Large Carnivores as Tourism Flagship Species for the Zimbabwe Component of the Kavango Zambezi Transfrontier Conservation Area

Author(s): Esther van der Meer, Muchaneta N. Badza & Aldwin Ndhlovu

Large carnivores as tourism flagship species for the Zimbabwe component of the Kavango Zambezi Transfrontier Conservation Area

Esther van der Meer[1,2]*, **Muchaneta N. Badza**[2] **& Aldwin Ndhlovu**[2]

[1]*Cheetah Conservation Project Zimbabwe, P.O. Box 204, Victoria Falls, Zimbabwe*
[2]*National University of Science and Technology, Department of Forest Resources and Wildlife Management,*
P.O. Box AC 939, Bulawayo, Zimbabwe

Wildlife tourism provides an opportunity to offset conservation costs and promote co-existence between people and wildlife. To promote conservation through wildlife tourism, one can use flagship species; charismatic species that increase awareness and public recognition of a site, and stimulate financial and political support for conservation. Due to their large area requirements and sensitivity to disturbance, promoting conservation of large carnivores automatically promotes conservation of other species, and the use of large carnivores as flagship species has been positively related to ecosystem conservation. In this study, we interviewed wildlife tourists to determine which large carnivores could serve as flagship species for the Zimbabwe component of the Kavango Zambezi Transfrontier Conservation Area (KAZA TFCA), an area that is expected to become a premier tourist destination and make a significant contribution to conservation. Based on likability and the possibility to raise funds and promote the area, lion (*Panthera leo*) was the most suitable flagship species, closely followed by leopard (*Panthera pardus*). Spotted hyaena (*Crocuta crocuta*) was the least suitable flagship species. Despite its endangered status, African wild dog (*Lycaon pictus*) did not seem to have a high potential to serve as a flagship species for the area. Although cheetah (*Acinonyx jubatus*) was less often mentioned as a species tourists were hoping to see or a favourite species seen, cheetah was liked as much as lion and leopard and provided similar potential to raise funds and promote the area. Flagship species status does not have to apply to a single species, it can also successfully apply to a cohort of species. With the KAZA TFCA being in the unique position of harbouring the largest free-roaming cheetah population in Zimbabwe, it would be appropriate if the area was promoted by using large cats as a flagship species cohort.

Key words: African wild dog, cheetah, leopard, lion, spotted hyaena, large carnivores, large cats, wildlife tourism, flagship species, transfrontier conservation area, Zimbabwe.

INTRODUCTION

Nature-based tourism is an important, fast-growing part of the tourism market, annually accounting for billions of dollars of tourism revenue (OECD, 2009; United Nations Environment Programme, 2011). Especially for developing countries with natural resource abundance, this type of tourism provides an opportunity for economic growth and development (Christie & Crompton, 2001; OECD, 2009; United Nations Environment Programme, 2013). Wildlife tourism is a component of nature-based tourism which can be defined as 'tourism undertaken to view or encounter wildlife' (Duffus & Dearden, 1990; Reynolds & Braithwaite, 2001). Depending on the number of tourists, the type of tourist activities and the development related to tourism, wildlife tourism can have a negative impact on wildlife and its natural environment and therefore requires proper management (Roe, Leader-Williams & Dalal-Clayton, 1997). However, it also raises awareness and produces economic benefits that can support protected area management and conservation initiatives (Roe *et al.*, 1997; Balmford *et al.*, 2009; Hudson & Lee, 2010). As such, wildlife tourism can provide means to offset conservation costs (Lindsey, Alexander, du Toit & Mills, 2005), create an incentive to conserve through revenue sharing (MacKenzie, 2012) and positively affect local attitudes towards conservation (Infield, 1988).

To be a competitive destination for wildlife tourism, it seems vital for an area to be inhabited by mega-

*To whom correspondence should be addressed.
E-mail: esther@cheetahzimbabwe.org

herbivores and large carnivores (Kerley, Geach & Vial, 2003; Lindsey, Alexander, Mills, Romañach & Woodroffe, 2007; Di Minin, Fraser, Slotow & MacMillan, 2013). Although historically, these charismatic species primarily served as a tourist attraction, wildlife tourism destinations have started using mega-herbivores and large carnivores as flagship species by linking them to conservation campaigns (Skibins, 2012). To be successful, flagship species need to be charismatic species that are able to stimulate an emotional connection with nature to raise awareness and funds for conservation and improve public recognition of a site (Walpole & Leader-Williams, 2002; Dalerum *et al.*, 2008; Skibins, Powell & Hallo, 2013). Apart from public awareness and financial support (Skibins *et al.*, 2013; Walpole & Leader-Williams, 2002), wildlife tourism based on flagship species can also increase political support for conservation (Xiang *et al.*, 2011). Provided that support and funds are not used for conservation of the flagship species alone, flagship species help to achieve larger conservation goals (Walpole & Leader-Williams, 2002; Sergio, Newton, Marchesi & Pedrini, 2006; Skibins, 2012). This is especially true for flagship species that, due to their large area requirements and sensitivity to disturbance, have the ability to serve as umbrella species for the conservation of habitats and communities of species (Caro & O'Doherty, 1999). Large carnivores have this ability and their use as flagship species has been positively related to ecosystem conservation (Sergio *et al.*, 2006).

Worldwide, habitat loss and persecution are main threats to carnivore survival (Hunter, Woodroffe, Flocken & Sillero, 2010). Large carnivores have extensive home ranges that often range beyond the borders of wildlife protected areas into surrounding human populated areas. As a result, conflict with humans is a major cause of large carnivore mortality (Woodroffe & Ginsberg 1998; Inskip & Zimmermann 2009). Nevertheless, especially in the western world, large carnivore species are generally perceived as charismatic (Mech, 1996; Karanth & Chellam, 2009) and therefore have the potential to serve as flagship species. Due to human–carnivore conflict, local support for carnivore flagship species might initially be lacking (Walpole & Leader-Williams, 2002). However, the economic benefits from flagship species-based wildlife tourism can increase local support for carnivore conservation (Walpole & Leader-Williams, 2002; Dalerum *et al.*, 2008). One of the most

obvious ways to increase economic benefits is by generating revenue out of direct observation of the flagship species (Walpole & Leader-Williams, 2002; Xiang *et al.*, 2011; Vianna, Meekan, Pannell, Marsh & Meeuwig, 2012). Furthermore, flagship species can stimulate wildlife-based tourism by being used in advertising campaigns that encourage tourists to visit areas where these species occur, which creates an opportunity to raise funds, awareness and public recognition for a site (Walpole & Leader-Williams, 2002).

In this paper we investigate the potential of large carnivores to serve as flagship species for the Zimbabwe component of the Kavango Zambezi Transfrontier Conservation Area (KAZA TFCA). The KAZA TFCA is the largest transfrontier conservation area in the world (Peace Parks Foundation, 2009). The area is expected to become southern Africa's premier tourist destination and make a significant contribution to conservation (Peace Parks Foundation, 2009). Tourism and conservation are seen as key components for socio-economic development of the KAZA TFCA (Peace Parks Foundation, 2009). After experiencing a decline in tourist arrivals in the early 2000s (Zimbabwe Tourism Authority, 2004), the number of tourists visiting Zimbabwe has substantially increased (Zimbabwe Tourism Authority, 2013). Since 2008, Zimbabwe received on average two million tourists a year, generating a mean revenue of 620 million USD a year (Zimbabwe Tourism Authority, 2013). Tourism currently represents 5.0% of Zimbabwe's gross domestic product and contributes to 7.4% of the country's employment (Zimbabwe Tourism Authority, 2013). In this study, we interviewed wildlife tourists who visited the Zimbabwe component of the KAZA TFCA to determine the likeability of African wild dog (*Lycaon pictus*), cheetah (*Acinonyx jubatus*), lion (*Panthera leo*), leopard (*Panthera pardus*) and spotted hyaena (*Crocuta crocuta*), and the willingness to pay, book a lodge or come to Zimbabwe for direct observations of these large carnivore species. Based on the tourists' answers, we assessed the possibility of using these large carnivores as flagship species to promote the area for wildlife-based tourism.

METHOD

Study area

The KAZA TFCA encompasses an area of *c.* 287 132 km^2, situated within the Okavango and Zambezi river basins where the borders of Angola,
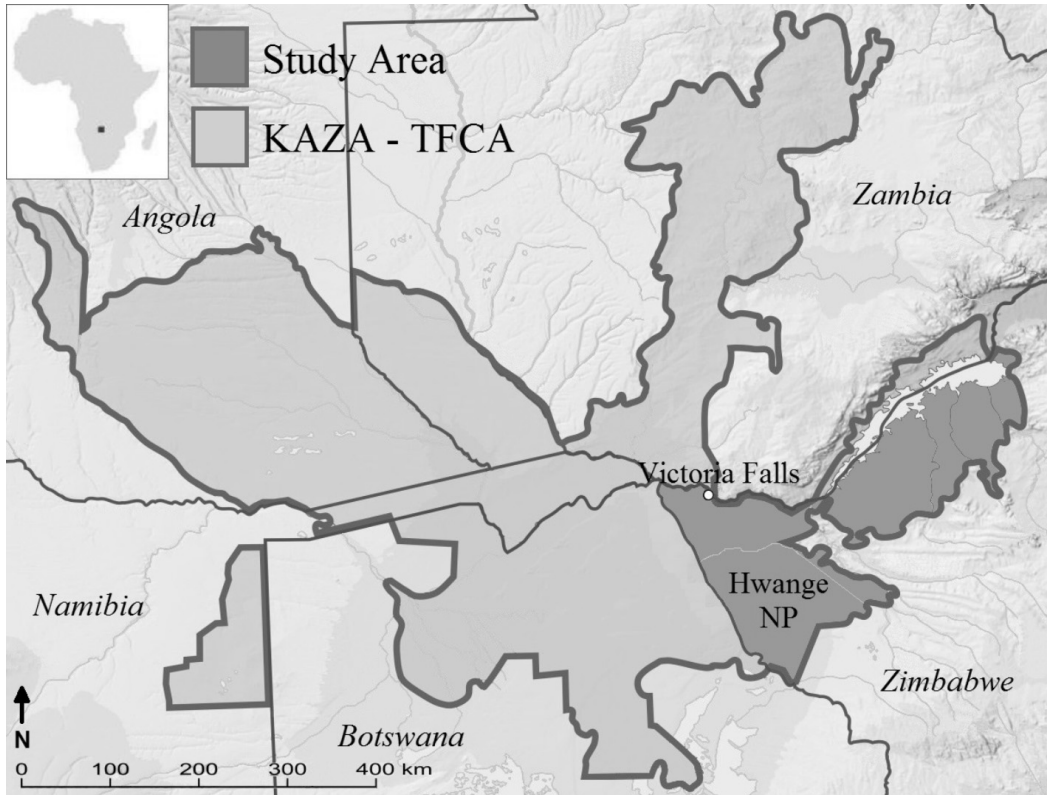
Fig. 1. The Kavango-Zambezi Tranfrontier Conservation Area (KAZA TFCA), the presented study encompasses the Zimbabwe component of this area, interviews (*n* = 325) were conducted at the Victoria Falls International Airport.

Botswana, Namibia, Zambia and Zimbabwe meet (Peace Parks Foundation, 2009) (Fig. 1). The aim of the KAZA TFCA is to facilitate the free, cross-boundary, movement of wildlife by joining fragmented wildlife areas (Peace Parks Foundation, 2009). Conservation and tourism are seen as the basis for socio-economic development in the area (Peace Parks Foundation, 2009). The Zimbabwe component of the KAZA TFCA stretches from the Zambezi in the north to the southern end of Hwange National Park, and from the Botswana border in the west to the eastern side of the Victoria Falls–Bulawayo road (Peace Parks Foundation, 2009) (Fig. 1). Within this area the predominant land-use types are related to wildlife tourism, trophy hunting, subsistence farming and to a lesser extent timber harvesting and commercial farming (Peace Parks Foundation, 2009). The area encompasses Zimbabwe's largest wildlife area, Hwange National Park and smaller areas like Kazuma pan, Zambezi National Park, Victoria Falls National Park, Matetsi Safari Area as well as several forestry and communal areas (Peace

Parks Foundation, 2009). A wide variety of abundant wildlife species occur in the Zimbabwe component as well as the other components of the KAZA TFCA (Peace Parks Foundation, 2009), including several large carnivore species, *i.e.* African wild dog, cheetah, lion, leopard and spotted hyaena (Peace Parks Foundation, 2009; Zimbabwe Parks and Wildlife Management Authority, 2009; Fritz, Loreau, Chamaillé-Jammes, Valeix & Clobert, 2011).

Interviews

To determine the potential of African wild dog, cheetah, lion, leopard and spotted hyaena to serve as flagship species for the Zimbabwe component of the KAZA TFCA, we conducted one-on-one interviews with tourists who came to Zimbabwe to view wildlife. The interviews were based on a structured (pilot tested) questionnaire with a mix of open- and closed-ended questions (see also Wynn 2003; Lindsey *et al.* 2007; Hemson, Maclennan, Mills, Johnson & Macdonald, 2009). From November till December 2012, we approached tourists in

the international departures lounge of Victoria Falls International Airport, the major aerial access point for the KAZA TFCA (Peace Parks Foundation, 2009). We asked departing tourists for what purpose they had visited Zimbabwe and only proceeded with the interview when the respondent had come to Zimbabwe to view wildlife within the KAZA TFCA. We started the interview with general questions about age, gender, nationality and occupation, followed by questions about the respondents' stay, wildlife viewing, how much they liked African wild dog, cheetah, leopard, lion and spotted hyaena and their willingness to pay, book a lodge or come to Zimbabwe specifically to see any of these five carnivore species (see Table S1 in the online supplement). We would like to point out that within this survey the willingness to pay to see any of the five carnivores species was used as an indication of popularity of a species rather than as a contingent economic valuation of a natural resource.

Analyses

We calculated the percentage of tourists in relation to gender, continent, age, occupation, area visited and the number of visits to Africa and Zimbabwe. To test for a relationship between the price paid per night at a lodge and age, gender and number of days the respondent stayed in Zimbabwe, we used a linear regression model with price paid per lodge as the dependent variable and age, gender and number of days as the explanatory variables. A backwards step-wise selection procedure was used to remove non-significant terms ($P > 0.05$) (Quinn & Keough, 2002). We calculated the percentage of tourists in relation to the species they were hoping to see and the favourite species they had seen. As we were only interested in viewing preferences in relation to wild animals, tourists who had booked activities with (semi) captive wildlife, *i.e.* elephant (*Loxodonta africana*) rides, lion walks, cheetah encounters, were excluded from the analysis of the species the respondents were hoping to see and the favourite species seen.

Chi-square tests were used to determine if tourists who had seen a particular carnivore species in the wild responded differently to our questions about whether they liked this species and their willingness to pay, book a lodge or come to Zimbabwe to see it compared to tourists who had seen this carnivore species in captivity. In accordance with Skibins (2012), there was no difference in response between tourists who had seen a carnivore species in the wild or in captivity (see Table S2 in the online supplement). The variable 'seen the carnivore species' was therefore added as a binary categorical variable (seen or not seen) to the binary logistic regression models as described below. For each carnivore species, we used binary logistic regression models with a logit link to investigate which independent variables determined whether or not tourists liked this species, whether or not tourists were willing to pay to see this species and whether or not tourists were willing to book a lodge or come to Zimbabwe to see this carnivore species. Tourists who did not know a particular carnivore species were excluded from the analyses for that species. The continuous variable age, and the categorical variables gender, continent, the number of visits to Africa (first-time visitor, return visitor or resident) and whether or not the tourists had seen the carnivore species during their stay were added to each model as independent variables. We included the two-way interactions age × gender, age × continent and gender × continent, and the three-way interaction age × gender × continent in our analyses. We used the significance of the variables as an indication of which variable could be omitted to simplify the model and used a backwards procedure to remove non-significant terms ($P > 0.05$), starting with interactions, until the model only contained significant terms (minimal adequate model) (Quinn & Keough, 2002).

All statistical analyses were performed with SPSS software version 20.0 (SPSS Inc., Chicago, IL, U.S.A.), both the linear regression model and the binary logistic regression models were run using the GENLIN procedure, determining the significance of the independent variables based on Wald chi-square statistics.

RESULTS

Characteristics of the tourists – We interviewed 325 tourists who came to Zimbabwe to view wildlife. The majority of these tourists were first-time visitors to Zimbabwe from Europe ($n = 123$) or North America ($n = 98$). The average age of respondents was 47 years (mean ± S.E. = 47.4 ± 0.8), with a minimum of 18 and a maximum of 81 years. Most tourists visited Victoria Falls, staying either in a town lodge or a bush lodge. On average, tourists visited Zimbabwe for 5 days (mean ± S.E. = 4.8 ± 0.3), with a minimum of 1 and a maximum of 49 days. Tourists spent on average 240 USD a night on accommodation (mean ± S.E. = 240.3 ± 6.7),

with a minimum of 40 USD and a maximum of 552 USD. The price paid per night for accommodation was positively related to the age of the respondent (χ^2 = 17.28, d.f. = 1 , P < 0.001, β ± S.E. = 1.78 ± 0.43) and not related to gender or the number of days spent in Zimbabwe ($P \geq$ 0.205). Approximately a third of the tourists (30.2%) had participated in an activity with (semi) captive wildlife, *i.e.* elephant rides, lion walks, cheetah encounters. For an overview of the characteristics of tourists interviewed in the survey see Table S3 in the online supplement. The majority of the tourists correctly identified or described African wild dog (80.3%), cheetah (77.5%), leopard (79.4%), lion (100.0%) and spotted hyaena (98.8%). In some cases, tourists had encountered captive African wild dog (n = 13), cheetah (n = 52) or lion (n = 62) during their stay; leopard and spotted hyaena were exclusively encountered in the wild.

Viewing preferences – With the exclusion of tourists who had participated in (semi) captive wildlife activities, we included 226 respondents in the analysis of viewing preferences. The species most often mentioned by all visitors as a species they were hoping to see was elephant (Fig. 2). Of the carnivore species, lions were most often mentioned as a species tourists were hoping to see by first-time visitors, return visitors and African residents ($\geq$42.4%), followed by leopard ($\geq$22.8%) and cheetah ($\geq$4.0%) (Fig. 2). African wild dogs ($\leq$ 4.0%) and spotted hyaenas ($\leq$4.6%) were rarely mentioned by tourists

as a species they were hoping to see (Fig. 2).

The species most often mentioned by all visitors as a favourite species seen was elephant, followed by giraffe (*Giraffa camelopardalis*) (Fig. 3). Of the carnivore species, first-time visitors, return visitors and African residents most often mentioned lion as their favourite species seen ($\geq$12.0%) (Fig. 3). Leopard, the second most popular carnivore species, was mentioned by first-time and return visitors ($\geq$10.1%), but not by African residents (Fig. 3). Cheetah ($\leq$4.3%), African wild dog ($\leq$3.3%) and spotted hyaena ($\leq$2.2%) were rarely mentioned as favourite species seen and were only mentioned by first-time and return visitors, not by African residents (Fig. 3).

More than half of the tourists (56.2%) mentioned one or more of the species they were hoping to see as one of their favourite species seen, especially elephant (n = 74), giraffe (n = 28) and lion (n = 19) were mentioned both as species tourists were hoping to see and as favourite species seen. Not all tourists had been able to see one of the five carnivore species during their stay. Excluding respondents who did not know the species, African wild dogs were seen by 20.4% of the respondents (15.6% in the wild, 4.8% in captivity), cheetahs by 25.4% (7.1% in the wild, 18.3% in captivity), leopards by 15.9% (exclusively in the wild), lions by 50.2% (31.1% in the wild, 19.1% in captivity) and spotted hyaenas by 15.6% (exclusively in the wild) of the respondents. Except for African wild dog for which two out of the three respondents (n = 3) who
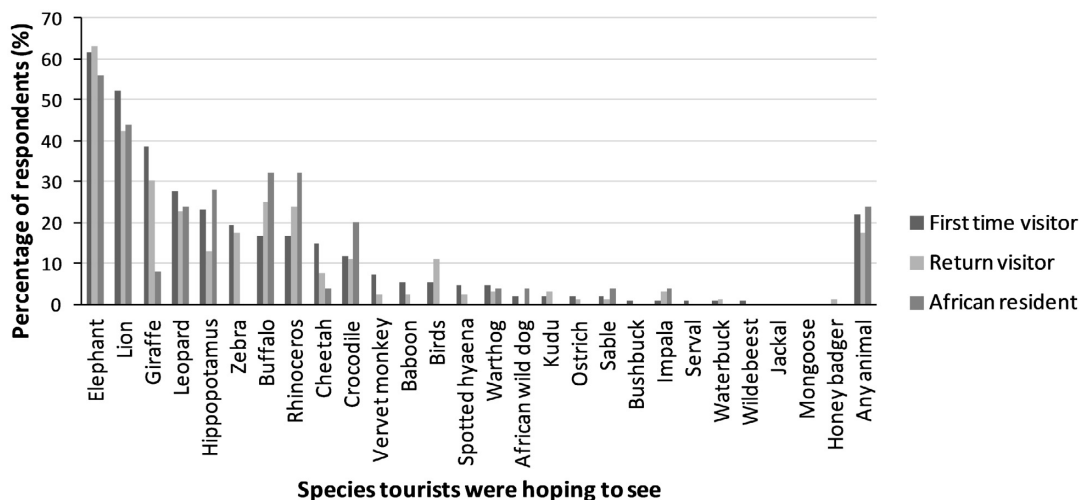

Fig. 2. Species mentioned by tourists when asked what were the species they were hoping to see in the wild in Zimbabwe (excluding respondents who had participated in activities with (semi) captive wildlife). For a list of scientific names of the species see Appendix 1.

Fig. 3. Species mentioned by tourists when asked what were their favourite species they had seen in the wild in Zimbabwe (excluding respondents who had participated in activities with (semi) captive wildlife). For a list of scientific names of the species see Appendix 1.
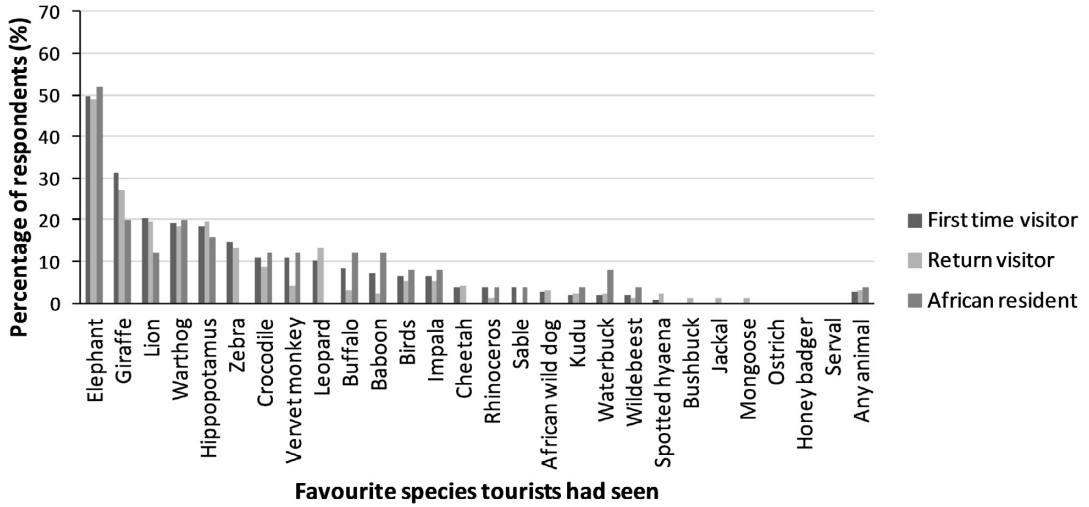
were hoping to see the species actually saw it, less than 50% of the tourists saw the carnivore species they were hoping to see in the wild (Table 1). When the respondent saw the carnivore species he or she was hoping to see, this did not necessarily mean it was mentioned as one of the favourite species seen in the wild (Table 1). Except for African wild dog for which both respondents ($n = 2$) who had seen the species mentioned it as their favourite species seen, less than 40% of the respondents mentioned the carnivore species he or she was hoping to see as a favourite species seen when they had had the chance to see it.

Like or dislike – Cheetah, leopard and lion were liked by the majority of the tourists ($\geq 86.5\%$), whereas African wild dog and spotted hyaena were less popular ($\leq 54.4\%$) (Table 2).

Tourists either gave 'no specific reason' or a general non-specific reason to like or dislike a carnivore species, or based their opinion on aesthetic appeal and image (Table 2).

The likelihood of tourists liking African wild dogs increased with age (Table 3). If tourists had seen a cheetah they were more likely to like it, and first-time visitors to Africa were more likely to like cheetahs than return visitors or African residents (Table 3). The likelihood that tourists liked leopards increased with age, and Asians ($n = 17$) and North Americans ($n = 84$) liked leopards less than Europeans ($n = 108$) (Table 3). Lions were more often liked by first-time visitors than return visitors or African residents (Table 3). None of the variables significantly affected whether or not tourists liked spotted hyaenas.

Table 1. Percentage of tourists ($n = 226$) who mentioned African wild dog, cheetah, leopard, lion or spotted hyaena as a species they were hoping to see in Zimbabwe, percentage of tourists who had seen one of these carnivore species when they were hoping to see it and the percentage of tourists who named one of these carnivore species as their favourite species seen when they were hoping to see it and had actually seen it (excluding respondents who had participated in activities with captive wildlife).

Species	Hoping to see		Seen when hoping to see		Favourite when hoping to see and seen	
	%	*n*	%	*n*	%	*n*
African wild dog	1.3	3	66.7	2	100.0	2
Cheetah	10.6	24	16.7	4	25.0	1
Leopard	25.2	57	29.8	17	35.3	6
Lion	47.3	107	43.9	47	40.4	19
Spotted hyaena	3.1	7	42.9	3	0.0	0

Table 2. Main reasons (≥10% of respondents) why tourists liked or disliked African wild dog, cheetah, leopard, lion or spotted hyaena (excluding respondents who did not know the species).

Species		Reason	%	*n*
African wild dog	Like *n* = 141, 54.4 %	Love all animals, nature, wildlife	25.2	35
		No particular reason	24.5	34
		Rare, endangered, don't see them often	23.0	32
	Neutral or dislike n = 118, 45.6 %	No particular reason	32.2	38
		They are not interesting	19.5	23
		They are ugly, smelly	11.9	14
		Not familiar with them	11.0	13
Cheetah	Like *n* = 218, 86.5 %	Beautiful, elegant, graceful	30.7	67
		Love all animals, nature, wildlife	15.6	34
		No particular reason	15.1	33
		Skilful and fast hunters	11.5	25
		Rare, endangered, don't see them often	11.0	24
	Neutral or dislike *n* = 34, 13.5 %	No particular reason	38.2	13
		They are not interesting	14.7	5
Leopard	Like n = 228, 88.4 %	Beautiful, elegant, graceful	32.6	74
		Love all animals, nature, wildlife	15.4	35
		No particular reason	15.0	34
		Rare, endangered, don't see them often	11.9	27
	Neutral or dislike *n* = 30, 11.6 %	No particular reason	40.0	12
		They are not interesting	13.3	4
		Difficult to see	10.0	3
Lion	Like *n* = 292, 89.8 %	King of the jungle, powerful, symbol of Africa	30.6	89
		No particular reason	15.8	46
		Beautiful, elegant, graceful	13.4	39
		Love all animals, nature, wildlife	13.4	39
	Neutral or dislike *n* = 33, 10.2%	No particular reason	36.4	12
		Common, seen often	24.2	8
Spotted hyaena	Like *n* = 134, 42.0%	Love all animals, nature, wildlife	27.1	36
		No particular reason	21.8	29
	Neutral or dislike *n* = 185, 58.0%	No particular reason	23.8	44
		They are ugly, smelly	21.6	40
		They are scavengers, bad, scary, mean	21.1	39

Willingness to pay – Although more than 60% of the tourist were willing to pay to see one of the carnivore species, they were more willing to pay to see cheetah, lion or leopard than to see African wild dog or spotted hyaena (Table 4). The majority of the tourists were willing to pay 10–100 USD to see a specific carnivore species, although very few respondents were willing to pay more than a 1000 USD (Table 5). Women were less likely to pay to see a specific carnivore species than men (Table 3). Older tourists were less likely to pay to see one of the five carnivore species (Table 3). Compared to Europeans, Asians were the least willing to pay to see African wild dog (Table 3). The willingness to pay to see leopard was higher for return visitors than for African residents (Table 3). Although not significant, compared to African residents, first-time visitors also seemed to be more willing to pay to see leopard (Table 3). Tourists who were not willing to pay to see any of the five carnivores species (*n* = 57) often commented that the price of seeing wildlife should be included in the tour operators fee (52.6%), or that nature is by definition priceless (22.8%).

Book a lodge – More than half of the tourists would be willing to book a lodge to see cheetah, leopard or lion (≥57.6%), whereas less than half would be willing to book a lodge to see African wild dog or spotted hyaena (≤37.7%) (Table 4). For all five carnivore species, women were more likely to

Table 3. Overview of the results of the logistic regressions, modelling the likelihood of tourists liking African wild dog, cheetah, leopard, lion, spotted hyaena and the willingness to pay, book a lodge or come to Zimbabwe to see one of these five carnivore species.

Species	Significant variables	Estimate ± S.E.	χ^2	d.f.	P
Likability carnivore species (*like = response, dislike or neutral = reference*)					
African wild dog	Age	0.02 ± 0.01	5.25	1	0.022
Cheetah	Seen (*not seen = reference*)	1.30 ± 0.63	4.21	1	0.040
	No. Africa visits (*resident = reference*)	*Overall effect*	6.74	2	0.034
	First-time visitor	1.36 ± 0.54	6.31	1	0.012
	Return visitor	0.47 ± 0.48	0.98	1	0.321
Leopard	Age	0.03 ± 0.01	5.65	1	0.017
	Continent (*Europe = reference*)	*Overall effect*	11.77	4	0.019
	Australia	−1.28 ± 0.69	3.41	1	0.065
	Africa	−1.05 ± 0.78	1.82	1	0.177
	Asia	−2.45 ± 0.74	10.88	1	0.001
	North America	−1.37 ± 0.56	5.96	1	0.015
Lion	No. Africa visits (*resident = reference*)	*Overall effect*	10.72	2	0.005
	First-time visitor	1.72 ± 0.53	10.66	1	0.001
	Return visitor	0.88 ± 0.47	3.03	1	0.082
Spotted hyaena	No significant effects				
Willingness to pay to see a carnivore species (*yes = response, no = reference*)					
African wild dog	Gender (*male = reference*)	−0.70 ± 0.29	5.70	1	0.017
	Age	−0.04 ± 0.01	13.68	1	<0.001
	Nationality (*Europe = reference*)	*Overall effect*	11.72	1	0.020
	Australia	−0.28 ± 0.49	0.34	1	0.561
	Africa	−0.69 ± 0.52	1.73	1	0.188
	Asia	−2.24 ± 0.68	10.74	1	0.001
	North America	−0.44 ± 0.34	1.75	1	0.185
Cheetah	Gender (*male = reference*)	−0.87 ± 0.35	6.40	1	0.011
	Age	−0.06 ± 0.01	20.66	1	<0.001
Leopard	Gender (*male = reference*)	−0.83 ± 0.36	5.30	1	0.021
	Age	−0.08 ± 0.01	29.12	1	<0.001
	No. Africa visits (*resident = reference*)	*Overall effect*	6.68	2	0.035
	First-time visitor	1.02 ± 0.52	3.86	1	0.050
	Return visitor	1.36 ± 0.53	6.67	1	0.010
Lion	Gender (*male = reference*)	−0.66 ± 0.31	4.61	1	0.032
	Age	−0.07 ± 0.01	33.29	1	<0.001
Spotted hyaena	Gender (*male = reference*)	−0.63 ± 0.25	6.40	1	0.011
	Age	−0.04 ± 0.01	26.09	1	<0.001
Willingness to book a lodge to see a carnivore species (*yes = response, no = reference*)					
African wild dog	Gender (*male = reference*)	0.60 ± 0.26	5.26	1	0.022
Cheetah	Gender (*male = reference*)	0.70 ± 0.27	6.93	1	0.008
	Age	−0.02 ± 0.01	3.78	1	0.052
Leopard	Gender (*male = reference*)	0.67 ± 0.26	6.48	1	0.011
	Age	−0.02 ± 0.01	6.61	1	0.010

Table 3 (continued)

Species	Significant variables	Estimate ± S.E.	χ^2	d.f.	*P*
Lion	Gender (*male = reference*)	0.57 ± 0.23	5.91	1	0.015
	Age	−0.02 ± 0.01	3.81	1	0.051
	Seen (*not seen = reference*)	0.49 ± 0.23	4.27	1	0.039
Spotted hyaena	Gender (*male = reference*)	0.55 ± 0.24	5.29	1	0.021

Willingness to come to Zimbabwe to see a carnivore species (*yes = response, no = reference*)

African wild dog	Age	−0.02 ± 0.01	3.90	1	0.048
Cheetah	Age	−0.05 ± 0.01	18.89	1	<0.001
	Seen (*not seen = reference*)	0.88 ± 0.37	5.71	1	0.017
	No. Africa visits (*resident = reference*)	*Overall effect*	8.78	2	0.012
	First-time visitor	0.99 ± 0.43	5.26	1	0.022
	Return visitor	1.30 ± 0.44	8.75	1	0.003
Leopard	Age	−0.04 ± 0.01	16.01	1	<0.001
	No. Africa visits (*resident = reference*)	*Overall effect*	7.21	2	0.027
	First-time visitor	0.85 ± 0.42	4.09	1	0.043
	Return visitor	1.16 ± 0.43	7.21	1	0.007
Lion	Age	−0.04 ± 0.01	17.18	1	<0.001
	No. Africa visits (*resident = reference*)	*Overall effect*	10.14	2	0.006
	First-time visitor	1.19 ± 0.39	9.38	1	0.002
	Return visitor	1.16 ± 0.40	8.52	1	0.004
Spotted hyaena	Age	−0.02 ± 0.01	6.63	1	0.010

Table 4. Percentage of tourists that were willing to pay, book a lodge or come to Zimbabwe to see African wild dog, cheetah, leopard, lion or spotted hyaena (excluding respondents who did not know the species).

	African wild dog		Cheetah		Leopard		Lion		Spotted hyaena	
	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*
Pay to see	66.7	172	79.8	198	80.7	205	79.8	257	63.4	201
Book a lodge to see	37.7	98	58.2	145	57.6	147	58.3	187	36.5	116
Come to Zimbabwe to see	49.0	128	66.8	167	69.0	176	65.7	211	45.6	145

Table 5. The percentage of tourists that would pay nothing, 10–100 USD, 100–1000 USD or more than 1000 USD to see African wild dog, cheetah, leopard, lion or spotted hyaena (excluding respondents who did not know the species).

	African wild dog		Cheetah		Leopard		Lion		Spotted hyaena	
Price	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*
Nothing	33.3	86	20.2	50	19.3	49	20.2	65	36.3	116
10–100 USD	43.4	112	52.8	131	44.5	113	43.5	140	51.1	162
100–1000 USD	21.7	56	24.2	60	31.5	80	30.1	97	11.4	36
>1000 USD	1.6	4	2.8	7	4.7	12	6.2	20	0.9	3

book a lodge to see a specific carnivore species than men (Table 3). The willingness to book a lodge to see leopard decreased with age, with the same trend also evident, although not significantly so, for lion and cheetah (Table 3). Tourists who had seen a lion were more willing to book a lodge to see this carnivore species (Table 3).

Come to Zimbabwe – More than half of the tourists were willing to come to Zimbabwe to see cheetah, leopard or lion (≥65.7%), whereas less than half were willing to come to Zimbabwe to see African wild dog or spotted hyaena (≤49.0%) (Table 4). For all five carnivore species, the willingness to come to Zimbabwe to see one of these species decreased with age (Table 3). In contrast to African residents, first-time and return visitors were more likely to come to Zimbabwe to see cheetah, leopard or lion (Table 3). Tourists who had seen cheetah were also more likely to come to Zimbabwe to see this carnivore species (Table 3).

DISCUSSION

The popularity of a species is affected by several factors, *e.g.* attractiveness, size, danger it presents, media attention it receives and whether or not the species is rare or endangered (Reynolds & Braithwaite, 2001). Aesthetic appeal and image seem to be important factors affecting the popularity of lion, leopard and cheetah, with many tourists admiring their power, beauty and grace. Being rare or endangered was often mentioned as a reason to like a carnivore species, especially for the endangered African wild dog. The willingness to pay, and the price willing to pay, to see African wild dog falls within the range found by Lindsey *et al.* (2005). However, compared to Lindsey *et al.* (2007), the popularity of African wild dog and other carnivore species seems to be relatively lower. This difference could be the result of different methodologies. Lindsey *et al.* (2007) asked tourists directly whether they had a desire to see a specific species, whereas in this study we asked tourists which species they were hoping to see, herewith forcing respondents to name the species themselves. Di Minin *et al.* (2013) used a comparable method to ours by asking tourists to name their favourite species. However, in comparison to Di Minin *et al.* (2013) who limited tourists to a single species, we allowed tourists to mention an indefinite number of species, resulting in a relatively higher popularity of carnivore species in this study. In addition to differences in methodology, variations between study areas further complicates compari-

sons between studies since some destinations are known for a specific species, therefore attracting tourists who specifically visit the area to see that particular species (see Lindsey *et al.*, 2007). Although not the focus of this study, it should be noted that in accordance with Lindsey *et al.* (2007) and Di Minin *et al.* (2013) elephant and giraffe were very popular species often mentioned by tourists as a species they were hoping to see and a favourite species seen (see also Kerley *et al.*, 2003; Skibins, 2012).

Species that are predictable in their activity or location, approachable, easy to view in open habitats, tolerant to human presence, rare or locally overabundant with diurnal activity patterns provide the best wildlife tourism experience (Reynolds & Braithwaite, 2001). Finding carnivores in the wild can be challenging and especially tourists who were hoping to see cheetah, a carnivore species that meets most of the above mentioned criteria, often failed to see the species. However, tourists who had seen a cheetah were more likely to like the species or come to Zimbabwe if there was a high chance to see it. Similarly, tourists who had seen a lion were more likely to book a lodge if there was a high chance to see this carnivore species. Within the study area, the number of successful carnivore viewing experiences could be increased by offering specialized wildlife trips to areas with a relatively high carnivore encounter probability. However, a low carnivore encounter probability is not necessarily a negative trait, as being rare and difficult to see was more often mentioned by tourists as a reason to like a carnivore species than a reason to dislike it. In addition, with the exception of cheetah, whether or not tourists had seen a carnivore species on their visit did not affect the species' likability. This finding is similar to other studies (Lindsey *et al.*, 2007), and might indicate tourists have a fixed perception of a species before encountering it in the wild.

Knowledge of a species positively affects the attitude towards a species (Lukas & Ross, 2005; Tisdell, Nantha & Wilson, 2007). Rather than biological facts, many tourists gave 'no specific reason' or general, non-species-specific, reasons to like or dislike a carnivore species and the likability of a carnivore species seemed to be largely driven by its aesthetic appeal and image. This might indicate a lack of knowledge, which can be especially disadvantageous for carnivore species that are perceived as less attractive, *e.g.* African wild dog and spotted hyaena. Tourist interest in

less charismatic wildlife can be improved by additional *in situ* information and guided drives (Kerley *et al.* 2003). Although interest in viewing less charismatic species improves with the number of visits to Africa and, in some cases, age of the tourists (Lindsey *et al.*, 2007; Di Minin *et al.*, 2013), there is an important role for safari guides to educate and sensitize wildlife tourists to less popular species. Education and sensitization also seem necessary to discourage tourists from participating in activities with (semi) captive wildlife. Almost a third of the tourists interviewed in this study participated in elephant rides, lion walks and cheetah encounters. This is of concern since these commercially driven wildlife activities generally play no significant role in species conservation and often raise animal welfare issues (Hunter *et al.*, 2012; Duffy, 2014).

Although African wild dog and spotted hyaena are less poplar carnivore species than lion, leopard and cheetah, a large percentage of tourists were willing to pay, book a lodge or come to Zimbabwe to see any of these five carnivore species. If flagship species-based wildlife tourism within the Zimbabwe component of the KAZA TFCA is to be based on a single carnivore species, lion would be the most suitable candidate. Not only was lion a very popular species, it also provides a high possibility of a successful viewing experience. However, as long as an emotional connection and pro-conservation behaviour is stimulated, flagship species status does not necessarily have to apply to a single species, it can also successfully apply to a cohort of species (Skibins, 2012). Compared to lions, leopards and cheetahs were less likely to be viewed in the wild and were less often mentioned by tourists as a species they were hoping to see or a favourite species seen. Nevertheless, both species were highly liked by tourists and, compared to lion, provided a similar incentive for tourists to pay, book a lodge or come to Zimbabwe to see them. The Zimbabwe component of the KAZA TFCA harbours the largest free-roaming cheetah population in Zimbabwe (Van der Meer, 2013, 2014) and it could be of benefit to this vulnerable species if conservation and public recognition of the site was promoted by using large cats as a flagship species cohort.

When selecting a flagship species it is important to also take local cultural values into account. To be an effective flagship species it is beneficial if the species has local support (Walpole & Leader-Williams, 2002). At the same time, giving a species that is not locally supported flagship status can play an important role in creating local support for its conservation by providing direct benefits that offset the costs of living with the species (Walpole & Leader-Williams, 2002; Dalerum *et al.*, 2008). Within the study area, livestock depredation by lion, leopard and spotted hyaena is a main cause of human–wildlife conflict (Guerbois, 2012; Loveridge, 2013), while conflict with African wild dog and cheetah is minimal (Guerbois, 2012; Van der Meer, 2013). As long as revenue out of flagship species-based tourism benefits the community and supports local conservation initiatives, it should be possible for popular species like lion and leopard to offset some of these economic costs and improve local support through flagship species-based wildlife tourism (*e.g.* Walpole & Leader-Williams, 2002). For less popular species like spotted hyaena, the opportunities to compensate for economic losses through flagship species-based wildlife tourism are likely to be limited. A successful flagship species is able to raise awareness and funds for wider conservation goals that include less popular species (Walpole & Leader-Williams, 2002; Sergio *et al.*, 2006; Skibins, 2012). However, in order to raise awareness and local support, it is worthwhile considering including less popular species in flagship species cohorts with highly popular species. Whether or not flagship species-based wildlife tourism can generate sufficient funds to contribute to wider conservation goals will not only depend on the flagship species or flagship species cohort, but also on the number of tourists visiting the area. It has to be kept in mind that the latter is very sensitive to external factors like disease outbreaks (Kuo, Chen, Tseng, Ju & Huang, 2008) and the level of political stability in the destination country (Clements & Georgiou, 1998; Ingram, Taberi & Watthanakhomprathip, 2013). Conservation efforts should therefore never be based on tourism alone.

When designing marketing strategies for flagship species-based tourism it is important to take gender and age into account. Women were more likely to book a lodge if there was a high chance of seeing a specific carnivore species. However, women were also less likely to pay to view large carnivores than men. This gender bias is attributed to gender differences in income and personal preference for recreational activities (Dupont, 2001; Kamri, 2013). With gender having no effect on the price paid per night for accommodation and the likability of a carnivore species, it seems unlikely

that in this study differences in income and personal preference explain the lower willingness of women to pay to view large carnivores, as such, the underlying reasons for this difference remain unclear. Although some studies have found no age effect (Kamri, 2013), others show that the willingness to pay for natural resources declines with age (Reynisdottir, Song & Agrusa, 2008). We found that the willingness to pay to see large carnivores decreased with age. With older tourists spending more money on accommodation, they might be less willing to pay additional fees to view wildlife. Older tourists were also less willing to book a lodge to see cheetah, leopard or lion, or come to Zimbabwe to see one of the large carnivores. Travel objectives vary with age and older tourists place a higher priority on health as a motivation behind holiday plans (Romsa and Blenman, 1989). When deciding on a holiday destination, older tourists might thus focus on characteristics other than wildlife viewing opportunities, *e.g.* accessibility and comfort of the holiday destination. When designing marketing strategies for the Zimbabwe component of the KAZA TFCA, young to middle-aged men should be the target group for paid large carnivore viewing. Promotion of accommodation through large carnivore viewing, especially large cats, should be aimed at young to middle-aged women. With African residents being less willing to come to Zimbabwe to see cheetah, leopard and lion, promotion of Zimbabwe as a large carnivore viewing destination should be aimed at young to middle-aged non-African tourists, especially when using large cats as a flagship species cohort.

ACKNOWLEDGEMENTS

REFERENCES

Balmford, A., Beresford, J., Green, J., Naidoo, R., Walpole, M. & Manica, A. (2009). A global perspective on trends in nature-based tourism. *PLOS Biology*, 7, e1000144.

Caro, T.M. & O'Doherty, G. (1999). On the use of surrogate species in conservation biology. *Conservation Biology*, 13, 805–814.

Christie, I.T. & Crompton, D.E. (2001). Tourism in Africa, Africa region working paper series no. 12. The World Bank. Retrieved from: http://www.worldbank.org/afr/wps/wp12.pdf on 10 July 2015.

Clements, M.A. & Georgiou, A. (1998). The impact of political instability on a fragile tourism product. *Tourism Management*, 19, 283–288.

Dalerum, F., Somers, M.J., Kunkel, K.E. & Cameron, E.Z. (2008). The potential for large carnivores to act as biodiversity surrogates in southern Africa. *Biodiversity and Conservation*, 17, 2939–2949.

Di Minin, E., Fraser, I., Slotow, R. & MacMillan, D.C. (2013). Understanding heterogeneous preference of tourists for big game species: implications for conservation and management. *Animal Conservation*, 16, 249–258.

Duffus, D. & Dearden, P. (1990). Non-consumptive wildlife-oriented recreation: a conceptual framework. *Biological Conservation,* 53, 213–231.

Duffy, R. (2014). Interactive elephants: nature, tourism and neoliberalism. *Annals of Tourism Research*, 44, 88–101.

Dupont, D. (2001). Gender and willingness to pay for recreational benefits from water quality improvements. *Microbehavior and Macroresults: Proceedings of the Tenth Biennial Conference of the International Institute for Fisheries Economics and Trade.* Corvallis, Oregon, U.S.A. (pp. 1–8).

Fritz, H., Loreau, M., Chamaillé-Jammes, S., Valeix, M. & Clobert, J. (2011). A food web perspective on large herbivore community limitation. *Ecography,* 34, 196–202.

Guerbois, C. (2012). *Considering protected areas in the dynamics of socio-ecological systems for the integrated and sustainable conservation of African wildlife.* (Unpublished Ph.D. thesis). Paris, France: Museum National d'Histoire Naturelle.

Hemson, G., Maclennan, S., Mills, G., Johnson, P. & Macdonald, D. (2009) Community, lions, livestock and money: a spatial and social analysis of attitudes to wildlife and the conservation value of tourism in a human–carnivore conflict in Botswana. *Biological Conservation*, 142, 2718–2725.

Hudson, K. & Lee, D. (2010). Biodiversity and tourism: a valuable relationship. *Social Alternatives*, 29, 39–43.

Hunter, L., Woodroffe, R., Flocken, J. & Sillero, C. (2010). The fading call of the wild, a status update of 15 species of wild cats and canids. A report by the International Fund for Animal Welfare, Panthera, the IUCN Canid Specialist Group, the IUCN Cat Specialist Group and the Wildlife Conservation Society. Retrieved from: http://www.ifaw.org/sites/default/files/fading_call_of_the_wild.pdf on 10 July 2015.

Hunter, L.T.B., White, P., Henschel, P., Burton, L.F.C., Loveridge, A., Balme, G., Breitenmoser, C. & Breitenmoser, U. (2012). Walking with lions: why there is no role for captive-origin lions *Panthera leo* in species restoration. *Oryx*, 47, 19–24.

Infield, M. (1988). Attitudes of a rural community towards conservation and a local conservation area in Natal, South Africa. *Biological Conservation*, 45, 21–46.

Ingram, H., Taberi, S. & Watthanakhomprathip, W.

(2013). The impact of political instability on tourism: case of Thailand. *Worldwide Hospitality and Tourism Themes*, 5, 92–103.

Inskip, C. & Zimmermann, A. (2009). Human–felid conflict: a review of patterns and priorities worldwide. *Oryx*, 43, 18–34.

Kamri, T. (2013). Willingness to pay for conservation of natural resources in the Gunung Gading National Park, Sarawak. *Procedia – Social and Behavioral Sciences*, 101, 506–515.

Karanth, K.U. & Chellam, R. (2009). Carnivore conservation at the crossroads. *Oryx*, 43, 1–2.

Kerley, G.I.H., Geach, B.G.S. & Vial, C. (2003). Jumbos or bust: do tourists' perceptions lead to an underappreciation of biodiversity? *South African Journal of Wildlife Research*, 33, 13–21.

Kuo, H.I., Chen, C.C., Tseng, W.C., Ju, L.F. & Huang, B.W. (2008). Assessing impacts of SARS and Avian Flu on international tourism demand to Asia. *Tourism Management*, 29, 917–928.

Lindsey, P.A., Alexander, R.R., du Toit, J.T. & Mills, M.G.L. (2005). The potential contribution of ecotourism to African wild dog *Lycaon pictus* conservation in South Africa. *Biological Conservation*, 123, 339–348.

Lindsey, P.A., Alexander, R., Mills, M.G.L., Romañach, S. & Woodroffe, R. (2007). Wildlife viewing preferences of visitors to protected areas in South Africa: implications for the role of ecotourism in conservation. *Journal of Ecotourism*, 6, 19–33.

Loveridge, A.J. (2013). *Hwange Lion Project Annual Report 2013.* Harare, Zimbabwe: Zimbabwe Parks and Wildlife Management Authority.

Lukas, K.E. & Ross, S.R. (2005). Zoo visitor knowledge and attitudes toward gorillas and chimpanzees. *Journal of Environmental Education*, 36, 33–48.

MacKenzie, C.A. (2012). Trenches like fences make good neighbours: revenue sharing around Kibale National Park, Uganda. *Journal for Nature Conservation*, 20, 92–100.

Mech, L.D. 1996. A new era for carnivore conservation. *Wildlife Society Bulletin*, 24, 397–401.

OECD (2009). Wildlife and nature-based tourism for pro-poor growth, in natural resources and pro-poor growth: the economics and politics, OECD Publishing. Retrieved from: http://dx.doi.org/10.1787/9789264060258-10-en on 10 July 2015.

Peace Parks Foundation (2009). *Integrated Development Plan: Zimbabwean Component of the KAZA TFCA.* Harare, Zimbabwe: Zimbabwe Parks and Wildlife Management Authority.

Quinn, G. P. & M. J. Keough (2002). *Experimental design and data analysis for biologists*. Cambridge, United Kingdom: Cambridge University Press.

Reynisdottir, M., Song, H. & Agrusa, J. (2008) Willingness to pay entrance fees to natural attractions: an Icelandic case study. *Tourism Management,* 29, 1076–1083.

Reynolds, P. & Braithwaite, D. (2001). Towards a conceptual framework for wildlife tourism. *Tourism Management*, 22, 31–42.

Roe, D., Leader-Williams, N., Dalal-Clayton, B. 1997. Take only photographs, leave only footprints: the environmental impacts of wildlife tourism. IIED Wildlife and Development Series No.10, Institute for Environment and Development, London. Retrieved from: http://pubs.iied.org/pdfs/7761IIED.pdf? on 10 July 2015.

Romsa, G. and Blenman, M. (1989). Vacation patterns of the elderly German. *Annals of Tourism Research*, 16, 178–188.

Sergio, F., Newton, I., Marchesi, L. & Pedrini, P. (2006) Ecologically justified charisma: preservation of top predators delivers biodiversity conservation. *Journal of Applied Ecology*, 43, 1049–1055.

Skibins, J.C. (2012). *The influence of flagship species on in situ and ex situ wildlife tourists' connection to wildlife and pro-conservation behaviors.* (Ph.D. thesis). Clemson, USA: Clemson University. Retrieved from: http://tigerprints.clemson.edu/cgi/viewcontent.cgi?article=1991&context=all_dissertations on 10 July 2015.

Skibins, J.C., Powell, R.B. & Hallo, J.C. (2013). Charisma and conservation: charismatic megafauna's influence on safari and zoo tourists' pro-conservation behaviors. *Biodiversity and Conservation*, 22, 959–982.

Tisdell, C., Nantha, H.S. & Wilson, C. (2007). Endangerment and likeability of wildlife species: How important are they for payments proposed for conservation? *Ecological Economics*, 60, 627–633.

United Nations Environment Programme (2011). Tourism, investing in energy and resource efficiency. Tourism chapter in Part II investing in energy and resource efficiency, in towards a green economy, pathways to sustainable and poverty eradication. Retrieved from: www.unep.org/resourceefficiency/.../tourism/greeneconomy_tourism.pdf on 10 July 2015.

United Nations Environment Programme (2013). Tourism. Chapter 7 in green economy and trade, trends, challenges and opportunities. Retrieved from: http://www.unep.org/greeneconomy/Portals/8-8/GETReport/pdf/Chapitre%207%20Tourism.pdf on 10 July 2015.

Van der Meer, E. (2013). Cheetah Conservation Project Zimbabwe, annual report 2013. Retrieved from: http://www.cheetahzimbabwe.org/#!downloads/c-15vd on 10 July 2015.

Van der Meer, E. (2014). Cheetah Conservation Project Zimbabwe, annual report 2014. Retrieved from: http://www.cheetahzimbabwe.org/#!downloads/c15-vd on 10 July 2015.

Vianna, G.M.S., Meekan, M.G., Pannell, D.J., Marsh, S.P. & Meeuwig, J.J. (2011). Socio-economic value and community benefits from shark-diving tourism in Palau: a sustainable use of reef shark populations. *Biological Conservation*, 145, 267–277.

Walpole, M.J. & Leader-Williams, N. (2002). Tourism and flagship species in conservation. *Biodiversity and Conservation*, 11, 543–547.

Woodroffe, R. & Ginsberg, J.R. (1998). Edge effects and the extinction of populations inside protected areas. *Science*, 280, 2126–2128.

Wynn, S. (2003) Zambezi River: wilderness and tourism research into visitor perceptions about wilderness and its value. *Science stewardship to protect and sustain wilderness values: seventh World Wilderness Congress symposium,* Port Elizabeth, South Africa (pp 155–162).

Xiang, Z., Yu, Y., Yang, M., Yang, J.Y., Niao, M.Y. & Li, M. (2011). Does flagship species tourism benefit conservation? A case study of the golden snub-nosed monkey in Shennongjia National Nature Reserve. *Chinese Science Bulletin*, 56, 2553–2558.

Zimbabwe Parks and Wildlife Management Authority (2009). National conservation action plan for cheetahs and African wild dogs in Zimbabwe. Retrieved from: http://www.cheetahandwilddog.org/documents/Draft%20Strategic%20Plan%20for%20cheetah%20and%20wild%20dogs%20Zimbabwe_Sept%2009.pdf on 10 July 2015.

Zimbabwe Tourism Authority (2004) Tourism trends and statistics report 2004. ZTA Market research and product development division. Retrieved from: http://www.zimbabwetourism.net/images/Downloads/zimbabwe-tourism-trends-and-statistics/tourism-trends-and-statistics-2004-annual-report.pdf on 16 September 2015.

Zimbabwe Tourism Authority (2013) Tourism trends and statistics report 2013. ZTA Market research and product development division. Retrieved from: http://www.zimbabwetourism.net/images/Downloads/zimbabwe-tourism-trends-and-statistics/tourism-trends-and-statistics-2013-annual-report.pdf on 16 September 2015.

Responsible Editor: M.G.L. Mills

Appendix 1. Scientific names of the species tourists were hoping to see and the favourite species they had seen.

Species	Scientific name
African wild dog	*Lycaon pictus*
Baboon	*Papio hamadryas*
Buffalo	*Syncerus caffer*
Bushbuck	*Tragelaphus scriptus*
Cheetah	*Acinonyx jubatus*
Crocodile	*Crocodylus niloticus*
Elephant	*Loxodonta africana*
Giraffe	*Giraffa camelopardalis*
Hippopotamus	*Hippopotamus amphibius*
Honey badger	*Mellivora capensis*
Impala	*Aepyceros melampus*
Jackal	*Canis mesomelas, Canis adustus*
Kudu	*Tragelaphus strepsiceros*
Leopard	*Panthera pardus*
Lion	*Panthera leo*
Mongoose	Herpestidae
Ostrich	*Struthio camelus*
Rhinoceros	*Ceratotherium simum, Diceros bicornis*
Sable	*Hippotragus niger*
Serval	*Leptailurus serval*
Spotted hyaena	*Crocuta crocuta*
Vervet monkey	*Chlorocebus pygerythrus*
Warthog	*Phacochoerus africanus*
Waterbuck	*Kobus ellipsiprymnus*
Wildebeest	*Connochaetus taurinus*
Zebra	*Equus burchelli*