

Too Much Pressure on Thin Ice? Antarctic Tourism and Regulatory Considerations

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Abstract: In recent years, a considerable increase and diversification of tourism to the Antarctic has caused some concern among Antarctic Treaty Parties (ATPs) and environmentalists. Whereas in the past, the legitimacy of tourism, in view of the Antarctic Treaty setting aside the continent for science and peace, has been questioned, it is now rather its patterns of “horizontal” and “vertical” growth that provoke controversy. Although tourism issues have received more attention during the recent Antarctic Treaty Consultative Meetings (ATCMs), the resultant regulation of Antarctic tourism within the framework of the Antarctic Treaty System (ATS) has been no more than patchwork, a variety of distinct resolutions, recommendations and measures instead of a comprehensive management tool. The actual tourism management was left to the hands of a strong and rigorous industry self-regulation. However, questions about the effectiveness of the overall regulatory regime have arisen, whilst voices denouncing Antarctic tourism as an “environmental culprit” do not quieten. Whereas the latter seems to lack a scientific foundation, it is acknowledged that more research particularly into the actual and potential impacts of Antarctic tourism as well as into the effectiveness of the regulatory regime is needed.

Zusammenfassung: Aufgrund ihrer einzigartigen Umwelt, ihrer Bedeutung für die Wissenschaft und ihres besonderen geopolitischen Status nimmt die Antarktis in unserer heutigen Zeit eine besondere Stellung ein. Obwohl versucht wird, diesem Stellenwert durch das umfassende Regelwerk des Antarktisvertragssystems (ATS) mit einem vorausschauenden und effektiven Managementregime Rechnung zu tragen, sorgt der Anstieg von diversen kommerziellen Aktivitäten in der Antarktis für größer werdende Bedenken. In diesem Zusammenhang wird ganz speziell dem Antarktistourismus, der durch seine besonderen Charakteristika nur schwer mit Tourismus in anderen Teilen der Welt verglichen werden kann, Beachtung geschenkt.

In den letzten Jahren erfuhr der Antarktistourismus ein erhebliches Wachstum und eine beträchtliche Diversifizierung, eine Entwicklung, die Bedenken bei Antarktisvertragsparteien (ATPs) und Umweltschützern hervorrief. So stieg nicht nur die Zahl der Antarktisbesucher exponential an, sondern auch die Vielfaltigkeit der angebotenen Aktivitäten erweiterte sich erheblich.

Während in der Vergangenheit die Legitimität des Antarktistourismus in Bezug auf den vom Antarktisvertrag der Wissenschaft und dem Frieden gewidmeten Kontinent in Frage gestellt wurde, sind es nun die Merkmale dieses „horizontalen“ und „vertikalen“ Wachstums, die im Mittelpunkt der Kontroverse stehen. Obwohl Tourismusangelegenheiten während der jährlichen „Antarctic Treaty Consultative Meetings“ (ATCMs) in der letzten Zeit mehr Aufmerksamkeit fanden, stellt die resultierende Regulation des Antarktistourismus im Rahmen des Antarktisvertragssystems nicht mehr als ein Stückwerk dar, eine Ansammlung von separaten Resolutionen, Empfehlungen und Maßnahmen anstelle eines umfassenden Managementsystems.

Das eigentliche Management des Tourismus in der Antarktis wurde einer starken und rigorosen Selbstregulation der Tourismusbranche überlassen. Die Organisation dieser Selbstregulation erfolgt durch die International Association of Antarctica Tour Operators (IAATO), welche für sicheren und umweltbewussten Antarktistourismus eintritt und ihren Mitgliedern rigorose Regeln und Durchführungsbestimmungen für Antarktisreisen auferlegt. Da jedoch die IAATO-Mitgliedschaft für Anbieter und Organisatoren von Antarktisreisen freiwillig ist, sind Fragen nach der Effektivität des gesamten regulierenden Regimes aufgekommen, und Stimmen, die den Antarktistourismus als Umweltsünder kritisieren, sind keineswegs verstummt. Wenn auch letztere Kritik anscheinend wissenschaftlich kaum begründet werden kann, muss anerkannt werden, dass weitere Forschung insbesondere mit Hinblick auf tatsächliche und potenzielle Auswirkungen des Antarktistourismus und die Effektivität des regulierenden Regimes erforderlich ist.

Aus diesem Grund arbeitet die Autorin dieses Artikels im Rahmen ihrer Dissertation zurzeit an einem Projekt, welches es sich zum Ziel setzt, die Vor-

und Nachteile der momentanen Regulation des Antarktistourismus durch das Antarktisvertragssystem und industrieller Selbstregulation genau zu analysieren und die Durchsetzbarkeit, Adäquanz, Praktikabilität und Effektivität dieses Regimes zu untersuchen.

ACRONYMS AND ABBREVIATIONS USED

ASOC	Antarctic and Southern Ocean Coalition,
AT	Antarctic Treaty,
ATCM	Antarctic Treaty Consultative Meeting,
ATCP	Antarctic Treaty Consultative Party,
ATP	Antarctic Treaty Party,
ATS	Antarctic Treaty System,
ATME	Antarctic Treaty Meeting of Experts,
EIA	Environmental Impact Assessment,
IAATO	International Association of Antarctica Tour Operators,
IGY	International Geophysical Year,
ICIS	International Centre for Integrative assessment and Sustainable development,
UNEP	United Nations Environment Programme.

INTRODUCTION

There are numerous characteristics and parameters that set Antarctica apart from the other continents on this planet, some of them with direct implications for the management of its environment, including political, geophysical, biological and cultural aspects, as well as of human activities in the Antarctic. Unlike any other place in the world, Antarctica is not ruled by any one government but by an international consortium of 45 governments of which 29 have decision-making power with respect to the management of the Antarctic. Unlike anywhere else, historical circumstances and events during the formulation of the Antarctic Treaty resulted in the designation of the continent to science and peace. The latter was a product of the tense political situation and the existence of seven territorial claims in the face of the Cold War when the Treaty was concluded, born out of the urge to prevent the continent from becoming a focal point of international conflict (MURRAY & JABOUR 2004: 310), and the former a tribute to the successful international scientific collaboration during the 1957-1958 International Geophysical Year (IGY). Unlike any other region on earth, Antarctica is not only commonly referred to as the last great wilderness (POLK 1998: 1403), but is also an area of primary importance for global climate regulation and ocean circulation (VOGLER 1995: 79).

One might argue that its uniqueness in terms of governance, political and legal status, scientific significance and environmental value, seemingly placing the Antarctic continent outside conventional regulatory outreach and jurisdiction,

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require a similarly unique approach to managing its resources. With the increasing commercial penetration of the Antarctic primarily in form of tourism, fishing and recently also bioprospecting, the Antarctic Treaty System (ATS) seems to have entered a new era of power struggles between “agencies of progress and the opposing forces of preservation” (MASON & LEGG 1999: 73), an era which calls for delicate politics towards the harmonisation of interests and the coordination of governmental and non-governmental activities. Increasingly, questions are being asked about the effectiveness and adequacy of the current regulatory regime, particularly with tourism as the fastest growing commercial activity in the Antarctic in mind. In fact, with the Protocol on Environmental Protection to the Antarctic Treaty (Madrid Protocol) being signed by all AT signatories on 15 January 1998 and the ban on mining being thus initiated, MASON & LEGG (1999) claim that after experiencing the four historical phases of polar discovery, resource exploitation, scientific exploration and environmental consciousness (PROSSER 1995: 114), Antarctica has now entered the fifth era, an era which will be dominated by tourism as the main human activity and resource user in Antarctica (MASON & LEGG 1999: 72).

The recent years have seen not only a relative increase in tourism research, but also a growing interest of Antarctic Treaty Parties (ATPs) in the developments of Antarctic tourism and respective efforts to regulate it. However, as this article will show, a lot still has to be done in terms of baseline data research as well as with respect to the alignment of conflicting interests and diverging opinions.

THE NATURE OF ANTARCTIC TOURISM AND CURRENT ISSUES

The peculiar nature of Antarctic tourism sets it apart from tourism to other parts of the world. First of all, due to the special characteristics of Antarctica as an international commons (BUCK 1998: 6) yet still being subject to unresolved sovereignty claims (POLK 1998: 1395), Antarctic tourism lacks a “clear recipient state” (VIDAS 1996: 295). Secondly, tourism to the Antarctic region is restricted to relatively few areas and a brief time period (VIDAS 1996: 296). As the great majority of the areas visited are the ice-free, most fragile parts of the Antarctic continent, and as the tourism period coincides with the peak-breeding season of many animal species (MASON & LEGG 1999, RICHARDSON 1999), tourism is being criticised by some as constituting an environmental threat.

Others, however, emphasise that generally, although tourists now physically outnumber scientists in Antarctica during the austral summer (HEMMINGS 1995), Antarctic tourism appears to have a far smaller impact on the environment than national programmes and their support operations (RIFFENBURGH 1998: 193). For instance, in 1992-93 the average annual man hours spent by tourists on the ice was only 0.52 % of the average annual man-hours scientists put in (HEADLAND 1994: 279). Nowadays, the numbers of tourists landing in Antarctica have more than tripled since the 1992-93 season. Nevertheless, it is safe to argue that, even when ignoring the fact that the science population has experienced substantial increases as well, annual average tourist man-hours are still considerably smaller than those put in by scientists and support staff. Moreover, the claim that tourism impacts are noticeably smaller than impacts

originating from scientific activities in the Antarctic is supported by three further arguments: the government personnel usually stay in an area much longer than tourists and may visit fragile areas that are inaccessible to tourists; the level of control through specific guidelines and rules that is applied to tourist visits is assumedly greater, particularly when considering IAATO members, than that applied to the activities of scientists and support staff who are generally expected to adhere to the requirements of the Protocol; and tourist supervision ashore through expedition staff is more or less continuously guaranteed whereas the base and support personnel are oftentimes given considerable freedom (RIFFENBURGH 1998: 194). Finally, it must not be overlooked that any tourism, which offers nature as the main attraction, has a strong interest in preserving this key resource (MOLENAAR 2005).

These conflicting views – one denouncing tourism and the other referring to tourism as a relatively benign activity with the potential of creating ambassadorship (BAUER 2001, MAHER et al. 2003b) which in turn, may support environmental conservation of the Antarctic environment – do not only influence most Antarctic tourism debates but also policy decisions, particularly when considering the size and legal status of Antarctic tourism. Although not having found specific mention in the Antarctic Treaty, tourism is nowadays generally recognised as a legitimate activity (HALL & WOUTERS 1995: 158, HERR 1996: 105, RICHARDSON 1999: 3, BASTMEIJER 2003, MOLENAAR 2005). It not only developed naturally alongside the ATS, but it is referred to in the Madrid Protocol as well (Articles 3, 8, 15, and Annex III). However, this does not imply that all kinds of tourism are considered as appropriate activities, especially when taking into consideration the already long and still growing list of Antarctic tourism activities that take place on and around the continent.

A pattern of horizontal and vertical growth

Due to advances in technology, the remoteness and hostility of the Antarctic increasingly lose their significance as a means of protection for the Antarctic environment (PROSSER 1995: 119). Nurtured by publications on its spectacular undisturbed wildlife and scenery, in addition to its extreme climate, remoteness, challenging potential for mountaineering and adventure travel, Antarctica has become increasingly appealing as a unique tourist attraction (HANSOM & GORDON 1998: 252). The aforementioned points can be identified as two of the reasons for the rapid growth Antarctic tourism experienced over the last decade, a growth which was said by some to contrast the notion of a slow and controlled tourism development that is more usually associated with the concept of sustainable tourism (HEMMINGS & ROURA 2003: 21).

In fact, the estimated number of tourists visiting Antarctica has increased to over 17500 in the 2002/2003 season, further to over 27500 in the 2003/2004 season and has eventually crossed the 30000 demarcation in 2004/2005 (IAATO 2005a, b). As it is difficult to take account of all the yachts and independent private expeditions to Antarctica (IAATO 2005b), care needs to be taken as regards the definiteness of these numbers. Nevertheless, they do reveal a strong trend.

Figure 1 depicts the development of the estimated number of

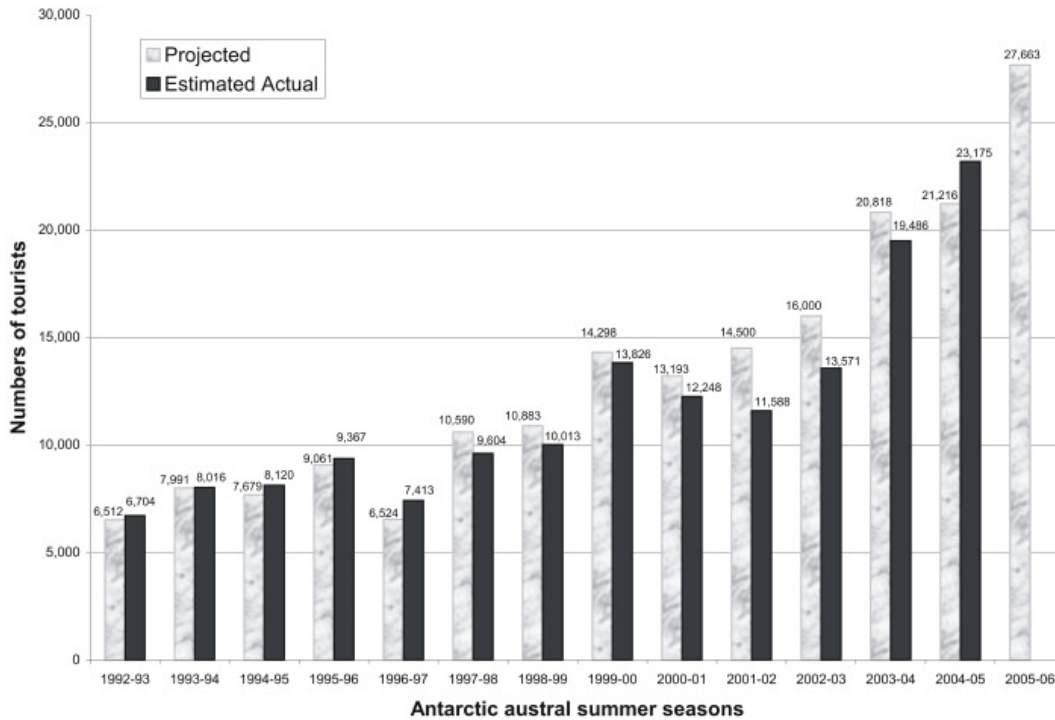


Fig. 1: Antarctic tourist trends 1992-2006 (landed tourists, including ship and land-based passenger numbers. 1997-98 onwards includes commercial yacht activity.); Source: IAA-TO (2005b).

Abb. 1: Trends im Antarktistourismus 1992-2006. Anzahl der Touristen, die Zeit an Land verbrachten, inklusive landeter Kreuzfahrttouristen und regulärer Expeditionen zu Land. Alle Daten ab Saison 1997/98 umfassen auch die kommerziellen Aktivitäten von Jachten/Seglern; Quelle: IAATO (2005b).

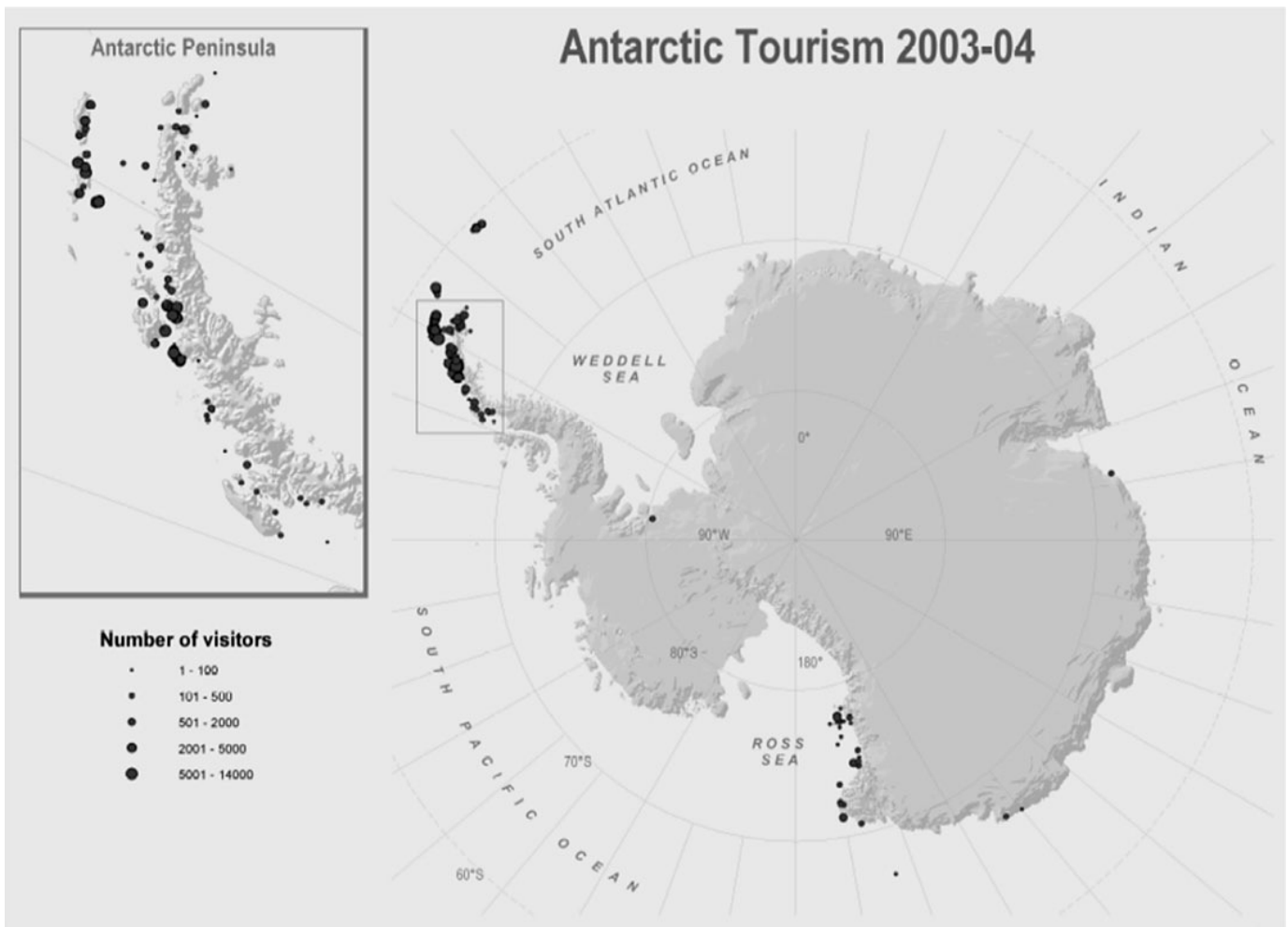


Fig. 2: Spatial distribution of Antarctic tourism activities in the 2003/04 season; Source: UNEP & ASOC (2005).

Abb.2: Geographische Verteilung der Antarktistourismusaktivitäten während der Saison 2003/2004; Quelle: UNEP & ASSOC (2005).

tourists that landed in Antarctica from the early 1990s and provides a projection for the 2005/2006 season.

As shown in Figure 2, out of all tourists participating in a cruise to Antarctica, approximately 95 % visit the Antarctic Peninsula, whereas the remaining 5 % of sea-borne tourism concentrates on the Ross Sea region (MOLENAAR 2005). Moreover, all camping, climbing, scuba diving and kayaking activities in the 2003/2004 season have exclusively been undertaken in the Antarctic Peninsula region (UNEP & ASOC 2005). At the Antarctic Peninsula itself, tourism activities concentrate particularly at the north-western coastline (UNEP & ASOC 2005).

Aside from the horizontal growth of Antarctic tourism, recent years have seen a vertical growth as well. In fact, tourism appears to have considerably diversified and now includes not only the more or less traditional cruises, but also fly-sail or fly-cruise operations; overflights; skiing, mountaineering and snowboarding expeditions; kayaking; marathons; scuba diving; and cross-continental expeditions (BASTMEIJER 2003, BASTMEIJER & ROURA 2004). This increasing diversification of tourism activities has initiated some debates around the effectiveness of the current regulatory regime, especially in view of land-based activities.

CURRENT REGULATION OF ANTARCTIC TOURISM

Since Antarctica is neither owned nor governed by any one state, the regulation of tourism per se is not, as is the case in the rest of the world, jurisdictionally overseen by coastal or territorial states, with the exception of vessels landing at or near government stations (MOLENAAR 2005). Hence, the regulation of tourism transpires through a multi-faceted network of various international regimes with different levels of concurrence and varying sets of signatories. Aside from indirect regulation, which represents all kinds of tools aiming at controlling activities of tour operators or individual travellers, direct regulation through the tourism industry, the ATS and various other intergovernmental regulatory instruments such as the Global Code of Ethics for Tourism as adopted by the World Committee on Tourism Ethics is of importance (MOLENAAR 2005).

Within the ATS, tourism regulation rests mainly on two pillars: various legally binding or non-binding recommendations, guidelines, measures and resolutions that have been adopted during ATCMs, and the Madrid Protocol which applies to all human activities in Antarctica (BASTMEIJER & ROURA 2004, MOLENAAR 2005). The latter introduced environmental impact assessment (EIA) procedures for all human activities in the Antarctic including tourism, which shifted the responsibility for establishing adequate EIA processes primarily to ATS member states (ENZENBACHER 1995a: 184). Nevertheless, environmental impact assessment with respect to actual or potential cumulative impacts, as a result of repeated or multiple operator visits to key locations, is considered as being still in its infancy (KRIWOKEN & ROOTES 2000: 146, BASTMEIJER & ROURA 2004: 770). Besides, due to the restriction in binding power of the Antarctic Treaty to member states, due to the lack of standardised approaches and definitions on the scope and nature of the required EIAs, and due to the lack of a centralised regulatory and monitoring authority, enforceability,

liability, and accountability problems arise (HANSOM & GORDON 1998: 286-289, RICHARDSON 1999).

In this context, questions were raised with respect to the sufficiency of the current regulatory approach to tourism or the need for further regulation within the ATS framework. In fact, within the realm of the ATS, tourism has emerged out of the shadows in the 1990s and has since steadily remained on the agenda during ATCMs. However, so far no final decisions have been reached, which is thought to originate in the considerations by some consultative parties that the existence of rigorous industry self-regulation may not necessitate immediate action (RICHARDSON 1999, BASTMEIJER 2003: 96, BASTMEIJER & ROURA 2004: 774).

This industry self-regulation which seems to be the most stringent regulatory tool for Antarctic tourism presently in place, is embodied by the International Association of Antarctica Tour Operators (IAATO). Founded in 1991 by seven tourist operators (ENZENBACHER 1995a: 187), IAATO represents a network of tour operators that advocate and agree to provide safe and environmentally conscious forms of tourism to the Antarctic (MASON & LEGG 1999: 80). It is generally acknowledged that IAATO established groundbreaking guidelines for Antarctic tourism. IAATO currently counts 81 members (including new members as per April 2006), most of which are either companies in support of Antarctic tourism or tour operators with vessels of a carrying capacity of less than 200 passengers (IAATO 2005c). That way, as depicted in Table 1, IAATO covers the largest share of reported Antarctic tourism.

However, IAATO membership is of a voluntary character, and is thus far from being all-embracing. Furthermore, it is not yet clear whether all Antarctic tourism issues can be effectively addressed through a self-regulatory regime without possible interventions from a neutral authority. (ENZENBACHER 1995a: 188). On the other hand, it is doubtful that, particularly in the context of such a politically, emotionally and environmentally unique environment as the Antarctic, any institution or organisation could possibly be regarded as a neutral authority. Neutrality *per se* seems to be an elusive concept in a political world. Although the ATS would have the means of incorporating comprehensive Antarctic tourism management strategies, it seems that so far the ATPs have been rather passive in terms of systematically regulating tourism and have relied on the tourism industry to fill that gap (RICHARDSON 1999: 9).

ATS responses to developments and challenges in Antarctic tourism

Although first concerns about Antarctic tourism, primarily in relation to the national science programmes, were already articulated during the IV ATCM in 1966 (HERR 1996: 213, MURRAY & JABOUR 2004: 309), the modest numbers of tourists until the mid-1980s prevented stringent action and detailed, committed further discussion among the ATPs until the 1990s. Between 1966 and 1979, a number of Antarctic Treaty recommendations related to Antarctic tourism were issued (for a comprehensive list of these tourism recommendations until 1992 see ENZENBACHER 1995a), but as HERR (1996: 213) noted, the majority of the provisions focused either on securing the control and influence of the Antarctic Treaty or on protecting scientific interests and research activities in the

Passenger numbers	Land-based	Ship-based with landings	Ship-based without landings	Air / cruise	Over-flights	Total
IAATO	878	16955	4358	130	2030	243511
Non-IAATO		5212	669			5881
Totals	878	22167	5027	130	2030	

Tab.1: Estimates of tourism activities in the Antarctic for the 2004/2005 season. Adapted from IAATO 2005b.

Tab. 1: Zahlenmäßige Einschätzung der Tourismus Aktivitäten in der Antarktis während der Saison 2004/2005; nach IAATO 2005b.

Antarctic. In the 1980s, the ATPs seemed to be preoccupied with potential mineral exploitation and marine resource activities and, although not being oblivious to the rapid increase of the numbers of tourists visiting Antarctica, did not attach too much weight to Antarctic tourism (BECK 1994: 377). As a result, not a single recommendation pertaining to tourism was concluded in the 1980s (BECK 1994: 377).

During the XVI ATCM in 1991, the ATPs reiterated the need to include discussion on tourism in their agenda, which was subsequently done during the XVII ATCM in 1992 (BECK 1994: 376, ENZENBACHER 1995a: 181). An additional annex on tourism to the Madrid Protocol, had been suggested by five ATPs during this ATCM, but was not agreed upon. The main argument against a separate annex relates to the assumption that the Protocol addresses all human activities in Antarctica and hence, a separate annex on tourism might negatively affect the credibility and ramifications of the Protocol (BECK 1994: 376, RICHARDSON 1999, BASTMEIJER 2003: 94). Nevertheless, one year later it was agreed that general guidance for visitors of the Antarctic and tour operators should be developed resulting in Recommendation XVIII-1, which includes guidelines for visitors and tour operators, being adopted at the XVIII ATCM in 1994 (RICHARDSON 1999, BASTMEIJER 2003: 94-95).

Since 1994, Antarctic tourism was an important item on the agenda of all subsequent ATCMs with additional measures being adopted with respect to post-visit reporting and the issuance of advanced notice (BASTMEIJER 2003: 95, MOLENAAR 2005). Following the XXIV ATCM (2001) in response to the diversification of Antarctic tourism, various stakeholders of Antarctic tourism and ATCPs submitted information papers to the XXV and XXVI ATCM with a focus on safety issues, an Antarctic tourism database and site-specific guidelines (BASTMEIJER 2003: 95). Finally, during the XXVI ATCM in Madrid (2003), the ATPs agreed that an Antarctic Treaty Meeting of Experts (ATME) on tourism and non-governmental activities was to be held in Norway in 2004 (MURRAY & JABOUR 2004). At the ATME, issues comprising monitoring, cumulative impact, safety, jurisdiction, industry self-regulation, as well as land-based and adventure tourism were discussed. Its outcomes were presented at the XXVII ATCM in Cape Town (2004), but again the “tourism discussion – as previously in Norway – focused on various technical responses, rather than on the development of a comprehensive policy” (BASTMEIJER & ROURA 2004: 776).

Generally, the tourism regulation through the ATPs appears to bear the mark of a rather scattered, dissimilated and indecisive approach to tourism management through a variety of measures, resolutions and guidelines. At the XXVIII ATCM in Stockholm (2005), two resolutions were added to that catalogue. Resolution 5 (2005) focuses on maintaining the flexibility and enabling greater dissemination of site guidelines. Resolution 6 (2005) details an updated post-visit site report form, which allows for the inclusion of additional tourism

activities in the IAATO database and which was recommended to be used from then on. Moreover, the XXVIII ATCM also saw the adoption of the liability annex with direct implications for Antarctic tourism (ATCM 2005).

The recent ATCM in Stockholm further confirmed the pattern of increasing levels of attention Antarctic tourism received from the ATCPs. A number of working and information papers solely on tourism, and additionally numerous others on topics relevant for conducting tourism to the Antarctic were submitted and discussed at the XXVIII ATCM. The issue of land-based tourism and potentially the establishment of supportive permanent or semi-permanent infrastructure was generally a subject of concern. However, so far no agreement towards issuing a new binding regulation prohibiting the erection of permanent infrastructure in support of tourism could be reached, as some parties believed that existing mechanisms, for instance the Madrid Protocol, already cover this aspect (ATCM 2005).

As it can be seen from the previous paragraphs, the ATPs still face a number of challenges pertaining to Antarctic tourism. With the recent developments in Antarctic tourism initiating debates not only from the political but also from the academic and environmental sides, these challenges have eloquently been elaborated on in the last decade. The following paragraph summarises the major issues that have been raised, particularly from a legal perspective, in order to introduce the last part of this article, which deals with recommended Antarctic tourism research. Drawing on BECK (1994), RICHARDSON (1999), BASTMEIJER (2003), BASTMEIJER & ROURA (2004), HEMMINGS & ROURA (2004), and MOLENAAR (2005) the following major issues can be outlined:

- the lack of a comprehensive framework for controlling and managing Antarctic tourism,
- problems with the enforcement of the existing rules and guidelines,
- jurisdictional problems (flag-state jurisdiction) raised by tourism,
- the hortatory but non-binding nature of many tourist guidelines,
- inconsistencies with respect to national enactment of Treaty provisions with EIA standards being one example, and
- the lack of data on the impacts of tourism activities.

RECOMMENDED RESEARCH

The efforts of the last decade to fill some gaps in Antarctic tourism research provided important results and cornerstones of reports that informed political decision-making. Among other projects, the pioneer work of ACERO & AGUIRRE (1994), ENZENBACHER (1995b), DAVIS (1995), and STONEHOUSE & CROSBIE (1995), regarding the collection of baseline data on the development and characteristics of Antarctic tourism, particularly ship-borne tourism in the Antarctic Peninsula

region, has to be acknowledged. In the same manner, the Antarctic Site Inventory Project conducted by Oceanites (NAVEEN 1997), which lists characteristics and, what MASON & LEGG (1999: 81) describe as “the nature and quality of the tourism resource”, deserve mention as much as the recent Fildes Peninsula project on the site-specific environmental impacts of tourism carried out by the group around H.-U. Peter (Peter pers. comm. 2005).

Nevertheless, it seems that due to the relative neglect Antarctic tourism research has suffered from in the past and the limited applicability of tourism research results from other regions because of the uniqueness of the Antarctic environment and political situation, further research is still needed. As it has already been outlined by ENZENBACHER (1995a), RICHARDSON (1999) and MASON & LEGG (1999), little is known about the actual and potential (cumulative) impacts of Antarctic tourism and the carrying capacities of tourism sites. Thus, there seems to be a pressing need for a thorough investigation of tourism impacts with consequences for tourism EIAs and the environmental management of the continent. Similarly, further insight into the characteristics of the various tourism activities along with the development of an appropriate monitoring system is needed (RICHARDSON 1999: 13).

As the International Polar Year (IPY) 2007-2009 does not only receive much media attention but also causes a spur of increased scientific activity on the ice, it appears to be relevant not only to look into the effect this heightened media awareness has on tourism, but also to investigate the impact of a greater number of science projects have on the Antarctic environment. Moreover, the relationship between science and tourism, especially regarding the effects of tourists observing scientists at work has not yet been explored (MASON & LEGG 1999).

Equally, as it has been pointed out by MASON & LEGG (1999) and TRACEY (2001), it seems to be necessary to research the motivations, experiences, the needs and wants of Antarctic tourists, and the tourists' potential to become effective ambassadors for the Antarctic in order to enable tourism management to take a proactive approach. This gap will potentially be closed by Maher (MAHER et al. 2003a), who currently completes a doctoral thesis which focuses on these aspects.

BASTMEIJER & ROURA (2004: 778) suggested that it might be beneficial to develop various scenarios depicting the anticipated tourism development over the next decade in order to effectively support policy-making. This task has been embraced by Lamers (pers. comm. 2005) at the International Centre for Integrative assessment and Sustainable development (ICIS) at Maastricht University in the Netherlands as part of his doctoral thesis.

Finally, in the light of the challenges the ATPs currently face and under consideration of the growing numbers of tourists to Antarctica, there seems to be an increasing necessity to not only evaluate the effectiveness and adequacy of the current regulatory regime for Antarctic tourism, but also to deal with questions relating to the feasibility and desirability of alternative regimes. Hence, the author at present works on a PhD project that addresses the implications of recent developments in Antarctic tourism for the self-regulatory industry as well as

for the ATS by attempting to disentangle considerations of enforceability, adequacy and practicability and matters of monitoring and policing. This project aims at analysing the merits and pitfalls of the current ATS regulation for tourism and industry self-regulation including the extent to which tour operators embrace and adhere to the general codes of conduct and the importance of ethics in Antarctic tourism. Further, it will be assessed how compliance with these guidelines is encouraged and monitored, and whether internationally comparable standards of sustainable and low-impact tourism can be achieved through a self-regulatory framework. The backbone of this research will be an interdisciplinary analysis that utilises interviews and the Delphi technique in order to benefit most from Antarctic tourism stakeholders' existing expertise, personal opinions and ideas that might otherwise be considered too risky to be expressed without the cover of anonymity.

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