Stakeholder perceptions on the environmental impacts of wildlife-based tourism at the Chobe National Park River Front, Botswana

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Abstract

Stakeholders' perceptions of the impacts of wildlife-based tourism activities on the environment of a protected area were examined at the Chobe National Park (CNP) in Northern Botswana. Data were collected by means of a self-completion survey (questionnaire) among wildlife-based tourists and key informants in Kasane. Additional data were collected via participant observation on wildlife/safari tourism at the study site. Results show that there were positive perceptions of wildlife-based tourism, quality of wildlife and birdlife, species variety and scenic beauty along the Chobe National Park river front. The frequent use of the river front route by mobile tour safaris and fixed lodge operators has led to negative environmental impacts: vehicle congestion, deepening of treks/paths, boat congestion on the Chobe River and dust, all of which have led to reduced nature experience and satisfaction by tourists. This paper argues that it is evident that the ecological sustainability of the park is compromised and suggests that there is a looming problem at the park that deserves to be investigated further.

Keywords: Wildlife tourism, protected areas, conservation, Chobe National Park, Botswana

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Introduction

Botswana is often celebrated as a success story in conservation circles, and it has become a popular destination for wildlife and safari tourism for international nature-based tourists (Botswana Tourism Development Program [BTDP], 1999; Mladenov et al. 2007; Magole and Gojamang, 2007; Mbaiwa, 2015). In the last few decades, Botswana has experienced an increase in tourists visiting protected areas thereby making tourism one of the key contributors to Botswana's economy (Government of Botswana [GoB], 2009b; World Travel and Tourism Council [WTTC], 2007). For instance, in 2010 approximately 2.5 million tourists visited Botswana (WTTC, 2015). The increase in tourist visitor numbers can be attributed to the popularity and attractiveness of Botswana's tourism destinations (Figure 5). Due to the aesthetic beauty and naturalness of most tourists' sites in northern Botswana, there is likelihood that tourist areas may become degraded due to the high number of visitors, and this may reduce the quality of tourist experience (Eagles et al, 2000). However, there is dearth of empirical data on environmental impacts of wildlife tourism in many protected areas in southern Africa in general and Botswana in particular.

Wildlife in Botswana is seen as an asset to be utilised in realising the economic growth through non-consumptive means. Through the Kazango Zambezi Transfrontier Conservation Area (KAZA-TFCA), expectations of economic growth through the development of the tourism sector are high. However, most areas of high tourism potential in Botswana are already fully explored and/or are sensitive to further development and appear to have reached their capacity to absorb more tourists (Mbaiwa, 2015). For instance, there have been concerns regarding Chobe National Park (CNP) that tourism levels at times exceed the carrying capacity of the tourism areas, and that these high levels of tourist related activities have negative impacts on the industry and the environment (Mbaiwa, 2012; ECOSURV, 2000). Research has shown that if wildlife-related tourism is ill-planned and activities are not carefully managed it can cause negative impacts on people, resources and the environment (Moswete and Mavondo, 2003). Previous studies have shown negative ecological effects that include, but are not limited to, a decline in animal numbers due to consumptive activities (e.g., poaching) (Barnes, 1995, 2001; Newsome et al, 2005; Shackley, 1996), death of wildlife (Moswete and Mavondo, 2003; ECOSURV, 2000), transmission of human diseases (Barnes, 2001; Mbaiwa, 2012), change of animal behaviour (breeding, feeding and hunting) (Higginbottom, 2004; Orams, 2002; Moswete et al, 2017), soil compaction and erosion at popular tourist viewing sites (Weaver, 2001) and stress-related illnesses of wild animals (Green and Higginbottom, 2000; Hachileka, 2003; Laven et al. 2005; Newsome et al., 2005).

Wildlife based tourism

Botswana's tourism is mainly wildlife-based (BTDP, 2000; GoB, 2001). Wildlife and safari tourism developments (e.g., airstrips for chartered aircrafts) tend to be situated on the peripheries of protected areas (GoB, 1986; Department of Wildlife and National Parks [DWNP], 2003; Ketshabile, 2010). Wildlife tourism infrastructure (e.g. safari lodges is concentrated on popular areas including the CNP (BTDP, 1999; GoB, 2001; Moswete et al. 2017). For the most part, nature tourists visiting Botswana's protected areas (Pas) are attracted by wild animals that roam free and are not 'displayed' in Zoos (BTDP, 1998; Mbaiwa, 2012; Sebopeng, 2010). In studies

by Magole and Gojamang (2005), Mbaiwa (2018) and Mmopelwa et al (2007), it was established that tourists who visit northern Botswana come to see wildlife in uncrowded parks (BTDP, 1998). Of the total tourists to northern parks and reserves, Magole and Gojamang (2005) found that the CNP received 60% of all visitors. The CNP received 203,974 tourists in 2006 and about 269, 000 were recorded in 2007 (DWNP, 2010). Table 1 below shows a rapid increase in tourist numbers from outside fixed wildlife camps/lodges and mobile tour operator clients from 2009 to 2014 (DWNP, 2015). For instance, visitors from outside fixed camp/lodges rose from 86, 982 in 2009 to 118,763 in 2014. Mobile tour operator clients also increased from 47, 277 in 2009 to 90,515 in 2014 (Table 1). The rapid increase in and popularity of wildlife tourism in Botswana have prompted the government to enact tourism legislation (GoB, 1986; 2009a) and policies (GoB, 2007) in order to promote sustainable nature tourism activities.

Table 1: Number of visitors to Chobe National Park in the period between 2009 and 2015

Chobe National Park	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**
Private visitors	18,089	25,373	25,577	29,227	32,462	36,563	34,854
Mobile tour operator clients	47,277	49,408	53,438	63,179	78,257	90,515	78,128
Inside fixed camps/lodge clients	18,559	14,655	17,885	18,934	19,570	20,298	18,303
Outside fixed camps/lodge clients	86,982	96,975	96,900	100,195	111,361	118,763	104,547
Non-fee-paying tourists	13,770	10,480	11,091	2,132	1,788	1,135	1,803
Total	**184,677**	**196,891**	**204, 891**	**213, 667**	**243, 438**	**267, 274**	**237, 635**

Source: Department of Wildlife and National Parks (DWNP, 2015)

The government ascribes great importance to the sustainable utilization of wildlife and other natural resources as documented in its wildlife conservation policies and strategies (*see* Wildlife Conservation Policy, 1986; Wildlife Regulations, 2000; Community Based Natural Resources Management Policy, 2007; Tourism Act 2009; Botswana National Ecotourism Strategy, 2003; Botswana Tourism Policy 1990). It is through these conservation-related policies and strategies that undesirable environmental effects of wildlife or safari tourism development are controlled, monitored and thereby minimized. For instance, to utilize wildlife resources sustainably, the government pursues a High Cost, Low Volume (HCLV) marketing strategy. With HCLV, wildlife-based tourism enterprises are to target high paying clientele, typically those with the potential to stay longer at destinations (BTDP, 2003; GoB, 2009a). The targeted tourists are those with the potential to stay longer in permanent lodging facilities as the tourism policy discourages casual camping (GoB, 1990; BTDP, 2000). More importantly, the HCLV strategy encourages and supports sustainable tourism development and environmental protection (Hachileka, 2003; GoB, 2009b). As stated in the Botswana's NDP10 of 2009, "the high value-low volume strategy avoids having an excessive number of tourists in a 'single' given 'nature' based tourist area . . ." (p. 195). As a result, Botswana's wildlife tourism has been managed as

such, and until recently, there have been successes and challenges (Mbaiwa, 2015; Moswete and Thapa, 2015).

The motivation for this study is that there is dearth of research on wildlife leisure activities and associated consumption patterns in most parts of the country. Studies conducted in northern Botswana show that scores of safari tourism developments (e.g., game lodges) tend to be located along waterfronts of the Chobe River and the Okavango Delta (Ketshabile, 2010; Mbaiwa, 2012; Moswete et al. 2017). Thus, wildlife tourists tend to frequent and crowd at the River Front area of the CNP. This has relatively reduced the quality of wildlife recreational experience for tourists (Chobe River Front Management Plan, 2001). Researchers have raised concerns that if wildlife campsites facilities in the Chobe-Kasane regions can increase, nature-based tourists will also increase (Barnes, 2001; Moswete and Mavondo, 2003; Mafa and Habala, 2011). Consequently, increased numbers of wildlife-based tourists may result in some form of degradation of the environment in these areas (Mmopelwa et al, 2007; Moswete et al. 2017; Orams, 2002)

The Chobe River Front is marketed as the most attractive part of the Chobe National Park (Mladenov et al. 2007; Moswete et al. 2017). But increased wildlife activities have somewhat transformed and pushed the CNPRF to the verge of mass tourism, especially during peak season (Mbaiwa, 2012; Moswete et al., 2017). Therefore, the HCLV strategy is challenged by ever growing numbers of safari tourists (DWNP, 2003). As noted by Magole and Gojamang (2005) and Mmopelwa et al., (2007) vehicular congestion impact on tourists' expectations and satisfaction levels. Furthermore, there is a potential threat from the newly proposed Kavango-Zambezi Transfontier Park (KAZA)'s UniVisa[i] through which more visitors are likely to holiday in the Chobe National Park and thereby put more pressure on the sensitive ecology of the park. The purpose of the study is to assess perceived environmental impacts of wildlife-based tourism on the Chobe National Park River Front (CNPRF). The research objectives are: i) to assess environmental impacts of wildlife tourism at the CNP River Front; and ii) to examine tourists' perceptions of the current quality of the natural environment of the park.

There are many stakeholders in protected area tourism (Moswete et al. 2012; Nicholas and Thapa, 2010; Poudel et al, 2014; Weaver, 2001). However, this study explored perspectives of two stakeholders: tourists and key informants. In this study, key informants comprised tour operators, safari lodge managers and owners, as well as wildlife officials (Eagles et al., 2002). The two stakeholder groups were targeted because earlier research had recommended the importance of balancing conservation and developments while ensuring that the needs and aspirations of all stakeholders, including tourists, are met (Moswete et al. 2012; Nicholas and Thapa, 2010; Spenceley, 2008). Tourists as consumers of protected area tourism have hitherto not been included as an important stakeholder in studies on natural resource based management in many developing countries, including Botswana. Researchers have argued that tourists as stakeholders in PAs can contribute towards the management of environmentally sensitive resources (Kaltenborn et al., 2011; Laven et al., 2005; Mladenov et al., 2007; Nicholas and Thapa, 2010; Reinius, 2011; Poudel et al., 2014).

Research methods

The study site

The CNP covers an area of 10,590km², and it is located in northern Botswana within the Chobe District (Figure 1). It is Botswana's second largest protected conservation area after the Central Kgalagadi Game Reserve. The Chobe River bank known as the River Front stretches from Sedudu entrance gate to Serondela covering a distance of 17 kilometres (GoB, 2001). One of the major features of the CNP is the booming elephant population, which is estimated at approximately 120,000 (Mbaiwa, 2018). While the Chobe River Front is popular for water dependent wild animals such as waterbuck, hippopotamus, many other large and small animals come to the river bank to drink; amongst these are the big cats such as lions, cheetahs, which follow their prey to the river (Mafa and Habala, 2011). The park as a whole offers game viewing and photographic tourism opportunities both inland (open van/trucks) and water based transport (DWNP, 2001; Mbaiwa, 2018). The CNP is renowned for conservation of fauna and flora (DWNP, 2010; GoB, 2001) and forms a large part of the livelihood of the Chobe district communities, particularly those found on its periphery (GoB, 2001).

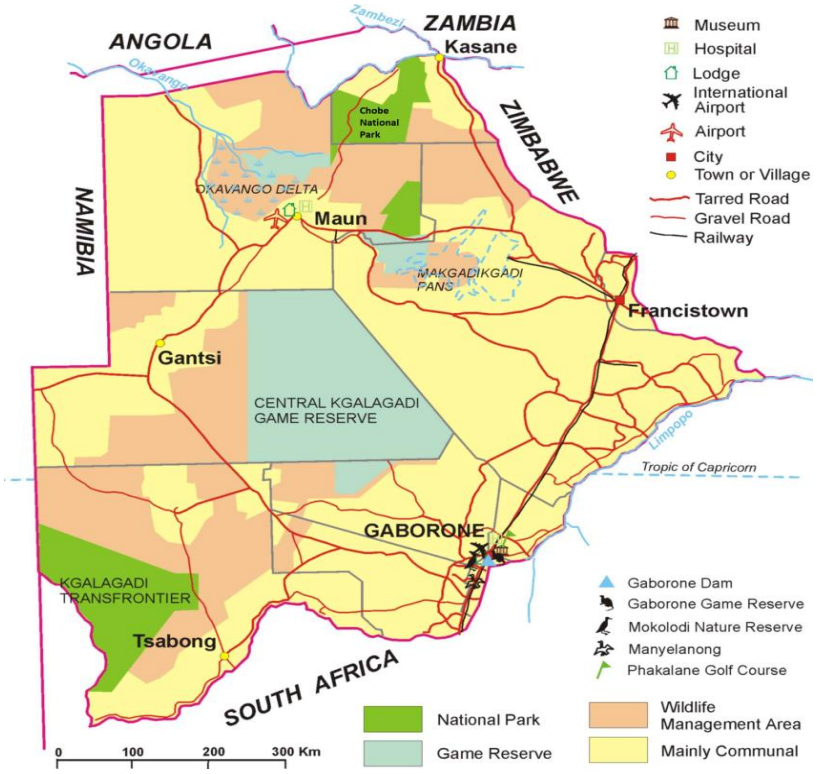

Figure 1: **Map showing the Chobe National Park** (created by G.P. Koorutwe)

The CNP is in close proximity to the Chobe, Kasane, and Maikaelelo forest reserves (Figure 1). The forest reserves and the Chobe River floodplains, Savuti marsh, Linyanti swamps make the CNP one of the biodiversity hotspots and a popular wildlife tourism attraction in Botswana (see Table 1 above). Due to the rich biodiversity and the attractiveness of the CNPRF, nature tourism has rapidly increased, leading to the construction of tourism facilities to meet the demand.

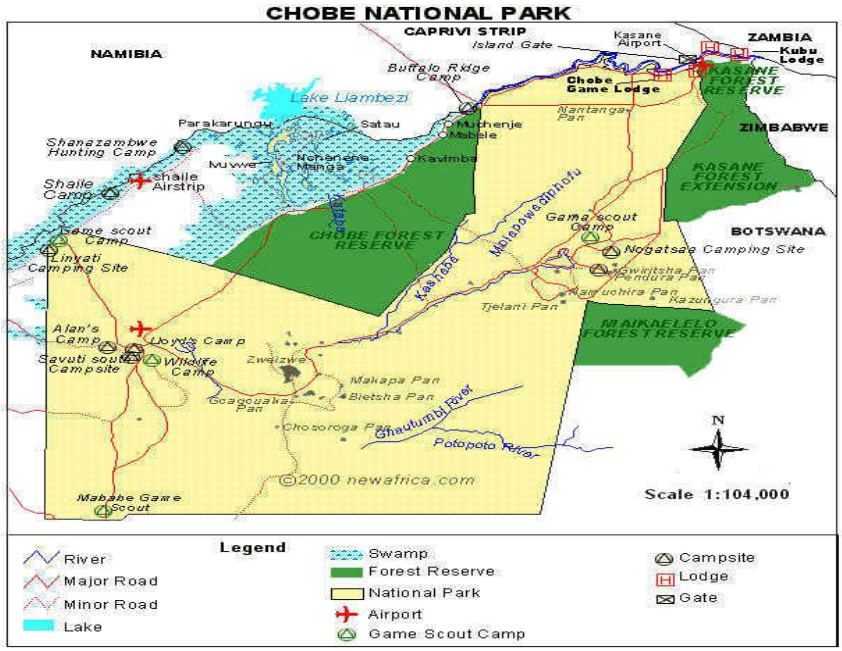

Figure 2: Map of the Chobe National Park (https://www.safariwithus.com/chobe-national-park/)

Similarly, the number of fixed safari lodges and mobile tour operators has increased causing vehicle overcrowding (Ketshabile, 2010; Moswete et al. 2017).

Data collection

Data collection was conducted mainly at the Sedudu gate which is the main entry point into the CNP. A total of 40 wildlife tourists were surveyed from June to July 2012. A convenience sampling technique was used in which tourists were contacted onsite, briefed about the survey and requested to participate. The researcher waited for the tourists at the Sedudu entrance gate. The tourists completed the survey after they had been in the park, particularly the River Front (the main stop and viewing site). The tour guides were informed about the study and asked to assist and distribute the questionnaires. Only one adult from each travel party completed the questionnaire. A total of 60 semi-structured self-completion questionnaires with close and open-ended questions were distributed, of which only 40 were useable. Over all, the response rate was 67%. The refusal rate was high because some tourists considered the questionnaire to be too long as they did not have time and others left a few sections uncompleted.

For the tourists, a question with 'Yes', 'No' and 'Don't know' options was used to assess perceived negative environmental impacts of wildlife tourism at the park. Furthermore, an open-ended question was also used to elicit explanations on the identified impacts. In addition, perceptions towards wildlife-based tourism were sought by using five items based on a five-point Likert scale, ranging from 1= highly disappointed, 2= disappointed, 3=neutral, 4= satisfied and 5= highly satisfied. Wildlife tourist impressions of the current quality of the environment were measured with 10 items based on a five-point Likert scale that ranged from: 1= very poor. 2=poor, 3=fair, 4= good to 5= excellent

Purposive sampling (see Tashakkori and Teddlie, 1998; Veal, 2006) was used to select key informants. This group comprised park management, wildlife officials, safari lodge and campsite managers, wildlife tour operators and safari enterprise owners. This group of representatives was selected from the existing institutions which were known to be influential in protected area management and conservation at the CNP. Some of the respondents were contacted via telephone and others by visits to their work place. The target for this group was 50 management personnel, making it a total of 50 questionnaires with open and close-ended questions distributed. In all, 30 surveys were useable representing a 60% response rate. The remaining 20 surveys were discarded because of unanswered questions or because some private safari tourism managers refused to participate.

For the key informants, a survey form was designed to establish knowledge and experience of wildlife tourism using a 'Yes', 'No' and 'Don't know' options question on whether there were negative environmental impacts of wildlife tourism at the CNP. Perceptions towards wildlife-based tourism was measured with 8 items based on a five-point Likert scale that ranged from 1= strongly disagree to 5= strongly agree; perceptions about severity of environmental impacts were elicited using 6 items based on a five-point Likert scale, ranging from 1= not very severe, 2= not severe, 3= neutral, 4= severe to 5= very severe. Key informants were asked to share their perceptions regarding what they opine is likely to happen. Once more, this question was measured by six items/statements using a three-point Likert scale that ranged from 1= very likely, 2= likely and 3= not likely. In addition, participant observation (May, 1997; Veal, 2006) was used to gather information for this study in December 2012. The authors were involved as participant observers (Veal, 2006; Reinius, 2011) during game drives and boat cruises at the CNP.

Because of the exploratory nature of the study, descriptive analysis with frequency calculations were conducted followed by cross tabulation to determine the differences and similarities in each of the items in the environmental impact construct among tourists and key informants. Responses to the open-ended questions (May, 1997; Tashakkori and Teddlie, 1998) were coded based on similar meanings and phrases and then entered into SPSS. Subsequently, frequency analyses were performed.

Results

Demographic Profile of respondents

Tourists' survey

Following the frequency analysis of the socio-demographic items, respondents comprised more females (57%) than males (43%). The majority came from the United States (45%), followed by those from Republic of South Africa (20%), then Australia (12.5%) and Brazil, Italy and United Kingdom combined (7.5%), Hong Kong and Germany combined (2.5%) and others. The dominant age group was 51 and older (55%), followed by 41 to 50 years (30%); 31 to 40 (12.5%) whereas 18 to 30 age bracket made up the smallest group (2.5%). Almost 88% of the respondents had a college degree/diploma and 8% of them had secondary or high school education. The results show relatively high educational attainments of the tourists (see Table 2 below). Most of the respondents (97%) were first time visitors to the Chobe National Park.

Table 2: Demographic characteristics of respondents (tourists)

	Frequency	Percent %
Gender		
Male	17	42.5
Female	23	57.5
Total	**40**	**100.0**
Age		
18-30	1	2.5
31-40	5	12.5
41-50	12	30.0
51 & above	22	55.0
Total	**40**	**100.0**
Education level		
Primary	1	2.5
Secondary	3	7.5
Diploma	2	5.0
Degree	33	82.5
Others	1	2.5
Total	**40**	**100.0**
Country of residence		
USA	18	45.0
Australia	5	12.5
RSA	8	20.0
Brazil	2	5.0
UK	3	7.5
Hong Kong	1	2.5
Germany	1	2.5
Italy	2	5.0
		100.0

Key informants survey

The key informant sample comprised more males (77%) than females (23%), therefore there was unequal gender representation in the workplace of the key informants. Altogether, 73% were in the age group 31-40; while 20% were in the 41-50 group and approximately 7% were 51 or older. This group of key informants represented a highly educated cohort (87%), with college qualifications (Table 3).

Table 3: Demographic characteristics of key informants (management)

	FREQUENCY	**PERCENTAGE**
Gender		
Male	23	76.7
Female	7	23.3
Total	**30**	**100.0**
Age		
18-30	0	0
31-40	22	73.3
41-50	6	20.0
51 & above	2	6.7
Total	**30**	**100.0**
Highest Educational Attainment		
Primary	0	0
Secondary	0	0
Diploma	11	36.7
Degree	15	50.0
Others	4	13.3
Total	**30**	**100.0**

Assessment of environmental impacts of wildlife tourism

In order to assess perceived environmental impacts of wildlife-based tourism on tourist areas, tourist respondents were asked a general question that established whether such impacts occur. Forty percent of the tourists (40%) who visited the park acknowledged that wildlife-based tourism has negative impacts on the environment. Less than half (30%) were not aware of any environmental impacts. In addition, 30% of the respondents did not think there were negative environmental impacts of tourism.

A similar question on whether there are any negative environmental impacts of tourism on the environment in the CNP and Chobe River Front was directed to the key informants. Most respondents (87%) indicated that wildlife-based tourism leads to undesirable environmental impacts. While the majority acknowledged negative impacts of wildlife and safari tourism, a small proportion (13%) did not perceive any negative impacts of tourism on the environment at the CNP.

Furthermore, respondents who acknowledged the presence of negative impacts of WBT were asked an open-ended question to probe them to elaborate on what they considered to be negative environmental impacts. Almost all the respondents identified negative impacts as habituation, land degradation, crowding, congestion, noise and visual pollution. In all, about 43% of the tourists considered wildlife habituation as the highest negative environmental impact at the CNP. Tourists (35%) were of the view that the level of safari vehicle crowding and boat congestion at the Chobe River Front was extreme. Likewise, tourists (18%) observed that land degradation was a problem, while only a small proportion (4%) identified noise pollution to be a problem. Key informants were also asked to indicate whether crowding was a problem at the CNPRF. Sixty percent of them acknowledged that vehicle crowding was a challenge, while 37% did not agree with the statement. Only a small proportion (3%) of the respondents did not perceive any crowding in the park.

Figures 3 and 4 show signs of congestion as observed by the researchers during game drives and boat cruises at the CNP (Participant observation).

Figure 3 (left): **Game drives at the CNP - tourist vehicle crowding around one group of animals (E. Mogende).**
Figure 4 (right): **Boat cruise - crowding around groups of animals foraging along the Chobe River (N. Moswete)**

The key informants were also asked to evaluate the level of severity of environmental impacts of wildlife tourism based on a five-point Likert scale ranging from 1=not very severe, 2=not severe, 3=neutral, 4=severe and 5=very severe. The results show that visual pollution was regarded as the highest impact with the mean score of 3.77; followed by land degradation (deepening treks/paths) with the mean score of 3.47. Respondents considered air pollution (m=2.10) and excessive vegetation damage (m=2.67) were perceived to be low impacts. However, the disturbance of wildlife and birds (m=3.27) and noise pollution from cruise boats (m=2.87) were considered to be average impacts of tourism on the environment (Table 4).

Table 4: Assessment of environmental impacts by key informants

	Mean	Std. Deviation
Land Degradation	**3.47**	1.106
Noise pollution from the cruise boats	2.87	1.042
Visual pollution (e.g. solid litter)		
Disturbance of wildlife and birdlife	3.27	1.112
Excessive vegetation damage	2.67	1.093
Air pollution	2.10	1.155

Tourists' perceptions of wildlife-based tourism

Five statements were used to assess tourists' perceptions on the impacts of wildlife-based tourism on the environment at the CNPRF. A five-point Likert type scale that ranged from

1=Highly Disappointed, 2= Disappointed, 3=Neutral, 4=Satisfied and 5=Highly Satisfied was used. Respondents were satisfied with wildlife tourism as observed for nearly all statements (Table 5). The majority (90%) were satisfied[ii] with the quality or appearance of the natural environment. Almost all respondents (95%) were satisfied with the quality of wildlife and birdlife. Additionally, 83% of the tourists were satisfied with the absence of boat cruise noise along the Chobe River Front. However, a sizeable number (43%) were neutral on the number and frequency of encounters with tourists, while 13% expressed disappointment.

Table 5: Perceptions on wildlife-based tourism by tourists (percentages)

Statements[a]	HD	D	N	S	HS
Quality of wildlife and birdlife	0	0	5.0	37.5	57.5
Number & frequency of encounters with tourist	0	12.5	42.5	27.5	17.5
Quality of the natural environment	0	2.5	7.5	25.0	65.0
Absence of human generated noise	0	2.5	25	40.0	32.5
Absence of boat cruise noise along the River Front	0	5.0	12.5	30.0	52.5

[a]items have been coded on a 5-point Likert scale ranging from 1= highly disappointed (HD), 2 = disappointed (D), 3= neutral (N), 4= satisfied (S), 5 = highly satisfied (HS)

Key informants' perceptions on wildlife-based tourism

For the key informants, eight statements were used to assess their perceptions on wildlife tourism development at the CNPRF. A five-point Likert type scale that ranged from 1=strongly disagree, 2= disagree, 3=neutral, 4= agreed and 5=strongly agree was used. The results are displayed in Table 6, and they show that the majority of the respondents (93%) agreed[iii] that wildlife tourism development has resulted in an increase in lodging facilities in the area. Additionally, 80% agreed that wildlife tourism produces overcrowding on the Chobe riverfront. The majority (77%) agreed that tourism has resulted in traffic and boat congestion on the river front. More than half of the respondents (57%) agreed that tourism has resulted in land degradation, with 23% of them expressing neutrality while 20% disagreeing[iv] with the statement. Likewise, key informants (27%) were neutral in their response to the question of whether tourism generates too much pressure on the environment, and (27%) disagreed with the statement (Table 6).

Table 6: Perceptions on wildlife-based tourism by key informants (percentage)

STATEMENTS[a]	SD	D	N	A	SA
WBT has resulted in an increase in lodging facilities	0	3.3	3.3	**43.3**	**50.0**
WBT generates too much pressure on the environment	0	**26.7**	**26.7**	**26.7**	20.0
WBT has resulted in traffic & boat congestion	0	0	23.3	20.0	**56.7**
WBT produces overcrowding along the river bank	0	6.7	13.3	26.7	**53.3**
WBT has resulted in land degradation	10.0	10.0	23.3	23.3	**33.3**
WBT results in noise pollution from cruise boats	0	20.0	33.3	**43.3**	3.3
WBT destroys the natural environment	13.3	13.3	26.7	**36.7**	10.0
WBT promotes nature preservation and conservation	6.7	3.3	13.3	**26.7**	5.0

[a]items have been coded on a five-point Likert scale ranging from 1= strongly disagree (SD); 2= disagree (D); 3= neutral (N); 4=agree (A); 5= strongly agree (SA)

Impressions on the current quality of the environment

Nine statements were used to assess impressions of quality of the natural environment as observed by the tourists during game drives in the park. A five-point Likert-type scale ranging from 1=very poor, 2=poor, 3= fair, 4=good and 5=excellent was used. Results indicate that most tourists were impressed with the quality of the environment. The majority (90%) said the amount of biodiversity was good[v], followed by number of structures in the wilderness (88%), condition of vegetation (75%); amount of noise heard during trips (78%). Slightly more than half (55%) said that the number and density of the tracks and roads were good. However, an exception was observed for some variables in which the tourists indicated that the quality of their experience was affected by the quality of the environment. This was shown by the high percentages of the poor to very poor responses as reflected on Table 7 below.

Table 7: **Impressions on the quality of the current environment by tourists (percentage)**

STATEMENTS[a]	Very poor	Poor	Fair	Good	Excellent
Amount of noise heard	0	12.5	10.0	**47.5**	**30.0**
Number of mobile safari and other vehicles	15.0	**37.5**	**32.5**	10.0	5.0
Number & density of tracks & roads	0	12.5	**32.5**	**37.5**	17.5
Condition of vegetation	0	0	25.0	**55.0**	**20.0**
Amount of biodiversity	0	0	10.0	**55.0**	**35.0**
Number of structures in wilderness	0	5.0	7.5	**55.0**	**32.5**
Number & density of tourists	15.4	**30.8**	**30.8**	10.3	12.8
Traffic congestion	22.5	**27.5**	**27.5**	2.5	20.0
Crowding	20.0	**32.5**	**22.5**	5.0	17.5

[a]items have been coded on a five-point Likert scale ranging from 1=Very poor, 2=Poor, 3=Fair, 4=Good & 5=Excellent; Missing data excluded.

More than half of the respondents (53%) rated impressions of crowding as poor[vi], while 23% of them perceived crowding in the park as being fair. Additionally, 53% of the tourists rated impressions on the number of mobile safaris and other vehicles came across as poor, while traffic congestion (50%) and number and density of tourists (46%) were both rated as poor. Furthermore, slightly higher proportions in responses for 'Fair' were in the following items: number and density of tourists (33%), number and density of tracks and roads (33%), number and density of tourists (31%), and traffic congestion (28%).

Discussion

The study revealed that the CNP is popular for, and is frequented by three types of tourists: private or self-drive visitors, fixed lodge/camp clients and mobile tour operators. Most wildlife tourists enter the CNPRF to see wild animals which roam free in the park, and to experience nature. Due to the unique features and attractiveness of the CNP, the River Front viewing site

receives a higher number of visitors than any other tourist spot at the CNP (DOT, 2010; DWNP, 2008; Mafa and Habala, 2011).

Regarding the assessment of perceptions on wildlife tourism, the study found that an overwhelming number of tourists had positive perceptions of, and satisfaction with wildlife tourism activities at the CNP and the Chobe River Front. They were highly satisfied with the quality of the natural environment and conservation, abundance, quality and variety of wild animals and birds. In addition, they were impressed by the little human and boat cruise generated noise during tours and game drives. Wilderness experience and satisfaction levels of the majority of the tourists were high; they observed that the CNP was less disturbed by the development of wildlife and safari tourism. Interestingly, nearly all tourists interviewed were first time visitors at the CNPRF. Based on the literature on perceptions on wildlife tourism, first time visitors to natural wildlife areas or any other attractions tend to have a high rating of the places they visit (Hillery et al, 2001; Mmopelwa et al, 2007), and thereby are more positive about the attraction than those who have visited the same place more than once (Nicholas and Thapa, 2010; Kaltenborn et al., 2011; Reinuis, 2001)

The study also showed varying results between tourists and key informants with regards to the perceptions on the impact of wildlife tourism on the environment. Tourists were mostly neutral when they were asked about the 'number and frequency of encounters with tourists' and 'absence of boat cruise noise along the Chobe River Front' but were very satisfied with the general quality of the environment. The key informants appeared to be unhappy with wildlife tourism activities in the park and at the river front. The following three statements which address the negative impact of tourism on the environment were rated very high: 'tourism has resulted in an increase in lodging facilities'; 'tourism produces overcrowding along the river front' and 'tourism has resulted in traffic and boat congestion along river routes' respectfully. These findings are consistent with previous studies that wildlife tourism infrastructure (e.g., camps and lodges) in the Chobe and Okavango region have increased, thereby impacting on the natural landscape and causing crowding in some areas (Ketshabile, 2010; Mbaiwa, 2011). Furthermore, overuse of certain zones in conserved areas occurs when such zones are utilised by all tourist groups, particularly during peak season. This could be a challenge for tour operators as managers, owners of wildlife/safari tour businesses and as guides for clients who stay in fixed lodges on the periphery of the CNP or those who are brought into the park as day trippers from neighbouring countries such as Namibia (DWNP, 2008; Moswete et al, 2017).

The study identified a few negative environmental impacts of wildlife tourism related developments at the CNPRF. One of the major findings was crowding caused by tourist vehicles (Figure 3 and 4) which was observed and experienced along the Chobe River Route and at the River Front viewing spot. The congestion caused by boats during cruises (Figure 4) was also perceived as a negative ecological impediment to boaters' experience.

It was found that many more day-trippers and other nature-based tourists chose tour packages or game drives that enter the park from Sedudu gate and proceeded on the Chobe River route with a stopover at the River Front and Serondela areas where wild animals are found in abundance and variety (Mafa and Habala, 2011). It is at this area that encounters with water dependent animal species such as hippopotamus, crocodile, lechwe, waterbuck and puku antelopes are guaranteed and inimitable. Tour operators also prefer to bring their guests to this part of the CNP because they are more likely to see predators (e.g., leopards), buffaloes and large

herds of elephants. Consequently, too many tourist boats are on the river at the same time and safari vehicles on the River front route during game drives reduce the visibility of wild animals and the naturalness of the area that visitors pay to experience.

The crowding of wildlife/safari vehicles often seen going off-road and concentrating around a single group of animals (e.g., lions) (Figure 3) was perceived as a major challenge at the River Front route (see Mbaiwa, 2012; Moswete et al. 2017). This is a cause for concern as such tourist behaviour has led to perceptible changes in animal behaviour (Mosetlhi, 2012). In this study, a sizeable number of tourists have indicated that wildlife habituation is the highest negative impact of tourism on the environment they observed at the CNP even though 97% of the tourists were first time visitors. Studies have shown that the presence of tourists affects feeding and mating behaviours of wild animals (Shaffer and Inglis, 2000; Spenceley, 2008; Weaver, 2001) and can also result in the death of wildlife (Green and Higginbottom, 2000). If this is left unchecked it can reduce the natural attractiveness of CNP and the park's general image both locally and internationally (BTDP, 1998; see Du Plessis et al, 2012). The overcrowding of wildlife and safari visitors on the Chobe River bank appears to be linked to the heavy marketing of the River Front zone at the expense of other gazetted zones within the park (Sebopeng, 2010). Additionally, the congestion has led to the erosion of the white sands (participant observation). The white sands were a popular stopping spot for tourists who were site-seeing along the river through to the park (Mafa and Habala, 2011; Mbaiwa, 2012; Moswete et al., 2017). At the time of this study, the white sands that characterised the spot had been replaced by the black clay soil that was common along the Chobe River bank (DWNP, 2010). The pathways and treks in the park constitute visual pollution (Figure 5 and 6) to a visitor who may have seen positive messages in the marketing and promotional media. Additionally, the criss-crossing and tyre markings from off-road driving pose a threat to the ecology of the park and long-term sustainability of tourism.

Figure 5 (left): Signs of impacts from overuse of roads**.**
Figure 6 (right): Mismanagement of litter negatively impacts the visual aesthetic of the park and threatens animals in the park (Photography by E.Mogende)

According to the DWNP decongestion strategy, several routes have been constructed in the park to curb congestion along the popular river bank route. The study discovered that wildlife tourists still prefer Sedudu gate to enter and exit the CNP. Hence, safari vehicle traffic is still a

problem along that route (see Moswete et al., 2017). According to the CNP code of conduct, only 4 vehicles are allowed per sighting and a maximum of 5 minutes should be spent by each vehicle (Mafa and Habala, 2011). However, this rule is often violated by many tour operators who bring clients to the park. This behaviour has the potential to negatively affect the ecological integrity of the park because road tracks are used continually without adequate time to recover from increased traffic and the roads and treks become muddy, slippery and deepen during the wet season (Figure 5). The results of this study are consistent with the Office of the Auditor report on the management of protected areas (DWNP 2010). This means that the park management should try to enforce the code of conduct during game drives and other wildlife related activities in the park. It is imperative that the DWNP and all relevant stakeholders collectively to the means to augment the existing decongestion strategy.

Conclusion

We conclude that the environmental sustainability of the CNP is at risk if the problems identified in this study are not addressed. Further, the study concludes that lack of adequate support services and planning means that pressure will continue to be exerted on the biodiversity rich Chobe National Park River Front, especially if no mitigation strategies are put in place. More wildlife activists will come to holiday in Botswana, especially at the renowned CNP. The Okavango Delta was declared the 1000th World Heritage Site in 2014, and the Kavango-Zambezi Conservation Area (KAZA) has also opened opportunities for wildlife-based tourism in the north and this has the potential to increase tourist visits and put even more pressure on the CNP.

The findings of this study suggest that there is a potential problem at the CNP that deserves thorough investigation and remedial action. The study results are useful for the park authority, conservation management and other key stakeholders such as the DWNP to use in monitoring tourism related activities to safeguard the CNP environment and its aesthetic beauty. The limitation of study is that the sample size of tourists was small because data were collected off season, and the rate of refusal to participate in the study was also high. However, the number of key informants was large enough for the results to be generalised about the CNP. Hence, we recommend a repeat study specifically targeting a large sample of tourists on their perception of this important wildlife destination in northern Botswana.

Notes

[i] The KAZA UniVisa would enable tourists from across the Botswana borders to circulate the KAZA region without constraints.

[ii] Satisfied (satisfied combined with highly satisfied responses)

[iii] Agreed (strongly agreed combined with agreed responses)

[iv] Disagreed (strongly disagreed combined with disagreed responses)

[v] Good (excellent combined with good responses)

[vi] Poor (Very Poor combined with poor responses)

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