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Carrying Capacity - An Uncomfortable Truth

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The concept of carrying capacity and its relevance as a visitor management tool has come under increasing scrutiny in recent years. However, it is an uncomfortable truth that in popular protected areas the numbers and behaviours of visitors need to be controlled if conservation and experience values are to be sustained into the future. This paper summarises the recent critique of carrying capacity and introduces a new Australian visitor management framework developed by Queensland Parks and Wildlife for addressing capacity issues in protected areas. The Sustainable Visitor Capacity (SVC) methodology is a collaborative, multi-stakeholder approach to assessing visitor sites for landscape quality, values and impacts so that these may be linked to requirements for more effectively managing visitor engagement with the resource. Outputs inform infrastructure and education needs, visitor use patterns, desired behaviours and appropriate visitor numbers.

The Tourism Explosion

In recent decades many parks around the world have become important places for recreation and tourism. Progressively over this time a large body of scientific research has been amassed that shows these increasing visitation levels are linked to increased physical and social impacts. This situation exposes an apparent paradox between the objectives of environmental conservation and visitor access, and the considerable management challenge that exists to resolve the outcomes of this interaction. Such a challenge could be characterised as a wicked problem (Rittell & Weber, 1973; McCool & Stankey, 2003) featuring multiple aspects and different stakeholder perceptions not rocket science, but much harder:

Managers of public land recreation operate in a complex, dynamic and messy environment, where competing goals and a lack of science challenge their ability to frame problems and develop responses (McCool, 2005:8).

The contemporary management challenge of balancing use and preservation can be represented by a system focussing on the improved management of people and recreation to concurrently achieve both conservation and experiential goals. To date, the mechanism that has been adopted to achieve this has been the application of various visitor management frameworks to guide decision-making. The underlying foundation of many of these frameworks has been the carrying capacity concept.

Carrying Capacity

There has been a preoccupation in the recent park management literature over the confused understanding and application of carrying capacity. Much of this attention stems from our growing interest in sustainable tourism and the desire to limit its impact on the physical and cultural values of destinations through limiting tourism development and activity.

Originating from applications in wildlife management, recreation carrying capacity (RCC) was conceived as the level of use beyond which the recreation resource or recreation experience deteriorates (McCool, Clark & Stankey, 2007:35). Hence the concept was interpreted originally as a numbers issue and has been heavily criticised on this basis as a simplistic view of a complex recreation management problem (McCool & Lime, 2001). However it is worth noting that Wagar (1964), who is credited with first exploring the concept in relation to recreation, never saw RCC as an absolute value. He also acknowledged that carrying capacity was dependent on the needs and values of people according to some management objective, and that the magnitude of use limits could be reduced through other familiar management actions like zoning, engineering and education.

From these early observations and the subsequent work of many others, it is apparent that there are both descriptive and prescriptive components of carrying capacity, where the former highlights what is and the latter what ought to be (Shelby & Heberlein, 1986). Perhaps the application of the carrying capacity concept is well suited to an analysis of the current status of a recreational system where numbers are known and impacts are evident, but less relevant for future planning conducted in a fluid atmosphere of competing goals, contrasting community values and multiple visitor behaviours. McCool and Lime (2001: 372) assert that a prescriptive approach is better served to address the issues of visitor impact by reframing the question from How many is too many? to What are the appropriate or acceptable conditions? This realignment of focus has been evident in a plethora of visitor management decision-making frameworks developed since the mid-1980s. These include LAC, VAMP, VIM and VERP (Nilsen & Tayler, 1997), and all have contributed to a more considered and rational approach to managing visitors in protected areas, though none have successfully drawn our attention away from visitor numbers.

Uncomfortable Truth

Within the overall visitor management debate, the uncomfortable truth remains for most of us that numbers do matter and need to be addressed in some way in any plan of management. Numbers matter for:

- The allocation of commercial permits
- The development of infrastructure and accommodation
- Transport and access provision

- Aesthetic impact
- Regional tourism planning
- Physical and Social Impacts because most of the body of recreation ecology research has focussed on numbers of people (or passes) in relation to observed impacts.

Therefore it may still be reasonable to talk about carrying capacity, especially if we consider it as a multi-variable concept including visitor numbers, behaviour, experiences, conflict, facilities, information, and above all the responsibility to manage people as part of, and not separate to, the ecosystem where they are conducting their tourism activities.

Sustainable Visitor Capacity (SVC)

A new protected area management approach that does not shy away from carrying capacity, yet incorporates many of the beneficial aspects of earlier frameworks is the Sustainable Visitor Capacity (SVC) methodology developed and trialled by Queensland Parks and Wildlife.

In the broadest sense, SVC is a mixture of science and art, where a community or stakeholder working group is empowered to use available information and collect new data to make informed judgements about future park management directions. The process is also unashamedly based on the hypothesis that impacts increase as visitor use increases, though not necessarily in a consistent or predictable pattern.

SVC is applied to individual visitor sites or nodes, though results are considered in a whole of park context with regard to recreation opportunities, management decisions and desired outcomes. It considers the values of a place, current visitor use patterns, the desired setting (condition based on naturalness), existing visitor impacts on the biophysical, cultural, social and managerial conditions (based on indicators and defined standards) and the acceptability of those impacts for the desired setting and any specific constraints relating to the nature of tourism use and infrastructure capacity at the site. From these considerations, management improvements are recommended to make the site more resilient to use levels.

SVC assessment is undertaken in four stages:

1. Data collection Data and documents relating to the site are collated before the process begins. Reliable and comprehensive visitor data and site values are important.
2. Field assessment The site’s values, setting, impacts and condition are assessed in the field.
3. Information analysis Standards determine whether impacts are acceptable and what changes to visitor use and management are necessary to ensure sustainability.
4. Recommendations, monitoring and review Detailed recommendations considering the nature and patterns of use to ensure sustainability, and monitoring to check whether SVC recommendations are working. The available visitor capacity is then allocated among various user groups.

The real strength of the SVC process lies in the fact that it is implemented by a diverse community working group that represents multiple perspectives and values associated with the tourism and recreational use of a particular protected area. It represents a new way of thinking and decision-making grounded in the efforts of learning, accommodating and consensus building that are more appropriate for addressing wicked or complex problems. In this regard, the approach is more than normal collaboration and closer to the ideals of transactive planning (Friedmann, 1973). Both the public and agency participants take ownership of the resultant plan, and its recommendations are transparent to the broader community.

A second strength is the acceptance that science and data cannot provide all the answers and that informed judgement (Manning, 2002) based on experience and values, as well as science, needs to be applied to capacity assessments, infrastructure requirements and other management decisions. Through open discussions, working group members ultimately act in the interests of the wider community rather than according to vested or personal interests.

Finally, the SVC process diverges from dominantly technical solutions and represents a refreshing and critical approach to tourism management that aims for understanding, belonging, emancipation, and accommodation in and with the world (Tribe, 2008:254). SVC has been informed by earlier visitor management frameworks and represents an evolving critique of the inadequacies of government procedures to address complex problems in contentious situations (McCool, 2005:4). In this regard, SVC is a new generation, transactive model for visitor management decision-making in protected areas that is conceptually sound, ethical and pragmatic. The methodology has been successfully trialled in the Fraser Island World Heritage Area and appears to have scope for application at other popular protected areas utilised by tourists. It has also been reviewed and received positive endorsement from international visitor management experts who recognised the strong points of the process to be its explicitness, transparency, public engagement and incorporation of visitor management science.

References

Friedmann, J. (1973). *Retracking America*. Garden City, NY: Anchor Press/Doubleday.

Manning, R. E., and Lawson, S. (2002). Carrying capacity as informed judgement: The values of science and the science of values. *Environmental Management*, 30, 157-168.

McCool, S. F. (2005). Outdoor recreation in the new century: Frameworks for working through the challenges. Unpublished manuscript presented at the *2005 Society of American Foresters National Convention* (16p.). Fort Worth, Texas.

McCool, S. F., and Lime, D. W. (2001). Tourism carrying capacity: Tempting fantasy or useful reality? *Journal of Sustainable Tourism*, 9(5), 372-388.

McCool, S. F., and Stankey, G. H. (2003). Advancing the dialogue of visitor management: Expanding beyond the culture of technical control. Unpublished manuscript presented at *Protecting our diverse heritage*, The 2003 George Wright Society Biennial Conference (8p.). San Diego, California.

McCool, S. F., Clark, R. N., and Stankey, G. H. (2007). *An assessment of frameworks useful for public land recreation planning*. General Technical Report PNW-GTR-705 (122p.). Pacific Northwest Research Station: USDA Forest Service.

Nilsen, P., and Tayler, G. (1997). A Comparative Analysis of Protected Area Planning and Management Frameworks. In *Proceedings - Limits of Acceptable Change and Related Planning Processes: Progress and Future Directions.* General Technical Report INT-GTR-371: 49-57. Ogden, UT: USDA Forest Service.

Rittell, H. W. J., and Weber, M. M. (1973). Dilemmas in a general theory of planning. *Policy Sciences*, 4, 155-169.

Shelby, B., and Heberlein, T. A. (1986). *Carrying capacity in recreation settings*. Corvallis: Oregon State University Press.

Tribe, J. (2008). Tourism: A critical business. *Journal of Travel research*, 46(3), 245-255.

Wagar, J. A. (1964). The carrying capacity of wildlands for recreation. *Forest Science Monographs*, 7, 1-23.