ISSN 1327-8231

ECONOMICS, ECOLOGY AND THE ENVIRONMENT

Working Paper No. 99

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April 2004

THE UNIVERSITY OF QUEENSLAND

ISSN 1327-8231
WORKING PAPERS ON
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* Draft of a chapter to be in Ashish Chandra and Devesh Nigam (eds), *Tourism, Environment and Ecology*, Institute of Tourism and Hotel Management, Bundelkhand University, Jhansi, India.

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WORKING PAPERS IN THE SERIES, *Economics, Ecology and the Environment* are published by the School of Economics, University of Queensland, 4072, Australia, as follow up to the Australian Centre for International Agricultural Research Project 40 of which Professor Clem Tisdell was the Project Leader. Views expressed in these working papers are those of their authors and not necessarily of any of the organisations associated with the Project. They should not be reproduced in whole or in part without the written permission of the Project Leader. It is planned to publish contributions to this series over the next few years.

Research for ACIAR project 40, *Economic impact and rural adjustments to nature conservation (biodiversity) programmes: A case study of Xishuangbanna Dai Autonomous Prefecture, Yunnan, China* was sponsored by the Australian Centre for International Agricultural Research (ACIAR), GPO Box 1571, Canberra, ACT, 2601, Australia.

The research for ACIAR project 40 has led in part, to the research being carried out in this current series.

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Antarctic Tourists: A Case Study of Their Evaluation of Antarctic Wildlife and Environmental Issues

Abstract

Reports the results of surveys of Antarctic cruise ship passengers on the 'Akademik Ioffe' who undertook their Antarctic journey in January 2003. The prime purposes of the surveys were to determine the socio-economic profile of these travellers, evaluate the importance of Antarctic wildlife for their travel, their attitude to Antarctic wildlife conservation as well as environmental issues involving Antarctica, both prior to their tourist visit to Antarctica and following it. This paper reports on the socio-economic profile of respondents, their willingness to pay for their Antarctic trip, and their knowledge of Antarctica. The comparative importance of Antarctic wildlife as a factor motivating respondents to undertake their journey is assessed and the evaluation of travellers following their Antarctic visit is considered. The relative importance of different Antarctic wildlife species is taken into account as well as Antarctic attractions other than wildlife. The attitudes of respondents to several environmental issues involving Antarctica, (eg. the commercial use of its natural resources and global environmental change impacting on Antarctica) are canvassed and summarised. In conclusion, the relevance of the survey results for Antarctic conservation are discussed. Particular attention is given to the question of whether Antarctic tourism favours or threatens Antarctic nature conservation.

Antarctic Tourists: A Case Study of Their Evaluation of Antarctic Wildlife and Environmental Issues

1. Introduction

While visits by tourists to Antarctica have increased considerably, Antarctica is still far from a mass tourism destination partly because the cost of an Antarctic cruise is quite high. For example, in January 2003, we asked tourists joining the cruise to Antarctica on the cruise ship 'Akademik Ioffe', 'How much do you expect that you/your accompanying partner/family will have spent per person (approximately) specifically for this journey by the time it ends?'. The mean value mentioned was AUS$15,540 with a median of AUS$15,000. The actual cruise was of nine days duration from the Argentinean port of Ushuaia. Approximately 75 per cent of tourists to Antarctica start and finish their journey in this port (Barrio and Roldan, 1997).

Fifty-two passengers filled out the structured pre-visit survey forms on board this vessel on their way to Antarctica. Fifty passengers filled out post-visit survey forms on their return journeys. The survey forms (pre- and post visit are reproduced in the Appendix). Only one form was completed per party. The questionnaires were designed to detect possible differences between expectations on the outward journey and evaluations after the visit of the tourists to Antarctica.

According to the International Association of Antarctica Tourist Operators (2003), the maximum capacity of the 'Akademik Ioffe' is 117 passengers and it carries an average of 90 passengers per trip. Because only one completed survey was required per party travelling on this ship, coverage of the survey was relatively complete. Incidentally, the 'Akademik Ioffe' is registered in Russia and chartered by Peregrine Shipping Pty Ltd, Melbourne, Australia.

In this paper, we first outline the nature of the survey and the profiles of respondents and their willingness to pay for this trip. This is followed by an outline of the knowledge of respondents of Antarctica and their evaluation of Antarctica wildlife as part of their experience. Their attitudes to environmental issues we raised about Antarctica are then reported and examined. This is followed by a general discussion and conclusions.

2. Surveys, Profile of Respondents, and Their Willingness to Pay for Their Antarctic Trip

Tourists onboard the 'Akademik Ioffe' were asked to participate in the survey during the journey from Ushuaia, Argentina to the Antarctic Peninsula, whilst crossing the Drake Passage. The second part of the survey was administered at the completion of the trip whilst heading north across the Drake Passage towards Ushuaia. Tourists onboard were briefly introduced to the research and had the option of not participating. The survey was administered on two voyages of this ship in January 2003. There were 68 passengers on each voyage.

A slight majority of respondents were females (51.9 per cent). Most respondents (76.9 per cent) were accompanied but 23.1 per cent travelled alone. Only one respondent had previously visited the South Polar Region.

The countries in which the respondents normally reside are shown in Table 1. Only one respondent did not indicate their country of residence but otherwise all were from Western countries, with those from Australia, Sweden and the USA accounting for most respondents. A high number of Australians is not usual for Antarctic trips. Normally, Americans make up the majority of travellers to Antarctica. The high proportion of Australians in our sample is a reflection of the location of Peregrine in Australia.

Table 1:

In which country do you normally reside? (Pre-visit question)

Distribution of responses

Country	Frequency	% of total
Australia	20	38.5
Sweden	15	28.8
USA	6	11.5
UK	4	7.7
Italy	2	3.8
Switzerland	2	3.8
Austria	1	1.9
France	1	1.9
n/r	1	1.9
Total	**52**	**100**

More than half the respondents were over 50 years of age and the modal age group was 51-60. The age distribution of respondents is shown in Table 2. Typically respondents are 'empty-nesters' and belong to older age groups. This accords with other studies.

Table 2:

To what age group do you belong? (Pre-visit survey)

Distribution of responses

Age in years	Frequency	% of total
20-30	2	3.8
31-40	8	15.4
41-50	8	15.4
51-60	17	32.7
61-70	12	23.1
71-80	2	3.8
81+	0	0
n/r	3	5.8
Total	**52**	**100**

They possess a high degree of education (see Table 3). This has also been found in other studies. Almost 75 per cent had university degrees with most in this group having postgraduate degrees.

Table 3:

Indicate your highest educational qualification (Pre-visit survey)

Distribution of responses

Level of education	Frequency	% of total
Primary only	0	0
Some junior schooling	0	0
Completed year 10 secondary or equivalent	1	1.9
Completed year 12 or equivalent	4	7.7
Trade certificate or equivalent	1	1.9
Diploma or equivalent	3	5.8
Degree or equivalent	16	30.8
Post-graduate degree or equivalent	22	42.3
n/r	5	9.6
Total	**52**	**100**

For most of the cruise ship passengers the family income was found to be high. However, this needs clarification. In the survey the respondents were asked to state their family income in their home currency since there are many passengers from different nationalities using

various currencies. An income comparison using various currencies is inappropriate and hence the various currencies were converted into Australian dollars using the prevailing exchange rates at the time. The adjusted family income levels are shown in Table 4. Of the 52 respondents in the survey 77 per cent of the respondents answered this question and the rest did not. Of the respondents who did, it is clear that the majority (60 per cent) of the respondents had an income of more than AUS$100,000. Of those who did not have an income of more than AUS$100,000, 17.5 per cent had a family income of more than AUS$50,000, but less than AUS$100,000. The rest of the respondents (22.5 per cent) had an income of less than AUS$50,000. A closer examination of data show that the majority (90 per cent) of those having a family income less than AUS$50,000 were Swedish and close to half (44 per cent) of them were retirees perhaps using their savings to make this journey. This partly explains how those with less than AUS$50,000 family income could undertake an expensive journey such as this to Antarctica. Another 44 per cent belonged to the 51-60 age category perhaps using up their savings to undertake this journey. Only 11 per cent of the passengers who had a family income of less than AUS$50,000 belonged to the 20-30 age group and were single. A similar analysis for those with a family income of less than AUS$100,000 to a large extent demonstrate similar characteristics. Therefore, the data show that in addition to the level of income other factors such as being able to use up savings, empty nesters and being single also influence the affordability of the journeys and is not solely explained by income.

Table 4:

Your family income level per annum in your home currency? (Pre-visit survey)

Distribution of responses

Family income range (in AUS$)	Number	Frequency (%)
Below 25,000	1	2.5
25,001-50,000	8	20
50,001-75,000	6	15
75,001-100,000	1	2.5
100,001-125,000	8	20
125,001-150,000	1	2.5
150,001-175,000	2	5
175,001-200,000	3	7.5
200,001-225,000	3	7.5
225,001 and above	7	17.5
Total	**40**	**100**

Note: 12 respondents did not answer this question

Respondents indicated in the pre-visit and post-visit surveys that, on average, they would have been prepared to pay more for their trip than they actually paid. The study tried to determine the expectations of visitors about Antarctica in terms of what they had actually paid for the journey and what they would be willing to pay after the journey. In order to make a comparison, it is necessary to compare those who had stated how much they had actually paid and how much they were willing to pay after the visit. There were only 33 respondents who had answered the pre-and post visit questions. From the limited data, it seems that the money that was spent is consistent with the expectations of the visitors. For example, the pre-visit mean of these 33 respondents was AUS$14,194 and the post-visit mean was AUS$14,362 which is only marginally larger. These figures differ from those given in Section 1. The former figures are based on 47 responses.

Some of the comments from respondents received after the journey were:

- Quite expensive;
- It is too much!!;
- Just within my reach;
- We spent three-quarters of our savings on this journey; a life-long dream for my husband but still cannot justify the expense. We would have spent $15,000 for this dream;
- It was a lot of money compared to travelling to other areas of the world but a great one off;
- It was about AUS$2,000 over my budgeted amount but worth it; and
- Well worth it for the experience.

3. Knowledge of Antarctica

Respondents were asked whether they considered their knowledge of Antarctica to be poor, average, good or excellent. Most considered their knowledge before their visit to be average but after their visit, their knowledge was rated as good, a rating above the average. In general, there was a sharp rise in the perceived level of knowledge of respondents about Antarctica. Weighting poor as zero, average as 1, good as 2 and excellent as 3, the weighted

average of knowledge of respondents of Antarctica rose from 2.23 pre-visit to 2.84 following their visit. The upward shift in the distribution is evident from Table 5.

Table 5:

Do you regard your current knowledge of Antarctica/sub-Antarctica as excellent, good, average or poor? Distribution of responses

Rating	Pre-Visit		Post-Visit	
	Frequency	**%**	**Frequency**	**%**
Excellent	1	1.9	3	6
Good	16	30.8	38	76
Average	29	55.8	7	14
Poor	6	11.5	2	4
Total	**52**	**100**	**50**	**100**
Index of knowledge		2.23		2.84

Index of knowledge calculated using the following weights:
4 - Excellent knowledge
3 - Good knowledge
2 - Average knowledge
1 - Poor knowledge or no response

Prior to their visit, just under 40 per cent of respondents said that they had read widely about Antarctica and around 55 per cent said they had watched many TV programmes on Antarctica. Nevertheless, a substantial proportion of the respondents did not have such exposure before their journey.

4. Respondents' Attitudes to Antarctic Wildlife

Prior to their visit, 94.2 per cent of respondents said they were interested in Antarctic wildlife and 5.8 per cent said they were not. Of those interested in Antarctic wildlife, their greatest interest was shown in penguins, followed by whales and dolphins, and then seals.

The stated interest of respondents in Antarctic wildlife species before and after their visit is shown in Table 6. Penguins continued to be of greatest interest and whales and dolphins of second highest interest after the journey. A major change, however, was the very substantial rise in valuations of sea birds (other than penguins) following the visit of respondents to Antarctica. Most respondents said that they became more interested in Antarctic wildlife following their visit.

Table 6:

If you are interested in Antarctic wildlife, is your interest mainly in which species listed? (you may tick more than one box). Distribution of responses.

Type of wildlife	Pre-Visit		Post-Visit	
	Frequency	%	Frequency	%
All Wildlife	33	32.7	24	25.8
Penguins	27	26.7	25	26.9
Whales and Dolphins	24	23.8	18	19.4
Seals	14	13.9	10	10.8
Other Polar Seabirds	3	3	16	17.2
Total	**101**	**100**	**93**	**100**

The majority of respondents suggested that a special feature of Antarctic wildlife is that most species do not occur elsewhere. The proportion saying this was about the same before and following their visit. Prior to the visit about 40 per cent of respondents said that Antarctic wildlife can be easily seen in large numbers whereas after their visit this rose to 54 per cent. While the majority of respondents stated on the outbound journey that the adaptations of Antarctic wildlife would be a special attraction, only a half said this on the return journey. As for other features and comments, on the outward journey some respondents said they would be able to get close to the wildlife and many thought that it would be a special attraction to see Antarctic wildlife in its natural environment. Getting close was not, however, mentioned in the post-visit survey responses but seeing wildlife in their own environment was. One respondent said that the journey enabled him/her to see several new bird species for the first time.

Following their cruise, 94 per cent of respondents said that they had learnt more about Antarctica and its wildlife as a result of their cruise and 76 per cent said that they had become more aware of conservation issues involving Antarctica wildlife. Nearly all (94 per cent) were in favour of conserving Antarctic wildlife, none expressed opposition to it but 6 per cent did not respond.

The importance placed on seeing Antarctic wildlife increased as a result of the cruise. This is evident from Table 7. It is also supported by the increase in the weighted average in which ‘no response’ or ‘of no importance’ responses are weighted as zero, ‘not very important’ as 1, ‘important’ as 2, and ‘very important’ as 3. This weighted average increased from 2.48 to

2.66. Although 70 per cent of respondents were satisfied with their wildlife watching experience in Antarctica 30 per cent said they were not satisfied.

Table 7: Responses to the questions: (Pre-Visit): How important was the possibility of seeing Antarctic/Sub-Antarctic wildlife in your decision to come on this journey? (Post-Visit): How important was seeing Antarctic/Sub-Antarctic wildlife during this cruise? Distribution of responses.

Rating	Pre-Visit		Post-Visit	
	Frequency	**%**	**Frequency**	**%**
Very important	32	61.5	37	74
Important	13	25	11	22
Not very important	7	13.5	0	0
Of no importance or n/r	0	0	2	4
Total	**52**	**100**	**50**	**100**
Index of importance*		2.48		2.66

* Index is calculated on the basis that Not important or No response = 0, Not Very Important = 1, Important = 2, Very important = 3

The importance of Antarctic wildlife as an attraction to Antarctic tourists is evident from responses to a pre-visit question. Respondents were asked: 'If there was no wildlife to be seen in the South Polar Region, would you have still decided to come on this cruise, given your present costs'. The majority (61.5 per cent) said 'No' 34.6 per cent said 'Yes' and 3.8 per cent did not respond. Furthermore, 53.1 per cent of those said 'No' would not even come on this cruise even if it were much cheaper should there be no Antarctic wildlife.

Some of the comments given by those who said they would have decided to join the cruise even in the absence of Antarctic wildlife are as follows:

- The ruggedness/isolation/ice/wind etc, landscapes;
- Because I am also interested in geology/science;
- Wonderful scenery;
- To see scenery in the region, ice, etc;
- More to see than I thought;
- Probably if the landscape is beautiful;
- It would have been a travelling option;
- Interest in photography (scenery) and plants;
- Fascinated by the icebergs and sheer isolation; and

- The nature, landscape is …. There.

Comments from those who said they would not join the cruise in the absence of Antarctic wildlife were as follows:

- Would not be a complete experience;
- Wildlife factor is most important;
- Wherever I go wildlife is my major interest along with people and cultural differences;
- Can visit glaciers/national parks for much fewer dollars without requirement of a boat trip;
- For me, interactional behaviour of wildlife with its environment is very important to see/understand;
- Wanted to see wildlife;
- Absolutely impossible to say, completely theoretical question, we go for the existing Antarctica as it is;
- Ice I can see at home; and
- Appearance/experience of ice alone not sufficient.

Following their cruise, however, 50 per cent of respondents stated that they would still have enjoyed their cruise if they had not seen any wildlife, 34 per cent said they would not have, and 16 per cent did not reply. While many respondents still said they would have enjoyed their cruise in the absence of wildlife, it is nonetheless clear that for most, wildlife is a highly significant contributor to their willingness to visit Antarctica and to their enjoyment of it.

On the outward journey, all respondents expected to see whales and dolphins, penguins, seals, and all (except one) expected to see polar seabirds, other than penguins. Respondents were asked to say how much seeing this wildlife would add to their satisfaction along a scale of 'not at all', 'a little', 'much' and 'very much'. Whales, dolphins and penguins topped the list in terms of expected added satisfaction, followed by seals and their relatives, and then polar seabirds other than penguins. Nearly all respondents said after their Antarctic visit that they had seen those species. The added satisfaction they claimed to obtain by seeing, accorded with their original expectations about how much relative extra satisfaction they would obtain if they saw these species. Whales and dolphins were said on average to add

most to satisfaction followed by penguins, seals and relatives, and then polar birds (other than penguins). These results are borne out by Table 8.

Table 8: Index of satisfaction anticipated obtained from seeing Antarctic wildlife species based on responses to the following question: Pre-Visit (Q9). Please tick in the second column if you expect to see any of the following wildlife in Antarctica or Sub-Antarctica during this cruise. Would it increase your satisfaction (1) a little; (2) much; (3) very much; or (4) not at all to see the following wildlife? Please put the appropriate number in the last column. Post –Visit (Q6). Tick in the second column if you saw any of the following wildlife in Antarctica or Sub-Antarctica during this cruise. Did they increase your satisfaction (1) a little; (2) much; (3) very much; or (4) not at all to see the following wildlife?

Type of wildlife	Pre-Visit	Post-Visit	Change in value of index	% variation in index
Whales and Dolphins	2.33	2.19	-0.14	-6.01
Penguins	2.31	2.15	-0.16	-6.93
Seals (and relatives)	1.98	1.96	-0.02	-1.01
Polar Seabirds (other than penguins)	1.71	1.66	-0.05	-2.92

Index of added satisfaction calculated using the following weights:
3 - Very much
2 - Much
1 - A little
0 - Not at all/No response

Respondents were requested to rank various features of their cruise prior to their visit to Antarctica and to rank the same set of features following their visit using a scale of ‘very important’, ‘important’, ‘not very important’ or ‘of no importance’. Weighting these rankings as 3, 2, 1 and zero respectively and treating a non-response as indicating ‘no importance’, the weighted means before and after visits to Antarctica are as set out in Table 9.

Table 9: Average weighted indices of importance to respondents of features or attributes of Antarctica/Sub-Antarctica prior to and following their visit. Changes in indices are also shown.

Features	Pre-Visit Index	Post-Visit Index	Change in value of index	% variation in index
Landscapes and seascapes	2.75	2.74	-0.01	-0.36
Wildlife	2.60	2.56	-0.04	-1.54
Different or unique environment	2.58	2.52	-0.06	-2.33
Unspoilt wilderness	2.58	2.48	-0.1	-3.88
Antarctic summer	2.12	1.94	-0.18	-8.49
The thrill of expedition	1.98	1.90	-0.08	-4.04
Continent without permanent human habitations	1.69	1.82	0.13	+7.69
Few others have visited it	1.50	1.52	0.02	+1.33
Connections with explorers	1.40	1.40	0	0.00
Ship cruise pleasures	0.73	1.20	0.47	+64.38

Index of importance calculated using the following weights:
3 - Very important
2 - Important
1 - Not very important
0 - Of no importance/No response

From Table 9, it can be seen that respondents ranked Antarctic landscapes and seascapes as the most important feature (both pre- and post-visit) followed by wildlife. Various Antarctic cruise features are ranked in Table 9 by the index of importance given to them by respondents before their Antarctic visit. On average, the rank ordering by respondents remained the same after their visits as before their visits. While most indices of importance showed little change before and after the Antarctic visit by respondents, a few showed substantial variation. Appreciation of ship cruise pleasures increased by a comparatively large amount and the fact that Antarctica is a continent without permanent human habitation also increased as did, to a small extent, the realisation that few others have visited Antarctica. Most other items showed only small declines in their ratings of importance. However, the importance of the Antarctic summer as an attraction showed a decline of around eight per cent, as measured by the index of importance.

There was also a slight increase in the degree of advocacy of respondents of nature conservation following their visit to Antarctica, as can be seen from Table 10.

Table 10: Attitudes of respondents to nature conservation based on responses to pre-visit and post-visit questions. Pre-Visit (Q8). How would you rate your attitude towards conservation. Post-Visit (Q14). How would you rate you attitudes towards nature conservation after your experience of Antarctica. Distribution of responses.

Attitude to nature conservation	Pre-Visit		Post-Visit	
	Frequency	%	Frequency	%
Extremely strong advocate	6	11.5	3	6
Strong advocate	20	38.5	30	60
Moderate advocate	24	46.2	14	28
Neutral towards this subject	2	3.8	0	0
More oriented towards development than conservation	0	0	0	0
No response	0	0	3	6
Total	**52**	**100**	**50**	**100**
Index of environmental advocacy		1.58		1.66

Index of environmental advocacy calculated with the following weights:

3 - Extremely strong advocate
2 - Strong advocate
1 - Moderate advocate
0 - Neutral towards this subject
0 - No response
-1 - More oriented towards development than conservation

On the whole, the importance placed by respondents on natural environments and wildlife in Antarctica as a part of their cruise expectations and experience appear to be much the same before their visit and following it. There was, however, a slight increase in their advocacy of nature conservation following their visit to Antarctica. In addition, expectations about seeing different species of Antarctic wildlife and stated realisation of satisfaction from doing so were quite similar in both pre- and post-visit. Now we turn to the opinions of respondents as revealed by various questions posed about environmental issues involving Antarctica.

5. Opinions of Respondents About Various Environmental Issues Involving Antarctica

Several environmental issues involving Antarctica were raised with respondents, similar questions being asked before their visit and following it. This was done to assess the general attitudes of respondents to such issues and to detect any changes as a result of their visit to Antarctica.

Before their visit, 80.8 per cent of respondents said that they believe that global warming is melting icebergs in Antarctica. This fell slightly to 76 per cent in the post-visit survey. However, there was a slight increase in the percentage of respondents saying that they would like more action to be taken to reduce such melting. Almost 95 per cent of those respondents who were convinced that global warming is melting Antarctic icebergs thought that more action should be taken to reduce such melting (see Table 11).

Table 11:

If you believe global warming is melting icebergs in Antarctica, would you like action to be taken to reduce such melting? Distribution of responses

Response	Pre-Visit	Post-Visit
	Relative frequency %	Relative frequency %
Yes	92.9	94.7
No	0	2.6
n/r	7.1	2.6
Total	**100**	**100**

Around 75 per cent of the respondents were opposed to krill harvesting in Antarctica but 9.6 per cent favoured it in the pre-visit survey. Those in favour rose to 14 per cent in the post-visit survey (see Table 12).

Table 12:

Do you think that krill harvesting should continue in Antarctica? Distribution of responses

Response	Pre-Visit	Post-Visit
	Relative frequency %	Relative frequency %
Yes	9.6	14
No	75	74
n/r	15.4	12
Total	**100**	**100**

Most respondents (over 90 per cent) were opposed to Antarctica's vast non-living natural resources (eg. petroleum, minerals, water) being commercially exploited for consumptive use. This is evident from Table 13.

Table 13:

Are you in favour of Antarctica's vast resources (eg. petroleum,, minerals, water) being exploited? Distribution of responses

Response	Pre-Visit	Post-Visit
	Relative Frequency %	Relative Frequency %
Yes	0	2
No	92.3	94
n/r	7.7	4
Total	**100**	**100**

Furthermore, over 90 per cent of respondents wanted Antarctica to be preserved in a pristine state (see Table 14), a slight rise being evident following the visits by respondents. The most frequently given reason was because it was seen as unique (see Table 15). The mere knowledge that Antarctica would remain unspoilt was also frequently mentioned as a reason for preserving it in a pristine state, as well as its influence on the Earth's climate, an indirect use value. The desire to retain the uniqueness and unspoilt character of Antarctica reflects the non-use values. *Use values* such as tourism potential and conservation of resources for future use *were mentioned very infrequently as a reason for wanting to conserve Antarctica* in a pristine state. Bequest and altruistic values ('I would like my children and others to enjoy it') were mentioned relatively frequently. No major changes (between responses on the outward journey and the return one) occurred in the relative frequencies with which the reasons were given for wanting to conserve Antarctica in a pristine state. There was very little support for conservation of resources for future (consumptive) use.

Table 14:

Do you want Antarctica (including wildlife, plant life and its landscape) to be preserved in its pristine state? Distribution of responses

Response	Pre-Visit	Post-Visit
	Relative frequency %	Relative frequency %
Yes	92.3	94
No	1.9	4
n/r	5.8	2
Total	**100**	**100**

Table 15:

The distribution of reasons given by those who said they want Antarctica (including its wildlife, plant life and its landscape) to be preserved in its pristine state

Reason	Pre-Visit		Post-Visit	
	Frequency	% of Total responses	Frequency	% of Total responses
It is unique	46	28.9	47	29.2
It has a large influence on the Earth's climate	38	23.9	37	23
I would like to know that it could remain unspoilt	36	22.6	37	23
I would like my children and others to enjoy it	26	16.4	28	17.4
It has tourism potential	7	4.4	7	4.3
It has great resources that could be used in the future	6	3.8	5	3.1
Total	**159**	**100**	**161**	**100**

Opinions were somewhat divided about whether there should be increased tourism activity in Antarctica. Around half of respondents were against it whereas about 40 per cent favoured it. The results are summarised in Table 16.

Table 16:

Are you in favour of increased tourism in Antarctica?

Distribution of responses

Response	Pre-Visit	Post-Visit
	Relative frequency %	Relative frequency %
Yes	40.4	38
No	50	54
n/r	9.6	8
Total	**100**	**100**

Comments by those respondents who favoured increased tourism into Antarctica included the following:

- It is inevitable, need to be proactive in developing an action plan;
- Public awareness;
- If environmental impact is managed;
- Good education;

- Controlled tourism allows populations to experience this wilderness and will motivate them to help preserve it;
- To give others the opportunity to experience Antarctica as we have;
- People who have seen Antarctica will probably be in favour of preserving it;
- Awareness;
- The unique experience;
- Done in sensitive ways to inform the world about this treasure;
- Learning;
- It was great to see it;
- If controlled;
- To get to understand it; and
- To encourage more donations and better protection of wildlife.

Comments by respondents who opposed increased tourism to Antarctica included the following:

- Inevitable damage;
- Difficult to control;
- Increased tourism can only mean increased impact on wildlife and environment;
- Not to disturb wildlife;
- Increased activity likely to result in increased impact;
- Limit the numbers to preserve wilderness;
- Would spoil it;
- More people than come now could have an adverse effect;
- Seems to be well managed at existing tourism levels;
- At present there seems to be no impact analysis;
- Consequences;
- Not to damage and disturb wildlife;
- Save the nature;
- Mass tourism will damage some spots at least;
- Damage;
- Not to spoil Antarctica;

- More chance of damage;
- Pollution;
- Environmental issue;
- To maintain environment;
- Greater risk of pollution and damage to ecosystems;
- Disturbance of wildlife;
- Keep it pristine/pure; and
- Destruction to environment.

A high proportion of respondents (around 90 per cent) favour the Antarctic continent and surrounding seas being declared a world park and for it to be managed under the auspices of the United Nations and/or by the twelve Antarctic Treaty Nations. [These are the original claimant nations and do not include all Antarctic Treaty Nations]. Although there was some increase in opposition to this in the post-visit survey, no major change is apparent (see Table 17).

Table 17: Are you in favour of the Antarctic continent and surrounding seas being declared a world park and managed under the auspices of the United Nations and/or by the twelve Antarctic Treaty nations? Distribution of responses

Response	Pre-Visit	Post-Visit
	Relative frequency %	Relative frequency %
Yes	90.4	88
No	1.9	6
n/r	7.7	6
Total	**100**	**100**

Respondents were in addition asked 'If an organisation such as the United Nations were to raise money to declare Antarctica and the surrounding seas as a world park and conduct further research into its unique wildlife and landscapes/seascapes, would you be willing to make an annual contribution for the next ten years'? The percentage of respondents' pre-visit who said 'Yes' was 46 per cent and this rose to 54 per cent post-visit. Those who said 'No' declined from 52.7 per cent pre-visit to 26 per cent post-visit whereas the percentage of non-respondents declined slightly. The results are shown in Table 18.

Table 18: If an organisation such as the United Nations were to raise money to declare Antarctica and its surrounding seas as a world park and conduct further research into its unique wildlife and landscape/seascapes, would you be willing to make an annual contribution for the next ten years? Distribution of responses

Response	Pre-Visit	Post-Visit
	Relative frequency %	Relative frequency %
Yes	46.2	54
No	32.7	26
n/r	21.2	20
Total	**100**	**100**

Reasons given by those who said they would not contribute included the following:

- I prefer to make donations to charities that improve the lives of humans;
- Money should come from countries involved in Antarctic Treaty;
- I would need to know what the purpose of the contribution is first;
- Should be funded by states in the UN;
- Study funding should be supported by tourism access (charge per visit);
- This is a state/government responsibility;
- Would give to other priorities;
- My first option is the Scandinavian area; and
- Can't make decisions based on a 10 year plan.

It is worth noting that under The Protocol to the Antarctic Treaty on Environmental Protection (Madrid Protocol) Article 2 declares that "The Parties commit themselves to the comprehensive protection of the Antarctic environment and dependent and associated ecosystems and hereby designate Antarctica as a natural reserve, devoted to peace and science". Hence, it is a declared natural reserve. This in itself, however, does not ensure that it is managed as a strict nature reserve and that its pristine nature will necessarily be preserved.

6. General Discussion and Conclusion

Representatives of virtually all travellers on the 'Akademik Ioffe' completed the questions for this survey during their journeys to and from Antarctica for two of its trips in January 2003. The questionnaire was completed on the return journey to gauge whether values and attitudes

of respondents to Antarctic wildlife and to environmental conservation in Antarctica changed following their visit. Little change occurred.

Respondents were found, on the whole, to be relatively well-off economically, to be well educated and typically they were over 50 years of age. Prior to their visit most respondents regarded their knowledge of Antarctica to be 'average', but this rose to 'good' following their visit.

Prior to their visit, most respondents (86.5 per cent) thought that the presence of Antarctic wildlife was a very important or important reason for joining the cruise, although 13.5 per cent thought it was not a very important reason for this. After their visit, 96 per cent of respondents stated that seeing Antarctic wildlife was a very important or important feature of their cruise and no one stated that it was not very important. However, two individuals did not respond. Answers by respondents indicated that (on the whole) their valuation of the importance of Antarctic wildlife as an attraction rose as a result of their cruise. Penguins vied with whales and dolphins as being of particular interest or importance to the responding tourists. Seeing these animals added most to the satisfaction of respondents.

However, most values of respondents about the importance of natural attributes or features of Antarctica remained relatively unchanged before and after their visit. Landscapes and seascapes were on average rated as most important in relation to this cruise both before and after visits to Antarctica, followed in importance by wildlife. The attributes of 'different or unique environment' and 'unspoilt wilderness' continued to be highly ranked in importance both pre- and post-visit. The largest comparative increase in importance following the visit was for 'ship cruise pleasures'. Attitudes of respondents in favour of environmental conservation (as scaled by them) strengthened considerably following their visit to Antarctica.

As for environmental policy in Antarctica, nearly all respondents thought that more action should be taken to reduce the melting of icebergs as a result of global warming, nearly all were against the consumptive use of Antarctica's natural resources, and nearly all favoured the conservation of Antarctica in a pristine state. Attitudes in relation to these matters did not change very much after the visit of respondents to Antarctica. While there is some difficulty

in interpreting reasons given by respondents for wanting to conserve Antarctica in a pristine state, non-use economic values appear to be of predominant importance.

Respondents were quite divided about whether there should be increased tourism activity in Antarctica. A half of the respondents were against it prior to their trip to Antarctica and this increased slightly following their visit. On the other hand, 40 per cent of respondents said prior to their visit to Antarctica that they favoured increased tourism activity in Antarctica. However, this fell slightly following their visit, and many of those who favoured increased tourism in Antarctica qualified their answer, for example, by saying that safeguards should be imposed to ensure that the increased tourism does not jeopardise environmental conservation. Around 90 per cent of respondents favoured the declaration of the Antarctic and surrounding seas as a world park managed under the auspices of the United Nations and/or by the twelve Antarctic Treaty nations. However, only about half of respondents said that they would be prepared to donate funds for this enterprise. There was, however, some increase in the proportion of respondents who said they were willing to donate once they had visited Antarctica. In addition, although a third of respondents said they would not donate when asked prior to their visit to Antarctica, this fraction fell to a quarter after their visit.

Since the question of the contribution is hypothetical, upward bias may be present in the respondents' expressed willingness to donate funds to support the creation and maintain an Antarctic world park.

Nevertheless, very strong support clearly exists amongst this sample of tourists for the idea that the Antarctic continent and surrounding seas should be a world park managed under the auspices of the United Nations and/or by the twelve Antarctica Treaty nations. About 90 per cent of respondents favoured this proposal. This is consistent with the view that most tourists to Antarctica are likely to be advocates of its environmental conservation.

Despite this, Antarctic tourists in large numbers can endanger the relatively pristine state of Antarctica, especially in the absence of appropriate environmental management. Furthermore, apart from the volume of visitors to Antarctica, the geographical distribution of their visits is very important. Presently, tourism is concentrated on the Antarctic Peninsula and particularly on a few tourist 'hotspots' there, and nearly all such spots are shoreline and coastal (Barrio and Roldan, 1997).

While a voluntary association of Antarctic tourist operators exist, [International Association of Antarctica Tour Operators, (IAATO)] with a code of conduct favourable to environmental conservation, not all Antarctic tourism operators belong to it. Furthermore, it is not known how rigorously members observe the code of conduct of IAATO. In addition, the nature and extent of cumulative-type impacts associated with Antarctic tourism have not been adequately studied.

Nevertheless, according to *Australian Wildlife*, No. 1, 2004, p.81, British scientists have issued a warning that tourists to Antarctica are threatening its wildlife. This claim, however, needs to be qualified according to the entry in *Australian Wildlife* (Anon, 2004) because politically and socially tourism can play a positive role in nature conservation in Antarctica (compare also Tisdell and Broadus, 1989). This item states that "it was tourists who alerted the world to mistakes in that part of the world many years ago, warning of the killing of birds to be rendered down for oil and later the dumping of rubbish from research stations". While operators of many research stations now return rubbish to their home country, others continue to dump it in the sea. Research stations in Antarctica can have substantial adverse environmental impacts. In conclusion, this *Australian Wildlife* item claims that "The world over, it is tourists who tend to be most concerned about the conservation of any pristine landscape and its wildlife" (Anon, p.31).

Although the last point involves a comparatively sweeping claim, the results from this case study lend support to it. From Table 14, it was seen that over 92 per cent of our survey respondents said prior to their visit to Antarctica that they wanted Antarctica (including wildlife, plant life and its landscape) to be preserved in its pristine state. Support for this proposal increased to 94 per cent after their visit to Antarctica. Only a small minority of respondents opposed such preservation.

While tourists can play, and have played, a significant political, social and economic role in supporting nature conservation (consider, for example, their role in fostering conservation of marine turtles in Australia, as outlined, for example, in Tisdell and Wilson, 2003), there is also a need to manage tourism including Antarctic tourism, appropriately so as to control its possible adverse environmental consequences. Ideal mechanisms are not yet in place for managing Antarctic tourism and for conserving Antarctica's natural resources.

Furthermore, the consensus approach to the Antarctic Treaty System seems to be a barrier to effective governance of tourism by the Antarctic Treaty Nations. While self regulation of Antarctic tourism by IAATO members is a step forward, not all Antarctic tour operators are members of IAATO. In addition, although self-organisation can be effective, there is no guarantee that all operators will adhere to an 'agreed' code of conduct.

Acknowledgements

We wish to thank Alex Park, Nick Footner and Vincent Hoang for their research assistance and also the CRC for Sustainable Tourism for some financial support for this project. We also wish to thank Diane Gee for administering the questionnaires on board the 'Akademik Ioffe' and are grateful to the ship's staff for assistance, and to Peregrine Shipping Pty Ltd for permission to conduct this survey.

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APPENDIX:

Pre-Visit and Post-Visit Questionnaires Distributed to Tourists on the "Akademik Ioffe" on Antarctic Voyages January 2003

This study is being conducted with support from the *CRC for Sustainable Tourism* by the *University of Queensland* and the *University of Tasmania* (Australia) and we would like your help. We need information about Antarctic/Sub Antarctic-based tourism. Could you please spare a little time to answer some of our questions? Your answers will be confidential and will be used only for scientific purposes. <u>It is not necessary to divulge your name or address for this study.</u> Please hand over the completed survey form in the **<u>next few days</u>** in the envelope provided to a crew member or the person who handed over this form to you. Thank you very much for your cooperation.

Your assigned survey number …….

Important: The assigned number will be used to match your replies with a brief return survey.

<u>Preliminary Information</u>

1. Your name or, if you wish to remain anonymous, a pseudonym that you should also use to complete a second form on your return journey ……..
2. Date of completion of this form: Day …….. Month …….. Year ……...
3. Name of cruise ship ……...……. Port of departure …….
4. Date of departure of cruise ……..……...
5. Proposed date of return of cruise ……..
6. Brief indication of route of cruise (main places visited)
   ……..……
   …….
7. In which country do you normally reside? ……...
8. What is the main unit of currency of the country in which you permanently reside? (For example, for the US it is US dollars, for Canada it is Canadian dollars, for many European countries it is Euros, for Australia, it is Australian dollars)

……..……..

9. Is this your first visit to the South Polar Region? ❑ **Yes** ❑ **No**

10. If **No,** how many times have you visited it before? ……...

11. Have you visited the North Pole? ❑ **Yes** ❑ **No**

12. Are you travelling alone or are you accompanied on this journey?

❑ Alone ❑ Accompanied

13. If accompanied, by how many persons? Adults ……Children (under 15) ……

14. In terms of your home currency, **how much do you expect that you/ your accompanying partner/family will have spent per person (approximately) specifically for this journey by the time it ends?** [Include what you have spent to date **plus** extra purchases such as special clothing, books, etc and what you expect to spend before the end of the journey.]

Amount in home currency ……. for entire journey for …….. person(s)

15. How **much more** would you have been prepared to spend for this journey before deciding **not to go** on it and to do something else instead?

Amount in home currency ……**per person**

Any comments?…….
……...
……

Knowledge about Antarctica

1. Do you regard your current knowledge of Antarctica/sub-Antarctica as

Excellent ❑ Good ❑ Average ❑ Poor ❑

2. Have you read widely about Antarctica? **Yes** ❑ **No** ❑

3. Have you watched **many** TV programmes on Antarctica? **Yes** ❑ **No** ❑

4. Are you interested in Antarctic wildlife? **Yes** ❑ **No** ❑

5. If **Yes**, is your interest of Antarctic wildlife mainly in:
(you may tick more than one box)

❑ Penguins ❑ Other sea birds ❑ Seals and sea lions
❑ Whales and dolphins ❑ All wildlife ❑ Any other ……

6. What is special about Antarctic wildlife? (you may tick more than one box)

❑ Most of Antarctic wildlife are not found elsewhere
❑ They can be seen easily in large numbers
❑ The special adaptations of Antarctic wildlife

Any other (1) ……. (2) ……

7. Were you aware that commercial hunting of seals and penguins has taken place during the 19th and 20th century in the Sub-Antarctic islands? **Yes** ❑ **No** ❑

Wildlife and Tourism

1. How important was the possibility of seeing Antarctic/Sub-Antarctic wildlife in your decision to come on this journey?
   - ❑ Very important
   - ❑ Important
   - ❑ Not very important
   - ❑ Of no importance

2. If there was **no wildlife** to be seen in the South Polar Region, would you have still decided to come on this cruise, given your present costs? **Yes** ❑ **No** ❑

3. If **No,** and the cruise costs were much less, would you change your mind and go on this cruise, **despite not being able to see wildlife?**

   Yes ❑ **No** ❑

   Why? ……..

4. If **Yes,** by how much in terms of your home currency would the cruise price have to **be reduced** for you to take this cruise?

   ……

5. Please tick (✓) the appropriate column to indicate how important the following **features or attributes of Antarctica/Sub-Antarctica** were in your decision to join this cruise

	Very important	**Important**	**Not very important**	**Of no importance**
Wildlife				
Landscapes and seascapes				
Connections with explorers				
Different or unique environment				
Few others have visited it				
Unspoilt wilderness				
The thrill of expedition				
Ship cruise pleasures				
Continent without permanent human habitations				
Antarctic Summer				
Other (please specify)				

6. Are you a specialist bird-watcher? **Yes** ❑ **No** ❑

   If **Yes,** approximately how many field trips do you undertake away from home **per year**? ……

7. Are you a member of any nature conservation organizations? **Yes** ❑ **No** ❑

   If Yes, please state names of organizations
   (1) ……... (2) ……. (3) ……

8. How would you rate your attitudes towards nature conservation?
   - ❑ Extremely strong advocate
   - ❑ Strong advocate
   - ❑ Moderate advocate
   - ❑ Neutral towards this subject
   - ❑ More oriented towards development than conservation

9. Please tick in the second column if you **expect to see** any of the following wildlife in Antarctica or Sub-Antarctica during this cruise. Would it increase your satisfaction **(1) a little, (2) much, (3) very much, or (4) not at all** to see the following wildlife? **Please put the appropriate number in the last column.**

	Expect to see If <u>Yes</u>, tick (✓)	**Added satisfaction if seen (Please put the appropriate numbers below)**
Whales and dolphins		
Penguins		
Seals (and relatives)		
Polar seabirds (other than penguins)		

10. List up to **eight species** of wildlife that you would especially like to see and hope to see on this cruise. List the species that **you most want to see** first and the remainder in descending order [**Please see note at end of table to fill out <u>hypothetical donation amount</u>**].

Species (Name)	**Hypothetical Donation* (in your home currency) (Please read note)**	**Species (Name)**	**Hypothetical Donation* (in your home currency) (Please read note)**
1		5	
2		6	
3		7	
4		8	

***Note:** It is possible that the continuing existence of each of these species may be threatened by environmental changes such as global warming, the harvesting of **krill** or, in some cases, unknown factors. If you were asked for a **<u>one-off payment</u>** to support measures (such as research or policy changes) that would prevent the extinction of the individual species mentioned by you, what is the donation you would make? List this in your home currency against the species mentioned in the corresponding column. When you consider each, assume that **<u>no</u>** donation is required to save the others. **Although this <u>question is hypothetical</u>, please assume that it is real and that it has to come from your budget. Please consider your daily expenses before deciding on the donation.**

11. If these species were **not** in your previous list, and you were asked for a **similar one-off donation,** how much would you **donate in terms of your home currency**.

Species (Tick if you expect to see them)	Donation in your home currency
1. Emperor Penguins ❑	
2. Rockhopper Penguins ❑	
3. Southern Elephant Seals ❑	
4. Blue Whales ❑	
5. Humpback Whales ❑	
6. Minke Whales ❑	
7. Orca (Killer Whales) ❑	
8. Snow Petrels ❑	
9. Antarctic Skuas ❑	
10. Wilson's Storm Petrels ❑	

Opinions on Antarctica

1. Do you believe that global warming is melting icebergs in Antarctica? **Yes** ❑ **No** ❑

2. If **Yes**, would you like action to be taken to reduce such melting? **Yes** ❑ **No** ❑

   If **Yes,** why (1) …… (2) ……...

   If **No,** why (1) …… (2) ……...

3. Do you think that **krill** harvesting should continue in Antarctica? **Yes** ❑ **No** ❑

4. If **No,** are you in favour of limited krill harvesting? **Yes** ❑ **No** ❑

5. Are you in favour of Antarctica's vast resources (e.g. petroleum, minerals, water) being exploited?

   Yes ❑ **No** ❑

6. Are you in favour of the Antarctic continent and surrounding seas being declared a world park and managed under the auspices of the United Nations and/or by the twelve Antarctic Treaty nations?

   Yes ❑ **No** ❑

7. Are you in favour of **increased** tourism activity in Antarctica?

   Yes ❑ **No** ❑

   If **Yes**, why (1) ……..

   If **No,** why (1) ……..…….

8. Do you want Antarctica (including the wildlife, plant life and its landscape) to be preserved in its pristine state? **Yes** ❑ **No** ❑

9. If **Yes,** is it because (you may tick more than one box)

❑ It is unique
❑ It has tourism potential
❑ I would like my children and others to enjoy it
❑ I would like to know that it remains unspoilt
❑ It has great resources that could be used in the future
❑ It has a large influence on the Earth's climate

10. If an organization such as the *United Nations* were to raise money to declare **Antarctica** and its surrounding seas as a **world park** and conduct further research into its unique wildlife and landscapes/seascapes, would you be willing to make an **annual contribution** for the next ten years?

Yes ❑ **No** ❑

11. If **Yes**, what is the maximum amount you would like to contribute **per year** in your currency for the next 10 years?

……..

If **No**, what are your reasons? …….

Background Information (only to be used for general processing of responses)

1. Gender of person filling out the form? Male ❑ Female ❑

2. To what age group do you belong?
20 – 30 ❑ 31 – 40 ❑ 41 – 50 ❑ 51 – 60 ❑
61 - 70 ❑ 71 - 80 ❑ 81 + ❑

3. Indicate your highest educational qualification
Primary only ❑ Some junior schooling ❑ Completed year 10 secondary or equivalent ❑
Completed year 12 or equivalent ❑ Trade certificate or equivalent ❑ Diploma or equivalent ❑
Degree or equivalent ❑ Post-graduate degree or equivalent ❑ Any other ……

4. Your family income level per annum in your home currency?
Note: This is **confidential** and for **scientific research only**

Below 25,000 ❑ 25,001 - 50,000 ❑ 50,001 - 75,000 ❑ 75,001 - 100,000 ❑
100,001 - 125,000 ❑ 125,001 - 150,000 ❑ 150,001 – 175,000 ❑
175,001 - 200,000 ❑ 200,001 - 225,000 ❑ 225,001 and above ❑

Any other amount ……...

5. Would you want to visit Antarctica again if it costs the same as now? **Yes** ❑ **No** ❑

THANK YOU FOR YOUR COOPERATION

Contact details of researchers:
Dr Lorne Kriwoken - E-mail: L.K. Kriwoken@utas.edu.au - University of Tasmania
Professor Clem Tisdell - E-mail: c.tisdell@economics.uq.edu.au - University of Queensland
Dr Clevo Wilson - E-mail: clevo.wilson@uq.edu.au - University of Queensland

This is the Second Evaluation Form (post-visit survey) of the study you participated in during your outbound journey (First Evaluation) to Antarctic/Sub Antarctic islands which is being conducted with support from the *CRC for Sustainable Tourism* by the *University of Queensland* and the *University of Tasmania* (Australia). Could you please spare a little time to answer a few more questions? Your answers, as always, will be confidential and will be used only for scientific purposes. Please hand over the completed survey form in the **next few days** (before the ship reaches the port of departure) in the envelope provided to a crew member or the person who handed over this form to you. Thank you very much for your cooperation.

Important: Please use the same survey number you used during the filling out of the **outbound survey form (First Evaluation).**

Your assigned survey number ……

Please state all answers to questions below involving money in your home currency.

Preliminary Information

1. Your name or pseudonym that you used to complete the first survey form on your outbound journey……

2. Date of completion of this form: Day …….. Month …….. Year ……..

3. Name of cruise ship ……...……...

4. Date of departure of cruise from Antarctica ……..…….

5. Brief indication of route of cruise (main places visited)

   ……..…
   ……
   ……

6. Was your Antarctic experience
   - ❑ less impressive than you expected
   - ❑ more impressive than you expected
   - ❑ about the same as you expected

7. How much do you **now feel (after your experience of Antarctica)** you would have been justified in spending on this journey? Please indicate the maximum amount. **The value can be <u>less, equal or more than the amount you/partner/family actually spent</u>.**

   Amount in home currency ……. for entire journey for …….. person(s)

   Any comments?……..
   ……
   ……

<u>Knowledge about Antarctica</u>

1. Do you consider your knowledge of Antarctica/sub-Antarctica after your visit to be

   Excellent ❑ Good ❑ Average ❑ Poor ❑

2. Have you become **more** interested in Antarctic wildlife following your visit? ❑ **Yes** ❑ **No**

3. If **Yes**, is your increase in interest of Antarctic wildlife mainly in relation to:
   (you may tick more than one box)

   ❑ Penguins ❑ Other sea birds ❑ Seals and their relatives
   ❑ Whales and dolphins ❑ All wildlife ❑ Any other ……..

4. What is special about Antarctic wildlife?
   (you may tick more than one box)

   ❑ Most of Antarctic wildlife are not found elsewhere
   ❑ They can be seen easily in large numbers
   ❑ The special adaptations of Antarctic wildlife

   Any other (1) …… (2) ……..

5. Did you become aware of commercial hunting of seals and penguins in the 19th and 20th century in the Sub-Antarctic islands during the visit to Antarctica?
   ❑ **Yes** ❑ **No** ❑ Knew about it before the cruise

6. Do you think you have **<u>learnt more</u>** about Antarctica and its wildlife as a result of this cruise?
   ❑ **Yes** ❑ **No**

7. Did you become **<u>more aware</u>** of conservation issues of Antarctic wildlife as a result of your cruise?
   ❑ **Yes** ❑ **No**

8. Do you think that Antarctic wildlife should be conserved?
   ❑ **Yes** ❑ **No**

Wildlife and Tourism

1. How important was seeing Antarctic/Sub-Antarctic wildlife during this cruise?
   - ❑ Very important
   - ❑ Important
   - ❑ Not very important
   - ❑ Not of any importance

2. If you are a specialist bird-watcher did you see

   - ❑ all the birds you wanted to see
   - ❑ more than half of the birds you wanted to see
   - ❑ less than half of the birds you wanted to see

3. With your bird-watching experience in Antarctica were you

   ❑ Very satisfied ❑ Satisfied ❑ Not satisfied

4. If you did not see **any wildlife**, would you have still enjoyed your cruise?

   ❑ **Yes** ❑ **No**

5. Please tick (✓) the appropriate column to indicate how important the following features or attributes of **Antarctica/Sub-Antarctica** were **during** this cruise

	Very important	**Important**	**Limited in importance**	**Of no importance**
Wildlife				
Landscapes and seascapes				
Connections with explorers				
Different or unique environment				
Few others have visited it				
Unspoilt wilderness				
The thrill of expedition				
Ship cruise pleasures				
Continent without permanent human habitations				
Antarctic Summer				
Other (please specify)				

6. Tick the second column if you **saw any of the following wildlife in Antarctica or Sub-Antarctica** during the cruise. Did they increase your satisfaction **(1) a little (2) much (3) very much or (4) not at all** to see the following wildlife? **Please put the appropriate number in the last column.**

Species	**Saw the species? If Yes, please tick (✓)**	**Added satisfaction if seen (Please put the appropriate numbers below)**
Whales and dolphins		
Penguins		
Seals (and relatives)		
Polar seabirds (other than penguins)		

7. List up to **eight species** of wildlife that you wanted to see and which you encountered on this cruise. List **first** the species that you **liked most** and the remainder in descending order of your preference for these. [**Please see note at end of table to fill out hypothetical donation amount**].

Species Name	**Hypothetical Donation* Please read note**	**Species Name**	**Hypothetical Donation* Please read note**
1		5	
2		6	
3		7	
4		8	

*** Note:** It is possible that the continuing existence of each of these species may be threatened by environmental changes such as global warming, the harvesting of **krill** or, in some cases, unknown factors. If you were asked for a **one-off payment** to support measures (such as research or policy changes) that would prevent the extinction of the individual species mentioned by you, what is the donation you would make? List this in your home currency against the species mentioned in the corresponding column. When you consider each, assume that no donation is required to save the others. **Although this question is hypothetical, please assume that it is real and that it has to come from your budget. Please consider your daily expenses before deciding on the donation.**

8. If the following species **<u>were not</u>** in your previous list, and you were asked for **a similar one-off donation**, how much would you donate in terms of your home currency **<u>after your experience with these species</u>**.

Species (Tick if you expect to see them)	Donation in your home currency
1. Emperor Penguins ❑	
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2. If **Yes**, would you like action to be taken to reduce such melting? **Yes** ❑ **No** ❑

   If **Yes,** why (1) …… (2) ……...

   If **No,** why (1) …… (2) ……...

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4. If **No,** are you in favour of limited **krill** harvesting? **Yes** ❑ **No** ❑

5. Are you in favour of Antarctica's vast resources (e.g. petroleum, minerals, water) being exploited?

   Yes ❑ **No** ❑

6. Are you in favour of the Antarctic continent and surrounding seas being declared a world park and managed under the auspices of the United Nations and/or by the twelve Antarctic Treaty nations? **Yes** ❑ **No** ❑

7. Are you in favour of **<u>increased</u>** tourism activity in Antarctica?

   Yes ❑ **No** ❑

   If **Yes**, why (1) …… (2) ……..

   If **No,** why (1) …… (2) ……..

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- ❑ It is unique
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10. If an organization such as the *United Nations* were to raise money to declare Antarctica and its surrounding seas as a **world park** and conduct further research into its unique wildlife and landscapes, would you be willing to make an annual contribution for the next ten years?

Yes ❑ **No** ❑

11. If **Yes**, what is the maximum amount you would like to contribute **per year** in your currency for the next 10 years

……..

If **No**, what are your reasons? …….

12. If you are **not** already a member of a nature conservation organization do you wish to join one after your Antarctic experience?

Yes ❑ **No** ❑

If **No**, why? ……

13. **If Yes**, please state organizations that you would consider joining

(1)…….. (2) ……..

14. How would you rate your attitudes towards nature conservation **after** your experience of Antarctica?

- ❑ Extremely strong advocate
- ❑ Strong advocate
- ❑ Moderate advocate
- ❑ Neutral towards this subject
- ❑ More oriented towards development than conservation

15. Would you want to visit Antarctica again if costs are the same as now? **Yes** ❑ **No** ❑

16. Any comments are welcome……
……
……
……

THANK YOU FOR YOUR COOPERATION

Contact details of researchers:
Dr Lorne Kriwoken - E-mail L.K. Kriwoken@utas.edu.au - University of Tasmania
Professor Clem Tisdell - E-mail:c.tisdell@economics.uq.edu.au - University of Queensland
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