POLISH POLAR RESEARCH (POL. POLAR RES.) POLSKIE BADANIA POLARNE	1	1	117—126	1980

Andrzej MYRCHA and Karol TELIGA

Department of Polar Research, Institute of Ecology, Polish Academy of Sciences, Dziekanów Leśny

Observations of pinnipedian mammals in the vicinity of Arctowski Station (King George Island) in 1978 *)

ABSTRACT: Throughout 1978 regular counts of pinniped mammals were conducted along as 12-kilometre-long stretch of the Admiralty Bay coasts. The occurrence of all the six species of antarctic seals was noted, among them the most numerous were *Mirounga leonina, Arctocephalus tropicalis* and *Lobodon carcinophagus*. The number of these animals varied within a year-cycle. *M. leonina* and *Leptonychotes weddelli* breed at Admiralty Bay.

Key words: Antarctic, pinniped mammals

1. Introduction

Census information of pinnipedian mammals of the South Shetlands is exceedingly meagre. Mostly these are estimates from the observations carried out during short visits to these regions and made only within the period of the austral summer (Krylov 1968, Øristland 1970a, 1970b, Popov and Krylov 1977, Müller-Schwarze et al. 1978). Aguayo and Torres (1968) and Aguayo (1970) give results from the summer count of seals made by helicopters over the whole area of the Archipelago.

Particularly lacking, so far, are long range observations concerning biology of pinnipedian mammals inhabiting these regions and changes in their numbers between years and between within-year census points. The Arctowski Station operating at Admiralty Bay on King George Island creates great opportunity for the development of such studies.

The purpose of this study is to make a preliminary estimate of the number of seals and determination of the principal places of their occurrence in the nearest neighbourhood of the Station.

---

*) These studies were supported by Polish Academy of Sciences within the MR-II-16 Project carried out at Arctowski Station during the Third Antarctic Expedition 1978/79.

These studies will be continued in the coming years and their range will be extended over at least the whole area of Admiralty Bay, where the complex ecological investigations are conducted by the expeditions of the Polish Academy of Sciences.

2. Area and methods

Observations of pinnipedian mammals were conducted from the beginning of January until the end of November 1978. Regularly, once a week, and in the period from April to August every two weeks, counts of all the animals were made along a 12-kilometre stretch of the sea coast from Point Thomas to Fur Seal Point, just beyond Demay Point, which lies on the border line between Admiralty Bay and Bransfield Strait (Fig. 1).

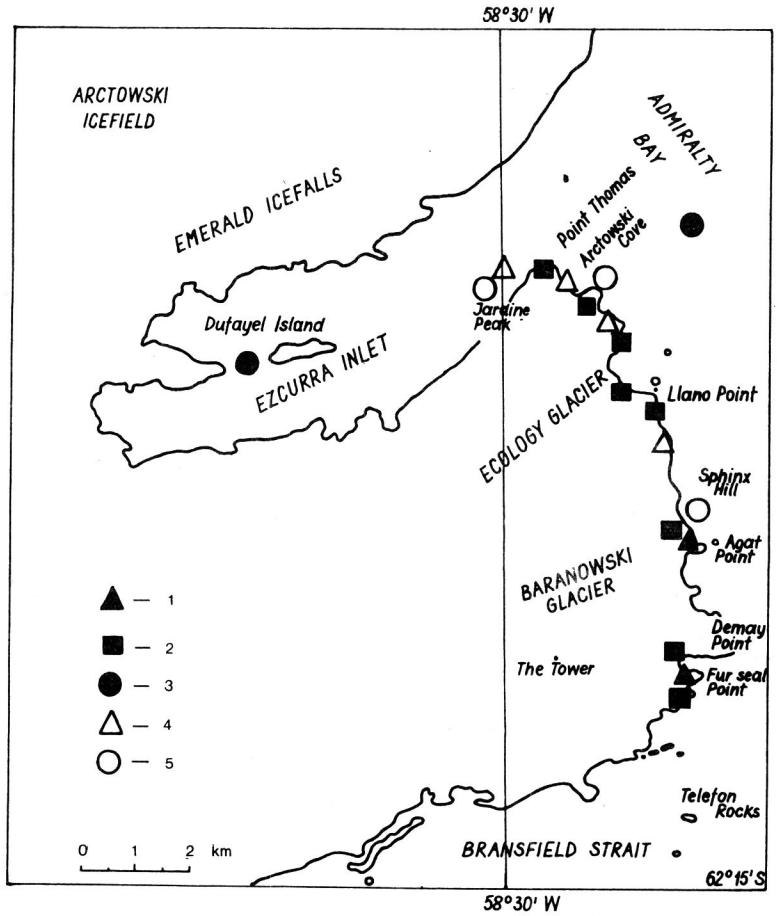

Fig. 1. Principal locations of the occurrence of pinnipedian mammals in the vicinity of Arctowski Station in 1978

1. Arctocephalus tropicalis, 2. Mirounga leonina, 3. Lobodon carcinophagus, 4. Leptonychotes weddelli, 5. Hydrurga leptonyx

The counts were made mostly during the day. The censuses included all the animals, i.e. those actually present on land and seals swimming in the sea distinctly visible from the shore. During the winter and spring season the observations included also the animals present on the ice cover of Ezcurra Inlet and the main part of Admiralty Bay.

In all these surveys attempts were made to differentiate the sex of the animals and to classify them into one of the three age-groups — young of the year (pups), immature and mature individuals.

3. Results and discussion

In the vicinity of Arctowski Station the occurrence of all the following six antarctic *Pinnipedia* species was noted: southern fur seal (*Arctocephalus tropicalis gazella* (L.)), southern elephant seal (*Mirounga leonina australis* (L.)), Weddell seal (*Leptonychotes weddelli* (Lesson)), crabeater seal (*Lobodon carcinophagus* (L.)), leopard seal (*Hydrurga leptonyx* (de Blainville)) and Ross seal (*Ommatophoca rossi* (Gray)). The populations of different species varied considerably during the year of surveys (Fig. 2). The most numerous were the southern elephant seal, the crabeater seal and the southern fur seal. The Weddell seal and the leopard seal were less abundant and the Ross seal were very rare.

Arctocephalus tropicalis gazella (L.).

The main region of the occurrence of the southern fur seal was the coast of Bransfield Strait, close by Demay Point, and above all the nearest neighbourhood of Fur Seal Point (Fig. 1). The second location of a frequent presence of these animals during austral summer was Agat Point.

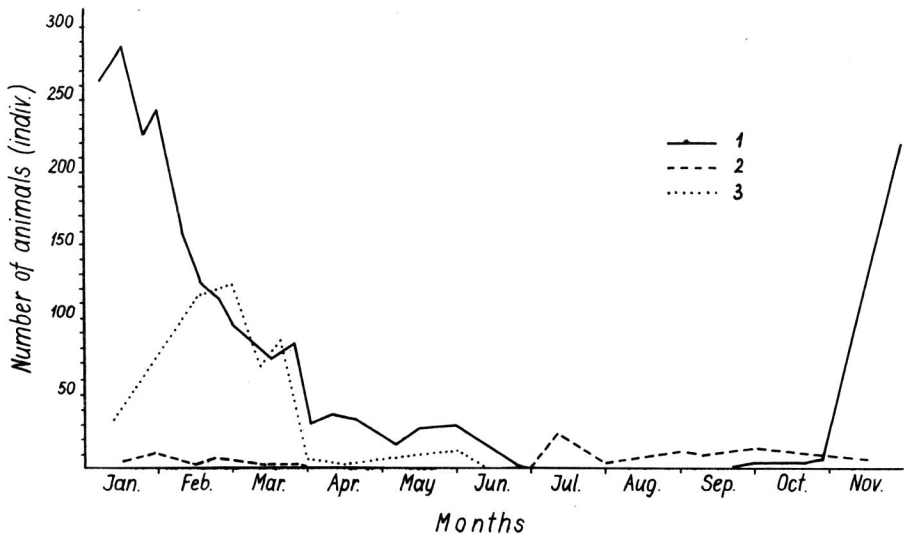

Fig. 2. Changes in the number of the population of three species of pinnipedian mammals observed between Point Thomas and Fur Seal Point (Admiralty Bay) in 1978
1. Arctocephalus tropicalis, 2. Mirounga leonina, 3. Leptonychotes weddelli

Between Thomas Point and Sphinx Hill these mammals occurred irregularly and in most cases solitarily. The occurrence of two or three animals in one spot was very rare (Halfmoon Cove, a beach near Llano Point).

Besides the stretch of the coastal line where regular counts were conducted the southern fur seal occurred abundantly nearest to Telephone Point, at a distance of about 3 km from Fur Seal Point. The participants of the Second Antarctic Expedition of the Polish Academy of Sciences have encountered in this place dozens of these animals several times during February and the first half of March (Birkenmajer and Czajkowski — personal communication).

In the investigated stretch of the coast the southern fur seal occurred in greatest numbers from January till mid-March (Fig. 2). The greatest abundance, altogether 125 animals, was recorded on 28 February, out of this number 66 specimens were observed at Fur Seal Point. In this area 3–4 mature bulls, showing a high degree of territorialism, and many cows with young were present permanently. From 19 March the number of southern fur seal decreases rapidly and by the end of May they were practically not encountered, any longer. Single animals appeared still on 10 June and on 13 and 25 July. Then, until the end of November, the southern fur seal were not found in the vicinity of Arctowski Station.

The history of the restoration of *A. tropicalis* populations, frightfully destroyed by over-hunting, is well-known (Bonner 1964, 1968). The ways and the time of the settling in the Falkland Islands, South Orkneys and South Shetlands of the colonies formed on the islets lying at the western end of South Georgia (Laws 1953, 1973, Øristland 1960, O'Gorman 1961, Erickson et al. 1971) were also described.

Summer censuses of seals carried out in the South Shetlands by Aguayo and Torres (1967, 1968) and Aguayo (1970) in the years 1966–1968 do not show the occurrence of southern fur seal on King George Island. Over 200 specimens of these animals were recorded in the group of the Elephant Islands and on Livingston Island. At the same time, however, Krylov (1968) reported their presence, though in a number not greater than 10 individuals, at the northern shores of the Fildes Peninsula. Later reports (Laws 1973, Popov and Krylov 1977) and our observations give evidence that beaches of King George Island are visited by more and more numerous groups of *A. tropicalis* during the summer. It seems however that hitherto the southern fur seal populations do not breed on this island.

Mirounga leonina australis.

In January and the first half of February the southern elephant seal were the most frequently encountered mammals on the coast of Admiralty Bay. January counts showed up to 300 animals (Fig. 2), aggregated most often in several moulting groups, numbering from a few to dozens of individuals. The most numerous groups were observed at Halfmoon Cove (Fig. 1) at the edge of a penguin colony (about 30 and 45 animals), at Llano Point (about 50 specimens), at Sphinx Hill (dozens of animals), just beyond Demay Point, between two colonies of antarctic penguins (up to 100 individuals in a few neighbouring groups). These groups consisted mainly of young animals with predominance of males. Each of these groups,

however, included also a mature bull with a well-developed proboscis. The largest males were noted in the groups having their rookeries at Halfmoon Cove and Fur Seal Point. A fairly intensive exchange of animals occurred within the groups and between the groups as well. Very often young males were observed playing and flighting with one another in the water near the shore. Quite often single females with several -month-old young were encountered separately outside the larger groups of animals.

In February the numbers of the observed southern elephant seal populations started to decrease fairly rapidly. The groups of animals were less numerous and their composition changed. There was a greater and greater prevalence of young animals, more cautious and timid. Also a greater number of mature bulls was observed, lying together in separate groups (5 individuals at Halfmoon Cove, 6 and 4 at Llano Point, and 6 at individuals at Halfmoon Cove, 6 and 4 at Llano Point, and 6 at Fur Seal Point).

In March, over the whole area of the observations no more than 80 southern elephant seals were encountered. In the sites where only a month earlier large groups of these animals were observed now small groups of moulting mature bulls were lying around. The largest of these groups consisted of 7 animals at Halfmoon Cove, 10 at Llano Point, 9 at Sphinx Hill and 9 at Fur Seal Point. The remaining animals were mostly very young.

In the following months the number of the southern elephant seal observed along the coast decreases progressively and in the second half of May there are practically only single specimens left. The last male was seen on 23 June in the proximity of Ecology Glacier.

In spring, for the first time the presence of a female was noticed on the shore of Arctowski Cove on 30 September. Before long other females arrived and on 19 October the first mature bull appeared. The first parturition in the vicinity of Arctowski Station was observed on 26 October. In sum, 37 pups were recorded in the controlled stretch of the coast, for the most part at Fur Seal Point. At the end of October the formation of pods and first copulations were observed. The largest pod numbering 14 females was observed at Fur Seal Point. The period of procreation ended about 10 November. Throughout November the number of southern elephant seals increased continuously due to the incoming of the new immature young animals.

It seems that the number of the southern elephant seal in the observed areas is similat to that in the remaining part the southern coast of King George Island (Krylov 1968, Aguayo 1970, Müller-Schwarze et al. 1978). On the basis of the obtained data and the observations of other authors it may be assumed that these seals occur on King George Island in greater numbers from the side of the open sea as compared with those on the shores of the Admiralty Bay. The reproduction also occurs mainly outside the Bay. In the investigated area a small reproductive colony was observed inside the Bay, between Halfmoon Cove and Ecology Glacier, and another much larger in the vicinity of Fur Seal Point, on the coast of Bransfield Strait.

Aguayo (1970), on the basis of helicopter counts, reports that the number of southern elephant seal recorded on King George Island is almost 6.5 times higher than the numbers of all the remaining seals observed in this area. Our census data indicate that the number of southern elephant seals, counted in summer (January), is 3.3 times higher than the number of the representatives of the remaining species. This difference results from the fact that Aguayo (1970) did not report on the occurrence of the southern fur seal on King George Island, whereas at that time they were already present in this island, though in much smaller numbers (Krylov 1968, Popov and Krylov 1977).

Leptonychotes weddelli (Lesson).

During the whole period of investigations the occurrence of largest groups of Weddell seal was not observed in the vicinity of Arctowski Station (Fig. 2). Throughout the first three months of the year and in the period from July till the end of November these seals occurred singly or in very small groups (2–4 specimens) in various places on the coasts of Admiralty Bay. They were most frequently encountered at Ezcurra Inlet, Ecology Glacier, Sphinx Hill and at a bay just beyond Demay Point. In the period from April till July the presence of Weddell seal was not observed in the controlled area of the coast. The greatest number of these animals was observed in the vicinity of the Station early in September. Then the reproduction started. The first parturition was observed on 5 September on the beach of Halfmoon Cove. In sum, till 2 October the presence of 7 different females with newborn pups was noticed. Also, during the 1977 winter some breeding *L. weddelli* were observed in the vicinity of the Station. The first parturition occurred on 6 September 1977 on the ice of Arctowski Cove (Kuntze — personal communication). Also, Müller-Schwarze et al. (1978) observed at the same place Weddell seals with young in November 1976.

Life-cycle and behaviour of animals in the vicinity of Arctowski Station were similar to those of *L. weddelli* inhabiting other archipelagoes in this part of the ocean (Mansfield 1958, Vaughan 1968, Smith and Burton 1970).

Lobodon carcinophagus (L.).

During the first half of the year until the end of June, the number of crabeater seals observed on the coast was similar to that of Weddell seals occurring in this area. After the freezing of Ezcurra Inlet and the main part of Admiralty Bay, later on, *L. carcinophagus* became much more numerous. Every now and again new groups of animals appeared on the ice cover incoming from the regiont of Bransfield Strait. In the period from August till October hundreds of seals were always present in the Bay. They were most abundant at the end on August and the first half of September (over 1000 specimens were noted on 4 September).

Similarly high concentration of *L. carcinophagus* was observed in winter of the precedent year, when during a peak period over 3000 animals were seen on the ice of Admiralty Bay (Presler — personal communications).

At the time of the breaking up of the ice a fairly large group of *L. carcinophagus* (nearly 100 individuals) moved deep inwards Ezcurra

Inlet, where the ice cover was still unbroken. From the 3rd October on, copulation of the crabeater seal was observed several times on the ice of the Bay. This is a typical reproductive period for this species (King 1957, Øristland 1970b).

In October the population of the crabeater seal in the Bay decreases to 20–30 specimens, which is November are also carried away with pack ice towards Bransfield Strait. Small groups encountered on the coast during the austral summer are composed of animals undergoing the moult, which in this species is of a relatively short duration (Bertram 1940, Øristland 1970b). According to the data given by Aguayo and Torres (1967) and Aguayo (1970) *L. carcinophagus* is in the area of the South Shetlands the most abundant on the pack ice (nearly 90% of the total number of seals) and second numerically after *M. leonina* in inshore areas.
Hydrurga leptonyx (de Blainville).

Leopard seals were rare during January and February. They occurred singly in various places of the coast, most frequently in the sea close to the shores or on the floes in the Bay. They were encountered most often at Ezcurra Inlet and in the vicinity of Sphinx Hill. From mid-March till mid-July not even one representative of this species was seen in the vicinity of Arctowski Station. Then again single leopard seals were noticed on the ice or in the sea along the coast between Point Thomas and Ecology Glacier.

In October a greater number of these seals appeared at Admiralty Bay, lying in groups in the peripheral areas of the ice. The highest number, i.e. as many as about 60 specimens of *H. leptonyx*, was recorded on 20 October, 36 animals out of this number were observed at Ezcurra Inlet. For the last time the leopard seals were seen on 31 October — 3 specimens at Ezcurra Inlet and 3 in the Bay between Demay Point and Fur Seal Point.

Leopard seals are permanent inhabitants of the peripheral areas of the South Shetland Islands. These animals, however, are not very numerous. As results from the data by Aguayo (1970) in summer *H. leptonyx* constituted only 0.3% of all the seals identifield on King George Island. Krylov (1968) also reports that leopard seals are among the animals rarely observed in the region of Fildes Peninsula. Therefore the fact of the aggregation of such a Iarge number of these animals at Admiralty Bay in October 1978 seems to be very interesting.
Ommatophoca rossi (Gray).

This is an exceedingly rare representative of the pinnipedian mammals on King George Island. In Admiralty Bay these seals were observed only four times during the period from 20 September till 8 November. All the encounters occurred in the area between Point Thomas — Halfmoon Cove. On two occasions these were single animals and in other two cases there were two seals in one spot, lying on the ice far away from the representatives of other species.

Aguayo and Torres (1967), Krylov (1968) and Aguayo (1970) did not report the presence of the Ross seal in the South Shetlands, or in Bransfield Strait. Siniff, Cline and Erickson (1970) report that this spe-

cies is rather rare in the Weddell sea and in the regions of Antarctic Peninsula. The more intriguing, therefore, is the presence of Ross seals at Admiralty Bay in October 1978.

4. Summary

Throughout 1978 counts of pinniped mammals in the neighbourhood of Arctowski Station (Admiralty Bay, King George Island) were conducted. Regularly counts of animals were made along 12-kilometre stretch of the sea coast from Point Thomas to Fur Seal Point, just beyond Demey Point (Fig. 1).

The occurrence of all six species of antarctic seals was noted, among them the most numerous were *Mirounga leonina* and *Arctocephalus tropicalis* (summer season) and *Lobodon carcinophagus* (in winter). *Leptonychotes weddelli* occured frequently, but in small numbers (Fig. 2).

Hydrurga leptonyx is also a permanent inhabitant of the King George Island coast and was observed in great number (up to 60 individuals) during spring. The most rare representative of the pinnipeds is *Ommatophoca rossi*. It was observed only four times in early spring. *M. leonina* and *L. weddelli* breed at Admiralty Bay.

5. РЕЗЮМЕ

В течение всего 1978 г проводились наблюдения ластоногих млекопитающих в окрестностях Станции Арцтовского (Адмиральты Бай, Остров Кинг Джорж). Систематически, методом таксации определялось количество этих животных на 12-ти километровом участке побережья Залива Адмиральты от Поинт Томас до Фир Сеиль Поинт, сразу же за Демей Поинт (рис. 1).

Обнаружено 6 видов антарктических тюленей среди которых особенно многочисленно летом выступали *Mirounga leonina* и *Arctocephalus tropicalis* а зимой *Lobodon carcinophagus*. *Leptonychotes weddelli* выступает систематически но не в больших количествах (рис. 2).

Постоянными жителями побережьи Кинг Джорж являются также *Hydrurga leptonyx* которые весной наблюдались в большом количестве (до 60 особь). Найболее редким представителем ластоногих млекопитающих является *Omnatophoca rossi*, которого можно было наблюдать только четыре раза весной. *M. leonina* и *L. weddelli* размножаются в Заливе Адмиральты.

6. Streszczenie

W ciągu roku 1978 prowadzono obserwacje ssaków płetwonogich w okolicach Stacji Arctowskiego (Zatoka Admiralicji, Wyspa Króla Jerzego). Regularnie, metodą taksacji ocemiano liczbę tych zwierząt na 12 kilometrowym odcinku wybrzeża Zatoki Admiralicji od Point Thomas do Fur Seal Point, tuż za Demay Point (rys. 1).

Stwierdzono występowanie wszystkich 6 gatunków fok antarktycznych, z których najliczniejsze były w okresie letnim *Mirounga leonina* i *Arctocephalus tropicalis*, a zimą *Lobodon carcinophagus*. *Leptonychotes weddelli* występuje regularnie, lecz w niewielkiej liczbie osobników (rys. 2).

Stałymi mieszkańcami pobrzeży Wyspy Króla Jerzego są również *Hydrurga leptonyx*, które wiosną obserwowano w dużej liczebności (do 60 osobników). Najrzadszym przedstawicielem ssaków płetwonogich jest *Ommatophoca rossi*, którą obserwowano tylko czterokrotnie wczesną wiosną.

M. leonina i *L. weddelli* rozradzają się w Zatoce Admiralicji.

7. References

1. Aguayo A. L. 1970 — Census of *Pinnipedia* in South Shetland Islands (In: Antarctic Ecology, Ed. M. W. Holgate) — London-New York, 395–397.
2. Aguayo A., Torres D. 1967 — Observaciones sobre mamiferos marinos durante la Vigésima Comisión Antárctica Chilena. Primer censo de pinipedios en las Islas Shetland de Sur — Rev. Biol. Mar. Valparaiso, 13: 1–57.
3. Aguayo A., Torres D. 1968 — A first census of *Pinnipedia* in the South Shetland Islands and other observations on marine mammals (In: Symp. on Antarct. Oceanogr.) — Santiago, September 1966, Scott Polar Res. Inst., 166–168.
4. Bertram G. C. L. 1940 — The biology of the weddell and crabeater seals with a study of the comparative behaviour of the *Pinnipedia* — Sci. Rep. Brit. Graham Land Exp., 1: 1–139.
5. Bonner W. N. 1964 — Population increase the fur seal, *Arctocephalus tropicalis gazella,* at South Georgia (In: Biologie Antarctique, Ed. F. Herman) — Paris, 433–443.
6. Bonner W. N. 1968 — The fur seal at South Georgia — Brit. Antarct. Survey Sci. Rep., 56.
7. Erickson A. W., Siniff D. B., Cline D. R., Hofman R. J. 1971 — Distributional ecology of antarctic seals (In: Proc. Symp. on Antarct. Ice and Water Masses, Ed. G. Deacon) — Tokyo, 1970, 55–76.
8. King J. E. 1957 — On a pup of the crabeater seal, *Lobodon carcinophagus* — Ann. Mag. nat. Hist., ser. 12: 619–624.
9. Krylov V. J. 1968 — Morskie mlekopitajuščie i pticy v rajone Stancii Belingshausen — Bull. Sov. Antarkt. Exp., 71: 68–70.
10. Laws R. M. 1953 — The seals of the Falkland Islands and Dependiencies — Oryx, 2: 87–97.
11. Laws R. M. 1973 — Population increase of fur seals at South Georgia — Polar Rec., 16: 856–858.
12. Mansfield A. W. 1958 — The breeding behaviour and reproductive cycle of the Weddell seal (*Leptonychotes weddelli* Lesson) — Falkland Isl. Dependiencies Surv. Sci. Rep., 18: 1–41.
13. Müller-Schwarze D., Waltz E. C., Trivelpiece W., Volkman N. J. 1978 — Breeding status of southern elephant seals at King George Island — Antarct. J. of the U.S., 13: 157–158.
14. O'Gorman F. A. 1961 — Fur seals breeding in the Falkland Islands Dependencies — Nature, 192: 914–916.
15. Øristland T. 1960 — Fur seals breeding in the South Orkney Islands — Norsk. Hvalfangsttid., 5: 220–225.
16. Øristland T. 1970a — Sealing and seal research in the south-west Atlantic pack ice. September-October 1964 (In: Antarct, Ecology, Ed. M. W. Holdgate) — London-New-York, 1: 367–376.
17. Øristland T. 1970b — Biology and population dynamics of antarctic seals (In: Antarct. Ecology, Ed. M. W. Holdgate) — London-New York 1: 361–366.
18. Popov L. A., Krylov V. J. 1977 — Kergelenskij južnyj morskij kotik o. King-Džordž — Bull. Sov. Antarkt. Eksp. 96: 66–71.

19. Siniff D. B., Cline D. R., Erickson A. W. 1970 — Population densities of seals in the Weddell Sea, Antarctic (In: Antarct. Ecology, Ed. M. W. Holdgate) — London-New York, 1: 377–394.
20. Smith E. A., Burton R. W. 1970 — Weddell seals of Signy Island (In: Antarct. Ecology, Ed. M. W. Holdgate) — London-New York, 1: 413–428.
21. Vaughan R. W. 1968 — The status of the Weddell seal (*Leptonychotes weddelli*) at South Georgia — Brit. Antarct. Surv. Bull., 15: 71–74.

AUTHOR'S ADDRESS:
Doc. dr Andrzej Myrcha
Mgr inż. Karol Teliga
Zakład Badań Polarnych
Instytut Ekologii PAN
Dziekanów Leśny
05-150 Łomianki, Poland