

Key environmental management factors in protected areas: an eco-tourist perspective

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Abstract

Ecotourism in South African National Parks is growing. Increased tourist numbers means increased environmental impacts and more pressure on non-renewable resources. Tourists are important stakeholders and have the potential of contributing to the success of environmental management in national parks. Understanding tourists' perceptions regarding environmental management factors can assist national park managers in identifying environmental management issues to be addressed and to provide sustainable ecotourism experiences in national parks. The purpose of this paper is therefore to determine ecotourists' perceptions regarding environmental management practices in South African National Parks. This study followed a quantitative research approach in which a web survey was conducted with 993 responses. Three factors were identified from the exploratory factor analysis: eco-efficient practices, Eco-tourist conduct, and park management aspects. Tourists' responses to an open-ended question regarding specific environmental issues in South African National Parks were further analysed in order to elicit more depth regarding visitors' perceptions.

Keywords: environmental management, protected areas, ecotourism, perceptions, visitors, South Africa.



Introduction

Global environmental issues such as climate change, natural resource depletion, extinction of species and land degradation have roused support for conservation and environmental management in tourism (Dodds, Graci & Holmes, 2010; Wearing & Neil 2009). Ecotourism in protected areas, such as national parks, plays an important role in the conservation of the world's biodiversity and natural resources as they supply valuable income to maintain and manage conservation areas (Wang & Wi, 2012). However, the growth of ecotourism leads to negative impacts such as increased waste generation, water and electricity usage as well as the disturbance of wildlife (Alonso-Almeida, 2013; Lee, Jan & Yang, 2013; Buckley, 2009; Page & Connell, 2009). Sustaining immaculate natural resources, while offering high quality ecotourism experiences, are extremely important goals for managers of national parks. These goals need to be balanced in order to assist in the twofold goal of conservation and tourism development (Arabatzis & Grigoroudis, 2010; Beunen, Regnerus & Jaarsma, 2008; Marion & Reid, 2007; Hearne & Salinas, 2002).

Environmental management is therefore a crucial factor to ensure sustainability of ecotourism in protected and conservation areas (Holden, 2008; Buckley, 2009). Environmental management refers to the methods an organisation applies to manage its negative impacts on the environment (Buckley, 2009). Without a healthy physical environment, ecotourism providers cannot provide the experience the tourist seeks (Verbeek & Mommaas, 2008; Powell & Ham, 2008:468; Keyser, 2009). Nevertheless, unless tourists take a true interest in the long-term viability of ecotourism in protected areas, little could be achieved either by government or by industry efforts (Saayman, 2009; Keyser, 2009).

Understanding tourists' perceptions regarding environmental management practices and nurturing environmentally responsible behaviour is vital for the achievement of a sustainable environment (Arnberger, Eder, Alex, Sterl & Burns, 2012; Chan & Baum, 2007; Dolnicar, Crouch & Long, 2008; Arabatzis & Grigoroudis, 2010). A profound understanding of visitors' perceptions regarding environmental management practices will furthermore assist national park managers in improving the management thereof and educating tourists about environmental issues and best practice behaviour. Tourists are seen as significant role-players in terms of their contribution to environmental management in national parks. The aim of this study is to illuminate the manner in which visitors perceive environmental management practices in South African National Parks.

The paper commences with a discussion of the environmental impacts of ecotourism, environmental management practices and the ecotourist. Subsequently, the methodology and results of the empirical study, which consist of a factor analysis of visitors' responses regarding environmental management factors, will be discussed. The paper concludes with the management implications pertaining to ecotourism in South African National Parks

Literature Review

South African National Parks (SANParks – managing body) is one of the largest conservation agencies in South Africa - their business operations are based on three core pillars, namely conservation, nature-based (eco) tourism and constituency building (SANParks, 2006). Natural areas owe their attractiveness and continuing existence, largely, to protected areas such as national parks. It is for this reason that national

parks have become popular ecotourism attractions; they usually contain extraordinary features such as remarkable natural scenery, topography; rare fauna and/or flora, unusual geological features and cultural heritage (Saayman, 2009). Ecotourism is almost inevitably concentrated in sensitive and unique natural environments. Where tourism development takes place or is proposed in natural areas, environmental impacts will undoubtedly take place (Geldenhuis & Saayman, 2009; Holden, 2008; George, 2007; Diamantis, 2004). These impacts can potentially be either advantageous or undesirable. There are numerous ways in which ecotourism can have a positive impact on the natural environment. Nature conservation; improvement of degraded and disturbed areas; improvement and protection of biodiversity; the establishment or expansion of national parks and the creation of nature reserves are examples of the positive environmental impacts ecotourism strives to achieve (Diamantis, 2004; Newsome Moore & Dowling, 2013). Ecotourism has proved to have had a positive impact on wildlife where fauna and flora species were at the verge of extinction. Many countries established wildlife reserves and implemented firm laws to protect these species and, as a result, many endangered species have begun to flourish again (Page & Connell, 2009).

Increased public awareness of environmental problems and appreciation of nature can sprout from tourists that come into close contact with nature. Being confronted with the value of nature may lead to environment-friendly behaviour in order to preserve the environment (Newsome *et al.*, 2013; George, 2007).

On the other hand, it is undeniable that ecotourism can have adverse impacts on the natural environment such as

soil erosion; trampling; disturbance of wildlife modification and/or loss of habits; deforestation or destruction of vegetation due to building tourism facilities, access roads and other infrastructure - in broad terms, wear and tear of the environment (Geldenhuis & Saayman, 2009; George, 2007; Newsome *et al.*, 2013). The impacts of ecotourism will even become a greater problem as it is expected that ecotourism will grow considerably in the years to come. The International Ecotourism Society (TIES) estimated that ecotourism was growing three times faster than the tourism industry as a whole (TIES, 2006). In South Africa, the numbers of visitors to South African National Parks increased during the 2010/11 tourism season, by 0.5% from 4 512 478 to 4 536 491 (of which 80% were domestic tourists) with an average unit occupancy rate of 69.2%. This was significantly higher than the average occupancy rate of the rest of the accommodation sector in South Africa, which was 44%-47% (Price Waterhouse Coopers, 2011; SANParks, 2011). This significant increase in visitor numbers to natural areas will undeniably result in increased pressure on resources (such as energy and water) and added impacts on the environment (such as littering, pollution, disturbance of wildlife and degradation).

Littering by tourists that affects the visual quality of the environment and can further harm wildlife is one example of impact on the environment (George, 2007). Transport is another aspect that contributes to pollution, both in terms of air and noise pollution (George, 2007; Page & Connell, 2009; Simmons & Becken, 2004). There can be little doubt that in order to maximise positive and minimise negative impacts, proper planning and management needs to take place at all levels of ecotourism management and development (Newsome *et al.*, 2013; Buckley, 2009). Additionally, the tourism industry relies on other sectors

of the economy like transportation, construction and agriculture for the production of goods and services and this reliance can lead to the increase in consumption of energy and water (Buckley, 2004; George, 2007). Important aspects that should be taken into consideration when developing an ecotourism product to minimise its environmental impact include facilities design; site and visitor management, community involvement and eco-efficient practices (Fennell, 2008; Geldenhuys, 2004; Cole, 2006). These aspects are elucidated upon as follows:

Facilities: The ability of facilities to sustain itself and the environment is reliant on careful planning and design. In the development of facilities, two key components must be taken into account, namely tourist satisfaction and the environment (Saayman, 2009). Eco-tourists want to have an authentic nature experience; therefore the site must be developed such that the ambience of the natural environment is maintained and enhanced (Saayman, 2009). Ecotourism facilities should draw on a low impact approach and this may necessitate a complete paradigm shift from conventional facilities design (Fennell, 2008).

Site and visitor management: Management strategies that deal with tourist impacts can be divided into two main groups, namely site management and visitor management. Site management focuses on manipulating the environment by means of zoning, visitor movement and infrastructure. Visitor management refers to regulating visitor behaviour and the amount of use which can be achieved by visitor number limitations; education and interpretation (Newsome, Dowling & Moore, 2005; Geldenhuys, 2004).

Community involvement: The local community has the right to understand, appreciate and conserve its natural and cultural resources and

to benefit from them. It is also important that the local community recognise their role as custodians of natural and cultural resources in order to sustain the industry (Keyser, 2009). The community will be more inclined to fulfil their role in terms of developing a sustainable tourism industry if they are involved in the planning process (of tourism development) and receive benefits from the industry. Involvement must occur from the planning stages so that suitable decisions can be made, and support be gained for tourism development projects (Neth, 2008; Cole, 2006).

Eco-efficient practices: In order to contribute to the long-term well-being of natural resources and to minimise negative ecological impacts; it is essential that protected area managers adopt eco-efficient practices. Eco-efficiency refers to the reduction of energy and natural resource usage as well as waste management and minimisation of pollutants discharged during the production of goods and services (Kelly, Haider, Williams & Englund, 2007). The wise use of resources is becoming ever-more important to remain sufficient for current use, and that of future generations (Coetzee & Saayman, 2009; DEAT, 2003).

The successful implementation of the just-mentioned practices will not only require innovative practical solutions but also the support of various stakeholders (tourists, product owners and government) (Kelly *et al.*, 2007). Therefore an understanding of the eco-tourist market and their perceptions regarding environmental management issues is important in that it provides developers with information to help prevent negative impacts on the environment, whilst also creating experiences to meet the expectations of the ecotourism market (Petrosillo, Zurlini, Corlian, Zaccarelli & Dadamo, 2007; Clifton & Benson, 2006; Kelly *et al.*, 2007).

An eco-tourists' perception of environmental management practices will depend on their needs which they seek to satisfy and their motivations and values (Kelly *et al.*, 2007). Research has shown that eco-tourists often seek more than the mere viewing of wildlife - they search for authentic experiences (Chan & Baum, 2007). Eco-tourists often have a desire to escape from their daily routines to relax and to "get away from it all". It is for this reason that uncrowded, remote ecotourism destinations/sites are important aspects of the ecotourism experience. Furthermore, eco-tourists often seek experiences that provide a sense of closeness to nature; they wish to interact with and learn more about wildlife; nature and local cultures (Chan & Baum, 2007; Wearing & Neil, 2009; Beh & Bruyere, 2007).

According to Newsome *et al.* (2013), tourists' perceptions concerning the environment can be placed along a continuum ranging from anthropocentric (human-centred) to ecocentric (pro-environmental). The anthropocentric view typifies the traditional tourism perspective prior to the rise of environmentalism, where the Earth is seen as a planet with a limitless supply of resources to satisfy all human needs, including tourism. The ecocentric view respects the biodiversity and fragility of the Earth.

Various studies regarding tourist perceptions of environmentally friendly destinations and/or tourism operations have been conducted during the last 15 years. This include studies such as those of Hun, Hsu, Lee & Sheu (2011), Andereck (2009), Dalton, Lockington & Baldock (2008) Kelly, *et al.* (2007) and Tearfund (2002). These studies suggest that tourists with a more ecocentric (concerned about the environment) orientation are more positive towards environmentally friendly initiatives and are often willing to pay 'environmental fees' such as conservation fees. This trend will force ecotourism providers such as

protected area managers to implement environmental management practices. However, according to Kelly *et al.* (2007), a challenge that protected area managers face is choosing those environmentally friendly practices that will appeal to eco-tourists. This can be difficult to determine due to diverse perspectives of tourists and their broad distribution around the globe. It is therefore important to determine the visitors' perspectives of environmental management practices in different contexts to be able to provide the correct management strategies to limit tourism impacts (Kelly *et al.*, 2007). This study presents one of the first documented research regarding eco-tourists' perceptions of key environmental management factors in South African National Parks.

Research Methodology

Research Design

For this research study a quantitative approach was employed. A web-based survey was conducted amongst tourists that have visited South African National Parks.

Data Collection

The survey was launched in March 2011 which coincided with the school holidays in South Africa, using the Unit Command Climate Assessment and Survey System (UCCASS). A total of 1 014 questionnaires were received, of which 993 were adequately completed. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was calculated and a score of 0.970 was reported exceeding the necessary threshold of 0.6 (Field, 2013). The questionnaire consisted of 55 constructs pertaining to responsible ecotourism. However, for purpose of this study 35 constructs pertaining to the environmental management practices had been selected for analysis. The constructs were environmental management practices such as development aspects, eco-

efficiency, environmental education and visitor management. All constructs were identified in and are based on the literature review. Sources used to a large extent to develop the questionnaire include the works of Buckley (2009); Saayman (2009); Holden (2008); Kelly *et al.* (2007) and DEAT (2003). A Likert scale of 1 (not important at all) to 5 (extremely important) was applied in order to express the significance of each particular construct.

Data Analysis

The data was analysed by means of the SPSS (Statistical Package for Social Sciences) software program. An exploratory factor analysis was conducted in order to determine the perceptions of visitors regarding environmental management practices in South African National Parks. The pattern matrix with the principal axis

factoring extraction method and the Oblimin rotation method were employed; three factors were extracted according to Kaiser's criterion explaining 59.1% of the total variance. A Cronbach's Alpha (1 = very reliable) and inter-item correlation reliability tests were conducted in which all the factors proved to be reliable.

An open-ended question was included in the questionnaire to elicit more depth. The open-ended question aimed at prompting further responses from visitor respondents regarding specific environmental management issues in South African National Parks.

Results and Discussion

Three factors were extracted from the factor analysis as indicated in Tables 1 to 3. Constructs with a factor loading lower than 0.4 were omitted.

Table 1: Eco-efficient practices

Factors	Mean Value	Chronbach Alpha	Factor Loading	Key constructs
Factor 1: Eco-efficient practices	4.39	0.941	0.934	Energy-saving techniques
			0.864	Make use of renewable energy sources
			0.883	Water-saving techniques
			0.739	Environmentally friendly design (e.g. optimise natural heating/cooling)
			0.725	Collecting rainwater
			0.598	Reduce, re-use, recycle
			0.587	Environmentally friendly purchasing policies
			0.566	Environmentally friendly consumer products (soap, pesticides, recycled paper)
			0.484	Arrange with suppliers to minimise packaging
			0.482	Solid waste management plan

Factor 1: Eco-efficient practices

This factor has a mean value of 4.39 and includes the following important constructs: the resource-saving

techniques, waste management, environmentally friendly consumer products and purchasing policies. This was rated as the second most important factor. Eco-efficiency is

about easing the amount of energy and natural resources used, as well as waste and pollutants emitted in the supply of ecotourism products and services (Kelly *et al.*, 2007). Waste disposal and energy consumption is a worldwide problem and is particularly relevant to the tourism industry. Tourism operations are producers of large quantities of waste, some of

which are toxic and can lead to pollution of natural areas (Buckley, 2009; DEAT, 2003; Kandari & Chandra, 2004). Where protected areas attract tourists the pressure on resources increases. Therefore it is essential to implement eco-efficient practices in order to minimise the negative environmental impacts of tourism in these areas.

Table 2: Eco-tourist conduct

Factors	Mean Value	Chronbach Alpha	Factor Loading	Key constructs
Factor 2: Eco-tourist conduct	4.74	0.936	0.928	No littering
			0.919	No feeding of animals
			0.826	No speeding in parks
			0.790	No loud talking at sightings
			0.777	No collecting of specimens
			0.770	Responsible use of resources such as water and electricity
			0.726	Obey road signs and rules
			0.705	Remain inside the vehicles
			0.564	Implement practices to reduce pollution and litter
0.507	Reduce negative impacts such as noise, lighting and erosion			

Factor 2: Eco-tourist conduct

This factor was rated the most important of the three factors with a mean value of 4.74. It includes constructs related to the ethical behaviour of tourists in protected areas. Not only are these constructs important for minimising negative

impacts on the environment, but also for enhancing the quality of experience for the visitor (Du Plessis, 2010).

Table 3: Park management aspects

Factors	Mean Value	Chronbach Alpha	Factor Loading	Key constructs
Factor 3: Park management Aspects	4.03	0.898	0.703	Variety of activities in usage zones
			0.690	Inform visitors about conservation projects
			0.666	Facilities for interpretation
			0.665	Provide environmental education programmes for communities

		0.664	SANparks should venture beyond its borders to grow its constituency of conservation
		0.643	Tourism offerings should provide visitors with an opportunity to learn about nature
		0.537	SANparks must make use of locally produced products
		0.428	Use of low impact promotional mechanisms, e.g. brochures in electronic format or on recycled paper
		0.410	Inform visitors about eco-friendly practices

Factor 3: Park management aspects

This factor has a mean value of 4.03 and includes the following constructs: the promotion of environmental awareness and ethics, staff training and the provision of facilities for interpretation, as well as a variety of activities within usage zones. SANParks forms an important link between the environment, tourists and local community and it is imperative that this position be amplified to influence tourists at destinations and also to encourage the local community to participate in projects that will enhance the overall well-being of the environment (Saayman, 2009).

Based on the results, the following findings and implications were revealed. The first finding indicates that appropriate eco-tourist conduct by tourists and management (Factor 2) is extremely important to respondents and was the factor with the highest mean value (Mean value 4.74). Littering, alcohol abuse, speeding and high noise levels of tourists and staff were among the most common offences listed and is said to be a major disturbance to other tourists as well as wildlife. This was also found in a study done by Du Plessis (2010) regarding the influence of negative environmental impacts on the tourists' experience. A prominent implication of this finding is educating tourists and management regarding appropriate behaviour in parks. Education is

furthermore an important aspect of park management (Factor 3). Protected-area managers have used education and interpretation as a tool for the two main purposes of satisfying tourists' need for knowledge, as well as for influencing both visitor and community behaviour towards fragile resources in order to minimise negative impacts (Powell & Ham, 2008; Fennell & Weaver, 2005; Littlefair, 2004). Visitors, staff and the community should be made aware of their impacts as well as desirable environmental behaviour and park rules. When designing educational material pertaining to environmental issues and ethical conduct, one must bear in mind that it should enhance the experience for the visitor and not make them feel as if they are being controlled (Eagles & McCool, 2002). According to the UNESCO-UNEP, providing education and interpretation have the following objectives in terms of visitors, staff and local community, namely: to create awareness of the fragility of the environment; to provide a basic understanding of the environment; to influence positive and protective attitudes towards the environment; and to acquire skills for identifying and solving environmental problems (Fennell, 2008). Park management should be innovative when designing educational and promotional materials and take advantage of the technology in order to make it appealing to visitors.

The second finding revealed that eco-efficient practices (Factor 1) are crucial to reduce the pressure on non-renewable resources and for the long-term sustainability of ecotourism in national parks. This factor is furthermore perceived by tourists to be a very important factor as it has a mean value of 4.39 (very important to extremely important on the Likert scale). SANParks has shown commitment to the implementation of eco-efficient practices. For example, the Coordinated Policy Framework indicates that “an eco-friendly approach for all aspects of the organisation should be adopted” (SANParks, 2006). The Park Management Plan for Kruger National Park highlights “the reduction of the waste stream by 70%, recycling of all plastics and removal of incineration where feasible” as a five-year strategic objective (SANParks, 2008). SANParks has already started implementing eco-efficient practices, by using solar energy to power fridges and geysers, for example.

The implication of this finding is that this commitment needs to be communicated to the tourists, since they perceive eco-efficient practices to be very important. A recommendation in this regard is to develop an online flipbook such as the responsible tourism flipbook (available on SANParks website). The flipbook should give information on which eco-efficient practices have already been implemented; the benefits of the specific practices and how it will contribute to the minimisation of negative impacts; and lastly what the plans are for upgrading older, less eco-efficient infrastructure. This flipbook should be updated regularly in order for tourists to track the progress.

Conclusion

This research reveals key environmental management factors in South African National Parks from an eco-tourist perspective, namely eco-

efficient practices, eco-tourist conduct, and park management aspects. “Eco-tourist conduct” was the factor with the highest mean value and it was noted that this factor is not only important for decreasing negative environmental impacts, but also for improving the overall visitor experience. This study made the following contributions: it was the first time that perceptions of visitors to South African National Parks regarding key environmental factors were assessed.

The research furthermore contributes to the literature regarding environmental management in protected areas and the tourism industry, particularly from the tourists’ point of view. Lastly, it can assist park management to address environmental management issues in South African National Parks as well as other protected areas (such as game farms and private nature reserves), while providing visitors with satisfying ecotourism experiences.

It is furthermore recommended that research be conducted to determine what environmental management practices are currently being implemented in protected areas in the private sector, since environmental management is crucial for sustaining natural resources and minimise negative impacts in protected areas where nature attracts tourism.

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