A visitor perspective of conservation management at a South African national park and world heritage site

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Abstract

MNP is of international cultural and ecological importance as it has been inscribed as a world heritage site and a transfrontier conservation area (TFCA). Conservation is seen as the primary pillar of management for any national park in South Africa, however, the perceptions of visitors in terms of conservation at such sites is often overlooked. For this reason the primary goal of this paper is to determine whether there are any gaps in the effective management of conservation at MNP. The results presented in this paper form part of a larger integrated tourism research project which took place at MNP during 2013. This study incorporated various aspects related to effective tourism management at a national park and world heritage sites including hospitality, human resources, marketing and conservation, the latter aspect will be the core focus of this paper. This paper is structured in four main parts. The paper will commence with a literature overview of protected area management with a focus on the pillars of park management. The second part of the paper will detail the methodology utilised followed by the data and methodology. The paper will conclude with a discussion and conclusion.

Keywords: National park, world heritage site, visitor perceptions, tourist experience, conservation management.

Source: http://www.mopanebushlodge.co.za/image/Maps%20and%20Directions/Mapungubwe%20Area.
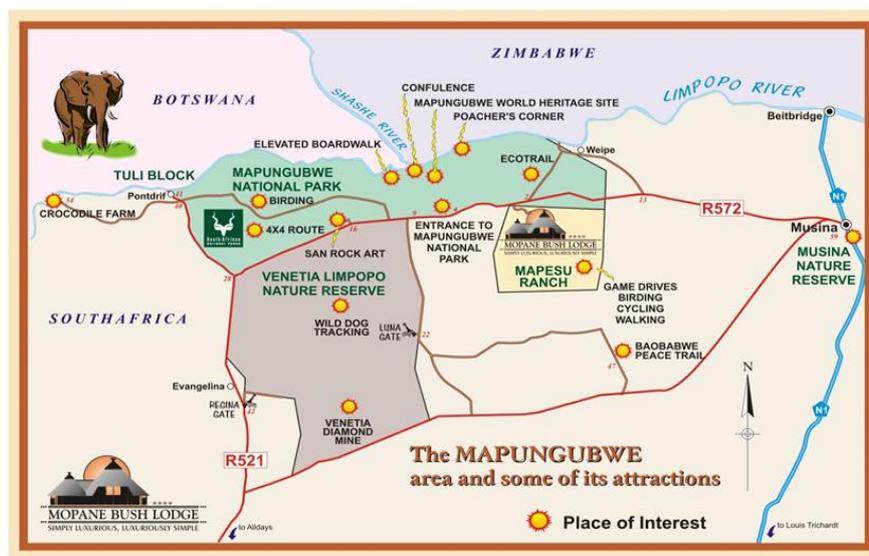
Introduction and Literature Review

MNP is one of 19 national parks in South Africa which are managed by South African National Parks (SANParks). SANParks follows a centralised management plan which is then replicated and adapted within each of its national parks and management divisions (SANParks, 2012a). The management approach that is adopted by a particular tourism attraction is important in three ways. Firstly, the management approach determines the formal structure of the organisation and its informal culture. Secondly, the management approach influences the staff attitudes and job satisfaction at the attraction, which leads to the third reason, which is the management approach's ability to influence the visitor experience (Swarbrooke, 2002). Child (2004) notes that the challenge with managing parks is not to make them more efficient, but to make them more effective. Although all parks are unique, Saayman (2009) states that three mutual categories of park management exists, namely conservation management, ecotourism management, and general management.

Carruthers (2009) notes that the national parks of South Africa came to being as a result of the need to conserve the country's unique fauna and flora, which were rapidly being eradicated in the last decade of the nineteenth century and in the early twentieth century. As a result of this fundamental need, conservation management was recognised to be the principal mandate of SANParks as it comprises the largest part of its management activities. This conservation involves the preservation of biodiversity, natural landscapes and heritage assets (SANParks, 2012a). To this day conservation is still the main mandate of SANParks, although tourism management and community engagement are now also fundamental elements of this mandate (SANParks, 2012b). In recent times, due to the income-generating potential of the industry, ecotourism is also cited as a

motivation for the conservation of natural and cultural resources (Keyser, 2004).

Saayman (2009) notes that conservation management involves various aspects that need to be addressed in park management. These aspects are detailed below together with their application within the context of MNP.

- Game introductions – Some species of game have been reintroduced into MNP in order to establish new populations or to augment existing populations (SANParks, 2010). The TFCA also allows fauna from other countries to cross into MNP (SANParks, 2012b).
- Educational facilities – At MNP these include the management of signage as well as the park's interpretive centre near its main gate (SANParks, 2010).
- Water points – MNP is bordered to the north by the Limpopo River that provides water, especially during the summer months. The park is situated in an arid area, which means that water is scarce during certain times of the year. For this reason MNP provides artificial water points for animals (SANParks, 2010).
- Services and water supply – For MNP to cater for tourism, it was necessary for the park to develop infrastructure which included the connection of camps and staff villages to the national power grid, the provision of water pipelines and boreholes, and the construction of septic tanks for sewerage (SANParks, 2010).
- Carrying capacity – Saayman (2009) states the importance of managing the number of visitors entering a park in order to ensure the integrity of the park. On the other side of the paradigm is the importance of managing animal-carrying capacities, such as the elephant population in MNP, which is known to cause significant damage to the endangered riparian forest along the Limpopo River (SANParks, 2010).

- Game counting – MNP is home to a number of endangered, rare and threatened animal species, including cheetah, African wild dog, and the Transvaal quilsnout snake (SANParks, 2010).
- Alien plant control – Over 30 alien plant species and one species of alien fish have been recorded within the boundaries of MNP (SANParks, 2010).
- Soil erosion and reclamation – Large portions of land that now form part of MNP served the needs of the agricultural industry for a number of years. These lands are now being rehabilitated and restored to their natural condition, although this may take a number of years in some cases (SANParks 2010).
- Problem animal control – MNP is known to have populations of domestic animals such as cattle, goats and donkeys and in addition, elephants are known to cause severe damage to vegetation (SANParks, 2010).
- Removal of structures – At MNP this includes the removal of infrastructure related to boundary fences, roads, dams and buildings that previously served military, agricultural and residential purposes (SANParks, 2010).

Although conservation is the primary pillar of management for protected areas Ballantyne, Packer and Hughes (2009) have noted that visitor awareness of conservation messages are critical to the achievement of conservation objectives. They assert the importance of analysing conservation from a tourist perspective. Timothy (2011) notes that the intrinsic link between tourism and conservation is interpretation. He notes that when interpretation facilities at conservation sites are appropriate and of a good quality, they effectively heighten the significance of the site in the hearts and minds of visitors. This should lead to a greater appreciation of the site's significance and therefore a greater desire to respect and conserve the site. Powell

and Ham (2008) describe the intrinsic link between tourism in a protected area and the achievement of conservation. They found that a well-designed and delivered ecotourism experience can increase knowledge of the host-protected area, supportive attitudes towards resource management issues facing the host-protected area, general environmental behavioural intentions and general support of conservation (Powell & Ham, 2008). In addition, Van der Merwe and Saayman (2014) have identified interpretation and the management of conservation within a protected area as significant factors influencing a memorable game experience for visitors. In Australia, Tonge and Moore (2007) measured visitor experiences of conservation management in a protected area. They identified a direct link between the management of conservation and the satisfaction visitors receive from their wildlife experience. Here visitors indicated a gap in the effective management of litter and the general condition of the environment as areas of concern influencing their visitor experience. Tonge and Moore (2007) as well as Van der Merwe and Saayman (2014) determined that these experience factors are sometimes out of the control of management such as species variety and some infrastructure, however sometimes minimal management input in these regards such as modest interpretation may overcome a potential gap in management effectiveness.

Conservation management is considered the fundamental core of park management while ecotourism management ensures the financial viability of conservation areas. These two spheres could have conflicting interests and in order to manage a park effectively general management, the third sphere, is used to bridge these two spheres. General management is responsible for the planning, organising, leading and control of various managerial functions. The type of functions may differ from park to park. In order to determine the effectiveness of conservation management at MNP and to minimise the potential conflict with ecotourism management, this study aims

to identify gaps in the effective management of conservation from a visitor perspective and to make recommendations for improvement.

Methodology

The research design was primarily quantitative in nature and formed part of an integrated study into effective tourism management at MNP. The research design adopted was in the form of a survey. Data collection took place by means of a self-completion online questionnaire. The questionnaire dealt with various themes pertaining to sustainable tourism management at MNP which were measured using five-point Likert scales. For the purpose of obtaining data from park visitors non-probability sampling was used. More specifically a web-based survey (convenience sampling) was conducted utilising a database supplied by SANParks of previous overnight visitors to MNP over a period of 12 months. In addition questionnaires were distributed manually by the researcher at MNP during the period March and April 2013.

The data collected was analysed by means of the SPSS (Statistical Package for Social Sciences) and the methods that were employed to interpret data included descriptive statistics, in addition a multivariate analysis was done utilising a factor analysis, ANOVA's and t-tests. A factor analysis is beneficial when used to examine underlying constructs influencing the responses on a number of measurable variables (DeCoster, 1998); this allows the researcher to identify key constructs that influence variables or to eliminate those that are not relevant to the study. ANOVA's allow the researcher to determine variances in data while t-tests were utilised to determine whether any significant differences were encountered between various sets of data (Field, 2009; Wielkiewicz, 2000).

Results

The overall visitor questionnaire focused on various factors related to tourism management at MNP. Forty constructs were identified and tested. Eight of these constructs pertained to conservation management. The various constructs (variables) identified were tested on a five-point Likert scale where 1 represented *extremely unimportant* and 5 represented *extremely important*. The constructs in this section were presented in two parts; firstly, respondents were asked to rate how important the constructs were from a visitor perspective and then they were asked to rate how they perceived the management implementation of that factor. Respondents' were then asked to rate these eight variables again but this time they were asked to rate the effective implementation of the various management constructs by the park management at MNP. Respondents were asked to rate these eight statements as but this time they were requested to indicate how they perceived management at MNP implementing these management statements. Rating took place in the form of a five-point Likert scale (1= *not at all* and 5 = *very well*).

An exploratory factor analysis was conducted on the forty management constructs of the total study. A pattern matrix with the principal axis factoring extraction method and the Oblimin rotation method was used on the different constructs in their respective groupings. These groupings were; transport and hospitality, entertainment and attractions, conservation management and general management. Bartlett's test of specificity indicated that the factors yielded p-values of <0.001, which indicates that the correlation structure is valid for factor analysis of the data collected. The factor analysis was utilised in order to identify various categories, and a total of nine factors were identified. The Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) of each of each factor indicates that the patterns of correlation are relatively compact and should yield distinct and reliable factors (Field, 2009). According to Field (2009) a KMO statistic of between 0.7 and 0.8 is good, while a KMO statistic of 0.8 to 0.9 is great and a

KMO statistic above 0.9 are superb. Nine factors were extracted (accounting for 71% of total variance) and factor labels determined. All constructs were included in the factor analysis as all constructs had factor loadings above 0.2. The factor labels were determined by analysing the common themes underlying the constructs within each factor.

Table 1: Factor analysis: Conservation management aspects seen as important (visitors)

Risk items	Factor loading	Mean value	Reliability coefficient (α)	Average inter-item correlation	Percentage of variance
Factor 6: Conservation		**4.25**	**0.83**	**0.39**	**47**
Eradication of alien fauna and flora.	0.760				
Control of domestic animals in the park.	0.738				
The reintroduction of indigenous game species to MNP.	0.729				
Conservation-focused educational facilities.	0.703				
The management of visitor numbers at MNP.	0.698				
The management of problem animals in MNP.	0.673				
The reclamation and rehabilitation of former agricultural land in MNP.	0.605				
The removal of unnatural structures such as fences, man-made dams and buildings in the park.	0.587				

The following factors were identified: F1: Information and accessibility, F2: Accommodation and ablution facilities, F3: Food and beverage, F4: Leisure facilities, F5: Professionalism of tours, F6: Conservation, F7: Concessions, F8: Human resources, and F9: Regulations and marketing. The results of the factor analysis pertaining to the importance of various management aspects related to conservation are presented on Table 1. In this factor analysis the factor of conservation with its eight constructs was identified as a distinct factor and with a KMO of 0.879 which represents a good to superb distinct correlation

All the identified factors had high reliability coefficients ranging from 0.71 to 0.95. These reliability coefficients test the data's ability to produce consistent results when the data is measured under different conditions (Field, 2009). In this study the Cronbach's Alpha (α) was utilised to test reliability. According to Webb, Shavelson and Haertel (2006) coefficients at or above 0.80 are often considered sufficiently reliable to make decisions about individual findings, thus the results of this factor analysis indicate that the instrument utilised to gather data was reliable. In addition, the inter-item correlations within the factors are all greater than 3, which indicates that the items correlate satisfactorily with the overall scale (Field, 2009).

As with the factor analysis conducted on the constructs pertaining to the importance of various management constructs, the constructs were also rated by respondents in terms of management effectiveness, or management aspects implemented at MNP. In this factor analysis the same methodology was utilised as with the previous factor analysis. The factor analysis of management effectiveness revealed the equivalent nine factors as identified previously.

Table 2: Factor analysis: Effectiveness of management aspects

Risk Items	Factor loading	Mean value	Reliability coefficient (α)	Average inter-item correlation	Percentage total variance
Factor 6: Conservation		**3.23**	**0.88**	**0.49**	**54**
Eradication of alien fauna and flora.	0.714				
Control of domestic animals in the park.	0.756				
The reintroduction of indigenous game species to MNP.	0.775				
Conservation-focused educational facilities.	0.696				
The management of visitor numbers at MNP.	0.702				
The management of problem animals in MNP.	0.759				
The reclamation and rehabilitation of former agricultural land in MNP.	0.792				
The removal of unnatural structures such as fences, man-made dams and buildings in the park.	0.672				

The following factors were identified: Information and accessibility, F2: Accommodation and ablution facilities, F3: Food and beverages, F4: Leisure facilities, F5: Professionalism of tours, F6: Conservation (KMO = 0.891), F7: Concessions, F8: Human resources, and F9: Regulations and marketing. The findings pertaining to the effective management of conservation is provided in Table 4. As with the factor analysis on the importance of management tasks, this second factor analysis relating to management effectiveness identified the factor of conservation as a distinct factor and with a KMO of 0.891 a good to superb distinct correlation was detected. The KMO measure verified the sampling adequacy for the analysis as all KMO's were above 0.7, which according to Field (2009) is considered acceptable as they are above the minimum level of 0.5. Bartlett's test of specificity indicated that the factors yielded p-values of <0.001, which indicates that the correlation structure is valid for factor analysis of the data collected. In this analysis the Cronbach's Alpha was also utilised to test reliability. The inter-item correlations within the factors are all greater than 3, ranging from 0.47 to 0.79, which indicates that the items correlate satisfactorily with the overall scale (Field, 2009).

The results indicate nine main factors that are perceived by visitors to MNP in terms of visitor management. Inherent differences can be seen between the conservation management constructs that visitors to MNP perceive as important and how effectively management implements these conservation management constructs. When analysing these two tables, it can be seen that the respondents in the study perceived the same factor relating to conservation management and that there are differences between what visitors see as important and how effective management implements these conservation management aspects; however, this factor analysis does not indicate where significant differences occur between the two analyses. For this reason and to clearly answer the third objective of the study (to identify gaps in management effectiveness from a visitor perspective), a t-test was conducted on the factors identified.

A t-test (paired-samples t-test) was conducted in order to determine whether there were any significant differences between the factors identified from the managerial variables (in other words between Table 3 and Table 4). These tests are suitable when there are two experimental conditions and the same participants took part in both conditions (Field, 2009; Wielkiewicz, 2000), thus it was suitable for the purposes of this analysis. A p-value of >0.05 was indicative of a significant difference between the mean factors of the two groups on a confidence level of 95%. In a t-test differences are depicted by means of effect sizes. According to Field (2009), effect sizes of around 0.1 indicate small effects, effect sizes around 0.3 represent medium effects and effect sizes around 0.5 and above represent large effects. Table 3 provides an outline of the results of the t-test.

Table 3: Management effectiveness t-test

Factor	Group	Mean	N	Standard deviation	Sig. 2-tailed	t value	Effect size (r)
Conservation.	Importance	4.25	377	0.566	0.001	22.295	1.43
	Effectiveness	3.23		0.708			

The following inferences can be drawn from the t-test in Table 3, On average, respondents experienced a significant gap in the effective management of conservation at MNP (M = 3.23) and their perceptions of the importance of the management of conservation in the park (M = 4.25), t (df = 376) = 22.295, p < 0.05. With an effect size of r = 1.43 a medium to large effect can be determined. This is the largest gap in management that was identified in this study.

The visitor questionnaire concluded with an open-ended question where visitors were requested to provide comments relating to improvements related to tourism management at MNP. A total of 239 respondents provided input in this regard; therefore it was imperative to analyse these results, as they provide numerous suggested improvements to tourism management at MNP. The responses received were analysed utilising the qualitative data analysis software Atlas.ti (Version 7). The results of the qualitative data analysis of the visitor questionnaire determined three main themes within the scope of conservation management, namely (1) management of animals, (2) visitor management and (3) infrastructural improvements. The key sub-themes in each theme category will be discussed.

Of highest concern within the main theme of management of animals related to the management of problem animals in MNP. These problem animals included both wild and domestic animals. Primates and elephants were considered the wild animals requiring improved management. Primates caused numerous frustrations in the Limpopo Tented Camp and the Mazhou Camp as these animals damage respondents' property and took food and other items. The damage caused by elephants to vegetation, especially in the western part of the park, is increasingly being noticed by respondents. Elephants have broken through the elephant fence and are now hampering vegetation rehabilitation efforts. Respondents indicated a concern related to issues surrounding the presence of domestic animals within MNP. More specifically, respondents were concerned about the large number of cattle and donkeys in the park. In terms of rehabilitation, some respondents advocated greater management efforts focussing on the rehabilitation of former agricultural land and vegetation damaged by elephants.

The second main theme encountered pertained to visitor management. Although increased awareness of the park could lead to market growth, respondents indicated concern about the number of tourists in the park. Respondents were concerned about the low numbers of visitors and the viability of the park, but at the same time indicated that they did not wish to see large numbers of tourists in the park.

As far as information is concerned, respondents recommended that more information be provided to tourists in order to enhance the visitor experience at the park. Areas where information was lacking included; general information about fauna and flora at the park, perhaps a checklist of species at the park, signage at recreational sites such as the tree-top walk, bird hides and confluence look-out, information on activities available at the park for tourists such as walks, game drives and tours, improved up-to-date maps of the park.

The final theme identified related to the management of conservation infrastructure at MNP. Two sub-themes identified relate to park consolidation and border issues. In terms of park consolidation, respondents indicated a concern about the separation of the park into two parts, which caused inconvenience in some cases. The border issues raised concerned problems experienced by respondents in relation to illegal immigrants and poaching in the park. Respondents encountered illegal immigrants on a number of occasions. The fences along the Limpopo River to the north of MNP, along the South African, Botswana and Zimbabwe border, were a major concern to respondents. Respondents found the fence poorly maintained and in a poor condition. As a result, numerous respondents felt that this fence should be removed. The above

themes indicate that the respondents were concerned not only about the condition of the fence, but also about the welfare of wildlife in the area. Although respondents want the fence removed, there were some suggestions that portions of the fence should be preserved because of its historical importance.

The data and results of the study indicate that there are differences between what visitors to MNP perceive as important in the management of conservation and the effective implementation of these management tasks. The visitors have additionally provided an insight into the problems that exist in this sphere of park management and they have made reference to potential solutions to these problems. In the final section of this paper, conclusions and recommendations for the improvement of conservation management at MNP will be provided.

Conclusion and Recommendations

Conservation management cannot exist in an isolated state as ecotourism today is considered a vital management component to ensure the viability of a protected area. However the perspectives of visitors relating to conservation management are often not taken into consideration when developing management plans for protected areas. As such the aim of this paper was to determine whether there were any gaps in the effective management of conservation at MNP from a visitor's perspective and to make recommendations in this regard.

The following conclusions can be drawn about the importance of conservation management at MNP from a visitor perspective:

- The reintroduction of indigenous game species to MNP is considered very important to visitors at MNP.
- The control of domestic animals in the park is considered very important to visitors.
- Eradication of alien fauna and flora is considered very important to visitors.
- The park needs to improve its effectiveness in the removal of unnatural structures such as fences, man-made dams and buildings in the park.
- Management needs to improve the reclamation and rehabilitation of former agricultural land in MNP.

Visitors to MNP felt that there was a gap in the effective management of conservation in the park. This gap included the eradication of alien fauna and flora, the control of domestic and problem animals in the park, the reintroduction of indigenous game species, and the provision of conservation-focused educational facilities. Visitors also perceived inefficiencies in the management of low visitor numbers at MNP, the reclamation and rehabilitation of agricultural lands and the removal of unnatural structures in the park.

Management should investigate a management strategy for removing such animals from MNP. Should management decide to keep the animals in the park for their heritage value, they should be managed in an appropriate way in order to portray their cultural significance and visitors should be educated about their role in the park.

Management should implement strategies to manage problem animals in the park. These problems refer to the damage caused by elephants and primates. Solutions may include better maintained elephant fences to protect sensitive vegetation systems, information to tourists on how to protect themselves from primates and possible use of camp assistants tasked with chasing away problem primates.

Man-made structures situated in MNP, such as the remains of buildings, dams, fences and agricultural structures, should be removed. The border fence between South Africa and its neighbouring countries should be properly managed.

The fence should either be removed or maintained. Since there is a viewpoint that this fence has historical significance, it is recommended that a portion of this fence be retained for its historical value. This historical value should be effectively communicated to tourists.

MNP is both a world heritage site and a national park, and each protected area has its own unique management environment, however conservation remains the core management function. The presence of ecotourism is however required in order to ensure the viability of the park and the perceptions of these visitors may be considered an essential input into the management process. This study was not only the first to analyse the perception of visitor towards conservation management at MNP, but also the first to do so at a world heritage site and TFCA in southern Africa. The results of the study pointed out the main gaps in management effectiveness towards conservation management and provided recommendations in this regard. However to enhance this findings of the study additional linear studies will be required at other protected areas.

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