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Full Length Research Paper

The willingness to pay (WTP) for the conservation of wild animals: Case of the Derby Eland (*Taurotragus derbianus gigas*) and the African wild dog (*Lycaon pictus*) in North Cameroon

Tsi, E. A.[1], Ajaga, Nji[2], Wiegleb, G.[3] and Mühlenberg, M.[4]

[1]Department of Forestry, , Faculty of Agronomy and Agricultural Sciences (FASA), P. O. Box 222 Dschang, University of Dschang, Cameroon.
[2]Department of Agricultural sociology, Faculty of Agronomy and Agricultural Sciences (FASA), P. O. Box 222 Dschang, University of Dschang, Cameroon.
[3]Chair of General Ecology, BTU Cottbus, Germany.
[4]Centre for Nature Conservation, University of Gottingen, Germany.

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Data on the perception of and willingness to pay (WTP) for the conservation of the Derby Eland and the African Wild Dog in North Cameroon were collected from August to October 2004 using administered questionnaires. The results show a positive attitude of respondents towards wildlife conservation. They indicated willingness to support actions geared towards the conservation of endangered species in National Parks. WTP often leads to a social dilemma of a choice between one's self interests and community or group interest. This choice often affects attitudes, motivations, perceptions, and values leading to different outcomes at the individual and group levels. The level of awareness of the need for wildlife conservation of endangered species in Cameroon National Parks is high and thus leads to a high approval of conservation plans. As a result respondents expressed the view that individuals have a moral obligation to cooperate in wildlife conservation effort. Where private operators and governments manage hunting zones (ZIC) and National Parks respectively, the results are not always excellent as they should be. Funds generated from taxes and individual contributions for specific conservation measures are neither used by officials for wildlife conservation as hoped nor to compensate farmers for damages caused by wildlife. Even though a positive environmental attitude influences the WTP for environmental goods, the WTP for environmental goods is certainly out of surplus and personal unique dispositions, perception, organization, understanding and appreciation of the environment. However, under the present management scheme, local communities around Faro and Benoué National Parks benefit from tax quotas. Primarily because of the attractiveness and beauty of the Derby Eland and the African Wild Dog, respondents expressed favourable attitude towards their conservation despite their attractive tendencies and notorious labels as animals of prey.

Key words: Conservation, gender, perception, willingness to pay, ecotourism.

INTRODUCTION

Willingness to pay (WTP) is an important concept in wildlife conservation. UNEP (1995) defines WTP as the amount an individual is "willing to pay" to acquire some good or service. This amount may be elicited from stated or revealed preference approaches. WTP can be used to improve economic growth and environmental quality by analyzing different trends in the population to generate a reversal in conservation projects (Israel and Levinson, 2004).

Environmental services are rather a necessity than a luxury, because they tend to affect low-income groups more strongly than high-income groups (Hökby and Sö-

*Corresponding author. Email: tsievaristus@yahoo.co.nz.

derqvist, 2001). Therefore environmental projects are supposedly designed to improve the welfare of the poor and under privileged. This is why it is important to seek and obtain the active participation of potential beneficiaries not only in the technical efficiency of a conservation technology, but also the extend to which the technology satisfies cultural, social and political considerations in their environment (Nji, 1992). For example, the forest plays an important social, economical, political, cultural and technological role in African countries not only for the timber but for its Non-Timber Forest Products (NTFP) such as barks, leaves, bush meat, vegetables, honey etc. For this reason, forest and wildlife conservation efforts affect poor peasants more negatively than rich urban dwellers and policy-makers who promote conservation policies. Hence sustainable management of conservation parks has fundamental environmental and socio-economic impacts especially on peasant communities struggling within a rapidly changing environment characterized by globalization, population pressure and extinction of endangered species.

National Parks Systems constitute a potentially viable mechanism for securing local community participation and building stakeholder consensus for sustainable park management (Hiwasaki, 2005). Unfortunately, the protection of National Parks in Cameroon does not appear to be as successful as foreign donors and Non-Governmental Organizations desire. Inappropriate policies, lack of involvement and participation of local communities, high turnover of government officials implementing conservation policies and weaning from foreign funding have contributed to failures in many curator conservation efforts (Tsi, 2006).

Sport hunting is an activity that has the potential to influence the dynamics of wildlife populations in parks as well as the lifestyle and future of local populations (Muir-Leresche and Nelson, 2007). Consensus on sustainability suggests that programs such as sport hunting should be implemented with caution because of their impact on stakeholders and the parks themselves. Therefore, resource management decisions should integrate information on how, for instance, people near protected areas perceive hunting and the WTP for conservation. Beneficiary and stakeholders involvement in such decisions will ensure the sustainability of conservation projects and the protection of endangered species in the parks.

MATERIAL AND METHODS

Structured questionnaires were used to enable respondents to give their responses on a 4 points scale ranging from very important, important, somewhat important and not important based on their perception and evaluation of the topic or issue raised. Questions asked were designed to determine (“yes”/ “no” or “none”) attitude of respondents towards wildlife conservation and what they expect to get from future generations in wildlife conservation. Questionnaires were close ended question with formal interviews.

The sample size was large (300 out of a population of over 1500) and randomly done to draw from the population (all individuals) who had an equal chance of being chosen. This was done essentially to minimize bias. Test questionnaires of the English and French versions (since Cameroon is a bilingual country) were administered to 60 Cameroonian students on the Brandenburg University of Technology campus Germany. From August to October - 2004 questionnaires were administered (by face to face contact) to 300 people living in the villages (Voko, Poli, Durusaka, Mayo Jaranji, Mina, Tchollire, Touboro, Madingring, Lagdo, Ray Bouba, Tcheboa and Beka) around the parks (Faro and Benoué) . The questionnaires consisted of several parts each proceeded by a short text explaining the subsequent questions.

The level of awareness of wildlife conservation resources was assessed by asking respondents to indicate how much they would be willing to pay (a tax increase in FCFA) for a classified endangered species (Derby Eland and African Wild dog). Multiple choice questionnaires (Mccowen et al., 1988) were used to scale competing natural resource programs. Respondents could choose between two alternatives with varying levels of program character and cost.

Contingent valuation (CV) is a relatively new methodology of valuing biodiversity by asking people directly about their preferences. Though the total value of biological diversity may be unknown, it is indicative that it is essential to human existence. The method is applied to the conservation of an endangered species (Derby Eland) and a threatened species (African Wild Dog) in two national parks, Cameroon. This CV method provides information relevant to decision making processes based on monetary economic considerations. CV is a survey method, simply asking people about their values for environmental goods through surveys and direct questioning where there are a number of alternatives that have to be compared and valued, each with different combinations and quantities from their most to their least preferred. Each alternative in the choice set differs from the others in the levels of its component attributes, and the cost which the respondent would incur as a result of the choice. Benefits are measured directly rather than inferred. The underlying idea is that individuals have true, hidden preferences for environmental goods, such as species conservation, which they will reveal if they are asked the appropriate questions. Descriptive statistics was used to present the results.

RESULTS AND DISCUSSION

Identification of the sample

Figure 1 shows that there were more males (50%) involved in the sample aged between 21 and 40 than females (25%) . A very insignificant number of the sample was less than 20 years old and only predominantly females. There were more men than women in the greater than 40 years age group. Young people below 20 years showed no interest in the study and therefore could be interpreted as not being interested in conservation of Derby Eland and African Wild Dog. The median age of respondents was 30 years. The bulk of respondents were in the active age group of 21 to 40 which suggests that this is the age group most involved in exploitation of natural resources. Data cleaning resulted in the disqualification of 20 respondents for missing data. The intension of the questionnaire and its design was to be broad based but people will not answer some questions especially the demographic data section. The census was virtually impossible to complete because some individuals were inevitably unavailable or unwilling to participate.

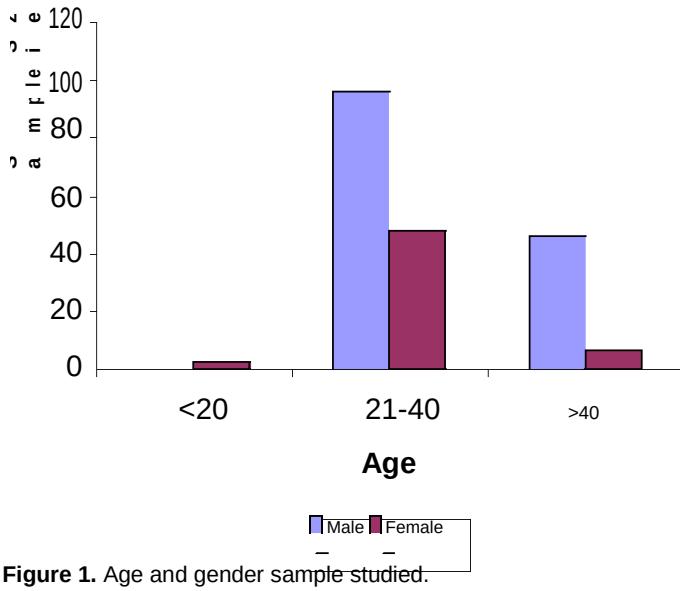

Figure 1. Age and gender sample studied.

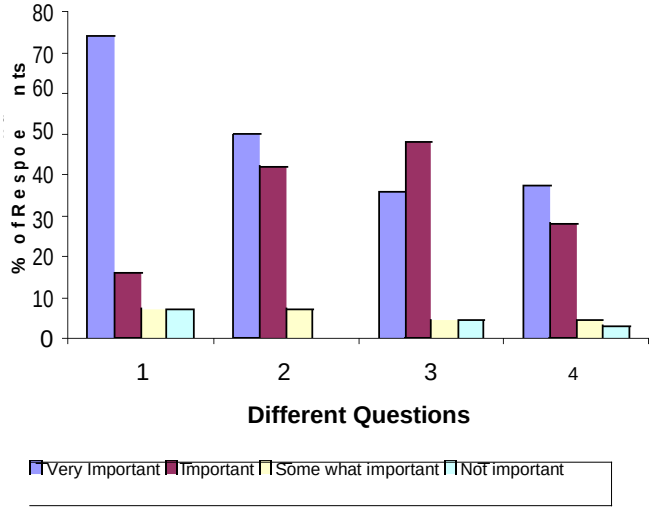

Figure 2. Rating of the level of importance of conservation.

Therefore, some of these issues were better asked and answered directly by oral interview. This left 204 respondents whose data were suitable for analysis. Out of a population of approximately 1500 people dotted settlements around the parks, the findings can be 13.6% representative of the entire population

Gender, approximate age and religion were the only issues of concern because the population leaving around the national parks is basically farmers, hunters and the insignificant population of administrator all of whom sometimes perform all seasonal activities. The predominance of male respondents in the study was due to the fact that women in the area were not accessible due to cultural restrictions keeping young Moslem women away from contact with outsiders. The few women interviewed were older Moslem women and few non-Moslem women working in North Cameroon. In societies where the tradition, religious believes and culture of the people places persons or groups of persons away from decision making will definitely affect the WTP. North Cameroon is not predominantly Moslems, hence the WTP could be valued the same as other areas of the country. This research applies the recommendations of the National Oceanic and Atmospheric Administration (NOAA) that CV surveys should employ a referendum approach (Arrow et al. 1993) . But differs with it in that it is not the entire population that is involved (not a referendum) but a random representative sample of the population.

The importance of conservation projects in Faro and Benoue National Park

The following questions were asked to determine the perception of respondents regarding wildlife conservation in North Cameroon.

1. Do you think it is important to know that other people are able to enjoy African Wild Dog and Derby Eland in the parks?
2. How important is it to know that future generations will be able to enjoy African Wild Dogs and Derby Eland in the parks?
3. How important is it to know that African Wild Dog and Derby Elands exist in Cameroon parks even if you do not see them?
4. How important is it to allow the existence of endangered species (African Wild Dog and Derby Eland) in National Parks?

Figure 2 shows the perception of respondents regarding the level of importance of each of the four questions. Seventy- five percent and 60% of the respondents rated question 1 and 2 as very important respectively, 50% of them rated question 3 as important, while for question 4, there was a 40 and 30% response for very important. This is a strong indication that the people interviewed support the conservation of the African Wild Dog and Derby Eland in the national parks. The positive response of respondents to questions 4 indicates that respondents would support actions geared towards the conservation of African Wild Dog and Derby Eland in Cameroon's National Parks. Going by the recommendations of NOAA panel (Arrow et al. 1993), Very important, important and some what important questions can be grouped as the commonly use questions "for" while not important is "against". Therefore this research did not give room for the "don't know" or "not sure" responses. Hence the "would-not-vote" option can be assumed to be combined with the "against" if offering the option will not alter the distribution of "for" and "against" responses, the estimates of WTP derived from the choices, or construct va-

Table 1. Quota of taxes benefits paid to the rural communities 2004 in FCFA.

S/N	Rural Community	Amount	Exchange Premiums	Net Amount Received
1	Tchollire	19,075,640	288,000	18,787,640
2	Touboro	10,780,552	144,000	10,636,552
3	Poli	8,363,776	144,000	8,219,776
4	Madingring	4,786,720	144,000	4,642,720
5	Lagdo	2,864,384	144,000	2,720,384
6	Ray Bouba	2,298,096	144,000	2,154,096
7	Tcheboa	1,997,184	1,440,000	1,853,184
8	Beka	857,024	_	857,024

Source: MINEF, 2005

lidity of the results (Schuman, 1994).

The WTP for conservation of species often leaves people who must decide in a social dilemma. Carson et al. (1995) describes the choice as mechanism that asks each respondent how they would vote if faced with a particular program and the prospect of paying for the program through some means, such as higher taxes. This choice is between one's self-interests and those of the community or group. In either case the problem of choice is often affected by attitudes, motivation, percep-tions, and culture. The immediate gains of individuals lead them to act in one's self-interest based on personal principles. Yet decisions made based on personal values rather than values on consideration of the common good often jeopardize the sustainability of such decisions. However, acting in a collective- interest or common good requires cooperation and may lead to cognitive disso-nance (Baron et al., 1974) and the option to make short-term sacrifices (Komorita and Parks, 1994).

The WTP or not to pay for the conservation of Derby Eland or African Wild Dog depends on the choices people make. An analysis of the WTP produces three types of outcomes: individual, collective and indifferent outcomes. The individual outcomes include sanctions individuals may incur such as payment of fines, poaching, violating the national laws on protected areas management and poor participation in park management. Sanctions for collective outcomes include environmental degradation and break of solidarity and cohesion. People who are indifferent incur no cost to their decision in the short run, although they are invariably affected by the collective negative consequences to their environment. The panel of NOAA accepts this three options in CV surveys but recommends a fourth option of expanding survey to explicitly offer "I would-not-vote" response. In agreement with Schuman, (1994) who conjured, based on the results of the past studies, that offering a "would-not-vote" option would lower estimates of the willingness to pay derived from respondents' choices. Nordlund and Garvil (2003) and Van Langue (1992) concluded that there is no objectively rational solution to guide one's decision. Hence they suggest that the decision problem in a social dilemma could be seen as a moral issue, at some cost to oneself. In this situation cooperation may thus be considered as the morally right good choice to make. In the four questions asked to determine attitudes towards conservation of the endangered species in Cameroon National Parks, respondents overwhelmingly approved conservation by declaring the questions important. Since no cost to the conservation was proposed, it can be argued that their favourable assess-ments were aided more by social and cultural considera-tions rather than economic ones. Their positive assess -ments show awareness about conservation practice and needs in the National Parks and the moral obligations to cooperate in the conservation of the African Wild Dog and Derby Eland. This may be proof of the level of benefit enjoyed by the local communities with respect to the revenue generated from National Park activities (Table 1).

Sources of information for the conservation awareness of Derby Eland and African wild dog in Faro and Benoue National Park

Information on conservation was sort to come from sources one to six sources represented in Figure 3.

1. Got information on conservation issues of Derby Eland from magazines, newspapers and watched television.
2. Got information on conservation issues of African Wild Dog from magazines, newspapers and watched television.
3. Have seen or heard Derby Eland in the wild.
4. Willing to pay for a one time tax increase to fund conservation projects.
5. Willing to fund program for compensation of lost livestock hurt by destruction by African Wild Dog.
6. Have seen or heard African Wild Dog in the wild.

Figure 3 shows the numbers of persons responding to question 1-6 asked. Whereas 45.6% of the individuals obtained information from newspapers and television on the conservation of Derby Eland, that number is 64.2% for persons obtaining conservation information for African

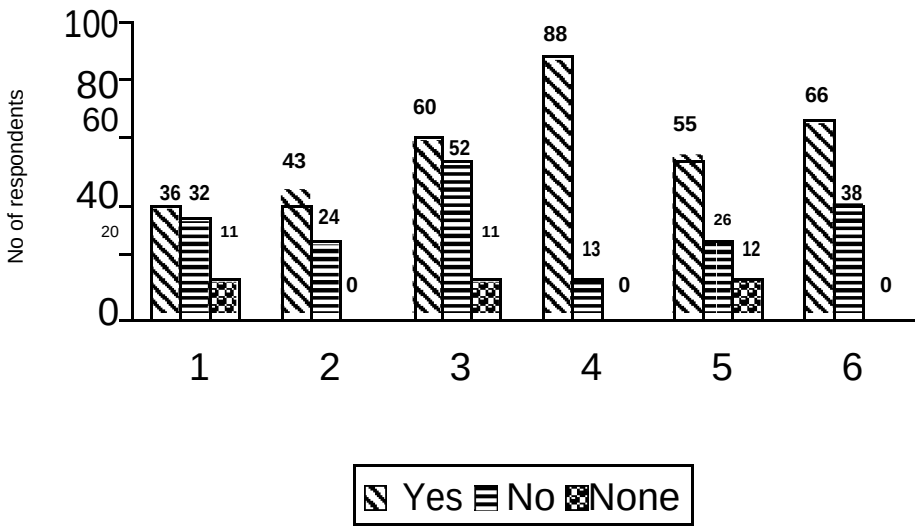

Figure 3. Sources of acquiring conservation information.

Wild Dog from the same source (newspaper and television). High responses were received for the willingness to pay a conservation tax (87.1%) and to pay into African Wild Dog conservation fund. The general assumption of politicians, policy makers and some researchers is that local people do not care about parks or are not willing to pay for wildlife conservation. The data on Figure 3 gives credit to the knowledge level of the local residents concerning the endangered species studied. One main reason often given against conservation of wildlife is the destructive capacity of the animals to crops and other livestock. For example village chiefs (*Lamidos*) have suggested that the African Wild Dog be exterminated because of its destructive tendencies towards the domestic stock such cattle, sheep and goats.

With respect to recommendations of the NOAA panel, the results of the willingness to pay can be improved if the "yes" "no" options were used but in addition, the "no-answer" option was not asked nondirective to explain their choice, as well as the yes/no were not followed up by open-ended questions. Although some researchers believe that the African Wild Dog is extinguished, others (Aarhaug, personal communication) who owns a hunting zone (No 7 Naari 97,920 ha) attested that "good eyes like his" have seen and adored the African Wild Dog. But that was 30 years ago; he has not seen them in the last 15 years. Rizzotti and his hunting tracker say they have seen the African Wild Dog in their hunting zone No 2 Bandjoukri 75,648 ha (personal communication) . The park manager of Benoué National Park (Gomse in 2006, personal communication) also states that he came across the African Wild Dog while on a drive into the park from the central road from the camp (Campement de chasee du Bel Eland) to the camp (Campement de chasee du Buffle noir). This is evidence that the African Wild Dog still exists in the park but is rare, endangered and nearly extinct.

The distribution of wildlife in the park in general sometimes depends on how well the park is managed. Since the government and private operators do manage the parks, the results are not always as good as they should be. Private operators invest a lot in conserving their zones by protecting, liming and creating artificial rich salt licks for their animals. Thus protected zones tend to be better protected and richer in animals than parks based on the concept of territoriality which are not consistent with private operator's investment objectives. Without the help of international organizations such as WWF, IUCN, GTZ, ECOFAC, endangered species like the African Wild Dog and the Derby Eland would have been completely extinct. Unfortunately the Cameroon government does not seem to contribute as much to their conservation as expected. This puts to question whether current conservation schemes in Cameroon can be successfully weaned from donor funding.

The WTP for the conservation of Derby Eland and African wild dog

Respondents were asked to indicate how much they will be willing to pay for a common tax on African Wild Dog and Derby Eland (Figure 4). Close-ended questions asking respondents their maximum amounts they would be willing to pay for a tax to fund conservation projects. Must respondents seem to recognize the need for a financial contribution probably coming from taxes generated from within park activities. The high level of the WTP for the conservation of species shows that conservation has been seen by respondents as important. Persons also need to be informed through specific awareness campaigns. With these funds government may as well fund conservation projects and/or compensate damage caus -

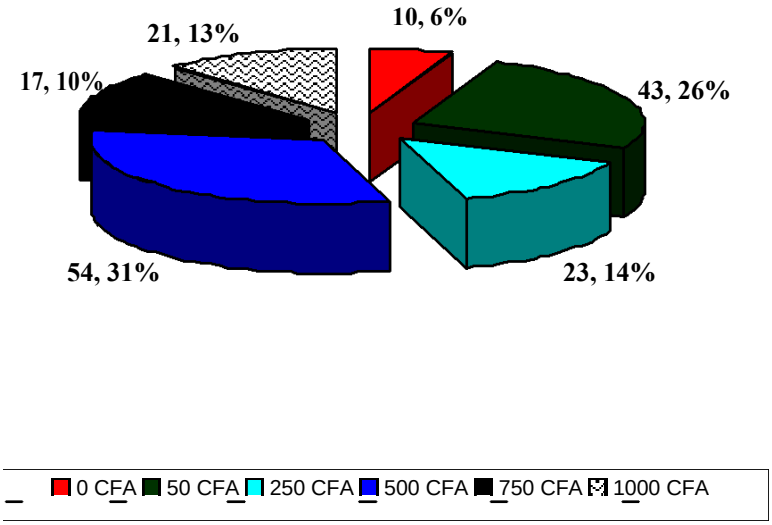

Figure 4. Willingness to contribute for conservation issues.

caused by wildlife. The population of North Cameroon will be willing to pay from 50-500 FCFA (10¢ to US $1) for wildlife conservation. As much as 43 individuals are willing to accept a deduction at source of 50 FCFA (10¢) from their monthly salaries.

In general, the distribution of the amounts indicated by respondents can be classified normally distributed and represents the social classes in the society (peasants, middle class and bourgeoisie) with the two extremes peasants at the lower extreme and bourgeoisie at the upper extreme. However, the respondent's proportions seem greater in favour of paying amounts less than the mean. This also show the behaviour of the bourgeoisie when contributions in the society on public goods come up. They have a positive environmental attitude which influences their WTP for environmental goods certainly out of their surplus and personality. Such personality refers to individual' unique disposition, perception, organization, understanding and appreciation of the environment. Such a relationship between personality and environment is a vital frame work for the understanding of ecological realities and process of environmental management.

An assessment of the management policy

It is difficult in CV surveys to provide adequate information to respondents about the policy employed by the government for better conservation of wildlife resources for which values are being elicited and to be sure they have absorbed and accepted this information as the basis for their response. During the creation of the Natio-nal Parks Faro and Benoué, Cameroon government used the policy of compensation to settle the local population. Based on the conservative choice, mere acceptance of compensation, the willingness to pay is exceeded. At that time, the objective of the park simply put use based on a "no- use policy". But today the objectives have changed with the inclusion of tourism where the local inhabitants see "their resource" being enjoyed by foreigners and money coming from different sources.

Figure 5 shows the preference of the population and the consensus in the National Park management policy. 46% of the population would prefer to be compensated for giving away their natural resource while 28% opt for exchange of the resource for another equally beneficial resource. Only 9% opt for expropriation, while 16% would like to see the present policy remain unchanged. However, whether compensation, exchange, expropriation or maintenance of status quo, an old adage states that the more people in the protected territory are idle, the more they are prone to crime.

Under the present management scheme, local communities around Faro and Benoué National Parks benefit from tax quotas (Table 1) by forming associations which are funded by income generated from conserving the wildlife in the parks. However, there is some understanding that in the procedure creating National Parks in the North of Cameroon, financial loss by local communities was compensated for (Mbouya, 2006, personal communication) . The loss claimed in the present should be loss in the future which is more than money. It appears that this concern of the local communities is receiving attention as conservation policies are being amended to meet the needs and challenges of a dynamic society and to respond to the crane for ecotourism. Income generated from Derby Eland hunt which is constantly cope with to this size, beauty and quality of trophy of these species has and will always remain to the beneficial of the local communities.

Therefore, these amounts will influence the local com-

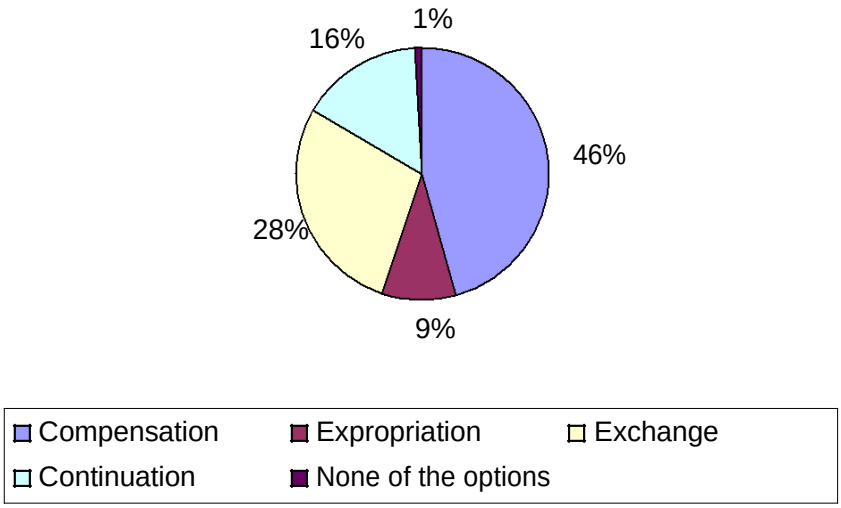

Figure 5. Assessment of the management policy by the community**.**

communities to vote the “for” option, hence increasing the willingness to pay since the have financial benefits which boast their economic and social life. Communities that benefit less or do not benefit will tilt their responses to the “against” option or “I do not know” option in the assessment of the WTP.

Conclusion

This study shows that the African Wild Dog and The Derby Eland are recognized by the local populations and scientists alike as endangered species. The study also shows the willingness to pay (WTP) of local population for the conservation of these species through special programs. Beauty and attractiveness of the African Wild Dog and Derby Eland are factors that work in their favour for protection despite their preying on domestic livestock. For conservation to be effective and sustainable, alternative protection strategies for domestic livestock need to be adopted as well as the provision of alternative food sources provided to the African Wild Dog and the Derby Eland to generate mutual co-existence.

These species are considered as being on the verge of extinction. Extinction of these animals has been accelerated by the attitude of the inhabitants of the community residents who believe that the African Wild Dog and the Derby Eland are destructive to the domestic livestock due to their carnivorous nutrition. Reversal of such attitudes would require a cost- benefit analysis of the existing conservation practices and strategies which clearly shows the possible outcomes at the individual and collective levels.

Wildlife conservation has the potential to bring benefits to local communities, operators and the state. Some benefits of conservation to local and national community include job creation through the employment of local people on the projects, knowledge transfer through training and education on conservation skills, income from park fees where parks are well organized and managed, ecotourism provides opportunities for cultural dialogue, knowledge transfer and reinforcement of cultural values.

Sustainable park management should be built on the culture of the people within the designated communities, their knowledge, motivations, beliefs, willingness to pay for, and the willingness to accept conservation. This study has shown that given the high level of awareness, there is a high level of a WTP for the conservation of the African Wild Dog and Derby Eland in North Cameroon despite the destructive nature of the wildlife. Indications of WTP only suggest at this time the preparedness of the local population to contribute to the protection of their environment. A more in depth study will have to be conducted to determine capacity of the various social groups and affected communities to spend cash for conservation.

There is need to improve awareness and communication on the benefits of such projects. This can be achieved through environmental education in schools, media, and door-to-door campaigns for the benefits of all stakeholders. The African Wild Dog and Derby Eland amongst other species are becoming rare and need protection. One way to propagate the species is to conduct genetic research and engineering techniques such as artificial insemination, domestication, improved breeding.

It will be helpful to review management policies and improvement mechanisms for community participation in order to build ownership and sustainability in conservation of wildlife. Similar efforts should be made to tap the prospect of attitude change towards the African Wild Dog and Derby Eland, as shown by the findings. This will promote ecotourism that will bring benefits to both individual

and the community.

We believe that the perception of wildlife conservation programs can generally be positive but can be challenged by personal interest which tends to prevail over collective interest. This suggests the negative attitude of the people towards the African Wild Dog and Derby Eland, motivating the desire to exterminate the species because of their destructive potential to domestic livestock. The adjustment of such perception requires personality and attitude change through education at all levels of the community and society. This should begin in the communities at home and school.

Environmental laws and policies need to be dynamic within the global development partnership. They should have a positive influence on sustainable management of the ecotourism-industry based on a win- win framework that upholds human welfare within a sustainable environment. This can be achieved through a tax or cost sharing program that is fair and equitable.

The value of the park and the need for conservation can be well designed with a carefully implemented conservation programs do contribute to poverty alleviation. For instance, one reason poor people remain poor (Nji, 2004) is because they are forced by circumstances beyond their control to overexploit their environment. Therefore, the cooperation of all stakeholders (the com-munity, Government, NGO's, foreign donors' agencies) is crucial for lasting success in environmental protection programs. This will require the adoption of conservation strategies that are proactive, mutually beneficial, and environmental friendly and sustainable.

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