



Tourists visiting Antarctica now have a wide variety of activities to choose from, including kayaking, wildlife watching, climbing, and camping overnight on shore. All photos courtesy of author. © Peter Carey

Is it time for a paradigm shift in how Antarctic tourism is controlled?

Peter W. Carey, Polar Institute Global Fellow

Until the recent coronavirus pandemic upended the world's economy and gutted global tourism, Antarctica was an increasingly popular tourist destination. A record high of about 74,000 people made the expensive trip there in the most recent summer season (November 2019-March 2020). This is a 32 percent increase from the previous record high, set just one year before (IAATO 2020). The vast majority of these visitors went only to the northern end of the Antarctic Peninsula, traveling by cruise ship from ports in South America. With the big increase in visitor numbers has come increasing concern for the environmental impacts of these tours. This concern

is not new — calls for tighter controls on Antarctic tourism have been made whenever visitor numbers took a big step up (e.g., Enzenbacher 1992, Liggett et al. 2011, Jabour 2013). In response to these calls, the largely self-managed industry has adjusted how it operates in the Far South. This has helped protect the environment, while allowing the industry to remain in charge of its own commercial destiny. However, this latest huge increase feels different, as if this step-up in numbers is finally so big that it simply cannot be accommodated by adjusting ship schedules and juggling itineraries. With the pandemic forcing a pause in the upward trajectory of visitor numbers, is

it time for a paradigm shift from visitor management to tourism regulation in Antarctica?

A HOT DESTINATION

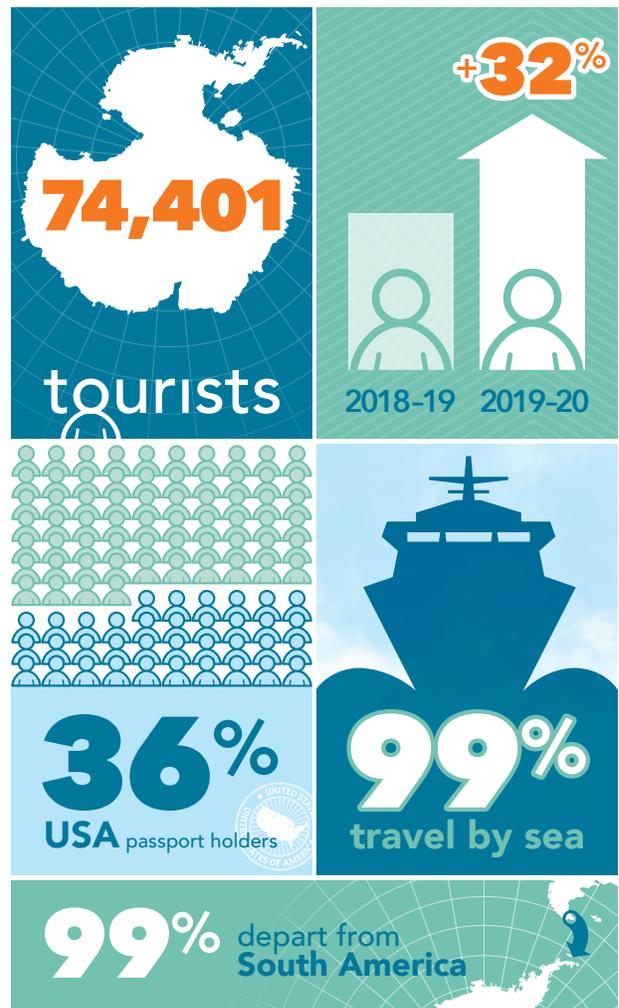
To date, the number of tourists going to Antarctica has been solely determined by market forces. That is, pretty much anyone with the desire, and enough money, can go. Antarctica is an expensive destination and the health of the world's economy has been a dominant factor in determining Antarctic visitor numbers. Tourist numbers in Antarctica have been climbing steadily since the industry began in the late 1950s, but things really took off in the early 1990s with only the global financial crisis of 2008 able to briefly interrupt this trend. Of the four countries which historically send the most tourists to Antarctica (United States, Australia, Germany, and United Kingdom), fluctuations in their respective GDPs are correlated with changes in their visitor numbers (Bender et al. 2016). In the last decade, China has joined these top tourist nations, and their visitor numbers made up 11 percent of all Antarctic tourists in this latest season. This is second only to the 36 percent market share of the United States (IAATO 2020).

Pre-pandemic, tourist numbers were projected to swell even further and cruise companies have prepared to meet this increasing demand by constructing more than twenty-nine new expedition-style cruise ships in the next three years. This will double the passenger capacity seen in 2018 (Cruise Industry News 2020) as these new ships join the forty or so vessels already plying their trade in Antarctica. However, a pandemic-induced world recession in 2020-21 will cool this trend, and once again it will be economic happenstance, not direct management, which controls visitor numbers.

CURRENT MANAGEMENT SCHEME

Tourism, along with all other human activities in Antarctica, is currently governed by a suite of international agreements that collectively form the Antarctic Treaty System (ATS). Ship-based tourism, which accounts for 99 percent of all Antarctic tourism, is also indirectly controlled by the regulations of the International Maritime Organization (IMO), which sets standards for how ships operate everywhere in the world but has additional regulations for ships in the polar regions (<http://www.imo.org/en/MediaCentre/HotTopics/polar/Pages/default.aspx>).

Antarctic Tourism Statistics 2019-2020



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Data source: IAATO 2020

POLAR PERSPECTIVES

While the ATS has struggled to make substantive progress on tourism management, the Treaty Parties have put in place a number of recommendations that help regulate tourist activities, including: setting a maximum number of tourists allowed ashore at a site at one time (100), setting a maximum number of tourists a ship can carry if it wishes to make landings (500), providing detailed site guidelines for some areas, and prohibiting landings at protected sites. However, there are currently no restrictions on the size of vessels visiting/sailing in Antarctic waters, nor on the related issue of how many passengers a ship can carry if it is not intending to make landings (so-called 'cruise-only' voyages). The Treaty Parties set no limit to the number of ships or the number of visitors that can visit Antarctica in a season.

Tour ships also must follow the regulations implemented by the IMO, which sets safety and environmental standards including, for example, requiring lifeboats be fully-enclosed and prohibiting ships from using or carrying heavy fuel oil when operating south of 60° S. Heavy fuel oil is less refined than the more expensive diesel fuel, and it causes far more environmental damage if spilled.

While the ATS and IMO provide legally binding regulations that exert some control over ship-borne tourism, the tourism industry itself also adds operational elements to help manage their own activities. These are mostly done through the International Association of Antarctica Tour Operators (IAATO). Formed by a consortium of tour companies to self-manage their industry, IAATO has been instrumental in shaping the way tourism is conducted in Antarctica. They have proved to be effective at lobbying the ATS and are frequently consulted as an expert, contributing to meetings of the Antarctic Treaty Consultative Parties. Although joining IAATO is not mandatory for companies wishing to bring tourists to Antarctica, all current operators have become members.

For the most part, the ATS is happy to let IAATO self-manage their own activities, and IAATO is delighted to have so much say in their own destiny. This is a highly unusual arrangement: seldom do the companies profiting from a common-pool resource, get to dictate how they consume that resource. However, as tourist numbers grow and are perceived to put greater pressure on the Antarctic environment, this arrangement will be tested.



The telephoto lens makes this ship look like it's parked on the beach when in fact it is a safe distance offshore. Ships carrying less than 500 passengers are permitted to make landings in Antarctica. The green vest identifies a staff member who plays an important role in interpretation as well as crowd control. © Peter Carey

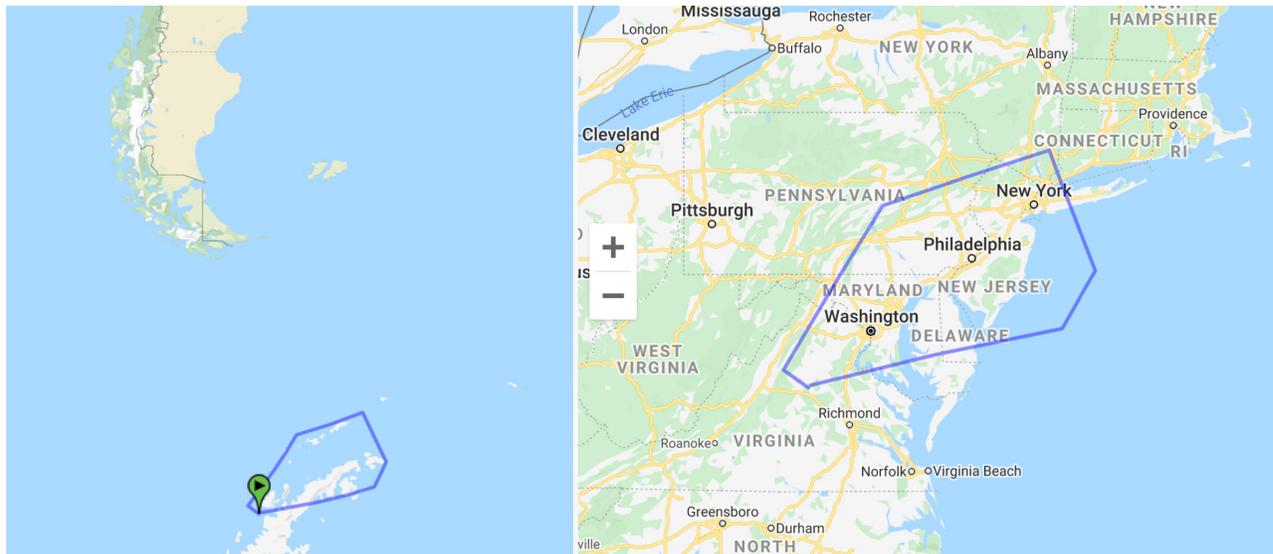


Figure 1. The blue polygon is the same size on both maps. On the left, the polygon outlines the area where most ship-borne tourism takes place in Antarctica. On the right, the same-sized polygon is laid over the eastern United States for comparison. Map courtesy of map-frappe.com and Google Maps.

TRAFFIC CONTROL

Although Antarctica is larger than Europe, visitor activity on the continent is mostly confined to the area closest to South America, at the northwest tip of the Antarctic Peninsula. Ninety-eight percent of all tourism on the continent takes place in a small zone only about 500 km (300 miles) in length (Fig. 1). It only takes 1-2 days sailing to reach this area from the bottom of South America. Conveniently, this part of Antarctica is not only relatively close, it also possesses spectacular scenery and abundant wildlife.

And, within this small zone, tourist activity is further concentrated at a few dozen landing sites where the landscape is suitable for getting ashore safely. Hence, the vast majority of tourism traffic goes ashore in just a handful of places, measuring about 200 ha (494 acres) in total area (Bender et al. 2016). This is the equivalent of about 350 football fields, or three times the area covered by Disneyland in California. Some of the busiest visitor sites can host

200 landings within a summer season that lasts about 120 days. One such site, Goudier Island, was visited by an average of about 150 tourists per day during each of the past three seasons (IAATO 2019).

The ATS guidelines prohibit more than one vessel visiting a site at the same time. Decades ago, when only a few ships were operating, it was easy for ships to stay out of the way of one another and spread out spatially as well as temporally. But as the number of ships increased, finding an available spot to land tourists became more difficult. In the 2019-20 season there were forty-two tour ships (not including commercial yachts) operating in the Antarctic Peninsula, up from thirty-two vessels in the previous summer. By 2022, if all the newly-built vessels are launched as expected, there will be about seventy ships trying to find room in the same already-crowded tourism zone.

Regulation would allow limits to be set based on what the environment can support, not on what the market will bear. This would be a fundamental change for Antarctic tourism.

In order to operate within the ATS guidelines, tour companies currently cooperate with one another and coordinate their schedules, taking turns to make landings at the most popular places. This is a complicated matter, and IAATO runs a “Ship Scheduler” to facilitate this. Here’s how it works: at a specific time, on a specific date several months before the start of the season, the Scheduler is opened through an online platform to accept bookings on a first-come first-served basis. This sets off a hectic scramble as cruise companies try to secure their favoured landing sites/dates before they are claimed by a rival operator. Initially, there were just two landing time-slots per day (morning and afternoon), but as the number of ships increased the defined time-slots were adjusted to better accommodate increased traffic. There are now up to five visitation time-slots within one day, although some sites have a ‘resting’ period from 22:00 – 04:00 when visitors are not permitted.

While the Ship Scheduler sets the template for where ships will be and when, in practice there are often last-minute changes to itineraries due to weather or ice conditions. These changes are communicated to other ships in a perpetual dance to avoid one another. The system is voluntary and there is no authority enforcing this schedule, but it works well as long as everyone plays nicely. Indeed, because most companies market their trips as visiting pristine wilderness places, many ships would prefer to not even see another vessel.

However, with more ships on the horizon, it will only get harder to follow an itinerary that does not clash with other ships.

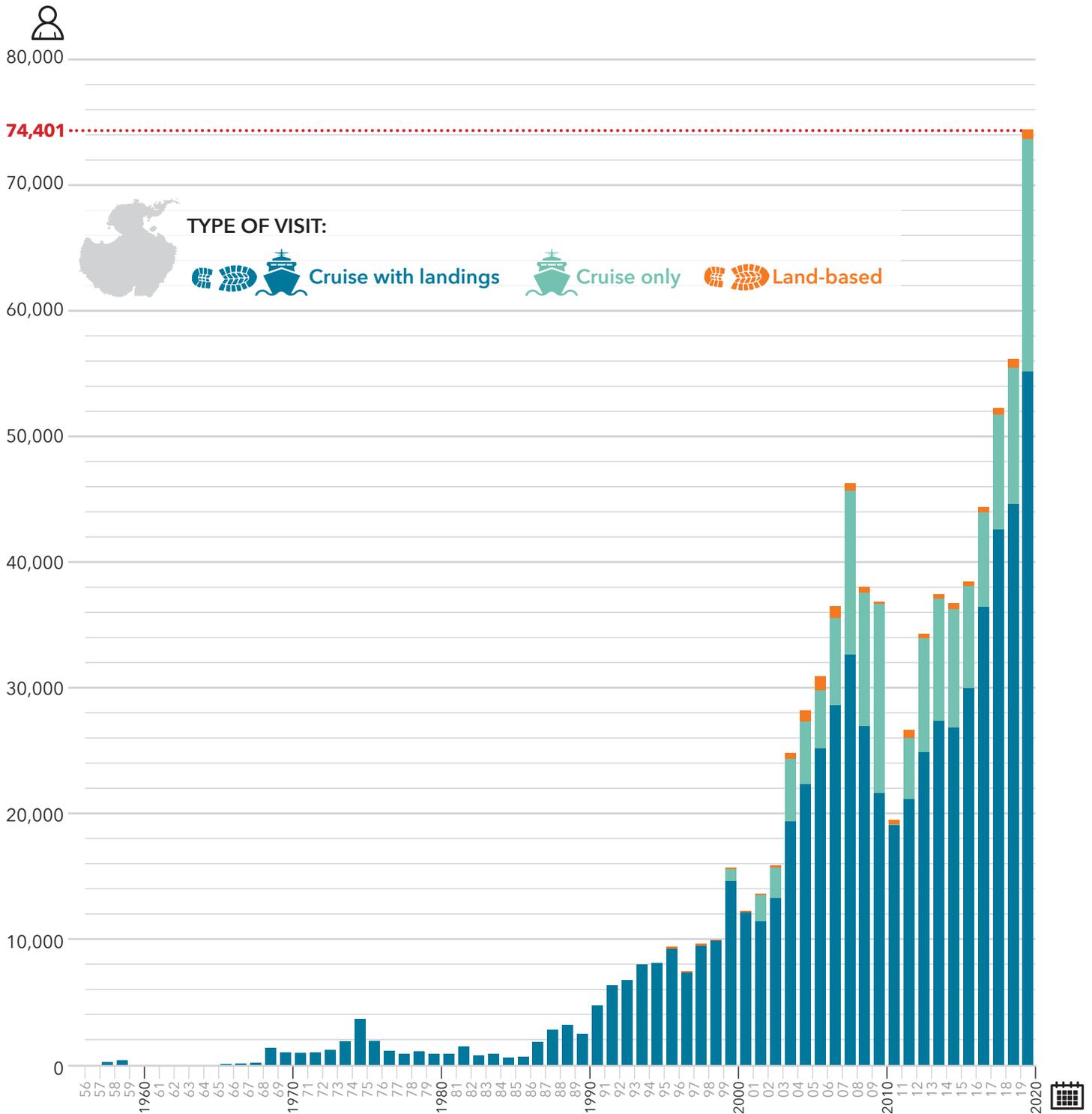
Further exacerbating this congestion is the capacity of the port facilities in Ushuaia, Argentina, the city where most Antarctic cruises begin. The facilities there have not changed much since the 1990s; but now with more, and bigger, ships visiting there is increased demand for dock space, provisions, and associated services. Despite the crowding, Ushuaia is still the most convenient starting point for Antarctic cruises, but these infrastructure limits mean that for cruise planners, the traffic jam starts well before the ship even sails.

Another challenge for tourism management is the increased diversity of activities offered by the cruise industry. Often added as a means to differentiate from competitors, tour companies are now doing more than just riding around in Zodiac boats or going ashore to look at wildlife. Kayaking, scuba diving, skiing, snowshoeing, climbing, and camping ashore overnight are all now options for Antarctic tourists. It’s all designed to attract more customers, although it gives the impression that the beauty of Antarctica is no longer enough of a drawcard on its own.

IS TOURISM A PROBLEM?

As with most resource management issues, it depends who you ask. IAATO would say ‘no,’ while conservation groups like those represented by the Antarctic and Southern Ocean Coalition would say ‘yes.’ And some Treaty Parties are viewing the increased numbers with concerns about maritime safety. From the perspective of the ATS, tourism is okay as long as it doesn’t negatively impact the environment or Antarctica’s intrinsic aesthetic, science, and wilderness values, the protection of which is enshrined in the AT and its Environmental Protocol.

Antarctic Tourism Annual Visitors 1956-2020



Infographic © 2020, Peter Carey (may not to be used without prior written permission)

Data source: IAATO 2020, Enzenbacher 1992, & Reich 1980



You don't have to leave the ship to enjoy stunning scenery. Visitors on "cruise-only" voyages, which do not make landings, represent about 25 percent of all tourists. © Peter Carey

All activities undertaken in Antarctica by signatory parties require a permit. As part of their permit application, tour operators must complete an environmental evaluation that shows their activities can be managed safely and with no more than a minor or transitory impact. External to that, studies have been made of environmental impacts in some localised areas, including some of the sites frequently visited by tourists. Most attention has been paid to impacts on penguins and while many studies have found an absence of negative impact from visitors (e.g., Cobley and Shears 1999, Lynch et al. 2019), a broad meta-analysis of penguin-disturbance studies in Antarctica and subantarctic islands showed a small negative impact (Coetzee and Chown 2016). For impacts on soil invertebrates and other species of wildlife, there is less information, although the populations of some seabird species (including penguins) have been monitored at many sites for over twenty-five years (Lynch et al. 2008, Naveen and Lynch 2011). Noticeably lacking are studies that have quantified cumulative impacts, and impacts on aesthetic and wilderness values.

As tourist numbers grow, negative impacts become increasingly likely. Indeed, even when visitor numbers were less than 10 percent of the current figure, concerns of too much tourism were raised (Enzenbacher 1992). To date, the ATS has approached direct tourism regulation with caution/disinterest and has largely deferred to the tour operators to manage themselves. Increased visitor numbers have thus far been accommodated by self-imposed behavioural changes, such as lengthening the season, or pioneering new landing sites. Additional small tweaks to the status quo may accommodate some further increases under the present regime, but eventually firmer controls will be needed if tourism is to avoid having more than a minor or transitory impact on the Antarctic environment or its intrinsic values. This is predicted by models of the use of common-pool resources (Hardin 1968), and been shown to happen in the management of some fisheries (e.g., Meissa and Gascuel 2014, McCauley et al. 2015).

The first step in introducing controls may be to move from managing tourism to regulating tourism.

Regulating tourism would allow for more direct control of how much tourism is allowed, and where, rather than simply relying on the market to dictate numbers. As history has shown, tourism will grow as much as the economy allows, and the industry continues to accommodate increasing demand by constructing more ships. Regulation would allow limits to be set based on what the environment can support, not on what the market will bear. This would be a fundamental change for Antarctic tourism.

Tighter controls and defined limits would likely see reduced impacts on the environment, but the path to regulation is impeded by many administrative hurdles. Central to these hurdles is the dilemma of how to regulate a place where no single state has sovereignty. This conundrum has vexed policymakers and diplomats since the 1960s, when tour operators began to turn the continent into a commodity for sale (e.g., Hall 1992, Bastmeijer and Roura. 2008, ATCM 2019). Bastmeijer and Gilbert (ATCM 2019) summarise the many bureaucratic obstacles that have thus far limited tourism regulation to just a few modest measures, and these authors are just the most recent in a long history of voices calling for a fresh start in how tourism is controlled. With a complicated variety of stakeholders, the search for a correct Antarctic tourism management solution is a wicked problem (*sensu* Rittel and Webber 1973).

That is partly because, despite the longstanding success of the Antarctic Treaty System in managing the continent, it governs by consensus and operates largely on the 'honor system.' Importantly, there are no measures in place for policing and enforcing the agreements. Also challenging is the paucity of

A group of well-behaved tourists watching penguins from a safe distance. Tour operators enforce wildlife watching guidelines to minimize disturbance and these visitors are sitting quietly outside the edge of the colony where they won't affect the penguins' behavior. © Peter Carey

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tourism-specific rules contained within the ATS and its companion agreements (Abdullah et al. 2015). While the AT has been enhanced by annexes that cover such human-impact issues as waste disposal, marine pollution, commercial sealing, commercial fishing, etc., there is no annex that specifically addresses tourism.

Add into that the geopolitical complications that come from some nations holding territorial claims to portions of the continent, and the idea of restricting who can and cannot visit Antarctica becomes a major stumbling block. Would the seven claimant nations (Argentina, Australia, Chile, France, New



Zealand, Norway, and United Kingdom) insist on setting the regulations for their claimed portions of the continent, even though the treaty holds their land claims in abeyance? And if so, how would that work in the Antarctic Peninsula area, where the claims of Argentina, Chile, and United Kingdom overlap? Another example of awkward scenarios thrown up by the treaty and claimants: could the ATS legally prohibit, say, an Australian tour company from taking Australian citizens to the part of the continent claimed by that country? What if the tour company and its clients were from a nation that has not even signed the Antarctic Treaty? What limits would apply to them?

One thing we should not expect is for the tourism industry itself to set a limit to the number of visitors that can come to Antarctica. The IAATO has no authority to regulate, nor does it have any incentive to do so. This organisation works for its member companies, and they are all in the business of taking people to Antarctica. Capping visitor numbers is therefore not in their best interest. Although the tourism industry has put in place many effective guidelines and membership by-laws, these have all been about managing — not regulating — tourism. Regulation must come from the ATS.

Beyond simply continuing with 'business as usual,' here are some of the suggested ways of regulating Antarctic tourism:

Set an annual cap on the number of visitors

This blunt approach would install an annual limit on the number of tourists that can visit Antarctica. The central question then becomes 'how many visitors?' Whatever the figure, it would likely be unpopular with tour companies. That said, one advantage for operators would be an increase in the value of a ticket to Antarctica — if supply is limited, then each space is worth more. Also crucial is how the Treaty

nations deal with the thorny issue of how to divide the capacity among operators. All forty-three of the current Antarctic tour operators are based in countries that have signed the Antarctic Treaty. The biggest concentrations of companies are in United States (fifteen), United Kingdom (six), and Australia, Germany, and Chile (three companies each).

A slightly more nuanced approach within this framework would be to consider capping visitor numbers at different levels based on proposed activities. For example, tourists who make landings will likely have greater impact on the environment than those who visit on cruise-only voyages. Hence, comparatively more cruise-only visitors could be accommodated. Conversely, the larger vessels used for cruise-only voyages could be seen as having a greater potential to damage the environment in the case of an accident. While helpful in protecting the environment and the continent's intrinsic values, the 'capped number' option would be difficult to implement within the confines of the ATS.

Create a quota system for visitors

This option fits within the annual limit to tourist visitors, but it adds inherent value to tour operators by using a quota system, where each signatory nation has a fixed number of allotted spaces they can use or trade. Tradeable quota systems have been successfully used to manage fisheries, water allotments, and air pollution and could potentially be used here. The quota system creates a commodity that has a market value and can be traded as companies choose.

Restrict tourism activity to specific landing sites

Without capping numbers, tourism could be geographically restricted to places deemed best suited for intense tourism activity, while being



Some, but not all, Antarctic tour ships have hulls strengthened to allow them to push through pack ice. This photo shows a strengthened ship pushing through dense ice conditions early in the summer (November) before most of the sea ice has dispersed.
© Peter Carey

prohibited from sites deemed of high value for scientific research or set aside to preserve aesthetic values. “Zoning” areas for different activities presents fewer administrative difficulties than a cap and/or quota system. Zoning could also be managed under the existing framework of Antarctic Specially Managed Areas (ASMA) by creating management plans for sites that set limits to activities in these areas. The Scientific Committee on Antarctic Research (SCAR), in conjunction with IAATO, is currently conducting a systematic conservation planning exercise to help identify the sites best suited for particular activities (<https://www.scar.org/policy/scar-iaato-scp/>).

Sponsoring states for tourism operators

Jabour (2013) suggested tour operators could be required to be “sponsored” by a treaty party with which they have a genuine link, e.g., the country which issued their permit. Under this

arrangement, the sponsoring nation then takes on the responsibility and liability to ensure “their” tour operators comply with all regulations and, importantly, will have the legal framework in place to prosecute any transgressions. This approach will require the creation of some new ATS instruments, but these can follow the example set by the 1988 Convention on the Regulation of Antarctic Mineral Resource Activities. Although this convention never entered into force (it was superseded by the Environmental Protocol in 1991), it laid much of the groundwork for how to manage a commercial activity in Antarctica, and was agreed to by the Antarctic Treaty Consultative Parties. However, one challenge of this system would be to ensure it did not lead to operators seeking “sponsors of convenience,” like some ships seek flags of convenience. (A flag of convenience is when a ship is registered in a country which offers more convenient operational standards, even when there is no natural connection to that country.)

Looming over all of these scenarios is the question of liability should something go wrong. This remains a challenging topic of discussion since the ATS's Liability Annex (2005) has so far failed to enter into force (Hemmings 2018).

While all of these options have their challenges, enacting some kind of firmer regulation through the ATS protects Antarctica from the potential difficulties of a non-cooperative tourism industry. Under the current system, Antarctic tourism management requires a cooperative and cohesive tourism industry, and it has that with IAATO representing the whole industry. But this may not always be the case. As visitor demographics change and new operators enter the market, there is nothing to stop companies from seeking a competitive advantage by forging their own path, either independently or by creating a rival tourism organisation. The advantage of enacting legally-binding regulations from the ATS is that they could control tour operators no matter what their attitude or lobbying affiliation.

The pause or reduction in tourist activity due to the current economic recession has provided Antarctic policymakers with a rare opportunity to make big changes in how the continent is protected and regulated. Recent research has shown only 32 percent of Antarctica can be classified as being pristine and free from human interference, and this area is declining (Leihy et al. 2020). 'Business as usual' is therefore not a good strategy for the future, especially when tourism pressure is just catching its breath before continuing its trend of rapid increase. Whether it is through wholesale changes like the creation of a Tourism Annex, or using existing instruments like Antarctic Specially Managed Areas to better control tourism impact, now is the time for a shift from reactively managing visitors to proactively regulating them.

The opinions expressed in this article are those solely of the author.

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Peter Carey is a zoologist who has worked in Antarctica and the Southern Ocean since 1983. In addition to doing research with the national Antarctic programs of New Zealand and Australia, he has worked in polar tourism for several decades as a program developer, expedition leader, and educator. Peter is co-author of the Antarctica Cruising

Guide (Awa Press). In addition to his work in tourism, he is also Director of the SubAntarctic Foundation for Ecosystems Research, a non-profit organisation that works to enhance native biodiversity by ecologically restoring islands in the subantarctic Falklands archipelago.

Woodrow Wilson International Center for Scholars
One Woodrow Wilson Plaza
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