

Managing tourism in protected areas: Conducting desktop assessments of tourism activity and infrastructure impacts using horse riding as an example.

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Protected areas are the major mechanism for the conservation of biodiversity internationally and in Australia. Australia has a good track record in creating protected areas, including programs to promote an ecologically representative and comprehensive system of parks. Many parks are also popular with visitors providing people with the chance to experience nature and appreciate these stunning landscapes.

However, visitors to parks, their activities, and the facilities they use, have environmental impacts. This includes impacts on soils, vegetation, aquatic systems and animals. Some are direct and obvious such as removing vegetation when building a track, while others are indirect, such as spreading weed seed. Managing visitors involves minimising impacts while still providing opportunities for nature-based tourism and recreation. Visiting parks can also enhance conservation directly via fees and other income for parks, and indirectly through increasing support for the establishment and management of parks and other natural areas. There are also a range of important social benefits from visiting parks including increased physical and mental health, enhanced social bonding, and a great sense of place.

Recreation ecology is a specific area of research focused on evaluating the range and severity of impacts from different types of recreational and tourism activities and ways to minimise impacts. This includes documenting impacts from small scale nature-based tourism activities such as hiking on birds, to evaluating mass tourism developments such as ski resorts.

This research can be used by park managers, tourism operators, conservation organisations and others to conduct and evaluate desktop assessments of environmental impacts when new activities and facilities are proposed for parks. It is critical that assessments are done, done well and evaluated prior to implementation. Adequate monitoring of impacts once the activity or infrastructure is up and running is rare in Australia due to limited resources. Also, once operational, it is often politically difficult to then remove the activity or infrastructure even if it is shown to have impacts. It's also expensive to rehabilitate a site, once damaged.

Before any ecological or social analysis is undertaken, the following question needs to be addressed: should the park even be considered as a location for this activity/infrastructure? Tourism and recreation in parks should be nature-based, and more particularly, ecotourism focused: that is the attraction should be the natural environment, and use of the park should contribute to conservation. It's not about replicating tourism and recreation opportunities offered elsewhere. This particularly applies to high impact activities and infrastructure where the setting is of secondary importance. Often there are far more suitable locations outside the park.

Pre-assessments need to consider the conservation value of the site, the nature of the disturbance (e.g. horse riding, hiking, skiing), the resistance of the site to disturbance, its capacity to recover from disturbance, the susceptibility the site to erosion, the severity of direct and indirect impacts, likely amount of use, timing of use in relation to critical ecological events (flowering, nesting, etc.), and in relation to social factors such as crowding, conflict, temporal and spatial displacement of visitors and likely compliance with minimum impact behaviour, and the total area likely to be affected. They also need to evaluate the likely success of potential management actions to minimise these impacts.

An example of how recreation ecology research could be used is in the assessment of a proposal to allow horse riding in a park. The first consideration is the conservation value of the site. Parks have high conservation value, often contain a diversity of ecosystems, have minimal disturbance from other human uses, provide important ecosystem services and enhance ecological connectivity in the face of increasing threats to biodiversity including from climate change. They are also rare landscapes even in Australia.

The second factor, is the resistance of the site to disturbance from horse riding. Australian soils and vegetation evolved in the absence of hard hoofed animals. As a result they have much lower resistance to trampling by horses and other hard hoofed animals than those in North America, Europe and Africa. Within Australia there are also some ecosystems, such as mountains that have even lower low resistance to these types of use. They are also extremely slow to recover from disturbance, often taking decades or longer to recover. Some sites in mountains are still eroding due to cattle grazing 70 years later.

The next factor to consider is how susceptible the site is to erosion? Obviously steep slopes are more at risk than gentler slopes or flat areas. Soil type also has an effect with deep humus soils more likely to erode than sites with harder more compacted soils.

The severity of direct impacts on vegetation and soils is well known for many common recreational activities. For example, compaction of vegetation and soils from horse's hooves is 10 times greater than from hiking boots and 24 times as great as from shoes (e.g. the relative pressure per area of contact).

The severity of indirect impacts is also important. For example, horses have additional impacts to hiking. These include weed seed in dung. Seed from more than 216 species have been germinated from horse dung, including major environmental weeds. Weeds are a major threat to biodiversity globally and in Australia. It's much cheaper and easier to stop weeds getting into parks than remove them once established. Horses also create nitrogen and phosphorous hotspots when they urinate and in their dung. Australian soils are naturally low in these nutrients and many natives are adapted to low levels of phosphorous in the soil. Therefore the combined effects of trampling, added nutrients and seeds in dung can favour weeds over natives.

The amount of use is important. Horse riding appears to be declining in popularity both as a private recreational activity and as commercial tourism activity. This is in part due to large time and money commitment involved in owning and then transporting horses to access parks. For commercial operators insurance costs are also an issue for higher risk activities such as horse riding compared to lower risk activities.

Timing of use is important as it affects the severity of impacts and visitor behaviour. Riding on wet soils will obviously have greater impact than on dry soils. Similarly grazing and trampling by horses and other pack animals when plants are flowering and seeding can have greater impacts than at other times. Riding in large groups can cause greater impacts when it results in riders spreading out and going off-track. Non-compliance behaviour is a major issue as it directly contributes to greater impacts. Education, motivation, behavioural modelling and regulation can all influence how well visitors adhere to minimum impact behaviours in parks.

The total area likely to be affected is also important. People on horses can travel further than hikers over a day increasing the area affected. Therefore riders could introduce weeds over a greater area than other users who do not travel so far through the park. Zoning within a park can minimise the area used and hence where weed seed could be spread by any given activity.

Management strategies to minimise impacts of horse riding include regulating where, when and how many people ride in the park. They also involve influencing how visitors use the park including via minimum impact codes. For horse riding, these can include strategies to reduce the potential for spreading weed by strategies such as changing what horses are fed and clearing equipment before entering the park. However, even when these types strategies are adhered to, the impacts from horse riding are likely to be much greater per user than for some other activities such as hiking and mountain biking. Therefore a desk top analysis of potential impacts is likely to demonstrate that horse riding is inappropriate in areas of high conservation value such as nearly all parks.

Further reading:

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