

Parks & Culture: Visitor Impacts

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Sustainable Tourism Online is an EarthCheck initiative.

Sustainable Tourism Online (STO) is a comprehensive online information resource delivering substantial research, data and tools within three main sustainability themes – Destinations & Communities, Business Operations, and Parks & Culture. STO also offers relevant information and knowledge on broader sustainability tourism topics.

Developed by Australia's Sustainable Tourism Cooperative Research Centre (STCRC) in 2010 to support sustainable policy, planning and practice, STO provides access to tourism research and tools developed by STCRC as well as other trusted sources of information.

The growth in tourist numbers in many parts of Australia and worldwide is putting significant pressure on national parks. Care is required in planning for tourism and recreation to minimise environmental impacts, provide desired experiences for visitors, achieve sustainable use and secure **economic benefits for protected areas** and local people (see [Natural Area Tourism](#) and [Managing Protected Areas](#)).

The environmental impacts of tourism and recreation fall into three main types: those related to transport, accommodation and shelter, and recreational activities. [‘Planning’](#), active management, ‘monitoring’ and rapid response to unsustainable actions are the four basic elements of effective visitor management. A number of **tourism and recreation planning models** address these elements (see [‘Recreation and Tourism as a Key Value of Parks’](#)).

1. BIOPHYSICAL IMPACTS OF VISITORS

Biophysical threats and impacts to protected areas from visitation include those to entire ecosystems (e.g. coastal ecosystems), soil, water, geology, vegetation, air and wildlife.

Understanding visitors and visitor behaviours is a fundamental component of effective impact management. Many park visitors are first time visitors and so **education and information** and **strategic communication** are important tools for eliciting appropriate behaviours.

In recent years visitor impact research in Australia has moved from studies of individual sites and their management challenges to a broader view and systematic management requirements. New science and tools, such as the **Tourism Pressure Index**, can give early warning that management actions are needed and offer more systematic and forward thinking views of park visitation and associated impacts.

Australian research, particularly by the STCRC, has focussed on high impact activities such as [‘horse riding’](#), [‘mountain biking’](#), ‘off road vehicles’ and [‘rock climbing’](#). Other activities such as [‘hiking’](#), [‘camping’](#), skiing, rafting and kayaking, sailing and boating, fishing and swimming have also been analysed for their environmental impacts.

1.1 BIRD WATCHING

Recent STCRC research suggests that:

- While seemingly low impact, bird watching has been shown to negatively impact on wildlife populations;

- The mean number of species in undisturbed sites was significantly greater than in semi disturbed and disturbed sites in both rainforest and eucalypt areas;
- Compared to those living in completely undisturbed locations, birds living in areas of higher disturbance were characterised by:
 - Lower species richness;
 - Lower numbers of individuals; and
 - Greater disturbance distances.
- Some species appear unaffected by disturbance levels.
- Long-term studies of the impacts of bird watching on bird reproductive and foraging ecology is required.

1.2 CAMPING – WASTE DISPOSAL

Recent research in Australia on waste disposal at huts and campsites indicates that:

- Many people did not abide by minimal impact bushwalking (MIB) guidelines.
- The decay rates of toilet paper and faeces depended on the environment in which they were buried.
- The decay rate did not correspond with the rate of pathogen survival; after fast decay, pathogens were still present in the soil.
- There was little evidence of faecal contamination around campsites, however elevated nutrient levels were present.
- Sites that are perceived as health risks should be monitored, and social surveys undertaken.

Recent research in Australia on waste disposal in backcountry areas indicates that:

- The presence of human wastes and the products that help dispose of them, (e.g., tissues, toilet paper and tampons) are unpleasant for tourists and present possible health and environmental hazards;
- Different products decay at differing rates, with unbleached toilet paper decaying most rapidly;
- Decay rates depended on the climate and soil characteristics, with coastal eucalypt forest having the fastest rate of decay.
- Enforceable regulations for waste disposal are proposed as an alternative to the current non-enforceable guidelines.
- Disposal of faeces, toilet paper and tissues in treeless vegetation above 800m should be restricted.

1.3 CRUISE SHIPS

Recent research in Australia on the turbulence associated with cruise ships indicates that:

- Cruise ship turbulence can have negative impacts on benthic communities;
- A predicted model for calculating the turbulence pocket created by specific ships has been developed, and
- The wake generated by vessels at low speeds (less than seven knots) was small and unlikely to be problematic.

Other research in Australia on ship-sourced pollutants indicates that:

- The release of anti-fouling agents was and still is of major concern to local communities and agencies responsible for ecosystem health.
- The general presence of boats at anchor sites affected copper concentrations in waterways to some degree, but other factors (e.g., season) had a stronger influence.
- Large numbers of small recreational vessels contribute significantly to copper levels in the water column and in sediments even in well-flushed coastal estuaries and lagoon systems.
- As copper is unlikely to be replaced as a major constituent of anti-fouling paints, ongoing monitoring is required to determine the impacts.

1.4 HIKING AND WALKING TRACKS

Many of the impacts on vegetation, soils and trails are similar for hiking, 'mountain biking' and 'horse riding' but there are also differences in severity.

Hiking is an immensely popular activity in protected areas. Walking tracks are a fundamental part of park infrastructure providing recreation opportunities and concentrating use.

Recent research in Australia undertaken by the STCRC indicates that:

- Degradation of tracks is widespread and this is of major concern to both managers and users.
- A first step in managing tracks is initial assessment of their condition.
- Three common methods for determining the condition of walking tracks:
 - Condition class surveys.
 - Track problem surveys.
 - Point sampling techniques.

- Track management is a challenging task for park managers. The sharing of track management and walking track research and knowledge is an important tool in improving management practices (see [Mountain Walking Track Management](#)).

1.5 HORSE RIDING

Australia has a long, controversial history of **recreational horse riding** in protected areas.

- Impacts are primarily biophysical however social impacts such as user conflicts are also evident.
- Horses can cause considerable damage including soil erosion and compaction, vegetation trampling and loss of vegetative cover, alteration to plant species composition, tree damage and the introduction of foreign material.

Recommendations for bridle trails development include:

- purpose-build trails to suit the characteristics of the location (e.g. wider trails designed for horse riders, use of trail hardening material);
- manage trail impacts or degradation problems (e.g. management of erosion);
- use monitoring programs and key performance indicators (such as trail surface soils, slope degrees, incision depths, and management features) to identify management issues and sections in need of maintenance;
- use a targeted maintenance program to repair any problem sections and to prevent degradation; and
- involve the local horse riding community in designing, maintaining and managing the trail.

1.6 IMPACT CREEP

Impact creep can be defined as a sequence of changes that lead to a site being more developed over time. These changes confer both negative and positive impacts. Each impact creep situation may be deemed unique according to different tourism situations and attractions. Case study research in Australia undertaken by the STCRC suggests that while visitors prefer natural settings, management intervention through the development or extension of visitor facilities may be positively regarded because of improved convenience and increased attractiveness, and a reduction in negative environmental impacts.

1.7 MOUNTAIN BIKING

Recent research in Australia undertaken by the STCRC indicates that:

- Mountain biking is a rapidly growing activity in Australia.
- Four different categories of mountain biking exist
 - Cross-country.
 - Downhill.
 - Free.
 - Dirt jumping.
- Social conflict between hikers and mountain bikers is a potentially serious issue.
- Three biophysical impacts are critical in understanding effects including
 - Trail erosion.
 - Creation of informal trails.
 - Creation of informal trail features.
- A combined GPS and GIS assessment is the best way to quantify impacts.

1.8 Rock Climbing

Recent research in Australia undertaken by the STCRC indicates that the main impacts are on rocks, plants and animals.

Recommended management strategies include:

- Conduct baseline studies at sites to help monitor impacts;
- Identify suitable sites for climbing and their associated carrying capacity;
- Designate and clearly advertise climbing sites in protected areas (if permitted);
- Signpost and well mark tracks to cliffs;
- Monitor cliff, vegetation and soil impacts;
- Monitor nest bird activity, rock wallaby numbers, and
- Use zoning systems to regulate particular types of climbing to limit environmental and social impacts.

2. OTHER IMPACTS

The tourism industry is particularly susceptible to short and long term climatic events. Climate change and natural events such as floods and fire have the potential to have severe economic and social impacts on tourism destinations.

2.1 CLIMATE CHANGE

Climate change is a long-term significant change in ‘average weather’ that a given region experiences. It has the potential to have severe economic and non-economic impacts on Australian tourism destinations. Six major Australian tourism destinations have been reviewed to determine their degree of vulnerability, with four of these including protected areas; tropical North Queensland, Kakadu, the Victorian Alps, the Blue Mountains and the Margaret River region of south west Western Australia.

Potential impacts include increased frequency and intensity of ENEs, and environmental, economic, social and infrastructure impacts. Environmental impacts include ecosystem, and fire impacts, changes to hydrological systems, and alterations to the distribution and abundance of indigenous and invasive species (see [Protected Areas: Buffering Nature Against Climate Change](#)).

3. SOCIAL AND ECONOMIC IMPACTS OF PROTECTED AREAS/VISITORS

The social and economic effects of protected areas on local communities can be perceived as both positive and negative. For this reason and because impacts are often relative, such impacts are best described as ‘change’.

In terms of social concerns, six types of changes typify the effects of protected areas on communities: (from Fortin & Gagnon, 1999, Environmental Conservation 26, pp. 200-211)

- Resource management – such as changes to zoning and control limits, access restrictions
- Local economy – park expenditure by government, tourism infrastructure, job creation
- Tourism – changes to economic and political conditions favourable or unfavourable to tourism
- Living Conditions – changes in community orientation to tourism, changes in living standards and cost of living;
- Social mobilisation – mobilisation of local players and changes in the involvement of the community in park management, and
- Social organisation and dynamics – arrival of new families and influx of casual workers

Recent research undertaken by the STCRC on the economic ‘[value of parks](#)’ has found that:

- national parks and other protected areas can:
 - make significant contributions to local businesses and economies through tourism revenue and park management expenditure;
 - make significant contributions to local State government revenue through park fees;
 - contribute to social outcomes such as local employment and training;
- effective [‘community involvement in planning’](#) can improve the positive impacts and mitigate negative impacts by helping inform management practices and directions for tourism development;
- many **factors influence the economic contribution** of a particular park to an economy including the inherent values of the area and its accessibility, the market profile of visitors (age, place of origin, occupation) and visit characteristics (length of stay, accommodation options, activities undertaken).