

Tourist Preferences for Ecotourism in Rural Communities Adjacent to Kruger National Park: A choice experiment approach

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Abstract

Ecotourism is viewed as a possible solution to promote wildlife conservation and rural development in communities adjacent to Kruger National Park (KNP) in South Africa. Some rural communities adjacent to the KNP have expressed an interest to exploit the potential of ecotourism to generate income and promote cultural awareness amongst tourists. There is, however, limited information on tourists' preferences for ecotourism in the area, and their willingness to pay for ecotourism goods and services. The aim of this study is to determine the preferences of tourists, according to origin and income levels, to engage in ecotourism as well as their marginal willingness to pay (MWTP) for three specific ecotourism attributes; namely village accommodation, village tours and visits to crafts markets. Data were collected from 319 tourists through choice experiments, and analysed using a conditional probit model. The study found a reluctance on the part of all tourists to use accommodation facilities outside KNP, although there is interest among tourists of all origin and income groups to purchase village tours and visit village-based craft markets. The MWTP was negative for accommodation for all income groups, but positive for village tours and crafts markets. Among international and high income groups of tourists, MWTP was even much higher than fees proposed for village tours. These results, which are relevant for planners, project managers and other policy makers, suggest there is potential for development of ecotourism in villages adjacent to KNP.

Keywords: Ecotourism, Choice Experiment, Village Tours, Craft Markets, Village Accommodation

Introduction

Ecotourism is a relatively new concept in the tourism industry that has raised interest and debates on international fora such as the 2002 World Ecotourism Summit, held in Quebec, and in subsequent discussions at the 2002 World Summit on Sustainable Development, and the Global Ecotourism Conference 2007 of Oslo. Although the potential of ecotourism to contribute towards poverty alleviation, biodiversity conservation, and employment creation has been acknowledged (World Ecotourism

Summit, 2002; Fennell, 2001), the challenge remains in finding ways to address these issues jointly.

The key principles of ecotourism as laid out in the Quebec Declaration on Ecotourism (World Ecotourism Summit, 2002) are (i) active contribution to cultural and natural heritage; (ii) inclusion of local and native communities in the planning of ecotourism and a contribution to their well being; (iii) visitors are familiarized with the cultural and natural heritage of the places they visit; (iv) better independent travelers and organized tours of small-sized groups. It has been argued that ecotourism has a comparative advantage as a driver for rural development because it tends to occur in peripheral and non-industrialized or rural regions, where opportunities for expanding the economy can be realized at a relatively low cost (Boo, 1990). The involvement of local communities in ecotourism can also improve their attitudes towards conservation. Controversy exists, however, over the meaning of the concept, its operationalisation (Weaver and Lawton, 2007; Fennell, 2001) and its potential to yield socio-economic benefits for rural communities (Isaacs, 2000; Wunder, 2000).

Operationalisation of ecotourism that promotes the goals of contributing to nature conservation and rural development, requires that rural communities and managers of protected areas have information on the tourist preferences for ecotourism, its attributes and economic potential (Hearne and Salinas, 2002). From an economic point of view demand and supply side considerations are also important. The success of ecotourism hinges on the extent to which local communities are willing and able to be involved, in the planning and implementation of ecotourism projects (Munthali, 2007; Spenceley, 2006). At the same time, the willingness of tourists to engage in ecotourism activities in rural areas and to pay for the ecotourism goods and services that communities supply is also important.

In South Africa, lack of capacity for business development in the local communities as well as limited information on possible ecotourism businesses have been identified as problems limiting the potential of ecotourism (Spenceley et al., 2008; Munthali, 2007). Another study conducted by Mabunda (2004) also indicated that rural communities adjacent to the Kruger National Park (KNP) were interested in sharing their cultural heritage with the tourists, but the park management framework did not

enable them to do so. There is thus a lack of information on how ecotourism can be operationalised in local communities and the types of ecotourism activities tourists would be interested in.

The main aim of this study is to analyse tourist preferences for ecotourism and their willingness to pay for ecotourism activities in rural communities adjacent to the KNP in the Greater Limpopo Transfrontier Conservation Area (GLTFCA). We provide answers to two questions. First, what sort of ecotourism goods and services are tourists interested in? And second, how much are tourists willing to pay for these services? To enable a better understanding of tourism preferences we distinguish between tourist nationality and income groups as preferences have been shown elsewhere to be heterogenous between international and local tourists, and also between different income groups (Weaver and Lawton, 2007; Hearne and Santos, 2005; Kepe, 2001).

Our paper makes the following contributions to the literature. First, it adds to the limited amount of non-market valuation studies on ecotourism in sub-Saharan Africa by means of choice experiments. Second, our study contributes to the debate on the extent to which ecotourism can yield socio-economic benefits for rural communities. As such, the study describes an interesting case study that provides important information to rural communities, tour operators and policy makers for development of ecotourism in the GLTFCA.

Ecotourism in the Greater Limpopo Transfrontier Conservation Area

Transfrontier Conservation Areas (TFCAs) encompass one or more protected areas which cross frontiers between two or more countries. The GLTFCA was established in 2000 and straddles Zimbabwe, Mozambique and South Africa. In South Africa the GLTFCA encompasses the Kruger National Park, private game reserves and rural communities adjacent to the KNP. In the GLTFCA, it is envisaged that communities residing on the borders of the park will be able to engage in ecotourism which is seen as a bridge between nature conservation and rural economic development. Ecotourism's main attraction lies in its potential to provide complementary or alternative solutions to problems of low incomes, high unemployment and limited economic opportunities for rural communities within the GLTFCA whilst ensuring

sustainability of wildlife conservation (Joint Management Plan Working Group, 2001; Munthali, 2007).

The KNP, which attracts over a million tourists per year, has in recent years made a concerted effort through its People and Conservation Division to contribute towards the socio-economic development of communities in and bordering the park (SANPARKS, 2008). Past studies by Spenceley (2008) and Spenceley (2006) in the GLTFCA and KNP have noted that efforts to shift to conservation approaches that benefit local people have only resulted in some people from the communities being employed in existing and upcoming private tourism facilities, without proper empowerment of rural communities and creation of sustainable economic opportunities to enable them to benefit more from tourism.

Some of the rural communities interested in starting ecotourism projects, but lacking information on tourist preferences or possible ecotourism projects, are situated on the northern borders of the KNP, nearest to Shingwedzi and Punda Maria camps. The northern borders of the KNP are least developed in terms of opportunities for employment and tourism related businesses, and would benefit from viable ecotourism development. This study investigates possible ecotourism development on this remote side of the KNP. These villages (totaling eight) all fall under the Mhinga Traditional Authority

Theoretical background of the choice modeling approach

Microeconomic foundations for choice models derive from Lancasterian consumer theory (Lancaster, 1966) which postulates that a consumer derives utility not from the good itself but from attributes of the good that cannot be purchased independently. These attributes can in turn take on different levels, and by varying these attributes and their combinations it is possible to create different goods from which a consumer chooses (Hanley et al., 2001). Econometric representation of consumer choices in non-market evaluation and marketing studies is most commonly done through random utility theory which can be used to model multinomial choices where there is no ordering in the alternatives.

To illustrate the basic model behind choice experiments, consider a tourist's choice for a trip from a set of different possible ecotourism trips. Suppose that each trip (j) consists of K different attributes, which among others include the location of accommodation, the price of the trip, and the possible inclusion of a village tour. Each of these attributes can take on different levels. Assuming that the utility that the tourist derives from trip j is a function of the trip's attributes (i.e., $U_{ij} = U_i(\mathbf{X}_j)$, where \mathbf{X}_j is a $K \times 1$ vector of attributes), and the tourist can choose from a set of J trips, then he or she will choose trip 1 if it gives the highest utility of all available trips:

$$U_i(\mathbf{X}_1) \geq U_i(\mathbf{X}_j) \quad \forall j \in J. \quad (1)$$

Random utility theory assumes that U_i can be divided into a deterministic component (V_{ij}) and a non-deterministic component (ε_{ij}). The non-deterministic component follows a predetermined distribution and is due to unobservable characteristics (Manski, 1977). Accordingly, the utility (U_{ij}) derived by tourist i from trip j is expressed as;

$$U_{ij} = V_i(\mathbf{X}_j) + \varepsilon_{ij} \quad (2)$$

Under these assumptions, the probability of individual i choosing alternative 1 over all other alternatives in choice set J is equal to:

$$V_i(\mathbf{X}_1) + \varepsilon_{i1} \geq V_i(\mathbf{X}_j) + \varepsilon_{ij} \Rightarrow V_i(\mathbf{X}_1) - V_i(\mathbf{X}_j) \geq \varepsilon_{ij} - \varepsilon_{i1}. \quad (3)$$

The exact estimation method used depends on the assumptions made regarding the probability distribution of ε_{ij} . If ε_{ij} can be assumed to be independently and identically distributed, and to follow a Weibull distribution (Greene, 2003), one can use the conditional logit model. In this model the conditional probability of alternative 1 being selected out of a set of alternatives from set J is specified as

$$P_{i1} = \frac{\exp(V_{i1})}{\sum_{j \in J} \exp(V_{ij})}. \quad (4)$$

This specification, however, implies that the selection from the choice set must obey the Independence from Irrelevant Alternatives (IIA) property. This property states that given, say, alternatives 1, 2, and 3, the relative probability of a person preferring 1 over 2 will not depend on 3 being available. This property is considered to impose strict restrictions on the use of the conditional logit model (CLM), and where it is

violated then applying CLM will give biased results (Long and Freese, 2006). Where the alternatives that are contained in the choice set are close substitutes of each other the IIA becomes too restrictive and CLM cannot be applied.

One of the solutions to this problem is to use the conditional probit model which allows relaxation of the restriction imposed by the IIA property, and is able to generate unbiased estimates (Hausman and Wise, 1978). The conditional probit model assumes that the non-deterministic component (ε_{ij}) has a multivariate normal distribution and can be correlated across choices. So far the conditional probit model has not been widely used, mainly because of computational problems that make calculation of maximum likelihood infeasible (Swait, 2007), but recent developments in software development and computational capacity have largely solved these problems.

Design of the choice experiments

Choice experiment studies require important decisions to be made on the number of attributes, the number of levels for each attribute, what those levels should be, and how those levels and attributes should be described (Hanley et al., 1998). The attributes and levels are combined such that a set of alternatives result, which is then presented to the respondents. The respondents are asked to choose their preferred alternative from this set. Among the alternatives, a *status quo* option is often also included, which expresses the current situation. Including the status quo option in the choice sets enables interpretation of results in standard welfare economics terms (Hanley et al., 2001)

The attributes in this study were developed after a consultation process with different stakeholders. Two workshops and three focus group discussions were held to discuss options for development of ecotourism in Mhinga and to identify possible goods or services that village members could offer tourists. Further discussions were held with game rangers inside the KNP on possible attributes of an ecotourism package to tourists. Having the local communities participate in the process of attribute identification was also done to ensure that whatever choices were presented to tourists would reflect what the local community wanted to offer. This is particularly important

given that by definition ecotourism entails community involvement and empowerment (Campbell, 1999; Fennell, 2001). This process identified village tours, craft markets and village lodges as possible ecotourism services, and hence possible attributes of an ecotourism package. A price level attribute was added to make four attributes with different levels that were used in the choice sets. The levels for the price attribute were based on the amount that villagers indicated that they would like to be paid for village tours and craft market entrance, and on the price that was being charged for similar village tours at the time of the survey by villagers on the far south side of the KNP. Table 1 shows the explanation of the attributes and the attribute levels in the choice experiment.

The combination of all attributes and levels results in a full factorial design which has $2^3 \times 3 = 24$ different alternatives. A fractional factorial design was employed to obtain a smaller number of replicates in which all main effects and two-factor interactions could still be estimated (Johnson et al., 2007). Taking into account the problems of overlap and dominance or near dominance of some choice sets, a total of seven choice sets were generated for the questionnaire. However, utility balance between alternatives to reduce dominance (Johnson et al., 2007), could not be considered because of the lack of prior information on the tourist preferences in the area. Tourists were presented with seven choice sets, each with three options. The *status quo* option was included in all the choice sets giving room for a respondent to not select any of the two alternatives provided, which would in turn give an idea about the interest or lack thereof in the potential ecotourism activities to be offered. Given the limited literature on tourist preferences and choice experiments in studies in South Africa, attitude and opinion questions were included in this survey to assist with the understanding and explanation of some responses.

Table 1 Attribute and attribute levels in the choice experiment

Attribute	Explanation	Levels
<i>Accommodation</i>	Tourists could have the opportunity to stay in village lodges or in the KNP as the current default option. These lodges would have similar prices or standards as those of the KNP.	Status quo- Inside KNP Village lodge with similar standards and price to KNP
<i>Craft markets</i>	Currently <i>crafts</i> are sold in KNP shops, but tourists do not have the opportunity to see the making of these products. Establishing village craft markets will give tourists a chance to witness and participate in the process of making souvenirs as an ecotourism activity	No village craft markets Village craft markets
<i>Village tours</i>	3-4 hours duration. Activities include interaction with locals in their day to day lives, photography, cultural entertainment group, visit a traditional healer, the Tribal court house and visit cultural village.	No village tour Village tour
<i>Price</i>	These activities would come at an additional cost above the KNP entrance fees	R 0 (\$0) R 160 (\$20) R 320 (\$40)

Data collection

Data were collected in December and January of 2008-2009 and 2009-2010. The choice of the months was deliberate to maximize the chances of interviewing a larger number of tourists and to also be able to interview both domestic and international tourists as December is peak tourist season in the KNP. The interviews were conducted in Shingwedzi and Punda Maria, which are the camps nearest to Mhinga, and Skukuza, which is the biggest camp in the KNP. The questionnaire was pre-tested and revised prior to the surveys. Permission had been obtained from the KNP to conduct this survey.

A trained enumerator in each camp administered the questionnaire. Because of the diversity in nationality and languages of the target group it was decided that all interviews be conducted in English. The enumerators randomly picked a number between 1 and 10 every morning, and thereafter approached every 10th tourist for interviews. If the tourist declined to participate then they would approach the next one, and count again the 10th one. This enabled some systematic random sampling of

tourists, who were approached inside the park at the reception area, in restaurants, utility shops, picnic areas and accommodation areas. In some cases the enumerators administered the questionnaire face to face, or where preferred, left the questionnaires with the tourists for them to fill in on their own and made arrangements for later collection. The questionnaire was self explanatory.

Results

Tourist socio-economic characteristics

A total of 324 tourists took part in the survey, but only 319 questionnaires were usable. With three options and seven choice set per respondent this resulted in 6699 observations. General socio-economic characteristics of tourists that took part in the survey are shown in Table 2. The average age of respondents was 42.8 ± 15.2 years and there was an almost fair distribution between male and female respondents. Incomes were pre-classified into four categories, and for international tourists most of their incomes were in the two higher categories, whilst incomes of domestic tourists were concentrated in the two lower categories. As expected, the South African tourists comprised the bulk of the respondents, whilst international visitors accounted for about 36% of respondents. This sample distribution of nationality fits in with KNP statistics that show that international visitors comprise between 30-35% of total visitors to the park (SANPARKS, 2007). Very few of the respondents were travelling alone and most of them were not first time visitors, especially in the domestic group.

Table 2: Socio-economic characteristics of survey respondents (standard deviation between brackets)

<i>Characteristic</i>	<i>All tourists</i>	<i>Domestic tourists</i>	<i>International tourists</i>
Age (years)	42.8 (15.2)	40.4 (14.1)	47.4 (16.2)
Sex (Male)	49.8%	49.3%	45%
Income less than \$12000	20.1%	25.6%	9.4%
Income \$12001-\$25 000	25.4%	35.5%	7.5%
Income \$25001-\$50 000	32.3%	25.6%	43.4%
Income above \$50 000	22.1%	13.3%	39.6%
Nationality South African	62.0%	93.5%	0
Stay of more than one day	75.2%	64.2%	97.2%
Travelling alone	1.9%	1.9%	0.9%
Respondent visited KNP before	72.2%	87.9%	41.3%
Respondent planning to return to KNP in next 5 years	89.4%	96.2%	75.7%

Results of the Choice Experiment

Data were analysed using Stata intercooled Version 10.1. Log-likelihood ratio tests for the IIA property comparing a model with correlated errors to the nested model with uncorrelated errors (Greene, 2003) revealed that the IIA assumption was violated ($\chi^2 = 9.68; p = 0.00; df = 1$). The conditional logit would not be appropriate, and hence a conditional probit model was estimated. Following (Hausman and Wise, 1978) the deterministic part of the estimated utility function for the i^{th} individual and j^{th} alternative takes the form;

$$V_{ij} = \delta_j + \beta_A A_{ij} + \beta_C C_{ij} + \beta_T T_{ij} + \beta_P P_{ij}, \quad (5)$$

where δ_j is an alternative specific term to capture a possible preference for one of the alternatives regardless of their attributes; β_A is the coefficient of the location of accomodation; A_{ij} is a binary variable indicating the location of accomodation (0 = inside KNP; 1 = in a village outside KNP); β_C is the coefficient of the crafts markets; C is a binary variable indicating whether the trip includes a crafts market; β_T is the coefficient of a cultural village tour; T is a binary variable indicating whether the trip includes a cultural village tour; β_P is the coefficient of the trip price; and P indicates the price of the alternative.

The conditional probit procedure in Stata (`asmprobit`) fixes the variance to 2 to solve identification problems commonly associated with conditional probit models (Swait, 2007; Long and Freese, 2006). In all cases, the Hammersley sequence, which has the advantage of speed (Long and Freese, 2006), was used as the integration option for simulated maximum likelihood estimation.

Normal calculator aggregation of choices made by respondents show that there was some interest in engaging in ecotourism. The status quo option (which entailed no ecotourism activities in surrounding villages) was chosen in only 28% of the cases in the pooled sample, with the respondents choosing the alternative presented options in most of the cases. In all cases, the status quo option is assumed to be the base alternative. Table 3 shows that all the attributes were significant in determining the choices that the tourists made, and the coefficient of both the accommodation and the price variables have negative signs, for the pooled sample. This suggests that tourists prefer accommodation in the park to accommodation outside the park, have an interest in the village tours and crafts market and also prefer a low fee to a high fee.

Respondents were asked to indicate their origin and income category, which enables us to investigate the effect of these characteristics on tourist preferences. In classifying by origin, two groups are used. The first group termed 'domestic tourists' are of South African and other African nationalities, and the second group 'international tourists' comprises all other nationalities. The other African nationalities comprise only 6.5% of the domestic group. The second classification of tourists is by income category, and the sample is split into four income categories. Although Pearson chi-square tests confirmed a relationship between the origin of the tourists and the income levels ($\chi^2 = 1400; p = 0.00; df = 3$) by income categories, it was decided to continue with the analysis with both classifications because both have been shown to be important determinants of tourist preferences (Hearne and Salinas, 2002; Hearne and Santos, 2005) and might not necessarily affect preferences in the same way.

Table 3 : Conditional probit model estimates for all tourists, domestic tourists and international tourists (*standard errors between brackets*)

<i>Attributes</i>	<i>All tourists</i>	<i>Domestic tourists</i>	<i>International tourists</i>
Accommodation	-0.41*** (0.09)	-0.4 *** (0.11)	-0.43 *** (0.15)
Craft markets	0.35*** (0.05)	0.33*** (0.06)	0.37*** (0.1)
Village tours	0.410*** (0.06)	0.46*** (0.08)	0.33*** (0.1)
Price	-0.01*** (0.00)	-0.01*** (0.00)	-0.01* (0.00)
Option1_ASC	0.42*** (0.09)	0.25** (0.12)	0.79*** (0.16)
Option2_ASC	0.34*** (0.1)	0.19 (0.13)	0.65*** (0.17)
Log- likelihood	-2127	-1437	-676

Significant at * 10%, ** 5% and *** 1%.

Effect of tourist origin and income on choices

When the sample is split by nationality, about 31% of the domestic tourists preferred the status quo option, whilst in the international tourist group only 22% of the respondents preferred the status quo option. The conditional probit estimates for the two groups split by origin are also shown in table 3. Similar to the pooled sample, the coefficient of both the accommodation and the price variables have negative signs, for both domestic and international tourist groups. The results suggest that all tourist groups show an interest in the village tours and the crafts markets, and prefer accommodation inside the park to village accommodation. A likelihood ratio test was conducted to investigate whether preferences differ between the domestic and the international tourist groups. The likelihood-ratio test statistic was 28.44 (P=0.0004). The null hypothesis is rejected and we conclude that there are statistically significant differences between the two groups, hence the two groups should not be pooled in analyzing their choices.

Table 4 shows that there are differences in the extent to which tourists in the different income groups respond to the attributes in the choice sets. All income groups prefer KNP accommodation to village accommodation, except for the lowest income group. All income groups show an interest in the craft markets and the village tours. The main difference between the income groups is that the price attribute is not significant

in the highest income group and does not have a negative sign, whereas it is significant at 5% level in the second and third income groups. Interestingly, for the low income group, the accommodation attribute does not seem to be driving the choices made. Likelihood ratio tests for the income groups and the pooled sample also show that the income groups should be modeled separately and not pooled together. The LR statistic is 308.35 (P=0.000).

Table 4: Conditional probit model estimates for tourists grouped by income groups (*standard errors between brackets*)

<i>Attribute</i>	<i>Income less than \$12 000</i>	<i>Income \$12 001-\$25 000</i>	<i>Income \$25 001-\$50 000</i>	<i>Income above \$50 000</i>
Accommodation	-0.16 (0.11)	-0.54** (0.22)	-0.43*** (0.14)	-0.76** (0.27)
Craft markets	0.25*** (0.09)	0.40*** (0.11)	0.39*** (0.09)	0.38*** (0.12)
Village tours	0.34*** (0.11)	0.46*** (0.14)	0.36*** (0.1)	0.59*** (0.17)
Price	-0.01*** (0.00)	-0.01** (0.00)	-0.01** (0.00)	0.01 (0.01)
Option1_ASC	0.20 (0.17)	0.61** (0.24)	0.60*** (0.15)	0.22 (0.28)
Option2_ASC	0.33** (0.13)	0.25 (0.27)	0.56*** (0.14)	-0.01 (0.34)
Log-likelihood	-414	-517	-625	-417

- Not significant, Significant at * 10%, ** 5% and ***1%

Willingness to pay estimates for the different groups

From the estimates in Tables 3 and 4, it is possible to estimate the marginal willingness to pay (MWTP) for each of the variables. MWTP can be estimated from the marginal rate of substitution between the attribute coefficient and the coefficient for the price attribute, in the form of

$$MWTP = -\frac{\beta_{attribute}}{\beta_p}$$

For both the village tours and the crafts markets, the domestic tourists have a lower MWTP than their international counterparts (Table 5) or the pooled group. The MWTP estimates for the international tourists are also only significant at the 10% level, unlike in the pooled sample and for the domestic group. As expected the MWTP for tourists to use village accommodation is negative. This suggests that the tourists might need to be given a discount or some form of compensation for them to

switch preferences from using current KNP accommodation to village accommodation. In almost all cases, MWTP for the crafts and the tours are higher than the maximum value of \$40 that had been proposed in the choice sets.

Table 5: MWTP estimates for domestic and international tourists in dollars

<i>Attributes</i>	<i>All tourists</i>	<i>Domestic tourists</i>	<i>International tourists</i>
Accommodation	-56.8 ** (-94.8 ; -18.8)	-48.8** (-86.6 ; -11.0)	-82.4 (-197.9 ; 33.1)
	<i>19.4</i> 47.7*** (22.8 ; 72.5)	<i>19.3</i> 39.8*** (16.1 ; 63.4)	<i>58.9</i> 70.1* (-12.1 ; 152.3)
Craft markets	<i>12.7</i> 56.7*** (27.0; 86.3)	<i>12.1</i> 54.7*** (22.0; 87.4)	<i>42.0</i> 63.4* (-8.4 ; 135.3)
	<i>15.1</i>	<i>16.7</i>	<i>36.7</i>

Significant at * 10%, ** 5% and ***1%

Standard errors in italics, 95% confidence levels in parentheses

Table 6 shows the MWTP estimates for the different income groups. Expectedly, the lowest income group has the lowest MWTP. This group also has a MWTP that is within the \$0-40 limits that were set. For all attributes the third income group has MWTP estimates that are higher than the \$40 limit set in the questionnaire. In all cases the groups display negative MWTP estimates for accommodation outside the KNP.

Table 6: MWTP estimates for different income groups in \$

<i>Attribute</i>	<i>Income less than \$12 000</i>	<i>Income \$12 001- \$25 000</i>	<i>Income \$25 001- \$50 000</i>	<i>Income above \$50 000</i>
Accommodation	-15.3* (-33.1 ; 2.6)	-46.9 (-103.9 ; 9.2)	-53.4** (-103.0; -3.9)	142.1 (-174.1; 458.2)
	<i>9.1</i> 23.7*** (10.0 ; 37.4)	<i>28.7</i> 35.1** (1.8 ; 68.4)	<i>25.3</i> 48.3*** (13.0 ; 83.7)	<i>161.3</i> -70.4 (-254.6; 113.7)
Craft markets	<i>7.0</i> 33.0*** (14.8; 51.1)	<i>17.0</i> 40.9** (2.0; 79.7)	<i>18.0</i> 44.1*** (11.4; 76.7)	<i>93.9</i> -111.5 (-395.8; 172.7)
	<i>9.3</i>	<i>19.8</i>	<i>16.6</i>	<i>145.0</i>

Significant at * 10%, ** 5% and ***1%

Standard errors in italics, 95% confidence levels in parentheses

Tourist perceptions

In the supporting questions, the tourists were asked a range of questions to determine their perceptions of the relationship between rural development and conservation as well as their willingness to purchase ecotourism related goods and services from

surrounding rural communities. The resulting responses for domestic and international tourists are shown in Tables 7 and 8. Table 7 shows that there were differences in the interest of international tourists to purchase certain ecotourism goods and services compared to domestic tourists. Pearson chi square tests performed for most of the statements in Table 7 show that there were significant differences between the international and domestic tourist groups on their interest in purchasing domestic goods and services. International tourists seem to have a higher interest to purchase the goods and services that villages can offer than domestic tourists. For instance, only 48% of the domestic tourists would purchase a village tour compared to 63% of the international tourists. This reluctance of domestic tourists to purchase goods and services from the local communities has also been observed elsewhere in South Africa by Kepe (2001).

Similarly, Pearson chi square tests for responses from the two groups to statements in Table 8 show that there were significant differences between opinions of domestic tourists and international tourists on key statements pertaining to the relationship between conservation and rural development. Whereas none of the international tourists disagreed with the statement that tourism should contribute to the development of local villages, 10% of domestic tourists disagreed with this statement. Similarly, 20% of domestic tourists disagreed with the statement that the KNP should contribute towards rural development in the surrounding communities, compared to only 3% of the international tourists.

Table 7: Pearson chi-square comparisons of tourist interest in purchasing ecotourism related goods and services grouped by nationality

	<i>International</i>			<i>Domestic</i>			<i>Pearson χ^2 df (2)</i>
	Indifferent	Not Purchase	Purchase	Indifferent	Not Purchase	Purchase	
Accommodation with same standards and prices as KNP but in the villages	20	30	50	23	37	40	3.158
Accommodation facilities in villages with same standards and lower prices than in KNP	26	23	51	22	35	43	5.227**
3-4 hour village tour at an additional R150 if it was available	16	21	63	25	27	48	6.504**
Crafts from a craft market in the KNP	12	15	73	24	18	58	8.215**
Crafts from a craft market in the surrounding villages	17	10	73	22	22	56	9.134***
Traditional meal in the villages sold at the same price of a meal in the KNP	35	12	53	28	26	46	8.099**
Traditional meal in the village sold at a higher price than a meal in the park	41	27	32	24	52	24	17.906***
Food supplies outside KNP to support rural businesses with similar prices	31	10	59	22	24	54	9.210***

Significant at * 10%, ** 5% and ***1%

Table 8: Pearson chi-square comparisons of tourist opinions on rural development and conservation grouped by nationality

	<i>International</i>			<i>Domestic</i>			<i>Pearson χ^2 df (2)</i>
	Indifferent	Agree	Disagree	Indiffere nt	Agree	Disagree	
When I visit KNP, I am only interested in wildlife	11	70	19	8	79	13	3.242
I am also interested in surrounding rural villages	25	64	11	25	48	27	11.333***
Tourism should contribute to development of surrounding communities	10	90	0	8	80	12	10.467***
Rural development is more important than conservation	32	14	54	29	18	53	0.763
Conservation efforts in KNP will not be sustainable if there is no rural development in surrounding communities	26	64	10	18	57	25	10.442***
KNP should only focus on nature conservation and leave other stakeholders to focus on rural development	38	27	37	21	36	43	10.142***
For me, rural communities are part of 'the holiday experience'	14	72	14	17	51	32	9.482***
The KNP should support rural development in surrounding villages	15	82	3	15	65	20	13.679***
I would pay more to engage in village tourism activities such as tours and crafting than the current KNP entrance fees	26	56	18	20	49	31	5.210**

Significant at * 10%, ** 5% and ***1%

Discussion

The results of the analysis suggest that there is an interest in the village tours and the crafts markets, and there is no interest in staying in village based accommodation on the part of the tourists. Both domestic and international groups expressed an interest in the tours and craft markets, as well as all income groups of the tourists. Additional fees were only significant for the low income groups and when the tourists are grouped according to origin, the fees were most significant for the domestic tourist groups. This is to be expected given that domestic tourists on average have lower income than international tourists. Likelihood ratio tests justified to model the tourists separately in two groups based on origin, as well as in four groups based on the income levels.

The MWTP estimates derived suggest that tourists are willing to pay additional fees that are within or higher than the set bid values of \$0, \$20 and \$40. The results also suggest that the second and third income groups as well as the domestic tourist groups are willing to pay more for the tours than proposed. This finding could be interpreted in two ways. First, tourists may indeed be willing to pay more than what is being charged for similar tours elsewhere or the prices set by the communities. Second, since these are hypothetical packages the tourists might state that they are willing to commit themselves to pay more than they would actually pay should a market for these services arise. It is thus worthwhile for decision makers in communities intending to offer these services to look further into the pricing of these services.

The reluctance of tourists to stay in village accommodation might be due to a number of reasons. First, concerns about crime and personal safety in South Africa might account for the unwillingness of both domestic and international tourists to stay outside the KNP. This was expressed in informal discussions with some of the tourists during and after the interviews. The second plausible explanation might be the inconvenience that is associated with staying outside the KNP if the main reason for visiting the area is to view wildlife and participate in related activities inside the KNP. This concurs with findings by Wight (1997) that tourists choose accommodation that enables them to experience a place i.e. the choice of the environment and activities is what motivates the accommodation selected not vice versa. Thirdly, the abundance of

alternative accommodation and the ease of access in booking accommodation in the KNP might act as a disincentive for tourists to seek lodgings elsewhere. Indeed the KNP itself often has below maximum occupancy rates for accommodation in most of its camps (SANPARKS, 2007; SANPARKS, 2008). A possible solution to this problem might be for these community lodges to be located inside the KNP to alleviate possible concerns around security. The Kruger National Park currently has concessions for investment in accommodation facilities to private companies inside the KNP. Such an arrangement for local communities would have to be more carefully considered given that most of the existing concessionaires in the KNP had not performed as well as expected (Spenceley, 2006).

Conclusion

This paper, analyzes the preferences of tourists to engage in ecotourism related activities as well as their MWTP for three specific ecotourism attributes, namely village accommodation, village tours and visits to crafts markets in villages adjacent to the Kruger National Park (KNP). These attributes had been identified through a consultation process with local communities. Choice experiments were applied to determine tourists' preferences and their MWTP. Conditional probit models were used to analyse tourist preferences by origin and by income groups.

The results of our analysis suggest that there is potential for the development of ecotourism in the surrounding areas close to KNP. It is, however, necessary to consider the pricing and the nature of the services provided if ecotourism is to be practiced successfully. The benefits from developing accommodation facilities mainly targeted at KNP visitors might be limited, but rural communities can still target KNP visitors who intend to stay in the park for village tours and other cultural activities. Ecotourism activities should complement existing activities inside the KNP and target specific groups of tourists, particularly international tourists who have an interest in cultural related tourism activities and low income groups of tourists who might be attracted by cheaper accommodation outside the park. It might also be worthwhile to charge different rates for the village tours for domestic and international tourists.

These results aid decision making for development of ecotourism by rural communities. Plans to invest in tourism accommodation in communities adjacent to

the KNP should consider these findings and explore ways to address tourists' reluctance to stay outside the park, or even consider situating village owned accommodation facilities within the KNP itself. For the KNP and GLTFCA management, this study suggests the possibility for including cultural specific tourism activities within the tourism plans for the transfrontier park and also closer collaboration in developing ecotourism with rural communities in the GLTFCA. This would not only promote rural development but also provide a bridge for the type of tourism that encompasses the principles laid out in the 2002 Quebec Declaration on Ecotourism of active contribution to visitor familiarization with cultural and natural heritage of places they visit and inclusion of local and native communities in the planning of ecotourism and better organized tours of small sized groups. Capacity should also be developed in local communities to harness the opportunities for income generation through village tours and craft markets and other aspects of ecotourism. The insights into tourist attitudes towards some dimensions of ecotourism highlighted in this study can help planners or project managers to understand the extent to which tourists would support efforts to bridge the divide between conservation and development

The intention in this study was to keep the design simple given that choice experiments are a relatively new data collection method in developing countries. Future studies of ecotourism in or around KNP could consider increasing the number of attribute levels to increase efficiency (Johnson et al., 2007) and detail in terms of specific ecotourism packages to enable development of tailor-made tour packages. A possible limitation in this approach might have resulted from the reluctance of tourists to use accommodation out of the park. This could have resulted in respondents employing a lexicographical strategy (see Hensher, 2007) in terms of attribute processing. Hence future studies can also investigate lexicographic preferences in tourist choices.

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References

- BOO, E. (1990) *Ecotourism : the potentials and pitfalls*, Washington, D.C. : World Wildlife Fund.
- CAMPBELL, L. M. (1999) Ecotourism in rural developing communities. *Annals of Tourism Research*, 26, 534.
- FENNELL, D. A. (2001) A content analysis of ecotourism definitions. *Current Issues in Tourism*, 4, 403-421.
- GREENE, W. H. (2003) *Econometric Analysis*, Prentice Hall, Upper Saddle River.
- HANLEY, N., MOURATO, S. & WRIGHT, R. E. (2001) Choice Modelling Approaches: A Superior Alternative for Environmental Valuation? *Journal of Economic Surveys*, 15, 435-462.
- HANLEY, N., WRIGHT, R. & ADAMOWICZ, V. (1998) Using Choice Experiments to Value the Environment. *Environmental and Resource Economics*, 11, 413-428.
- HAUSMAN, J. A. & WISE, D. A. (1978) A Conditional Probit Model for Qualitative Choice: Discrete Decisions Recognizing Interdependence and Heterogeneous Preferences. *Econometrica*, 46, 403-426.
- HEARNE, R. & SANTOS, C. (2005) Tourists' and Locals' Preferences Toward Ecotourism Development in the Maya Biosphere Reserve, Guatemala. *Environment, Development and Sustainability*, 7, 303-318.
- HEARNE, R. R. & SALINAS, Z. M. (2002) The use of choice experiments in the analysis of tourist preferences for ecotourism development in Costa Rica. *Journal of Environmental Management*, 65, 153-163.
- HENSHER, D. A. (2007) Attribute Processing in Choice Experiments and Implications on Willingness to Pay. IN KANNINEN, B. J. (Ed.) *Valuing Environmental Amenities Using Stated Choice Studies: A Common Sense Approach to Theory and Practice*. Dordrecht, Springer.
- ISAACS, J. C. (2000) The limited potential of ecotourism to contribute to wildlife conservation. *Wildlife Society Bulletin*, 28 61-69.
- JOHNSON, F. R., KANNINEN, B., BINGHAM, M. & OZDEMIR, S. (2007) Experimental design for stated choice studies. IN KANNINEN, B. J. (Ed.) *Valuing Environmental Amenities Using Stated Choice Studies: A Common Sense Approach to Theory and Practice*. Dordrecht, Springer.
- JOINT MANAGEMENT PLAN WORKING GROUP (2001) *Draft Great Limpopo Transfrontier Park Joint Management Plan*.
- KEPE, T. (2001) Tourism, protected areas and development in South Africa: views of visitors to Mkambati Nature Reserve *South African Journal of Wildlife Research* 31, 155-159.
- LANCASTER, K. (1966) A New Approach to Consumer Theory. *Journal of Political Economy*, 74, 132-157.
- LONG, S. J. & FREESE, J. (2006) *Regression models for categorical dependent variables using Stata*, Texas, A Stata Press Publication.
- MABUNDA, M. D. (2004) An Integrated Tourism Management Framework for the Kruger National Park: South Africa, 2003. *Department of Tourism Management*. Pretoria, University of Pretoria.
- MANSKI, C. F. (1977) The structure of random utility models. *Theory and Decision*, 8, 229-254.

- MUNTHALI, S. M. (2007) Transfrontier conservation areas: Integrating biodiversity and poverty alleviation in Southern Africa. *Natural Resources Forum*, 31, 51-60.
- SANPARKS (2007) South Africa National Parks Annual Report 2006-2007. Pretoria.
- SANPARKS (2008) South Africa National Parks Annual Report 2007-2008. Pretoria.
- SPENCELEY, A. (2006) Tourism in the Greater Limpopo Transfrontier Park. *Development Southern Africa*, 23.
- SPENCELEY, A., DZINGIRAI, P. & TANGAWAMIRA, Z. (2008) Economic Impacts of Transfrontier Conservation Areas: Tourism in the Greater Limpopo Transfrontier Conservation Area *A report to the IUCN Southern Africa Sustainable Use Specialist Group and the University of the Witwatersrand*.
- SWAIT, J. (2007) Advanced Choice Models. IN KANNINEN, B. (Ed.) *Valuing Environmental Amenities Using Stated Choice Studies: A Common Sense Approach to Theory and Practice* Dordrecht, Springer.
- WEAVER, D. B. & LAWTON, L. J. (2007) Twenty years on: The state of contemporary ecotourism research. *Tourism Management*, 28, 1168-1179.
- WIGHT, P. A. (1997) Ecotourism accommodation spectrum: does supply match the demand? *Tourism Management*, 18, 209-220.
- WORLD ECOTOURISM SUMMIT (2002) World Ecotourism Summit – Final Report. Madrid, Spain, World Tourism Organization and the United Nations Environment Programme. Madrid, Spain.
- WUNDER, S. (2000) Ecotourism and economic incentives -- an empirical approach. *Ecological Economics*, 32, 465-479.