ANTARCTIC AFFAIRS

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ANTARCTIC AND SOUTHERN OCEAN COALITION (ASOC)

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Cover Photo Photographer: Eric Carr. Title: Iceberg tour in Pleneau Bay, Antarctic Peninsula. 2014
Dear readers:

Welcome to the sixth volume of Antarctic Affairs. This edition focuses on one of the most relevant topics in the Antarctic discussions of the last decade: Antarctic tourism, which has had a sustained increase in recent years. For this volume, we have articles by academics, conservationists, representatives of Antarctic forums, representatives of IAATO, and non-governmental organizations, constituting a diversity of topics and perspectives regarding Antarctic tourism.

The first article of this edition was written by Ricardo Roura and examines the past and current trends on the growth of tourism and explores and applies the concept of “overtourism” to the Antarctic case. This article provides an excellent introduction for learning about the current situation of Antarctic tourism and its evolution.

The second article was written by Amanda Lynnes of the International Association of Antarctic Tour Operators (IAATO) and provides a description of how this organization was formed in 1991, discussing how its development over the years contributes to responsible management of tourism activity in Antarctica. The article shares the achievements, challenges and objectives of IAATO to promote its mission, while trying to ensure that its activities have only a minor or transient impact on the environment.

The third article of this edition was written by academics Marisol Vereda and Marie Jensen, who provide an analysis on the evolution of Antarctic tourism, which uses Ushuaia as a gateway city to Antarctica, from where most of the boats depart and arrive that visit the white continent. The authors range from the first trip in 1958 to the 2017/2018 tourist season, where two phases stand out: the creation of myths and the maturation of the Antarctic tourism industry.

The following article was written by Marco Favero, former Executive Secretary of the Agreement on the Conservation of Albatrosses and Petrels (ACAP), who has also worked as a guide and expedition leader in tourist trips to Antarctica. In his article, Favero makes a reflection on tourism in Antarctica and poses its greatest challenges and opportunities. In particular, it discusses the role of IAATO and the Antarctic Treaty System to regulate industry and achieve the most positive aspects of the sector.

Fifth, Lauren Farmer and Alex Cowan highlight the importance of conducting citizen science programs among passengers traveling to Antarctica. Citizen science helps to collect data for research centers and, at the same time, creates environmental awareness among passengers. The authors, both founders of the Polar Citizen Science Collective, share their experiences on how it is possible to empower the polar tourism industry so that travelers contribute to scientific knowledge through the collection of data and monitoring activities.

Finally, this volume includes a second article by Ricardo Roura where the author examines the links between Antarctic tourism and Marine Protected Areas (MPAs) in the Southern Ocean. Roura highlights the importance of the support of tour operators in the creation of MPAs in Antarctic waters, since it would not only bring benefits for the industry but would also serve for the conservation of
the Antarctic marine ecosystem.

In closing, I would like to thank all the authors, translators, and the Editorial Committee for making possible the publication of this new edition of Antarctic Affairs.

Juan José Lucci
The management of human activities in Antarctica, including tourism, is the subject of important discussions at the annual meetings of the Antarctic Treaty. The natural and pristine values of Antarctica, coupled with the majesty of its ice and the abundance of a charismatic megafauna, make this region the focus of a growing demand for international tourism. Although Antarctica is a vast continent that extends circum-polarly, the greatest concentration of tourism occurs in the area of the Antarctic Peninsula and its islands. Tourism in the Antarctic recently began towards the end of the 1950s, with visits made by only a few people on private trips, but has grown significantly and sustained since then.

The main modality of tourist visits is through boats on trips, characterized as expeditions. In this way, thousands of tourists annually access this region during the austral summer, visiting sites enabled and regulated by the Antarctic Treaty. The principal reasons for the trips to Antarctica revolve around visits to bird colonies - penguins being the biggest attraction - the observation of marine mammals (seals, sea lions, whales) - ideally from small boats - and the experience of sailing between icebergs and hanging glaciers of enormous dimensions. The sensation of nature in its purest state and the great landscapes are central to the sought after Antarctic experience.

From ASOC, we argue that it is necessary for the Antarctic Treaty to implement adequate tourism regulation given that, beyond the general controls, there is no clear regulation regarding the current activities and how to face the increasing increase of tourism in Antarctica. The use of large vessels that run through the region implicitly carries risks to the Antarctic environment. Accidents in the past with boats show us that these situations are totally possible and can have important consequences for the ecosystem. For example, in the event of a collapse or collision, significant quantities of fuel could spill into Antarctic waters, a region whose remote location makes remediation possibilities a major challenge. On the other hand, disproportionate numbers of visitors at certain sites could also result in a considerable impact on bird colonies and marine mammals. This is particularly important given that the breeding season of these animals occurs in the austral summer, in parallel with the tourist season.

Beyond the adventure of the trip itself, being able to live in Antarctica and directly encounter its wildlife and its wonderful nature should also serve as a valuable educational opportunity for all those who visit the region. In this sense, projects such as the Polar Citizen Science Collective, created by naturalist guides whose passion is related to giving a special meaning to these trips, enrich the experience and the look of the tourists that visit the frozen continent.

Undoubtedly, there is a before and after in the lives of people who visit Antarctica. The greatest learning is related to a greater appreciation of the natural values that make this region unique. It is my wish that these natural and aesthetic values are the main basis that allows us to ensure the protection of the white continent.

Dr. Rodolfo Werner *
Managing Editor

* Advisor to The Pew Charitable Trusts and the Coalition for Antarctica and the Southern Ocean (ASOC); Member of the board and scientific advisor of the Antarctic Wildlife Research Fund; Director of the Advisory Council of the Antarctic Agenda; Naturalist guide for Lindblad Expeditions / National Geographic.
ANTARCTIC TOURISM AND OVERTOURISM

Ricardo Roura

ABSTRACT

Tourism in Antarctica started in the late 1950s and remained at relatively low levels until it began to expand significantly in the 1990s. In the last twenty years Antarctic tourism has experienced both change and continuity, with an overall trend towards growth and diversification that has been in part moderated – or concealed - by seasonal and decadal fluctuations. However, the relative predictability of Antarctic tourism over the past two decades – steady growth managed by limited regulation – seems to be about to change. A new expansion of tourism is now beginning to take place, led by the construction of a considerable number of new cruise ships and a growing interest for Antarctic tourism in Asian markets. This document examines recent and anticipated trends on tourism growth and explore the concept of overtourism as it applies to Antarctic tourism. The initiatives announced by IAATO to manage tourism growth are welcome but Antarctic Treaty Consultative Parties should endeavour to be proactive too to ensure that tourism growth does not impact on the values protected by the Protocol. The concept of overtourism may not be fully applicable to Antarctic conditions, but serves as a reminder that rapid tourism growth requires timely action to prevent unwanted effects on the environment and on the tourism experience itself.

KEY WORDS

Antarctica, Antarctic tourism, tourist behavior, overtourism.
INTRODUCTION

Tourism in the Antarctic region predates the Antarctic Treaty itself and has been a matter of discussion among Antarctic Treaty states since the early Antarctic Treaty Consultative Meetings beginning in 1961. Antarctic tourism growth, in particular, has resulted in significant discussion in Antarctic Treaty fora and also generated substantial academic interest. Earlier ATCM instruments on tourism addressed issues such as regulating tourist visits to stations, protecting designated areas and historic monuments, and preventing tourist landings in newly formed islands. At the time, few tourism ships travelled to the Antarctic region, and only a few hundreds of tourists visited the region each season.

In contrast, Antarctic tourism nearing the 2019-2020 season is an established, robust industry that transports tens of thousands of tourists to Antarctica each year over a season lasting approximately five months. However, the relative predictability of Antarctic tourism over the past two decades—steady overall growth managed by limited industry-led regulation—seems to be about to change. Significant growth is predicted in the next few years, which puts again the focus on tourism growth as an issue that merits consideration from the industry, decision makers, competent authorities and other stakeholders.

This document examines recent and anticipated trends on tourism growth and diversification, and in addition it explores the concept of “overtourism” as it applies to Antarctic tourism. What are the likely trends in Antarctic tourism for the next few years compared to the past two decades? What are the consequences likely to be for the practice of tourism—and is Antarctic tourism moving towards early stages of overtourism at some times and places?

METHODS

This analysis is based on active participation on Antarctic tourism discussions at the ATCM and related fora for two decades. In 2008 ASOC made an assessment of Antarctic tourism tendencies during the previous decade from the 1997-1998 season onwards. That analysis focused specifically on status and trends for Antarctic tourism; concerns with respect to tourism management and Antarctic governance generally; and actions needed from a policy perspective. This article provides both a “rearview” and forward looking perspective of Antarctic tourism at a time of change. For the status and trends of Antarctic tourism we used data and analysis provided by the IAATO in its annual overviews, with a focus on relevant points in time every ten years approximately. This analysis is informed, where relevant, with observations of polar tourist behavior, more recently during research in Svalbard (2015 and 2017) and in Antarctica (November 2017).

RESULTS AND DISCUSSION

Status and trends on Antarctic tourism
Antarctic tourism is inherently dynamic and characterized by several interrelated factors, including growth in numbers, geographic expansion coupled with a concentration of landings at certain sites that have been de facto consolidated as tourism destinations; diversification of means of transport; diversification of activities; and an expanding customer base.
Tourism remained at relatively low levels from the late 1950s onwards until it began to grow significantly in the 1990s and through the late 2000s. Some of the trends during this earlier period of growth included:

- Continuing increase of tourism resulting in tourist numbers doubling every few years. Other indicators – number of operators, ships, staff and crew – increased too; 7
- Establishment of what could aptly be called “mass tourism destinations” – i.e., locations that appear on most tourist itineraries, where hundreds or thousands of tourists land every season, representing a sizeable percentage of all landings that season. This results in tourism concentration in certain sites, and in certain regions. A number of other sites are also subject to tourism use albeit less frequently;
- Increasing expansion – whilst these activities largely focused on the northern part of the Antarctic Peninsula, there was some activity in the Ross Sea area, and activities in some parts of the Antarctic interior expanded as well;
- Diversification of activities and development of activity-based tourism (rather than location-based tourism, where the focus of the visits are attractions such as wildlife or historic sites), 8 and
- Limited legally binding regulation specific to tourism adopted by the ATCM. Between 2004 and 2009, coincident with growing tourism, the ATCM adopted two mandatory Measures on tourism, as well as Annex VI to the Protocol on Environmental Protection to the Antarctic Treaty. 9 However, none of these instruments has yet entered into force.

Antarctic tourism peaked in the 2007-2008 season and subsequently declined. The sinking of the cruise ship MV Explorer in 2006 might have dampened public interest on visiting the Antarctica but the effect of this accident is difficult to discern. However, the global economic crisis that started in 2008 clearly impacted on demand for Antarctic travel.

Limits on the landing of passengers from ships carrying more than 500 passengers from 2005 encouraged the modality of cruise-only tourism – i.e. tourism cruises carried out on large capacity ships that do not conduct landings on account of logistic. 10 Cruise-only tourism was growing in the late 2000s, and while it has continued as an activity category it decreased somewhat subsequently. A ban on the use of heavy fuel oils established by the International Maritime Organisation entered into force on 1 August 2011 and further discouraged the operations of large-capacity cruise ships (carrying up to several thousands of passengers) which largely rely on that type of fuel and are expensive to retrofit to burn lighter fuel. 11 These factors resulted in a drop in tourist numbers from the late 2000s.

However, Antarctic tourism numbers have recovered and are now beginning to exceed the levels it had in 2007-2008 in terms of total tourist numbers when it exceeded 46,000 tourists, including both landing and non-landing tourists. Non-landing overflights have declined, whereas air-cruise and deep field tourism are on the increase.

In recent seasons, there has been an increase in the number of voyages and the number of tourist landings (i.e. “instances of passengers being carried by inflatable boats to a particular site where these passengers actually set foot ashore” Naveen and others 2001:122). Two recent seasons (2016-2017 and 2017-2018) had some 45,000 and 51,000 tourists respectively, including both landing and
non-landing tourists.

Future predictions of Antarctic tourism growth are based on the number of polar ships that are currently under construction and that will be delivered in coming years, coupled by a growing interest on polar tourism in Asian markets. Between 16 and 20 new cruise vessels are currently under construction for operation in polar waters, with more potentially planned for the future. Some industry sources suggest up to 40 new “expedition” cruise vessels, most of them commissioned by companies already operating in the polar regions. Whilst some of these ships will replace existing ones, there will be a net increase in market capacity and consequently the growth trend in tourist numbers is upwards. In the 2018-2019 season, there was an estimate of 55,000 tourists, including both landing and non-landing tourists. Tourist numbers are predicted to reach over 80,000 tourists in the 2018-2019 season, including both landing and non-landing tourists.

The anticipated escalation on tourist numbers is common knowledge among those following Antarctic tourism developments from within or outside the industry. However, some Antarctic tour operators question that tourism growth will be as significant as predicted. The projected increase in ship capacity is real, but some operators question whether ships under construction will be delivered in time, and speculate that the growth will spread over a longer period than predicted. Further, some operators question whether a 40% increase in passenger numbers is possible even given expanded capacity and a strong demand. In contrast, other operators are concerned about an almost unmanageable situation in parts of Antarctica given that the current operations model depends on activities taking place over a small part of the NW Antarctic Peninsula’s coastline. There, operators need to coordinate landings like clockwork to prevent having two cruise ships in one landing site, which is one of the rules of the industry to preserve the “wilderness experience” for their passengers. But this is becoming increasingly difficult and may be disrupted by sea ice and weather conditions. For instance, heavy sea ice in highly used shipping lanes could disrupt landing plans at some sites and cause congestion elsewhere.

IAATO has proposed ways to manage tourism growth based on four “pillars” which consist of redefining the Antarctic experience (largely about managing the expectations of tourists); strengthening environmental and safety standards; site scale management; and strengthening scientific cooperation (including promoting citizen science). Some of the proposed actions are relatively new initiatives, others are approaches that IAATO has been following for some time. Further IAATO has also introduced changes to its scheduler to facilitate vessel management and communications. Through the ship scheduler each vessel knows the location and planned visits of other vessels; the new scheduler will aim to streamline the movement of a larger number of vessels.

Apart from shipborne tourism, other modalities of Antarctic tourism may grow too, particularly as air links to Antarctica are expanded and enhanced. Air-cruise tourism, where passengers fly to the Antarctic to board their ship (thus avoiding long sea passages) is on the increase. Land based tourism supported by air transport (or “deep-field” tourism) has also increased in the past decade while remaining a niche activity. Some of these activities are enabled by the use of runaways and other facilities maintained by national Antarctic programs. Activities are likely to increase in the triangle delimited by Union Glacier – Queen Maud Land – South Pole. This vast area combines landing airstrips and land-based support for tourists at some locations relatively near the coast with overland access to the South Pole, which
serves as a magnet for both independent and assisted expeditions. However, the dynamics of land-based tourism are different than for seaborne tourism, and the overall situation is less well known. Here, remoteness and difficult access result in high costs and tour operators target the high end of the tourism market. Absolute tourist numbers in the Antarctic interior are one or two orders of magnitude fewer than for other forms of tourism (several hundred tourists annually) and likely to remain comparatively small. However, the establishment of new runaways and air links both by operators and by national Antarctic programs, as well as overland transport in specialized wheeled vehicles, may eventually lead to more tourism to the Antarctic interior.

DIVERSIFICATION, TECHNOLOGY IMPACT AND BEHAVIOURAL CHANGE

Antarctic tourism, as an activity, has changed considerably in the past two decades from respect to the earlier times, and is likely to continue to change in the future. Change results in part from the need by operators to diversify their products and differentiate from their competitors, and partly from the impact of new technology.

For the purposes of tourism, Antarctica is not only a destination visited for its archetypical attractions but is also a playground for a range of more or less adventurous activities, and a background for on-board activities and entertainment. During landings, polar tourists display a basic behavioural repertoire that includes walking around the sites they visit, gathering and receiving information about local sights and attractions, and making a record of their presence, either by taking something with them, e.g., photographs, or leaving something behind, e.g., a stone on a cairn. Obviously, common behaviour is complemented by a vast range of less common and even eccentric behaviour, including potentially non-compliant behaviour such as graffitiing. In addition, a broad range of additional activities available to tourists such as kayaking and overnight camping correspondingly expands the range of possible behaviour.

In recent years technological developments and associated social change globally – particularly the advent of the mobile phone, digital photography, and social media platforms of different kinds – have had a transformative effect on tourist behaviour and the tourism experience as a whole. Documentation and image-making have been turned into a dominant element of Antarctic tourist behaviour too. Images are meant not only for private use but also to share in social media. Further, the camera is often pointed at the photographer, and in that sense Antarctica has become a background for the tourists themselves as they document their lives and share them with their social media friends. It could be argued that for many tourists Antarctic sight-seeing – a basic form of tourist behaviour – has increasingly become mediated by technology, self-centred, and aimed at virtual audiences rather than introspective.

However, not all tourists choose to focus on image-making. In an analysis of three works of non-fiction literature developed during recent Antarctic tourism cruises, Leane (2019) noted that the authors selected to quietly rebel against the dominance of image-making practices and herd-like behaviour. Instead they chose to take few or no photographs at all themselves, focusing on other forms of documenting their trip such as writing. In a way, these tourist/writers rebelled against being tourists, and choose to behave in variance with respect to their fellow travellers, making them “problem-passengers” of sorts.
The use of “drones” in Antarctica could have had a transformative effect on tourism, too, and may still have in the future. Unmanned aerial vehicles (UAVs) are aircraft with no on-board crew or passengers, are now referred in Antarctica as remotely piloted aircraft systems (RPAS). RPAS are used for a number of purposes, including aerial photography. RPAS appeared as an item for discussion at the ATCM only on 2014. It was apparent that by then RPAS use by scientists as well as tourists in Antarctica was ubiquitous and growing, and RPAS impact and regulation became a significant agenda item for discussion at the ATCM.

On the industry side UAVs were initially tolerated but in 2015 IAATO agreed on a partial moratoria on their use by tourists from 2015-2016 season (IAATO 2015). The recreational use of RPAS in the often wildlife-rich, coastal areas of Antarctica is not allowed by IAATO members until more is known about their responsible use. IAATO has stated that it intends to review the ban annually in May to allow for potential technological advances and further developments by decision makers. IAATO further established that the recreational use of authorized RPAS in the interior of Antarctica is allowed “under strict and carefully controlled conditions”.[23] On the government side, several years of discussion resulted on Resolution 4 (2018) on Environmental Guidelines for operation of Remotely Piloted Aircraft Systems (RPAS) in Antarctica. Although not mandatory, the guidelines represent the current environmental best practice for planning and undertaking RPAS activities in Antarctica and can be used to inform decisions by competent authorities.

Both the industry and Antarctic Treaty parties took relatively prompt action to prevent this technology – with potential harmful effects on wildlife and human safety, but also a potential transformation of the tourism experience – to be broadly adopted for tourism use until it was better understood. This raises the question of what will happen then.

ANTARCTIC OVERTOURISM?

Commercial shipborne tourism along the Antarctic Peninsula grew significantly since the late 1980s. Certain conditions such as relatively short distance to a port city with an international airport, a rugged coastline with abundant wildlife and historic sites, and dramatic landscapes have enabled the particular form of shipborne tourism that exists today to develop – in essence an “expedition cruise” that fits in a two- or three-week vacation to the Antarctic Peninsula. This enables different modalities of tourism, whether it is a standard tourism cruise with or without landings, or air-cruise operations where sea passages are minimised. A study of shipborne tourism patterns in that region confirmed that:

…. passenger landings and marine traffic are highly concentrated at a few specific locations and that growth in tourism activity occurred disproportionally rapidly at these sites relative to growth in visitation of the Peninsula as a whole.[24]

One of the early indicators of tourism growth in Antarctica was the establishment of Site Guidelines for Visitors (SGVs). These non-mandatory instruments were adopted by the Antarctic Treaty Consultative Meeting from 2005 to provide practical guidance to tour operators and visitors about how they should conduct their activities at certain sites. SGVs responded to a continuing trend
in the increase of tourism activities in Antarctica; the fact that certain specific sites provided the principal focus for visitors and are, to varying degrees, visited frequently by tour operators thereby increasing the potential for visitor-related pressures at such sites. SGVs complement other “soft”, non-binding regulation to streamline tourism landings. The majority of SGVs apply to sites in the Antarctic Peninsula. In the 2007-2008 season, there were 14 sites with SGVs attached to them which had been adopted by the ATCM (in turn a fraction of the sites visited at the time, but those where those guidelines were most needed). In the 2017-2018 season there were 39 of such sites. This increase reflects steady progress by the ATCM on completing SGVs for the most visited sites, but also continued pressure to produce such guidelines.

A projected significant increase of tourist numbers by 40% or more in the next few years will further add pressure to a relatively limited number of ice-free sites where landings take place. These developments raise questions about whether concept of overtourism might soon apply to Antarctica. The term overtourism, which is reported to have first appeared in social media in 2012 (with the hashtag #overtourism) is increasingly in use by mainstream media, tourism organizations, and academia. The term is however not clearly defined or conceptualised. The (apparently) only available dictionary definition of “overtourism” (from Collins) describes it as “the phenomenon of a popular destination or sight becoming overrun with tourists in an unsustainable way.” A recent study on overtourism in Europe commissioned by the European Union defines it thus:

Overtourism describes the situation in which the impact of tourism, at certain times and in certain locations, exceeds physical, ecological, social, economic, psychological, and/or political capacity thresholds.

For the purposes of applying the concept of overtourism to Antarctic tourism these two definitions above clarify some aspects of this phenomena, but remain somewhat vague because they rely on concepts which are in themselves not unambiguous (e.g. “unsustainability” or “carrying capacity”). However, they point at certain circumstances that might become apparent in Antarctica, at least at some sites and in some times. Most studies of overtourism apply to European cities and clearly some of the descriptors of overtourism would not apply in Antarctica. Nonetheless, they give a hint of how the concept of overtourism might apply to Antarctica. Also, overtourism is not a problem of cities only, but also applies to smaller or more isolated locations. Nor is overtourism a synonym of mass tourism, although a rise on tourist numbers is a triggering factor to many issues associated with it.

A study commissioned by the World Travel & Tourism Council concluded that the five challenges associated with overtourism are alienation of local residents, degradation of the tourist experience, infrastructure overload, environmental damage and threats to culture and heritage. These challenges will be briefly examined as they apply to Antarctica.

Plainly Antarctica has no indigenous peoples or permanent residents, but it has some temporary residents and regular site users, whether long term or short term, whose activities might be affected by an increase on tourism. This includes base personnel, scientists doing field work or running long term research projects at certain locations, and tour operators using repeatedly some sites to land their passengers. It also includes the tourists themselves. Most Antarctic research stations regulate and limit tourism visits, but there is potential for some interference at some stations. Equally there is no tourism infrastructure to speak of, barring a small number of facilities primarily focused on
receiving tourist landings (e.g. such as Historic Site and Monument 61, Port Lockroy) and some accommodation facilities. However, there is a potential for tourism overload at some sites that have no actual infrastructure – the sites subject to Site Guidelines for Visitors, in itself an indicator that a site is regularly or frequently visited. According to guidelines only 100 guided passengers can land ashore at any one time (fewer in some sites), thus preventing the build-up of larger groups. Some wildlife rich SGVs institute precautionary “rest times” in the evening – the approximate equivalent of a zoo closing time – and at those sites this prevents 24 hour visitation. However, it is conceivable that some sites will experience a frequent flow of visitor landings in the high season. Further there might be a relative congestion of ships in the vicinity of popular sites. Increased visitation would contribute to cumulative effects at some locations, whether these are evident or not for visitors, with varying degrees of significance in an environmental sense.

The predicted increase on shipborne tourism may be felt not only onshore but also in some coastal and marine areas, for instance where whales congregate encouraging whale watching activities. In recent years, whale researchers have observed an increase in both the number and size of expedition vessels touring the Antarctic Peninsula. Reportedly some vessels have been observed transiting through aggregations of feeding whales at high speeds. Whale researchers have also noticed a change in the behaviour of whales; reportedly individual whales that used to be approachable to researchers have become very evasive. This is interpreted to be likely a result of high levels of close approaches and follows by both ships and Zodias. IAATO has recently agreed on some whale strike prevention measures. These are to either reduce speed limits to 10 knots (18.5 km/h) while cruising in certain areas or, for member operators who have a whale strike mitigation training program, an extra person on watch on the bridge to monitor and record sightings within the area. These measures are welcome as they would reduce whale strikes by ships. However, other issues associated with increased ship traffic will remain.

For the time being, overtourism might become apparent in some occasions at some specific sites in the Antarctic Peninsula that are frequently visited, and in certain shipping routes – such as frequent instances of cruise ships encountering each other, frequent successive landings at particular sites, large number of tourists participating in “extra” activities such as extended walks, and evidence of earlier landings. Elsewhere in Antarctica, the risk of overtourism will be limited or nil, but there will still be growing tourism pressure at some relatively accessible areas. These include the Ross Sea region, accessible from New Zealand ports, and parts of Queen Maud Land, accessible by plane from Cape Town. Even the South Pole, one of the most remote places on earth, is visited regularly by both independent expeditions and tourists in organised adventure trips. The increase of visitation in recent years has required action from authorities from the United States that operate the Amundsen-Scott Base located precisely at the South Pole to allow visitors to the geographical South Pole nearby the station but to prevent interference with station activities.

Koens et al (2018) suggest that overtourism is not well conceptualised and merits further research. They note that the debate about over tourism draws attention to the effects of unlimited tourism growth, and points to the limitations of voluntary, market-led regulation. More regulatory oversight by Antarctic Treaty Parties may be required and beneficial, as there is a limit as to how much tourism can grow while remaining sustainable. This suggests that revisiting the concept of carrying capacity – or capacities – for Antarctica (and hence further clarifying a concept of overtourism for Antarctica)
would be a positive development. This was, indeed, one of the conclusions of the workshop on Antarctic tourism conducted by Antarctic Treaty states in May 2019.37

CONCLUSIONS

What are the likely trends in Antarctic tourism for the next few years compared to the past two decades?

As a whole, from the late 1990s Antarctic tourism has experienced both change and continuity, with an overall trend towards continued growth, expansion and diversification that has been moderated – or at least concealed – by seasonal, annual and decadal fluctuations. Whatever the trends in the past two decades, as identified in the documents from 2008 and 2018 used here as a benchmark, there is a general understanding that polar tourism is expected to grow significantly in coming years, partly driven by demand (including from newer Asian markets) and partly by an increase of capacity. An increase on tourist numbers in the last three seasons serve as an early indicator of growth, reaching and surpassing the previous peak in the late 2000s after an economic slump from 2008.

However, estimates for 2019-2020 suggest a significant jump on tourism numbers. Antarctic tourism seems to be entering an entirely new phase, and this is likely to influence how current Antarctic tourism regulation works. If the growth is as large as projected then it will necessarily require an adjustment of how Antarctic tourism is conducted in parts of the Antarctic Peninsula, partly through industry initiatives, but also with support, oversight and regulation by Antarctic Treaty states. Actions needed include ratifying mandatory instruments that have already been adopted but are not in force yet, and adopting additional measures aimed to minimize environmental risk, cumulative environmental impacts, and keep under control the expansion of tourism towards new Antarctic frontiers.

What are the consequence likely to be for the practice of tourism – and is Antarctic tourism moving towards early stages of overtourism at some times and places?

Antarctic tourism growth responds to the same processes that led to tourism growth worldwide and to a range of problems at some popular destinations characterised as overtourism. In parallel, technological and behavioural change is already changing the tourism experience from within, arguably distancing people from their surroundings. The future of tourism looks increasingly like more and more people will want to travel to Antarctica mostly to take selfies and other images for sharing on social media. In this context, it is worth asking whether Antarctic overtourism might not be a real possibility in some places and at some times.

Antarctica as a whole will not likely be overrun by tourists, but some areas or locations might experience at times a form of overtourism (in as far as the concept can be applied to Antarctic conditions) such as it might be e.g. frequent encounters with other tourist groups or cruise ships, cumulative effects at landing sites, and a degraded wilderness experience by visitors. Further, new “tourism frontiers” may develop elsewhere in Antarctica. Future developments are likely to be related to air operations, whether air-cruise tourism or air transport to land based facilities.

The concept of overtourism serves at a minimum to remind the Antarctic tourism industry, decision
makers and other Antarctic stakeholders that rapid tourism growth requires timely action to prevent unwanted effects on the environment and other values recognised in Antarctic Treaty instruments, and even on the tourism experience itself. In this content, the initiatives announced by IAATO to manage tourism growth are welcome. The implementation and effectiveness of these initiatives should be monitored by IAATO members and also by external observers to ensure that they work in the longer term. Antarctic Treaty Consultative Parties should endeavour to be proactive too, and ensure that the various mandatory instruments they adopted in the past enter into force, and take other initiatives – such as the establishment of ASPAs - to ensure that tourism growth does not impact on the intrinsic value of Antarctic. Antarctic Treaty states have tended to be reactive with respect to regulating tourism, but rapidly changing circumstances may spur them to action.

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DISCLAIMER

The views expressed in this article are those of the author and do not necessarily reflect the official policy or position of ASOC or its member organisations, or any organisation the author has cooperated with.

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8. These include camping, climbing, and marathons. Some activities (scuba diving, extended walks, kayaking) occupy some 5,000-15,000 tourists per annum (2006-07 data from www.iaato.com/statistics ).
10. ATCM Measure 15, 2009, not yet in force but generally applied.
11. IAATO 2011.
14. The projected estimate for this season as published in mid-2018 was of over 55,000 tourists (IAATO 2018). At the time of writing the actual number of Antarctic tourists in the 2018-2019 season had not been made public.
15. IAATO 2019b.
16. Observations at IAATO Annual Meeting, May 2019
17. IAATO 2019a.
18. IAATO 2019b.
19. The South Pole Amundsen-Scott Station, located at 90o S and operated by the US, serves as an attraction and point of reference to some forms of tourism but does not in itself facilitate or accommodate tourism in any way. An area has been set aside to serve as "NGO camp".
23. See also: https://iaato.org/frequently-asked-questions. Can I fly my drone/UAV in Antarctica?
29. UNWTO 2018.
31. https://www.telegraph.co.uk/travel/comment/overtourism-word-of-the-year/
33. WTTC 2018.
34. Holly Fearnbach, personal communication 30 March 2019, who also noted: "An increase in vessel traffic can increase whale strikes. Regular vessel disturbance can negatively impact the whales in a number of ways, including reducing foraging opportunities and disturbing whales during resting periods - both of which can lead to declines in condition and fitness."
35. IAATO 2019c.
36. The geographic South Pole is in a fixed location, but the ice surface in the South Pole area is in continuous movement – and so are the buildings and other infrastructure in the area, including the South Pole mark. It is likely that the geographic South Pole will end up sometime in the future in a location that is off-limits to tourists, such as underneath a building.
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THE INTERNATIONAL ASSOCIATION OF ANTARCTICA TOUR OPERATORS:
28 YEARS AND COUNTING

Amanda Lynnes

ABSTRACT

This article gives an overview of the history of Antarctic tourism and how the International Association of Antarctica Tour Operators (IAATO) was formed in 1991 with a mission to advocate and promote the practice of safe, environmentally responsible private-sector travel to the Antarctic. It describes how IAATO has developed over the years to contribute to the responsible management of human activity in Antarctica including how it operates within the framework of the Antarctic Treaty System, particularly the Environmental Protocol. In the context of managing for recent and projected tourism growth, the article shares IAATO’s achievements, challenges and objectives to further its mission while planning its activities to have no more than a minor or transitory impact on the environment and create a corps of ambassadors for Antarctica’s continued protection.

KEY WORDS

INTRODUCTION

Visitors have been experiencing Antarctica’s natural splendor through organised tours for over 60 years. Tourism, like science and fishing, is managed through the Antarctic Treaty System, a unique global partnership of nations that celebrates 60 years of Antarctic governance in 2019. The entire continent is declared a natural reserve, devoted to peace and science with all territorial claims on hold. Scientific research is regarded by the Treaty Parties as the most important activity, but tourism is notable in that it accounts for the largest number of people visiting the region every year, between October and April. To date there is minimal known direct impact on the environment.

Nearly all visitors to the Antarctic do so under the auspices of the International Association of Antarctica Tour Operators (IAATO). IAATO is an international member association, comprising over 100 companies and organizations from all over the world who support IAATO’s mission to advocate and promote safe and environmentally responsible private-sector travel to the Antarctic. IAATO operators organize and conduct expeditions to Antarctica, planning their activities to have no more than a minor or transitory impact on the environment in accordance with the Antarctic Treaty System (ATS) Environmental Protocol. IAATO membership categories also include Provisional Operators, who are in the process of demonstrating membership requirements to become operators; and Associate Members.

IAATO’s vision is derived from principles enshrined by the Antarctic Treaty System for environmental protection and education:

Through self-regulation, Antarctic tourism is a sustainable, safe activity that causes no more than a minor or transitory impact on the environment and creates a corps of ambassadors for the continued protection of Antarctica.

IAATO has been attending the Antarctic Treaty Consultative Meeting (ATCM) as an Invited Expert since 1994 to facilitate Antarctic Treaty Party decision-making on the management of human activity in the region.

The work of IAATO is facilitated by a Secretariat and supported by eight thematic committees and six working groups covering field operations, marine and environmental issues, compliance and dispute resolution, plastic elimination, climate change, external stakeholder engagement, tourism growth, education and outreach. IAATO meets at least once a year, during which policies, procedures, challenges and tasks are agreed to by at least a two-thirds majority vote.

Based in Rhode Island, USA, IAATO is a non-profit organization funded by its members through annual dues and variable fees that are levied depending on the numbers of Antarctic visitors carried. It does not receive funding from external sources.

HISTORY

The birth of modern Antarctic tourism
Tourism to Antarctic coastal areas began in the late 1950s and early 1960s when one or two chartered ships carrying a few hundred passengers along with a handful of intrepid yachtsmen began venturing south each year. There were also occasional ‘over-flights’ to Antarctica from Chile, Australia and New Zealand, which offered passengers a chance to view the continent from on high. Deep field operations – activities that take place in the interior of the continent – commenced in 1985. These expeditions were initially to support climbers tackling Mt Vinson, Antarctica’s highest mountain, and subsequently to fly the first group of tourists to the South Pole in 1987-88 season. Since these modest beginnings, Antarctic tourism has grown to include thousands of seaborne passengers arriving yearly on board dozens of vessels, while several hundred others fly deep into the continent.

By the 1985-86 season, the number of tourists visiting Antarctica started to outnumber the number of national scientific and logistic support personnel working in the Antarctic Treaty area (although they still accounted for less than 1% of the total time spent ashore by human visitors). This increase in numbers and activities generated concern amongst Treaty Parties and prompted them to seek more information about these activities. Between the mid 1980s and mid 1990s the US Office of Polar Programs at the National Science Foundation held annual meetings with tour operators to develop an understanding of a growing industry and develop a database of tourism activities (a database that IAATO continues to maintain today).

By 1990 there were seven tour operators – six ship-borne, one deep-field, all based in North America – who were active in Antarctica. It became evident that there was a need to pool experience and set aside competitive practices in order to mutually benefit from a coordinated effort in the areas of ship scheduling, safety measures and specific environmental guidelines for wildlife. This cooperation would help protect the environment, provide expert advice to Treaty Parties and meet clients’ aspirations. It was on this basis that the International Association of Antarctica Tour Operators (IAATO) was formed in 1991.

The first decade 1991 – 2001

The first ten years saw a steady growth in tourism, aided in part by improved technology and by a circumstance of global affairs. The breakup of the Soviet Union in 1989 resulted in a number of polar research vessels, including two icebreakers and several ice-strengthened ex-Arctic passenger ferries, becoming readily available for charter as passenger ships. The employment of these ships more than doubled the annual number of cruises in the early 1990s. Meanwhile, many economies around the world, including that of the USA, were experiencing a period of expansion that resulted in an increase in disposable income amongst the travelling public. These developments coincided with a series of high profile photojournalist publications and television documentaries such as the BBC’s Life in the Freezer, which further whetted the appetite to visit Antarctica. So, while total visitor numbers remained low, the travelling public’s attention was turning southwards.

Some key events during this decade of expansion and exploration:
• 1990-91 - Lars-Eric Lindblad brings the first large passenger ship, Ocean Princess, to the Antarctic, carrying 269 passengers.
• 1991 - Perestroika enables the arrival of Russian ice-strengthened ships into the market.
• 1991 - Antarctic tourist site monitoring begins, led by Dr. Bernard Stonehouse of the Scott
Polar Research Institute, Cambridge, UK, and soon followed by Oceanites, a US based non-profit organization headed by Ron Naveen.

- 1992 - Kapitan Khlebnikov becomes the first tourist ship to visit an emperor penguin colony.
- 1992 - First private flight travels to an emperor penguin colony at Dawson-Lambton Glacier.
- 1993 - First Hercules wheeled aircraft touches down on a blue ice runway.
- 1994 – IAATO is invited to the Antarctic Treaty Consultative Meeting as an Invited Expert.
- 1996-97 - Kapitan Khlebnikov makes the first circumnavigation of the continent with passengers.
- 1998 - Explorer (formerly Lindblad Explorer) is the second vessel ever and the first passenger vessel to successfully circumnavigate James Ross Island following the collapse of the Prince Gustav Channel ice shelf in February 1997.
- 2000 - Rotterdam VI, carrying 1200 passengers, is the first large passenger liner to sail in Antarctic waters.

Managing for growth 2001 – 2019

By 2001 the original seven companies in IAATO had increased to a coalition of well over 20 operators. Tourism to the Antarctic was forecast to increase, possibly at a greater rate than experienced in previous years. Larger ships were entering the market, including an increasing number of non-IAATO members carrying more than 400 passengers, and there was a notable rise in the number of yachts. IAATO was at a crossroads; there was pressure on the association to be more inclusive and members themselves were aware of the need to evolve. IAATO recognised that if it did not embrace the majority of the industry it would become increasingly difficult for the membership to maintain their mission of safe and environmentally responsible private sector travel to the Antarctic.

A focused discussion took place at IAATO’s 12th Annual Meeting (Washington, 27-30 June, 2001) in response to this perceived turning point. A review of then current trends and a market analysis of the mainstream cruise industry and its potential implications for Antarctic tourism was undertaken. The ensuing debate resulted in a major revision of IAATO’s Bylaws. These would allow the inclusion of large cruise-only vessels that did not land their passengers and also would distinguish between ships carrying less than 200 passengers and those carrying between 200-500 passengers.

As of 2019, IAATO recognised categories of vessels as follows:

- Category 1 vessels are those which carry 13 – 200 passengers. They are required to limit to 100 the number of passengers ashore at any one time.
- Category 2 vessels are those which carry 201 – 500 passengers and who are intending to land passengers. They must also limit passengers ashore to 100 and there are some sites where currently they cannot land.
- Cruise-Only vessels are those which carry over 500 passengers and are not allowed to make landings. Yachts are vessels which carry 12 or less passengers.
- Yachts are vessels which carry 12 or less passengers.

The 2001 meeting also saw the establishment of a dedicated committee within IAATO to develop site-specific management plans for selected tourist landing sites. This committee subsequently evolved into a field operations committee that still exists today to consider activity-based guidelines in addition to site-specific guidelines. This was in response to a diversification in activities being
offered by cruise operators including kayaking, snowshoeing, skiing, mountaineering, snorkelling, diving and camping, and the use of remotely operated vehicles, submersibles and helicopters.

In the 2007-2008 season there was a peak in visitors (46,265) followed by a sharp decline due to the world economic crisis and the International Maritime Organization (IMO) ban on the use and carriage of heavy fuel oil in Antarctic waters (Figure 1). The industry began growing steadily again after 2011, reaching a new peak of 56,168 visitors in 2018-2019 (Table 1). IAATO predicts that growth will continue until around 2024 before reaching a plateau.

**Delivering safe, responsible private-sector travel:**
Delivering on IAATO’s commitment to safe, environmentally responsible private-sector travel is driven by an annual cycle of tasks, obligations and the use of bespoke tools. This is a quick summary of current practice.

**The ship scheduler**
An important feature of IAATO is a bespoke web-based scheduling system designed to support pre-season planning for its members. The “Ship Scheduler” is a tool that assists vessel operators in complying with IAATO bylaws and ATCM Measure 15 (2019) requiring no more than one ship at one landing site at a given time. It also provides the basis for coordination between IAATO members with each vessel aware of where others will be in Antarctica. Originally compiled manually, the Ship Scheduler expanded in scale over the years, eventually requiring the development of a proprietary web application and database. It also sets limits on the time, number of passengers ashore and number of daily visitors in accordance with IAATO and Antarctic Treaty Visitor Site Guidelines (https://www.ats.aq/devAS/ats_other_siteguidelines.aspx). Every year, at an agreed time and date, IAATO operators around the world book their intended landing sites in the Ship Scheduler on a first-come, first-served basis. Schedule changes that become necessary as the season progresses, due to adverse weather and ice conditions, for example, are agreed by adjustments between ships in the field, coordinated by the IAATO Secretariat.

**The IAATO Field Operations Manual**
The IAATO Field Operations Manual – the “bible” of Antarctic tourism management - is updated annually and provides the minimum standard for operating procedures and practices for IAATO members and their field staff.

The Field Operations Manual includes:

- Relevant communications and emergency contact information for those in the field.
- Forms for reporting information such as incident reports, visitor statistics, activities undertaken and sites visited. This is added to IAATO’s database that is used for assessing and developing visitor management techniques.
- Emergency and medical response procedures.
- Environmental impact mitigation practices including guidelines and procedures on: Waste Management; Vessel Operations; Safety Equipment Ashore; Boot, Clothing and Equipment Decontamination; Protecting Antarctic Wildlife; Respecting Protected Areas; Respecting Scientific
Research; and Keeping Antarctica Pristine.

- Site-specific visitor guidelines for commonly used landing sites. Originally prepared for IAATO member operators, IAATO now works closely with Antarctic Treaty Parties to review current guidelines and develop new ones to ensure consistency of use by all visitors. They are available in multiple languages on the Antarctic Treaty System website at www.ats.aq.
- Guidelines for activities including: small boat operations; sea kayaking; snorkelling and diving; overnight stays ashore; wildlife watching; Remotely Piloted Aircraft Systems (RPAS) for navigational use; manned and unmanned submersibles.
- Specific management guidelines for specially protected areas and specially managed areas.
- Legal framework documents including: The Antarctic Treaty; the Environmental Protocol to the Antarctic Treaty; and relevant ATCM Decisions and Resolutions.
- Supporting documents and methodology for operators and field staff for scientific and citizen projects currently being supported by IAATO.

IAATO Polar Guide: Antarctica app
In 2017, IAATO launched the IAATO Polar Guide: Antarctica app for iOS and Android to make it easy to access essential information from the Field Operations Manual in the field. The app, which does not require the use of phone signal, also includes updated information from the Antarctic Treaty System and International Maritime Organization (IMO).

Field Staff Support
IAATO regards its members’ staff – the guides in the field – as the frontline for maintaining standards and identifying any issues in the field that need addressing. As such the association uses several tools to help strengthen field guide development including an Online Assessment and Certification Program that is updated annually based on IAATO and ATS developments. IAATO and its sister Arctic organisation, the Association of Arctic Expedition Cruise Operators (AECO) also host a polar field staff conference every other year to discuss shared challenges and opportunities and promote best practice.

Vessel database and vessel tracking
IAATO operators participate in a web-based vessel tracking system known as RedPort which provides near real-time location, course and speed of each vessel in the fleet. In addition, the Secretariat maintains a database of every vessel as a single source of information on all static facts about each individual vessel (for example, medical facilities, contact information, etc.). Access to both the vessel tracking system and the vessel database are shared, on a commercial-in-confidence basis, with the five Rescue Coordination Centres (RCCs) that have responsibility in Antarctica. This information is an integral element of a collaborative Search and Rescue (SAR) system through which relevant parties are instantly aware of the resources available in the field.

Post-Visit Reporting and monitoring
IAATO maintains an extensive database in order to understand long-term trends and to facilitate decision-making about the responsible management of its activities. Data are collected through post-visit reports submitted to the IAATO Secretariat and collated into an annual statistics overview. These are also shared with Antarctic Treaty Parties to inform and assist their work in managing
human activity in the region. IAATO also conducts a five-year analysis of the trends in the spatial and
temporal distribution of its members’ activities, focusing on the Antarctic Peninsula. The database is
shared with independent partners in the research community to ensure transparency and avoid bias
in interpretation.

At a more local level, the post-visit reports are also used to generate annual statistics on landing site
usage and to quantify specific activities. IAATO field staff, who visit sites regularly and are required
to complete the post-visit reports, provide IAATO with invaluable data for its regular review of
Antarctic site guidelines. Anecdotal reports and photographs from staff are useful for evaluating site
management schemes and whether current guidelines are effective. This form of monitoring ensures
visitor management can be quickly adjusted to maximise protection of sites. IAATO also assists
Antarctic Treaty Parties, as required, with regular reviews of ATS visitor sites.

Observer Scheme
In order to become an operating member of IAATO, applicant companies must undertake a
desktop assessment of their planned operations that, if successful, leads to a probationary period
of membership. To become a voting member, however, the company must carry an official IAATO
observer on one of its cruises or expeditions to monitor its operations and practice of relevant
regulations. A successful observation report will lead to voting-member status.

At its annual meeting in 2018, IAATO adopted a mandatory observer scheme. All member operators,
their field camps and vessels will carry an approved observer every five years to assess compliance
with IAATO and ATS requirements for safe, environmentally responsible travel. All new vessels
with existing member Operators will be observed in their first season of operation. The scheme also
includes observing the effectiveness of programs and activities in educating guests about Antarctica.

Because yacht members and yacht applicant members cannot physically accommodate an observer
on a voyage, the Dockside Observer Scheme employs observers to discuss and assess the yacht’s
operations before its departure.

Yacht Outreach Campaign
A small but increasing number of private yachts travel to Antarctica each year. The IAATO Yacht
Outreach Campaign targets yacht operators intending to visit Antarctica for the first time who are
not members of IAATO. They are often unaware of the safety, environmental and authorization
requirements for operating in Antarctica’s harsh and relatively remote environment. Information
in several languages is distributed by IAATO members in marinas and ports at various Antarctic
departure points and is supplemented by targeted content on the IAATO website.

Scientific and hydrographic cooperation
In accordance with its bylaws, IAATO supports scientific endeavour in Antarctica through
cooperation with National Antarctica Programs and the wider international scientific community.
This is achieved through logistical support – freely or cost-effectively – and by offering a platform
for research.
Increasingly IAATO member operators are offering visitors the opportunity to participate in citizen science, which is the practice of involving members of the public in scientific projects. In the context of Antarctica, it applies to observations made by operators’ field staff and visitors. Projects are coordinated and managed either by scientists invited to travel with an operator or by experienced, scientifically-trained members of ships’ field staff. In recent years a group of scientists and industry experts have set up an organisation called the Polar Citizen Science Collective (http://www.polarcollective.org) which facilitates ship-based citizen science projects on IAATO and AECO vessels. Citizen science also helps to build a strong interest in Antarctica and Antarctic science potentially leading to the creation of ambassadors for the continent.

Marine mammal research is an ideal citizen science initiative for vessel-based operators. Sightings and photos that enable individual identification of whales and seals contribute to knowledge on distribution and population size, often in areas where data are still surprisingly scarce. Until recently, participation was low because several projects were requesting information and there was a lack of feedback from the coordinators to the observers. To solve this problem, an IAATO member operator coordinated the development of a program called Happywhale (www.happywhale.com) that links contributors to researchers and provides a means of uploading photos that identify individual marine mammals together with location data. Contributors can then check to see where and when ‘their’ whale has been sighted again.

To improve navigation in Antarctica where surveying is difficult and expensive, IAATO participates in the crowdsourcing of Olex bathymetric information and provides navigational data to the International Hydrographic Organization (IHO).

Creating responsible visitors
A key element of IAATO operational procedures is the mandatory briefing that the association’s operators present to all visitors, staff and crew before arrival in Antarctica. This briefing covers IAATO and Antarctic Treaty System guidelines and requirements for visiting the continent safely and responsibly.

IAATO produces informative documents, presentations, posters, flyers and videos, in multiple languages and formats, for distribution to field staff and clients before and during their trip. This material, which is also available on www.iaato.org, covers the key codes of conduct and what to expect when visiting Antarctica. Examples include:

• Animated guidelines;  
• IAATO Don't Pack a Pest pamphlet;  
• Reducing waste – Guidelines for visitors to Antarctica;  
• Expedition Cruising – What to expect from your Antarctic journey;  
• Climate Change in Antarctica – Understanding the Facts pamphlet;  
• General wildlife watching guideline;  
• Separate guidelines for watching birds, seals and whales;  
• Sailing to Antarctica? – Information for Yachts pamphlet and poster.
Creating a task force for Antarctica’s continued protection
Antarctic visitors, whether tourists, scientists or support staff, often report that experiencing Antarctica’s natural splendour first-hand ignites a desire to ‘do something’ to help safeguard the region. This passion has led IAATO to launch an education programme for creating ‘Antarctic ambassadors’, an informal corps of individuals who are inspired to protect the continent for future generations. Through social media platforms, citizen science, on-board educational programmes and presentations on topics ranging from oceanography and glaciology to history and ornithology, guests return home better informed about environmental and conservation issues. Given that the vast majority of the visitors are supporting their own national Antarctic programmes through taxes, conveying the importance of Antarctic science boosts awareness, and understanding. IAATO is engaged with ongoing research to explore the concept further in order to help refine its programme.

Looking to the Future
IAATO began in 2015 to organise a series of workshops and meetings, supported by specialist working groups and committees, to identify the most effective ways to manage for growth in line with IAATO’s mission and vision. Four priority themes were identified with 24 associated actions. These themes and actions were unanimously adopted by members at IAATO’s 2018 Annual General Meeting as a framework for managing growth going forward.

Theme One: Visitor site management
IAATO has been using a ship scheduling process (see above) for almost two decades as a planning tool to manage site visits by vessels in accordance with ATS and IAATO requirements to have no more than a minor or transitory impact on the environment. The ship scheduler and associated database is being redeveloped to meet predicted demand and to reduce potential pressure at popular sites. IAATO members agreed to develop site guidelines for all visitor sites in the ship scheduler, continuing to report and work with Antarctic Treaty Parties as appropriate. This includes routine reviews of sites with existing guidelines. Activities such as small boat or ship cruising will be encouraged as an alternative to traditional landings.

Theme Two: ‘Reimagining’ the Antarctic experience
With an expanding association and a growing number of Antarctic visitors, IAATO implemented a number of internal and external tools to ensure IAATO and ATS core values are communicated across the IAATO community from the point of sale to operations in the field. The tools include slide shows, audits, webinars and guidelines that target specific audiences, including new members and marketing and PR staff. As a result, client expectations for visiting Antarctica responsibly are managed more effectively. At its 2019 Annual General Meeting, IAATO strengthened its bylaws to reaffirm its commitment to educating travellers in Antarctica and also that marketing and PR material reflect IAATO’s commitment to managing its activities to have no more than a minor or transitory impact on the environment.

Theme Three: Strengthening environmental and safety standards
Actions to strengthen environmental and safety standards in response to predicted growth include
implementing a mandatory observer scheme; expanding IAATO’s online assessment to include ships’ masters and bridge officers and developing standards for polar guides that will help training providers and assessment bodies to calibrate their courses. In addition,

• IAATO’s Wilderness Etiquette, which established guidelines in 2007 to preserve the Antarctic wilderness aspect as an intrinsic part of the visitor experience, has evolved into a new Code of Conduct which is fit for purpose in the current and future climate of growth. It further reinforces IAATO, ATS and other international requirements for safe, environmentally sound travel.
• At IAATO’s 2019 Annual General Meeting in Cape Town, South Africa, members unanimously voted in mandatory measures to prevent whale strikes within specific geo-fenced time areas on the Antarctic Peninsula. Operators will commit to either a 10-knot speed restriction or, for operators with a whale strike mitigation training programme, an extra watchman on the bridge. The compulsory measures will take effect for the 2019-2020 season. Further research is planned to refine IAATO operations in the vicinity of whales, including reviewing the boundaries and locations of the geo-fenced time areas.
• A ban adopted by IAATO members in 2015 on the recreational use of Remotely Piloted Aircraft Systems (RPAS) in wildlife rich coastal regions led to further restrictions on commercial flights in 2019. This was in response to a loophole identified in the ATCM system that allowed individual pilots to obtain personal authorisation to fly devices independent of the tour operator with whom they intended to travel. Members agreed that commercial RPAS flights would not be allowed unless the activity is covered by the IAATO Operator’s permit/authorisation and the pilot secures approval from the IAATO operator with whom they are travelling, regardless of any personal authorisation they may have. RPAS restrictions are reviewed annually by IAATO based on available information for their responsible use.
• In 2018, IAATO introduced a ‘Care & Concern’ policy that enables Antarctic visitors and staff to raise concerns about any practices they feel fall short of IAATO standards.
• IAATO, and its sister association in the north, the Association of Arctic Expedition Cruise Operators (AECO) joined the UN Environment Clean Seas Initiative (www.cleanseas.org) in 2017 and work together to reduce their waste and plastic footprints at both poles. In 2019 IAATO and AECO introduced guidelines for travellers to the Arctic and Antarctic for joining their tour operator in reducing waste.

Theme Four: Strengthening regulatory and scientific collaboration

IAATO believes that that the sustainable management of human activity in Antarctica requires collaboration with all stakeholders with a vested interest in the region. Being a trusted and engaged stakeholder has long been part of IAATO’s strategy. In pursuing this strategy, the association advises and participates in the workings of government and other organizations that have direct interests in the Antarctic through scientific research, environmental protection and industry interests. IAATO is especially committed to expanding its support of scientific research into the potential impact and management of its activities.

In 2018, IAATO and the Scientific Committee on Antarctic Research (SCAR) launched a project to develop a Systematic Conservation Plan (SCP). SCP is an evidence-based approach routinely
employed in conservation when developing strategies for managing whole landscapes that encompass multiple stakeholders and objectives. It is hoped that IAATO’s collaboration with SCAR will help inform the Antarctic community on how best to concurrently manage biodiversity, science and tourism on and around the Antarctic Peninsula.

IAATO also introduced a fellowship with the Council of Managers of National Antarctic Programmes (COMNAP) in 2018, inviting early-career researchers to contribute to the Antarctic community’s knowledge of human activity in the region.

In 2018, IAATO was accepted by the Commission for the Conservation of Antarctic Living Resources (CCAMLR) to attend its annual meeting as an Observer.

While tourism falls under the mandate of the ATCM and fishing under CCAMLR, an increased desire by Parties to harmonise the work of the two, combined with the development of a representative system of Marine Protected Areas in the Southern Oceans, led IAATO to seek observer status in order further to facilitate discussions on the effective management of areas where there is significant human activity. Given IAATO’s commitment to plan its activities to support the long-term protection and preservation of Antarctica’s unique natural, scientific and heritage values, it seeks to contribute to the success of Antarctic MPAs. This involves contributing positively to relevant discussions, supporting evidence-based science and decision-making, delivering safe, responsible and well managed tourism activities, and supporting the view that MPAs should provide for the long-term protection, understanding and enjoyment of Antarctic marine resources and heritage.

Antarctic visitors today

Today, the vast majority (98%) of Antarctic travellers depart from South America to experience the beauty of the Antarctic Peninsula region from vessels carrying fewer than 500 passengers (Table 1). Of these, approximately 9% fly from South America to the northern Antarctic Peninsula where they embark on a ship for onward cruising.

Several hundred - around 1% of total visitors - fly into deep-field continental destinations as expeditioners or tourists to stay in field camps. Others visit the Peninsula by yacht or cruise to East Antarctica and the Ross Sea from New Zealand or Australia. Around 20% of annual visitors experience Antarctica aboard cruise-only vessels without stepping foot on land. IAATO does not support the development of permanent infrastructure solely for tourism in Antarctica. Some member operators use runways shared with Antarctic Treaty Parties with appropriate authorisation or a permit from a relevant government authority.

Antarctic tourists were traditionally from North America and other English-speaking countries but in recent years increasing numbers are booking from emerging markets such as China (Fig 2). Research by IAATO indicates that the demographics of Antarctic visitors are heavily influenced by socio-economic factors, such as a nation’s gross domestic product.
IAATO and the Antarctic Treaty System: A framework for visitor management

The Protocol on Environmental Protection, which was negotiated in 1991, came into force in 1998 and applies to both governmental and non-governmental activities including tourism. It comprises six annexes covering environmental impact assessment procedures, conservation of Antarctic flora and fauna, waste disposal and waste management, prevention of marine pollution, area protection and management and liability arising from environmental emergencies. Through these annexes, the Protocol sets standards for all human activities and aims to ensure that those activities are planned and conducted in a way that limits adverse impacts on the Antarctic environment. As part of this, any proposed human activity in Antarctica must first be authorised or permitted by a relevant ‘competent authority’ (national government). To obtain authorization, anyone organising or conducting tourism and non-governmental activities must:

- Conduct an assessment of the potential environmental impacts of their planned activities;
- Provide for effective response to environmental emergencies;
- Ensure self-sufficiency and safe operation;
- Respect scientific research and the Antarctic environment, including restrictions regarding protected areas, and the protection of flora and fauna;
- Prevent the disposal and discharge of prohibited waste; and
- Report on their activities within three months of the end of their visit.

The ongoing management of tourism is considered through a series of Antarctic Treaty Consultative Meeting (ATCM) agreements such as Antarctic Treaty XVIII-1 Guidance for Visitors to the Antarctic (1994) and Measure 15 Landing of Persons from Passenger Vessels in the Antarctic Treaty Area (2009).

Recommendation XVIII-1 Guidance for Visitors to the Antarctic

A major contribution to the regulation of tourism was the negotiation of Recommendation XVIII-1, Guidance for Those Organising and Conducting Tourism and Non-governmental Activities in the Antarctic in 1994.

Critically, this recommendation has two parts:

- “Guidance for Visitors to the Antarctic” which was based on the original guidelines developed when modern day Antarctic tourism started in the 1970s. These guidelines form the foundation of the mandatory briefing that all clients, staff, and crew on every IAATO-member expedition must receive before setting foot on Antarctica.

- “Guidance for those Organising and Conducting Tourism and Non-governmental Activities in the Antarctic”. This guidance provides the framework that operators use to get
authorisation to visit the Antarctic from their own national governments. IAATO actively contributed to the development of the guidance at ATCM XVIII; and since 1994, IAATO Members have self-imposed both elements of Recommendation XVIII-1.

ATCM Measure 15 Landing of Persons from Passenger Vessels in the Antarctic Treaty Area (2009)

Measure 15, (2009) prohibits vessels carrying more than 500 passengers to make landings in Antarctica. In addition, it requires tour operators to coordinate their itineraries so that no more than one vessel visits a landing site at any one time. Furthermore, no more than 100 passengers are permitted ashore at one time and there should be a ratio of one guide to 20 passengers while ashore. This Measure codifies the standard operating procedures that had been developed by IAATO in the early 1990s.

CONCLUSION

The existence of the Antarctic Treaty System has driven the development of a responsible tourism industry through IAATO. Although regulations and effective tools currently exist for managing tourism, the Antarctic community relies upon the willingness of operators and the visitors themselves to self-manage their activities and behaviour in order to safeguard the region. For almost three decades, IAATO has successfully planned its activities to have no more than a minor or transitory impact on the Antarctic environment, acutely aware that visiting the continent is a privilege. IAATO welcomes increased support from Antarctic Treaty Parties through the strengthening of compliance and enforcement, greater harmonisation across national competent authorities in the permitting and authorisation process, and bringing Measure 15 (2009) into force. While any kind of human presence has the potential to disrupt a natural balance, carefully managed first-hand experience is irreplaceable when it comes to creating a task force amongst the general public to support the long-term conservation of Antarctica. IAATO remains deeply committed to its mission and is prepared to face the challenges derived from growth that lie ahead. However, the continent and its governance are also under pressure from a changing climate, politics and increased demand for natural resources. Increased cooperation and coordination are critical for developing a comprehensive approach to the effective management of human activity.

ACKNOWLEDGEMENTS

Thanks to Terry Shaller, John Splettstoesser, Kim Crosbie, Steve Wellmeier, Robert Burton, Rachel Morgan and Denise Landau for content and inspiration.
The International Association of Antarctica Tour Operators: 28 years and counting

Table 1. Estimated number of Antarctic visitors travelling with IAATO member operators for the 2019-2020 season as of April 12, 2019.

<table>
<thead>
<tr>
<th>Types of Tourism</th>
<th>Estimated Total Number of Passengers 2019-2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>IAATO Seaborne Tourism, Antarctic Peninsula on ships carrying fewer than 500 passengers</td>
<td>55642</td>
</tr>
<tr>
<td>IAATO Seaborne Tourism Ross Sea/Continental Antarctica on ships carrying fewer than 500 passengers</td>
<td>486</td>
</tr>
<tr>
<td>IAATO Sailing Vessels/Yacht Tourism Peninsula on vessels carrying fewer than 12 passengers</td>
<td>188</td>
</tr>
<tr>
<td>IAATO Air-Cruise Peninsula on ships carrying fewer than 500 passengers</td>
<td>5084</td>
</tr>
<tr>
<td>IAATO Large Ships/Cruise-Only Peninsula (carrying more than 500 pax and not allowed to make landings)</td>
<td>18420</td>
</tr>
<tr>
<td>IAATO Deep-Field Tourism (by air)</td>
<td>733</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>80,553</strong></td>
</tr>
</tbody>
</table>

Figure 1. Graph showing trends in passenger numbers and vessels visiting the Antarctic Peninsula between 1989 and 2019. Vessel numbers do not include yachts or cruise only vessels carrying more than 500 passengers and not making landings.
<table>
<thead>
<tr>
<th>Country</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States</td>
<td>32%</td>
</tr>
<tr>
<td>Other Nations</td>
<td>16%</td>
</tr>
<tr>
<td>China</td>
<td>15%</td>
</tr>
<tr>
<td>Australia</td>
<td>11%</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>8%</td>
</tr>
<tr>
<td>Germany</td>
<td>6%</td>
</tr>
<tr>
<td>Canada</td>
<td>5%</td>
</tr>
<tr>
<td>France</td>
<td>4%</td>
</tr>
<tr>
<td>Switzerland</td>
<td>2%</td>
</tr>
<tr>
<td>Netherlands</td>
<td>1%</td>
</tr>
</tbody>
</table>

Figure 2. Who is visiting Antarctica? Visitors by country of origin, 2018-2019.
A GEO-HISTORICAL ANALYSIS OF ANTARCTIC TOURISM: PRACTICES AND REPRESENTATIONS

Marisol Vereda and Marie Jensen

ABSTRACT

The first tourist voyages to Antarctica started in 1958 and since then the activity has been mostly reserved for a well-travelled elite. Tourism in Antarctica has increased significantly and expanded to embrace different ways of visitation. Considering Chadeauf’s (1988) diachronic model of the evolution of tourist destinations, this contribution provides an analysis on the evolution of Antarctic tourism through Ushuaia as a gateway city, where most tourists arrive and/or depart. The temporal scope comprises the whole period from the first voyage in 1958 to the 2017/2018 tourist season. In this period, two phases could be clearly identified in the development of Antarctic tourism in accordance to Chadeauf’s model: myth creation and maturation of the tourist product.

KEY WORDS

Antarctic tourism, diachronic model, representations, tourist flows, tourist space.
INTRODUCTION

Antarctica has been transformed into an important destination for elite tourism, demonstrating distinct stages of growth and new modes of operation. Antarctic tourism can be defined as a commercial activity, where people travel south of 60° S (the Antarctic Treaty area), for leisure purposes related to wildlife, dramatic landscapes, scientific interests, or historic exploration (Jensen and Vereda, 2016). Several voyages include the sub-Antarctic regions north of the Antarctic Treaty Area, as well. Given the particular characteristics of the Antarctic continent, namely its remote location and isolation from major urban centers, tourism to the continent requires specialized gateways with specific operations regarding passenger changeover, logistics, and supplies, among others.

Various types of tourism have developed over the years, including cruise tourism, land-based tourism, flyovers, and combination tours of air and cruise transport. Among these, cruise tourism has grown most significantly. Antarctic tourist numbers reached 51,707 travelers during the 2017/2018 season (IAATO, 2018), a number that is expected to grow rapidly over the coming years. Most of the Antarctic cruise tourism originates from Ushuaia due to its relatively close proximity to the Antarctic Peninsula where most tourism activities are concentrated. In fact, Ushuaia has focused much of its economy to specializing in tourism services as a gateway to Antarctica. In the 2017/2018 season analyzed, 43,000 visitors traveled to Antarctica through the pier of Ushuaia.

THE DIACHRONIC MODEL OF CHADEFAUD

Various authors have examined the history of Antarctic tourism (Reich, 1980, Enzenbaher, 1992, Headland, 1994, Jensen and Daverio, 2008, Jensen and Vereda, 2016). For this study, the diachronic model of Michel Chadefaud (1988) is used to consider the evolution of cruise tourism, and specifically the movement of passengers from Ushuaia as a gateway to the Antarctic. This model facilitates the analysis of the evolution of tourism through a systematic interaction between the social demand (the myth), the supply (the tourist product), and the space as a global projection of society. The purpose of this contribution is to offer an analysis of the evolution of Antarctic tourism by virtue of the type of practices developed and the representations of Antarctica achieved by the industry (visitors and tour operators). For this purpose, the sources include previous works (Jensen and Daverio, 2008, Jensen and Vereda, 2016, Vereda, 2005, 2010, 2016), statistical reports, promotional material, documents delivered on board ships, and testimonies from Antarctic visitors.

This model considers space as a social product from a systemic vision. The productivity of tourism is directly related to social demand, representing the projection in space and time of the ideals of the global society. This socio-spatial formation is made up of material spaces (accommodation, transport, activities) and intangible spaces (representations, images) (Chadefaud, 1988; see also Callizo Soneiro, 1989, Larrinaga, 2005).

The tourism product can be synthesized in a process that includes different phases:

1. Creation of the product: the first immaterial elements are generated that differentiate the binomial myth-product from the social representations about the space, which stimulates the generation of
material elements.
2. Maturation of the product: maturation is characterized by the expansion of the product and contains the different stages of its growth. It is defined by the accumulation of investments of offered material—essentially lodging, transportation, and practices.
3. Obsolescence: different changes appear, such as the emergence of other myths, new places of interest, other fashions, etc., where a period of inadequacy between supply and demand is evident.
4. Reconversion-mutation of the product: there is a possibility of generating new myths about the space in question that will make it possible to re-signify the tourist product.

MYTH-CREATION PHASE

Attention is focused on the creation of the myth that gave rise to the development of tourism. The myth can be understood through a definition provided by Barthes (2012), which proposes myth as a language, a communication system, a message, and a mode of meaning. The myth refers to the mental representations that have their origin in different sources of information, such as texts, iconographies, photographs, and others, which confirm a communication system (Chadefaud 1988).

The initial moment of spatial localization of the first elements can be related to the demand expectations and the components of the product. The beginning, or the creation of the myth, is mainly given by the immaterial elements, generated by the mental representations.

In the case of Antarctic tourism, the myth starts from the dominant narratives in relation to the “heroic era”. This is how collective representations about Antarctica are nourished by the travel logs of explorers, referring to Antarctica as a new space for discovery and exploration (Vereda et al, 2018).

In this sense, there was a first experience of “visitors” in Antarctica in 1933, aboard the ARA Pampa. More specifically, it was a survey voyage made by Argentina to Orcadas Station at South Orkney Islands. This voyage was accompanied by illustrious personalities: Juan José Soiza Reilly, the Buenos Aires journalists of the magazine Caras y Caretas, and his wife and daughter. The naval attaché was to travel with the family of Reilly, but the attaché stayed in Ushuaia, because he did not trust the ship to make the crossing (Soiza Reilly, 1933). A distinguished group from the University Club of Buenos Aires was also part of the expedition (Capdevila, 2001).

While this trip was not considered a tourist trip in the strict sense, it marked an initial moment of the “pre-tourist” phase, where a series of representations were already beginning to manifest themselves. In this sense, the description by journalist Soiza Reilly (1933: 22) was collected:

*On the mystery of the Orkneys…*

*In reality, the Orkney Islands are often a mystery to those of us who live in big cities. The name of these fantastic islands suggests the image of a very white death. High peaks of silent ice, lost in a petrified sea of whiteness. Loneliness. Dantesque hell where the fire of snow burns in immobile flames.*

The myth of Antarctica, which had already begun to take shape from the travel logs of the explorers, is nourished especially by the search for spatial alterity (Chadefaud, 1981), as seen in the description
made by Soiza Reilly, when mentioning the mystery suggested by the islands for those who live in big cities. Other elements stand out as well, such as the ideas of desolation and isolation.

Subsequently, the first tourist voyage to Antarctica took place in January 1958, aboard the ship ARA Les Eclaireurs, which marked the beginning of tourism to Antarctica. This first voyage was organized by the Argentine state, as well as the subsequent ones of this period, where the selection of eligible passengers for travel is notable: decisions were made based on nationality, occupation, and purpose of the visit (Jensen and Vereda, 2016). A passenger described the details of the selection process:

The news appeared in October 1957. The Command of Naval Transport in Argentina would study the requests of people interested in… interests? My wife and I jumped at the possibility. They would only accept one hundred passengers, they told us when we presented ourselves, due to the capacity of the transport, which would be used as a cruise ship. So that the voyage would have as much variety as possible, the selection would be based on nationality, occupation, and purpose. As for us, our purpose was purely and simply pleasure (which did not seem adequate enough): my nationality, American, my occupation, agricultural attaché of the embassy in Buenos Aires. Of course, we were overwhelmed by the news in mid-December that we were two of the three Americans chosen. We would fly on January 11 with the first contingent of forty-eight to Ushuaia, the southernmost city of the world, at 2900 Kilometers at the end of Tierra del Fuego. There, we would join the rest and embark on “Les Eclaireurs” (Nichols, 1959: 4).

In fact, the voyage was made up of Argentines and foreigners, with a large number of ambassadors, several newspaper correspondents, the governor of Tierra del Fuego, some artists and doctors, among others.

This selection of visitors highlighted the desire in having an “educated” class, with experience in traveling, and with the ability to disseminate the Antarctic experience. In this regard, the passenger and journalist Jutronich (1958: 2) expresses: “(…) the trip should be useful to the primordial purpose of creating Antarctic ‘consciousness’.”

The remote destinations have a particular attraction, which Dann (2006) calls the anti-tourist attraction. That is, that there are few people who have actually visited these places is itself a form of attraction to visit the place. In some manner, a distinction is needed in the sense that Bourdieu (2012) proposes regarding tourists who visit massive places. These tourists with initiatives and innovators, who venture into new areas with little human intervention, often become the pioneers of tourism, motivating others to follow in their footsteps (Cohen, 1989). Through two fragments of Jutronich, a social distinction is made:

In terms of photography and cinematography, it is not an exaggeration to say that the value of the equipment amounted much more than one million pesos (…) he showed off a whole series of devices that ranged from a modern video camera to a tiny and perfect pocket camera (Jutronich, 1958:4).

Although this has essentially been a tour of tourism, it would be unfair to say that it was only for pleasure. Almost without exception, the travelers were men and women eager to expand their knowledge, to know the only region of the world that is forbidden to ordinary human beings.
The myth about the Antarctic journey is shaped by the idea of adventure and mystery, of a desolate and inhospitable place where death seems to threaten permanently. Also, masculinity is highlighted as an essential requirement to inhabit Antarctica, in reference to whom visitors met in the various stations visited.

From the very first tourist voyage to now, certain practices continue to be carried about, such as the logbook, called “The Tourist Penguin”, and the issuance of a certificate indicating the completion of the trip. Stamp collecting was also an important group activity.

As for the components of the landscape, the sighting of the first iceberg stand out: “(…) and then the appearance of the first iceberg. The mass of ice rose majestically sailing slowly (…)” (Jutronich, 1958: 3); “(…) the icebergs began to appear. One was so big that it protruded more than forty meters and extended about three kilometers on each side, as if it were an ice bank rather than a part detached from a glacier.” (Nichols, 1959: 2). “(…) and we went out to look at the marvel: the first floating iceberg that was drifting towards the north” (Cocaro, 1958). The presence of the fauna and its detailed description, especially of penguins, is also striking in the testimonies.

On the other hand, there is a clear reference to the “national feeling”, a product of the Antarctic policy that the Argentine government was carrying out at that time, when the International Geophysical Year had just ended. This national feeling is expressed in the following way by one of the tourists:

The two hundred travelers who left Buenos Aires and crossed the Drake Passage to put their feet on Antarctic soil, saw with their own eyes how the Antarctic Peninsula and the swarm of islands that rise close to its shores are a simple extension of the mountain range of the Andes. They also checked with how much effort the Argentine sovereignty is maintained in places that are indescribably inhospitable (Jutronich, 1958: 1).

Between 1958 and 1959, three tourist voyages were carried out, transporting 456 passengers. They were characterized by having been made prior to the signing of the Antarctic Treaty and by having been organized by state agencies and with ships flying the flag of the organizing country. These trips were possible based on the experience gained through exploration, reconnaissance, hydrographic, meteorological, oceanographic and glaciological studies, and scientific research. They demonstrated both the technical feasibility of its realization and the interest of tourists in traveling to these remote regions, and the possibility of having logistical support forces. The itineraries were based on visits to scientific stations. Through the sensations of adventure and remoteness, the beauty of the landscapes, the diversity of the fauna, and the epic characteristics of these trips, voyages to the Antarctic managed to satisfy and exceed the expectations of tourists (Jensen y Vereda, 2016).

During the 1960s, tourist voyages began only in the 1965-1966 season. In January 1966, the company Lindblad Travel, with headquarters in New York, together with the tourism agency Astra of Buenos Aires, leased to the Naval Transport Command the ship Lapataia and organized the “First International Survey Voyage to Argentine Antarctic Sector” to the Antarctica in January.
1966, constituting the first trip organized by the private sector. They departed from Buenos Aires to Antarctica on January 13, with stops in Mar del Plata and Ushuaia, later visiting the Brown, Decepción, and Esperanza research stations. This first Lindblad trip marked the beginning of private activity in relation to Antarctic tourism. A fragment of the newspaper La Nación evokes the moment (Diario La Nación, 01/14/1966: 7):

Antarctica is the destination of these 60 Americans who constitute the first "tourist contingent" that will reach the frozen continent. They left yesterday from Dock A of the metropolitan port, aboard the transport of the Navy Lapataia, commanded by Captain Zenon Bolino. The ship has a crew of 55 men, and special clothes, as well as technical and scientific materials, were loaded on board. These implements will be used by tourists -they belong to the high society of the United States- that are commanded by the explorer Finne Ronnes. During the trip, travelers will be dedicated to various research tasks, since the purpose of this unique journey is exclusively cultural. The scientific leader of the expedition that will conclude in the Argentine Antarctic is Mr. Lyman Sexton.

Once again, that the voyage was directed towards an elite and had a distinctive function, defined as “strictly cultural” and dedicated to “research tasks”, is evident. Life magazine (Leatherbee, 1967) wrote an article about this experience, incorporating photographs of visitors interacting with fauna (Figure 1). As previously mentioned, Antarctic tourism had already begun at the end of the 1950s, and the Lindblad trip of 1966 marked a milestone that is still remembered today, likely due to the important international repercussions that it had at the time, as well as the continuity in the operations of the company under the same name. In this way, the “myth” about the Antarctic trip has been emphatically reinforced, especially by groups of tourists with high purchasing power and valued travel experience.

However, the myth continues to be filtered through certain elements that still characterize the Antarctic Journey. The logbook occupies a central place in the experience. In the case of these trips, they were written by renowned scientists and naturalists of the time, with drawings that gave an account of the sightings, made by renown artists, such as the example of Roberto Bateman (see Figure 2).

In 1967, Lindblad travel rented the vessel Lapataia again and organized two trips to Antarctica. During the next three seasons, he rented vessels to Chile and Denmark, experimenting with different itineraries not registered in Ushuaia.

The Lapataia ship, on the other hand, returned to make a trip with tourists to Antarctica in the summer of 1968.

During the 1968/1969 season, the National Tourism Directorate of Argentina organized a series of four cruises called “Cruceros Continent Blanco”. The trips were made with the ship Libertad belonging to Empresa Líneas Marítimas Argentinas.

In total, throughout the 1960s there were 8 tourist trips to Antarctica. This decade was characterized by the continuation of voyages organized by public agencies of Argentina, as well as the beginning
of private Antarctic tourism through the company led by Lars Eric Lindblad, who hired ships from different countries, making different itineraries that departed from places as diverse as Buenos Aires and Ushuaia in Argentina, Punta Arenas in Chile, and Lyttelton in New Zealand.

To garner the participation of private activity in the organization of tourist activities in Antarctica the first Tourism Recommendation was approved (Recommendation ATCM IV-27) at the IV ACTM held in Santiago, Chile, in 1966.

During the 1970s, tourist activity was divided between private initiatives and initiatives promoted from different Argentine agencies.

In 1970, alongside the Lindblad Explorer voyages, a ship specifically designed to operate in polar waters was developed. The concept of expedition cruises arose, where trips to remote destinations that lacked support and infrastructure were organized, and where ships would allow both access and extended stay in the destination area, covering all passenger needs.

The National Directorate of Tourism was the Argentine state agency that promoted the continuity of tourism. Trips were made with the Río Tunuyán and Libertad vessels. As of 1974, and for two seasons, the Undersecretariat of Sports and Tourism of Argentina chartered the Regina Prima ship, under the Panamanian flag, and organized 6 trips in the 1974/75 season, as well as 7 trips during the following season.

During the following seasons of the same decade, the Lindblad Explorer (the ship designed to navigate in polar waters), made numerous trips. Notably, a 35-day trip took place in the 1973/1974 season, from the port of Bluff (New Zealand) to Ushuaia, marking the first tourist trip of Antarctic semi-circumnavigation.

In the 1972/1973 season, the Spanish company Ybarra made a trip called 1st Antarctic Cruise and Midnight Sun, aboard the ship Cabo San Roque, with a 720-passenger capacity distributed in two classes, completing 5 trips in the subsequent years.

In January 1973, the vessel Enrico C of the Costa Line arrived in Ushuaia with 888 passengers from Antarctica. Additionally, the World Discoverer vessel from the Society Expedition Cruises began operating in the 1977/1978 season, making two trips with 282 passengers.

In conclusion, during the 1970s, 63 voyages were made, transporting 16,824 passengers. In the 70’s a “tourist boom” was generated, characterized by continuous activity during all seasons, participation by the Argentine State, as well as involvement from new private companies where larger ships were used in several cases. A vessel specifically designed for navigation in polar waters began operating for the first time and, in some cases, vessels carried convenience flags.

Although it is still an initial phase of Antarctic tourism, we observe how the myth is sustained and incorporates materials that indicate how to visit Antarctica (see Figures 3 and 4) and reinforce the landscape components highlighted from the first trips.
In the 1980s the National Direction of Tourism of Argentina organized the last trip with the ship ARA Bahía Buen Suceso. From then on, private activity took the initiative in tourism, and in the 1980/1981 season, the Antartur company, based in Ushuaia, organized a trip aboard the ship ARA Bahía Buen Suceso, carrying 70 tourists. In the following season, it made two more trips, with 139 tourists. Antartur continued with Antarctic voyages in the 1985/1986 season, partially using the Polar Ship ARA Bahía Paraíso, organizing a series of trips during the following three seasons. From an organizational point of view, an emphasis was put on the “Antarctic Cruises Handbook”, where rules of conduct exist that tourists must acknowledge in order to respect the legal provisions made by the Antarctic Treaty. The activities of foreign companies continued to develop with the Lindblad Explorer vessel and the Society Explorer; likewise, in the 1988/1989 season, the Antonia Nezhdanova vessel began operating, making 7 trips through Ushuaia, thereby anticipating in a way the sustained growth that would begin the following decade.

Once again, the importance of Antarctic trips with renowned personalities is noted. The Antartur company once invited the descendants of members of the Swedish Antarctic expedition 1901-1904, Larsen, Nordenskjöld, and Sobral, who were invited to hoist up the flags of their respective countries (See Figure 5). On another occasion, the grandson of De Gerlache was also invited, taking him by ship on the exact same date that his grandfather had embarked (Giró, pers. com, 2017). Attention was likewise directed towards the learning and knowledge of Antarctica through lectures on board: “scientists, polar experts, and descendants of Antarctic pioneers illustrated the passage and historical aspects of the Antarctic Continent”. (Giró, pers. com, 2017). In this regard, see figure 6.

In synthesis, it can be noted that during the 1980s 33 trips were made, carrying 3,017 tourists. In this period, the activities organized by Argentina ended, both by state and private initiatives, and tour operators began to engage in new itineraries.

With regard to Antarctic tourism operating through the port of Ushuaia, in the 1990s, it developed from private-activity initiatives of foreign origin due to exogenous and endogenous factors. For example, the greater availability of ships and specialized human resources in polar navigation can be highlighted. In particular, polar ships from the former Soviet Union became the most viable vessels of the time to be chartered, and thus expedition trips, without luxury, but with the possibility of having program activities that favored learning, were offered. In regards to endogenous factors, the infrastructure works developed in Ushuaia, made it possible to consolidate the Antarctic tourism activity. The construction of the international airport and the expansion of the commercial dock stand out. In 1995, longer runway (2,460 m) was inaugurated, favoring takeoff and landing operations. In 1997, the construction of a new passenger terminal was completed, thus providing the possibility of receiving a large aircraft. As a result, the frequency of flights to Ushuaia was increased, facilitating the operation of Antarctic tourists through charter flights that allowed the changeover of airport-port intermodal passengers. Additionally, in 1999, the length of the dock was extended to 520 m, allowing a greater number of mooring sights—a condition that added to the natural characteristics of deep-water and sheltered bay, optimizing the operation of Antarctic tourist vessels.

Antarctic tourism continued to reproduce the distinctive travel model, highlighting significant aspects of the Antarctic landscape (Figure 7). Likewise, Figure 8 shows the presence of personalities,
belonging to a membership and, in turn, a greater offer of amenities on board. The cruise season lasted 105 days and was on the rise until the 1996-1997 season, when the extension of the season reached 147 days.

During this period, commemoration trips were also carried out, such as the “Adrien de Gerlache Commemorative Antarctic Cruise”, organized by the Belgian company Asteria, in 1997, 100 years after the Belgica expedition of Adrien de Gerlache to Antarctica. It was done aboard the vessel Professor Khromov, following the same route as the Belgian vessel at the end of the 19th century (Figure 9). In that same sense, commemorative trips, of the expedition of Shackleton, were also organized.

In this decade, there was an exceptional growth in both the number of ships and voyages and passengers, as a result of private initiative, also the International Association of Antarctic Tour Operators, IAATO, was created. This decade was also characterized by the use of boats with a capacity for between 50 and 100 passengers. Ushuaia was consolidated as a base port, and its share of total Antarctic shipborne tourism exceeded 90 percent.

In summary, during the 1990s, 585 voyages were carried out, transporting 55,013 tourists.

MATURE PHASE

This phase is characterized by the expansion of the product and by showing, in turn, different stages of growth. It is defined by the accumulation of investments that the material offer develops—that is, lodging, transportation, and activities. Accommodation was developed in the same cruises, although camping is also highlighted among the diversification of activities.

For Antarctic tourism the beginning of this phase coincides with the end of the XX century, at which numerous special programs were promoted, producing a significant increase in the number of trips, and especially in the number of passengers (more than 50% greater than the previous season).

Also in this phase, larger vessels operated, with a progressive increase in capacity that began to include Antarctic trips. Their itineraries originated in ports in South America, or were part of more extensive itineraries around South America or around the world, and would make a stopover in Ushuaia on their journey to or from Antarctica. In the 2006/2007 season, the first “Very Large Cruise Vessel” (VLCL) took place, called the Golden Princess, with a capacity for 3,100 passengers. South American participation was also added to the Antarctic tourist industry, with companies like Antarpply Expeditions, founded by Argentine businessmen with headquarters in Ushuaia, beginning to operate alongside the MV Ushuaia in the 2002-2003 season. Likewise, from the 2005-2006 season to 2011-2012, the MV Antarctic Dream of the Antarctic Shipping company, based in Chile, regularly operated a total of 88 trips.

The 2007/2008 season recorded the largest movement of this kind throughout the port of Ushuaia, with 44,605 passengers, while the following season was the most extensive, with a duration of 179 days. Concern for the preservation of the Antarctic environment and for enabling the development of tourism activity in a sustainable manner was presented in the agenda of the Antarctic Treaty
Consultative Meetings (ATCMs). Vessels with more than 500 passengers did not make any landings in the Treaty area due to the limit established by IAATO for its member operators. These limitations were adopted by the ATCM through Resolution 4 (2007) and in 2009, consensus was reached on Measure 15.

Because of the amendments to Annex I of the MARPOL Convention (IMO), in force since August 2011, that prohibit the use and/or transport of heavy fuel south of 60 S, the presence of large vessels decreased in the 2011/2012 season.

From the 1999/2000 to 2009/2010 seasons, a total of 244,582 tourists visited Antarctica, while from the 2010/2011 season to the 2017/2018 season, 319,587 passengers visited Antarctica. Until the 2017/2018 season, the number of passengers in the 2007/2008 season had not yet been exceeded, reaching 44,605 passengers compared to the 43,000 in the last mentioned season, through the port of Ushuaia.

Also, there is a great diversification of activities, such as diving, kayaking, mountaineering, skiing, camping, among others (Figure 10). There are also groups with specific interests, such as birdwatchers and photographers, among others.

During this period of the 21st century, the characteristics of the Antarctic journey continue to be strengthened in its symbolic and material dimensions. In relation to the symbolic dimension, two works that were previously carried out based on surveys of Antarctic visitors on their representations (Vereda, 2010, 2016) indicate that visitors consider Antarctica as a special destination associated with a pristine landscape, remoteness, and exceptional wildlife. These attributes reinforce the idea of wilderness or wild nature, of Antarctica as the last place on Earth with unique environments that motivate tourist visits. The mention of explorers is related to difficulties (referring to the explorers of the heroic era), Shackleton occupies a leading position while the role of other explorers is sometimes subordinated to the nationality of tour operators and/or to the demand they address (Vereda, Obreque and Cohen, 2018).

Different factors exert great influence on the representations prior to the trip. It should be noted that high expectations a priori are mostly overcome during the experience. This process of satisfaction is achieved once the experience in the place is compared and evaluated based on those previous images.

The idea of a “once-in-a-lifetime experience” is particularly emphasized, as a unique experience itself. The purpose of a “learning experience” is highlighted, putting in perspective the content that is given to the trip from the conferences on board, the awareness of the importance of Antarctica, among others.

Several works that have highlighted the profile of Antarctic visitors (Bauer, 2001, Vereda 2005, 2010, 2016) show that visitors have a high income, are experienced in travel, and are mostly over 45 years of age. Most of the demand comes from the United States, followed by China, Australia, the United Kingdom, and Germany. China ranks second since the 2015/2016 season.

In sum, Figure 11 shows the evolution of Antarctic tourism from 1958 to the tourist season of 2017/2018, distinguishing the two phases identified: the creation of the myth and the maturity of
the tourist product.

**FINAL REMARKS**

The creation of the myth of Antarctic tourism has been based on dominant narratives related to the exploration trips of the heroic era, in which Antarctica is conceived as a new space of discovery and exploration, where the desolation and the difficulties were present in the representations of the visitors.

The first phase where the myth is created and fed back includes tourism practices in a remote and inhospitable place at the end of the world. Visitors recorded their experiences in their travel journals, gave an important value to Antarctic stamp-collecting, and those who organized the trips considered the “behavior of the cruise” through the issuance of manuals for compliance with certain standards, among other practices. The sense of distinction has always been present, throughout the processes of selection of visitors in the very first trips, the cost of those trips, and the incorporation of personalities that gave the trips or expeditions certain characteristics different from other trips, and the organization on board of conferences that gave trips an educational and awareness-raising quality. In this way, the activity was consolidated as the domain of an elite experience.

In relation to materiality, in the sense proposed by Chadefaud, during the creation phase of the myth, the materiality of Antarctic tourism was only made effective through the use of vessels that, as in the case of cruise ships, fulfilled the double role of transport and accommodation. During the first years, the ships did not correspond with boats designed for tourism, but for cargo and passengers, which belonged to the Argentine navy.

In 1970, with the start of the voyages made by the ship Lindblad Explorer, a boat was specifically designed to operate in polar waters. However, most of the ships used by the tour operators later had not been designed for an exclusive tourist purpose, since the ships that were available in the former Soviet Union were able to navigate polar waters but were not specially built for tourism.

The maturity phase begins once the creation of the myth stimulates the subsequent generation of material productions. This phase begins with the celebrations of the end of the Millennium. While Antarctic tourism shows its sustained growth over time, different stages occur due to the intervention of different factors. A significant diversification of practices takes place in the space, and the visits to sites in various areas are increased. Also, cruise companies with medium or large ships occupy a prominent place in the market that was previously reserved for tour operators that commercialized ‘expedition cruise’.

In addition, at present, several companies are building new and modern ships, increasing their fleets, with important technological innovations regarding safety, environmental care, greater passenger capacity, and new options to provide varied experiences.

The model of Chadefaud foresees a next phase related to the obsolescence of the tourist product, which is considered also an instance of product reconversion. However, according to the current state of knowledge, the Antarctic tourism industry will continue to grow over the next few years, with products
aimed at an elite group that seeks to conquer the “once-in-a-lifetime experience”. It is not yet possible to think about this last phase, given the visitor satisfaction continues to exceed expectations. However, there is the possibility of an increase in the flow of tourism, and that opening Antarctic visits to others might have a negative influence on the future, if a quality of experience is sought.

ACKNOWLEDGMENTS

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Figure 1. Visitors interacting with fauna. Source: Leatherbee, 1967: 80 y 81).

Figure 2. Travel diary of the first trip organized by Lindblad in 1966. Taken from: https://www.expeditions.com/globalassets/pdf/brochures/ANT-016_2ANTFUB6.pdf, recovered on 16/01/2019.

Figure 3. Letterhead and postmarked with motifs related to travels from the 70s (consulted at the Antarctic Documentation Center, UNTDF, Ushuaia).
Figure 4. Materials delivered on board of the ship Río Tunuyán, 1971. Courtesy by Ms. Posada.

Figure 5. Descendants of Larsen, Sobral and Nordenskjöld hoisting the pavilions of their respective countries in Base Esperanza. Courtesy by Ms. Giró.
A GEO-HISTORICAL ANALYSIS OF ANTARCTIC TOURISM: PRACTICES AND REPRESENTATIONS

Figure 6. Conference on board of the ship ARA Bahía Paraiso, 1980s. Courtesy by Ms. Giró.

Figure 7. Presentation of Antarctic trips during the summer of 1993 (taken from the travel catalog of Ute Hohn Travel and Tourism, January-March 1993: 1).
Figure 8. Part of the voyage program of the ship Illiria, summer 1992 (taken from the travel catalog of Travel Dynamics, 28 January-1 February 1992: 4 and 8).

Figure 9. Cover of the promotional material of the commemorative trip of Adrien de Gerlache, on board of Professor Khromov, summer of 1997 (Taken from the travel catalog of Asteria, February 2-20 1997).

Figure 10. Diversification of activities in Antarctica. Source: catalogs of Quark Expeditions and Oceanwide Expeditions, 2019.
Figure 11. Evolution of cruise Antarctic tourism through Ushuaia, period 1957/1958 to 2017/2018.
ANTARCTIC TOURISM: AN ESSAY ON CONTRASTS BETWEEN ENVIRONMENTAL IMPACT, CURRENT REGULATIONS AND OPPORTUNITIES TO GENERATE ENVIRONMENTAL AWARENESS

Marco Favero

ABSTRACT

Although Antarctica is commonly considered a pristine environment it is a part of the world that has been visited for more than 200 years for exploration, exploitation of renewable resources, militarization, science and more recently tourism. The flow of tourists has increased significantly since its inception, reaching current values that exceed 45,000 tourists annually, featuring a marked seasonality and a high spatial density. This spatial-temporal concentration has required, from IAATO and in line with current regulations within the Antarctic Treaty System, a proactive agenda with the progressive development of operational regulations. A factor that cannot be ignored is that tourism, associated with current climate processes and their effect on the biodiversity and their habitats, can exacerbate the impact of tourism activity. Other aspect, although not necessarily circumscribed to it, is the potential for introducing non-native species into the environment, incorporated into the agenda of the Antarctic Treaty System and taken proactively by industry through the design of protocols that require the implementation of strict biosecurity measures. In contrast to the potential or actual negative effects on the Antarctic environment, it is worth highlighting the value of the educational programs implemented on board as a tool to transfer conservation values over Antarctica. The challenge for multilateral organizations is to achieve a broad understanding of the tourism activity, and to develop and refine regulations that prevent impacts that exceed the resilience capacity of the environment and its fauna. For IAATO the challenge will be to ensure that its members continue developing activities within a framework of growing and more sophisticated regulations aimed at further improving the performance of operations on land and at-sea, to minimize the impact of tourism over the Antarctic environment.

KEY WORDS

Antarctic tourism, IATTO
To write about tourism in Antarctica is to address the complexity imposed by growing activity and the potential for associated environmental risks, which in turn contains particular characteristics in regards to the spatial and temporal scale in which it develops, the existence of regulations imposed by an intergovernmental organization, and a proactive industry that seeks the development of an activity aligned with the regulations in force. Antarctica has often been referred to as a global commons, which in some way has limited the way in which human activities have been regulated, including the development of tourism (Lamers et al., 2012). This essay will attempt to characterize the tourist activity in Antarctica, considering the contrasts between values and questions that different stakeholders raise when discussing this industry in a region that, due to its landscape, biodiversity, and governability, is unique on the planet.

Negotiations for the establishment of the Antarctic Treaty began in 1959, immediately following the International Geophysical Year and as a consequence thereof. For this reason, the Antarctic Treaty has been from its conception signed by scientific research as a core activity. In fact, Articles II and III of the Treaty highlight the development of scientific research in a framework of international cooperation (Antarctic Treaty 1959). This approach has been further emphasized with the creation of the Protocol on the Protection of the Environment, which in its Article II designates Antarctica as a “natural reserve, devoted to peace and science” (Madrid Protocol, 1991).

Although Antarctica is commonly considered a pristine environment, almost completely untouched by man, in reality - at least in its insular and coastal sector - it is a part of the world that has been visited for more than 200 years for exploration, exploitation of renewable resources, militarization (as a strategic point of the planet), science, and more recently tourism. There are ample qualitative-quantitative differences between those first explorations and extraction of renewable resources, and what constitute the human activities that take place in modern times. In this regard, it is of paramount importance to refer to the existence of regulatory frameworks that apply to the entire continent, starting with the signing of the Antarctic Treaty in 1959 (in force since 1961), and related instruments that together form part of what is known as the Antarctic Treaty System. This includes the Convention for the Conservation of Antarctic Seals (CCAS, signed in London in 1972, in force since 1978), the Convention for the Conservation of Antarctic Marine Living Resources (CCAMLR, signed in Canberra in 1980, in force since 1982), and more recently the Protocol on Environmental Protection to the Antarctic Treaty (or the Madrid Protocol, signed in 1991, in force since 1998). While the first two Conventions address the conservation of renewable resources through prohibition (CCAS) or the sustainable management of resources (CCAMLR), the Madrid Protocol was created to establish basic principles applicable to human activities on the continent. The latter is the international instrument within which tourist activity in Antarctica is framed.

On the side of industry, following from the signing of the Madrid Protocol, in 1991, the International Association of Antarctica Tour Operators (IAATO) was created to promote the practice of environmentally responsible tourism in Antarctica. IAATO started with a few members, and over the years has grown significantly to now contain more than a hundred associated companies. Among other points, IAATO refers to the promotion of operations within the parameters of the Antarctic Treaty System and the Madrid Protocol, with its members subscribing to the principle that their activities will have no more than a minor or transitory impact on the Antarctic environment (IAATO
IAATO guidelines also include the support to scientific activities, and the work on public awareness for the conservation of the Antarctic environment.

Antarctica represents the ultimate destination for tourists eager to explore remote environments. Whether the interest is concentrated in the landscape, ice, climate, history, biodiversity, or a combination of these, the typical Antarctic tourist represents a small fraction of the global population that can access this destination by a combination of purchasing power and a clear personal interest. These characteristics make the tourist who visits Antarctica particularly receptive to information about a region with very peculiar characteristics, from political-administrative aspects to environmental and conservation problems. Stories about the challenge of crossing seas with names like Cape Horn or the Drake Passage in the charts, and the possibility of visiting emblematic historic sites, are figures that increase the attraction for those interested in history of the place. In terms of nature, Antarctica offers an almost unique opportunity to appreciate biodiversity in almost inconceivable numbers and at extremely close proximity. Birdwatchers would flock to this continent in search of species that can only be seen in high latitudes, and photographers are eager to portray a continent that, to the advantage of the those who are not experts, is extremely photogenic.

When analyzing the (current and potential) effects of tourism activity in Antarctica, the immediate reaction is strongly associated with volume of tourists. With ups and downs, the flow of tourists has increased significantly in recent years. Beginning in the late 1950s to mid-60s with a few dozen visitors, and reaching several thousands in the late 1980s, tourism took off significantly in early 2000 (with a brief decrease between 2010 and 2012 due to a change in regulations regarding the use of heavy fuels in Antarctica) reaching current values that exceed 45,000 tourists per year aboard about 40 vessels making several trips per season. In modern times, the modality of tourism based on expedition ships that make at least one landing per day (grouped in categories 1 and 2, carrying less than 200 and up to 500 passengers, respectively) constitute between 60 and 80% of the total number of visitors. The rest is largely made up of tourism based on cruise liners carrying more than 500 passengers (category 3) that never disembark in Antarctica, and by much lower numbers visiting the interior of the continent or flying over Antarctica. In comparison with these volumes of tourists, the flow of researchers and other personnel involved in National Antarctic Programs is currently in the order of 4,000 to 5,000 people. It is worth noting that some authors have also considered this activity as tourism, following the definition of the World Tourism Organization (Abad & Nieto Codina 2016). Reference has also been made to the fact that although the numbers of NAP scientists and staff are significantly lower, in reality a quantification in terms of men-to-days on land could significantly increase the effect of this activity. However, the impacts can be difficult to compare given the characteristics of each activity, its ultimate purpose, the behavior of people involved and the areas in which each one is focused.

The problem of the number of tourists in Antarctica should also be addressed, considering two additional factors that make up the “density” of the activity, in terms of its concentration in time and space. On the one hand, its marked seasonality; although tourism is observed between October and April, the peak season occurs between the beginning of December and the end of February, overlapping with the peak breeding season of many seabirds (in particular penguins) that are the focus of attention of many visitors. No less important is the spatial density of the activity; although
Antarctica is a continent with an area of 14 million km² (and some 18,000 km of coastline), dimensions equivalent to South America, a large proportion of tourist activity is concentrated to the West in the NW Antarctic Peninsula and its insular sector, and to the East (with minor numbers) in a restricted coastal portion of the Ross Sea. Moreover, although the sites visited and reported to IAATO in recent years are in the order of 200, it is clear that a significant portion of them are concentrated in less than 20% of them (www.iaato.org), which makes the spatial concentration much more evident.

This spatial-temporal concentration has required, from IAATO and in line with current regulations within the Antarctic Treaty System, a proactive agenda with the progressive development of operational regulations that, for example, allow the disembarkation of no more than 100 visitors in a given moment, a minimum 1:20 on land guide-passenger ratio, durations and rest times between landings, and specific regulations for certain sites. These and other regulations have added to the existence of (generally) off limit areas for tourist activity, defined by the Antarctic Treaty as Antarctic Specially Protected Areas (ASPAs), preserved for their biodiversity, historical or scientific values, and Antarctic Specially Managed Areas (ASMAs), where regulations may allow tourist activity though restricted within relatively strict margins and conditions. Although the spatial distribution of tourism activity presents an enormous challenge for the conservation and management of certain sites of interest, it could also be argued that at a continental scale, the spatial concentration could represent an advantage by affecting a small fraction of the total surface area of the continent. However, it should be stressed that many of these sites chosen by the industry are precisely those that represent an attraction, having special value for the landscapes, and abundant flora and fauna.

Vessels outside the dimensions of expedition ships present a different challenge for the industry, in particular because their activities may not be necessarily framed within IAATO guidelines. On the one hand, large vessels (between 500 and 3000 passengers) not landing in Antarctica do not represent a risk to biodiversity on land, although they could represent an environmental risk at-sea and in the coastal sector under certain undesired circumstances. On the other hand, the activities of smaller vessels and yachts not aligned with IAATO but making frequent landings, could represent a serious problem if regulations, distances to the fauna, or landing times, among others, are not respected.

Another factor that cannot be ignored is associated with current climate processes and their effect on the biodiversity and their habitats. Seabird and marine mammal populations dependent on sea ice have shown reductions in their sizes and reproductive success throughout the Antarctic Peninsula, and this has been correlated with an unprecedented increase in air and sea temperatures (McClintock et al. 2010). It is therefore imperative to consider a number of additive effects that could be affecting populations, such as the increase in precipitations (rainfall) observed in recent decades, extreme weather events (storms), and even the occurrence of commercial fisheries overlapping with feeding areas of top predators. These factors can affect the reproductive performance of many species, and contribute to environmental degradation, exacerbating the impact of tourism activity.

Other aspects of tourism activity in Antarctica, although not necessarily circumscribed to it, is the potential for introducing non-native species into the environment. There are already known cases of introduced plant species, which could have originated both from tourism and from other
anthropogenic activities linked to the logistics of Antarctic bases or research. The problem of the introduction of species has worsened in the last decades due to the increase of temperature in the extreme north of the Antarctic Peninsula and its insular sector, which may have generated environments that are currently viable for a number of species that could not survive few decades ago (Chown et al., 2012). The accidental introduction of invasive species in Antarctica has been incorporated into the agenda of the Antarctic Treaty System and taken proactively by industry through the implementation of procedures that require the implementation of strict biosecurity measures. While neither is exclusively linked to tourism, the increase in shipping and the potential for incidents that could result from oil spills, alongside problems affecting passenger and crew safety in extreme cases, should be mentioned. Although the increase in traffic could favor the assistance of any vessel that requires it, the Antarctic waters, the Drake Passage accessed from the West, or the wide Southern Oceans accessed from the East, still present a navigational challenge in relatively isolated conditions.

In contrast to the potential or actual negative effects on the Antarctic environment, its biodiversity, and environments, it is worth highlighting the value of the educational programs implemented on board as a tool to transfer conservation values over to Antarctica. More than half a century ago, Lars-Eric Lindblad, pioneer of tourism in Antarctica, took 57 travelers for the first time to Antarctica, with the conviction that "providing a first-hand experience to tourists, they would be educated about the ecological sensitivity of the Antarctic environment and ... the important role of Antarctica in the global context". In this regard, education and awareness programs coupled with the "expedition cruises" have been positive concepts, progressively incorporated into the agendas of most of the companies operating in Antarctica associated with IAATO.

Having presented the contrast between current and/or potential impacts and values of tourism activity in Antarctica, the role of multilateral organizations regulating activity and the existence of a proactive industry taking care of the environment and regulations, there is a crucial question that needs to be addressed: to what extent can Antarctic tourism grow considering the potential impact on the environment and associated operational risks? Or in other words, to what extent will the areas visited in Antarctica be able to absorb a growing tourism activity? The approach to these questions should not only consider merely quantitative aspects referring to the number of vessels and passengers, but also qualitative aspects of this activity, some of which have been briefly analyzed in this essay. Within the framework of the Antarctic Treaty System, and in line with the dynamics observed in other multilateral organizations, the development and adoption of conservation and management measures may lack the reaction and speed required to contain changes that may occur in tourism activity. Researchers, decision makers, conservation policy experts and other stakeholders have expressed their concern about the challenges imposed in the development of policies and a long-term action plan to address Antarctic tourism (ASOC 2008, Lamers et al. 2012), and in particular the implementation of the precautionary principle established by the Antarctic Treaty (Bastmeijer & Roura 2004, Secretariat of the Antarctic Treaty 2009). It is clear that the discussion on whether Antarctic tourism is good or bad is not fruitful from the conservation and management point of view, in particular given that it is an activity internationally accepted as legitimate. The challenge for multilateral organizations is to achieve a broad understanding of the tourism activity, and to develop and refine regulations that prevent impacts that exceed the resilience capacity of the
environment and its fauna, including in the equation the concurrent effect of environmental changes that Antarctica is facing. For IAATO the challenge will be to ensure that its Members continue developing activities within a framework of growing and more sophisticated regulations aimed at further improving the performance of operations on land and at-sea, to minimize the impact of tourism over the Antarctic environment.

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Utilising Polar Tour Vessels as Platforms for Science

Lauren Farmer and Alex Cowan

Abstract

Every austral and boreal summer, the expedition cruise fleet journeys south and north toward the poles. Carrying passengers already invested in education and conservation and with trained biologists, meteorologists, geologists and ice experts as expedition guides, these ships make ideal platforms for citizen science. The Polar Citizen Science Collective, created and led by expedition guides with a passion for meaningful travel, is a non-profit aimed at empowering the polar tourism industry to make valuable contributions to science through data collection and monitoring. Its goal is to maximise the potential of the industry and to create efficiency around the development, implementation and data delivery of these programs.

Key words

citizen science, data collection, tourism, sustainability, expedition cruising
THE OPPORTUNITY

The polar tourism fleet consists of dozens of ice-strengthened expedition vessels, often spending up to 5 months at a time in the Southern Ocean (common itineraries include south Atlantic islands and the Antarctic Peninsula) from October to March, and a slightly shorter season length (June to September) in the north, ranging across the Norwegian, Canadian and Russian Arctic, all the way to the pole.

Together, the polar tourism fleet represents a major underutilised data collection platform. The polar expedition cruise industry is unique in that competing companies work collaboratively in the field, making for a fleet that would be the envy of any national polar research program.

In collaboration with the International Association of Antarctica Tour Operators (IAATO)1, the Polar Citizen Science Collective works together with scientists to develop projects that can be a valuable addition to a ship’s educational program. These projects range across disciplines and are carried out by a trained and experienced Citizen Science Coordinator, along with the participation of guests. Key projects include Happywhale’s2 marine mammal identification network, phytoplankton sampling for FjordPhyto3, cloud observations through NASA’s GLOBE Observer4 app and seabird surveys for the Antarctic Site Inventory5. The Collective is actively seeking new scientific partners and initiatives which will continue to utilise the far-reaching and unique capability of the polar tourism fleet.

WHAT IT LOOKS LIKE NOW

The Collective works together with scientists to thoughtfully develop a wide variety of projects, which can require minimal, moderate or significant effort. The scientist or scientific organization drives the research question and protocols, while the Collective works to integrate the project into the tour operator’s existing program. The Collective can be as involved as the operator desires, but the standard is to deliver all the necessary information and training required and then be an ongoing support throughout the season. During the data collection phase, the scientist receives regular updates from the team in the field and can provide appreciated feedback to the participants. At the end of the season or in regular intervals, the data collected is delivered to the scientist for analysis.

Figure 1. An expedition guide leads guests through a cloud observation using NASA’s GLOBE Observer app. These ground-based observations, together with corresponding satellite imagery, help to paint a more complete picture of cloud cover, and can help us understand how much solar energy is being absorbed by the earth.
Figure 2. A “Citizen Science Zodiac Cruise” led by a trained Citizen Science Coordinator tows a mesh net to collect phytoplankton samples at a site on the Antarctic Peninsula. These samples are then sent to the Scripps Oceanographic Institute for analysis. FjordPhyto is studying how glacial meltwater affects the productivity of phytoplankton.

Figure 3. A group of passengers, led by a trained sea ice observer/expedition guide, measure depth and salinity of melt ponds at the Geographic North Pole, with icebreaker 50 let Pobedy in the background. These on-station measurements, combined with ship-based visual observations of ice coverage, thickness, floe size and topography during icebreaking contribute to the ASSIST6 (Arctic Shipborne Sea Ice Standardization Tool) Ice Watch data network and are also delivered to the Norwegian Ice Service to assist in ice charting.

The Results

Beyond the intrinsic value of the data collected, the participation of guests in these programs contributes to their greater understanding of the region in which they are traveling. Passengers are not only educated, but inspired to care. In the words of a recent guest, “Participating in citizen science allowed me to be more than just a tourist.” Through this heightened level of commitment, they become true ambassadors, returning home to champion for the protection of our planet’s most fragile ecosystems.
Additionally, the data collected by these citizen scientists is contributing to expanding datasets, such as Happywhale’s marine mammal database, with aims to individually identify marine mammals, with a focus on Humpback whales, in order to better understand their behavior and distribution.

**Figure 4.** In the 2015-16 austral season, 263 individual whales were identified, 6% having been “known to science” from previous sightings. In 2017-18 season, 487 individuals were identified, with 12% having been previously sighted. Thanks to citizen scientists contributing their whale photos to the Happywhale database, more and more whales are being logged in the system and further re sights allow us to track their returns to the Southern Ocean.

**Figure 5.** Cloud observations contributed by the polar tourism industry to NASA’s GLOBE Observer program. The triangle shape represents the oft-transited itinerary of the Scotia Sea, including South Georgia and the Antarctic Peninsula, and one can observe the lack of data from other parts of Antarctica.

**Figure 6.** The citizen science efforts of the polar tourism industry are already being included in a number of academic and mainstream scientific publications, including this project update for EOS, a publication of the American Geophysical Union.
THE CHALLENGES

Over the years, various efforts have been made to create more participatory data collection programs, but these often failed to gain much momentum due to a number of unique challenges the industry faces. Some of these challenges are a constant rotation of expedition staff coming and going from the vessel, leading to a lack of consistency in how the program is run, or whether it is run at all. Additionally, pre-existing cruise itineraries can be limited in time available for additional activities such as citizen science, as well as a difficulty in being relied upon for projects that require location-specific data collection, as ships’ whereabouts are often dictated entirely by weather and ice.

These challenges serve to validate the work of the Polar Collective as a coordinator of the industry’s efforts to participate in research and data collection, and the necessity for established protocols, training and resources made available to the dedicated Citizen Science Coordinator.

As enthusiasm and participation in citizen science grows, with more operators implementing these projects into their educational program, the challenge of scaling presents itself. How can it be ensured that all operators and expedition teams are following set protocols so that data is reliable and accurate? How is the collation and delivery of such large data sets to the scientists to be managed? What feedback loops can be created between the scientists and those on board expedition vessels, and how to best can that information be disseminated? How can it be ensured that citizen science remains a “no-brainer” for polar tourism operators to include it in their programs?

To answer the last question, the Polar Citizen Science Collective is developing an app which will serve to streamline data collection for those participating on board. It is being made possible by a generous grant of €170,000 from Booking Cares. Ted Cheeseman, co-founder of the Polar Collective and founder of Happywhale said, “This award is going to help take citizen science to the next level. We know from established projects that travelers love participating in science, and that researchers need data from the regions we travel to. The app will bridge the gap between the two; it will make citizen science more accessible, fun and rewarding while generating quality scientific data to guide environmental protection.” This will be achieved through well applied technology and by delivering feedback to participants that keeps them engaged long after the experience.

THE FUTURE

It is hoped that within the next few years, every operator in the industry will adopt a citizen science program. The Polar Collective works year-round to maintain collaborative relationships with the scientists driving the data collection projects, to gather feedback on data collected which can then be shared with citizen scientists on board, and to work with scientists or scientific organizations to develop new projects or extend the reach of existing projects, for both the Arctic and Antarctic.

On expedition vessels, there is an obvious opportunity for the implementation of monitoring programs which would require installation of equipment on board, and the Polar Collective is very open to receiving proposals for these kinds of automated data collection projects. However, a key focus of the Collective is to also develop programs which will allow for guest participation in the
data collection.

We believe citizen science in the polar regions holds a major key in assisting scientists in finding answers to cutting edge inquiries into how the poles are being impacted during this critical time in human history. The Polar Citizen Science Collective hopes to do our part by utilising polar expedition vessels as platforms for science, and passionate travelers as valued data collectors.

To learn more about the Polar Collective, visit http://www.polarcollective.org or email us at info.polarcollective@gmail.com.

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3- FjordPhyto is led by research graduate student Allison Casick and studies the effects of glacial meltwater on the biodiversity and productivity of phytoplankton in Antarctic fjord systems. https://scripps.ucsd.edu/programs/fjordphyto/
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ABSTRACT

Antarctica tour operators are one of the main users of the waters around Antarctica and have a significant stake in keeping the Antarctic environment and ecosystems pristine in order to protect the natural values that make the Antarctic experience unique. This article examines the linkages between Antarctic tourism and Marine Protected Areas (MPAs) in the Southern Ocean, and argues that the explicit support of tour operators for the adoption of MPAs can have favourable outcomes for marine protection. In order to do this, Antarctica tour operators need take a more active – or less neutral – stand in support of MPAs.

KEY WORDS

Antarctica, Antarctic tourism, Marine Protected Areas (MPAs), Southern Ocean, CCAMLR
INTRODUCTION

Fisheries and tourism are the most significant industries active in Antarctica in terms of inter alia their revenue, physical presence in the region and political influence in Antarctic Treaty System bodies.

Fisheries and tourism operate in most parts of Antarctica accessible to them, but much of their activities focus on the NW Antarctic Peninsula and Scotia Sea (particularly for the krill fisheries) and in the Ross Sea region (particularly for the toothfish fisheries). In particular, krill fishing operations take place at times in coastal areas nearby colonies of land based predators that are the focus of tourist landings.1

Fisheries are regulated by Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR), while tourism is regulated by the Antarctic Treaty Consultative Meeting (ATCM). These are the two main international decision making bodies of the Antarctic Treaty System.

The vast majority of Antarctica tour operators are represented by the International Association of Antarctica Tour Operators, IAATO.2 IAATO is politically influential at the ATCM, which although formally tasked to regulate tourism is generally happy to de facto delegate the management of tourism to IAATO. IAATO is particularly influential with some ATCPs with which it works closely. IAATO agrees on measures to coordinate and streamline the activities of its members while aiming to limit their environmental impact.3 One of IAATO’s bylaws states that “Members subscribe to the principle that their planned activities will have no more than a minor or transitory impact on the Antarctic environment”. This terminology derives from the Protocol on Environmental Protection to the Antarctic Treaty and marks the threshold for which the lower of three levels of Environmental Impact Assessment (EIA) is required. The higher the level impact of a proposed activity, the higher the level of EIA required, and the greater the scrutiny and regulatory requirements.

Cruising is the dominant form of tourism in Antarctica, and native seabirds and marine mammals are quintessential Antarctic tourism attractions both on land and at sea.4 Consequently, Antarctica tour operators are one of the main users of the Southern Ocean and have a significant stake in keeping the Antarctic environment and ecosystems pristine in order to protect the natural values that make the Antarctic experience unique. This is particularly the case as the industry prides itself on the environmental protection initiatives.

This article examines the linkages between Antarctic tourism and Marine Protected Areas (MPAs) in the Southern Ocean, and argues that an explicit support of tour operators for the adoption of MPAs can have favourable outcomes for marine protection. In order to do this, tour operators need take a more active – or less neutral – stand in support of MPAs.

Marine Protected Areas (MPAs) in Antarctica

International discussions about the adoption of Marine Protected Areas (MPAs) in Antarctica are one of the most significant as well as controversial discussions concerning the management and governance of the Antarctic in recent decades.
CCAMLR, an international body tasked with the conservation of marine life in the Southern Ocean, committed in 2009 to designating a network of marine protected areas (MPAs) by 2012. The Southern Ocean surrounds the Antarctic continent on the southern end of the Atlantic, Indian and Pacific Ocean. A network of MPAs in these region, protecting representative, unique and vulnerable areas of the ocean, would effectively create a “ring” of marine protection around the Antarctic continent. These areas would also contribute to increase resilience to climate change and create scientific reference areas.5

A MPA for the South Orkney Islands Southern Shelf was adopted by CCAMLR in 2009, the first high seas MPA globally.6 This was followed by a General framework for the establishment of CCAMLR Marine Protected Areas in 2011, aimed to streamline the process of adoption of later MPAs.6

After this initial progress, discussions to create two large marine protected areas in the Ross Sea and in East Antarctica since 2012 came to a virtual standstill. During several years of discussions the proposed MPAs lost between 30 and 50% of their proposed area. This was due to opposition by a few Members of the CCAMLR, which makes decisions by consensus among its Members (currently 24 states and the European Union). Common conservation objectives are heavily influenced by fishing, geopolitical and other national interests of individual Members.

This state of affairs changed dramatically in October 2016 when the Ross Sea region marine protected area was adopted by the CCAMLR. At over 1.5 million square kilometres excluding floating ice shelves, much of it no-take, this is the largest MPA adopted to date worldwide.8

The adoption of the Ross Sea region MPA, which became effective in December 2017, was a significant milestone in a longer-term process of enhancing marine protection in the Southern Ocean. Aside the East Antarctica MPA, other MPA proposals for the Southern Ocean are under discussion by CCAMLR are the Weddell Sea region MPA (formally proposed for adoption since 2016), and the Domain 1 MPA in the NW of the Antarctic Peninsula (since 2018). However, no other MPAs have been adopted since the Ross Sea MPA largely due to opposition led by some CCAMLR Members.

The Antarctic tourism industry and CCAMLR MPAs
While the CCAMLR MPA debate was taking place, the Antarctic tourism was very active in the ATCM but remained absent from meetings of the CCAMLR and from the MPA debate. Further, some tour operators had lingering concerns as to how CCAMLR measures would impact IAATO members activities. This was the case even though CCAMLR MPAs only apply to fishing and research vessels doing research relevant to CCAMLR. Discussion for the management of other activities is the remit of the Antarctic Treaty Parties (through its decision making body, the ATCM) and not through CCAMLR.

The adoption of the Ross Sea region MPA made it apparent that the Antarctic tourism cruise operators, individually and collectively through IAATO, had to have an opinion on this issue. One tour operator has already issued a formal statement supporting current and future MPAs in Antarctica.9 To our knowledge this has not been replicated by other tour operators yet, however in
recent years the tourism industry was interested in learning about MPA discussions at CCAMLR.

In October 2018 IAATO representatives participated as an observer to CCAMLR where they could witness first-hand the exchanges for or against conservation initiatives, including MPAs. In 2018 CCAMLR discussions were particularly polarised for and against conservation. One would imagine that for an organisation that promotes inter alia the creation of a corps of “Antarctic Ambassadors” it is clear on what side of the fence they should be.

**Supporting marine protection in Antarctica**

Antarctica has no indigenous people and no long-term residents, so it is up to people from outside the region to promote conservation initiatives. In order to do this, decision-makers and the bodies that govern Antarctica and the Southern Ocean need to know that there is substantial public interest in ensuring long-term protection of the marine environment. Environmental NGOs such as Antarctic and Southern Ocean Coalition (ASOC) are one of the stakeholders that fill this role.

Most Antarctica tour operators have a significant, long-term stake in the Antarctic region. As regular users of the Southern Ocean with an interest on preserving the values that make the region attractive to tourists, tour operators can both encourage and put pressure directly on their country representatives making decisions about the Antarctic. Tourism can support protected areas in Antarctica first of all politically through outreach to decision-makers and also through public outreach. Politically IAATO is active at the ATS and has the support of many ATCPs. In addition, many Antarctica tour operators are based in Antarctic Treaty and CCAMLR member countries. As noted in a document submitted to the XLII ATCM, “ASOC hopes that the tourism industry will become more closely involved in the MPA process, particularly in the Antarctic Peninsula area where shipborne tourism concentrates, and will contribute actively to promote a high standard of marine protection that is essential for the tourism business.”

In parallel, tourism is a global industry in rapid expansion. Worldwide there are examples of ecologically sustainable tourism that in some instances has contributed to conservation. There are also examples in which tourism has caused negative impacts in its destinations, including a phenomenon known as “overtourism”. At the moment there is great demand for travelling to the Arctic region and the industry is expanding rapidly, with a 40% increase anticipated for 2019-2020 with respect to the previous season. At the same time, the vast majority of Antarctic tourism activity focuses on a relatively small part of the Antarctic Peninsula. This might lead to excessive use of some locations, perhaps with early indications of “overtourism” in Antarctica, at least in some places at some times. The risks of expanding cruise tourism growth require more than ever proactive support for marine protection from the tourism industry.

Aside the industry and IAATO, there is also a potential role for Antarctic tourists – as consumers, voters/taxpayers of Antarctic Treaty states, and global citizens – to support the CCAMLR MPA process in various ways. Tourists can also contribute, by demonstrating their support for marine protection, for instance by signing letters and petitions organised by ENGOs to their country representatives at CCAMLR, and other decision-makers in their countries.
Furthermore, spatial marine protection is not only about designating MPAs on paper, but also about implementing them effectively for the longer term. Financial contributions to conservation, research and monitoring initiatives, and participation in “citizen science” projects using cruise vessels as a research platform are some of the other ways in which tourism can contribute to marine protection in the Southern Ocean.¹⁴

CONCLUSIONS

In Antarctica, preventing degradation of the sites used by tour operators visit – which often include breeding and resting grounds for land-based seabirds and marine mammals – and promoting marine protection through the creation of MPAs are part of the same equation. It is in the long-term interest of the tourism industry to preserve the marine environment and ecosystems of Antarctica. In order to do this, Antarctica tour operators need take a more active – or less neutral – stand in support of MPAs. This is particularly important as the Antarctic cruise tourism industry is expanding. The tourism industry can be an additional voice for political outreach and development of public support towards the establishment of a network of meaningful marine protected areas in Antarctica – meaning areas that are large, permanent, and protect unique, vulnerable and representative areas including through the use of fully protected no-take zones where no fishing occurs.

REFERENCES


1. See e.g. Favero.
2. Fishing organisations representing the more proactive segment of the industry are part of the Association of Responsible Krill harvesting companies (ARK) and the Coalition of Legal Toothfish Operators (COLTO). These attend CCAMLR meetings as observers.
3. See e.g. articles by Favero and by Lynnes
4. For a more detailed description of the Antarctic tourism industry see e.g. articles by Roure and by Vereda and Jensen.
5. ASOC 2019a.
11. For examples in which tourism has contributed to conservation initiatives, see https://www.ltancc.org/
examples/
12. See Roura, this volume.
13. ASOC 2019b.
14. See Farmer, this volume.

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