

WILDLIFE TOURISM: A GEOGRAPHICAL PERSPECTIVE¹

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ABSTRACT

Wildlife tourism, which is either wildlife-dependent or wildlife-independent, is increasingly becoming a popular recreational pursuit. Wildlife tourism can also be categorized as either consumptive or non-consumptive depending on the recreational motives of visitors and the level of visitor-wildlife interactions. The impacts of wildlife tourism and measures to minimize visitor's impact on wild species and their habitats are discussed from a geographical perspective. Managing tourism impacts involves an understanding of the spatial requirements of wild species and the limits that tourists have to impose on themselves in their pursuit for an enjoyable wildlife encounter. Australian policies and international commitments pertinent to wildlife tourism are presented. Major issues and challenges relative to ecologically sustainable practice in wildlife tourism and wildlife management are also pointed out. This paper complements the power point presentation.

KEY WORDS: wildlife, biodiversity, protected areas, impacts, zoning, regulations

INTRODUCTION

Wildlife tourism is increasingly becoming a popular recreational pursuit, which raises major concerns because of its impact on wild species and their habitats. Less intrusive form of wildlife tourism involves wildlife -independent recreation wherein sightings or hearing wild species in natural setting is opportunistic or incidental rather than intentional. On the other hand, a wildlife -dependent recreation is generally more disruptive although outdoor activities are usually planned since visitor's satisfaction relies on the presence of wild species. Wildlife-dependent activities range from leisure tracking of wildlife, to photographing and videotaping, and to sport hunting and fishing.

Wildlife tourism is a controversial issue. Many conservationists and natural resource managers believe that wildlife tourism can jeopardize the integrity of ecosystems, in general, and wildlife population dynamics and behaviour, in particular. However, others contend that, if properly managed, wildlife tourism can be a tool for biodiversity conservation. Furthermore, the tourism industry as well as some sectors of the government sees the economic and educational benefits of wildlife tourism

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(Freese, 1996, 1998; Orams, 1996; Prescott-Allen & Prescott-Allen, 1996; Shackley, 1996).

While understanding wildlife tourism may be broadened to include encounter with semi-captive or captive wild species in zoological gardens, aquaria, and 'stock farms', this paper will focus only on tourist encounter (both intentional and incidental) with free-roaming vertebrates. This paper discusses the basic elements of wildlife tourism from a geographical perspective, including the impacts of and benefits from wildlife tourism and the major issues and challenges relative to sustainable tourism. The paper complements the power-point presentation.

WHAT IS WILDLIFE

Historically, wildlife refers only to some game species (almost exclusively birds, mammals, and fish) that people hunt. Today the term 'wildlife' includes all living forms even those that are not used for sport (non-game species). Nevertheless, most literature confines its reference to wildlife to the Animal Kingdom, more specifically those species under Phylum Chordata consisting of vertebrates or animals with backbones (Box 1).

The wildlife species is only a small component of biological diversity (biodiversity), which refers to the variety of all living organisms at the genetic, species and ecosystem levels. Wildlife, in contrast to its domesticated counterpart, has genetic and behavioural characteristics that developed after generations of adaptive evolution. Many of these biological and physiological features have disappeared with the homogenisation of some animals through selective breeding and domestication for utilitarian reasons. The decline in the genetic diversity of species is a major issue in biodiversity conservation throughout the world especially with the advent of biogenetic modifications, habitat loss and fragmentation, and over-exploitation.

Box 1. Classification of the Eastern Grey Kangaroo in the Animal Kingdom

(broadest grouping of species that share basic characteristics in cell structure)

Kingdom: Animalia

Phylum: Chordata (animals with backbones)

Class: Mammalia (animals that nurse young)

Subclass: Theria (marsupials and placental mammals)

Order: Marsupiala (mammals with a ventral pouch)

Family: Macropodidae (hindlegs enlarged)

Genus: *Macropus*

Species: *giganteus*

Scientific Name: *Macropus giganteus*; not considered endangered but listed as a protected species (NSW National Parks and Wildlife Act 1974)

Source: Gunderson, 1976; Cronin, 2000

WHAT IS WILDLIFE TOURISM

The Cooperative Research Centre (CRC) for Sustainable Tourism (2001) describes wildlife tourism as “tourism that involves encounters with non-domesticated animals either in their natural environment or in captivity. It includes a wide range of activities, such as bird-watching, whale-watching, general wildlife viewing, visiting zoos and aquaria, snorkelling to view underwater life, hunting and recreational fishing”.

In the recent past, before the occurrence of mass tourism, visitors were content with viewing displayed animals in zoological gardens. Nowadays, many tourists prefer to see and interact with wild species in their habitats and experience a much more intimate closeness to authentic habitats (Shackley, 1996).

Wildlife tourism developed rapidly after Second World War in the form of wildlife viewing in national parks and game refuge on government or state-owned land. Viewing wildlife is being promoted in many government-controlled protected areas in Australia and overseas. In New South Wales, tourism may be permitted, in principle, in all protected area categories except in Reserves (Ironically, these crown reserves may be explored for mining.) and to a lesser extent in Wilderness Areas (Box 2). In accordance with state legislation on protected areas, the specific type and extent of recreational uses depend on the approved management plan for each park. Recently, to supplement other forms of land-use, wildlife tourism has been introduced on private or communal land. Wildlife tourism outside government control is significant within the Australian context since 70% of Australian land is under the management of private landlords and indigenous people (Commonwealth Australia, 1996).

TYPES OF WILDLIFE TOURISM

Wildlife tourism can be categorized according to the motivation of tourists and the level of interactions of tourists with wildlife:

1. Non-consumptive wildlife tourism

Non-consumptive tourism involves recreational activities that neither catch nor kill wild animals. Wildlife watching, video-recording and photographing are the most common forms of non-consumptive recreational activities. Wildlife tourists who participate in wildlife-dependent activities expect to see or interact with wildlife in the destination area (purposive motivation of tourists). In contrast, tourists who take trips without specific intention to view or interact with wildlife consider their wildlife encounter as an added value to their recreational experience (incidental motivation of tourists).

Non-consumptive recreational activities, although relatively benign or passive compared with active recreational pursuits, could also cause significant impacts on wildlife and their habitats. Wildlife photographers, who prefer to get a closer view of wildlife, can produce more disturbances to wildlife than a wildlife observer who watches from a safe distance. A study of impacts of tourism at a wildlife refuge in Florida showed that wildlife photographers are the most disruptive among the

different recreationists-users in the area (Klein 1993). The overwhelming enthusiasm of some tourists to see wildlife breed and court (most sought-after viewing opportunities) resulted in significant disruption of wildlife's reproductive rituals. Likewise, the competitiveness of some bird watchers to complete their Bird Identification List could sometimes be so overwhelming that their impact on the target species becomes only a secondary concern.

Another interesting case is on whale watching, a popular marine-based wildlife tourism, which is considered relatively passive and non-intrusive. Obviously, watching migrating whales (grey and humpback) from the shore is harmless. However, large number of tourist boats approaching whales could significantly disturb these marine mammals especially during feeding and bonding. Similarly, impacts due to frequent and close human contacts with wild dolphins (well-known to be "too people friendly") can affect their normal behavioural pattern and survival instinct.

2. Consumptive wildlife tourism

Consumptive use of wildlife for recreation involves the capture or killing of target animals. It can be in the form of (a) recreational hunting of waterfowl and big game (may also be valued for meat), (b) recreational fishing (fish may be released after catching or valued for food), or (c) trophy hunting and fishing (the trophy itself may be valued as well as the thrill of hunting itself) (Freese, 1998). Recreational hunting in Australia includes game bird hunting (waterfowl and quail), kangaroo and wallaby hunting, feral animal hunting, game ranch hunting of exotic species, and safari hunting (Commonwealth Australia, 1998) (Box 3).

Historically, game hunting was restricted to the nobility. It was a luxury enjoyed by the affluent particularly those from feudalistic and industrialized societies. Nowadays, game hunting is common among the middle-class but still regarded as a status symbol in which animal trophies represent adventure skills and courage. The Safari Club International (Australian South Pacific Chapter) has registered more than 1 million shooters, 85% of whom are considered hunters (Commonwealth Australia, 1998).

While there is a demand for trophy hunting, the opportunity to hunt is diminished because of stricter government regulations and declining number of wildlife. The current hunting regulation is based on the theoretical concept of ecological carrying capacity (Milner-Gulland, & Mace, 1998). It involves regulated removal of excess population that would otherwise be lost to natural predation, diseases and overcrowding. And so, hunters are permitted to cull-out a pre-determined number of individuals. However, heavy hunting (depending on age and sex distribution) within certain habitats or animal range can influence changes in wildlife populations and behaviour.

Most of consumptive wildlife tourists are on active pursuit through game hunting and safari tours on backpacks, on horses and canoes. Recreational hunting generally occurs during dusk or dawn or during the day, usually traveling on foot. In contrast,

commercial hunting operations organize big game or safari hunting at night on vehicles and search animals using spotlights.

Box 2. Categories of Protected Areas in New South Wales

1. National park: A relatively large area for the conservation of landscapes and native flora and fauna; some sites within the park are set aside for public education and recreation; visitor facilities are usually provided; 103 national parks established in NSW
2. Nature Reserve: An area of special scientific interest; established mainly for biodiversity conservation; only few have visitor facilities; 217 nature reserves established in NSW
3. State Recreation Area: An area with important natural environments; set aside mainly for outdoor recreation; 16 SRAs established in NSW
4. Regional Park: An area with open space, providing recreational and cultural opportunities to urban residents; usually near a large population center and as such the natural environments have already been altered since European colonization
5. Reserve: A Crown reserve set aside for long-term environmental conservation; could be explored for mining
6. Marine Park: An area consisting of marine waters and lands set aside for biodiversity conservation; may be zoned for multiple-uses for varying levels of protection; tourist-related activities are permitted in accordance with the approved zoning plan. To date, three marine parks have been declared - Solitary Islands (near Coffs Harbour), Jervis Bay (near Nowra), and the coastal waters around Lord Howe Island.
7. Historic Site: A site of national cultural importance, including buildings, objects, monuments and landscapes; generally open to visitors; 13 historic sites established in NSW
8. Wilderness Area: A large and remote area set aside for biodiversity conservation; usually located within the boundaries of some national parks or reserves. Under the Wilderness Act 1987, wilderness should show little or no human alterations. Horses and vehicles are not permitted although bicycles are allowed on few approved management trails. About 4 or 5 per cent of land in NSW may be considered as wilderness, but only 2-3% of which has been legally declared. Kanangra-Boyd Wilderness within the Blue Mountains National Park can be viewed at lookouts located at Leura, Wentworth Falls and Katoomba.
9. Aboriginal Area: Area of significance to the Aboriginal people; sites containing relics of Aboriginal culture
10. Ramsar Wetland: An internationally recognised wetland site under the Ramsar Convention; Out of the 49 sites approved in Australia, six Ramsar sites are located in NSW with a total area of 22,304 hectares. These sites are: Macquarie Marshes Nature Reserve, Towra Point Nature Reserve, Kooragang Nature Reserve, Little Llangothlin Nature Reserve, Lake Pinaroo in Sturt National Park, and Blue Lake in Kosciuszko National Park.
11. World Heritage Site : A globally recognised area for its important examples of natural and cultural heritage in the world, under the World Heritage Convention . Examples are the Great Barrier Reef (1981), Fraser Island (1992) and the Greater Blue Mountains Area (2000).
12. World Biosphere Reserve: An internationally recognised area for its characteristic biological features and the way the area is used by people; designated by UNESCO-MAB.

Box 3. Wildlife hunting in Australia

Game bird hunting: Duck hunting is a popular bird game in many parts of Australia. NSW and Western Australia have banned duck hunting although destruction permits may be issued if the birds were found to destroy crops and pasture. In South Australia, duck-hunting permit is issued if applicant passes the Waterbird Identification Test and only if a non-toxic shot is used. Eight species of ducks may be hunted from mid-February to mid June with a daily bag limit of 12 ducks per person. In Queensland, duck and quail hunting is set on a seasonal basis as determined through consultation and expert advice (Commonwealth Australia, 1998).

Safari hunting: The Wild Plains Safari Group in Darwin, Northern Territory advertises hunting of buffalo, wild boar and waterfowls as one of the outdoor adventures available within a 30,000-hectare cattle station near Kakadu National Park. Trophy hunting of large animals, including crocodiles, is not permitted by Environment Australia. It was reported that the Murwangi aboriginal people in NT organize a guided tour safari. The safari hunt includes shooting buffalos at AUD\$1000 for trophy fee, 5-6 times a year (King, 1995).

Kangaroo hunting: Queensland does not permit kangaroo (Red Eastern Grey) hunting for personal reason. NSW and Victoria do not allow recreational hunting; however, if kangaroos were proven to be pest, culling permit is issued but to licensed professional shooters only. Commercial harvesting and sale of meat is allowed in NSW but not in Victoria. In Tasmania, two kangaroo species (Bennett's Wallaby and the Tasmanian Pademelon) can be hunted for recreational and commercial reasons. The species most commonly harvested on a commercial basis are: the Eastern Grey, Western Grey, Red Kangaroo, Wallaroo and Whiptail Wallaby (ANCA, 1995).

Animal welfare issues also influence wildlife hunting. The general code of practice in hunting is to kill the animal effectively with the least damage or cruelty and to minimize disruption or mortality of the other non-targeted animals in the population. The representatives from Animal Liberation (Victoria) express their support for a "well-regulated ecotourism ventures that seek to provide education about animals, environmental and behavioral needs and that seek to imbue respect for the animal" (Commonwealth Australia, 1998:356). This position was supported by RSPCA who states that wildlife tourism, provided animals are not interfered with, is an alternative to direct wildlife utilisation (Commonwealth Australia, 1998).

WILDLIFE TOURISM: A PERSPECTIVE OF SPACE

The ability to comprehend wildlife tourism from a geographical perspective requires some knowledge of the space requirements of wildlife and the implications if people, including tourists, intrude into the animal's refuge. Strategic management of visitor's impacts involves an understanding of the spatial (horizontal and vertical) distributions of wildlife within its range. From a landscape management point of view, this may mean constructing a strategically located lookout/lookdown where wildlife inhabiting the forest canopy layer can be observed. Likewise, camping out in natural areas can be

managed appropriately if recreational activities are regulated based on the nesting habits of ground –nesting birds rather than on the demands and comfort of campers.

Animals, depending on their social and behavioral characteristics, also show variation in spatial distribution across the landscape. Individuals may be spread out evenly or at random. Many other species, however, occur in groups. Tourists who are interested in seeing diverse wildlife in large groups will have no difficulty sighting species that tend to aggregate (usually winter migrants) during feeding time in open areas. On the other hand, tourists who would rather see rare species that is solitary or in small family groups, will have to plan for a longer trip in the ‘wilderness’.

Knowledge of the ecology, habitat preference and distribution of wildlife within its range will improve the chance of spotting wildlife, as well as in enhancing management effectiveness. For instance, the herbivores of Masai-Mara Reserve in Africa are associated with varying types of vegetation (Figure 1).

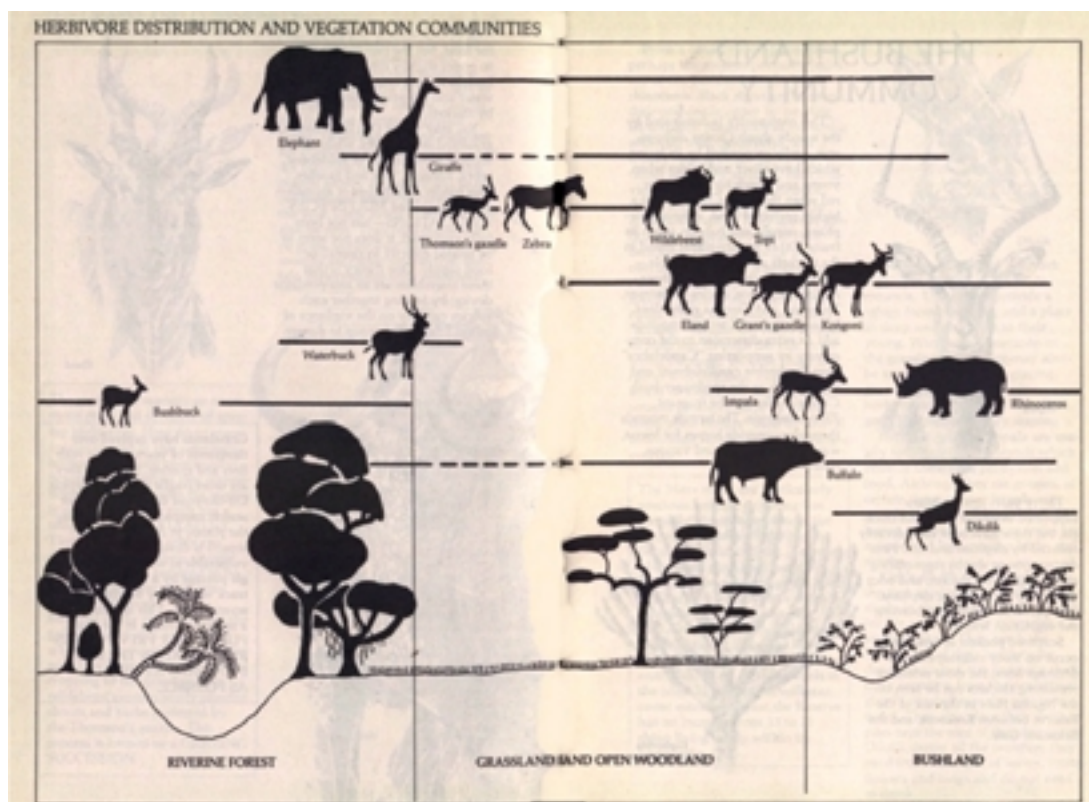


Figure 1. The type of vegetation cover is a good indicator of the distribution pattern of African herbivores (Source: Wilson, Undated).

The distribution of the Australian kangaroos also follows the rainfall and vegetation pattern across its range (Figure 2). The use of ecological indicators, such as vegetation cover, can help determine the location and activities of wild species.



Figure 2. The distribution of the five most commonly harvested species of Kangaroos in Australia (Source: ANCA, 1995)

Wildlife, like all other forms of living organisms, has specific habitat requirements for feeding, breeding, and resting. While some wildlife species have broad habitat requirements (e.g. wild pigs, magpies), others are more selective and quite sensitive to any form of spatial displacements (e.g. tigers, peregrine falcons). Habitat requirements vary from one species to another and from one season to the next. Parental care especially during nesting and rearing is very intense, and either one or both parents can be extremely aggressive and will attack or chase intruders to defend the young. Depending on the species, some animals claim large territories while others defend a much smaller, but well-defined spot (e.g. tree perch). In general, carnivores are more territorial than herbivores; and large carnivores require bigger territories than small carnivores. Some wildlife species are opportunistic feeders and prey on a wide range of animals. (Box 3 on Dingo --*Canis familiaris*)

Box 3. Notes about the Dingo—what tourists should know
 Introduced to Australia 3,500-11,000 years ago, the Dingo is a form of Domestic Dog derived from ancient Indian Wolf. They can survive for long periods without water, preferring to live in arid to semi-arid areas near sources of drinking water. In southeastern Australia, Dingoes are found in forests bordering grasslands and heathlands. They are opportunistic predators, with greatest liking for mammals (such as rodents, rabbits and macropods) for food. Dingoes are not territorial but they usually remain in well-defined home range of about 20 square kilometers. Breeding occurs from March to September. Young is reared by females at dens, caves, rock pile, hollow log, or enlarged wombat burrow, usually within 3 kilometers from a water source. Dingoes are intelligent and secretive. Tourism management strategy should be based on the ‘way-of-life’ of this

species at destination sites to reduce disturbance on the animal and to maintain the safety of tourists. (Source: Cronin, 2000)

Spatial zoning: a management approach to minimize recreational impacts

Management for wildlife tourism should consider developing a zoning plan to define and delineate sites within the protected area as well as in communal or private property that should be allocated for wildlife tourism. Frequently, tourists prefer to see species during courtship and breeding periods when they are most showy and noisy. However, these are also the periods when these species are relatively more vulnerable or aggressive. The zoning plan, therefore, should aim to protect wildlife in their critical habitats and during their sensitive periods in order to minimize resource-use conflicts between wildlife and people, including tourists.

Spatial zoning, that physically separates tourists and wildlife, is the most common technique to reduce the impact of tourists on wildlife. For instance, a land/water marker can be used to delineate the off-limits area of recreationists away from the seasonal refuge of waterbirds. This management technique is much more needed during peak tourism seasons that coincide with wildlife's seasonal migration or breeding (Figure 3).

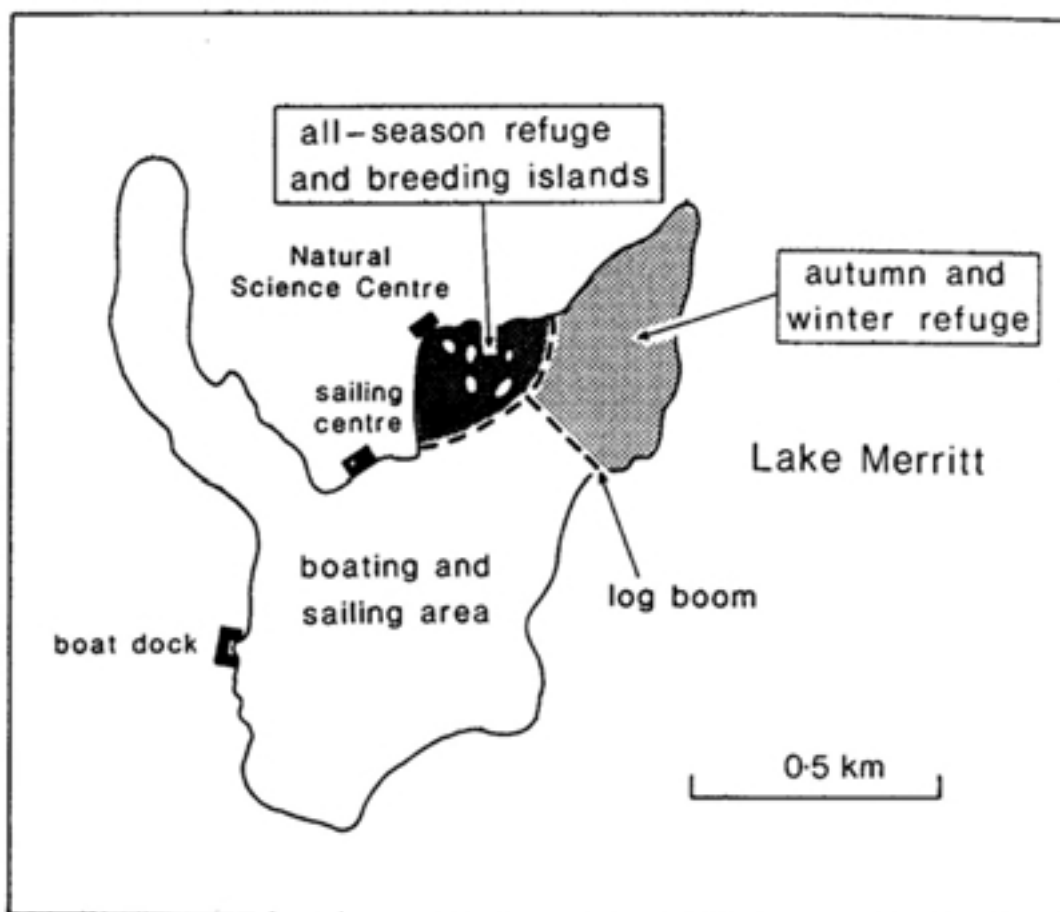


Figure 3. Spatial zoning, using a physical barrier, to reduce water-based recreational impact on waterbirds (Source: Edington, 1986).

The availability of wildlife viewing decks at tourist destination area gives tourists the opportunity to observe and photograph wildlife without causing excessive disruption to the animals. The value of ‘environmental hardening’, if properly planned, can be beneficial and rewarding to both the tourists and wildlife. For instance, the spatial elements of a viewing deck or observation posts that incorporate wildlife viewing and wildlife protection can make a destination place more appealing to tourists. As shown in Figure 4a, the spatial configuration of the viewing deck facilitates the flow of tourists. Furthermore, the spatial structures, as shown in Figure 4b and Figure 4c, provide tourists a sense of security in an unknown place and enhance their appreciation of nature. These structural elements also serve as a protective barrier between tourists and wildlife (Dredge, 1999; Edington, 1986). Wildlife tourism management also involves full supervision, monitoring and control so as not to disrupt the breeding behavior and reduce the breeding success of the animals (Sinha, 2001).



Figure 4a. Spatial structure that facilitates the flow of tourists (Source: Edington, 1986).

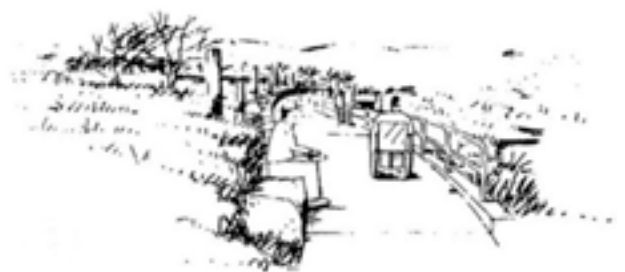


Figure 4 b. Spatial structure that provides tourists a sense of security in an unknown place (Source: Edington, 1986).

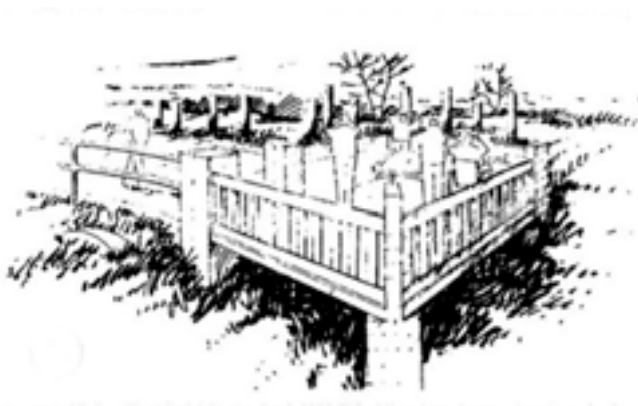


Figure 4c. Spatial structure that provides a physical barrier between tourists and wildlife and enhances tourists’ appreciation of nature (Source: Edington, 1986).

WILDLIFE’S REACTION TO TOURISTS

The literature has mixed information regarding the levels of human impacts on wildlife (Figure 5). This is because wildlife’s reaction varies among individuals within a species, from one species to another, and from one situation to the next. Roggenbuck (1992) states that the “adaptive characteristics of wildlife, the recreationists’ behaviour and the context of the disturbance all seem to be important” in understanding tourism impacts on wildlife. Thus, the level of recreational impacts on

wildlife depends not only on the number of tourists and their behaviour/attitude towards wildlife but also on the nature and magnitude (frequency and intensity) of tourist activity. In addition, the ecological sensitivity of wildlife habitats, seasonal vulnerability of wildlife (e.g. nesting, breeding, rearing), the animal's individual characteristics, population attributes of species, inter- and intra- specific interactions as well as the animal's adaptability to human-induced disturbances are among the many factors that may affect wildlife's reaction to tourism (Geen & Higginbottom, 2000; Knight & Gutzwiller, 1995).

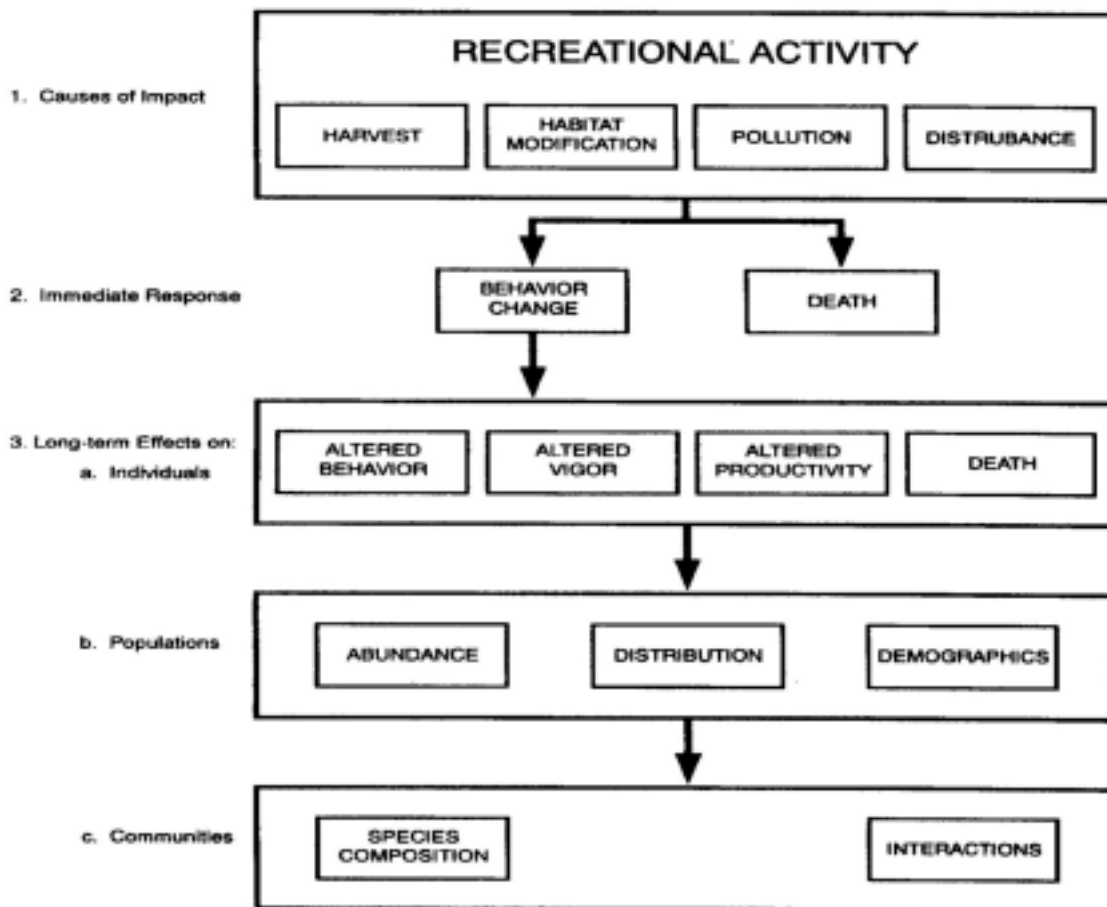


Figure 5. Short-term and long-term impacts of recreation on wildlife (Source: Knight & Gutzwiller, 1995).

Behavioural response of wild species to tourism can have short-term and long-term effects. Generally, the immediate response of wildlife in non-consumptive tourism situation (particularly when tourists deliberately harass them) ranges from mortality, to nest abandonment, to dramatic changes in behaviour (e.g. food habits), to energy depletion (consuming their energy to flee rather than to feed). Long-term effects have population implications, i.e. changes in population density, structure and distribution.

Some wild animals that have frequent contacts with tourists can become habituated to humans. Habituation is a behavioural response of animals to repeated stimulus

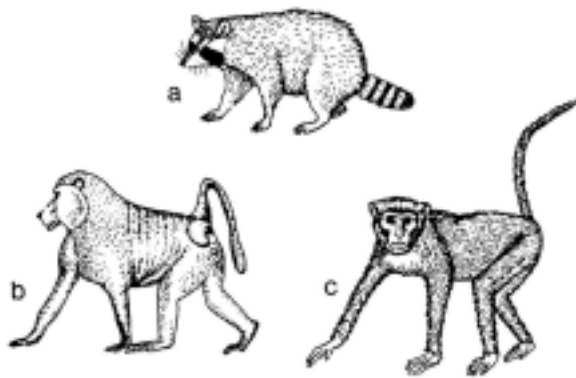


Figure 6. Wild species known to seek humans for food and create difficult situation to tourists (Source: Edington, 1986)

resulting in a waning of reaction. It was observed that eagles in heavily traveled rivers were less likely to flush from boaters than those without recreational boating occurring, suggesting the habituation of eagles to humans (Knight & Knight, 1983). Likewise, free-ranging animals, which are “induced” or given positive rewards (e.g. food) to come in contact with people, learn to seek humans. Animals that seek

humans for food can create difficult situation to tourists (Figure 6). These animals have developed begging traits that can be aggressive and dangerous. Human attacks and damage to motor vehicles and campsites by wildlife in search for food have been

documented (Edington, 1986; Knight & Gutzwiller, 1995).

While feeding birds is made to appear a lot of fun in wildlife tourism, its effect on the species is quite adverse. It was reported that artificial feeding of wild birds could make them over-weight and malnourished. Unhealthy wild animals that tend to congregate on feeders can spread diseases. Dependence on humans for food also results in the waning of the natural instinct to search for food for themselves and their young. Reports of some birds that have lost inherent abilities to avoid predators and natural enemies are common. Likewise, there is a high probability of population imbalance of birds in natural habitats due to forceful displacement of other species by those that are more habituated to humans (Knight & Gutzwiller, 1995).

Transmission of diseases from humans to wildlife and *vice versa* is also a major problem associated with close contact between tourists and wildlife (Holmes, 1996). For instance primates (e.g. gorillas) are prone to disease epidemics, particularly respiratory illnesses. Six of the habituated female gorillas in Africa died in 1988 because of human-transmitted respiratory illness. Among unhabituated gorillas that flee from tourists, diarrhea was found to be a common symptom of stress. There is also concern over the transmission of a potentially pathogenic virus (alpha-herpes) from gorillas to humans (Butynski & Kalina, 1998). Monkeys (long-tailed macaques and chimpanzees) are known to be susceptible to and as carriers of the deadly Eboli virus to humans.

Many tourists show high recreational satisfaction when there are opportunities to touch or closely interact with wildlife. Sadly, human attacks of tourists have occurred in some situations when tourists under-estimate the potential danger of wild species, even though they are already habituated to humans. Human attacks usually occur during the nursing season when parental instinct to protect their young is at its highest level. Likewise, highly territorial species can attack or chase tourists who intrude into

defended territories during the breeding period. Unfortunately, the government's reaction to such attacks is always at the detriment of the wild species, which often times have to be removed or persecuted. Ability of tour guides and tourists to respond to alarm vocalization made by stressed wild species should serve as the signal of the limits of wildlife recreational pursuit. Other management measures to minimise adverse wildlife-tourist encounters should also be in place.

Visiting zoological gardens, although a less adventurous form of wildlife tourism, can be a rewarding experience from a well-controlled human-animal interaction. Wildlife on display in zoos are generally used to people. To a certain extent, some zoos allow animal petting especially where animals have already habituated to humans. Zoo management, however, ensures that animal-people interaction does not cause adverse impact to either the animals or to the visitors. Under the Exhibited Animals Protection Regulations (1995), public safety in addition to standard procedures for construction of fences, cages and enclosures; animal health, hygiene and nutrition are specified for licensing requirements (Box 4).

Box 4. Zoological association for educators

The International Zoo Educators Association (IZEA) is a professional association dedicated to expanding the educational impact of zoos and aquariums worldwide. IZEA and its individual members work with other conservation organizations, including the World Zoo Organization (formerly known as the International Union of Directors of Zoological Gardens), the Conservation Breeding Specialist Group, and IUCN -- The World Conservation Union, to enhance the understanding of conservation issues and to share information on effective informal education methods.

For more information, visit www.izea.net/

BENEFITS FROM WILDLIFE TOURISM

The benefits from wildlife tourism can be both tangible and intangible. The economic benefits from nature-based tourism, in general, are considerable. It creates employment and supports secondary commercial industry. Wildlife hunting (in the form of recreational fishing, recreational hunting, and trophy hunting) generates income from admission permits and hunting/fishing fees, from sales of hunting/fishing gears, and from hiring fees of boats and land vehicles. Non-consumptive wildlife tourism also generates income from park fees, admission fees, leases, services, sale of materials, and other tourism-related entrepreneurs (Freese, 1996; 1998).

Where selective wildlife hunting is permitted, the economic return from recreational hunting may be significant. Recreational hunting is considered a major economic activity in Europe and North America. In Germany, hunters spent about US\$559 million while in the United States, hunters spent about US\$12 billion. The value of game meat, mostly from moose (*Alco alco*), in Sweden generated about US\$61 million in 1987; in Canada Northwest Territory, the income from annual harvest in the 1980s was about US\$25million (Freese, 1998).

A species-specific wildlife tourism venture, such as in gorilla watching in Africa, generates hundreds of thousands of dollars (e.g. US\$600,000 in park fees from 3,300 visitors of Bwindi-Impenetrable National Park in Uganda in 1995) (Butynski & Kalina, 1998). Big game hunts in Africa (Zimbabwe and Tanzania) are considered a lucrative business. The income from big games was used to manage parks and provide incentives to local communities to conserve wildlife (Leaders-Williams, Kayera & Overton, 1996). The safari hunting in Zimbabwe under the CAMPFIRE (Communal Area Management Program for Indigenous Resources) program generated about \$1.5 million in 1995, and supported community resource management by capitalizing on the value of wildlife through tourism. In Kenya, the annual revenue of US\$500 million from non-consumptive wildlife tourism was shared among national parks, tourism industry, and indigenous communities (Milner-Gulland & Mace, 1998).

However, the economic benefits from tourism are not always shared equitably. In North America, only a small proportion of income generated by the national park is returned back to the park (CEC, 1999). A similar concern was raised by the NSW-National Parks and Wildlife Service (NPWS, 1998) with regards to the sharing of revenues from tourism and their more apparent contribution for biodiversity conservation. Similarly, a large proportion of the income from wildlife tourism in many developing countries in South East Asia leaks out of the country and the little money left behind is channeled directly to the national treasury with little or no benefit accruing to the local community or site conservation.

The non-economic value of wildlife tourism may include the enhancement of tourism satisfaction from viewing and learning about wildlife, increased understanding of tourism impacts, and support for biodiversity conservation. Although tour operators claimed that they are creating conservation awareness among tourists through their various environmental education and interpretation initiatives, there is no study to support these claims (Green & Higginbottom, 2000). On the other hand, Tisdell and Wilson (2000) report that there was an increased support for turtle conservation after visitors have seen the captive setting at Mon Repos (Queensland).

REDUCING WILDLIFE TOURISM IMPACTS

The effects of non-consumptive tourism (e.g. wildlife viewing, photographing, feeding), even though no animal is directly hunted and removed from their natural habitats, could be as deleterious as those of consumptive tourism (e.g. hunting). Sustaining the benefits of wildlife tourism for recreation, education, and conservation requires strategic and long-term management planning to ensure that the adverse impacts of wildlife-tourists interactions are minimised.

Zoning is a commonly used strategy to protect sensitive habitats of wildlife. Normally, public access to these sites is prohibited during the critical breeding and nesting periods when animals are most vulnerable. Providing wildlife viewing shelters or decks during these periods is an important ingredient in wildlife tourism. Scheduling

other recreational activities at certain times of the year should also be taken into consideration in wildlife management.

Public education and general awareness about biodiversity conservation is a valuable tool to reduce tourism impacts. However, changing tourist attitudes towards wildlife is not an easy task because of the complex inter-relationships of visitors' values, motivations (eg. against those of the wildlife manager), satisfaction levels, and norms (Knight & Gutzwiller, 1995; Orams & Hill, 1996). Training tour operators on appropriate guiding in wildlife tourism should be firm but adaptive to the changing nature of the wild species in their natural environment (Box 5).

Box 5. Code of practice: No feeding campaign at Booderee National Park, NSW

The NPWS recognises the problems associated with feeding wildlife at Booderee National Park (Green Patch, Jervis Bay). The brochure given out to the tourists gives brief information about the consequences of feeding on the animal populations and behaviour, safety of animals and the public, as well as the potential transmission of diseases during the encounter. Despite this campaign, quite a number of visitors continue to feed wildlife.

Legislation and international treaties

Legislative measures are also necessary to reduce tourist impacts on wildlife and biodiversity. For consumptive-use tourism, government regulations and close monitoring are extremely essential to ensure that illegal activities that can jeopardize the welfare of wildlife are controlled (Box 6).

Box 6. Relevant legislation in Australia**1. Environment Protection and Biodiversity Conservation Act, 1999**

EPBC (1999), which came into effect on 16 July 2000, represents the most fundamental change in the environmental laws since mid 1970s. The Act replaces 5 Commonwealth statutes, all of which have been repealed. These are the (a) Environment Protection (Impact of Proposals) Act, 1974; (b) Endangered Species Protection Act, 1992; (c) National Parks and Wildlife Conservation Act, 1975; (d) World Heritage Properties Conservation Act, 1983; and (e) Whale Protection Act, 1980. For more information about EPBC, visit www.environment.gov.au/epbc

2 NSW Threatened Species Conservation Act, 1995

The Act came into effect in January 1996, providing protection to all threatened species of plants and animals native to NSW. It amended the (a) National Parks and Wildlife Act, 1974 and (b) Environmental Planning and Assessment Act, 1979 and integrates the consideration of threatened species in the planning process. For more information about the Act, visit www.ws.nsw.gov.au/wildlife/threaten.htm.

3. Wildlife Protection (Regulation of Exports and Imports) Act, 1982

This Act is the legislative basis for the control of the exportation and importation of wildlife and wildlife products. Controls under this Act apply to transactions undertaken by museums, zoos, scientific institutions, commercial organisations, tourists, migrants and the general public. Australia, as a signatory to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), has the legal obligation to regulate the movement of and trade in some animals and plants and their by-products (e.g. wildlife souvenirs). These controls complement those specified in the Quarantine Act 1908.

Australia, in compliance with ratified international treaties, has to protect not only its native flora and fauna but also to cooperate with other countries in the conservation of globally protected species (Box 7).

Box 7. International treaties (in which Australia is party of) relevant to wildlife tourism

1. Convention on International Trade in Endangered Species of Wild Fauna and Flora

The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) entered into force in July 1975 and became enforceable under Australian law in October 1976. The parties (more than 130 member countries) trade in species according to agreed lists (called Appendices I, II, III). In Australia, CITES controls are administered under the Wildlife Protection (Regulation of Exports and Imports) Act 1982. Environment Australia is the Management Authority for CITES and legally responsible for issuing import and export permits and monitoring movements of species in international trade.

As the world's largest wildlife trade monitoring programme, TRAFFIC (Trade Records Analysis of Flora and Fauna in Commerce), assists in monitoring trade in species listed in CITES Appendices.

2. Convention on Biological Diversity

The Convention on Biological Diversity came into force in December 1993. The Convention provides a global framework to conserve biodiversity and sustainably use its components found at three levels--genetic, species and ecosystem levels --within and outside protected areas. As party to the Convention, Australia developed the *National Strategy for the Conservation of Australia's Biological Diversity* (1996), wherein the adoption of ecologically sustainable management practices for tourism and recreation (Objective 2.6) and for wildlife management practices (Objective 2.7) was proposed.

3. Convention on Migratory Species

Also known as the Bonn Convention, CMS came into force in 1979. It provides the global framework for the conservation of migratory species of wild animals that live within or pass through the national jurisdictional boundaries of countries party to the Treaty. Signatories to the Convention must also aim to protect and rehabilitate the important habitats of migratory species.

4. Convention on Wetlands (Ramsar Convention)

The Convention on Wetlands, signed in Ramsar, Iran, in 1971 provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources. There are presently 124 Contracting Parties to the Convention, with 1069 Ramsar sites, totaling 81.2 million hectares.

Sources: (www.ea.gov.au, www.traffic.org.)

CHALLENGES (Recommendations)

- Countries with high level of biodiversity diversity (megadiversity), such as Australia, are popular tourist destinations. While the industry provides revenue and contribute significantly to the country's economy, many sectors of the society are critically concerned with the increasing pressure of tourism on the natural environment and wildlife. Since the range of opportunities for wildlife-tourist interactions is broadening, its implications on biodiversity conservation and tourism management should be addressed so as to provide visitor's satisfaction without compromising the welfare and safety of wild species.
- Strategic management of visitor impact on wildlife should be wildlife-centered rather than visitor/tourist-centered. This involves developing regulatory measures and management procedures based on scientific knowledge about the natural history and ecological requirements of wild species at tourist destination. For instance, prohibiting public access to nursing or breeding sites of potentially aggressive species (i.e. Dingo) does not only protect the animals but also ensure the safety of tourists.
- There should be some measures that would limit the number and extent of wildlife tourism operations in protected areas through stringent accreditation and monitoring process.
- While many Australian conservationists are against the direct, consumptive use of native wildlife, they generally accept the non-consumptive use of wildlife in ecotourism where tourists appreciate and learn about wildlife in their natural habitats. Appropriate policies and ecologically sustainable management practice in tourism, recreation and wildlife management should be implemented and monitored.
- The regulatory measures to protect wildlife and manage wildlife tourism should be complemented by an aggressive and long-term educational campaign for tour operators and tourists on appropriate tourism practice and conduct.
- Income and other forms of benefits generated from wildlife tourism should be equitably shared for the management of wildlife and their habitats as well as with the host community.
- There should be more and integrated research on the short and long-term impacts of wildlife tourism on species, habitats and ecosystems; study of visitors' perceptions and expectations; measurement of non-economic benefits; determination of benefits of wildlife tourism that accrue to biodiversity conservation and local communities at tourist destination area.

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