

Current and future issues in natural area tourism with a special focus on visitor monitoring

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Key issues for natural area tourism

Tourism is becoming one of the largest and fastest growing economic sectors in the world. The number of tourists has grown from 25 million in 1950 to 940 million in 2010 (UNWTO, 2011). Nature tourism has increased from about 2% of all tourism in the late 1980s to about 20% today (Buckley, 2009). With this increase is the view that nature tourism is morphing with sustainable mass tourism. Weaver (2012) attributes this change to natural resource scarcity, the development of green technology, and awareness of climate change. The associated dramatic increase in visitor numbers to natural areas makes visitor monitoring of paramount importance.

Another key issue is the recent movement of the debate about naturalness as a goal for natural areas, to a re-focus on the overarching management goals. Hobbs et al. (2010, 483) suggest taking 'a pluralistic approach that incorporates a suite of guiding principles, including historical fidelity, autonomy of nature, ecological integrity, and resilience, as well as managing with humility' (Hobbs et al., 2010, 483). Such an approach emphasises the importance of objective-based management, where monitoring is clearly directed towards determining if objectives are being met.

Visitor monitoring is also integral to improving management effectiveness, an increasing priority for natural area managers. The Programme of Work on Protected Areas adopted by the Convention of Biological Diversity in 2004 commits signatories to monitoring, evaluating and reporting on protected area management effectiveness and using the information to improve management. Over the last decade the IUCN WCPA's PAME Protected Area Management Evaluation assessment methodology has been widely applied, with visitor management being one of 34 headline indicators (Leverington et al., 2010).

Given these compelling reasons for monitoring visitor use of natural areas it is surprisingly still a neglected activity. Buckley et al. (2008) report a weak match between reported management priorities and monitoring programs, and little knowledge of what visitors do. This lack of knowledge suggests paucities in both visitor research and monitoring. These authors emphasize that monitoring is essential in today's society where evidence is increasingly required regarding the effective, efficient use of limited public financial resources.

Recent advances in monitoring and measurement

Given this policy backdrop, recent advances in monitoring are very much directed towards cost-effective, accurate ways of collecting data on visitor movements, activities, impacts and aspirations.

Remote technologies are a burgeoning field. Develop-

ments in walk trail monitoring are illustrative. Walk trails can be accurately located using global positioning systems (GPS) (Newsome & Davies, 2009), with locational and management data entered in a geographic information system (GIS), along with other spatial data, and then the resultant data sets manipulated to describe trail status and explore management options (Marion et al., 2011). Airborne radar is being increasingly used to locate walk trails and describe their condition (e.g. Kincey & Challis, 2011). Leung et al. (2011) have developed indices, using GIS, to describe the ecological fragmentation created by the proliferation of walk trails. Spatial analyses continue to be acknowledged as essential for planning and management of natural areas (Yuan & Fredman, 2008).

Developments in campsite monitoring relate to efforts to be more cost-effective in monitoring, through careful selection of sampling strategies and moving away from idealized census-based approaches (which are impractical given the limited resources available and the large areas over which camping can occur). Newman et al. (2006) used a GIS to help identify areas where campsites had a high probability of occurring and used this information to develop a sampling strategy for Yosemite National Park. Digital photography and subsequent software analysis are being pursued as a more accurate and cost-effective means of recording and analyzing campsite impacts (Monz & D'Luhosch, 2010).

Remote technologies are also permeating visitor monitoring. Visitors to walk trails can be counted using infrared, photoelectric and seismic pads as well video and still photography. Mass-produced locational (e.g. GPS) and communication devices (e.g. mobile phones) have enabled collection of movement data over time for visitors (Warnken & Blumenstein, 2008). Such data may be location restricted or location independent (i.e. GPS based). For the former, sensing may be passive (e.g. track counters), from a reflected signal (e.g. laser) or from a specific signal (e.g. radio frequency identification tag, mobile phone tracking).

Visitor monitoring continues to focus on crowding as measure of social conditions and visitor satisfaction (Manning, 2011). Recent advances include using animation of visitor use of walk trails to investigate visitors' perceptions regarding resource, social and managerial conditions, including the speed of visitors (e.g., Reichhart & Arnberger, 2010). To gain greater insights to the effects of crowding, researchers have investigated displacement and the contributing factors. Digitally depicted trail scenarios with different combinations of user types, group sizes, compliance behaviour and direction of movement were used by Arnberger and Haider (2007) to determine influential social factors.

The richness of methods associated with visitor perceptions is being enhanced by concepts and measures from

marketing, in particular service quality. Service quality monitoring generally determines visitors' satisfaction with a range of services and facilities, such as the friendliness of staff, the cleanliness of facilities, and the quality of information. Given the focus on facilities, such an approach is most relevant to developed sites and parks, not wilderness areas. Such monitoring also usually asks visitors about overall satisfaction with their visit. Park agencies worldwide use the latter measure in corporate reporting as a measure of the efficacy of their visitor management.

Importance-performance analyses (IPA) provide a simple means of reporting on visitor satisfaction with individual facilities and services. They are increasingly appearing in natural area tourism research. Such analyses are used by the US Forest Service to indicate which attributes, on which national forest, require management attention (i.e. those attributes where importance exceeds performance) (USDA FS, 2012). Recent analyses in Australia have used IPA to benchmark the performance of attributes in national parks

and reserves across Western Australia. Such benchmarking shows where there is exemplary performance of attributes and where further efforts are required. In this Australian study, staff friendliness was exemplary, whereas the quality of information required further management attention (see Taplin & Moore, this proceedings, for further details).

How to accurately count visitor numbers to a park system remains a vexed question (Griffin et al., 2010). Several state park agencies in Australia have resolved this by conducting phone-based community surveys. Respondents are asked about parks they have visited in the last four weeks and the results are used to estimate total visitation. Griffin et al. (2010), in their review of visitor data collection and use, recommend this approach as the most accurate, cost-effective way to obtain annual visitation numbers.

- Arnberger, A., Haider, W. (2007) Would you displace? It depends. A multivariate visual approach to intended displacement from an urban forest trail. *Journal of Leisure Research* 39, 668–685.
- Buckley, R., Robinson, Carmody, J., King, N. (2008) Monitoring for management of conservation and recreation in Australian protected areas. *Biodiversity Conservation* 17, 3589–3606.
- Buckley, R. (2009) *Ecotourism: Principles and Practices*. CABI, Wallingford, UK.
- Griffin, T., Moore, S. and Crilley, G., Darcy, S., Schweinsberg, S. (2010) Protected Area Management: Collection and Use of Visitor Data. Volume 1: Summary and Recommendations. Cooperative Research Centre for Sustainable Tourism, The Gold Coast, Queensland.
- Hobbs, R., Cole, D.N., Yung, L., Zavaleta, E.S., Aplet, G.H., Chapin III, F.S., Landres, P.B., Parsons, D.J., Stephenson, N.L., White, P.S., Graber, D.M., Higgs, E.S., Millar, C.I., Randall, J.M., Tonnessen, K.A., Woodley, S. (2010) Guiding concepts for park and wilderness stewardship in an era of global environmental change. *Frontiers in Ecology and the Environment* 8, 483–490
- Kincey, M., Challis, K. (2011) Monitoring fragile upland landscapes: The application of airborne lidar. *Journal for Nature Conservation* 18, 126–134.
- Leung, Y-F, Newburger, T., Jones, M., Kuhn, B., Woiderski, B. (2011) Developing a monitoring protocol for visitor-created informal trails in Yosemite National Park, USA. *Environmental Management* 47, 93–106.
- Leverington, F., Lemos Costa, K., Pavese, H., Lisle, A., Hockings, M. (2010) A global analysis of protected area management effectiveness. *Environmental Management* 46, 685–698.
- Manning, R.E. (2011) *Studies in Outdoor Recreation: Search and Research for Satisfaction*. Oregon State University Press, Corvallis.
- Marion, J.L., Wimpey, J.F., Park, L.O. (2011) The science of trail surveys: Recreation ecology provides new tools for managing wilderness trails. *Park Science* 28, 60–65.
- Monz, C.A. and D'Luhosch, P. (2010) Monitoring campsite conditions with digital image analysis. *International Journal of Wilderness* 16, 26–31.
- Newman, P., Monz, C., Leung, Y-F, Theobald, D.M. (2006) Monitoring campsite proliferation and conditions: Recent methodological considerations. *The George Wright Forum* 23, 28–35.
- Newsome, D., Moore, S.A., Dowling, R.N. (forthcoming) *Natural Area Tourism: Ecology, Impacts and Management*. Channelview Publications, Clevedon, England.
- Newsome, D., Davies, C. (2009) A case study in estimating the area of informal trail development and associated impacts caused by mountain bike activity in John Forrest National Park, Western Australia. *Journal of Ecotourism* 8, 237–253.
- Reichhart, T., Arnberger, A. (2010) Exploring the influence of speed, social, managerial and physical factors on shared trail preferences using a 3D computer animated choice experiment. *Landscape and Urban Planning* 96, 1–11.
- UNWTO (2011) *UNWTO Tourism Highlights: 2011 Edition*. United Nations World Tourism Organization, Madrid.
- USDA FS (United States Department of Agriculture Forest Service) (2012) Recreation, heritage and wilderness programs. National visitor use monitoring program. URL: <http://www.fs.fed.us/recreation/programs/nvum/>. Accessed 9 April 2012.
- Warnken, J., Blumenstein, M. (2008) *Monitoring Visitor Use in Australian Terrestrial and Marine Protected Areas: Practical Applications of Methodologies*. Sustainable Tourism Cooperative Research Centre, The Gold Coast, Queensland.
- Weaver, D.B. (2012) Organic, incremental and induced paths to sustainable mass tourism convergence. *Tourism Management* 33, 1042–1043.
- Yuan, M., Fredman, P. (2008) A call for a broad spatial understanding of outdoor recreation use. In A. Raschi and S. Trampeti. (eds) *Management for Protection and Sustainable Development. Proceedings of the Fourth International Conference on Monitoring and Management of Visitor Flows in Recreational and Protected Areas* (pp. 169–173). Montecatini Terme, Italy. October 14–19, 2008.