

Carrying Capacity vs. Acceptable Visitor Load: Semantics or a substantial change in tourism management?

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The use of Carrying Capacity as the predominant concept in tourism management assumes that there is a direct relation between the number of visitors to a tourist site and the impacts produced in the environment and on wildlife, and that these impacts can be managed via regulation of the number of people or groups of people that access visitor sites. Lacking other applicable approaches, Cifuentes (1984, 1992) took the concept of carrying capacity and further developed it as the primary management tool of the Galapagos National Park (GNP) for the boat-based tourism model of Galapagos in which the number of visitors is dependent upon the size of the tourist fleet. Initially the method was used to calculate the total carrying capacity or the total number of tourists permitted per year. In a later adaptation, the methodology was expanded to an evaluation of the daily carrying capacity of visitor sites (Cayot et al., 1996).

Carrying Capacity was adopted as a management tool because the concept is easy to understand and authorities and tourism operators wanted concrete numbers based on technical analyses to manage, monitor, and make future projections.

The results of the last carrying capacity study (Table 1, BID/FOMIN, 2007) oblige us to ask two fundamental questions. Does the calculation of Carrying Capacity of visitor sites effectively contribute to orient and potentially limit the development of tourism, the growth of the service infrastructure, or the size of the tourist fleet? And, does this management tool provide the type of data needed for tourism planning?

Table 1. Relationship of estimated Carrying Capacity of the Galapagos National Park and the Galapagos Marine Reserve to the overall capacity of the tourist industry in Galapagos.

Item	No.	Percent Estimate of "Overload"
Carrying capacity of visitor sites per year	102.425	
Capacity of air transportation per year (2007)	136.830	34%
Hotel and boat capacity per year (2007)	262.865	157%
Number of visitors arriving in 2007 for both land and sea tours	161.859	58%

Source: Determinación de la oferta actual y potencial del sector turístico en las Islas Galápagos, BID/FOMIN, 2007

Acceptable Visitor Load (AVL)

The Galapagos National Park (GNP) has successfully managed visitations to public use sites through systems of trails and visitor groups of limited size, which must be led by a naturalist guide. To a large degree, this approach has prevented measurable impacts in the Galapagos ecosystems.

In reality, no study has yet been able to demonstrate any significant or lasting changes in biodiversity or behavior or reproductive success of wildlife at visitor sites as a result of tourism activity. Reactions of the wildlife to the presence of humans are the same that occur when another similar-sized organism comes in close contact (e.g., sea lions). Many of the environmental impacts from tourism activities that have been observed are not related to the number of people present, but rather to their behavior and the lack of compliance with norms of conduct.

While no negative impacts have been detected, most fauna at visitor sites have adapted to the presence of visitors. Some birds have even shown a preference for nesting in areas exposed to regular tourist traffic. Animals cannot measure the size or the number of groups; therefore the groups do not have a cumulative effect on an animal's life. However, it is important to note that these results are specific for cases such as Galapagos, with few predators and a generally "tame" fauna, and are not applicable to forests or other ecosystems.

There is a clear and evident relationship between intensity of visits and levels of erosion in areas where ash, tuff, or sand predominate. However, these effects are localized and limited to the trails and can

be mitigated with management measures such as walkways or stairs.

The more important variable is the number of people or Groups at Any One Time (GAOT), which determines the level of visual and physical interference associated with a visit. A high GAOT reduces visitor satisfaction and can increase physical impacts. For example, with a high GAOT, it is more common for visitors to leave the trail to avoid or pass another group. Ten groups in one site at the same time can cause significant visual pollution and eventually impact the flora and fauna due to lack of compliance with visitation rules, such as the requirement to remain on the trail. On the other hand, the same number of groups distributed over a number of hours (during which encounters between groups will be fewer) will not produce a significant impact. The impact of the number of visitors on overall visitor satisfaction is eliminated and the guide's control over their passengers is improved.

Other methodologies, such as the Recreational Opportunity Spectrum (ROS) and Limits of Acceptable Change (LAC), in which environmental and social qualities of the visitor sites are determined, have been used for zoning of public use space. They are based on criteria that focus not only on the level of naturalness required, but also on the expectations of different segments of the clientele (tourists), in terms of exclusivity, solitude, vehicular access, or in terms of levels of intervention, signage, and permissible conduct. A zoning scheme adapted to qualitative standards for different categories of visitors and activities permits a reduction in use in the highly sensitive areas while increasing it in highly resistant areas or in areas in which the



Photograph Jason Heilmann

number of people visiting at the same time is not an essential criterion.

The number of visitors allowed at a visitor site should not depend solely upon criteria that can be determined by mathematical formulas; rather it should depend upon qualitative criteria established by resource managers, which are based on local policies regarding the hoped-for quality of tourism. An alternative to the Carrying Capacity approach is the concept of Acceptable Visitor Load (AVL). AVL uses more subjective data, gathered through public participation and consultation, which include visual impacts, levels of perceived isolation or crowding, and a shared sense of the quality and type of visitor experience. In addition to its subjective components, calculations of AVL and GAOT will take into account various technical parameters, such as the category of each site, its area, the length of trails, the minimum distance between groups for each zoning category and opportunity, visibility factors, and the time required for a complete visit, including stopping for interpretation.

Based on GAOT, the number of groups that can visit a site in one day (the AVL) depends upon the length of the visit and also upon the number of "turns" that can occur without interference--a concept already used in the Physical Carrying Capacity as defined by Cifuentes (1992).

Applying this concept depends upon effective internal organization of the tourism industry and the management and control capacity of the GNP. A number of complementary technical processes exist, in addition to AVL and GAOT, which can help manage the quality of the visitor sites in Galapagos, such as:

- Network of ecotourism visitor sites for public use
- System for awarding and renovating tourist operation permits
- Registration and control of visitor entrance
- Zoning system
- Tourist Carrying Capacity
- System of naturalist guides in protected areas
- System of itineraries
- Monitoring system for tourism
- Control of tourism operations

The objective of this document is to offer new guidelines, based on the use of AVL, for reviewing the management strategies employed by the GNPS for tourism activities in visitor sites within the public use network of the GNP. As such, we do not offer nor attempt to offer solutions to the broader challenges posed by tourism.

The principal risks associated with tourism development do not occur at visitor sites, rather they are directly related to the total number of tourists and the resulting population growth (given that more tourists require a greater labor force). Growth in tourism and the resident population result in increased traffic between islands in the archipelago and with the continent, ever-increasing demands for food and energy, and a greater risk of introducing or transferring species to and among the islands. The concept of quality of visit in the visitor sites can help in the discussions concerning the limits of tourism, but will not resolve the serious indirect impacts that uncontrolled tourism development carries with it.