



Monitoring

Description

Monitoring of thresholds and impacts contributes to tourism management by providing information on changes in visitor activity in natural and cultural environments and their ecological, social, cultural and economic impacts. Monitoring requires baseline data to build from and show trends in those data areas. Care needs to be taken in the choice of broad environment phenomena (or observable conditions) to monitor. These phenomena are called indicators and are selected because they are observable, measurable, and can provide consistent information about change or impact that is occurring. The Ministry for the Environment (MFE) Environmental Indicators Programme defines indicators as: “environmental parameters which are monitored regularly to show trends or sudden changes in an environmental condition.”

Some useful characteristics of indicators for tourism include that they:

- are capable of being measured accurately and in a cost-effective way;
- reflect some relationship to the amount and type of use occurring;
- are capable of identifying real changes and, if possible, the causes of these changes;
- in the case of social indicators, are related to user concerns;
- are responsive to management action; and
- are understandable to the general public and decision-makers.

In addition to monitoring numbers, types and behaviours of visitors, there is a wide range of possible monitoring parameters. For instance, for ecological monitoring, common indicators of impact include soil compaction on tracks, damage to plants, erosion, changes in breeding success or behaviour that suggest damage to wildlife, and deteriorating water quality and air pollution. For social monitoring, indicators may include number of people heard or seen, visitor satisfaction with their experience or host dissatisfaction with their experience. For economic monitoring, indicators may include employment levels and characteristics of visitor expenditure. Cultural monitoring indicators may include damage to cultural sites or host community perceptions of visitor impacts.

The scope of monitoring can range from one-off surveying to surveillance to systematic monitoring and indicators can be site-specific, or issue or activity specific. In practice, most monitoring in New Zealand is site-specific, often with a focus on key areas or hot spots. This is the approach recommended by the World Trade Organisation (WTO) that initiated a process of tourism indicator development in the 1990s to help tourism managers identify the information that would help them reduce risks to their enterprise and the communities and environments they used. It developed a set of core indicators and a further series of site-specific indicators for tourism destinations in different environmental zones. These are intended to provide essential information that responds to the key risks that tourism managers must manage. Its approach was to:

- Identify a small core set of indicators that is likely to be useful in almost any situation;
- To supplement these with additional indicators known to be useful in particular ecosystems of types of destinations; and
- To additionally require a scanning process for risks not covered by the above indicator sets, which produces further indicators critical to the management of particular sites and destinations.

This approach is compatible with that used by the Department of Conservation (DOC) to manage impacts and assets at key sites. DOC’s monitoring focuses on the biophysical environment as well as visitor satisfaction but these two monitoring strands do not appear to be linked.

How and when the tool is used

Monitoring visitor impacts in New Zealand is still in its infancy. Jonet Ward’s and Ruth Beanland’s 1990s review of the use of tourism indicators in New Zealand showed that there was heavy reliance on information about visitor numbers, and little evidence of integration of different types of indicators. More developmental work has been done since though. The Tourism Recreation Research and Education Centre (TRREC) has developed an indicator toolbox for biophysical environmental effects as part of its development of guidelines for improved management of the effects of tourism on natural assets (<http://www.tourism.govt.nz/tourism-toolkit/tkt-monitoring-performance/index.html>). And DOC and Environment Southland are working closely with stakeholders to develop a monitoring framework for the management of Milford Sound/Piopiotahi.



The United States Environmental Protection Agency has monitored environmental effects of 10 leisure activities: skiing, fishing, hunting, boating, golfing, casino gambling, amusement/theme parks, historic places and museums, conventions and conferences, and waterside recreation. Environmental impacts of those activities were measured using nine environmental indicators: water use, wastewater Biochemical Oxygen Demand (BOD), wastewater suspended solids, energy use, air pollution (three gases), greenhouse gas emissions, municipal solid waste generation. Economic impacts were also measured. These activities and indicators were chosen for pragmatic reasons (economically important and data was available for them) however the study yielded new and very useful information. It integrated physical and economic effects well, but not social effects (though this would be possible).

The Department of Conservation (DOC) has a standardised visitor satisfaction survey, mainly administered at visitor centres, to monitor visitors' satisfaction with their experiences on an ongoing basis. The survey collects data from visitors across the range of visitor facilities and services provided by DOC.

Application

Often monitoring is based on the assumption that visitor satisfaction will drop off before biophysical limits ([biophysical carrying capacity](#) 🌱) are reached. Thus, visitor satisfaction surveys are often used as a substitute for integrated monitoring. But this ignores the phenomenon of visitor replacement: dissatisfied visitors stay away and are replaced by visitors with a higher tolerance to crowding. Therefore, satisfaction levels remain the same even when impacts might be increasing. So, indicators of ecological carrying capacity need to be used in conjunction with indicators of social carrying capacity.

Cumulative effects are not generally addressed in monitoring frameworks. For instance, both [Resource Management Act framework](#) 🌱 consents and DOC [concessions](#) 🌱 system are set up for one-off applications and appraisal. It is also important to ensure that the choice of indicators is related to management objectives. Choice of indicators also relates strongly to views of what is sustainable tourism and its components.

There has been little work on the linkages between biophysical and social impacts/monitoring.

- Spatial: Management objectives differ for different types of natural areas (e.g. according to the Recreational Opportunity Spectrum ([ROS](#)) 🌱 - that will affect type of activities taking place, and thus type and extent of environmental effects.
- Social: (host community; social; relationship with indigenous people; process issues, heritage issues): The choice of indicators is subjective, and often in response to stakeholders' perceptions and requirements
- Tourism sector: (characteristics, demands, trends, flows, marketing, attractions): Indicators need to be linked to type of visitor and activity, e.g. for ROS approach each category needs specific indicators. Four useful sets of information for determining types of indicators are:
 - Type of ecosystem
 - Category of visitor attraction (ie ROS category)
 - Potential environmental impacts
 - Required management information requirementsHowever the relationship of visitor numbers to impacts is one of the most difficult issues to research and understand
- Institutional/legal: A New Zealand local government survey gave positive ratings to the usefulness of the WTO core indicators. Regional Councils valued indicators related to ecological and built environment processes and development control. Territorial Land Authorities (TLA) and Regional Tourism Operators valued economic indicators and those measuring local satisfaction. Since TLAs have explicit RMA responsibilities for integrated sustainable management, they may also find value in ecological and social indicators.

Our evaluation

Monitoring can be a key aspect of a more holistic approach to planning and management of natural areas for tourism as it can show whether a range of management objectives are being achieved or not. However, it is more commonly used, to monitor very narrowly focused tourism management objectives (for instance, to avoid ecological impacts). Monitoring frameworks linked to integrated management objectives are very difficult to develop and implement.