The Case Against Tourism Landings from Ships Carrying More than 500 Passengers
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Information Paper Submitted by ASOC\textsuperscript{1} to ATCM XXX

(CEP Agenda Item 6b; ATCM Agenda Item 11)

1. Introduction

The ongoing rapid growth and diversification of Antarctic tourism is partly driven by an increase in the size of cruise vessels. The number of vessels carrying 200 passengers and more has increased over the recent years. The cruise vessel \textit{Golden Princess}, the largest vessel that operated in the Antarctic in the 2006-07 season (indeed, the largest vessel of any sort that has ever operated in the Antarctic), carried at least 2500 passengers and a further 1200 crew.\textsuperscript{2}

Most commercial shipborne tourism in Antarctica involves periodic landings, but a few of the larger vessels offer cruise-only tourism. Tourism landings take place at over 150 sites around the continent, of which some 20 sites on the Antarctic Peninsula receive upwards of 5000 visitors every year.\textsuperscript{3} Currently most ships carrying more than 500 passengers do not land passengers ashore, since this is the upper landing limit established by the International Association of Antarctic Tour Operators (IAATO), to which most tour operators presently belong. Nevertheless, landings take place from vessels that transport several hundred passengers. In the 2004-05 season, for instance, the \textit{Discovery}, the \textit{Marco Polo}, and the \textit{Saga Rose} conducted landings while carrying passengers on the 450-550 range.\textsuperscript{4}

These developments have raised concerns among some Antarctic Treaty Parties. A January 2006 inspection of ten of the most popular landing sites used by tour operators noted that no site was found suitable for vessels of more than 500 passengers.\textsuperscript{5} At XXIX ATCM the United Kingdom submitted a draft Resolution that proposed, on precautionary grounds,\textsuperscript{6} to prohibit landings from ships carrying more than 500 passengers. The Resolution received the support of many delegations but did not attract consensus.\textsuperscript{7} Subsequently the ATCM asked the CEP whether the proposal to prevent ships carrying more than 500 passengers from landing in Antarctica was an environmentally responsible and precautionary approach, or whether they would recommend an alternative.\textsuperscript{8}

This paper briefly reviews some of the key arguments for prohibiting landings from ships carrying more than 500 passengers. However, it should be noted that ASOC has a more general concern about the operation of very large ships in the Antarctic.\textsuperscript{9} We would therefore urge the ATCM to prohibit vessels above a certain size from operating in Antarctic waters. The arguments in this paper about preventing the landing of passengers from ships carrying more than 500 passengers should therefore not be construed as acceptance of large (and seemingly ever larger) Antarctic cruise vessels – whether they land passengers or not.

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\textsuperscript{1} Lead author: R. Roura.
\textsuperscript{4} \url{http://www.iaato.org/tourism_stats.html}, file 2004-2005 Tourism Summary, accessed March 2007. Of these vessels only the \textit{Marco Polo} landed above 500 passengers; the \textit{Saga Rose} carried 499 passengers. The former is not an IAATO member.
\textsuperscript{5} Final Report XXIX ATCM para 155.
\textsuperscript{7} Final Report XXIX ATCM para 151.
\textsuperscript{8} Final Report XXIX ATCM para 146.
\textsuperscript{9} ASOC (1999): \textit{Large scale Antarctic tourism}. XXIII ATCM/IP 121.
2. **Current trends on tourism vessel size**

Traditionally Antarctic tourism activities have focused on smaller “expedition”-type vessels. For instance, a review of 32 cruise vessels used to transport Antarctic tourists in the period 1958-1993 found that 75% of them carried less than 200 passengers.\(^{10}\) Approximately 30% of these are still operating. However, the ship size composition of the fleet is changing. In the 2003-04 season the capacity of ships operating from Ushuaia, Argentina (which handles the majority of Antarctic shipborne tourism) ranged between 46 and 1,200 passengers, and over 50 percent of the passengers traveled in ships of more than 300 passengers.\(^{11}\) In the past season (2006-07), only 58% of the 38 ships operating in the Antarctic out of Ushuaia had a maximum capacity of less than 200 passengers (Fig. 1).\(^{12}\)

The focus on smaller vessels is still reflected in IAATO’s membership (Fig 2). Among the full members of IAATO in February 2007, most operate vessels with a capacity of up to 200 passengers (87%). The remaining 13% operate vessels with a larger capacity. IAATO classifies the ship operators among its members into three categories: vessels carrying more than 500 passengers, vessels carrying 200-500 passengers, and vessels carrying less than 200 passengers (some of which are in fact yachts). Vessels from the large vessel category – called “Cruise only” – are not allowed to land passengers under the IAATO guidelines. There is no upper passenger limit in IAATO’s guidelines.

These illustrative examples suggest that there are now larger vessels operating in the Antarctic than hitherto.\(^{13}\) Many of these large vessels are not operated by IAATO members and are not bound by the organisation’s guidelines, which in any event are not legally enforceable.

3. **The arguments against landing passengers from larger vessels**

The arguments against landing passengers from larger vessels fall broadly into the following categories:

- Industry standards;
- Safety of operations;
- Conflict of interest among users; and
- Environmental impact.

Below we will discuss briefly specific arguments within each of these categories, while noting that some arguments overlap different categories.

3.1 **Industry standards**

An increase in the size of the ship signals a departure on the traditional so-called “expedition cruising”, which focuses on visiting sites for their Antarctic wildlife, scenery, and cultural heritage. This reflects not only a change in vessel size, but also a departure from those activities that have a reasonably compelling Antarctic purpose. The larger the passenger carrying capacity, the larger the ship, and even where there is no intention to land people, the fact of having to entertain and support large numbers of people means a further stimulus to size. Smaller vessels landing people tend to be more frugal, to have proportionally fewer staff, etc. – which has a bearing on both the operational environmental loading and the risks of harm to people and

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\(^{10}\) Palazzi, R O (1993): “Antártida y Archipiélagos Subantárticos: Factores para su análisis. Segunda Parte: Los factores variables.” Revista de la Escuela Superior de Guerra Aérea de la Fuerza Aérea Argentina, Publicación N° 182. Note that 66% of the ships carrying less than 200 passengers carried in fact less than 100 passengers.


\(^{12}\) It should be noted that tourism vessels do not always operate at full passenger capacity. For instance, during the 2004-05 season the vessels that conducted landing (excluding yachts) operated at approximately 80% passenger capacity on average, with some of the largest vessels operating well below capacity. In some instances this results in a vessel being classified at a lower category of e.g. those used by IAATO.

\(^{13}\) The concept of what constitutes a large vessel in the Antarctic concept is changing. For instance, a 2001 study classified vessels with more than 200 passengers as “extra large” (Tracey P.J.(2001): *Managing Antarctic Tourism*. Unpublished PhD dissertation. Hobart, Australia: University of Tasmania.)
the environment if there is a serious accident. Large cruise ships are necessarily infrastructure- and staff-heavy, since they rely on greater luxury and activities aboard to entertain the large numbers of passengers.

An additional consequence of the use of very large ships could be greater congestion at landing sites, which would have carry on effects on the environment, the safety of operations, and other users. A very large vessel landing several hundred passengers in groups of 100 could take up a site for most of a day; a few very large vessels could in fact take over key landing sites while they are present in the area. This, in turn, would encourage the use of larger vessels by other companies so that they remain competitive. What this means is that the debate is not solely about e.g. one ship with 500 passengers against two with 250 passengers, but increasing numbers of vessels able to transport upwards of 500 passengers. In addition, preventing ship congestion and a too slow landing operation may be arguments to try to land more than 100 passengers at certain sites, as already occurs in Svalbard (Spitsbergen).

It should be noted that tourism vessels increasingly operate with flags of states that are not Antarctic Treaty Consultative Parties, including Bahamas, Barbados, Liberia, and Panama. For instance, in the 2003-04 season thirteen (52%) of the ships operating from Ushuaia were flagged in Antarctic Treaty Consultative Parties (ATCPs); twelve (48%) were flagged in non-treaty states. In the 2006-07 season the numbers were sixteen (42%) and twenty-two (58%), respectively. Larger general purpose cruise vessels are more likely to be flagged in open registry states, which tend not to be Antarctic Treaty Parties, than smaller vessels. For instance, among the Antarctic tourism ships carrying more than 500 passengers that operate out of Ushuaia 73% fly flags of convenience, while the percentage is only 55% for ships carrying less than 200 passengers (Fig. 3).

In other words, more Antarctic tourism ships operate out of Ushuaia now than a few years ago, and more of those ships fly flags of convenience, particularly ships that carry more than 500 passengers. This points to the absence of an effective link between the place (Antarctica) and the organiser and market (which is generally in an Antarctic Treaty state) and the flag state.

3.2 Safety of operations

The main operational argument against landing numerous passengers from one large vessel is safety. Larger ships may be less manoeuvrable (due to size) and have greater draught – both disadvantages in poorly charted and ice-strewn waters. In addition, larger ships have a much greater “sail” surface than standard vessels, which makes them more difficult to govern in windy conditions. Finally, the larger the vessel the greater the likelihood that it is not purpose-built for polar conditions, and therefore that it is not ice-strengthened in any way. By not allowing 500+ ships to land their passengers, the vessels would be discouraged from approaching and anchoring in areas that are relatively unsafe with regard to navigation.

In addition, a vessel carrying 500 passengers is likely to carry an additional 200-400 people on board as staff and crew, depending on the type of the vessel and on the services offered, with crew numbers generally increasing as the size and luxury increase. Assisting even this number of people (700-900) in the event of an emergency is likely to be beyond the capacity of most ships and stations in the Antarctic Treaty Area. Plainly the problems are magnified when the total number of people on board exceeds two or three thousand.

It should be noted that with the exception of USA’s McMurdo Station, no vessel or land-based facility operated by Antarctic Treaty Parties supports 500 people. In the Antarctic context, any pulse of 500 people or above in a limited area can reasonably be seen as massive, exceptional and warranting special justification. Thus, there seems to be a broader argument to limit the overall scale of Antarctic activities to a relatively modest size, on account of safety, logistic and environmental considerations as well as compelling Antarctic purpose.

15 See for instance XXVIII ATCM/IP 119.
16 XXVIII ATCM/IP 119, based on Infuetur data.
3.3 Conflicts of interest among users

Conflicts of interest among users may already occur at some of the very popular tourism destinations in Antarctica, even though not many ships land more than a few hundred people. However, landings from very large vessels would maximise the potential for conflicts between e.g. scientific and tourism activities; between tour operators operating vastly different types of vessels; and between commercial tour operators and other legitimate activities such as non-commercial yacht operations or recreational visits by station personnel. Plainly our main concern is the effect that tourism may have on scientific activities, although the other conflicts should be avoided too.

We have discussed elsewhere that the development of a destination results in a near-permanent appropriation of that site for tourism purposes. As a result there is a risk that these sites may become generally unavailable for scientific uses when these are in competition with tourism uses. The landing of people from very large vessels would imply more people ashore at key Antarctic sites more frequently, resulting in a longer occupation time. In those instances tourism will de facto have primacy over science over the use of some sites, which would be contrary to the purpose and intent of the Antarctic Treaty and its Protocol.

3.4 Environmental impact

There are environmental concerns with regard to both the standard operation of vessels and potential accidents. It should be noted that, generally speaking, EIAs for commercial tourism operations consider the former but do not address – or simply dismiss as unlikely – the later. Clearly these concerns apply to all operations and all ship sizes, however they are magnified as vessel size increases.

The immediate concern of standard operations is the carrying capacity of the sites. The concept of carrying capacity in an Antarctic context is still poorly understood. The only existing precedent to date of carrying capacity used for management purposes is the annual visitation limit of 2000 persons set in the management plans for the Ross Sea historic huts. These numbers include tourists and adjacent station staff. In those instances, a few vessels carrying above 500 passengers could theoretically capture access to the Antarctic historic “crown jewels”.

At any event, the effects of such concentrated activity levels on landing sites are essentially unknown. Landings from very large vessels in groups of 100 passengers, even for only one hour each group, would result in an exceedingly long, uninterrupted “contact time” with wildlife, particularly in the event of two or more consecutive landings, given that visitation is occurring during the Antarctic summer with up to 24 hour daylight. The need for rest periods for wildlife and other spatial or temporal restrictions to reduce localised impacts has been recognised by an on-site review of landing sites. So far, however, resting times apply only to some of the sites for which site specific guidelines have been drafted. It would appear that the concept of “resting time” should be applied more broadly at all sites with wildlife concentrations that tour operators use for landings, on precautionary grounds, ahead of the development of site specific guidelines.

Concerns about the environmental impact of Antarctic tourism have largely focused on the terrestrial impact of tourists during landing. The impacts of reaching the landing site, including those of long distance shipping and ship-to-shore transport, have generally been ignored. A risk assessment of ship-based tourism in Svalbard, for instance, included a much more extensive range of activities, outputs, and resulting environmental impacts than what is usually considered for the Antarctic. Operational environmental impacts of cruise ships include grey water, sewage, and fuel consumption. Waste production and storage may pose additional problems. Table 1 compares the grey, black and bilge water generated by cruise ships of different sizes that currently operate in Alaska. These cruise ships are generally larger than those seen in

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18 ASMA development – e.g., at Deception Island – has resulted in part from the need to prevent conflict of interests among users.
21 Bastmeijer and Roura 2004:767, supra note 6. These issues have been further developed, with regards to CO₂ emissions, by Amelung B and Lamers M (in press): “Estimating the greenhouse gas emissions from Antarctic tourism.” Tourism in the Marine Environment.
Antarctica (minimum capacity is 1,100 tourist and crew). Whilst there is no clear pattern, it would appear that a larger ship does not necessarily produce less pollution per person or per ton gross, and therefore there is no obvious economy of size. In addition, waste storage could also be a problem in larger vessels. For instance, the EIA for the Golden Princess noted that it had limited capacity for the storage of certain types of waste and waste capacity may be exceeded before leaving the Antarctic Treaty Area.\(^{24}\)

Fuel consumption estimated figures\(^{25}\) suggest that larger vessels (>200 passengers) tend to be more efficient than smaller vessels in terms of fuel consumption per passenger transported. However, larger vessels (>200 passengers) consume between two and three times as much fuel per day than smaller vessels. As a result, fuel consumption through the Antarctic tourist season is equivalent for all vessel categories, even though the duration of the tourism season is significantly shorter for the larger vessels (Table 2).\(^{26}\)

However, by far the largest environmental concern relates to the potential impacts of a ship accidentally spilling fuel in sensitive areas. The probabilities of such incident may be comparatively low, but the seriousness of potential environmental consequences would be very severe, particularly since many of these ships use HFO (Heavy Fuel Oil). The risks are therefore high.\(^{27}\) For instance, a ship like the Nordkapp – which ran aground at Deception Island in February 2007, causing a spill reported to be of between 500-750 litres of marine diesel\(^{28}\) – uses approximately 40 tonnes of fuel a day,\(^{29}\) and therefore carries a very large amount of fuel in each Antarctic leg – possibly more than fifteen times that amount. Naturally, larger ships carry more fuel. For instance, the fuel capacity of the Golden Princess is 3275 tonnes of MFO (Marine Fuel Oil), 235 tonnes of MDO (Marine Diesel Oil) and 182 tonnes of LO (Lubricating Oil).\(^{30}\)

4. Conclusions

The Antarctic tourism fleet is changing. The trend is now towards larger general-purpose cruise ships which are not ice-class, and this is in turn changing the type of tourism activities, some of which do not have a compelling Antarctic purpose. ASOC contends that the Antarctic wilderness (including the Southern Ocean) is a limited resource and should be reserved for activities that cannot take place anywhere else – this includes Antarctic science and the appreciation of Antarctic nature and cultural heritage.

Matters of principle aside, there is a range of practical arguments that strongly suggest that landings from ships carrying more than 500 passengers should not be allowed. The concerns against landings from very large vessels are primarily – but not solely – of a precautionary nature, particularly due to the potential discharges of fuel and other hazardous substances in the event of misadventure.

It should be noted, however, that landings from ships carrying hundreds of passengers is only one of the issues of concern around current commercial tourism developments in Antarctica. Other important issues include the increasingly greater diversification of tourism activities; a greater range of tourism support options;\(^{31}\) and the use of very large vessels regardless of whether or not they conduct landings. Many of these ships are registered outside Antarctic Treaty states and are not bound to Antarctic Treaty regulation. These developments are closely related and – in synergy with each other – could have significant negative effects on the environmental and other intrinsic values of Antarctica, the operations of National Antarctic Programs, and tourism itself. In this context, a prohibition on landings from very large vessels would be a

\(^{24}\) Princess Cruises 2006 supra note 2, p. 17. The EIA does not specify what sorts of wastes were being referred to (although it excluded plastics).

\(^{25}\) Amelung and Lamers (in press), supra note 21.

\(^{26}\) Among the smaller ships there appear to be a broad range of efficiency, and some are quite inefficient despite being small.

\(^{27}\) “Cameron defines risk as an “amalgam of the probability of an event occurring and the seriousness of the consequences should it occur. Thus, a high-risk strategy is one that either combines a relatively high probability with relatively innocuous consequences or one that combines a relatively low probability with relatively serious consequences.”” Bastmeijer and Roura 2004 supra note 6, p. 773.


\(^{29}\) Amelung and Lammers (in press) supra note 21.

\(^{30}\) Princess Cruises 2006 supra note 2, p.70. In contrast, the 1989 grounding of the Bahia Paraiso resulted in a spill of approximately 200,000 gallons of diesel and jet fuel (757,000 litres or approximately 600 tonnes of fuel).

\(^{31}\) These include emerging air- and land-supported tourism, sometimes in combination with state supported tourism.
first step towards “stabilising” tourism operations to what is reasonably tried and tested and of a scale appropriate for the circumstances.  

Barring a prohibition on the use of very large vessels, the Antarctic tourism fleet will continue to increase in average size. Having more passengers on board drives down the costs, but does not necessarily lower the environmental impact of tourism – particularly in the event of a serious accident. ASOC would therefore argue that the ATCM should prohibit landings from ships carrying more than 500 passengers. In addition, and for the same reasons, it should discuss further restrictions – such as limiting access to Antarctic waters to ships of a certain tonnage or carrying more than a certain number people – including passengers, staff, and crew. Overall, there seems to be a broader argument to limit the overall scale of Antarctic activities to a relatively modest size, on account of safety, logistic and environmental considerations as well as compelling Antarctic purpose.

32 The limit of 500 hundred is arguably arbitrary, and a different number could also be proposed. For instance, up until recently IAATO membership was restricted to companies that did not carry more than 400 passengers, which seemed to be a reasonably sensible upper limit.
Appendix 1 – Tables and figures


NOTE: Data from Palazzi and IAATO are based on the total number of passengers transported. Infuetur data are based on the ships’ passenger capacity. The passengers actually transported may be less than the ship’s maximum capacity, which may result in a change of category.

Fig. 2 – Ship operators that are IAATO members, classified by membership category and ship size, (Source: http://www.iaato.org, accessed February 2004).


<table>
<thead>
<tr>
<th>Criteria</th>
<th>Size 3</th>
<th>Size 2</th>
<th>Size 1</th>
<th>Size 0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max passengers and crew</td>
<td>3,200</td>
<td>2,380</td>
<td>2,156</td>
<td>1,100</td>
</tr>
<tr>
<td>Vessel size (gross tons)</td>
<td>78,000</td>
<td>55,400</td>
<td>48,000</td>
<td>22,000</td>
</tr>
<tr>
<td>Blackwater production, maximum (thousands of litres/day)</td>
<td>61</td>
<td>45</td>
<td>41</td>
<td>20</td>
</tr>
<tr>
<td>Graywater, treated blackwater production including laundry water, maximum (thousands of litres/day)</td>
<td>1,030</td>
<td>721</td>
<td>610</td>
<td>355</td>
</tr>
<tr>
<td>Bilgewater production, maximum (litres/day)</td>
<td>9,993</td>
<td>18,927</td>
<td>11,356</td>
<td>3,785</td>
</tr>
</tbody>
</table>

NOTE: Most ships currently operating in Antarctica correspond to Sizes 0 and 1, with at least one ship in the Size 2 category.
Table 2a – Antarctic shipborne tourism, 2004-05 season: Basic characteristics and fuel consumption

<table>
<thead>
<tr>
<th>Ship size (Pax)</th>
<th>Avg. tonnage</th>
<th>Avg. daily fuel use (tonnes)</th>
<th>Avg. fuel use through season (tonnes)</th>
<th>Avg. season duration (days)</th>
<th>Avg. fuel use pax/day</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;200 (21 ships)</td>
<td>4,799</td>
<td>26</td>
<td>1,722</td>
<td>67</td>
<td>0.34</td>
</tr>
<tr>
<td>200-500 (4 ships)</td>
<td>13,965</td>
<td>45</td>
<td>1,191</td>
<td>29</td>
<td>0.13</td>
</tr>
<tr>
<td>&gt;500 (6 ships)</td>
<td>35,798</td>
<td>88</td>
<td>2,018</td>
<td>23</td>
<td>0.12</td>
</tr>
</tbody>
</table>

Table 2b – Antarctic shipborne tourism, 2004-05 season: Capacity

<table>
<thead>
<tr>
<th>Ship size (Pax)</th>
<th>PAX CAPACITY</th>
<th>TRANSPORTED</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Minimum</td>
<td>Maximum</td>
</tr>
<tr>
<td>&lt;200 (21 ships)</td>
<td>38</td>
<td>178</td>
</tr>
<tr>
<td>200-500 (4 ships)</td>
<td>281</td>
<td>499</td>
</tr>
<tr>
<td>&gt;500 (6 ships)</td>
<td>669</td>
<td>1309</td>
</tr>
</tbody>
</table>

NOTES:
- Data exclude yachts.
- The passengers actually transported may be less than the ship’s potential passenger capacity. This may result in a change of category e.g. in the 2004-05 season two ships with a capacity of 200 passengers or more carried less than 200 passengers; and one ship with a capacity of more than 500 passengers carried less than that number (499 passengers).