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Birds and mammals in the region of SSSI No. 8 in the season 1988/89 (South Shetlands, King George Island, Admiralty Bay)

ABSTRACT: In the breeding season 1988/89, within the region of SSSI No. 8, nesting of 12 species of birds was observed. The highest number of nests — 24430 — belonged to three species of pygoscelid penguins; 77.1% were the Adelie penguin. Relatively high fluctuations in the number of penguins in some rookeries in particular breeding seasons were confirmed. During regular countings of mammals' in 1988 the presence of 5 species of *Pinnipedia* was noted, of which the southern elephant seal was most numerous in the summer season, whereas crabeater seal — in winter. In the region of SSSI No. 8, breeding of southern elephant seal and Weddell seal was observed. Fluctuations in the number of seals in this region in the period 1977—1988 were insignificant.

Key words: Antarctic, monitoring, birds, mammals.

Introduction

The first phenological observations on birds and mammals were carried out in 1977 in the region of "H. Arctowski" Station (Presler 1980). In the same year the number of penguins was evaluated in the rookeries at Point Thomas and Llano Point (Trivelpiece and Volkman 1979). In the successive years studies were continued on the number and distribution of penguins (Jabłoński 1984a, b, 1986, 1987) and on their consumption and food preferences (Volkman, Presler and Trivelpiece 1980, Jabłoński 1985). Precise census of all avifauna in the region of Admiralty Bay was carried out as well (Jabłoński 1986). Attention was also paid to the influence of weather conditions on the character of distribution and the breeding process of some bird species (Moczydłowski 1986, Wasilewski 1986). In several papers the distribution and number of

mammals in the region of Admiralty Bay was also estimated (Myrcha and Teliga 1980, Woyciechowski 1980, Krzemiński 1981, Jabłoński, Krzemiński and Zdzitowiecki 1987). Some of the data quoted in the above papers were used for the estimation of the matter circulation in the coastal zone of Admiralty Bay (Rakusa-Suszczewski 1980).

In the last decades the increase in the abundance of some penguin species was noticed. This has probably been caused by serious reduction of the stocks of baleen whales which in turn left free additional reserves of krill (Sladen 1964, Conroy 1975). At the same time one can expect the change in the abundance of pinnipeds — the change connected with a decline of their excessive exploitation, which has affected mostly the populations of southern fur seal and southern elephant seal.

The aim of this work was to compare present data on the distribution and abundance of particular species of birds and mammals with data obtained by former authors.

Investigated area and methods

Observations of the birds were carried out from 5 January 1988 till 17 January 1989 in the region of Admiralty Bay, mainly in the territory of SSSI No. 8. The area covered 13 km^2 and only 20% of its surface was not covered with ice (Fig. 1).

Differences in biology, distribution and abundance of particular species of birds required different methods of quantitative estimations. Due to the different features of the landscape in which penguin rookeries occurred several methods of quantitative estimations were applied:

1) stationary counting was applied in circular colonies not larger than 100 nests and in long and narrow colonies up to 300 nests,

2) the photographing of the colonies from the rocks,

3) counting the nests on sample areas of 16 m^2 and calculations for the whole colony area.

For other nesting species of birds stationary counting of nests was applied during repeated penetrations of every part of the coast. In relation to such species like Wilson's storm — petrel and black-billed storm — petrel, due to their way of life, the estimations of the number of these species were not precise enough. It was still possible, however to determine the character of their distribution along the coast. Weekly winter countings of the birds living in the close neighbourhood of "H. Arctowski" Station and on the areas of breeding colonies were also carried. Random observations in other oases of Admiralty Bay were also performed.

Observations of the pinniped mammals were carried out from the first days

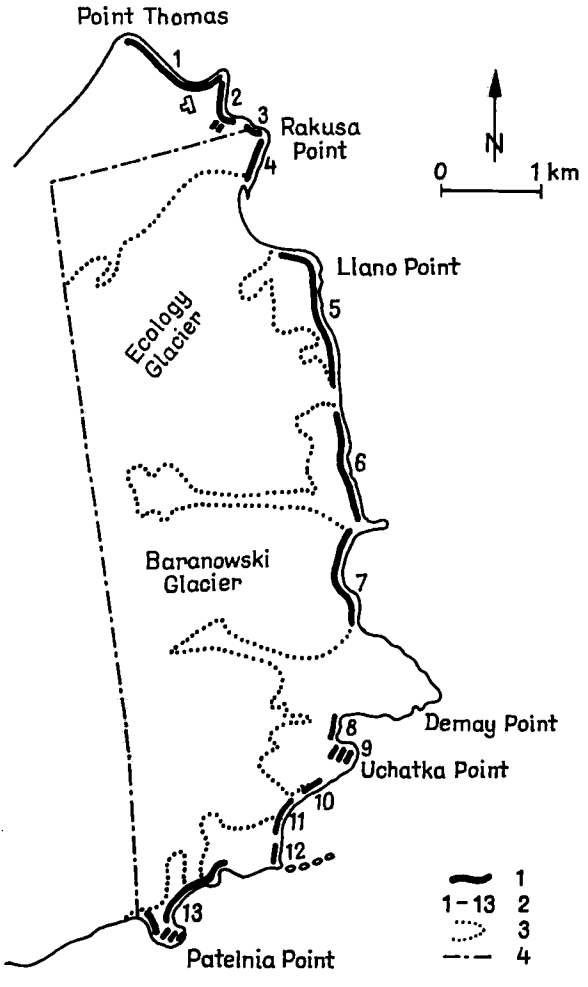

Fig. 1. Distribution of census sections from Point Thomas to Patelnia Point;
1 — lenght of the section, 2 — figures denote the subsequent numbers of the census sections, 3 — ice-free zones, 4 — boundaries of SSSI No. 8

of January 1988 until the middle of January 1989. The research area comprised 15 km of the western part of the coast of Admiralty Bay extending between Point Thomas and Patelnia Point. It was divided into census sections; each of them was the successive part of the coast limited by rocks or glacier (Fig. 1). The abundance of pinnipeds on the beach and in sea just near the coast was calculated using the appraisal method. The counting along the whole coastal route (sectors lasting several hours) was carried out at 10 days' intervals but some were penetrated more often. The counting of crabeater seals staying on the ice in winter and spring was carried out on the whole of Admiralty Bay,

and was made from permanent observation points with the help of field--glasses (12x) and focus-changing lunette (30—60x).

Results

Birds

In the investigated region of Admiralty Bay the presence of 12 breeding bird species was confirmed; among them one species was represented by two subspecies. Moreover 6 non-breeding species were observed, which stayed in this region only temporarily. Breeding species were: gentoo penguin — *Pygoscelis papua* (Forster), Adelie penguin — *Pygoscelis adeliae* (Hombron et Jacquinot), chinstrap penguin — *Pygoscelis antarctica* (Forster), southern giant petrel — *Macronectes giganteus* (Gmelin), cape pigeon — *Daption capensis* (Linn.), Wilson's storm-petrel — *Oceanites oceanicus* (Kuhl), black--billed storm-petrel — *Fregetta tropica* (Gould.), blue-eyed cormorant — *Phalacrocorax atriceps* (King), yellow-billed sheathbill — *Chionis alba* (Gmelin), McCormick's skua — *Catharacta maccormicki* (Saunders), southern skua — *Catharacta lonnbergi* (Mathews), southern black-backed gull — *Larus dominicanus* (Lichtenstein), Antarctic tern — *Sterna vittata* (Gmelin). Non--breeding species were: rock-hopper penguin — *Eudyptes crestatus* (Miller), macaroni penguin — *Eudyptes chrysolophus* (Brandt), light-mantled sooty albatross — *Phoebetria palpebrata* (Forster), silver-grey petrel — *Fulmarus glacialoides* (Smith), snow petrel — *Pagodroma nivea* (Forster), black-necked swan — *Cygnus melanocoryphus* (Molina).
The distribution of penguin rookeries in the region of SSSI No. 8 is illustrated in Fig. 2; the distribution of breeding places of other bird species — in Fig. 3.

Pygoscelis papua

In the season 1988/89 gentoo penguins formed 7 breeding groups in the rookery at Point Thomas (Fig. 4) and 34 breeding groups in the rookery at Llano Point (Fig. 5). The most numerous breeding group in the rookery of Point Thomas consisted of 59 nests. The rookery of Llano Point consisted of 553 nests (Figs. 4 and 5). The total number of gentoo penguin nests found in the region of SSSI No. 8 amounted to 2239 (Tab. 1). After the end of breeding period in 1988 the majority of gentoo penguins still stayed in the rookery region until total freezing of Admiralty Bay, which happened on 1 July. The retreat of ice in mid July was connected with re-appearence of gentoo penguins near the rookery. During next freezing of the Bay (this time gradual) the gentoo

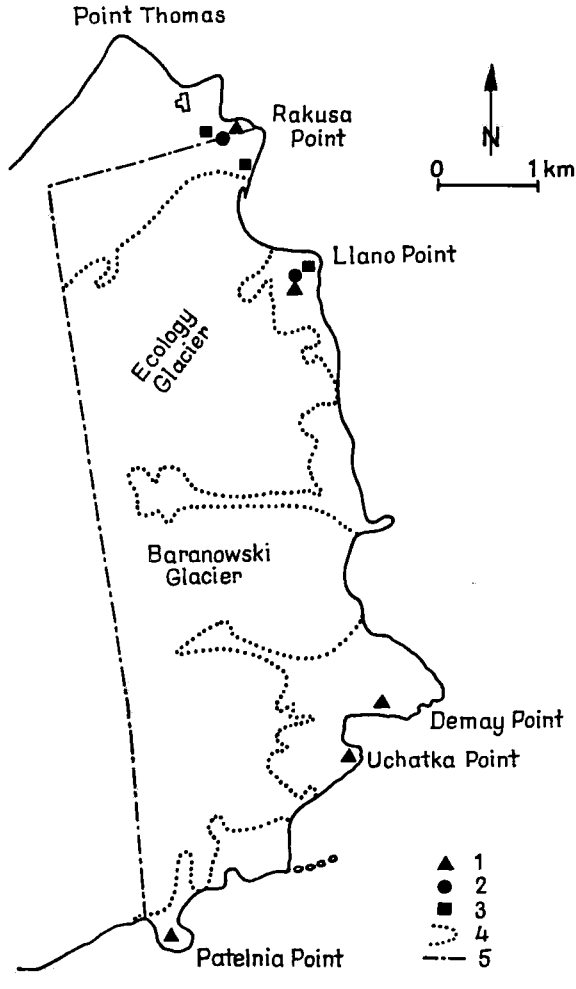

Fig. 2. Distribution of the rookeries of penguins within the area of SSSI No. 8; 1 — *Pygoscelis antarctica*, 2 — *Pygoscelis adeliae*, 3 — *Pygoscelis papua*, 4 — ice-free zones, 5 — boundaries of SSSI No. 8

penguins retreated from the sectors of the coast which were in the region of the compact ice cover. The freezing caused a migration of most specimens probably into places, where the ice had not yet cut off the access to the water. During the short retreat of ice in the middle of September gentoo penguins reacted in the same way according to the changes in the ice situation (Fig. 6). After a strong storm on 21 September the ice finally retreated and on 22 September gentoo penguins were observed near the rookery and the massive occupation of breeding places started on 26 September (in the rookery of Point

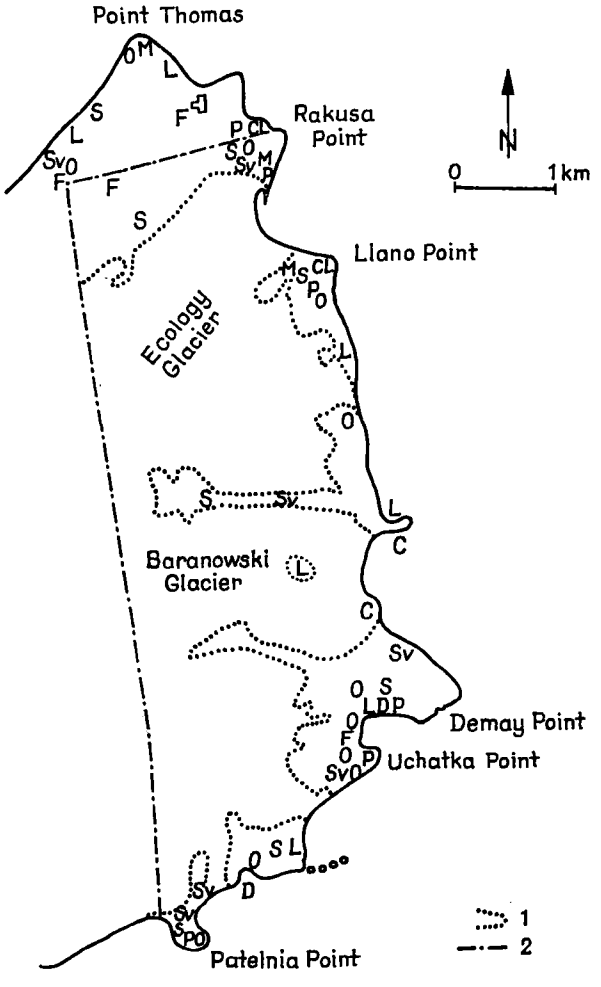

Fig. 3. Distribution of breeding places of birds within the area of SSSI No. 8 in the season 1988/89; Sv — *Sterna vittata*, S — *Catharacta* sp., O — *Oceanites oceanicus*, D — *Daption capensis*, L — *Larus dominicanus*, P — *Pygoscelis* sp., C — *Chionis alba*, M — *Macronectes giganteus*, F — *Fregetta tropica*, 1 — ice-free zones, 2 — boundaries of SSSI No. 8

Thomas — 57 specimens, in the rookery of Llano Point — 600 specimens). The laying of the first egg was noticed on 24 October.

Pygoscelis adeliae

In the season 1988/89 the total number of Adelie penguin nests in the region of SSSI No. 8 amounted to 18838. In the rookery of Point Thomas — 10220 nests were noted in 9 breeding groups, and in the rookery of Llano Point

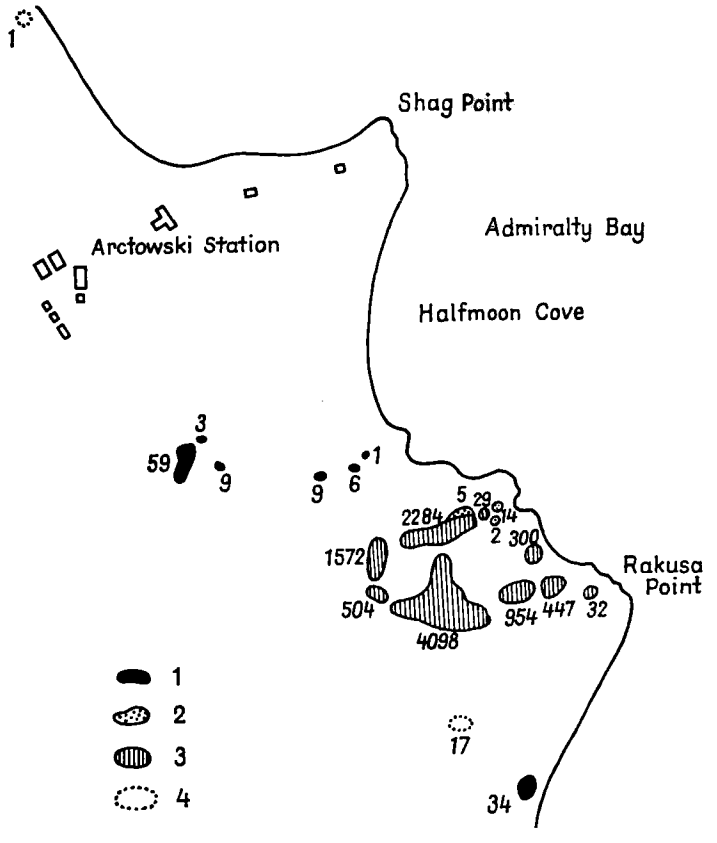

Fig. 4. Distribution and number of nests of penguins and of southern giant petrels in the region from Point Thomas to Ecology Glacier;
1 — *Pygoscelis papua*, 2 — *Pygoscelis antarctica*, 3 — *Pygoscelis adeliae*, 4 — *Macronectes giganteus*

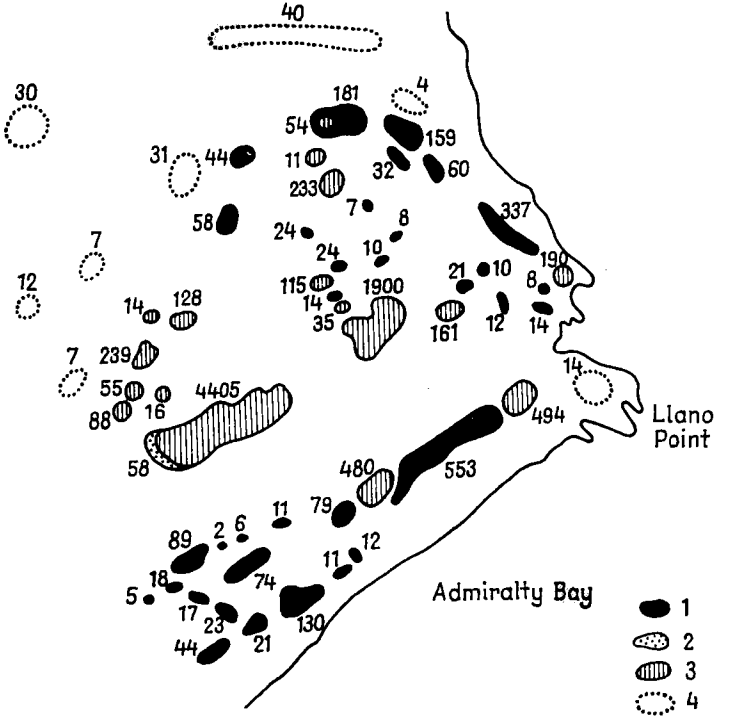

Fig. 5. Distribution and number of nests of penguins and of southern giant petrels in the region from Llano Point to Rescures Hills;
1 — *Pygoscelis papua*, 2 — *Pygoscelis antarctica*, 3 — *Pygoscelis adeliae*, 4 — *Macronectes giganteus*

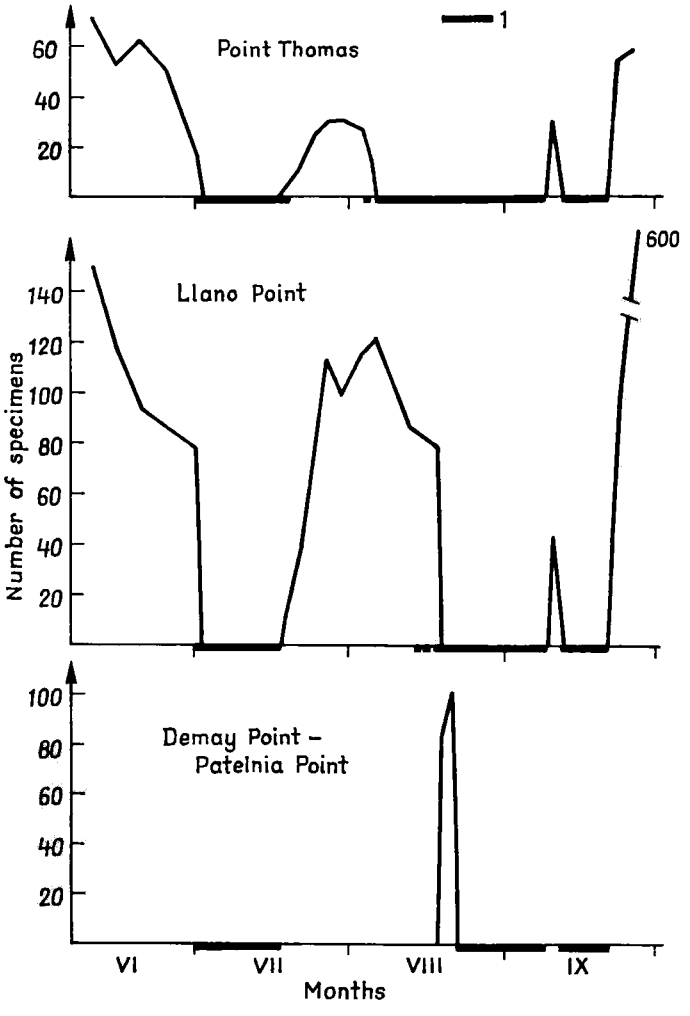

Fig. 6. Influence of ice conditions in the Admiralty Bay upon the number of wintering *Pygoscelis papua;*
1 — ice cover occurrence

— 8618 nests in 17 breeding groups (Tab. 1). The range of the number of nests in particular breeding groups was very large — from 29 to 4098 nests at Point Thomas, and from 11 to 4405 nests in the rookery of Llano Point (Figs. 4 and 5).

At the beginning of 1988 the fledged nestlings began to move to the seashore in massive groups and on 29 January almost all young Adelie penguins moved and stayed ashore. Last Adelie penguins left Admiralty Bay on 4 February 1988. In spring 1988 the first specimens appeared in the rookery area on 10 September, but the massive return (some hundreds specimens a day) started on 26 September. Laying of the first egg was noted on 17 October.

Table 1

Number of breeding groups and nests of penguins in the area of SSSI No. 8 in the season 1988/1989

Region	*Pygoscelis papua*		*Pygoscelis adeliae*		*Pygoscelis antarctica*	
	Breeding groups	Nests	Breeding groups	Nests	Breeding groups	Nests
Point Thomas	7	121	9	10220	3	21
Llano Point — Rescuers Hills	34	2118	17	8618	1	58
Demay Point	—	—	—	—	8	438
Uchatka Point	—	—	—	—	2	1191
Patelnia Point	—	—	—	—	4	1645
Total	41	2239	26	18838	18	3353

Pygoscelis antarctica

In the season 1988/89 in the rookeries of Point Thomas and Llano Point chinstrap penguins appeared in mixed breeding groups with Adelie penguins. Chinstrap penguins nests were situated in general at the edge of big breeding groups of Adelie penguins (Figs. 4 and 5). At Demay Point, Uchatka Point and Patelnia Point, chinstrap penguins were found in monospecific groups (Figs. 7,

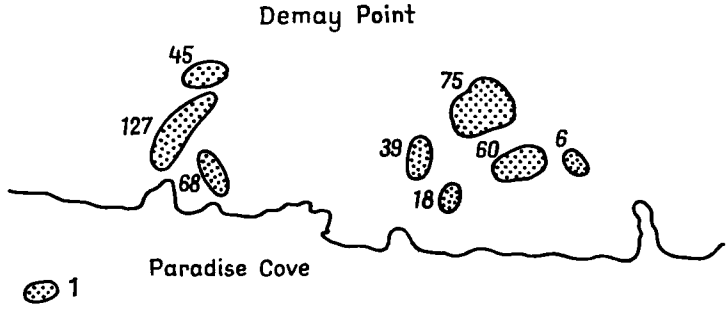

Fig. 7. Distribution and number of penguins' nests in the region of Demay Point
1 — *Pygoscelis antarctica*

8 and 9). The total number of chinstrap penguin nests in these groups was much bigger than the number of the nests in the breeding groups at Point Thomas and Llano Point (Tab. 1). In 1988 chinstrap penguins started leaving Admiralty Bay on 21 March. During the Antarctic winter this species was not observed in the region of the Bay. Large return (about 400 specimens a day) started on 27 October. The first egg appeared on 21 November.

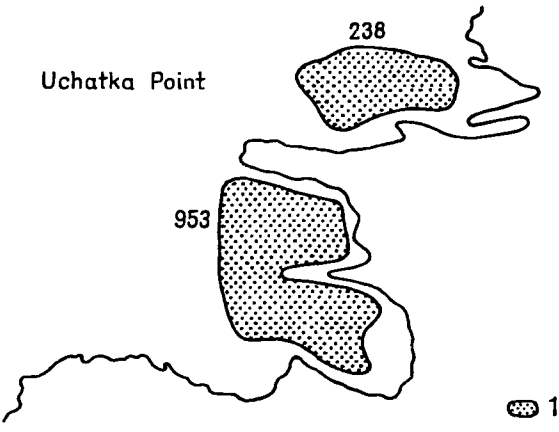

Fig. 8. Distribution and number of penguins' nests in the region of Uchatka Point
1 — *Pygoscelis antarctica*

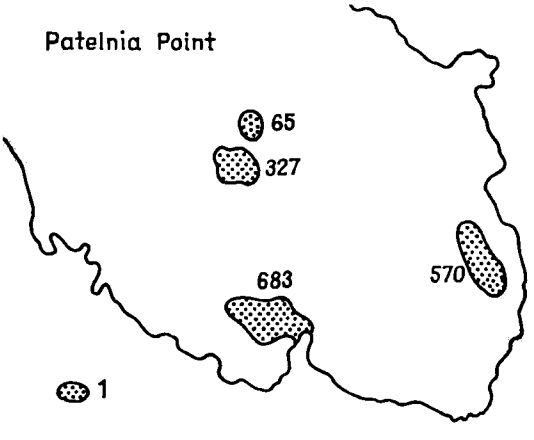

Fig. 9. Distribution and number of penguins' nests in the region of Patelnia Point
1 — *Pygoscelis antarctica*

Macronectes giganteus

In the region of Admiralty Bay southern giant petrels occur in colonies situated at Point Thomas and Llano Point (Figs. 4 and 5), and at Cape Vaureal. In the season 1987/88 in all colonies 315 nests with broods were noted. In this number are 163 broods in the region of SSSI No. 8 (Tab. 2). The first hatch of the nestlings from these broods took place on 13 January 1988. The last young specimen left the nest on 9 May. Southern giant petrels occurred in the region of SSSI No. 8 during all winter. The number of the

Table 2

Number of breeding colonies and nests of *Macronectes giganteus* in the Admiralty Bay region in the season 1987/1988

Region	Number of breeding colonies	Number of nests with brood	Number of nests with childrens	Number of broods destroyed
Point Thomas	2	18	6	12
Llano Point — Rescuers Hills	8	145	84	61
Cape Vaureal	9	152	123	29
Total	19	315	213	102

specimens of this species staying after the breeding season near, and within the colony, varied significantly (Tab. 3). In the breeding season 1988/89 the first egg was laid on 4 October. In February 1988 at Cape Vaureal 123 nestlings and

Table 3

Numbers of *Macronectes giganteus* staying in the region of the colony outside the breeding season in 1988 (census with a use of field glass)

Region	V	VI	VII	VIII	IX	X
Point Thomas	2—13	1—10	8—12	2—10	1—18	18—24
Llano Point — Rescuers Hills	100—140	30—50	15—35	22—73	80—125	110—160

3 adult specimens of southern giant petrels were ringed with the rings of Polish Ornithological Station bearing the numbers: BA 3301 — 3400 and BA 3501 — 3526.

Daption capensis

In the breeding season 1988/89 the colony of cape pigeons consisting of 43 nests was observed on the rocks near the shore of Demay Point from the side of Paradise Cove; 2 additional nests were found in the region of Blue Dyke (Fig. 3, Tab. 4). During winter cape pigeons appeared in small flocks consisting, in general, of only several specimens. In winter relatively large penetration of Admiralty Bay region by cape pigeons was observed only once: 240 specimens flew along the coast in the course of two hours in the region of Uchatka Point on 25 September.

Table 4

Distribution and number of nests of some bird species in the area of SSSI No. 8 in the season 1988/1989 (above) and 1978/1979 (below; according to Jabłoński 1986)

Species	Region and number of nests								
	Point Thomas	Llano Point	Sphinx — Zamek — Siodło	Demay Point	Uchatka Point	Blue Dyke	Patelnia Point	Shag Island (outside the area of SSSI No. 8)	Total
Daption capensis	—	—	—	43	—	2	—	—	45
	—	—	—	38		3	—	—	41
Chionis alba	5	1	2	1	—	—	—	—	9
	12	1	—	1		—	—	—	14
Catharacta sp.	21	8	2	3	1	2	1	—	38
	38	11	3	10		5	2	—	69
Larus dominicanus	10	12	3	22	—	5	—	—	52
	22	8	6	16		7	—	—	59
Sterna vittata	13	—	10	110	15	25	15	—	188
	53	4	8	152		159	20	—	396
Phalacrocorax atriceps	—	—	—	—	—	—	—	83	83
	—	—	—	—		—	—	92	92

Oceanites oceanicus and *Fregetta tropica*

Wilson's storm-petrels and black-billed storm-petrels were counted in particular colonies at various times of the 24 hour cycle during the relatively extended period (from 19 September 1988 until 17 January 1989). Therefore, the results obtained were not comparable with Wasilewski's data (1986). However, on the ground of data received it is possible to compare the occurrence of both species in particular parts of the coast, treating the relative estimation of the abundance in each colony as a percentage distribution (Tab. 5). The largest breeding colonies of Wilson's storm-petrel occurred on the scree-covered slopes in regions of Jardine Peak, Jersak Hills and Demay Point. Black-billed storm — petrels were found in the regions of Jardine Peak and Jersak Hills (Fig. 3, Tab. 5). In some places both species formed mixed breeding groups. In autumn 1988 the flight of last Wilson's storm-petrels took place on 30 March. Few days before (26 March), a large snowfall during strong wind changing into snow-and-rain, followed by frost, caused the blockade of Wilson's storm-petrel nestlings still remaining in their nests which were situated on the slopes of southern exposure. In summer, after the snow-melted, 70 mummified nestlings of Wilson's strom-petrel were found in the colony at

Rakusa Point alone. After the winter break the first Wilson's storm-petrel appeared in the region of Point Thomas on 19 September, two days before the ice left the Admiralty Bay; on 21 September 4 specimens were noticed, on 26 September — 11 and on 27 September — 32 specimens.

Table 5

Distribution and percentage share of Wilson's petrels and black-billed storm petrels in the section Jardine Peak — Patelnia Point in the season 1988/1989

Species	Region and parcentage share							
	Jardine Peak Jersak Hills Point Thomas	Shag Point Rakusa Point	Llano Point	Sphinx Hill Zamek Siodło	Demay Point	Uchatka Point	Blue Dyke	Patelnia Point
Oceanites oceanicus	55.7	7.8	4.5	0.8	13.9	8.4	7.2	1.7
Fregetta tropica	92.3	2.3	—	—	5.4	—	—	—

Phalacrocorax atriceps

The only colony of blue-eyed cormorants in the region of Admiralty Bay is situated on the Shag Island near Cape Vaureal. Some blue-eyed cormorant's nests can be found among the nests of chinstrap penguins nesting also on this islet. Besides this colony of 97 nests, in the breeding season 1987/88, one more nest was found on the rocky island in Herve Cove in the Ezcurra Inlet. In the season 1988/89 on 16 December on Shag Island 83 nests were found with cormorants on eggs, but the nest in Herve Cove disappeared (Tab. 4). Out of the breeding period, small flocks of blue-eyed cormorants, consisting of several to a dozen or so specimens, were observed. In winter, during the total freezing of Admiralty Bay the presence of cormorants in this region was not noticed.

Chionis alba

In the season 1988/89 in the region of SSSI No. 8, — 9 nests of yellow-billed sheathbills were noted (Tab. 4). When the breeding period of sheathbills was over, individuals began to concentrate in the direct neighbour hood of the "H. Arctowski" Station, where they stayed during the whole winter as partial synantropes. In 1988 the first sheathbill appeared in the immediate neighbourhood of the Station on 1 April; from this day the number of sheathbills increased, reaching the maximum of 63 specimens on 20 September. It was found (from the of the rings) that some specimens arrived from Fildes Peninsula. In October the number of sheathbills in the vicinity of "H.

Arctowski" Station began to decrease, and they totally disappeared at the beginning of November (Fig. 10).

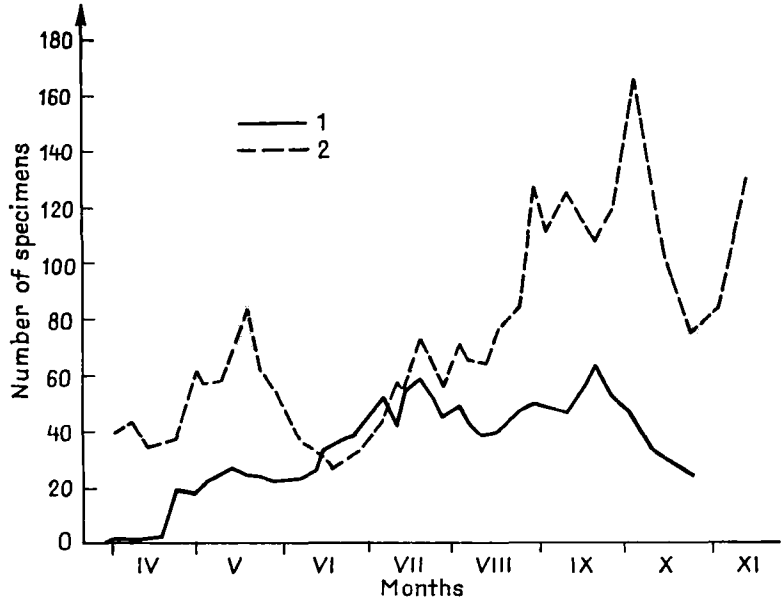

Fig. 10. The number of *Chionis alba* (1) and *Larus dominicanus* (2) in the immediate neighbourhood of the "H. Arctowski" Station in winter 1988

Catharacta maccormicki and *Catharacta lonnbergi*

In the region of SSSI No. 8 two subspecies co-exist: McCormick's skua and southern skua. In this paper they were treated together. In the breeding season 1988/89 in the region of SSSI No. 8, 38 breeding pairs of skuas were observed; the majority of them stayed in the region of Point Thomas, near penguin rookeries and southern giant petrel colonies (Tab. 4). Specimens without own breeding territories were not counted. In 1988, after the end of the breeding period, skuas began to flock at fresh-water lakes near "H. Arctowski" Station. In the third decade of March 168 specimens of this species were observed there. In April the number of skuas decreased fluctuating between 23 and 40 specimens. The flight of last skua specimen was noted in the region of the Station on 13 May. They were not observed during winter. In spring the first specimen appeared on 11 October. The first laying of eggs was observed on 27 October.

Larus dominicanus

In the season 1988/89 — 52 nests of this species were counted. The most numerous breeding groups were found in the regions of Demay Point, Llano

Point and Point Thomas (Tab. 4). At Rakusa Point (Fig. 3) the colony of southern black-backed gulls, with seven nests, was destroyed by skuas. After the end of the breeding season gulls, as skuas, flocked at fresh-water lakes near "H. Arctowski" Station, and stayed there during the whole winter of 1988 (Fig. 10). At the beginning of October some gulls moved to the breeding colonies whereas young specimens still stayed near the Station. The first egg was laid on 11 November.

Sterna vittata

The biggest colony of Antarctic terns consisting of 110 nests was found on the northern slopes of a rocky ridge at Demay Point. Other, less numerous, colonies were spotted in the regions of Point Thomas, Sphinx Hill, Uchatka Point, Blue Dyke and Patelnia Point (Fig. 3, Tab. 4). Beyond the region of SSSI No. 8 big number of Antarctic terns nested in the neighbourhood of Jardine Peak and Italian Valley. The incidence of Antarctic terns in the region of Admiralty Bay was not observed during winter. The first egg laid in the breeding season 1988/89 was observed on 21 November.

In the region of Admiralty Bay non-breeding species were also observed: rock-hopper penguin appeared on 6 February 1988 in the rookery of chinstrap penguins at Point Thomas and stayed there for three weeks; macaroni penguin — on 10 and 11 December 1988; three specimens of this species stayed in the breeding groups of Adelie penguins at Llano Point and on 16 December 1988 — one specimen was observed at Point Thomas. The flight of one light-mantled sooty albatross was noted on 18 January 1988. Silver-grey petrel was observed over the Admiralty Bay on 23 September and watched during few following days. Snow petrel was noted several times during winter (from 3 June 1988). Black-necked swan — stayed on the fresh-water lake at "H. Arctowski" Station from 6 to 17 January 1989.

Pinniped mammals

In the area of SSSI No. 8, 5 species of pinniped mammals occurred: southern fur seal — *Arctocephalus tropicalis gazella* (L.), southern elephant seal — *Mirounga leonina australis* (L.), Weddell seal — *Leptonychotes weddelli* (Lesson), crabeater seal — *Lobodon carcinophagus* (L.) and leopard seal — *Hydrurga leptonyx* (de Blainville).

The abundance of some pinniped species varied significantly in a yearly cycle (Fig. 11). During the Antarctic summer southern elephant seals had reached the highest abundance, but crabeater seals were most numerous in winter (Fig. 12). Southern fur seals reached their maximal number in the middle of March (Figs. 11 and 13). The abundance of Weddell seals, with the exception of June, was low and almost constant. The least numerous were leopard seals.

Arctocephalus tropicalis gazella

Along the coast of SSSI No. 8 fur seals appeared most abundantly at the entrance to the Bransfield Strait, in the regions of Patelnia Point, Blue Dyke, Uchatka Point and on the beaches at Demay Point. Fur seals were encountered several times between Sphinx Hill and Agat Point, and also near the moraines of Ecology Glacier and along the coast of Halfmoon Cove. In the research area of SSSI No. 8 their highest numbers (107 to 148 specimens) was noted in March, with the peak occurring exactly in the middle of the month (Fig. 11). Outside the area of SSSI No. 8 the highest number of fur seals in the

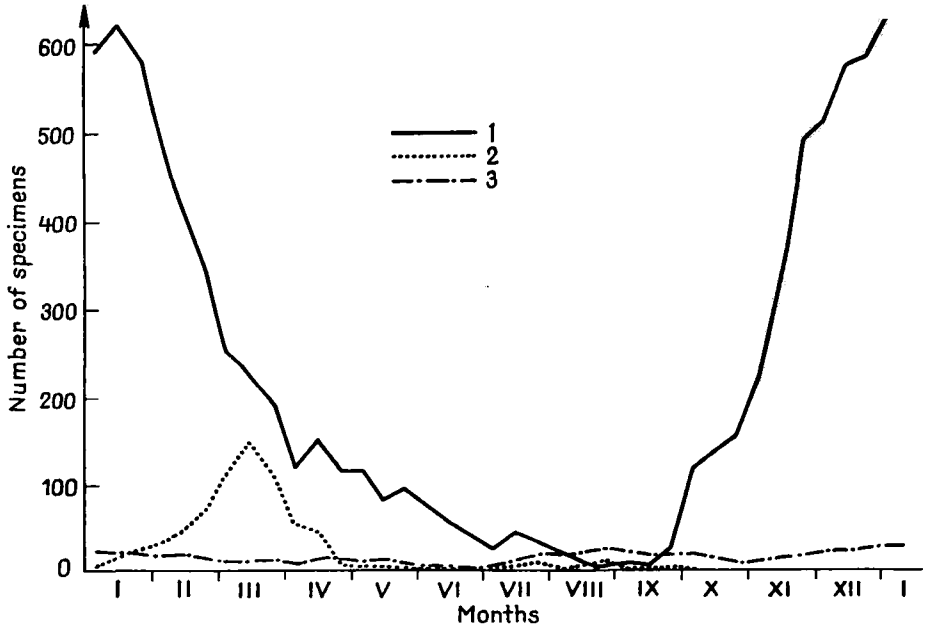

Fig. 11. Changes in the abundance of the population of three pinniped species between Point Thomas and Patelnia Point in the season 1988/89
1 — *Mirounga leonina*, 2 — *Arctocephalus tropicalis gazella*, 3 — *Leptonychotes weddelli*

region of Admiralty Bay was observed at the beach of Cape Vaureal; on 19 February 1988, 274 specimens were there, including two white ones.
During the third decade of April the number of fur seals in the region of SSSI No. 8 decreased significantly and till the end of July only single specimens were observed. In August a short inconspicuous increase in their number was noticed. From October till December they were not observed. The first fur seal after this break was noted on 6 January 1989 at Patelnia Point. So far the birth of the southern fur seals in the region of Admiralty Bay has not been observed; they come here however for the moulting period, appearing most often in the

oases of the Bay at the entrance to the Bransfield Strait. They also appear here during winter migrations.

Mirounga leonina australis

From January till the first days of August, southern elephant seal, was the most numerous species of seals appearing on the coast of SSSI No. 8. Their highest number was noted in January: there were 624 specimens observed on 16 January 1988 and 638 specimens were noted on 5 January 1989 (Fig. 11). The largest concentration of moulting elephant seals was observed at Patelnia Point, the beach at Blue Dyke, Uchatka Point; the smaller ones at the beach of Paradise Cove, at Agat Point and at the base of the rocks with penguin breeding groups at Halfmoon Cove.

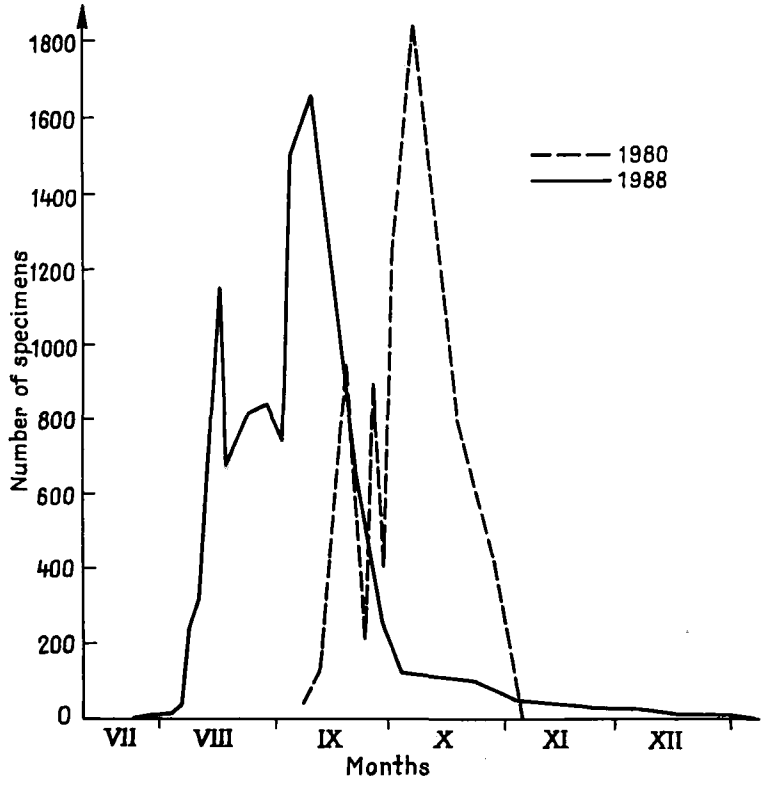

Fig. 12. Changes in the abundance of *Lobodon carcinophagus* in a yearly cycle in the years 1980 and 1988

The majority of elephant seals in the area were noticed between Patelnia Point and Demay Point. In this section in a yearly cycle, from 81.1% to 100% of the population of southern elephant seal occurring in a given period along

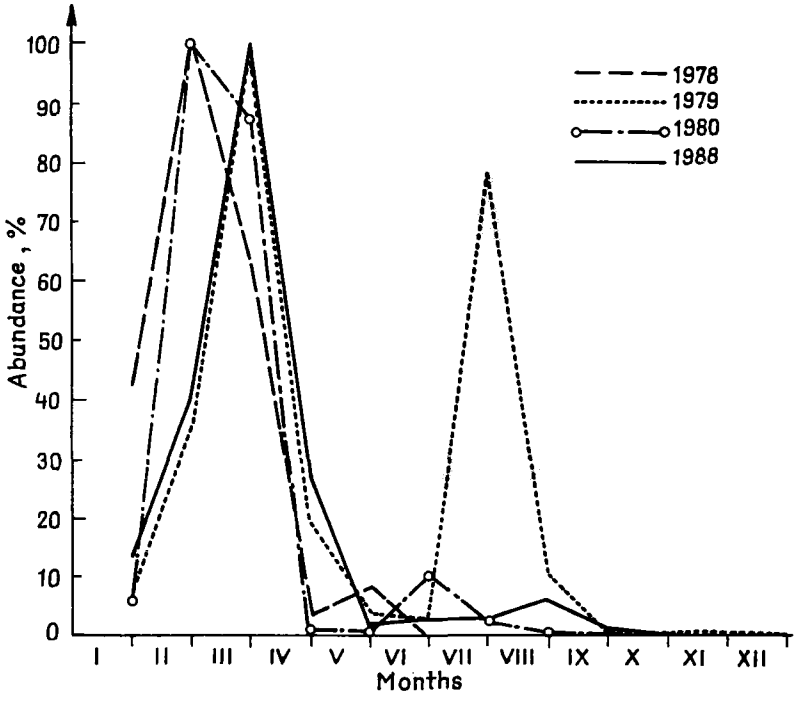

Fig. 13. Changes in the abundance of *Arctocephalus tropicalis gazella* in a yearly cycle (expressed as % from the maximal number in a given year) in particular years

the coasts of SSSI No. 8 were seen (Fig. 14). In February the moulting period of southern elephant seals ends and is accompanied by a significant decrease in their number. During the 1988 winter elephant seals did not entirely retreat from the research area. Together with the gradual freezing of the Admiralty Bay elephant seals migrated away from this region. Small groups of elephant seals, especially males, remained only in the region of Blue Dyke and Patelnia Point, which were practically free from ice, due to the influence of non-freezing Bransfield Strait waters. Beginning in late September the number of elephant seals began to increase. They came here for the reproductive period. Since ice-foot persisted still at that time along the coast of most oases of the Admiralty Bay, making difficult for southern elephant seals to crawl out ashore, they were found only at the beaches at Blue Dyke and on the beach of Patelnia Point, which were free from ice (Fig. 15). Here they pupped first. At Blue Dyke 3 pups were found, at Patelnia Point — 18 pups. The first pup was noted on 19 October. At Strangers Point elephant seals pupped during the first week of October (Ledesma, pers. comm.). Together with the retreat of the ice-foot elephant seals coming numerously to the region of Admiralty Bay in November and December for moulting were observed within other oases (Fig. 15).

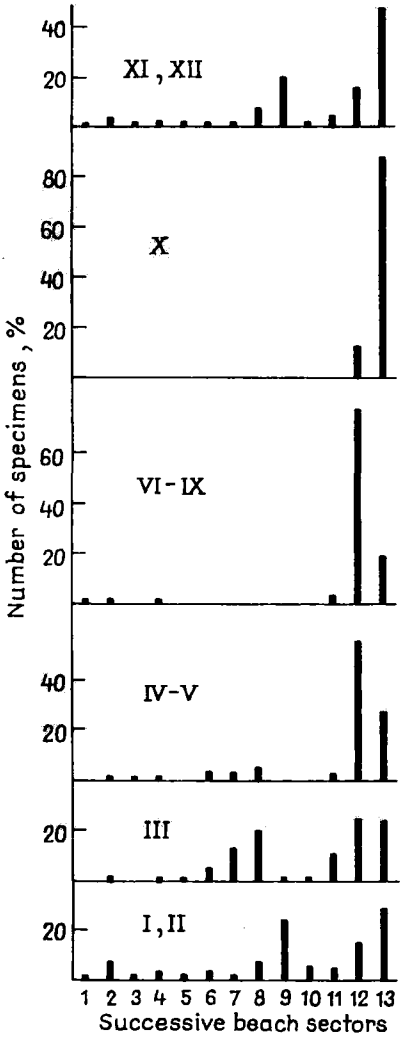

Fig. 14. Changes in the distribution of *Mirounga leonina* along the coast of SSSI No. 8 during the season (the number of *M. leonina* in separate sections of the coast were expressed in % from the total number of specimens in a given period of 1988)

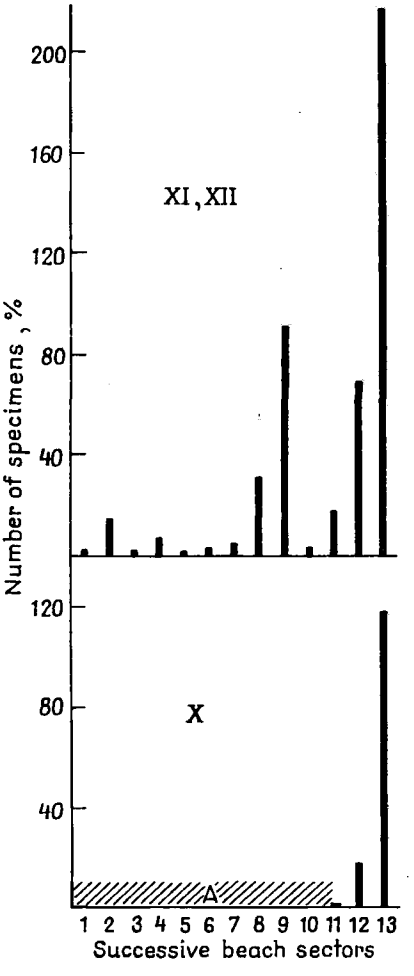

Fig. 15. Comparison of distribution of *Mirounga leonina* on the coast of SSSI No. 8 during periods with and without an ice-foot (A)

Leptonychotes weddelli

In 1988 Weddell seals occurred in the area of SSSI No. 8 during the whole year. No special preference of this species to the particular sections of the coast was noted. The highest number of Weddell seals was observed in January — 24 specimens, in August — 25 specimens and in December — 30 specimens, the

lowest — in June (only 1 specimen) (Fig. 11). In 1988 the first pupping occurred on 7 September on the ice of the Admiralty Bay, about 4 kilometers from the coast between Shag Point and Keller Peninsula. Two days later most of the ice flowed out from the Bay and Weddell seals moved on the coast. The next birth occurred on 28 September in Ezcurra Inlet. The following two were noted on 30 September. During the first days of October along the coast of SSSI No. 8, six other births were noted.

Lobodon carcinophagus

First single crabeaters began to be seen on the ice floes in Admiralty Bay at the end of April. After the freezing of Ezcurra, Martel and Mackellar inlets which happened in July, the number of crabeaters began to increase. The first peak in their number occurred on 16 August on the totally ice-covered Bay (1165 specimens were observed). Despite the unchanged ice situation on 18 August the decrease in their number was observed — it dropped to 672 specimens. On 29 August the number of crabeaters increased again up to 841 specimens. The third, highest peak in their number was observed on 10 September. On that day 1668 crabeaters were noticed. Admiralty Bay was then, only partially covered with ice — up to the line Shag Point — Hennequin Point. On 21 September ice flowed out from the Bay staying only in Ezcurra Inlet behind the Dufayel Island; on this ice there were still 126 crabeaters. Their number decreased, however, together with the further diminishing of the ice cover. On 30 December 15 last crabeaters flowed out from the Ezcurra Inlet on the ice floes (Fig. 12).

Hydrurga leptonyx

From the beginning of January and till the middle of February 1988 single leopard seals were observed either swimming in the sea or laying on the ice floes. They were most often encountered near big penguin colonies. From mid February leopard seals disappeared from the Admiralty Bay region. They re-appeared as late as on 27 May and single specimens were again observed either on ice or in the sea until September. In October the number of leopard seals increased. On 11 October 23 individuals drifting on the ice floes and 5 in the sea were seen in the section between Point Thomas and Sphinx Hill. On 18 October 31 specimens lying on the ice floes were observed in the same region. In November and in December only single leopard seals were observed in the Admiralty Bay.

Discussion

Birds

The comparison of distribution of colonies of particular species of birds in 1988/1989 with Jabłoński's results (1986) referring to 1978/79 season did not

reveal any significant differences in that respect. However, large fluctuations in the number of some species were observed within the region of SSSI No. 8 with regard to particular breeding colonies. The fluctuations in the number of penguins appear to be most striking.

In the period 1978—1988 changes of the total number of Adelie and gentoo penguins in the region of SSSI No. 8 were parallel. In the seasons 1978/79 and 1979/80 a significant increase in number of both species was observed compared to 1977; it was followed by a sudden decrease in the season 1980/81 (Trivelpiece and Volkman 1979, Jabłoński 1984a). In the season 1988/89 abundance of both species was slightly higher than in the season 1980/81, approaching the level of the season 1977/78 (Tab. 6). On the other hand, total number of chinstrap penguins in the region of SSSI No. 8 decreased regularly from 1978 (Tab. 7).

Table 6

Changes in the population abundance of penguins in the area of SSSI No. 8 in particular breeding seasons

Region	Season	Number of breeding pairs		
		P. papua	*P. adeliae*	*P. antarctica*
Point Thomas	* 1977/1978	700	11000	750
	** 1978/1979	783	10140	638
	** 1979/1980	695	17905	390
	** 1980/1981	623	9310	526
	1988/1989	121	10220	21
Llano Point	* 1977/1978	1900	7000	290
	** 1978/1979	2334	13521	321
	** 1979/1980	3008	15031	314
	** 1980/1981	1510	7095	349
	1988/1989	2118	8618	58
Demay Point	* 1977/1978	—	—	?
	** 1978/1979	—	—	1448
	** 1979/1980	—	—	652
	** 1980/1981	—	—	545
	1988/1989	—	—	438
Uchatka P.	* 1977/1978	—	—	?
	** 1978/1979	—	—	2189
	** 1979/1980	—	—	2104
	** 1980/1981	—	—	1613
	1988/1989	—	—	1191
Patelnia P.	* 1977/1978	—	—	?
	** 1978/1979	—	—	2629
	** 1979/1980	—	—	2252
	** 1980/1981	—	—	1498
	1988/1989	—	—	1645

* — according to Trivelpiece and Volkman 1979

** — according to Jabłoński 1984a

Table 7
Changes in total abundance of penguins in the area of SSSI No. 8 in the period 1977—1988

Season	Species		
	P. papua	*P. adeliae*	*P. antarctica*
* 1977/1978	2600	18000	?
** 1978/1979	3117	23661	7225
** 1979/1980	3703	32918	5712
** 1980/1981	2133	16405	4531
1988/1989	2239	18838	3353

* (Trivelpiece and Volkman 1979)
** (Jabłoński 1984a)

Dynamics of penguins abundance in successive seasons proceeded in different way within particular rookeries (Tab. 6). The increase in the number of Adelie penguin pairs occurred earlier in the rookery of Llano Point than in the rookery of Point Thomas; the decrease in number of gentoo penguin pairs in Llano Point rookery was much lower than in Point Thomas rookery, where the number of nesting pairs in the season 1988/89 was over 6 times lower than in the season 1978/79. The number of chinstrap penguins in the season 1988/89 compared to the season 1978/79 decreased sharply in Point Thomas and Llano Point rookeries, and decreased to much lower extent in the remaining rookeries (Tab. 6).

It is possible to present many hypotheses explaining these changes of the penguins abundance. One of the reasons for the decrease in number of chinstrap penguins in Point Thomas and Llano Point rookeries could have been the competition for nesting sites with Adelie penguins (Trivelpiece and Volkman 1979), the number of which in these rookeries reached higher levels in the successive two seasons. However, the decrease of the abundance of chinstrap penguins in the rookeries where Adelie penguins did not occur at all, contradicts that assumption. Jabłoński (1984a) suggested that the decrease in the number of Adelie penguins in the season 1980/81 was connected with extremely disadvantageous weather conditions which occurred at the beginning of their breeding season. This could affect Adelie penguins and gentoo penguins, but not chinstrap penguins, which breed in the region of Admiralty Bay only in the third part of November. Moreover, a significant decrease in number of this last species (by about 50%) had already ben noticed in Point Thomas and Demay Point rookeries in the previous season. This assumption is also contradicted by the low number of chinstrap penguins, with at Point Thomas and Llano Point in 1988, as compared with other rockeries. This can be hardly connected with a differentiating influence of the extreme weather conditions in the particular rookeries. On the other hand the extreme weather conditions undoubtedly can influence the dynamics of the number of penguins through the increased death rate of the broods.

The most probable cause seems to be the connection of the above presented changes in the number of penguins with the abundance of their food base, namely of krill. It is characteristic, that drastic abundance decrease was noted for gentoo penguins and chinstrap penguins at the rookeries situated farthermost from the Bransfield Strait. In the case of chinstrap penguins the relative abundance in the season 1988/89 as compared to the season 1978/79 had an inversely proportional relatinoship to the distances of particular rookeries from the Bransfield Strait and amounted respectively to: 3.3% for the rookery at Point Thomas, 18.1% at Llano Point, 30.2% at Demay Point, 54.4% at Uchatka Point and 62.6% for the rookery at Patelnia Point.

Gentoo penguins and chinstrap penguins in comparison to Adelie penguins have much smaller range of penetration of the feeding grounds (Jabłoński 1985), and therefore they are more sensitive to the fluctuations of krill stock constituting the basic food for all three species (Jabłoński 1985). Considerable variability of the contribution of krill in penguins' food shows the different accessibility of krill in particular breeding seasons (Jabłoński 1985). On the other hand Czykieta et al. (1986) showed that the distribution and number of krill in the Bransfield Strait fluctuates from year to year in a wide range. However, the mechanism of the possible regulation of penguin abundance in relation to the krill stocks can be explained only on the basis of many years' data, including the estimation of number of breeding couples, their breeding success and the parallel estimation of the size of the feeding base.

Many years' data are available on the number of southern giant petrel (Jabłoński 1986, Wasilewski, unpubl, data and autor's data) indicate, that the total number of this species in the region of Admiralty Bay increased from 252 pairs in the season 1978/79 to 315 pairs in the season 1987/88. Changes in the number of pairs in particular colonies occurred. The increase of southern giant petrel abundance was observed in the region of Llano Point and Cape Vaureal, and the decrease in colonies in the region of Point Thomas (Tab. 8). In the last case it may be due to human activity near the "H. Arctowski" Station.

Table 8

Changes in the abundance of *Macronectes giganteus* in the region of Admiralty Bay in various breeding seasons

Region	Seasons				
	* 1978/1979	** 1979/1980	** 1980/1981	1987/1988	1988/1989
Point Thomas	37	27	26	18	?
Llano Point — Rescuers Hills	102	80	91	145	?
Cape Vaureal	113	136	?	152	154

* (Jabłoński 1986)

** (Wasilewski, unpubl. data).

Southern giant petrels are exceptionally skittish whil hatching eggs. The skuas dwelling in big groups close to the giant petrels' colonies immediately destroy the temporarily left broods. In two colonies in the region of Point Thomas the losses in broods, caused indirectly by man, amounted to 67%, in the region of Llano Point and Rescuers Hills — 42% and at Cape Vaureal, a rarely visited area, only 19% (Tab. 2).

As compared to Jabłoński's data (1986) from the season 1978/79, in the season 1988/89 a much lower number of nests of skua and tern was observed; in the last case the colony at Blue Dyke underwent an especially large decrease (Tab. 4). A higher number of nests of both species noted by Jabłoński (1986) at Point Thomas comprised a tern colony in Italian Valley, as well as skua's nests situated outside the region of SSSI No. 8 and that is why these data are not compared with the present ones.

In the case of the cape pigeon, yellow-billed sheathbill, southern black-backed gull and blue-eyed cormorant, no significant differences in the number of nests between the seasons 1978/79 (Jabłoński 1986) and 1988/89 were observed (Tab. 4).

Permanent observations carried out in 1988/89 during the whole year cycle, enabled to study the dynamics of the number of birds during the Antarctic winter and, in some cases, made it possible to relate the changes to weather conditions in the region of Admiralty Bay.

In winter in the region of SSSI No. 8, three species of birds permanently occurred: southern giant petrel, yellow-billed sheathbill and southern black-backed gull. The existence of these species in winter in the region of "H. Arctowski" Station has been already noted in 1977 (Presler 1980). Information gathered from the participants of successive wintering expeditions show that this is an annual phenomenon. During winter a large part of the population of southern giant petrels occurred near their breeding colonies; they were noticed especially in May, after the flight of young, and from the beginning of August. In July the number of southern giant petrels staying near breeding places was at a minimum (Tab. 3). So far it is difficult to connect the occurrence of this species in winter with particular weather conditions; it can only be stated that the lowest number of specimens was observed in months with lowest temperatures.

The remaining two species — sheathbill and black-backed gull — occurred in winter close to the "H. Arctowski" Station as synantropes, using the garbage as a source of food during the periods when Admiralty Bay is ice covered. The lowest numbers of specimens of these species near the station were noted in the period when the waters of the Bay were free from ice. A large number of gulls staying near the station after October were mostly young specimens (Fig. 10).

The occurrence of gentoo penguins within the SSSI No. 8 in winter is not an obligatory phenomenon and is closely connected with ice conditions in Admiralty Bay (Fig. 9). It was confirmed by occasional observations made in

winter during former expeditions. In 1977 gentoo penguins occurred in the region of "H. Arctowski" Station until late July, that is until the total freezing of the Admiralty Bay; they appeared again in the middle of September, i.e. at the time of the partial breakout of the ice from Bay (Presler 1980). In 1978 the first specimen appeared in the nesting region between 27 and 30 August (Jabłoński 1986). In 1980 gentoo penguins certainly did not occur during winter, and their comparatively late appearance (7 October) undoubtedly can be attributed the long-period of ice cover in Admiralty Bay during that year; the total retreat of ice was not noted until 19 November (Wasilewski, pers. comm.). In 1988 the massive return of gentoo penguins to the rookeries occurred on 22 September, that is just after the breakout of ice from Admiralty Bay.

The phenology of the arrival of Wilson's storm — petrel to the breeding regions changes according to the ice situation in the Bay and probably also in the Bransfield Strait. In the season 1978/79 the first specimen was sighted on 10 October (Jabłoński 1986). In the season 1980/81 the first observation came from 6 November (Wasilewski 1986) and in 1988 — as early as 19 September. In 1988 the ice retreated from the Bay on 21 September, but in 1980 — much later (on 19 October).

The beginning of egg laying by the Wilson's storm petrels is connected with snow and ice melting within the area of the colony. In the colonies situated on the slopes inclined to the North the breeding begins earlier; the first eggs in 1978 were noted on 11 December (Jabłoński 1986), and in the breeding seasons 1979/80 and 1980/81 respectively on 8 December and 12 December (Wasilewski 1986). On the slopes inclined to the South they began much later: in the season 1988/89 not before 5 January.

In the case of some remaining bird species the hitherto obtained materials seem to indicate that the phenology of breeding (the beginning of egg laying) is not directly influenced by weather conditions. For particular species the dates of the first hatching were: gentoo penguin — 21 October 1978 (Jabłoński 1986), 24 October 1988 (present observations); chinstrap penguin — 20 November 1978 (Jabłoński 1986), 21 November 1988 (present data); southern giant petrel — 10 November 1978 (Jabłoński 1986), 9 November 1980 (Wasilewski, unpubl. observ.), 4 November 1988 (present data); Antarctic tern — 18 November 1978 (Jabłoński 1986) and 21 November 1988 (present observations).

Pinniped mammals

The abundance of seals within the SSSI No. 8 with the exception of Weddell seal, varies significantly during the whole year (Figs. 11 and 12). It is connected not only with the biology of particular species (the reproduction and moulting periods) but also with ice conditions in the Admiralty Bay and in the Bransfield Strait. For example, the lack of ice cover of the Bay in the region of

both Blue Dyke and Patelnia Point during some winters, led to same small groups of elephant seals remaining in these places during winter (Fig. 14). In turn, the formation of an ice foot along a significant sector of the coast makes crawling ashore impossible for elephant seals in the springtime reducing to a large extent their breeding places (Fig. 15).

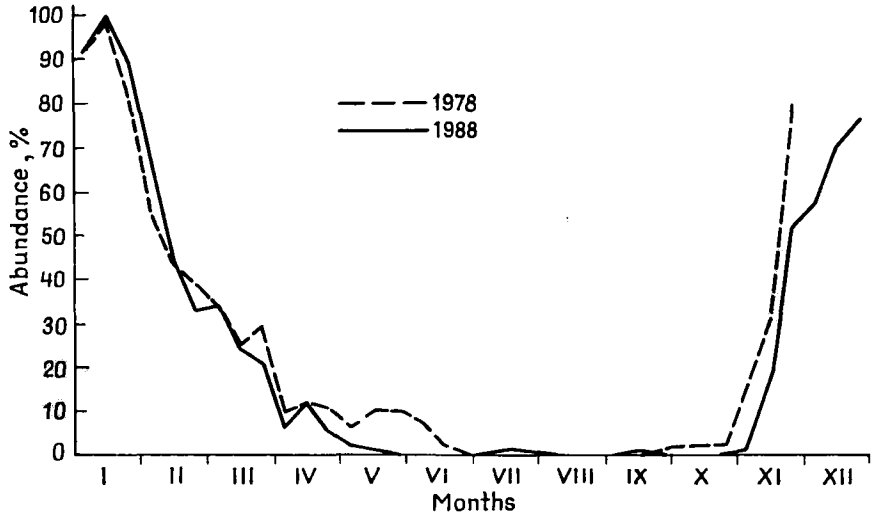

Fig. 16. Comparison of the changes in abundance of *Mirounga leonina* in a yearly cycle (expressed as % from the maximal number in a given year) in 1978 and in 1988

The yearly course of abundance dynamics of particular pinnipedians was in general similar in different seasons (Figs. 12, 13, 16). Some differences, however, can be noticed. In 1979 the first fur seal appeared on 9 January, in 1980 on 19 January, in 1981 on 3 February (Jabłoński, Krzemiński and Zdzitowiecki 1987), and in 1989 on 6 January. The highest numbers of fur seals were observed in February and in March. In this period they come to the Admiralty Bay to moult. On 28 February 1978, 125 specimens were noted in the transect from Point Thomas to Uchatka Point (Myrcha and Teliga 1980). In 1979 the peak of abundances (447) occurred in March; in 1980 maximal number (574) was noted in February, and in February 1981 — 781 fur seals were observed. In those three years the census was carried out from Italian Valley to Red Hill (Jabłoński, Krzemiński and Zdzitowiecki 1987). In 1988 the peak of fur seal numbers abundance (148) occurred in March.

After the end of the moulting season the fur seals departed. In winter some increase in fur seals abundance, connected with their winter migration, was observed. The year 1979, in comparison to other years, was exceptional with a very high winter migration rate (Fig. 13), when in July 347 fur seals appeared (Jabłoński, Krzemiński and Zdzitowiecki 1987).

In 1978 the highest number of elephant seals recorded in January amounted to 287 specimens (Myrcha and Teliga 1980); in the season 1988 the most abundant population (340) was observed also in January. The changes in elephant seal numbers on the section from Point Thomas to Uchatka Point in a yearly cycle in both seasons was also similar (Fig. 16). Both older (Krzemiński 1981, Wyrzykowski, pers. comm.) and present data indicate that over 80% of the elephant seal population occurring along the coast of SSSI No. 8 concentrates in the section from Demay Point to Patelnia Point.

In May and June 1977 Weddell seals were absent in the region of the Admiralty Bay (Presler 1980). Their long absence lasting from April till the end of June, also occurred in 1978 (Myrcha and Teliga 1980). In 1988 Weddell seals were present during the whole winter period. Comparing the yearly cycles from 1978 and 1988, it is evident that in the first three months of these years the number of Weddell seals decreased, dropping to zero in April 1978, whereas in 1988 the decrease stopped in June. In both years the numbers began to increase in July, more clearly in 1978 — up to 25 specimens. Taking into account the results of studies by Woyciechowski (1980) concerning the activity cycle of marked Weddell seals, the above cited numbers of specimens do not cover the whole population of Weddell seals of Admiralty Bay and they are surely much lower than the total population.

The reproduction of Weddell seals showed similar course in different years: in 1977 Weddell seals began to pup in September (Presler 1980); in 1978 the first pup was sighted on 5 September (Myrcha and Teliga 1980); in 1988 — on 7 September.

Maximal numbers of crabeater seals appearing in the Admiralty Bay in breeding time were: 17 September 1977 — 762 specimens (Presler 1980), 4 September 1978 — about 1000 specimens (Myrcha and Teliga 1980). The dynamics of the abundance of crabeater seals in 1980 was similar to that in 1988, but it was shifted in time by a month (Fig. 12).

The highest number of crabeaters occurred on 7 October 1980, when 1843 specimens were observed (Wasilewski, unpubl. data), whereas on 10 September 1988 — 1668 crabeaters were noted. The possible correlation between the appearence of crabeaters and ice conditions in the Admiralty Bay cannot be proved because of the small number of seasons to compare. It is, however, probable that their situation migration into the Bay can be conditioned by the ice conditions in the Bransfield Strait.

Leopard seals were most numerous in October. The highest number, about 60 specimens, was observed on 20 October 1978 (Myrcha and Teliga 1980), and on 31 September 1988.

A comparison of data from different seasons does not yet allow us to determine if there is a definite change in the numbers of several seals species living in SSSI No. 8. During the spring seaon the average peak montly number of fur seals in different years was as follows: 1978 — 120, 1979 — 447, 1980 —

352, and 1988 — 124. As far as elephant seals are concerned, the maximum number of individuals occuring during the spring season was 287 in 1978, and 340 in 1988 in an area of the sea shore of comparable lenght. In the period between January and March 1978, the average number of Weddell seals noted was 5,7, whilst in the same period in 1988, 11,3 Weddell seal individuals were noted. Between July and November in these respective years, 11,8 and 11,4 Weddell seal individuals were observed. Maximal numbers of crabeaters determined in 1980 and 1988 were comparable. From the above data, it can be assumed that the number of seals observed in SSSI No. 8, did not show any significant change during the period discussed.

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References

Conroy J. W. H., 1975. Recent increases in penguin population in Antarctica and the Subantarctic. — In: B. Stonehouse (ed.), The biology of penguins. The Maccmillan Press Ltd, 15: 321—336.

Czykieta H., Kittel W., Witek Z. and Wolnomiejski N. 1986. Biological characteristics of the population of *Euphausia superba*. Dana from the southern part of the Drake Passage and the Bransfield Strait carried out during the BIOMASS-SIBEX expedition (December 1983 — January 1984). — Pol. Polar Res., 7: 261—273.

Jabłoński B. 1984a. Distribution, numbers and breeding preferences of penguins in the region of the Admiralty Bay (King George Island, South Shetland Islands) in the season 1979/1980. — Pol. Polar Res., 5: 5—16.

Jabłoński B. 1984b. Distribution and numbers of penguins in the region of King George Island (South Shetland Islands) in the breeding season 1980/1981. — Pol. Polar Res., 5: 17—30.

Jabłoński B. 1985. The diet of penguins on King George Island, South Shetland Islands. — Acta Zool. Cracov., 29(8): 117—186.

Jabłoński B. 1986. Distribution, abundance and biomass of a summer community of birds in the region of the Admiralty Bay (King George Island, South Shetland Islands, Antarctica) in 1978/1979. — Pol. Polar Res., 7: 217—260.

Jabłoński B. 1987. Diurnal pattern of changes in the number of penguins on land and the estimation of their abundance (Admiralty Bay, King George Island, South Shetland Islands). — Acta Zool. Cracov., 30(8): 97—118.

Jabłoński B., Krzemiński W. and Zdzitowiecki K. 1987. Distribution and number of fur seals, *Arctocephalus gazella* (Peters, 1875) of King George Island (South Shetlands). — Acta Zool. Cracov., 30(9): 119—136.

Krzemiński W. 1981. Southern elephant seal (*Mirounga leonina* L.) of Admiralty Bay (King George Island, South Shetland Islands). Its numbers and activity during the moulting season in summer 1978/1979. — Pol. Polar Res., 2: 143—152.

Moczydłowski E. 1986. Microclimate of the nest-sites of pygoscelid penguins (Admiralty Bay, South Shetland Islands). — Pol. Polar Res., 7: 377—394.

Myrcha A. and Teliga K. 1980. Observations of pinnipedian mammals in the vicinity of Arctowski Station (King George Island) in 1978. — Pol. Polar Res., 1: 117—126.

Presler P. 1980. Phenological and physiographical observations carried out during the first wintering at the "Arctowski" Station in 1977. — Pol. Arch. Hydrobiol., 27: 245—252.

Rakusa-Suszczewski S. 1980. Environmental conditions and the functioning of Admiralty Bay (South Shetland Islands) as part of the near shore Antarctic ecosystem. — Pol. Polar Res., 1: 11—28.

Sladen W. J. L. 1964. The distribution of the Adelie and Chinstrap Penguins. — In: R. Carrick, M. Holdgate and J. Prevost (eds.), Biologie Antarctique. Paris, Hermann Press Ltd., 359—366.

Trivelpiece W. and Volkman N. J. 1979. Nest-site competitions between Adelie and Chinstrap penguins: an ecological interpretation. — Auk, 96: 675—681.

Volkman N. J., Presler P. and Trivelpiece W. 1980. Diets of Pygoscelid Penguins at King George Island, Antarctica. — Condor, 82: 373—378.

Wasilewski A. 1986. Ecological aspects of the breeding cycles in the Wilson's storm — petrel, *Oceanites oceanicus* (Kuhl), at King George Island (South Shetland Islands, Antarctica). — Pol. Polar Res., 7: 173—216.

Woyciechowski M. 1980. Numbers and activity of Weddell seal (*Leptonychotes weddelli* Lesson) in the Admiralty Bay (King George Island, South Shetland Islands) in summer 1978/1979. — Pol. Polar Res., 1: 207—216.

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Streszczenie

Monitoring ptaków i ssaków na terenie SSSI Nr 8 (rejon Zatoki Admiralicji, Wyspa Króla Jerzego, Szetlandy Południowe) prowadzono od 5 stycznia 1988 do 17 stycznia 1989 r.

Na obszarze tym stwierdzono występowanie 12 gatunków ptaków lęgowych (Rys. 3) oraz 6 gatunków ptaków nielęgowych. Na terenie SSSI Nr 8 znajduje się 5 kolonii pingwinów (Rys. 2). W obrębie tych kolonii wyróżniono szereg grup lęgowych poszczególnych gatunków pingwinów (Rys. 4—5, 7—9). W sezonie lęgowym 1988/1989 we wszystkich koloniach łącznie stwierdzono 2239 gniazd pingwinów białobrewych, 18838 gniazd pingwinów Adeli i 3353 gniazda pingwinów antarktycznych (Tab. 1).

Analiza wieloletnich danych o liczebności pingwinów wykazała znaczne wahania liczebności poszczególnych gatunków w cyklu wieloletnim (Tab. 6). Stwierdzono spadek liczebności pingwinów antarktycznych w koloniach Point Thomas, Llano Point, Demay Point i Uchatka Point oraz nieznaczny wzrost w kolonii Patelnia Point. W stosunku do sezonu 1980/81 stwierdzono tendencję do wzrostu liczebności u pingwinów Adeli. Liczebność pingwinów białobrewych zmniejszyła się znacznie w kolonii Point Thomas, natomiast wzrosła w kolonii Llano Point.

W obrębie Zatoki Admiralicji występują 3 kolonie południowych petreli olbrzymich. W sezonie lęgowym 1987/88 gatunek ten rozpoczął 315 lęgów (Tab. 2). Analiza wieloletnich danych dotyczących zmian liczebności południowych petreli olbrzymich wykazała spadek ich liczebności w rejonie Point Thomas, a wzrost liczebności w rejonie Llano Point i Cape Vaureal (Tab. 8).

Stwierdzono, że rozmieszczenie i liczba gniazd warcabników, nawałników Wilsona, nawałników białobrzuchych, kormoranów błękitnookich, pochwodziobów białych, wydrzyków antark-

tycznych, wydrzyków subantarktycznych, mew dominikańskich i rybitw antarktycznych w obrębie SSSI Nr 8 nie różniły się istotnie w porównaniu z wcześniejszymi obserwacjami (Tab. 4—5).

Z gatunków nielęgowych stwierdzono występowanie pingwina skałoskoczka, pingwina złotoczubego, albatrosa ciemnogłowego, petrela srebrzysto-szarego, petrela śnieżnego i łabędzia czarnoszyjnego. W okresie zimy na obszarze SSSI Nr 8 występowały regularnie południowe petrele olbrzymie (Tab. 3), pochwodzioby białe i mewy dominikańskie (Rys. 10). Zimą stwierdzono również liczne przebywanie w obrębie kolonii lęgowych pingwinów białobrewych w okresach, kiedy Zatoka Admiralicji była wolna od lodu (Rys. 6).

W przypadku ssaków badaniami objęto linię brzegową od Point Thomas do Patelnia Point (Rys. 1). W czasie regularnie prowadzonych taksacji stwierdzono występowanie 5 gatunków fok. W okresie lata najliczniej występowały słoń morski i uchatka południowa (Rys. 11), zimą zaś foka krabojad (Rys. 12). Foki Weddella w ciągu całego roku — z wyjątkiem czerwca — utrzymywały równy lecz niski poziom liczebności. Najmniej liczny okazał się lampart morski. Na odcinku Demay Point — Patelnia Point w cyklu rocznym obserwowano od 80 do 100% populacji słonia morskiego, występującej wzdłuż wybrzeża SSSI Nr 8 (Rys. 14). Rozprzestrzenianie się słoni morskich przybywających na rozród ogranicza utrzymująca się na znacznym odcinku wybrzeża stopa lodowa (Rys. 15). Poza słoniem morskim w obrębie SSSI Nr 8 rozmnażają się tylko foki Weddella.

Analiza zmian liczebności fok w cyklu rocznym wykazała na ogół zgodny przebieg zmian liczebności danego gatunku w różnych latach (Rys. 12, 13 i 16).