



Visitor to Antarctica lays on sea ice near Adelie penguins. Source: Gabriela Roldan.

Is COVID-19 helping or hindering effective management of Antarctic tourism?

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ABSTRACT

Antarctica is the most isolated continent on Earth, and ship-based tourism is the main access route for people to visit the place. The COVID-19 pandemic has significantly impacted Antarctic tourism, disrupting both travel to the continent and the management of human activity in Antarctica. Here we present a short overview of (1) the Antarctic

tourism status quo during the COVID-19 pandemic and (2) a SWOT analysis of the future challenges and opportunities COVID-19 poses for those operating in such a remote wilderness area. We suggest that the pause in Antarctic tourism caused by the pandemic offers a unique opportunity to consider a more adaptive model of Antarctic tourism management rather than return to business as usual.

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COVID-19 AND ANTARCTICA

Antarctica is often depicted as a pure place, unspoiled by humans. The commonly used, yet contested, framing of Antarctica as the last place on Earth free of the SARS-CoV2 virus, was mobilized during the pandemic. However, Covid-19 did impact the continent in several ways. In March 2020, the Australian-owned *M/V Greg Mortimer* cruise ship reported an eventual 128 COVID-19 cases among passengers and crew upon its return from Antarctica (Associated Press, 2020). This high-profile outbreak on an Antarctic cruise ship gained widespread media attention. Companies cancelled voyages as nations closed their borders and restricted international travel. Despite the curtailed season, the International Association of Antarctica Tour Operators (IAATO) reported that a total 74,401 tourists visited the continent during the 2019/2020 season (IAATO, 2021a), an increase of 32% from the previous season. Unsurprisingly, the number of people visiting Antarctica the following year decreased dramatically. The 2020/2021 tourism season consisted only of two expeditions with three yachts carrying 15 travelers among them (IAATO, 2021b).

Tourism is not the only human activity in Antarctica that was affected by the pandemic. Despite National Antarctic Programs scaling down their operations and introducing new health measures, a COVID-19 outbreak affected the Chilean O'Higgins Station in December 2020, officially ending Antarctica's status as a COVID-19 free continent. The outbreak was quickly contained, but it prompted national and international Antarctic program managers to tighten their protocols, as reflected in a Resolution at the Antarctic Treaty Consultative Meeting (ATCM) XLIII (WP 63). Similarly, the

KEY MESSAGE

- *COVID-19 impacts on Antarctica are ongoing as operational constraints continue to challenge how Antarctic tourism is conducted.*
- *COVID-19 is challenging policy makers, the scientific community, and the tourism industry to consider new ways of looking forward under different recovery scenarios.*
- *The current transition towards 'a new normal' provides a unique opportunity to question the nature of tourism in Antarctica and to review the best management model for commercial activities in the Antarctic.*

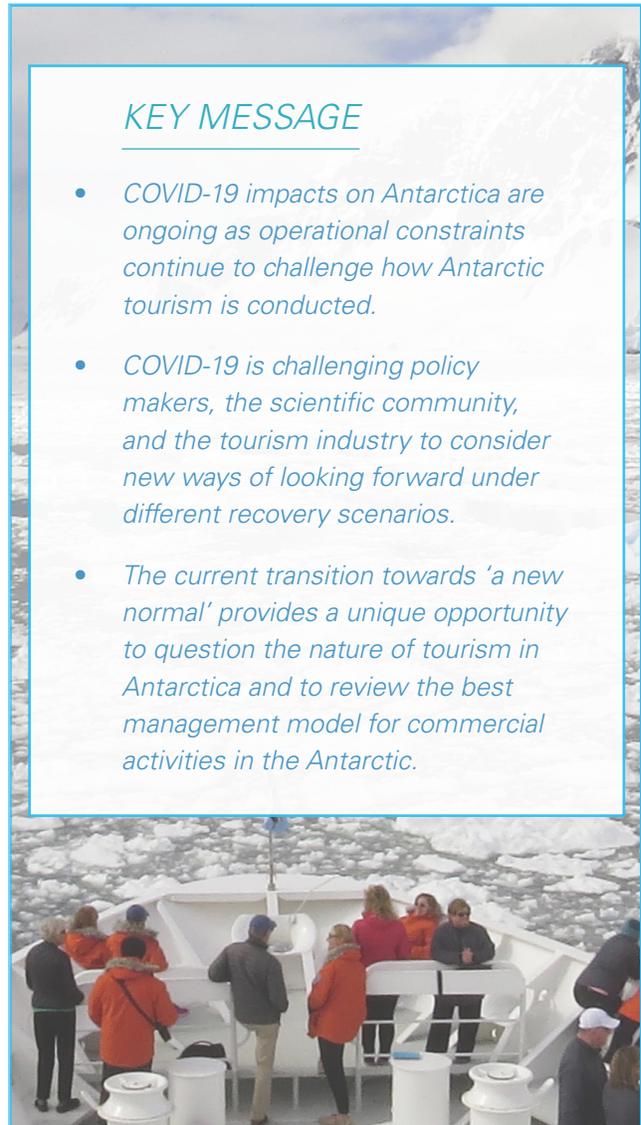


Figure 1. Background image source: Gabriela Roldan.

Spanish oceanographic research vessel *Hespérides* had to cancel its 2020/21 Antarctic voyage en route to Antarctica, as over half of its crew was infected with COVID-19 (La Voz de Galicia, 2021). Despite strict measures imposed for expeditioners pre-departure to Antarctica, such as vaccination mandates and managed isolation, new variants of

Covid-19 continue to challenge National Antarctic Program protocols. For instance, during the current 2021/22 Antarctic season, several outbreaks of SARS-CoV2 were detected at the Belgium Princess Elisabeth Polar Station (RNZ, 2022) and the Argentine Base Esperanza (COCOANTAR, 2022).

Such outbreaks in communal-living environments point to the challenges ahead for Antarctica's primarily ship-based tourism industry (Hughes and Convey, 2020). Protocols for protecting National Antarctic Program facilities from COVID-19 also led to opportunities for otherwise dormant polar-specific tourist vessels: In a mutually beneficial repurposing, three operators used their ships to support various National Antarctic Program activities for the 2020/21 season (IAATO, 2021b). Transit time aboard the vessels doubled as an additional quarantine period for incoming expeditioners. This repurposing of vessels did not help operators to retain key staff with Antarctic experience, however. While IAATO recommends its members ensure 50% of their Expedition Teams have prior experience, this could become more difficult to achieve as skilled people leave the outdoor recreation/ expedition cruising industries for other opportunities (Spennemann and Whitsed, 2021). Reports of ship-based outbreaks highlight the risks Covid-19 continues to pose to the Antarctic tourism workforce and – when adequate staffing level cannot be maintained – to the viability of the voyages (Reuters, 2022).

Antarctic governance was also impacted by the COVID-19 pandemic, with the annual ATCM and Committee for Environmental Protection (CEP) meeting cancelled in 2020 and the 2021 ATCM and CEP moved to an online format with a pared-back agenda. In recognition of these challenges, Resolution text from the ATCM XLIII encouraged "National Antarctic Programmes, the Council of Managers of National Antarctic Programs

(COMNAP), the Scientific Committee on Antarctic Research (SCAR) and IAATO to continue to develop protocols and guidelines, drawing on the lessons learned from the COVID-19 experience in preparation for any future similar eventualities" (WP 63). The Resolution also acknowledged IAATO, demonstrating the value of industry expertise in responding to the pandemic. However, tourism-related discussions during the 2021 ATCM focused on permanent infrastructure and on-board observers, rather than interrogating the nature of tourism activity in coming years more broadly. Time frames do pose a challenge under the Antarctic Treaty System, where pressing issues can take time to reach the Meeting agenda, and where decisions are made by consensus, which can take time to negotiate (Bloom, 2021). Time frames are a particular governance challenge when change is dramatic and rapid responses are crucial, such as in the lead up to an Antarctic summer season.

As a result of curtailed agendas and time constraints at the international policy level, the industry has been left to manage tourism by itself again. Operators have taken the lead in adapting operations to a pandemic context and working within various domestic legislations. As Antarctic tourism adapts to a world with COVID-19, now is an ideal time for policy makers and the competent authorities who grant permits for Antarctic activities to look carefully at the tourism industry's responsive solutions, as well as consider the policy vacuum created by changes in the regular ATCM schedule (Hemmings, 2020).

ANTARCTIC TOURISM OVERVIEW

Antarctic tourism began in the mid-1950s and has seen a significant increase of activity in recent years, with a pre-pandemic projection of about 70 tourist vessels and yachts to be operational in the



Tour group on Booth Island. Source: Gabriela Roldan.

region by 2023 (Carey, 2020). Most of the tourism in Antarctica is ship-based, composed primarily of smaller expedition vessels with several larger cruise ships. Tourist activity is concentrated around the Antarctic Peninsula, which stretches north towards South America. The Antarctic tourism season (October to April) coincides with the austral summer. This seasonal tourism provides important contributions to the economies of Antarctic Gateway cities like Ushuaia, Argentina, and Punta Arenas, Chile, which act as departure points for Antarctic tours (Carey, 2020). Tourists themselves are drawn from a range of nations, with U.S. nationals making up the largest sector (36% in the 2019/20 season), followed by China (11%) and Australia (11%), Germany (9%), the United Kingdom (7%) and Canada (6%) (IAATO, 2021b).

IAATO is an industry body that was established in 1991 to promote the practice of safe and environmentally responsible travel in the Antarctic region. IAATO provides to its members comprehensive guidelines on pre-landing biosecurity measures and appropriate behavior for guests in the region. Such guidelines are intended to minimize human impacts on the continent and to protect wildlife from pathogens such as avian influenza. In direct response to the pandemic, IAATO established a dedicated COVID-19 Advisory Group in June 2020. The group interacted with the Antarctic gateway countries and other stakeholders to implement new protocols and minimize SARS-CoV2 health risks in Antarctica (IAATO, 2021c).

The number of tourist voyages in the current 2021/22 season is lower than in previous pre-

pandemic seasons. This is due in part to the increased complexity and costs of international travel, including factors such as border closures, reduced numbers of commercial flights across the globe, and differing vaccination requirements between nations. Scaled-down tourism operations led to fewer opportunities for operator-supported science activities, such as citizen science projects and scientists accessing field sites via cruise ships. While both tourist and vessel numbers are expected to rebound in the longer term and continue the upward trend seen pre-pandemic, localized changes such as border restrictions have had a negative impact on the current summer season. Despite these challenges, operators have indicated a strong desire to continue to

feature Antarctica in their itineraries—albeit with extra health precautions in place—and tourists have continued to book the voyages offered ahead. In addition, operators shifted a number of bookings from the 2020/21 season to 2021/22 as an immediate response to the pandemic. These changes come with both risks and opportunities for the Antarctic tourism industry, and for the Antarctic continent itself.

SWOT ANALYSIS

As a place with strong environmental protection and no permanent human population, Antarctica is a useful case study to examine the impacts of the pandemic on tourism in remote and wilderness

COVID-19 & ANTARCTIC TOURISM

SWOT Analysis



Figure 2. A summary of a SWOT analysis of COVID-19 impacts on Antarctic tourism. Source: Scientific Committee on Antarctic Research.

areas. Using a SWOT analysis as a starting point for discussions, we present the Strengths/Weaknesses/Opportunities/Threats that Antarctic tourism is currently facing. The SWOT analysis, which focuses on tourism management and ecological aspects, has relevance for practitioners, policymakers, and the future research agenda.

Under the umbrella of the SCAR project on COVID-19 and Antarctica, this research group conducted a SWOT analysis (Helms & Nixon, 2010) in 2020 to assess the strengths and weaknesses of Antarctic tourism as revealed by the pandemic, as well as highlight opportunities and threats for the future of Antarctic tourism (Figure 2). The pandemic effectively curtailed human activities in Antarctica over the 2020/21 summer season, including most tourism activities. Consequently, the strengths we identified include improved conditions for Antarctic ecosystems, a decreased human footprint, and enhanced opportunities for a wilderness experience for those who do visit. The pandemic also exposed several weaknesses, including economic loss for tourism businesses and job loss for tourism-dependent households. These impacts could be short-term, or long-term if, for instance, tour operators go bankrupt or trained employees move to other sectors, or if the pandemic persists into further seasons and the associated socio-economic impacts continue.

The COVID-19 pandemic posed threats to human and wildlife health with potential human-to-human and human-to-wildlife transmissions (Barbosa et al., 2021). The pandemic also threatened the industry's Antarctic skill-base. As tourism recovers it will become harder to find staff with Antarctic experience, with guides and other frontline staff attracted into other industries during the paused season. Given tourists' desire for a pristine and clean environment, as well as the needs of tour operators to recover their financial losses, we may

see a boost in Antarctic tourism in coming years. This could encourage a diversity of tour operators who may stay outside the industry's main body and choose not to adopt IAATO's membership bylaws.

Finally, there are both threats and opportunities associated with changes in types of tour operations (e.g., increased numbers of smaller, yacht-type vessels; a broadening range of activities; and shorter but more numerous trips), though the implications of the loss of well-established and environmentally responsible tour operators poses a risk. The following section expands on key aspects such as operational constraints and health advice, before introducing recommendations on future directions for Antarctic tourism aimed at policymakers, states, industry, and the Antarctic Treaty System.

Operational Constraints

Although the 2021/22 Antarctic tourism season began in November 2021, the coronavirus pandemic continues to impact tourism operations in the Antarctic. New challenges to the industry include border restrictions into countries with Antarctic gateway cities, vaccination requirements for visitors and local workers, and the availability of skilled crew to operate tour vessels. At the local level, Antarctic gateway cities consider their immunization rates and mandate vaccination as a condition for entry and boarding the vessel; both local and guest immunization rates influence overall health risks for those who support Antarctic tourism. At a national level, closed borders are an important factor impacting guest and crew ability to reach vessels, particularly when multi-leg journeys with stopovers in multiple places are taken into account. For instance, up until November 2021, Australian citizens (who form the second largest national group of Antarctic tourists) required a



Tour group on cruise ship off the coast of Antarctica. Source: Hanne Nielsen.

government-issued travel exemption in order to leave the country.

The two South American gateways are particularly aware of the health risks associated with COVID-19, having experienced the highs and the lows of supporting the operations of the Antarctic tourism industry. Formerly proud hosts to international Antarctic travelers, locals in Ushuaia, Argentina and Punta Arenas, Chile protested and blockaded the disembarkation of cruise ship passengers at the local port in fear of contagion from coronavirus as the pandemic unfolded in March 2020 (Portal Portuario, 2020; El Diario del Fin del Mundo, 2020). Protocols developed in Chile and Argentina in conjunction with IAATO's COVID-19 Steering Group detailed how each country would open their borders to international travelers from November 2021. Notably, the 5-day mandated quarantine period for travelers entering Chile was waived for those who were transported directly from a charter flight to the cruise vessel. Among

the health and safety measures considered for foreigners entering the Antarctic gateways are immunization against COVID-19; a requirement to travel with fellow cruise ship passengers from overseas via charter flight; and insurance for medical expenses including hospitalization from COVID-19 and repatriation (Gobierno de Chile, 2021; Gobierno de la República Argentina, 2021). The availability of clear port procedures is also a factor for operators when deciding on a port base for their Antarctic season operation.

Health Advice

With renewed demand for Antarctica as a tourist destination reflected in growth forecast for the 2021/22 season (IAATO, 2021b) and by companies scheduling multiple vessels with Antarctic itineraries (Cruise Industry News, 2021), the question of how to get there and back safely arises. The emergence of a range of COVID-19 vaccines has led to proposals for vaccine passports

as a precursor for travel. This in turn feeds into vaccine nationalism, where some vaccines are recognized by certain nations and others are not. These aspects lead to a dynamic situation for tour operators and governments. During the pandemic, the U.S. Center for Disease Control and Prevention (CDC) has provided official recommendations on international travel to U.S. nationals, including a 4-level system on risk assessment for COVID-19 in different countries (CDC, 2022). In November 2021, the CDC considered that risk of transmission of COVID-19 in Argentina and Chile was “high”. This has since been upgraded to “very high” in both places, with the same designation applying to countries where many Antarctic tourists originate such as the United Kingdom and Australia (very

high, CDC 2022). One solution to this challenge is to charter flights to the vessels with single-origin cohorts of guests. This ‘cohort system’ will lead to changes in the on-board demographic, replacing mixed international groups with guests coming from the same nation.

Insurance is another hurdle in that those who desire to travel and find a means to reach departure points must also find an insurer willing to take on the risk of their trip. This is often contingent upon national travel advisories, such as CDC recommendations. At the start of the 2021/22 Antarctic season, Australia continued to advise citizens to “exercise a high degree of caution” when undertaking any international travel, while tourists from New Zealand were under a “do not



Gentoo penguins, cruise ship, and smaller Zodiac with visitors photographed in Antarctica. Source: Daniela Cajiao.

travel” advisory for any destination until February 2022. Finally, countries with search and rescue responsibilities now have another element to consider when planning for safe operations in Antarctica and the Southern Ocean, as potential exposure to the virus is an additional hazard (Hughes and Convey, 2020). By November 2021, one COVID-19 related medical evacuation from an Antarctic cruise vessel had been recorded, with an unwell guest flown back to Punta Arenas via King George Island on 24 November 2021 (La Prensa Austral, 2021). By February 2022, several outbreaks had been detected on board Antarctic cruise vessels, with numerous operators cutting short specific voyages or the remainder of the cruise season in response to the ongoing threat (Reuters 2022; Cruise Industry News 2022). Antarctica has long been environmentally fraught with dangers such as ice and remote operations, but the pandemic adds another layer of risk assessment associated with port operations during embarkation and debarkation in gateway ports.

Operator Responses

IAATO (2021c) has responded to these changes by advising members to:

- assess the limitations on their own international travel to Antarctic gateways,
- make any required amendments to their health and safety protocols,
- consider the potential impact of the pandemic on their own operations in relation to staff, guests, and service-providers at the gateway ports, and
- do these things while abiding by the regulations of gateway countries.

As a result, IAATO member operators must plan for port-based procedures should any guest or crew

test positive for COVID-19, with contingencies in place for shore-based isolation. Some operators responded by pre-emptively cancelling the 2021/22 season, citing health risks for guests, while other operators began advertising their own health procedures to reassure potential guests of their contingency plans for safe voyages. In other cases, operators have committed to a scaled-down season, with scheduled voyages consolidated onto one or two vessels rather than across the larger fleet. Additions to Antarctic promotional material include prominently displayed health and safety protocols highlighting enhanced sanitation on all public areas, the use of electrostatic sprayers, or reduced capacity onboard the ship (Lindblad Expeditions, 2021; Aurora Expeditions, 2021). Other advertised safety procedures include the opportunity for socially distanced cruising and the fact that all staff on and off the cruise ship (e.g. third party land agent) receive training on COVID-19 and tour operator-specific safety protocols. This response is driven by the industry, demonstrating its ability to respond to imminent challenges in short timeframes.

TIME FOR CHANGE

The continued expansion of Antarctic tourism created concerns about its sustainability prior to COVID-19 (Carey, 2020). This pandemic affords a timely opportunity for the industry, national governments, gateway communities, and researchers to join forces to reimagine a desirable future of Antarctic tourism in the post-pandemic era. Elements of this future could include different travel modes (e.g. cohort charter flights), expanded itinerary options, smaller group sizes and a larger number of small vessels, shifts in spatial and temporal patterns of visitation and landings, expanded general and site-specific guidelines, and further research into impactful Antarctic

experiences. Safety and environmental protection should be foregrounded in all discussions. While there is no silver bullet to address the identified threats and associated governance challenges, the authors' recommendations as follows provide a starting point for conversations about the future of Antarctic tourism.

The ATS should establish a permanent Tourism Advisory Group to provide up-to-date and evidence-based advice on tourism related issues. Comprising representatives from different institutions—such as the ATS, COMNAP, IAATO, International Polar Tourism Research Network (IPTRN), Scientific Committee on Antarctic Research (SCAR) and the SCAR Tourism Action Group (Ant-TAG), Commission for the Conservation

of Antarctic Marine Living Resources (CCAMLR), Antarctica and Southern Ocean Coalition (ASOC), and the International Union for Conservation of Nature (IUCN), along with tourism scholars—the multidisciplinary Tourism Advisory Group would be well-placed to address contemporary challenges (Cajiao et al., 2021). Such a group could operate effectively during the intersessional ATCM periods and be tasked with:

- translating research and monitoring results into management recommendations,
- providing guidance on tourism regulation and management to the CEP,
- facilitating the coordination of research planning and sharing data and logistics support,
- establishing standardized research monitoring protocols, and
- promoting collaboration among all stakeholders.

The ATS should collaborate with industry and experts to better understand the challenges associated with diversification and intensification of tourism, and to address these developments in a timely manner.

The emergence of new tourism products (such as an expanded range of activities like helicopter and submarine operations) raises new questions related to safety and human footprint in Antarctica. The pandemic presents an ideal moment to envisage a shift to an adaptive management approach under which both soft and hard instruments could be developed and implemented in tandem, with a long-term view of tourism as a sustainable human activity in Antarctica. The ATS and its collaborators should consider area-based conservation management tools; strategies for adaptive management in



Gateway city flag in Hobart. Source: Hanne Nielsen.

which planning, management, and monitoring could be implemented gradually with the advice of a Tourism Advisory Group; and the need for prior Antarctic experience among operations staff.

Governments should pay attention to permitting and transition from static-generic to dynamic and tailor-made designs (Dinica, 2018) for the concessions (leases, licenses, permits) issued to tourism operators. These should incorporate the principles of adaptive policy-making (Walker et al., 2001) by including prescriptions on ‘triggers’ for concession changes. Triggers should be based on science-informed monitoring indicators and values regarding key environmental changes, including public health, environmental health, and climate

change. The trigger types and values would have implications for new patterns of tourism access (in itineraries, visitation frequency, visitor numbers, vehicle specifications, and so on). This would ensure both environmental considerations and the safety of those working on vessels, as well as the level of Antarctic experience amongst staff, were prioritized in future permitted Antarctic operations. Although those seeking permits are not required to belong to an industry body such as IAATO, they must continue to demonstrate high environmental standards (in accordance with the Protocol on Environmental Protection to the Antarctic Treaty) and operate with utmost transparency.

Local governments should strengthen the



Antarctic tour group on Zodiac boat. Source: Hanne Nielsen.

identities of Antarctic gateway cities for both domestic and international tourists, in order to encourage people to feel a connection with the far south. A global pandemic that has impacted mobility, coupled with growing awareness of the environmental impacts of travel, could increase the attractiveness of experiencing Antarctica from afar via attractions in Southern Ocean rim cities that celebrate the idea of “Antarcticness” by performing connections in various ways (Roldan and Nielsen, 2021). This presents opportunities for these places to foster an ethic of care for the far south, whilst also benefitting from local tourism.

IAATO and industry should collaborate with scientists on long-term monitoring programs that frame the missed 2020/21 season as an opportunity. In order to demonstrate commitment to ‘sustainable tourism,’ it is essential for tour operators to liaise with scientists and commit to further long-term monitoring and research with participation, collaboration, and validation by external experts. The tourist-absent season could be considered a highly-visible reference point against which future Antarctic tourism and its ecological impacts can be evaluated. This presents opportunities for the industry to engage in science and outreach activities and for researchers to access Antarctic sites using tourist cruises—building research capacity and social license for the Antarctic tourism.

IAATO and the ATS should invest in research related to tourist profiles and the impacts of the ‘Antarctic Ambassador’ concept. The ambassadorship concept, which is about passion, knowledge of, and care for Antarctica, has the potential to contribute to the promotion of a better understanding of the place and its protection (Alexander et al., 2019). The narratives that are

told about the far south—including those brought home by the tourists who visit—can play a crucial mediating role in shaping wider perceptions of the place. However, aspects of human behavior require close attention from social sciences and humanities experts, particularly in the face of shifting industry priorities (Roberts, Howkins and van der Watt, 2016; Leane and McGee, 2020).

LOOKING AHEAD

COVID-19 has challenged the effective management of Antarctica in many different ways, with impacts on science, governance, and tourism (Frame and Hemmings, 2020; Hughes and Convey, 2020). National Antarctic Programs and industries have responded to the ongoing challenges to keep COVID-19 away from Antarctica. New protocols and safety procedures have enabled port visits to Antarctic gateway cities to resume, while moves to ‘cohort’ passengers based on country of residence have eased the resumption of Antarctic travel.

This is a prime moment for policy makers to reassess planning for the future of Antarctic tourism as an activity. Taking seriously lessons from the COVID-19 pandemic and critically examining future environmental, social and economic thresholds will be vital to ensure the safety and sustainability of Antarctic tourism in the longer term. COVID-19 impacts will play out across a range of timescales, from the coming season through to the coming decade. It would be a missed opportunity not to use this moment to reassess and reimagine where Antarctic tourism sits in the larger picture of human activity in the far south.

Antarctica also provides an important case study when considering models for tourism in protected



Antarctic tour group on kayaks. Source: Gabriela Roldan.

areas going forward. Its unique position of having no permanent population apart from a few year-round stations makes tourism an extremely important driver of human impacts on Antarctica and society’s understandings of the place. Careful attention should therefore continue to be paid to the Antarctic tourism industry as it emerges from the pandemic, as the strengths, weaknesses, opportunities, and threats experienced at the bottom of the world will have applications in how we interact with the far south going forward, as well as other protected areas across the globe.

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