

Piotr CIAPUTA and Katarzyna SALWICKA

Department of Antarctic Biology
Polish Academy of Sciences
Ustrzycka 10
02-141 Warszawa, POLAND

Tourism at Antarctic *Arctowski* Station 1991–1997: policies for better management

ABSTRACT: *Henryk Arctowski* Station, the research station of the Polish Academy of Science in Admiralty Bay, King George Island, West Antarctica, is one of the most heavily visited bases in Antarctica. Between the seasons 1991/92 and 1996/97, 12884 tourists were recorded. A specially designed tourist trail was marked to divert visitors toward alternative attractions, not only the station buildings. Tourist management goals include: environmental protection, minimising waste and pollution, respecting the rules relating to protected areas, and prohibition of collections and souveniring.

Key words: Antarctica, tourism, *Arctowski* Station.

Introduction

In Antarctic Treaty terms, Antarctica is defined as a “continent for science”. However numbers of tourists visiting the Antarctic Treaty Area every year now well exceed numbers of scientists and support staff, whose monopoly of the continent has hitherto been virtually exclusive (Stonehouse 1992a). Antarctica has been visited by tourists since the late 1950s (Reich 1980). Cruise ships have offered a regular basis for tourism since 1966. The increase in Antarctic tourist activity has prompted Antarctic Treaty Parties and policy-makers to take a closer look at tourism issues. The rising tide of environmental concern the world over (Burgess 1990), especially regarding the impact of tourism (Butler 1991; Hall 1992, 1993) on areas as distinct as Antarctica, has fuelled debate about how Antarctic tourism should be regulated (Beck 1990, Manheim 1990). In response to growing concern, research on the environmental effects of Antarctic tourism is underway. Its objective is to monitor tourist activity and includes field studies of tour parties, and their management and impacts on vegetation, animal life and other environmental features (Stonehouse 1992b).

Arctowski Station, the research station of the Polish Academy of Sciences in Admiralty Bay, King George Island, Antarctica, has provided attractions to tourists since it was established in 1977. The base appears to be the most heavily visited research station in the Antarctica. For instance, during the 1992/93 season the station log book listed 32 visits and a total of 2996 tourists from cruise ships. Visits are not restricted, but high numbers have made it necessary to plan ways of controlling activities of visiting parties. For that reason a more detailed method of collecting visitor data has been started, and a special trail for visitors was designed. The trail provides an interesting educational experience for all tourists and draws attention to the research of the station. This allows better monitoring and testing techniques of tourist management in an Antarctic setting. The trail heads tourists away from the station, which minimises the disturbance of the station life.

This paper presents the general pattern of Antarctic tourism at *Arctowski* Station, reports some effects of tourism at the station and its environment, and contributes to a Tourist Management Plan for the station and environs.

Methods

Regular records of visitor numbers at Polish *Arctowski* Station and its vicinity (Fig. 1) started in 1991. For the period between 1991/92 and 1995/96 the basic data were recorded by station managers. Expedition leaders were asked standard questions during each tourist ship visit (Appendix A). Since the 6th December 1996 a more detailed data collection has begun using forms which are completed in the course of each tourist visit as well (Appendix B).

During the austral summer of 1996/97 a special study was made of behavioural reactions of three species of seals that are present on shore in the station area: southern elephant seal (*Mirounga leonina*), Weddell seal (*Leptonychotes weddelli*) and Antarctic fur seal (*Arctocephalus gazella*). This behaviour in relation to human activities was noted at every landing.

Results

The 1996–97 season. — All Antarctic tours at *Arctowski* Station are sea-borne, involving cruise ships carrying between about 30 and 300 passengers. Typically these leave ports in South America, Tierra del Fuego (Ushuaia or Punta Arenas). During the season 1996/97, 1051 tourists visited *Arctowski* Station (see Fig. 2 and Appendix B). The average duration of the visits varied from two to three hours. Tourists of 25 nations were serviced by five companies: Abercrombie & Kent International, Hanseatic Tours GmbH, Marine Expeditions, Quark

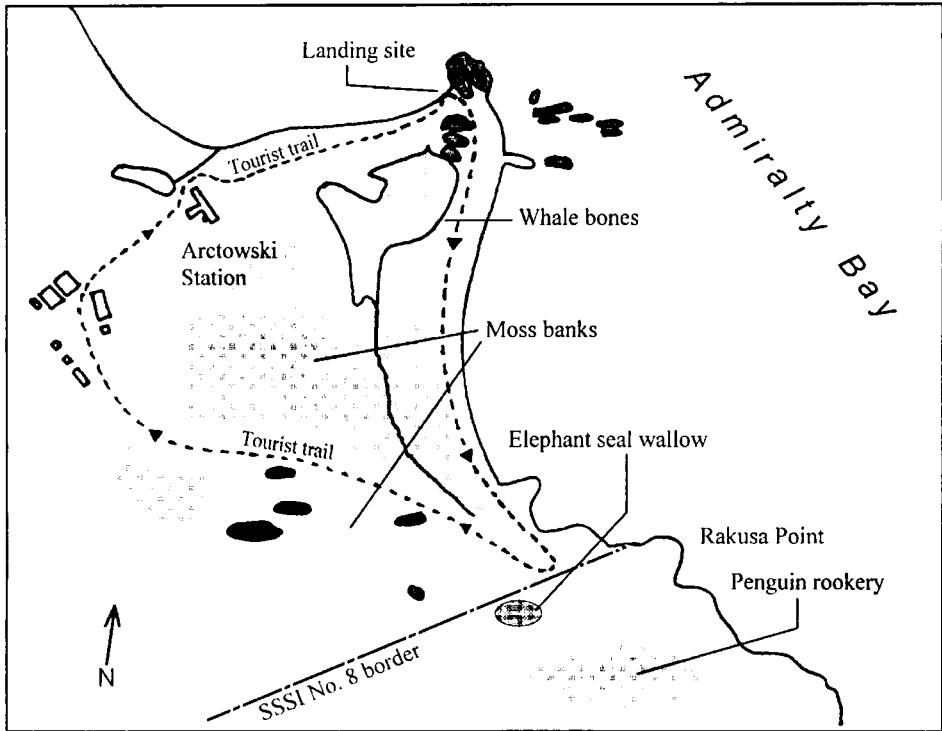


Fig. 1. The location of *Arctowski* Station area monitoring site, King George Island, South Shetlands, Antarctica.

Table 1

Collected data on tour companies who visited *Arctowski* Station during the summer season 1996/97.

No.	Tours companies	Total number of tourists	Group size per 1 naturalist	Mean visit time	Mean tourist group size
1	Abercrombie & Kent Int.	82	12	2h 05min	82
2	Hanseatic Tours GmbH	290	29	3h 06min	145
3	Marine Expeditions	466	18	2h 30min	67
4	Quark Expeditions	112	12	2h 04min	56
5	Society Expeditions	101	17	2h 44min	101

Expeditions and Society Expeditions. The most numerous were citizens from USA. Most were brought by Marine Expeditions (Table 1).

Passengers are brought ashore by inflatable boats (Zodiac) with powerful engines in parties of 10 to 15, and they are accompanied and closely supervised by guides. The average group size per one naturalist guide varied from 12 to 29

depending on the expedition operator (Table 1). There is only one landing site for tourists, located at the lighthouse (Fig. 1). Once ashore, individuals may be free to leave the parties, but are required to stay within sight of the embarkation point. They are allowed to follow a defined path (Fig. 1) to find good photography spots, watch penguins, seals and other wildlife. The second option is a tour around *Arctowski* Station.

During the season 1996/97 more detailed observations were made on the relationship between tourists and seals behaviour. It was found that visitors do not always follow the guidelines. The most common transgressions were:

- approaching seals with too much noise and from a distance shorter than stated in the guideline,
- landing at a different site than recommended; often too close to the seals resting on shore,
- trampling over the vegetation,
- crossing the border of SSSI No. 8.

Pinniped reactions varied depending on the intensity of disturbance. In general, seals resting alone escaped to the sea (young elephant seals, Weddell, and fur seals). Larger groups of individuals started to fight with each other, which often led to wounding and bleeding.

The period 1991–96. — Between seasons 1991/92 and 1995/96, 11833 tourists were recorded (Fig. 2). The highest number of visitors was recorded during the 1992/93 season (Fig. 2). Most visits are made in December, January and February (Fig. 3). During such a short time the station can be visited up to 32 times, which was noted in 1992/93 (Table 2). The station and its vicinity was visited every second day throughout a season of three months (Table 2). The average number of tourists groups between 1991 and 1997 was stable and totalled 75–101 (Table 2).

Table 2

Chosen parameters of tourist activities in *Arctowski* Station area calculated for years 1991–1997.

Season	Mean tourist group size	Number of visits per season	Weekly mean number of visit per season
1991/92	97	20	2
1992/93	94	32	2
1993/94	101	29	2
1994/95	77	30	2
1995/96	75	22	2
1996/97	81	13	2

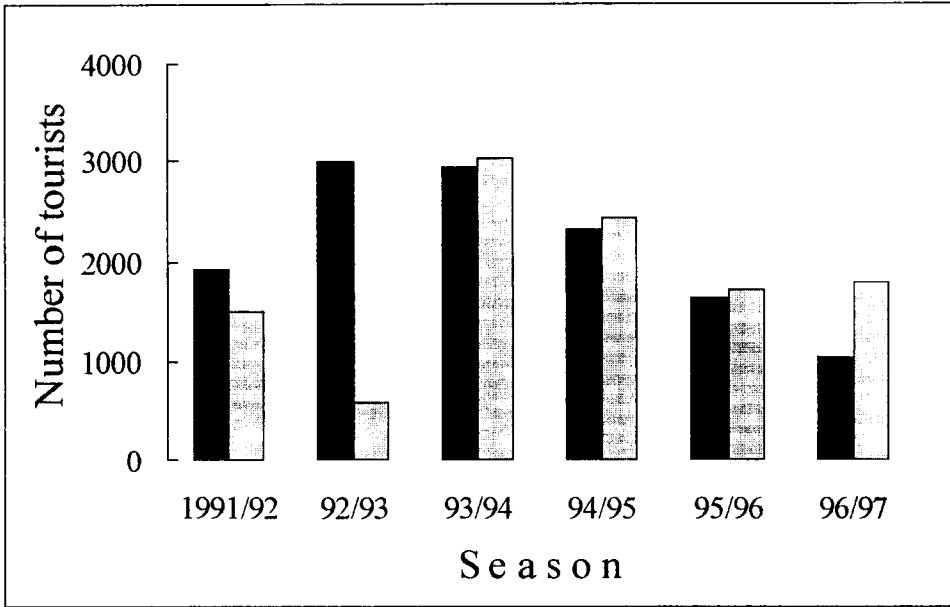


Fig. 2. Total numbers of tourists visiting *Arctowski* Station in summer seasons 1991/92 –1996/97. Comparison of data from two sources: *Arctowski* Station records – black bars, and US National Science Foundation, compiled from data provided by US tour companies in response to Treaty reporting documents – grey bars.

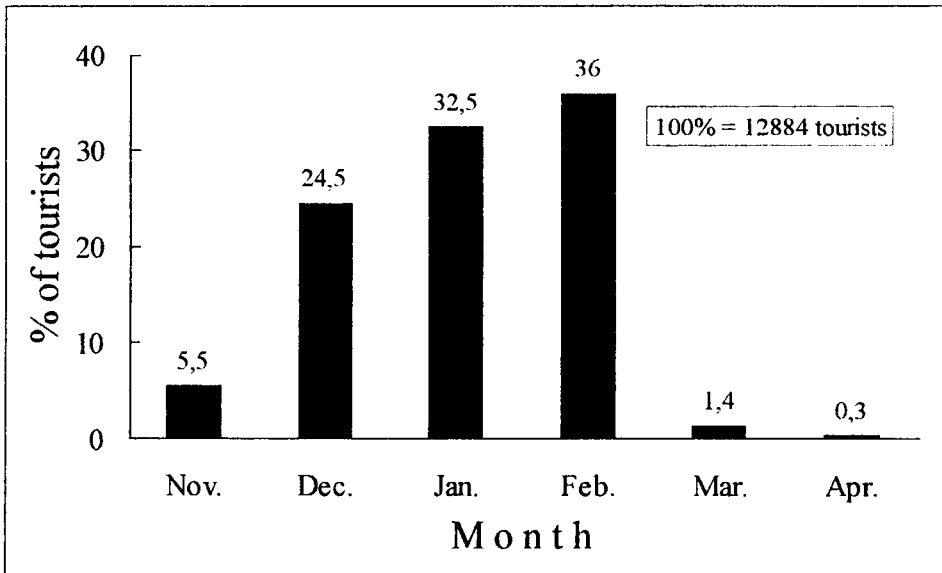


Fig. 3. Intensity of tourist activities in *Arctowski* Station area during the summer seasons (data from the years 1991–1997).

Discussion

Antarctic shipborne tourism has presented a cause of strong environmental concern, largely due to the influence of its earliest practitioner, Lars Eric Lindblad. Most operators now follow the Lindblad pattern, in which tours are treated as “expeditions”. Typically, passengers before landing are briefed on behaviour, possible hazards, and the needs to avoid interference with or damage to wildlife. Currently, a set of voluntary visitor guidelines is in use, developed by the International Association of Antarctica Tour Operators (IAATO) (Appendix C). Tourists are not allowed to feed, touch, or handle birds or seals, approach or photograph animals in ways that cause them to alter their behaviour, damage plants, dispose garbage, or collect biological or geological specimens. Since *Arctowski* Station is located close to the Site of Special Scientific Interest (SSSI) No. 8, and within an Antarctic Specially Managed Area (ASMA), tour operators are not free to land their clients. They are obligated to land near the lighthouse (Fig. 1) where tourists are briefed by station personnel on where the boundary of SSSI lies, which paths are accessible, current research projects and how to view them without disturbance. Even though incidences of incursions into protected area and approaching seals to close are not unknown, tourists ashore have a record of good behaviour and environmental awareness.

Numbers of passengers visiting *Arctowski* Station each season are currently high enough to pose problems for station staff. For this reason we have provided a marked tourist trail, to divert visitors away from the station buildings (which are currently the main attraction) toward alternative attractions. The path is an easy trail, well marked, close to sea level, starts and ends at the landing site and leads visitors around the station area. From the landing site, visitors are directed toward Rakusa Point, to visit the seals and penguin colonies. The walk is on the edge of grassy area, surrounded by whale bones, then goes along the back of the moss bed area, and to the station (Fig. 1). The approximate duration of the tour is one hour. It has been designed to yield: an interesting educational experience for all tourists, with information on past and current research based in Admiralty Bay. This is the first-ever feature to be developed for educational purposes in Antarctica. The route has been carefully chosen to avoid areas of existing or future scientific research, and will not be varied. A record is being kept of numbers of visitors using the trail.

There is an increasing concern that tourism and other human related activities may negatively impact penguin populations. Long-term ecological studies in the region of SSSI No. 8 indicate that the populations of both Gentoo (*Pygoscelis papua*) and Adélie (*Pygoscelis adeliae*) penguins can be considered to have been stable, but with large yearly fluctuations (Trivelpiece *et al.* 1990, Myrcha 1993). Potentially adverse effect of tourism, research, and station activity may be

negligible compared with effects of long-term changes in environmental variables (Fraser and Patterson 1993).

There have been several observations of the visitors violating the guidelines: scaring the seals into the water, or stirring up inter-group aggression, leading to fights and wounding. The research on the impact of such behaviour on pinniped populations is still developing. The pinniped populations in Admiralty Bay are stable but show large, long-term fluctuations (Rakusa-Suszczewski and Sierakowski 1993) but to determine whether the changes are due to the natural variation or to human impact, more studies are needed.

Shipborne tourism at *Arctowski* Station at present level appears to be well managed, with relatively slight environmental impact, particularly in relation to SSSI No. 8. All tour operators, which have visited the station, have a record of good behaviour and environmental awareness. However, some control on tourism in Admiralty Bay seems inevitable, as recent experience with a minority of ships visiting may cause problems for station staff, disturbances of research projects and wildlife.

Our proposals for ideal pattern of Antarctic tourism at *Arctowski* Station are:

- tourists coming ashore already well briefed on behaviour, possible hazards, and the need to avoid damage to wildlife, and well briefed tour leaders,
- tourist group size from 30 to 80,
- no more than 10 tourists per one naturalist guide,
- visit duration no longer than 3 hours.

Acknowledgements. — This paper forms part of a joint research programme between the Department of Antarctic Biology, Polish Academy of Sciences, and the Polar Ecology and Management Group, Scott Polar Research Institute, University of Cambridge, UK. We thank Dr. Bernard Stonehouse for advice in designing the research methods and critically reading the manuscript. We also thank Anna Spector and Kim Crosbie for improvements to the manuscript.

References

- BECK P.J. 1990. Regulating one of the last tourism frontiers: Antarctica. — *Applied Geography*, 10 (4): 343–356.
- BURGESS J. 1990. Comprehensive environmental protection of the Antarctic: new approaches for new times. In: Cook G. (ed.), *The future of Antarctica: exploitation versus preservation*. Manchester University Press, Manchester: 53–67.
- BUTLER R.W. 1991. Tourism, environment, and sustainable development. — *Environmental Conservation*, 18 (3): 201–209.
- FRAZER W.R. and PATTERSON D.L. 1993. Human disturbance and long-term changes in Adélie Penguin population: a natural experiment at Palmer Station, Antarctic Peninsula. — Workshop on researcher-seabird interactions, Monticello, Minnesota, USA.
- HALL C.M. 1992. Tourism in Antarctica: activities, impacts, and management. — *Journal of Travel Research*, 30 (4): 2–9.
- HALL C.M. 1993. Ecotourism in Antarctica and adjacent sub-Antarctic islands: development, impacts, management and prospects for the future. — *Tourism Management*, 14 (2): 117–122.

- MANHEIM B.S. 1990. Paradise lost? The need for environmental regulation of tourism in Antarctica. Washington, D. C.: Environmental Defence Fund.
- MYRCHA A. 1993. Birds. In: Rakusa-Suszczewski S. (ed.), *The maritime Antarctic coastal ecosystem of Admiralty Bay*. Department of Antarctic Biology Polish Academy of Sciences, Warsaw: 129–141.
- REICH R.J. 1980. The development of Antarctic tourism. — *Polar Record*, 20: 203–214.
- STONEHOUSE B. 1992a. Monitoring shipborne visitor to Antarctica: a preliminary field study. — *Polar Record*, 28: 213–218.
- STONEHOUSE B. 1992b. Tourism and Protected Areas. In: Smith R.I.L., Walton D.W.H. and Dingwall P.R. (eds), *Developing the Antarctic Protected Area System*. Page Brothers (Norwich) Ltd., UK.
- TRIVELPIECE W.Z., TRIVELPIECE S.G., GEUPEL G.R., KJELMYR J. and VOLKMAN N.J. 1990. Adélie and Chinstrap Penguins: their potential as monitors of the Southern Ocean Marine Ecosystem. In: Kerry K.R. and Hempel G. (eds), *Antarctic Ecosystems, Ecological Change and Conservation*. Springer-Verlag, Berlin, Heidelberg: 191–202.

Received September 25, 1997

Accepted November 6, 1997

Streszczenie

Natężenie ruchu turystycznego w Antarktyce wzrasta z każdym rokiem. Ponad 20 procent wszystkich turystów odwiedzających Antarktykę gości na Polskiej Stacji im. *H. Arctowskiego* (fig. 1–3, tab. 1–2). W latach 1991–97 stację odwiedziło 12884 turystów. W tej sytuacji konieczna jest regulacja ruchu turystycznego w rejonie stacji. Ma ona na celu: ochronę środowiska, ochronę fauny i flory, uniknięcie zakłóceń w projektach badawczych, respektowanie przepisów wiążących się z chronionymi obszarami. Dokonuje się to przez: organizację przestrzenną ruchu turystycznego. To jest: kontrolę liczby odwiedzających, wyznaczenie lądowisk dla turystów, tworzenie planu ścieżek i poruszania się wokół stacji. Ponadto przez edukację turystów (tablice informacyjne, foldery, instrukcje pisane i ustne), a także przez zapewnienie przestrzegania obowiązujących przepisów w rejonie: ASMA i SSSI Nr 8.

Appendix A

Cruise ship visit to Arctowski Station in the austral summers 1991/92 – 1996/97
(source station records).

No.	Vessel name	Date	Number of passengers	Flag
1	<i>Frontier Spirit</i>	11/12/91	123	Bahamas
2	<i>Frontier Spirit</i>	19/12/91	140	Bahamas
3	<i>Illiria</i>	23/12/91	60	Liberia
4	<i>Molchanov</i>	25/12/91	40	RUS
5	<i>Columbus Caravelle</i>	27/12/91	120	Bahamas
6	<i>Boris Petrov</i>	08/01/92	90	RUS
7	<i>Illiria</i>	19/01/92	90	Liberia
8	<i>Boris Petrov</i>	20/01/92	29	RUS
9	<i>Columbus Caravelle</i>	29/01/92	120	Bahamas
10	<i>World Discoverer</i>	30/01/92	120	Liberia
11	<i>Vistamar</i>	03/02/92	160	Panama
12	<i>Illiria</i>	10/02/92	100	Liberia
13	<i>Vistamar</i>	13/02/92	230	Panama
14	<i>Illiria</i>	16/02/92	95	Liberia
15	<i>Frontier Spirit</i>	17/02/92	180	Bahamas
16	<i>World Discoverer</i>	19/02/92	1	Liberia
17	<i>Illiria</i>	24/02/92	81	Liberia
18	<i>Columbus Caravelle</i>	26/02/92	150	Bahamas
19	<i>Asma (yacht)</i>	02/03/92	3	D
20	<i>Erebus</i>	08/05/92	5	St Vincent
21	<i>Explorer</i>	20/11/92	55	Liberia
22	<i>Molchanov</i>	21/11/92	27	RUS
23	<i>World Discoverer</i>	03/12/92	75	Liberia
24	<i>Explorer</i>	14/12/92	61	Liberia
25	<i>Columbus Caravelle</i>	15/12/92	97	Bahamas
26	<i>Molchanov</i>	18/12/92	27	RUS
27	<i>Vavilov</i>	28/12/92	50	RUS
28	<i>Molchanov</i>	29/12/92	30	RUS
29	<i>Illiria</i>	08/01/93	107	Liberia
30	<i>Molchanov</i>	11/01/93	37	RUS
31	<i>Columbus Caravelle</i>	13/01/93	120	Bahamas
32	<i>Northern Ranger</i>	21/01/93	70	CA
33	<i>World Discoverer</i>	21/01/93	120	Liberia
34	<i>Vistamar</i>	21/01/93	300	Panama
35	<i>Molchanov</i>	24/01/93	30	RUS
36	<i>Illiria</i>	26/01/93	108	Liberia
37	<i>Columbus Caravelle</i>	27/01/93	128	Bahamas
38	<i>Northern Ranger</i>	29/01/93	70	CA
39	<i>Vistamar</i>	02/02/93	289	Panama
40	<i>Explorer</i>	03/02/93	62	Liberia
41	<i>Illiria</i>	04/02/93	100	Liberia
42	<i>Northern Ranger</i>	04/02/93	65	CA
43	<i>Molchanov</i>	06/02/93	38	RUS
44	<i>Columbus Caravelle</i>	08/02/93	180	Bahamas
45	<i>Northern Ranger</i>	12/02/93	65	CA
46	<i>Illiria</i>	13/02/93	108	Liberia

No.	Vessel name	Date	Number of passengers	Flag
47	<i>Vistamar</i>	13/02/93	220	Panama
48	<i>Vavilov</i>	18/02/93	47	RUS
49	<i>Northern Ranger</i>	18/02/93	60	CA
50	<i>Molchanov</i>	19/02/93	30	RUS
51	<i>Columbus Caravelle</i>	21/02/93	160	Bahamas
52	<i>Northern Ranger</i>	25/02/93	60	CA
53	<i>Columbus Caravelle</i>	22/11/93	150	Bahamas
54	<i>Explorer</i>	01/12/93	60	Liberia
55	<i>Kapitan Khlebnikov</i>	03/12/93	100	RUS
56	<i>Columbus Caravelle</i>	03/12/93	120	Bahamas
57	<i>World Discoverer</i>	04/12/93	127	Liberia
58	<i>Molchanov</i>	08/12/93	20	RUS
59	<i>Ioffe</i>	13/12/93	73	RUS
60	<i>Columbus Caravelle</i>	14/12/93	160	Bahamas
61	<i>Explorer</i>	15/12/93	80	Liberia
62	<i>World Discoverer</i>	16/12/93	100	Liberia
63	<i>Molchanov</i>	21/12/93	38	RUS
64	<i>Ioffe</i>	23/12/93	76	RUS
65	<i>Ioffe</i>	31/12/93	78	RUS
66	<i>Hanseatic</i>	01/01/94	178	Bahamas
67	<i>Ioffe</i>	07/01/94	78	RUS
68	<i>Bremen</i>	11/01/94	155	D
69	<i>Columbus Caravelle</i>	14/01/94	157	Bahamas
70	<i>Bremen</i>	20/01/94	125	D
71	<i>Molchanov</i>	23/01/94	20	RUS
72	<i>Columbus Caravelle</i>	25/01/94	150	Bahamas
73	<i>Ioffe</i>	26/01/94	78	RUS
74	<i>Molchanov</i>	30/01/94	30	RUS
75	<i>Columbus Caravelle</i>	08/02/94	150	Bahamas
76	<i>Bremen</i>	10/02/94	135	D
77	<i>Vavilov</i>	17/02/94	72	RUS
78	<i>Molchanov</i>	18/02/94	30	RUS
79	<i>World Discoverer</i>	20/02/94	180	Liberia
80	<i>Ioffe</i>	25/02/94	75	RUS
81	<i>World Discoverer</i>	26/02/94	145	Liberia
82	<i>World Discoverer</i>	20/11/94	180	Liberia
83	<i>Explorer</i>	25/11/94	85	Liberia
84	<i>Alla Tarasova</i>	29/11/94	25	RUS
85	<i>Livonia</i>	09/12/94	35	EST
86	<i>Ioffe</i>	10/12/94	77	RUS
87	<i>Ioffe</i>	16/12/94	40	RUS
88	<i>Livonia</i>	18/12/94	43	EST
89	<i>Vavilov</i>	21/12/94	68	RUS
90	<i>Ioffe</i>	25/12/94	69	RUS
91	<i>Khromov</i>	02/01/95	35	RUS
92	<i>Explorer</i>	02/01/95	77	Liberia
93	<i>Livonia</i>	04/01/95	35	EST
94	<i>Ioffe</i>	05/01/95	65	RUS
95	<i>Hanseatic</i>	07/01/95	110	D
96	<i>World Discoverer</i>	08/01/95	120	Liberia

No.	Vessel name	Date	Number of passengers	Flag
97	<i>Vistamar</i>	09/01/95	280	Panama
98	<i>Livonia</i>	12/01/95	36	EST
99	<i>Vavilov</i>	12/01/95	68	RUS
100	<i>Ioffe</i>	26/01/95	80	RUS
101	<i>Livonia</i>	28/01/95	38	EST
102	<i>Vavilov</i>	28/01/95	60	RUS
103	<i>Bremen</i>	29/01/95	89	D
104	<i>Livonia</i>	05/02/95	36	EST
105	<i>Vavilov</i>	06/02/95	78	RUS
106	<i>Ioffe</i>	06/02/95	86	RUS
107	<i>Vavilov</i>	13/02/95	72	RUS
108	<i>Hanseatic</i>	14/02/95	145	D
109	<i>Ioffe</i>	07/03/95	76	RUS
110	<i>Livonia</i>	08/03/95	35	EST
111	<i>Vavilov</i>	17/03/95	72	RUS
112	<i>Explorer</i>	17/11/95	55	Liberia
113	<i>Vavilov</i>	23/11/95	72	RUS
114	<i>Ioffe</i>	25/11/95	78	RUS
115	<i>Bremen</i>	11/12/95	130	D
116	<i>Multanovsky</i>	12/12/95	40	RUS
117	<i>Livonia</i>	18/12/95	35	EST
118	<i>Vavilov</i>	22/12/95	67	RUS
119	<i>Boris Petrov</i>	27/12/95	35	RUS
120	<i>Hanseatic</i>	29/12/95	130	D
121	<i>Vavilov</i>	30/12/95	72	RUS
122	<i>Bremen</i>	31/12/95	130	D
123	<i>Multanovsky</i>	03/01/96	47	RUS
124	<i>Livonia</i>	12/01/96	32	EST
125	<i>World Discoverer</i>	12/01/96	118	Liberia
126	<i>Bremen</i>	19/01/96	130	D
127	<i>Ioffe</i>	28/01/96	80	RUS
128	<i>Livonia</i>	02/02/96	38	EST
129	<i>Hanseatic</i>	07/02/96	130	D
130	<i>Boris Petrov</i>	10/02/96	36	RUS
131	<i>Vavilov</i>	13/02/96	74	RUS
132	<i>Vavilov</i>	18/02/96	74	RUS
133	<i>Boris Petrov</i>	19/02/96	42	RUS
134	<i>Vavilov</i>	15/12/96	62	RUS
135	<i>Alla Tarasova</i>	21/12/96	115	RUS
136	<i>Shuleykin</i>	27/12/96	45	RUS
137	<i>World Discoverer</i>	10/01/97	101	Liberia
138	<i>Shuleykin</i>	11/01/97	36	RUS
139	<i>Hanseatic</i>	26/01/97	140	D
140	<i>Vavilov</i>	03/02/97	76	RUS
141	<i>Multanovsky</i>	04/02/97	35	RUS
142	<i>Hanseatic</i>	05/02/97	150	D
143	<i>Explorer</i>	06/02/97	82	Liberia
144	<i>Alla Tarasova</i>	06/02/97	99	RUS
145	<i>Vavilov</i>	14/02/97	74	RUS
146	<i>Khromov</i>	15/02/97	36	RUS

Cruise ship and guests from others stations visits to *Arctowski* Station during the austral summer of 1996/97.

No.	Date	Vessel/ aircraft name	Activities at site (use codes)	Number of										Tourist nationalities	Mean age of pass.	Embarkation port	Is it the first Antarctic site visited?	Expedition operator	Landing time	Departure time	
				Tourist		Staff		Naturalist		Crew		Guests									
				B	S	B	S	B	S	B	S	B	S								
1	15/12/96	<i>Vavilov</i>	SV, AV, BL	62		9	6	9	6	44	3			USA, A, CH, UK, D, F, JP, MX, IL, ID, MY	60	Ushuaia	Yes	Marine Expedition	17:50	20:22	
2	21/12/96	<i>Alla Tarasova</i>	SV, AV, BL	160	115	6	3	4	4	69	2			USA, UK, S, IL, MX, IN	60	Ushuaia	Yes	Marine Expedition	22:01	00:20	
3	22/12/96	<i>Ioffe</i>	SV, BL											CA							
4	25/12/96	<i>Ioffe</i>	SV, BL											AR							
5	27/12/96	<i>Shuleykin</i>	SV, AV, BL	45	45	6	3	2	2	27	1			USA, E, CA	50	Ushuaia		Marine Expedition			
6	10/01/97	<i>World Discoverer</i>	SV, AV, BL	126	101	12	12	6	6	74	9			USA, UK, D, A, S, F, B, AU, CA, ZA	60	Ushuaia	No	Society Expedition	13:21	16:05	
7	11/01/97	<i>Shuleykin</i>	SV, AV, BL	36	36	8	5	3	3	27	9			USA, D, UK, F, AU, CA	50	Ushuaia	Yes	Marine Expedition	21:00	00:05	
8	11/01/97	<i>Skua, zodiac</i>	SV, BL											PE, BR							
9	13/01/97	<i>Skua, zodiac</i>	SV, AV, BL											BR							
10	18/01/97	<i>zodiac</i>	SV, BL											PE							
11	19/01/97	<i>helicopter</i>	HF											UY							
12	25/01/97	<i>Arctic Sunrise</i>	SV, AV, BL											Greenpeace		Ushuaia	No	Greenpeace	10:25	14:15	
13	25/01/97	<i>Arctic Sunrise</i>	SV, AV, BL	170	140	8	5	8	5	105	30			Greenpeace		Ushuaia	No	Greenpeace	20:45	22:55	
14	26/01/97	<i>Hanseatic</i>	SV, AV, BL											USA	50	Ushuaia	Yes	Hanseatic	14:25	17:48	
15	27/01/97	<i>helicopter</i>	HL, SV											UY					11:05	12:50	
16	29/01/97	<i>Twin Otter</i>	AF											AR							
17	30/01/97	<i>helicopter</i>	AF											PE							

18	03/02/97	Vavilov	SV, AV, BL	76	76	11	5	6	6	42	0		USA, A, D, N, F, I, UK, S, AU, IN, SG, JP, IL, CA	60	Ushuaia	Yes	Quark	17:55	20:25
19	04/02/97	Multanowsky	SV, AV, BL	35	35	9	7	2	2	28	10		USA, JP	50	Ushuaia	No	Marine Expedition	16:15	18:35
20	04/02/97	Skua, zodiac	SV, BL									12	BR					10:45	15:05
21	04/02/97	Boeing	AF																
22	04/02/97	zodiac	BL, SV									2	AR					13:20	14:40
23	05/02/97	Hanseatic	SV, AV, BL	150	150	8	5	8	5	105	30		USA, D, JP, CA	55	Ushuaia	Yes	Hanseatic	16:15	19:00
24	05/02/97	Skua, zodiac	SV, AV, BL									10	BR					18:05	21:45
25	06/02/97	Explorer	SV, AV, BL	86	82	13	7	7	7	75	5		USA, D, UK	55	Port Stanley	No	Abercrombie & Kent Int.	14:15	16:20
26	06/02/97	Alla Tarasova	SV, AV, BL	112	99	10	7	6	6	65	4		USA, F, I, UK, A, CA	59	Ushuaia	No	Marine Expedition	17:25	19:15
27	10/02/97	helicopter	HL, SV									11	UY					16:05	21:30
28	10/02/97	Alla Tarasova	BL, SV									3	CA, CZ					23:10	00:05
29	14/02/97	Vavilov	SV, AV, BL	74	74	11	8	3	3	34	3		USA, D, JP, MX, NZ, AU, IRL, CA, ZA	40		Yes	Marine Expedition	15:45	17:30
30	15/02/97	Khromov	SV, AV, BL	36	36	3	3	3	3	22	1		B, F, USA, ID		Ushuaia	No	Quark	15:15	16:50
31	16/02/97	zodiac	BL, SV									9	BR					16:05	19:30
32	18/02/97	helicopter	HL									0	UY					09:05	09:10
33	18/02/97	Twin Otter	AF									0	CH					16:30	16:31
34	18/02/97	helicopter	HL									0	CH					16:55	17:00
35	21/02/97	helicopter	HL									0	UY					11:03	11:07
36	21/02/97	helicopter	AF									0	CH					12:00	12:02
37	21/02/97	zodiac	BL, SV									3	AR					16:30	17:50

Codes used in the Appendix B: SV – station visit, B – on board, BL – small landing, S – on shore, AV – station area visit, AF – aircraft flight. In column fourteenth country codes were used.