Wildlife tourists in India's emerging economy: potential for a conservation constituency?

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Abstract Wildlife tourism is a growing phenomenon, particularly in emerging economies such as India. Purported benefits of this growth in tourism include greater tourist interest in, and support for, conservation. We examined the interest, awareness and potential for this support in three prominent Indian national parks, Nagarahole, Kanha and Ranthambore. Park records indicate that most tourists (71%) are Indian nationals. Our surveys of 436 Indian tourists indicate that many were on their first visit to the park (71%) and are well educated (82% with bachelor and master degrees). Most tourists (88%) visited for < 1 week and spent < USD 600 on their visit. The main reasons for visiting parks were opportunities to see nature, tigers *Panthera tigris* and scenic beauty. Seventy-one percent of tourists indicated they are likely or somewhat likely to return to the parks but only 34% would be willing to visit the parks if tigers are absent. Forty-two percent indicated willingness to pay higher gate fees. Surprisingly, those spending less on their trip were more willing to pay higher fees than those spending more. Sixty-five percent believed that local people benefit from the park, whereas in reality local benefits are few. Our results indicate the potential for the growth of domestic wildlife tourism and support for conservation among tourists but highlight the need for increasing education and awareness on the difficult realities of conservation in India.

Keywords Fees, India, parks, people, tigers, tourism, wildlife

Introduction

Wildlife tourism in nature reserves and protected areas is a growing enterprise, particularly in developing and emerging economies (Goodwin, 1996; Gossling, 1999; Balmford et al., 2009; Karanth & DeFries, 2011). This growth in tourism is a result of increasing disposable incomes, improved accessibility for urban citizens and greater publicity for, and generation of public interest in, wild places and species such as tigers *Panthera tigris*, rhinoceroses *Rhinoceros unicornis* and elephants *Elephas maximus* (Scheyvens, 1999; Hutton & Leader-Williams, 2003; Hannam, 2005; Kruger, 2005). Governments and private commercial entities promote wildlife tourism as sustainable use of the environment that can benefit local people and protected areas whilst raising tourist interest in, awareness of, and general support for, conservation (Chin et al., 2000; Kiss, 2004; Ballantyne et al., 2009).

Wildlife and nature-based tourism results in a complex interplay between park managers, local communities, commercial tourist enterprises and tourists (Adams & Infield, 2003; Naidoo & Ricketts, 2006). Positive impacts from wildlife tourism include economic benefits (employment and entrepreneurship opportunities), infrastructure benefits (access to improved roads, transportation, health care and education) and social welfare benefits (political, psychological, economic and social empowerment; Ross & Wall, 1999; Scheyvens, 1999; Archabald & Naughton-Treves, 2001; Sandbrook, 2010). Negative impacts of wildlife tourism include commodification of people and places, particularly affecting pre-existing power structures among local people, and physical damage to habitats (King & Stewart, 1996; Stronza, 2001; He et al., 2008).

India is a rapidly growing emerging economy and domestic tourism is on the rise because of economic liberalization, resulting in a new middle class with greater disposable income (Bhardwaj, 1998). Development of tourism, and wildlife tourism in particular, has only recently become a priority in India (Hannam, 2005). However, the institutional framework to develop wildlife tourism is weak (Sekhar, 2003). Research on tourism trends in Indian parks suggests that wildlife tourism is growing (mean growth rate was 14.9% from 2002 to 2008) and is largely domestic (Karanth & DeFries, 2011). This growth in wildlife tourism potentially generates public interest in conservation but presents new challenges in a landscape where conservation efforts are already challenged by growth of infrastructure, high densities and resource dependence of local people living around parks, and declining wildlife populations (Sekhar, 2003; Hannam, 2005; TTF, 2005; DeFries et al., 2010; Karanth & DeFries, 2010; Karanth & Nepal, 2012).

Perceptions and awareness among wildlife tourists have been less well examined than the perceptions of conservation and parks by local communities (Bookbinder

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et al., 1998; Spiteri & Nepal, 2008). The willingness of tourists to return to a park has been examined by some studies (Luzar et al., 1995; Wallace & Pierce, 1996; Chase et al., 1998; Oppermann, 2000; Tisdell & Wilson, 2002). Other studies have established the importance of the presence of charismatic species such as gorillas *Gorilla* spp., panda *Ailuropoda melanoleuca*, polar bear *Ursus maritimus* or marine turtles for both conservation and wildlife tourism success (Wilkie & Carpenter, 1999; Goodwin & Leader-Williams, 2000; Adams & Infield, 2003; Tisdell & Wilson, 2002; Walpole & Leader-Williams, 2002; Lemelin & Weirsma, 2007). In India the tiger is an iconic flagship species used to promote conservation (Goodwin, 1996; Leader-Williams & Dublin, 2000; TTF, 2005) and there is public interest in tigers, with tiger reserves receiving > 1 million visitors annually (TTF, 2005). Park managers have to balance and manage wider biodiversity conservation goals and growing tourist interest in these species and places (Karanth & DeFries, 2011). The value and benefits of increased tourist interest, visitation, revenues and support for conservation relative to the costs and negative impacts that result from increased numbers of tourists is being debated (Gillingham & Lee, 1999; Chin et al., 2000; Wilson & Tisdell, 2001; Higginbottom, 2004; Marion & Reid, 2007; Ballantyne et al., 2009). Globally, studies have assessed tourists' awareness of gate fees and willingness to pay higher fees for visiting parks (Wells & Brandon, 1993; Wallace & Pierce, 1996; Chase et al., 1998; Goodwin, 2000; Hannam, 2005; Sandbrook, 2010). However, tourists' perceptions of park management and local communities have been examined by few studies (Mason, 2002; Stem et al., 2003; Charnley, 2005). Understanding these perceptions is important for building support for conservation amongst tourists and the general public. People's perceptions of, and willingness to support, conservation are influenced by characteristics such as age, gender and income (Soto et al., 2001; Bandara & Tisdell, 2003; Brook et al., 2003; Kleiven et al., 2004). Here we examine tourists' interest in, awareness of, and support for, conservation in India, particularly their perceptions and attitudes that indicate potential to build broader public support for conservation and increase understanding of conservation challenges in India.

We focus on the following questions: (1) What are the demographic characteristics of tourists visiting parks in India? What are the reasons tourists visit parks? What are their experiences? (2) Are tourists supportive of conservation, indicated by interest in wildlife other than tigers, interest in returning to the park and willingness to pay higher gate fees? (3) Do tourists appreciate the conservation challenges in India, particularly conflicts with local residents around parks and the difficulties of park management? We assess these questions through the lens of wildlife tourists, who are predisposed to appreciate wildlife relative to the general public.

Methods

Study sites

We selected three National Parks and Tiger Reserves in India: Nagarahole, Kanha and Ranthambore (Fig. 1). As our main focus is wildlife tourism we selected parks that are popular wildlife tourism destinations and have growing numbers of tourists (Karanth & DeFries, 2011). In 2008–2009 the annual numbers of visitors to the three parks ranged from 74,087 in Nagarahole to 154,888 in Ranthambore (Fig. 2). All three parks are experiencing positive growth in the number of visitors. The majority of tourists visiting Nagarahole and Kanha were Indian citizens, in contrast to Ranthambore that receives more international visitors (Karanth & DeFries, 2011). Additional reasons for selection of these parks included logistical feasibility to conduct surveys and co-operation from forest department in accessing government records. Table 1 provides further details about the three parks.

Surveys, interviews and models

We conducted semi-structured interviews with tourists in Nagarahole, Kanha and Ranthambore during February–May 2010. We pre-tested the survey with tourists in Ranthambore in June 2009 to check for clarity, and revised the survey based on the feedback received. The Human Subjects IRB Committee at Columbia University approved our survey questions and protocols. Tourists were randomly selected by approaching them at the entrance to the parks, and in resorts and homestays (facilities that are located in pre-existing tea and coffee plantations). Survey questions covered demographic characteristics; participants provided details on age, gender, educational qualifications, citizenship, participation in wildlife tours, reasons for visiting, group size, length of visit and costs associated with their trip. Open-ended questions elicited responses to perceptions of the park, park officials, local people and conservation.

Questionnaire responses were compiled and analysed in *R v. 2.11* (R Development Core Team, 2011). We examined the relationship between the characteristics and attitudes of tourists to conservation and parks using classification tree (CART) models. These tree-based models recursively partition data, thus allowing us to screen variables, capture non-additive behaviour and uncover data structure without pre-specifying interactions or assuming linear relationships (Cirincione & Gurrieri, 1997; Karanth et al., 2008). The tree identifies a series of best predictors (depicted as nodes and branches) for the dependent variable. In our study tree models can potentially identify the characteristics of tourists that drive their motivations for visiting parks. We examined whether tourists are
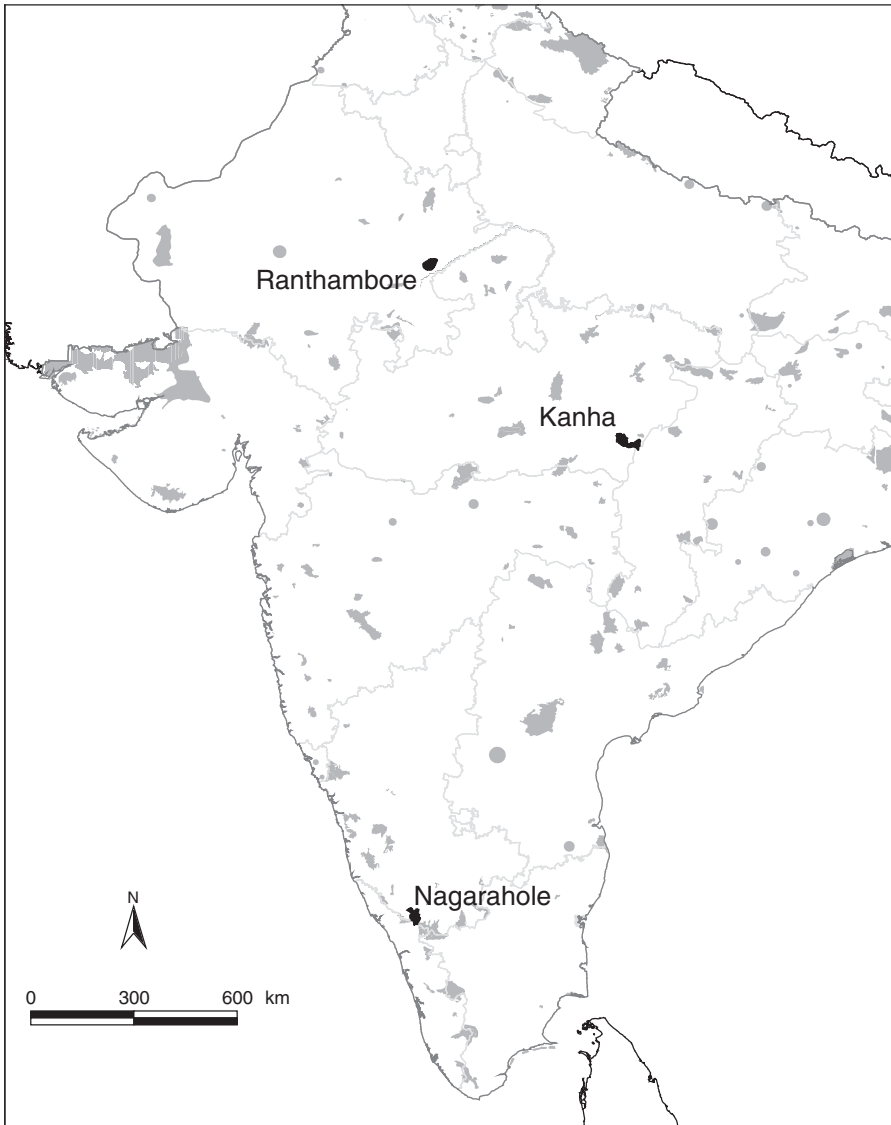
FIG. 1 Location of Nagarahole, Kanha and Ranthambore National Parks (shown in black) in India; other protected areas are in grey.
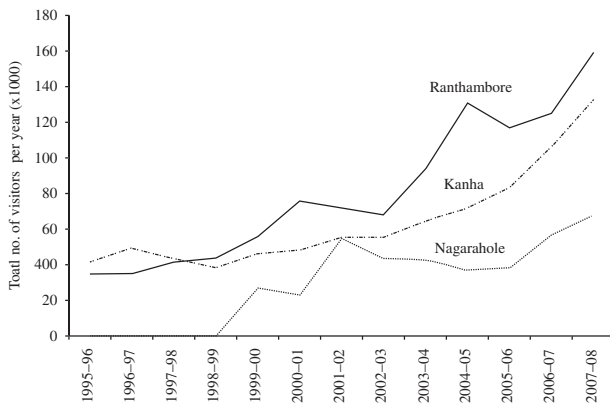

FIG. 2 Tourism trends in Nagarahole, Kanha and Ranthambore National Parks. Adapted from Karanth & DeFries (2011).

tiger-centric by asking if they would visit these parks in the absence of tigers. We expected differential responses in the three parks, with southern tourists less tiger-centric because

tiger sightings there are fewer compared to central and northern parks. We asked if tourists were interested in returning to the individual parks, grouping very likely and somewhat likely responses as 'yes'. We assessed tourists' awareness of gate fees and willingness to pay higher gate fees in the parks. Additionally, we were interested in conservation awareness of tourists, particularly whether they perceive benefits to local people from the parks, and perceptions of park management by the forest department. We also asked tourists for their suggestions to improve the experience of tourists in these parks.

Results

Tourists' characteristics and experiences

We surveyed 436 tourists in Ranthambore, Kanha and Nagarahole National Parks about their attitudes and

TABLE 1 Characteristics of Nagarahole, Kanha and Ranthambore National Parks (Fig. 1).

	Nagarahole	Kanha	Ranthambore
Area (km^2)[1]	644	940	392
Year established[1]	1955	1955	1955
Habitat[1]	Tropical moist & dry deciduous forests	Sal & bamboo forests	Tropical dry & open scrub forests
Districts (area, km^2)[2]	Mysore (6,268), Kodagu (4,102)	Balaghat (9,245), Mandla (8,771)	Sawai Madhopur (4,500)
Closest cities[2]	Mysore (94 km), Bangalore (180 km)	Nagpur (260 km), Jabalpur (169 km)	Jaipur (145 km)
Mean human population density (km^{-2}) within 10 km^2	681	91	128
Tourist visitors in 2008–2009[2]	74,087	128,329	154,888
Annual growth rate in 2002–2008[2] (%)	7.4	14.5	14.2
% Indian tourists[2]	91	86	42
No. of tourist facilities[2]	48	42	35
Mean price person^{-1} day^{-1}, INR (range), USD (range)	2,324 (100–20,000), 46 (2–400)	3,981 (400–35,000), 80 (8–700)	4,684 (400–42,000), 94 (8–840)
% local employees	90	76	83
% of people living within 10 km employed in tourism[2]	0.08	0.07	0.10

[1]DeFries et al. (2010)
[2]Karanth & DeFries (2011)

perceptions of parks and conservation in India. Sixty-eight percent of participants were male, with a mean age of 38 years (range 12–79). Many tourists were well educated, with bachelor's (52%) and master's degrees (30%). Seventy-six percent of participants were Indian. For 71% of visitors it was their first visit to that particular park. Seventy-two percent of tourists had previously participated in wildlife tours. Length of tourist visits to these parks was usually from 1 day (30%) to < 1 week (58%). Many (72%) tourists spent < USD 600 on their trip (42% tourists spent < USD 250 and 30% spent USD 251–600). Characteristics of tourists visiting each of the three parks are summarized in Table 2.

Indian park visitors ranked eight reasons for their visit. The three highest ranked reasons were opportunity to see nature (28% of participants ranked as first or second reason), opportunity to see tigers (27% of participants ranked as first or second reason) and scenic beauty of the landscape (21% of participants ranked as second or third reason). In responses to open-ended questions about what they liked best about their visit the most common observations were good tiger sightings and wildlife sightings in Ranthambore, and scenic beauty and good wildlife sightings in Kanha and Nagarahole. In responses to what they least liked about their visit common complaints were poorly trained guides and drivers, and too many vehicles in Ranthambore, absence of tiger sightings and too many vehicles in Kanha, and poor wildlife sightings and too many vehicles in Nagarahole. The responses to the two questions are summarized in Table 3.

Interest in tigers, willingness to return and willingness to pay

Among all tourists 34% stated that they would visit the park if were no tigers (Fig. 3). There were differential responses, with tourists in Ranthambore and Kanha more likely to say no. Details on secondary factors such as participation in tour group and education are presented in Table 4. Among all tourists, many (71%) said 'yes' they would return to the park (Fig. 4). The primary factor was first visit to a park (those on first visit were likely to say yes). Secondary factors included the park and expenses (Table 4). Among all tourists 80% knew the gate fees charged. Some (42%) were willing to pay more. The primary factor predicting their response was expenses (those spending < INR 10,000 (c. USD 200) were willing to pay more) and secondary factors were citizenship (more likely to be Indians) and the park (more likely to be visiting Nagarahole; Table 4).

Tourists' conservation awareness and suggestions

Sixty-five percent of tourists thought that local people benefit from the parks and the primary factor predicting this response was the park. Tourists visiting Nagarahole responded less positively than those visiting Ranthambore and Kanha. Secondary factors included expenses and education (Table 4).

Overall, many (80%) tourists did not have a positive view of the forest departments' park management. The primary

TABLE 2 Characteristics of tourists visiting Nagarahole, Kanha and Ranthambore National Parks.

	Nagarahole	Kanha	Ranthambore
Mean age (range)	36 (16–65)	41 (14–78)	37 (12–79)
Education (%)			
No formal education	0	0	1
Some school	0	3	5
School complete	11	11	26
Bachelor's	84	72	71
Master's	51	40	40
Doctorate/other	3	9	7
No. of states, cities of origin of Indian visitors	8, 24	8, 19	11, 19
Mean number of visits to parks (range)	10 (1–100)	13 (1–150)	13 (1–200)
Length of visit (%)			
1 day	46	27	16
2–6 days	54	57	74
1–2 weeks	0	15	9
2–4 weeks	0	1	1
> 4 weeks	0	0	0
Participation in wildlife tours (%)	80	67	68
Participation in tour group (%)	23	28	20
Mean group size (range)	9 (1–30)	8 (1–33)	11 (2–45)
Expenditure* (INR person^{-1} trip^{-1}) (%)			
< 10,000	51	41	21
10,001–25,000	39	31	34
25,001–50,000	5	7	10
50,001–75,000	1	3	3
75,000–100,000	3	18	0
> 100,000	1	0	32
Likely to return (%)			
Not likely	14	15	20
Somewhat likely	35	40	26
Very likely	51	44	54

*Exchange rate at the time of the study was 46 INR = 1 USD

factor predicting this response was participation in a tour group, with those tourists travelling in a group more likely to hold a positive view. The secondary factor was the park; further details are given in Table 4.

Tourists in all parks suggested that the forest department improve the entry process into the parks, the facilities within and the roads in all parks. Tourists wanted park rules to be better enforced, limits on the number of vehicles and people allowed inside, and improved vehicle safety. Tourists also recommended that patrol efforts by managers inside the parks be increased to strengthen existing conservation efforts. Tourists stated that the information given to tourists prior to park entry was insufficient and they wanted monitoring of the behaviour of other tourists. In all parks it was suggested that guides require better training especially to drive slowly and carefully when viewing wildlife. Tourists suggested that more local people be employed in the park and tourists educated about local cultures. Other suggestions include introduction of night safaris, trekking opportunities, increasing wildlife numbers in the parks, lowering park entrance fees, availability of less expensive accommodation facilities, and educating people to be less tiger-centric. In Nagarahole tourists wanted more vehicles to view wildlife and an increase in safari length. In Kanha tourists suggested banning the playing of loud music in the tourist facilities, and stopping tiger shows, which stress both tigers and elephants. In these shows mahouts on elephants locate tigers in the park and then tourists are transported on elephant back to view the tigers in close proximity. These shows deploy multiple elephants that can ferry up to six tourists each. In Ranthambore tourists suggested improving the routes and zone management system, the online booking system and banning vendors inside the park. These suggestions were corroborated by observations of owners and managers of tourist facilities in these parks (Karanth & DeFries, 2011).

Discussion

Wildlife tourism is growing in emerging economies such as India (Balmford et al., 2009; Karanth & DeFries, 2011). This growth presents an opportunity to engage tourists and the

TABLE 3 Summary of responses of tourists to two questions about the National Parks (N, Nagarahole; K, Kanha; R, Ranthambore).

Tourists' responses (by question)
What did you like best?
Tiger sightings (65% R, 22% K, 0% N)
Wildlife sightings (18% R, 27% K, 26% N)
Scenic park & landscapes (10% R, 35% K, 45% N)
Safari experience (7% R, 9% K, 11% N)
Photography opportunities (2% R)
Accommodation & hospitality (4% R)

What did you like least?

General concerns
Poor facilities (3% R, 2% K, 3% N)
Too many vehicles & poorly maintained (5% R, 9% K, 7% N)
No tiger sighting (3% R, 14%K, 5% N)
Entrance fee high (1% R, 4% K, 1% N)
Noisy ill-informed tourists (3% R, 2% K, 3% N)
Poorly trained guides & rash drivers (9% R, 4% K, <1%N)
Bad roads (4% R, <1% K, 3% N)
Forest department rules & practices not clear (4% R, <1% K & N)
Poor tourist information (1% R, 1%K, 1% N)
People inside park (1% R, 2% K)
Expensive accommodation (2% R, 2% N)

Park specific concerns
Ranthambore: too hot (7%), tiger-centric (1%), vendors (1%)
Kanha: stop tiger shows (2%)
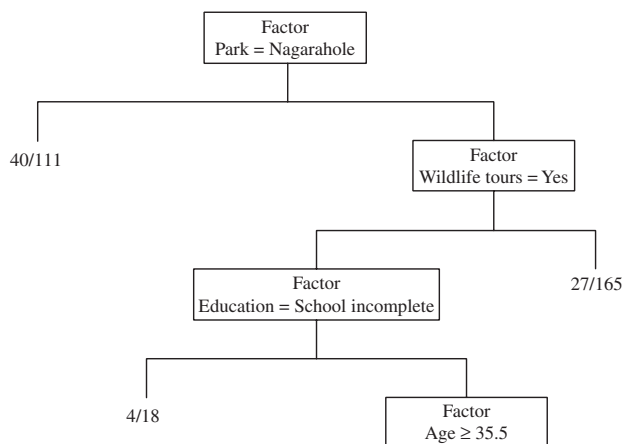Nagarahole: poor wildlife sightings (21%), few outdoor activities (3%), short safari (5%)

FIG. 3 Classification tree model for question concerning willingness of tourists to visit the park if tigers are absent. The text above each split shows the variable that is split and the condition for the left branch is stated. At the first node, the park was the primary factor and some (34%) said 'yes' they would visit the park if tigers were absent. Tourists visiting Ranthambore and Kanha are more likely to say 'no' compared to tourists visiting Nagarahole. Among those tourists visiting Ranthambore and Kanha, 32% are likely to say 'yes' if they have not participated in a wildlife tour previously. Further detail provided in Table 4.
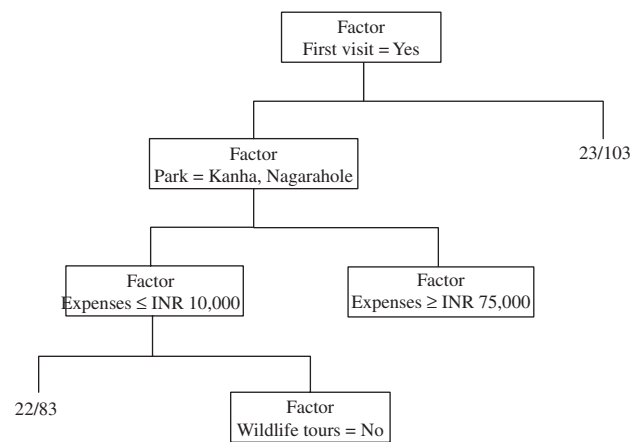

FIG. 4 Classification tree model for question concerning the willingness of tourists to return to the park. The text above each split shows the variable that is split and the condition for the left branch is stated. At the first node, first visit was the primary factor and many tourists (71%) say 'yes'. Among tourists on their first visit, many (62%) say 'yes' and are likely to be visiting Kanha and Nagarahole. Further detail provided in Table 4.

broader public in supporting conservation and to increase their awareness of conservation challenges. The use of tree models provides insights into characteristics of tourists that may influence their overall perceptions and attitudes and interest in wildlife and wild places. We found that tiger-centrism depends on the park, with tourists in Nagarahole less tiger-centric than tourists from Ranthambore and Kanha. In India tigers have captured the imagination of urban tourists as well as both the appreciation and hostility of local park residents. Park managers need to balance wider

TABLE 4 Summary of tree models predicting attitudes of tourists.

Factors	Discussion	Tree size
Will tourist visit if tigers are absent from the park?		
Primary: Park Secondary: Wildlife Tour, Education	Among all tourists 34% said yes. Tourists visiting Ranthambore & Kanha were less likely to say yes than those visiting Nagarahole. Among tourists visiting Ranthambore & Kanha 32% are likely to say yes if they have not previously participated in a wildlife tour. Among those who have participated in wildlife tours 89% are likely to say yes if they have not completed school.	Two
Will tourists return to visit the park?		
Primary: First visit Secondary: Park Expenses	Among all tourists 71% said yes & are likely to be on their first visit. Among those on their first visit 62% said yes & are likely to be visiting Kanha & Nagarahole. Among these 55% said yes & are likely to spend < INR 10,000 or INR 75,001–100,000.	Two
Are tourists willing to pay higher gate fees?		
Primary: Expenses Secondary: Citizenship, Park	Among all tourists 42% said yes & are likely to spend < INR 10,000. Among those spending less 94% said yes & are likely to be Indian citizens. Among those spending less 29% said yes & are likely to be visiting Nagarahole.	Two
Do tourists think local people benefit from the park?		
Primary: Park Secondary: Expenses, Park, Education	Among all tourists 65% think that yes, local people benefit from the park. Tourists visiting Ranthambore & Kanha are more likely to say yes compared to those visiting Nagarahole. Tourists who say no are likely to spend > INR 25,000. Among those visiting Ranthambore & Kanha 63% are likely to say yes if they have spent < INR 25,000. Among those spending less 96% are likely to say yes if they have completed school & possess educational degrees. Among those spending > INR 25,000 men are more likely to say yes than women.	Six
Do tourists think the forest department manages the park well?		
Primary: Tour group Secondary: Park	Among all tourists 20% said yes. Those travelling on their own are more likely to say no & those who are part of a tour group are more likely to say yes. Among those travelling in a tour group 28% say yes & are likely to be visiting Kanha.	One

biodiversity conservation needs with the needs of flagship species such as the tiger, elephant and rhino and the interest of tourists in these species. However, over-reliance on tigers has potential pitfalls and can detract from wider conservation priorities such as reduced funding for parks that do not have tigers and unstable revenues from tourism (Entwistle, 2000). In Sariska Tiger Reserve the local extinction of tigers resulted in a decrease in tourism and subsequent reintroduction of tigers resulted in increase in tourism (TTF, 2005; Karanth & DeFries, 2011).

Tourists who participated in a tour group were more likely to have a positive perception of park management. Additionally, tourists who spent less on their trip were willing to pay higher gate fees and tourists on their first visit to a park are more likely to be interested in returning to the park. This is in conjunction with the continued growth in numbers of visitors to Indian parks (Karanth & DeFries, 2011) and suggests that wildlife tourism will grow as more people become aware of wildlife and have the financial ability to travel to wild places. Sustaining growth in tourism numbers and facilities without overexploiting wild places, wildlife and communities living near parks is a top conservation priority.

The distribution of benefits to local people living in and around protected areas from wildlife tourism is a much debated conservation issue. The evidence for whether benefits are distributed equitably is mixed (King & Stewart, 1996; Bookbinder et al., 1998; Stronza, 2001; Sekhar, 2003; Spiteri & Nepal, 2008; Andam et al., 2010). We found that tourists' perception of benefits for local people depended on the park (with Kanha and Ranthambore visitors being more positive compared to Nagarahole visitors). In a parallel study conducted in the same parks Karanth & DeFries (2011) found that benefits of parks to local people are minimal in these parks. As local support is critical for conservation, engaging local residents and ensuring benefits are shared with them remains a challenge in India. There is also a need to educate wildlife tourists about local conservation challenges in individual parks.

Growth in wildlife tourism presents both an opportunity and challenge to conservation in India and other emerging economies. This growth is fuelled by the Indian urban middle-class, a constituency that can potentially generate significant support for conservation among tourists and the general public. Tourists' expectations of sighting charismatic species will need to be managed, along with concerns about particular species and individual parks, to design more effective conservation strategies. Education is needed to communicate the major conservation challenges in India, most notably the difficult realities of conservation in human-dominated landscapes. Park managers in India have an important role to play in managing the growth in wildlife tourism and educating tourists.

Acknowledgements

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