

Ecotourism in Madhav National Park: Visitors' Perspectives on Environmental Impacts

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ABSTRACT

Ecotourism potentially provides a sustainable approach to tourism development in India. However, to realize this potential the adverse effects of visitor activity and associated infrastructure on the natural environment and the tourism experience must be identified to guide management actions and thus to sustain the resources on which ecotourism ultimately depends. This study, conducted in Madhav National Park in Shivpuri, M.P., India, reports one of the first efforts to identify the impacts of ecotourism in India from the perspective of visitors. Environmental conditions of greatest influence on visitors' experiences included litter and biophysical conditions such as soil erosion and vegetation damage. These conditions were of greater concern to visitors than social conditions, such as the number of people. The broad support given by those surveyed for a range of management actions provides managers with a choice of strategies to sustain ecotourism in Madhav National Park. This study, with its sociopolitical approach, contributes to a greater understanding of the implications of the ecotourists experience for ecotourism management in India.

KEYWORDS: *Ecotourism, Visitor Perspective, Madhav National Park, Sustainable Development, Natural Resource*

INTRODUCTION

Tourism has long played an important role in the Indian economy as being the third most important industry sector of national economy. Within the tourism industry worldwide, ecotourism is one of the fastest growing sectors (*Eagles, 1995*). *The World Tourism Organization (WTO) has recently estimated that ecotourism is worth some \$20 billion a year, and together with nature-based tourism, accounts for 20% of global international travel (WTO, 1998)*. In the Asia-Pacific region, ecotourism has grown faster than any other form of tourism (*Lindberg et al., 1998*). Ecotourism has therefore come to signify an attractive investment proposition. The promise of ecotourism is that financial benefits originating from the influx of foreign tourist income may be employed to finance the provision and management of national parks to conserve the natural resources that ecotourist willingly pay to experience. Thus, ecotourism confers economic value on the conservation and protection of natural areas, representing the potential for a sustainable approach to tourism development in India. However, despite this mutually beneficial relationship between ecotourism and natural resource conservation, the impacts of ecotourism may also adversely affect the resources on which it depends. Therefore, in order to sustain ecotourism in India, it is essential to understand the potential effects of the expanding ecotourism sector on the natural environment, so as to identify management priorities for present and potential ecotourism destinations. It is widely recognized that both the environmental conditions of natural areas and the quality of the ecotourism experience are influenced not only by the

number of visitors *per se*, but by the impacts those users have on the ecological and social conditions (**Prosser, 1986**). In this way, visitors are at the centre of ecotourism management: they impact the natural environment and the tourism experience, while the quality of the experience is affected by the management actions necessary to restructure those impacts. Hence, users represent a valuable resource for gaining information about the presence and extent of impacts, the acceptability of environmental change, and the consequences of management actions for their experience. The centrality of visitors is embodied in the approach taken by the **Visitor Impact Management (VIM)** planning framework, which explicitly recognizes the value of both judgmental and scientific considerations for effective management of natural areas (**Graefe et al., 1990**). This recognition means that identifying the significance of biophysical and social impacts is necessarily value-laden, and as such, natural area planning and management must be recognized as a sociopolitical process. Therefore, rather than relying on technical assessment to determine carrying capacity and use-limits – an approach that has proved unworkable in addressing resource management problems (**McCool, 1989; Lindberg et al., 1997**) – the VIM approach is based on the principle that both the environment and the quality of the recreation experience are complex, and are influenced by a number of factors besides use levels. The VIM process thus incorporates a number of successive stages: review database (identify unacceptable visitor impacts); review management objectives; identify measurable indicators; select standards for indicators; assess current conditions of impact indicators; identify probable causes of impacts; identify a range of alternative management strategies; and implement selected strategies (**Graefe et al., 1990**). This paper reports on a study of visitor impacts in **Madhav National Park** in **Shivpuri (M.P.)**, specifically, the aims of this study were to:

1. Identify unacceptable visitor impacts from the perspective of visitors ;
2. Identify potential indicators based on the impacts identified; and
3. Identify visitors' support for potential management actions.

Madhav National Park was selected as the study site for two main reasons: it is an established ecotourism destination and existing management objectives for the park are compatible with ecotourism. The primary management objective for **Madhav National Park** is conservation, while secondary objectives include recreation, research, education and monitoring of visitor activities (**Good, 1988**). For the purposes of adopting the VIM approach for **Madhav National Park**, the existence of management objectives is important because it is widely considered to be a crucial first step in developing a management framework for natural areas.

PROBLEM IDENTIFICATION

Ecotourism has been defined by the Ecotourism Society as '*responsible travel to natural areas which conserves the environment and improves the welfare of local people*' (**Cochrane, 1996: 241**), a definition which emphasizes the view that ecotourism should have positive impacts. The Government of India believes that ecotourism can contribute to the preservation of the environment, which is an approach consistent with this definition. Forest parks, for example, fall under the jurisdiction of Forest Department. Land matters come under the state authorities. This situation has meant that there is no single authority empowered to make decisions on the environmental implications of tourism development. **Madhav National Park**, setup in 1957, was the first of the national parks in India. Facilities within the Park, including the park office, information centre, canteen, Boat Club Tiger safari are available. Attractions include the variety of water bodies and forest ecosystems of the park, and the abundant wildlife. Mixed dipterous carp forests dominate and provide habitat for the diverse wildlife. In particular, two species of monkey are found in the national park, including the **Languor Monkey**. There is a lack of reliable data specifically on ecotourist numbers to India (**Davison, 1995**). Madhav National Park itself received about 1000 visitors

per year, mainly of Indian origin, with only a few hundreds of being overseas visitors. The increasing number of overseas visitors is probably due to the success of promotional strategies such as '*Incredible India*'. Despite this growth in visitors to *Madhav National Park*, very little information exists regarding the environmental (biophysical and social) impacts of visitor activity and the effect of these impacts on the visitor experience. *Lindberg et al. (1998)* report that this is true of the Asia-Pacific region as a whole; and *Valentine and Cassells (1991)* have identified the need for studies of visitor impacts and experience in tropical rainforests generally. *Therefore, the present study aims to contribute to the current information deficit by identifying the environmental impacts of ecotourism in Madhav National Park as perceived by visitors.*

LITERATURE REVIEW

This paper draws on previous research on the environmental impacts of visitors in 'wilderness' and natural areas as well as current ecotourism research. *McKercher (1996)* argues that there is little or no difference between tourists and 'wilderness' visitors because they share the same resources and facilities and exert similar impacts when the same activity is undertaken. Further, *McKercher (1996: 563-4)* notes that making the artificial distinction 'serves no practical management purpose because tourists and non-tourists alike are part of the broader visitor management issue'. The environmental impacts of ecotourism have been published by a number of writers. Some have focused on tourism in natural areas (*Cohen, 1978; Mathieson & Wall, 1982; Buckley & Pannell, 1990; Andereck, 1995; McArthur, 1996; Shackley, 1996*), while others have taken a specifically ecotourism approach (*Boo, 1990; Olindo 1991; Sherman & Dixon, 1991; Ceballos-Lascurain, 1996; Commonwealth Department of Tourism, 1994; International Centre for Tourism Research, 1995*), and those concentrating on tropical rainforests include *MacKinnon et al. (1986), Valentine and Cassells (1991), Valentine (1992), Kinnaird and O'Brien (1996), and Wearing and Larsen (1996)*. The studies considered to be relevant to this paper is a number of visitor impact studies conducted in natural areas (*Anderson & Manfredi, 1985; British Columbia Forest Service, 1995; Lucas, 1990; Department of Conservation and Land Management, 1991; Dowling, 1993*). The following brief summary of the environmental impacts of ecotourism is drawn from this literature.

The benefits of ecotourism include an enhanced appreciation of natural environments, both in terms of their intrinsic and economic worth for protection and conservation; the educational value of exposing visitors and locals to nature and conservation; and the potential of ecotourism to motivate the designation of additional natural areas for conservation and protection. Conversely, pressures originating from inappropriately managed infrastructure and visitor activities can adversely impact the receiving environment. Negative impacts on terrestrial ecosystems include destruction of plant and wildlife habitats; soil and dune erosion; soil compaction; disruption of soil stability; alteration of geological regimes; disruption of nutrient cycles; and reduction in biodiversity. Impacts on vegetation include structural alterations to plant communities; damage due to trampling; the introduction of exotic species carried in on clothing; and direct removal of specimens through harvesting. Further to these biophysical impacts, increased human presence may lead to disturbances such as litter, as well as air and noise pollution caused by vehicles. Although there is limited understanding of the effects of tourism on wildlife (*Andereck, 1995*), all of the aforesaid impacts may have deleterious effects. Direct impacts on wildlife include disruption of behavior such as feeding, breeding, and mother-offspring interaction; poaching; killing (usually accidentally); and the disruption of predator-prey relationships. Indirect impacts on wildlife include changed habitats and feeding patterns, due for example to the attraction of wildlife to litter (*Mathieson & Wall, 1982*), and the introduction of disease. Even the pressures of photography may impact on wildlife, and have been reported to cause a decline in the breeding success of many coastal bird species in the

Galapagos Islands (*Mathieson & Wall, 1982*). Wildlife may also be directly impacted by visitor management techniques which place a priority on visitor satisfaction. For example, in the Yucatan Peninsula boatloads of tourists were driven into groups of feeding flamingos to make them take flight, and in the Galapagos Islands National Park visitors were allowed to approach frigate bird nesting areas (*MacKinnon et al., 1986*). Many biophysical impacts also adversely affect the visitor experience. *Buckley and Pannell (1990)* have identified damage to the natural environment as one of the major detractors from the visitor experience. Additional impacts on such experiences include noise (human and mechanical), visual impacts (such as infrastructural developments and signs) and crowding. With respect to the latter, both overall numbers of people and group size are conditions identified as impacting on visitors' experiences in natural areas.

RESEARCH METHODOLOGY

This study was based on a literature review and questionnaire. The literature review identified the potential impacts of ecotourism as described in the previous section, which were then used to guide questionnaire development. The questionnaire was designed to gain information from visitors to *Madhav National Park*. The sampling frame was limited to national park visitors approached while in the national park. Visitors were asked if they would like to participate in the study, and if they agreed, were given a brief description of the study objectives. The questionnaires were distributed at the canteen, Boat Club and Park office, places which most visitors frequented at some stage of their visit. The study was conducted between June 2009 and July 2009, with 200 questionnaires distributed by authors it self, and 46 questionnaires distributed by Park staff. A total of 145 responses were obtained from the 200 questionnaires distributed by authors, and 26 out of 46 questionnaires distributed by Park staff. The questionnaire was written in English and Hindi (Local Language), and comprised *three sections: visitor and visit characteristics; activities undertaken; and visitor perceptions of impacts and management strategies*. The assumption underlying all aspects of this study is that information about and generated by, visitors is essential to the successful planning and management of natural areas that aim to sustain ecotourism. These questions were designed from the literature surveyed earlier, including visitor surveys conducted in Africa (*Lindberg et al., 1998*) and Canada (*British Columbia Forest Service, 1995*). Visitors were also asked to rate specific management concerns, and to express the extent of their support for potential management strategies.

RESULTS AND DISCUSSION

Successful management of tourism in natural areas depends on knowledge of both *visitor and use characteristics (Buckley & Pannell, 1990)*. In this study, males and females were equally represented within the sample of visitors surveyed. A large proportion of visitors were aged between 16 and 40 years (76%), results supported by studies conducted in America, which have found that wilderness visitors tended to be younger than the general population (*Lucas, 1990*). These results contrast with those of a 1988 study of ecotourists visiting five Latin American and Caribbean countries, conducted by the World Wide Fund for Nature, which found that the average age was slightly higher than that of 'leisure tourists' at 44 years (*Ceballos-Lascurain, 1996*). The relative youth of Madhav visitors, when considered alongside the fact that a large proportion of Madhav visitors were, local origin and a more balanced proportion of people from 26 to 60 years old was found. 40% of visitors originated locally – from other Indian states (17%), 42% of visitors stayed less than 24 hours in the national park. The extended length of stay of over half of all visitors signals an opportunity for the use of education as a potential management tool.

The activities participated in by more than half of the respondents all related to the enjoyment of nature, and included hiking (76%), sightseeing (72%), observing wildlife (66%), relaxing (61%) and photography (61%). Conversely, wilderness visitors in the

United States tend to participate in wider Variety of activities, which include such 'consumptive' activities such as fishing and hunting (**Lucas, 1990**). The activities undertaken in Madhav National Park were found to mirror the activities visitors indicated were most important to their visit. Over two-thirds of respondents indicated that being close to nature (78%), encountering wildlife (72%), learning about nature (70%) and viewing the scenery (71%) were very/extremely important. These activities are highly dependent on the quality of the natural environment, suggesting that visitors to **Madhav National Park** specifically seek the natural qualities of the Park, rather than merely using the forest as a backdrop, as **Valentine and Cassells (1991)** found is often the case with visitors to Queensland's rainforests in Australia.

Visitor perceptions of impacts and management concerns visitor perceptions of observed and potential impacts were examined to identify possible indicators for monitoring, based on the premise that conditions of importance to visitors themselves are the best indicators of factors likely to adversely affect visitor experiences (**McArthur, 1996**). Impacts most frequently observed by visitors included soil erosion along walk-trails, litter along the beach/shore, wildlife attracted to rubbish bins, and smelly/discolored water. Vegetation damage along walk-trails, and hiking away from walk-trails, were also noted as current impacts by over 20% of the sample. In contrast to these biophysical impacts, only 5% of respondents perceived visitor numbers – a social impact – to be a current concern. A number of respondents also commented on impacts that were not given in the questionnaire, including litter on the forest floor, water logging along some trails and at the provocation of wildlife, and a lack of enforcement of national park regulations. For almost all of the impacts, a greater number of respondents expressed concern about the potential impact than the observed impact. Soil erosion along walk trails and smelly/discolored water were the only two impacts where no statistically significant difference in respondent numbers was found for the observed and potential impact. For soil erosion, these results could be due to visitors' perceptions that the present severity of the impact means it is unlikely to get any worse. However, the results for water purity suggest a recognition that the observed problem is caused by naturally high tannin levels, which do not pose any health problems. Therefore, although water quality was identified as an impact, respondents did not consider it to be a factor influencing visitor experience of Madhav National Park in the future.

The significance of litter as one of the most basic concerns of Madhav National Park visitors is supported by the results of similar studies in Australia (**Dowling, 1993**), Canada (**British Columbia Forest Service, 1995**) and the United States (**Lucas, 1990**). The intolerance of many visitors to litter may be explained by the view that littering violates deeply held norms of Western culture, which in form a large proportion of the visitors to Madhav National Park, where littering is seen as abuse rather than normal use of natural areas (**Lucas, 1990**). The concern with biophysical impacts such as soil erosion and vegetation damage as indicated by Madhav National Park visitors has also been expressed by wilderness users both in Canada (**British Columbia Forest Service, 1995**) and Australia (**Department of Conservation and Land Management, 1991**). One reason why many visitors identify biophysical impacts as problematic is that they are visually prominent. Further, greater visitor concern with biophysical over social conditions possibly reflects the view that although visitor use results in impacts, present levels of use are not in themselves reducing the quality of the visitor experience. These results regarding visitor perceptions of the impacts of tourist use can be used to identify potential indicators for monitoring environmental conditions in Madhav National Park. This approach is based on the premise that the best indicators are the conditions of most importance to visitors.

CONCLUSIONS

Soliciting the views and preferences of recent visitors to Madhav National Park enabled the identification of impacts perceived as significant by ecotourists. Most important were

litter, erosion and vegetation damage, all visual impacts with the potential to reduce the natural experience ecotourism offers. Greater visitor concern regarding potential impacts, compared to observed impacts, indicates a perception that social and biophysical conditions in the Park are likely to worsen in the future. Management concerns identified by the majority of respondents – litter, erosion and vegetation damage – correspond to the identified impacts of concern. Therefore, these management concerns are potential indicators for monitoring visitor impacts in Madhav National Park. *Further research is required to complete the remaining steps of the VIM framework if it is to effectively guide ecotourism management in the national park.* Respondents indicated strong support for management actions in general, including both educational and regulatory strategies such as controlling visitor numbers and limiting forest use.

One of the major challenges for the management of ecotourism is using interpretation and education to help visitors gain a better understanding of the natural environment of an area, thereby enhancing their experience and protection of the area. As **Lucas (1990)** notes, visitors to natural areas provide a particularly good audience for information and education, and such approaches are ideal for conservation reserves because they do not directly alter the natural environment. Education also has an important role in terms of communicating the reasons behind management actions to visitors, so that visitors are more likely to support management strategies, especially those restricting their activities. **Cole (1995)** commented that indirect techniques such as education are most likely to be effective when used proactively. These results are supported by **Anderson and Manfred's (1985)** study of visitor preferences for management actions in a US wilderness area. The study of Madhav National Park, indicating that potential impacts are considered more significant than those observed, suggests that proactive management techniques such as education could be invaluable. The findings of this study also have implications for conservation management. The notable support for direct as well as indirect management actions implies that visitors generally recognize that overuse of forest areas and overcrowding have the potential to further degrade natural areas, and hence are inclined to support restrictive measures.

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