

March 1999
Kate Downer

LITERATURE REVIEW:

THE IMPACTS OF TOURISM:

The impacts of tourism within the Antarctic are currently a topic of discussion. With increasing visitor numbers, diversification of activities and increased technology, questions concerning the impacts of Antarctic tourism are becoming more prominent.

The following is a review of a sample of literature that is currently available upon this topic. It will identify key themes that have been identified throughout the literature, provide a critique on the consistency and inconsistencies that is present within this work and highlight the most up to date suggestions and thoughts upon the identification and future management of the impacts of tourism within the Antarctic.

Although the author believes there are many aspects to the impacts of tourism within the Antarctic: environmental, scientific, social and political (Downer and others, 1999), the literature discussing the impacts of Antarctic tourism tends to focus upon the impacts upon the physical environment and scientific operations within the region. This review focuses on the literature concerning tourism impacts upon the physical environment only.

It was not until the late seventies, initiated by the public outcry of tourists and the publicity campaigns of Green/peace, that considerations towards human activity and their impacts within the Antarctic environment were seriously reviewed and acted upon. Since this time the management of human activity and its resultant environmental impacts within the Antarctic has steadily grown as a focus to the point that "Environmental management is now a third pillar on which the Antarctic Treaty System rests, along-side peace and science." (Department of Conservation, 1998). With the increased significance of environmental management, literature upon this subject has developed, reflecting the understandings and values of the time in which it was written.

As the Antarctic community became challenged by the commercialisation and personal monetary gain within the Antarctic region, presented by tourism, as opposed to the traditional non-profit global benefits of science and peace, initial literature commenting upon the impacts of tourism were often based upon emotion and exaggeration. "Tourists wreak havoc on the Antarctic environment. Tourists litter beaches, destroy delicate mosses and lichens that will take a century to grow back (Feizkhah, 1998:2) compared with Bernard Stonehouse's statement after seven years of monitoring at more than 200 sites within the Antarctic region "I challenge anybody to show any place where ship borne tourism has created any damage at all" (Feizkhah 1998:2). "Souvenir seeking tourists had removed extremely important fossils near the dry valleys" was later discovered to be taken by distinguished visitors, navy people from helicopters and biologists as no tour vessels had been in the area at the time of this claim (Grotta and others 1992).

Along with such exaggerated material was the publishing of misleading reports towards the impacts of tourism within the Antarctic region. For example, the sinking of the Bahia Paraiso (1989) resulting in the spillage of 150,000 gallons of diesel oil was initially claimed as being a tourist vessel and was up held as an example of tourism damaging the environment. More accurately the Bahia Paraiso was an Argentine supply vessel that had tourists on board and would have been in the Antarctic region whether there were tourists on it or not (Grotta and others, 1992).

As awareness and knowledge of human impacts within the Antarctic grew it became apparent that initial claims and generalisations of tourist impacts were not well supported and were based upon misleading and unfair claims. Attention then focused upon identifying the true sources of impacts upon Antarctica. Initial sources identified were governmental science stations and this was widely expressed in environmental management literature "The report concludes that science, at least so far, has had a more devastating impact on Antarctic ecosystems than has tourism" (Tangley, 1988:590). "We have found no litter due to tourists. Sadly there is plenty due to the scientists and support staff to whom Antarctica is dedicated." (Stonehouse, 1997). Cambell and others (1998) describe examples of chain reactions from scientific activity. One example briefly summarised: landscaping around government bases for building and road construction results in soil surface causing permafrost retreat, land subsidence, and salinisation. This has further consequences of an increased spread of dust over snow covered areas which in turn reduces albedo and causes snowfield retreat and acceleration of water and sediment run off. Such chain reactions identify the multiple and complex consequences of human activity within the Antarctic. More specifically, the construction of more than 40 scientific stations and transport facilities including the now abandoned French airstrip which resulted in the levelling of five small islands and the displacement of an estimation of 8,000 birds of five species which support Antarctic science, have been recognised as significant human impacts upon the environment, upon which future activities of similar nature need to be seriously assessed and valued.

Riffenburgh (1998) comments that government staff in Antarctica have the ability to venture into many places to which tourists do not go, they do not receive the same level of information on wildlife, plants, history, geology, and what they may and may not do while ashore as tourists do. Government staff are not subjected to the same degree of control and supervision by authorities as tourists are and "that many of them feel that since they 'live' there, they are not bound by the same rules as the tourists" (Riffenburgh, 1998:194). Government staff therefore have the potential to create considerably greater impacts upon the environment. "This impact from members of government programmes should be acknowledged, monitored and controlled, just as is the impact from tourist groups" (Riffenburgh, 1998:193).

To disprove the exceptional environmental impact of tourism further, research such as that of Headland (1994) focused on quantifying the activities and time spent in Antarctica. The aim being to differentiate the environmental impacts between tourism and governmental science stations by the quantity of people, the level of transportation and the comparative time spent ashore. Headland noted that although tourists greatly outnumber scientists, only 0.52% of the direct human impacts in Antarctica could be attributed to tourists (:279). This quantitative theme with similar

results is also expressed in Higham's (1995) statement "Although the number of tourists visiting Antarctica now well exceeds the 4,500-odd scientists and support staff currently involved with government research programmes, their impacts on the environment are considerably less. Most tourists spend only a few hours on land and require no onshore infrastructure" (:37).

Harris (1993) presents an opposing argument to the insignificance of tourist impacts compared to that of science by stating "... it could be argued that any science of 'global significance' should take precedence over local-scale environmental effects." An argument that is hard to overlook when current science in Antarctica is playing an important role in investigating future implications for the survival of the earth's ecosystem. Such studies include the monitoring of ozone and carbon dioxide levels in the atmosphere. In a laboratory where the relatively pristine environment is an important resource for valid and reliable results, it becomes difficult to justify any impact from tourism, no matter how small it may be compared with that of scientific activity.

Literature recognising that the Antarctic environment does not differentiate between a tourist and a scientist, but rather impacted by any person whose actions has an effect, is supported by the action of the Antarctic Treaty System itself. "The Treaty regards tourism in the same way as national research programmes" (Higham, 1995:40). Under the Protocol on Environmental Protection to the Antarctic Treaty (*Madrid Protocol*) tourist operators are required to follow the same procedure of environmental impact assessments as national research programmes before any activity within the region can be carried out.

As research continued to become more comprehensive, the focus towards differentiating the impacts of scientific activity compared with that of tourists became widened to include natural environmental changes. For example, Fraser & Patterson (1997) measured the size of rookeries (visited and non-visited) of Adelie Penguins at Anvers Island on the west side of the Antarctic Peninsula over a period of 13 years. Their data shows that it was the non-visited control site rather than the tourist-site that suffered major decline in breeding success. "This suggests there may be wider environmental changes significantly affecting the lifecycle of these penguins" (Walton, 1998:12). The idea of environmental changes having an influence upon what was initially thought to be a result of human activities is again supported by Feizkhah (1998) who states "On Cuverville island, with 3,000 tourists a year, the number of breeding pairs of penguins increased 15% in the three years we were there. If it had gone down, everyone would have said it was the tourists."(:42). As Gordon (1998) summarises "the localised impacts of tourism on features at Antarctic sites should be seen in the wider context of natural environmental fluctuations; global and regional human activities; and the ongoing localised effects of station operations and science programmes" (:27).

Challenging this view is that stated by Rubin (1996) who comments that one or two studies cannot and should not be extrapolated to other sites, other populations and other species. Possible impacts upon 'invisible' wildlife such as algae species living inside rocks or flora underneath the snow need also to be considered and the apparent benign impacts of tourism should not be over estimated.

As tourism has become more established and Antarctic Treaty governments have accepted it as a legitimate activity within the region, the question of whether tourism should or should not exist has diminished. In its place literature discussion centres on how tourism can be further managed to operate in ways which minimise disturbance, and further enhance the wilderness and scientific values already attributed to Antarctica (Cessford,1998).

Current tourism management relies on an as-yet-unratified Environmental Protocol to the Antarctic Treaty, voluntary guidelines and the good will of tour operators and tourists, in an 'unpoliced' environment. Hence, with the best of intentions there is much room for misinterpretation and inconsistency in the management of human behaviour to minimise detrimental impacts upon the Antarctic environment. Davis (1995) reports that the present voluntary guidelines and procedures relating to appropriate behaviour while ashore are not necessarily understood or followed by passengers. Further review and development of the present management strategies for tourism impact upon the environment needs to continue.

Suggestions for future environmental impact strategies include focussing on where there is no permanent management present e.g. penguin colonies, historic sites (Cessford, 1998). This was recognised after the success of the New Zealand tourist guidelines requiring all tourist operators within the area to be accompanied by a government official (The Press,1990).

Cessford (1998) suggests that a better understanding of specific human-environment interactions such as how different wildlife species perceive the repeated presence of humans and the long term consequences is required for effective management of visited sites.

In contrast to Headland (1994), Davis (1998) argues that the type of activity rather than the numbers of people in an area is the "key to identifying recreational impacts" (:45) and should be the focus of future research and preventative management strategies for human environmental impact.

Cessford
Dingwall (1996) suggests that a relief to the answer to the management question partly lies in the tourists themselves. Being of an older age group, from affluent and better-educated sectors of society, often professional and management backgrounds, they display high expectations of a pristine environment and have a high degree of acceptance of the regulations imposed upon them to keep their impacts at a minimum. "In essence, there does not appear to be any significant 'customer-demand' pressures on tour operators to undertake their tours in ways which might seriously compromise Antarctic wilderness values or ecological integrity" (Cessford,1998:29).

Environmental impacts of tourism within the Antarctic is well discussed and represented within Antarctic Literature. As tourism has developed and has become more recognised as a legitimate activity within the Antarctic, the literature of this topic has simultaneously become more developed and encompassing. Trends and perceptions of tourism are reflected over time, and the literature as a whole provides a history of discussions and debates that have been directed towards environmental impacts of tourism. Also heavily reported (although not reviewed in this essay) within tourism literature is the impact that tourism has had upon scientific activity

within the Antarctic. What is lacking is a comprehensive body literature reporting the impacts that Antarctic tourism has had upon social and political factors.

Bibliography

ANTARCT Case <http://gurukul.ucc.american.edu/TED/ANTARCT.HTM>

Cessford, Gordon. R. (1998) Antarctic Tourism – a frontier for wilderness management, *Antarctica in the environmental era*, Wellington: New Zealand.

Cambill, I. B. & Claridge, G. G. C. & Balks, M. R. (1998) Short and Long-term impacts of human disturbances on snow-free surfaces in Antarctica, *Polar Record* 34 (180):15-24.

Davis, Pamela. B. (1995) Antarctic visitor behaviour: are guidelines enough?, *Polar Record*, 31 (178):327-334.

Davis, Pamela. B. (1998) Understanding visitor use in Antarctica: the need for site criteria, *Polar record*, 34 (188):45-52.

Department of Conservation, Te Papa Atawhai. (1998) Antarctica in the Environmental Era, Wellington: New Zealand.

Dingwall, P.R. & Cessford, G. R. (1996) Tourist visitors and their experiences at New Zealand Subantarctic islands, *Science and Research Series*, (96) Science and Research Division, Department of Conservation, Wellington: New Zealand.

Downer, K. & Reany, R. & Watson, N. & Wouters, M. (1999) Antarctic Tourism – Where To? An Analysis of the Future of Antarctic Tourism, unpublished, University of Canterbury: New Zealand.

Feizkhah, Elizabeth. (1998) Tourism on Thin Ice, *Time International*, 150 (36):40-43.

Fraser, W.R. & Patterson, D. L. Woakes, A. J. (1997) Human disturbance on the heart rate and behaviour of Adelie penguins during the breeding season, *Antarctic communities: species, structure and survival*, Cambridge University press: Cambridge.

Grotta, D. & Grotta, S. & Fisher, A. (1992) Antarctica: whose continent is it anyway?, *Popular Science*, 240 (1):62-68.

Harris, C. M. (1993) Environmental Management in Antarctica Using Geographic Information Systems. A dissertation submitted for the degree of Doctor of Philosophy, Scott Polar Research Institute, University of Cambridge.

Headland, R. (1994) History of Antarctic Tourism, *Annals of Tourism Research*, 21 (2):275-280.

Higham, Tim. (1995) The Biggest Chill, *Forest and Bird*, (227):36-42.

The Press. (1990) The Lure of the Sub-Antarctic, 28 February:21

✓ Riffenburgh, B. (1998) Impacts on the Antarctic environment: tourism vs government programmes, *Polar Record*, 34 (190):193-196.

✓ Rubin, Jeff. (1996) Antarctica a lonely planet travel survival kit, Lonely Planet Publications.

✓ Stonehouse, Bernard. (1997) Small is beautiful in the planet's crystal wonderland, *People and the Planet, Sustainable Tourism*, 614.

✓ Tangley, Laura. Who's polluting Antarctica?, *BioScience*, 38 (9): 590-594.

✓ Walton, David. W.H. (1998) Environmental monitoring in Antarctica – measuring the damage, *Antarctica in the environmental era*, Department of Conservation, Wellington: New Zealand.