which had not been previously reported. The largest breeding site was located at Duthoit Point, with a total of 128 females, 111 pups and 7 weanlings distributed in 6 harems along 3 km of coast. The new breeding group was observed at Harmony Point, where 3 females with their pups were found. This is the first report on southern elephant seal numbers during the breeding period for the Nelson Island coast.

**Key words:** Antarctic, South Shetland Islands, southern elephant seal, *Mirounga leonina*, pinnipeds.

### Introduction

Information on censuses of southern elephant seals (*Mirounga leonina*) in the South Shetland Islands is scarce. Most of these records are made during the summer period, involving elephant seals during molt (Laws 1953, Aguayo 1970, Myrcha and Teliga 1980, Krzemiński 1981, Rakusa-Suszczewski and Sierakowski 1993, Cruwys and Davis 1994). Particularly lacking are censuses during the breeding period, because southern elephant seals breed between September and November, and the peak of the female haulout is on 26 October (Vergani and Stanganelli 1990). Laws (1953) estimated the 1951 breeding population of the entire archipelago at 250 animals. Additional information on southern elephant seal breeding groups is available for King George Island at Stranger Point (Mul-

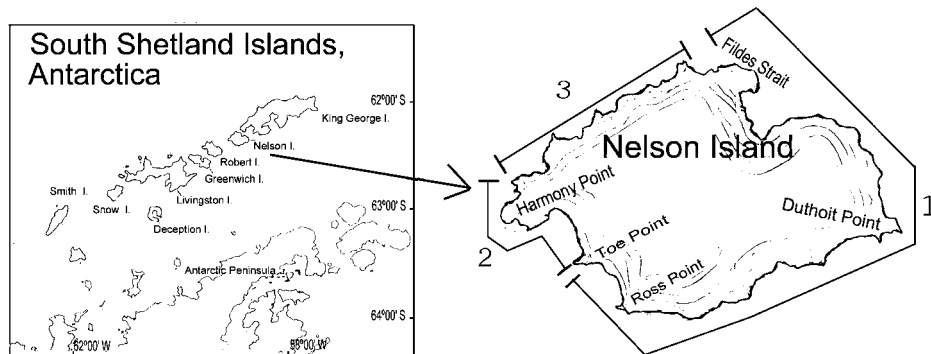


Fig. 1. Map of Nelson Island showing the coast covered by boat (1), on foot (2) or by plane (3).

ler-Schwarze *et al.* 1978, Vergani *et al.* 1987, Vergani and Stanganelli 1990) and Admiralty Bay (Myrcha and Teliga 1980, Sierakowski 1991, Lesinski 1993, Ciaputa 1996). The only available data on Nelson Island comes from a census conducted at Duthoit Point (Vergani and Stanganelli 1990).

The breeding status of the elephant seal population at Nelson Island has been referred to as uncertain (SCAR 2000). Consequently, the objective of this work is to determine the present status of the southern elephant seal breeding population at Nelson Island, South Shetland Islands.

## Materials and methods

Surveys of southern elephant seals from Fildes Strait to Toe Point (Fig. 1) were conducted on 27 October 2001 by navigating inflatable boats near the shoreline. Once a group of seals was identified, observers landed to count seals by walking through haulout areas. Females, pups, weanlings, and adult males were counted for each harem. When more than one adult male was found, these males were classified according to their position in the harem as principal – if they were inside the harem, or as subordinate – if they were close to it but in a peripheral position. At Harmony Point, the area was covered by walking from the De Gurruchaga Refuge on 9 November and weekly censuses were made from that date until the last pup departed on 15 December. In addition, during an aerial survey conducted on 19 November, the northwest coasts of the island, from the Fildes Strait to Harmony Point, were covered to search for additional beaches occupied by elephant seals.

## Results

Two breeding sites were identified: Duthoit Point (62°18'S, 58°47'W) and Harmony Point (62°17'S, 59°14'W). At Duthoit Point a total of 128 females,

111 pups and 7 weanlings were counted. Females formed 6 harems with a mean harem size of  $21.3 \pm 13.6$  females (Table 1). The mean harem structure (beachmaster: challenger: females) was  $1: 0.33 \pm 0.52: 21.3 \pm 13.6$ . At Harmony Point 3 females, their pups, and one adult male were counted (Table 1). No other breeding groups were observed during the aerial survey. Although the flights were made late during the breeding season, when no or very few females were expected to be found, the remaining groups of weanlings, still on the beach at this date (Carlini *et al.* 2001) would have constituted evidence of recent female presence.

Table 1  
Females, pups, weaned pups and challengers per harem counted at Nelson Island. Each harem contains one beachmaster.

	Number of females	Number of pups	Number of weaned pups	Number of challengers
Duthoit Point	20	14	1	0
	5	5	0	0
	15	14	0	1
	34	33	3	0
	41	38	3	0
	13	7	1	1
Harmony Point	3	3	0	0

## Discussion

Counts were performed at Duthoit Point during the 2001 breeding season near the peak of the female haulout. Although, due to logistic constraints, it was not possible to check the breeding sites again during the season, censuses were performed twice a week at Stranger Point, King George Island, a breeding site located 4 kilometres from Duthoit Point. There is little reason to doubt that both breeding groups are synchronised in their peak reproductive events because: (1) they are almost at the same latitude, (2) females tagged while breeding at Stranger Point were re-sighted at Duthoit Point in the next breeding period, suggesting considerable reproductive overlap. The peak female haulout date at Stranger Point for the 2001 breeding season was 26 October, so the counts at Duthoit Point were coincident with the peak haulout of females. At Harmony Point individuals were counted from 9 November, when no weaned pups were recorded. Since weaned pups remain on the beach for a mean period of 42 days after weaning (Arnbom *et al.* 1993), it was assumed that no other females bred at Harmony Point during the 2001 breeding season.

The only data for Nelson Island appears in Vergani and Stanganelli (1990), who reported 106 females and 21 bulls at Duthoit Point for the 1985 breeding season, counted during "occasional searches". Although our numbers are about 25%

higher, the comparison could be misleading as the 1985 count date was not mentioned. Count date will have a strong influence on female number estimation, because the numbers of females on land during breeding follow a Gaussian curve (Hindell and Burton 1988), and so a ten day displacement from the peak haulout can underestimate female numbers by up to 30 % if no correction is applied.

Taking into account that counts at the peak of the female haulout represent around 95% of the total pup production, as not all cows have hauled out by this time (McCann 1985), total pup production at Duthoit Point is estimated at 135 animals. The absence of additional weaned pups at Harmony Point suggests that only the three pups observed were born during 2001.

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