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SURVEY OF ANTARCTIC FUR SEALS IN THE SOUTH SHETLAND ISLANDS, ANTARCTICA, DURING THE 1986/87 AUSTRAL SUMMER

J.L. Bengtson, L.M. Ferm, T.J. Härkönen, E.G. Schaner, B.S. Stewart
(USA, Sweden)

Abstract

A survey of Antarctic fur seals in the South Shetland Islands, Antarctica, during the 1986/87 austral summer indicated that this species is continuing its population recovery and recolonization of rookery sites following 19th Century commercial exploitation. Twelve fur seal pupping sites were identified, some of which had not previously been reported. The largest pupping sites are at Telmo Island and Cape Shirreff, on the north coast of Livingston Island. Total fur seal pup production in the South Shetland Islands in 1986/87 is estimated to be approximately 4000 individuals. Notes on other pinniped species observed during the survey are presented. The optimal sites for combined fur seal and penguin monitoring activites, as part of the CCAMLR Ecosystem Monitoring Program, are recommended as Seal Island, Elephant Island; Stigant Point, King George Island; and Cape Shirreff/Telmo Island, Livingston Island.

Résumé

Une prospection des otaries antarctiques dans les Iles Shetland du Sud, Antarctique, au cours de l'été austral 1986/87 a indiqué que le repeuplement de cette espèce se poursuit et que ses colonies se développent à nouveau après l'exploitation commerciale dont elle a fait l'objet au cours du 19ème siècle. Douze sites de parturition ont été identifiés, dont certains n'avaient pas été signalés auparavant. Les plus grands sites de parturition se trouvent à l'Ile Telmo et au Cap Shirreff, sur la côte nord de l'Ile Livingston. La production totale d'otaries nouveau-nées dans les Iles Shetland du Sud en 1986/87 est estimée à environ 4000 individus. Des notes sur d'autres espèces de pinnipèdes observées au cours de la prospection sont présentées. Les sites optimums suivants sont recommandés pour des activités de contrôle combinées portant sur les otaries et les manchots, dans le cadre du Programme de contrôle de l'écosystème de la CCAMLR: l'Ile des Phoques, Ile Eléphant; Stigant Point, Ile du Roi George; et le Cap Shireff et l'Ile Telmo, Ile Livingston.

Resumen

Una prospección de las focas peleteras antárticas en las Islas Shetland del Sur, Antártida, durante el verano austral de 1986/87 indicó que esta especie está continuando la recuperación de su población y la recolonización de los sitios de anidamiento luego de la explotación comercial del siglo 19. Se identificaron doce sitios de cría de focas peleteras, algunos de los cuales no habían sido informados previamente. Los mayores sitios de cría se encuentran en la isla Telmo y en el Cabo Shirreff, en la costa norte de la isla Livingston. La producción total de cachorros de foca peletera en las Islas Shetland del Sur en 1986/87 se estima en aproximadamente 4000 individuos. Se presentan notas acerca de otras especies de pinípedos observadas durante la prospección. Los sitios óptimos recomendados para las actividades combinadas de control de focas peleteras y pingüinos, como parte del Programa de CCAMLR de Control del Ecosistema, son la isla Seal, la isla Elephant; Stigant Point, la isla King George y el Cabo Shirreff/Isla Telmo, isla Livingston.

Резюме

Съемка южных морских котиков в районе Южных Шетландских островов, Антарктика, в течение австрального лета 1986/87 г. показала, что популяции этого вида продолжают восстанавливаться и вновь занимать старые залежки - после коммерческой эксплуатации вида в XIX веке. Было зарегистрировано двенадцать щенных залежек; о некоторых из них ранее не сообщалось. Крупнейшие щенные залежки находятся на острове Телмо и мысе Ширефф, северный берег острова Ливингстон. Общее количество появившихся на свет щенков морского котика на Южных Шетландских островах в 1986/87 г. оценивается приблизительно в 4000 особей. Также представлены заметки о других видах ластоногих, наблюдавшихся во время проведения съемки. В качестве оптимальных участков для проведения комплексного мониторинга морских котиков и пингвинов в рамках Программы АНТКОМа по мониторингу экосистемы рекомендуются: остров Сил - остров Элефант, мыс Стигант - остров Кинг-Джордж и мыс Ширефф/остров Телмо - остров Ливингстон.

SURVEY OF ANTARCTIC FUR SEALS (ARCTOCEPHALUS GAZELLA) IN THE SOUTH SHETLAND ISLANDS, ANTARCTICA, DURING THE 1986/87 AUSTRAL SUMMER

John L. Bengtson[1], Lisa M. Ferm[1], Tero J. Härkönen[2], Everett G. Schaner[3], and Brent S. Stewart[4]

1. National Marine Mammal Laboratory, Northwest and Alaska Fisheries Center, 7600 Sand Point Way N.E., Seattle, WA 98815, USA
2. Tjärnö Marine Biological Institute, Pl. 2781, S-45200 Strömstad, Sweden
3. 8224 Windsor View Terrace, Potomac, Maryland, 20854 USA
4. Hubbs Marine Research Center, 1700 South Shores Road, San Diego, CA 92109 USA.

INTRODUCTION

Antarctic fur seals, Arctocephalus gazella, were commercially harvested and nearly exterminated in the 19th century. In the 1930's small numbers of fur seals (tens of individuals) were once again seen at Bird Island, South Georgia (Bonner, 1968). Since 1956, when censuses were begun in the South Georgia vicinity, the number of pups born at Bird Island and South Georgia increased to a population estimated in the early 1980's at just under 1 million (Payne 1977; Bonner, 1981; Laws 1984). At present, the majority of Antarctic fur seal pups are born at Bird Island, South Georgia, and the Willis Islands, although daughter rookeries have been re-established during the past several decades throughout the Scotia Arc and elsewhere (Bonner 1968; Laws 1984). Surveys have been made during the breeding season at several of these sites but census coverage has been incomplete. Fur seals in the South Shetland Islands have been censused sporadically over the past 80 years, with the first post-exploitation record of successful pup production being reported by O'Gorman (1961) at Cape Shirreff, Livingston Island, in January 1958. However, no attempts to census the entire archipelago have been made since 1965/66 when Aguayo and Torres (1967) surveyed fur seal abundance.

The survey reported here focused on the South Shetland Islands and had three principal objectives : 1) to document the recolonization and current distribution of Antarctic fur seal rookeries, 2) to estimate the current annual pup production in the archipelago, and 3) to identify fur seal rookeries suitable as potential monitoring sites in the land-based network of the CCAMLR Ecosystem Monitoring Program.

METHODS

Surveys were conducted between 23 December 1986 and 12 February 1987 during research cruises aboard the USCGC Glacier and the R/V Prof. Siedlecki. From 23 December 1986 to 2 January 1987, helicopters from the USCG Glacier were used to survey all coastlines of the Elephant Island group, including the Seal Islands, Cornwallis, Clarence, Gibbs, Aspland, and O'Brien Islands (Figure 1). Surveys were flown at approximately 100 meters altitude, with photographs taken of large groups to assist in estimating group size (e.g., southern elephant seals, Mirounga leonina). Although the survey focused on Antarctic fur seals, all pinnipeds observed hauled out on land were counted. Species which routinely haul out on ice (e.g., crabeater seals, Lobodon carcinophagus, and leopard seals, Hydrurga leptonyx) were only sighted on land infrequently whereas southern elephant seals (hauled out on beaches for their annual molting period) were sighted often. Counts of all pinnipeds were tallied by species, with no differentiation made between age and sex classes except for fur seals. At sites where fur seal pups were present, observers counted living and dead pups by censusing colonies on foot.

Surveys from the R/V Prof. Siedlecki were conducted between 25 January to 12 February 1987 and were performed by navigating inflatable boats near shore. All ice-free coasts of the South Shetland Islands between Low and Smith Islands and King George Island were examined in this fashion (Figure 1). Where fur seals were observed in abundance, observers landed to search for pups by walking through haulout areas.

RESULTS

A total of 12 Antarctic fur seal pupping sites were identified, some of which were not known prior to this survey (Tables 1 and 2). Numbers of Antarctic fur seal pups at various sites ranged between a single pup each at Fildes Peninsula, Desolation Island, and Smith Island, to 1895 pups (including 235 dead pups) at the Telmo Island north of Livingston Island. Most pupping sites were located on or near King George, Livingston, or Elephant Islands. Only bachelor male fur seals were observed at other sites. No pupping sites were located on the southern coasts of islands along the Bransfield Strait.

Even though the fur seal population is increasing in the South Shetland Islands, not all of the islands known to have had fur seal rookeries prior to exploitation are currently occupied. Our census revealed that although fur seal colonies are being established successfully along the northern coastlines of the South Shetland Islands, recolonization of the southern coasts has not yet begun. Southern coasts are known to have been the sites of large fur seal rookeries which were subjected to heavy commercial exploitation in the 1820/21 and 1821/22 seasons (Stackpole, 1955; Bertrand, 1971). In addition, no fur seals were observed at Cornwallis, Clarence, Gibbs, Aspland or O'Brien Islands. The absence of animals at these islands conforms to previous survey data which indicated few Antarctic fur seals in these areas (Aguayo and Torres, 1967; Hunt 1973; Aguayo 1978).

DISCUSSION

Survey results indicate that both the pup production and the distribution of Antarctic fur seals are continuing to increase in the South Shetland Islands (Table 3). Even for those sites in years when data on the number of pups are not available, the total number of individuals observed appears to be increasing in most areas.

The reason for the differences in growth rates of rookery size between the three islands listed in Table 3 is unknown. Whereas rookeries at Elephant and Livingston Islands have expanded signficantly over the past two decades, the number of pups born at Stigant Point, King George Island, has remained essentially unchanged. To the human observer, there appears to be sufficient space on the Stigant Point beaches for rookery growth. These areas are currently utilized as haulout areas by bachelor males. Determining the extent to which potential difference in habitat and local prey resources between these sites may influence pup survival and rookery expansion requires further study.

Three fur seal pupping sites were identified as potentially good locations for incorporation into the CCAMLR Ecosystem Monitoring Program network : 1) Seal Island, Elephant Island, 2) Stigant Point, King George Island, and 3) Cape Shirreff, Livingston Island. Each of these sites meets the following criteria which are considered important for establishing a field camp for monitoring purposes : 1) at least 100 fur seal pups born annually, 2) at least 10,000 nesting chinstrap penguins, Pygoscelis antarctica, available for similar monitoring studies, and 3) a suitable camp site available for a field team. Cape Shirreff and Seal Island are particularly well suited as monitoring sites because of their abundance of fur seals and geographic position in relation to krill fishing areas. The relative advantages of establishing a monitoring program at these sites will be considered further within national programs and the Working Group for the CCAMLR Ecosystem Monitoring Program.

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Table 1. Pinniped census in the South Shetland Islands, Antarctica, during the 1986/87 austral summer (E=elephant seal, W=Weddell seal, C=crabeater seal, L=leopard seal).

Location	Fur Seals							
			Pups					
	Male	Female	Alive	Dead	E	W	C	L
King George I.	3,326	147	146	12	2,932	386	2	1
Nelson Island	186	-	-	-	1,070	432	1	1
Robert Island	194	-	-	-	549	141	1	2
Greenwich I.	235	-	-	-	423	40	-	-
Livingston I.	1,912	129	298	-	4,898	264	1	1
Cape Shirreff	1,650	844	673	178	772	134	1	-
Telmo Island	1,607	2,299	1,660	235	3	3	-	-
Snow Island	652	-	-	-	1,494	157	5	-
Smith Island	105	2	1	-	-	8	-	-
Low Island	418	-	-	-	251	34	-	-
Deception Island	520	-	-	-	3	48	1	-
Elephant Island	153	191	235	15	1,315	-	21	4
Seal Island	286	200	241	8	232	4	1	3
Large Leap I.	73	167	254	21	-	-	-	-
Total	11,317	3,979	3,508	469	13,942	1,651	34	12

Table 2. Summary of Antarctic fur seal pup production in the South Shetland Islands, Antarctica, in 1986/87.

Location	Live	Dead	Total
Seal Island (Elephant Is.)	241	8	249
Large Leap Island (Elephant Is.)	254	21	275
Cape Valentine (Elephant Is.)	42	3	45
Cape Lindsey (Elephant Is.)	191	12	203
Stinker Point (Elephant Is.)	2	0	2
Stigant Point (King George Is.)	145	12	157
Fildes Peninsula (King George Is.)	1	0	1
Desolation Island (Livingston Is.)	1	0	1
Cape Shirreff (Livingston Is.)	673	178	851
Telmo Island (Livingston Is.)	1,660	235	1,895
Window Island (Livingston Is.)	297	-	297
Smith Island	1	0	1
Total	3,508	469	3,977

Table 3. Changes in Antarctic fur seal pup production at important rookery sites in the South Shetland Islands, Antarctica. Sites listed are for those areas for which there are past census data comparable with the 1986/87 survey.

Location	Date	Pups[1]	Total[2]	Source
ELEPHANT ISLAND				
Seal Island	7 Jan 66	--	20	Aguayo 1978
	13 Dec 70	16	62	Hunt 1973
	24 Dec 86	249	1250	1986/87 survey
Cape Valentine	16 Feb 66	2	30	Aguayo 1978
	9 Feb 71	3	100	Hunt 1973
	30 Jan 87	45	121	1986/87 survey
Cape Lindsey	16 Feb 66	3	70	Aguayo 1978
	Feb 71	--	30	Hunt 1973
	30 Jan 87	203	468	1986/87 survey
KING GEORGE ISLAND				
Stigant Point	16 Jan 70	123	213	Llano 1971
	Feb 73	80	250	Aguayo 1978
	Jan 82	168	293	Oliva et al. 1986
	1982/83	123	367	Oliva et al. 1986
	31 Jan 87	157	507	1986/87 survey
LIVINGSTON ISLAND				
Cape Shirreff	14 Jan 58	1	27	O'Gorman 1961
	2 Feb 59	2	11	O'Gorman 1961
	1 Jan 66	12	50	Aguayo 1978
	Feb 71	71	201	Aguayo 1978
	25 Jan 73	300	1741	Aguayo 1978
	Jan 82	60	532	Cattan et al. 1982
	1982/83	--	564	Oliva et al. 1986
	1983/84	248	969	Oliva et al. 1986
	1984/85	384	1590	Oliva et al. 1986
	2 Feb 87	851	3345	1986/87 survey
Window Island	21 Jan 66	50	150	Aguayo 1978
	25 Jan 73	70	320	Aguayo 1978
	3 Feb 87	297	646	1986/87 survey

1) Includes both living and dead pups.

2) Total Antarctic fur seals, including pups.

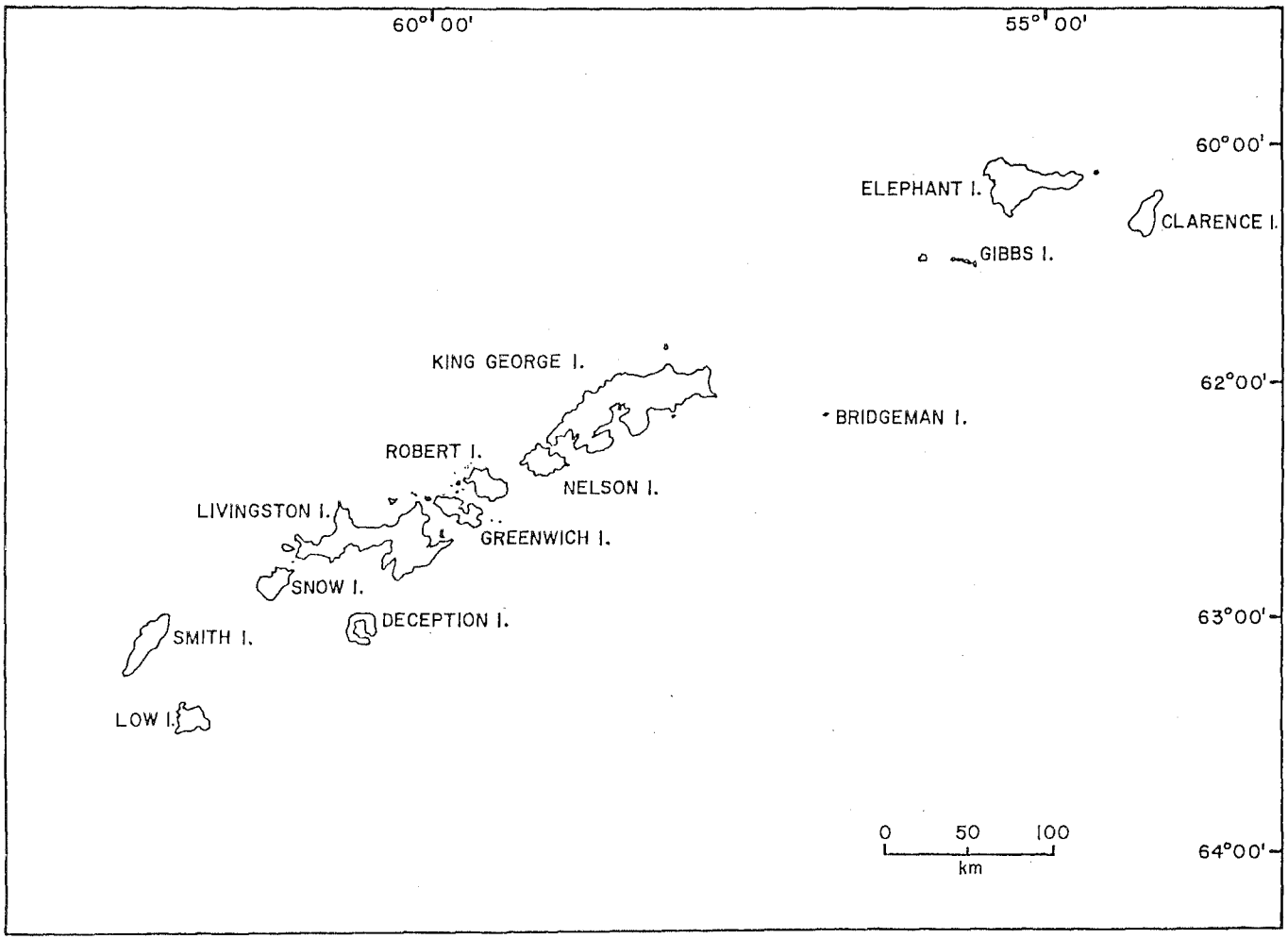

Figure 1. South Shetland Islands, Antarctica study area.

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Légendes des tableaux

Tableau 1 Recensement des pinnipèdes dans les Iles Shetland du Sud, Antarctique, au cours de l'été austral 1986/87 (E = éléphant de mer, W = phoque de Weddell, C = phoque crabier, L = léopard de mer).

Tableau 2 Récapitulation de la production des petits des otaries antarctiques dans les Iles Shetland du Sud, Antarctique, en 1986/87.

Tableau 3 Changements dans la production des petits des otaries antarctiques à d'importants sites de colonies dans les Iles Shetland du Sud, Antarctique. Les sites indiqués correspondent aux régions pour lesquelles il existe des données de recensements antérieurs comparables à la prospection de 1986/87.

Légende de la figure

Figure 1 Iles Shetland du Sud, Antarctique, zone d'étude.

Encabezamientos de las Tablas

Tabla 1 Censo de los pinípedos en las Islas Shetland del Sur, Antártida, durante el verano austral de 1986/87 (E = elefante marino, W = foca de Weddel, C = foca cangrejera, L = foca leopardo).

Tabla 2 Resumen de la producción de cachorros de foca peletera en las Islas Shetland del Sur, Antártida, en 1986/87.

Tabla 3 Cambios en la producción de cachorros de foca peletera en importantes sitios de reproducción en las Islas Shetland del Sur, Antártida. Los sitios que se indican corresponden a aquellas áreas para las cuales existen datos de censos anteriores comparables con los de la prospección de 1986/87.

Leyenda de la Figura

Figura 1 Islas Shetland del Sur, Antártida, área de estudio.

Заголовки к таблицам

Таблица 1 Учет численности ластоногих Южных Шетландских островов, Антарктика, в течение австрального лета 1986/87 г. (E - морской слон, W - тюлень Уэдделла, C - тюлень-крабоед, L - морской леопард).

Таблица 2 Сводка по рождаемости у южного морского котика Южных Шетландских островов, Антарктика, в 1986/87 г.

Таблица 3 Изменения в рождаемости у южного морского котика на основных лежбищах Южных Шетландских островов, Антарктика. Перечислены лежбища в тех районах, по которым имеются полученные при проведении в прошлом учета численности данные, которые можно сравнить с результатами съемки 1986/87 г.

Подпись к рисунку

Рисунок 1 Южные Шетландские острова, Антарктика, - район изучения.