

Residents Perception of the Human/ Wildlife Conflict in Kariba Urban

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Abstract

The construction of the Kariba dam in the years 1955 to 1959 resulted in the submergence of approximately 5500 km² of terrain which was largely home to various wild animal species. Wild animals lost their habitat after the dam filled up. The subsequent development of Kariba Town further reduced the space originally occupied by wild animals and also brought up interactions between people and wild animals. Besides space occupation, game corridors and accessibility to water in the Zambezi River was affected creating a potential conflict between people and wild animals. Recent researches and publications revealed that several clashes between animals and people have occurred. This research sought to establish the residents' perceptions on the human-wildlife conflict in Kariba town in Zimbabwe. A questionnaire survey and personal interviews were used to collect data from 50 residents. The study identified elephants, buffaloes, baboons, leopards, lions, wild pigs, lizards, jackals, ants, rats, crocodiles and hippopotamus as problem animals in the conflict. Baboons entered houses, broke windows and asbestos roof sheets and tipped bins. Crocodiles and hippos were a threat to fishermen, sports persons and tourists, while elephants, wild pigs and buffalos invaded residential areas destroying orchards, vegetable gardens and fences. Some respondents suggested use of electric fence around the park, more patrols, driving away of animals into parks hinterland, culling and scaring them away as strategies for the management of the conflict. Others accused humans of initiating the conflict by encroaching into the game park, growing crops that attracted animals as well as teasing, feeding, and snaring wild animals. It is necessary to formulate policies that promote participation in conservation through sustainable wildlife resource utilization by communities who live in animal infested areas.

Key Words: habitat, human-wildlife conflict, perception, sustainable resource utilization

Introduction

The Kariba dam was constructed on the Zambezi River in years 1955 to 1959, and extends over 300 km with a total water storage capacity of about 180 m³. It is located between latitudes 16° and 17° South and Longitude 27° and 29° East in the mid-Zambezi River basin (Tumbare, 1999). At full supply level, it covers about 5580 km². It was built during the period when the need for Environmental Impact Assessments was not so great, when there were very few dams of its size. The main purpose of its construction was the provision of hydropower for Zimbabwe and Zambia. Initial housing and related urban infrastructural development comprising roads, health, recreational facilities, were developed to cater for workmen and support services personnel who were engaged in the construction of Kariba Dam. That later became the modern day Kariba Town in Mashonaland West province and spreads for approximately 20km of the Lake Kariba shoreline with its western boundary on the Zambezi River. The town has a population of approximately 30000 inhabitants.

Prior to the construction of the dam, Kariba was a sanctuary of wild animals that ranged from small species like mongoose, squirrels and hares, to large species like leopard, lion, buffalo, elephant. During the filling of Kariba Dam, wild animals lost most of their habitat as it became submerged in rising lake water. A spectacular wildlife rescue operation to remove and resettle about 5000 wild animals trapped on the many islands which were forming during the filling-up of Kariba Dam was undertaken in 1959, and these were relocated to higher ground, part of which also hosted urban settlements (Tumbare, 1999). Most of the land on plateaus, the environs of the shoreline and other habitable areas, were developed into residential and commercial properties. This took up wildlife habitat and closed game corridors, thus preventing wild animals from accessing the lake for water and grazing along the shoreline. The transformation of the area of Kariba has created a number of conflicts between human beings and wildlife on use of natural resources like water, trees, and habitat. Movement of large animals and other aggressive species through human settlements along their traditional routes to the shore is generally more pronounced in winter. During the dry season, grazing is scarce in most other areas but abundant along the lakeshores and this influences pronounced animal movement through residential areas to the lake.

Both wildlife and humans share quite a number of resources in the environment. This causes conflict to arise and the ways in which wildlife and humans conflict for common resources are many and varied. As human populations expand and natural habitats shrink, people and animals are increasingly coming into conflict over living space and food. The impacts are often huge, with people losing their crops, livestock, property, and sometimes their lives (WWF, 2006). Cases of conflicts have been reported in Kariba Town and the surrounding areas. Recently a girl from Chirundu in Mashonaland West of Zimbabwe was reported to be battling for her life at Karoi District Hospital after being severely mauled by a leopard which pounced on her from a tree, while a Chirundu man

was also attacked by an elephant while drinking beer at a motel in the border town (The Herald, 8 February, 2007).

The animals, many of which are already threatened or endangered, are often killed in retaliation or to 'prevent' future conflicts. Human-wildlife conflict is one of the main threats to the continued survival of many species in many parts of the world, and is also a significant threat to many local human populations.

The ants build their castes into the home, thereby weakening the durability of the houses. Humans respond by applying poisons and kill the creatures in large numbers. However, some communities use ant behaviour in predicting climate and weather (Australian Broadcasting Corporation, 2006). Ants usually emerge in large numbers to collect food from houses when continuously wet and humid conditions are impending. Bird attacks on humans are quite common in both rural and urban communities, especially when a brooding female bird feels threatened. These usually consist of swoops, dives and chases. Other forms of attacks include vocal castigations from perching positions, intentional defecation or regurgitation on the victim. This may occur in areas of concentration, such as rookeries. During their breeding season birds establish territories, build nests and rear young and during this period, birds may engage in belligerent behavior, such as attacking creatures and humans many times larger than themselves. In this case, the birds are simply trying to protect their homes, their mates or their young. They make nests on the cavities of housing structures, where the noise made by the young in the morning becomes very annoying. Furniture, walls, floors are all spoiled by faeces. The sound of an owl in the night, as it hunts for its prey, can cause alarm in the African home, as the bird is associated with evil. Some bird species like the quelea and wild doves can cause severe damage to grain in the field. Losses by quelea bird (*Quelea spp*) can be as high as 80- 90 % (Svotwa and Mujaya, 2004). Bird damage on field crops starts as soon as the crop is sown when they dig out and peck the seed.

Humans are ever expanding settlement into the wild, and the wild animals are ever retreating. The two groups compete for wild fruit, water and even space to live on. The wild animals destroy the homes and the fields as they look for food. Humans respond by trapping and shooting the animals for food. Man does not spare the eggs, the young and the old. In both Africa and Asia, elephant habitat is being replaced by agriculture - both by small-scale farmers and international agribusiness such as palm oil. Not only are the animals being squeezed into smaller and smaller areas, but also farmers' plant crops that elephants like to eat (WWF, 2006). As a result, elephants frequently raid and destroy crops. The relationship of man and the life in the wild is so close and difficult to severe. The human race cannot do without the wild. However, if exploitation is haphazard there is that danger of exploiting at a rate that is faster than the rate of replenishment. The conflict must however be managed so that use of natural resources can be sustainable.

The main objective of this research was to establish the perception of the Kariba residents on the conflict existing between them and the wild animals. The nature and the types of animals involved in human/wildlife conflict in Kariba was also investigated. The results from this research could be used to formulate policies that deal with special cases as exemplified by the Kariba Town situation. It is further envisaged that Kariba Town council and Zimbabwe National Parks Authority can use the results to improve the co-existence of residents and animals at the same time fostering sustainable wildlife resource utilisation by communities that live near or within game reserves.

Method

The study was descriptive survey of the residents' perceptions of human- wildlife conflicts in Kariba Town and was carried out from October 2005 to March 2006. To thoroughly explore the questions surrounding the conflicts it was critical to solicit detailed data using triangulated interviews, questionnaires and field observations. The objective of the questionnaire was to collect residents' perceptions on the nature of human-wildlife conflicts. The questionnaire was targeted at the head of the family at the time of the visit. The data collected was important in that it helped to evaluate the perceptions of the respondents about the human-wildlife conflicts in the study area.

Interviews enabled the collection of data from a cross section of residents who were once victims of wild animal attacks and those who had stayed for long periods in the area. It was also important to establish the veracity of some of the data provided by the residents through interviewing key personnel in the Parks and wildlife management authority as well as the police who at times attend to these problems. This helped to generate specific technical and scientific data about the behaviour of wild animals as well the role of residents in these residents. This was an open approach aimed at maintaining maximum flexibility so as to obtain as much information as possible. Interviews served as means to gather data through probing the perceptions, attitudes, beliefs and feelings of representatives of organizations about the human wildlife conflicts in the area.

Field observations were conducted at various sites within Kariba Town to identify animals roots particularly the elephants as well evidence of destruction in homesteads. The objectivity of the methodology was guaranteed through the crosschecking of data provided through interviews and the one collected through the pilot test done for the questionnaire. The crafting of the instrument itself was thorough enough to develop relevant theoretical constructs or variables that would facilitate the deeper understanding of the dynamics of human wildlife conflicts.

In research of a qualitative nature where mostly the data was categorical, cross tabulation, coding, and cleaning of data was important if any meaning was to be derived from the collected data.

People’s perceptions yield better results in analysis if simple descriptive statistics are supported by penetrative descriptions of the nature of human wildlife conflicts.

Results and Discussions

Elephants, buffalo, baboons, leopards, mosquitoes and tsetse flies were mentioned as problem by ten percent (10%) of the respondents. Other animal species involved in the conflict were lions, wild pigs, lizards, jackals, ants, rats, and hippopotamus. Crocodiles and hippos were said to be a danger in the lake itself and along the shores and hence were considered a serious threat to fishers, sportspersons and tourists (Figure 1).

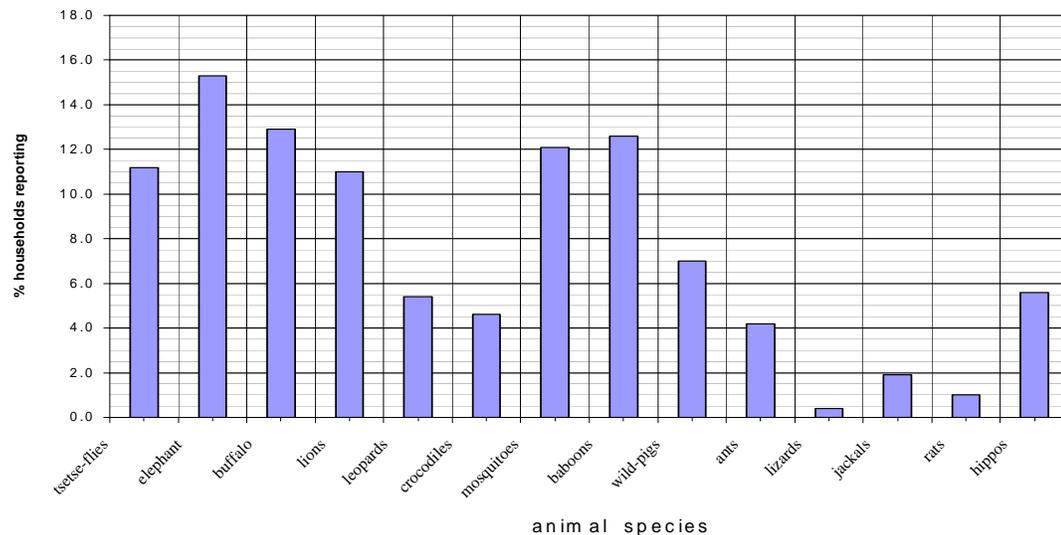


Figure 1 Problem animal species in Karibatom

Elephants, wild pigs and buffalos invaded residential areas and destroyed orchards, vegetable gardens and fences. Elephants also destroyed walls, hedges, shacks, fruit trees and kiosks. Baboons enter people’s houses to steal foodstuff, break windows and asbestos roof sheets and tipping of bins (The Herald Reporter, 2 May 2005). Only recently a Kariba woman was reportedly trampled to death by an elephant while returning home from a clinic where she had gone for treatment (The Herald, February, 2007).

Similar conflicts involving elephants were reported in India where people are often injured and killed. Elephants kill over 100 people each year, and over 200 people have been killed in Kenya over the last 7 years. Elephants are often killed in retaliation. Wildlife authorities in Kenya shoot between 50

and 120 problem elephants each year and dozens of elephants are poisoned each year in oil palm plantations in Indonesia (WWF, 2006). The situation in Kariba however, has not yet reached that far and conservation education must be speeded up to mobilise local support for conservation programmes.

Forty three percent (43%) of respondents had members of their families or friends who experienced loss of foodstuffs through baboon snatching. Respondents noted that baboons virtually live within the residential areas hence they cause the most nuisances.

Leopards killed pets in 60% of the households and such cases were limited to the high-density area. The presence of leopards seemed to be linked to high population of monkeys that frequent residential areas in search of food in small gardens, urban fields and kitchen left overs (Nduku, 2004). The presence of leopards poses a great danger of attack on humans, as well as reprisal killings of the already endangered species.

Nearly twelve percent (12,1%) of residents expressed deep concern over mosquito bites and associated malaria disease. The breeding of these disease-causing vectors is increased by the presence of a large water body and generally high temperatures that characterise the area. Nearly eleven percent (11,2%) of respondents reported of problems caused by tsetse flies to their pets i.e. dogs and cats.

Of the respondents, 4.2 % reported problems of ants attacking their household furniture and house fittings like timber doors and door frames, wooden window frames, ceiling boards and roof timber. Ants were also reported to be a nuisance through building mud columns on the walls and thus creating unsightly marks. The traditional Kariba community could use the behaviour of ants in predicting weather (Australian Broadcasting Corporation, 2006). The imparting of such knowledge to the Kariba urban community could improve their perception of this class of animals.

Forty percent (40%) of residents reported in-door problems from lizards, which entered houses to feed on ants and mosquitoes on the walls and crevices. Lizard droppings dirty houses and some fall on uncovered food. One percent of respondents reported of rats entering houses to forage for foodstuff like maize, nuts and also gnawing mattresses and clothes. Nearly two percent (1.8%) reported attacks on their dogs by jackals.

Three indoor wild animals were reported as problematic and these were lizards, ants and mosquitoes. Lizards and ants were reported by less than ten percent of respondents as problematic. However, eleven outdoor wild animal species were cited as problematic. The reported cases of problematic wild animals are much higher than indoor wild animals. It appeared the life threatening outdoor wild animals were major causes of poor perception of wild life by the residents. Threat from

mosquitoes is most likely undermined by medical advancement as malaria treatment has improved over the years. Attacks by mosquitoes are less visionary and deaths from attacks do not occur on the spot, as is the case with large animals. Notwithstanding the above reports and assumptions on the reports, there are no statistics of actual deaths, cost of damages to property and suffering caused by the large species of outdoor wild animals compared to those caused and inflicted by indoor animals like mosquitoes and ants.

Problems caused by animals were grouped and ranked in order of frequency(Figure 2). The reported problem groups threatened human life, destroyed gardens and structures like walls, fences, kiosks and tipped bins.

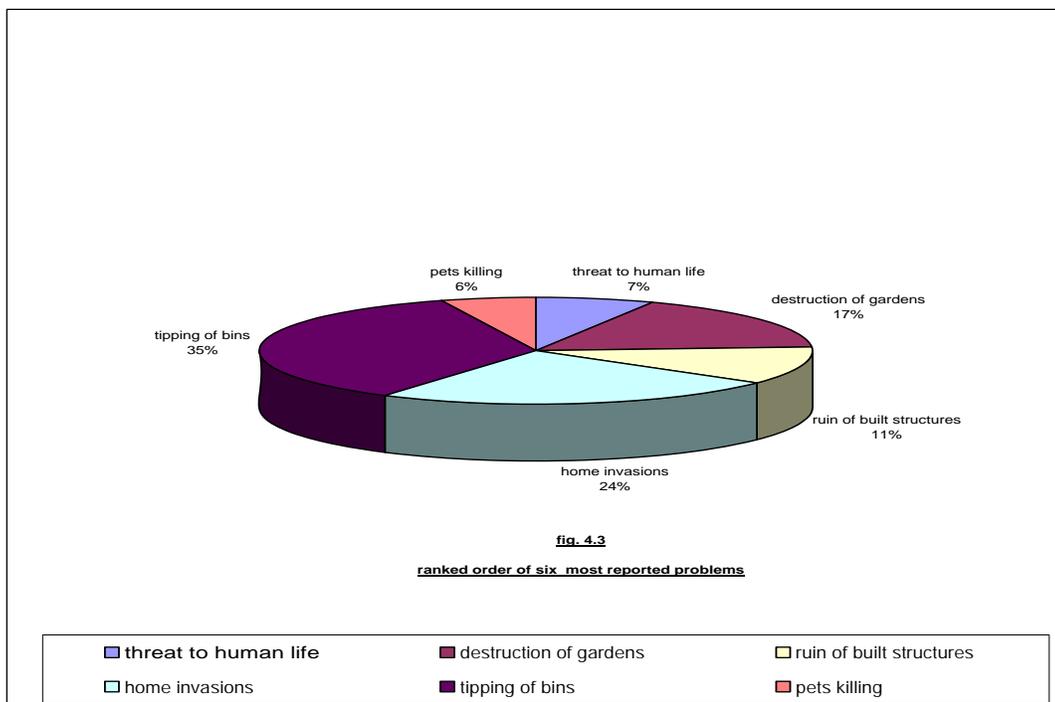


Figure 2. Ranking of six most reported problems found between people and wild animals

Suggestions from respondents to alleviate the above problems included the construction of an electric fence around the entire game park, leaving only a small corridor that allowed access to water and shoreline grazing. Others suggested solutions included patrols within residential areas by armed parks guides, driving away of animals into parks hinterland, culling of animals to reduce population to sustainable numbers that can be supported by available vegetation in the parks, that some residents be given rifles that use rubber bullets scare away wild animals as shown in Figure 3.

A project being implemented by the IUCN Species Survival Commission African Elephant Specialist Group in partnership with WWF sub-regional program offices in central, eastern, southern and western Africa, has a goal to reduce the levels of human-elephant conflict at selected sites by improving the elephant deterrent methods of wildlife managers and local communities. Methods range from building watchtowers to help local farmers guard their crops from roving elephants to excluding elephants from crop fields and residential areas by using barriers made of ropes smeared with chili peppers and oil (WWF, 2007). Research is needed on deterrent measures for other problem animals so that the project can be expanded.

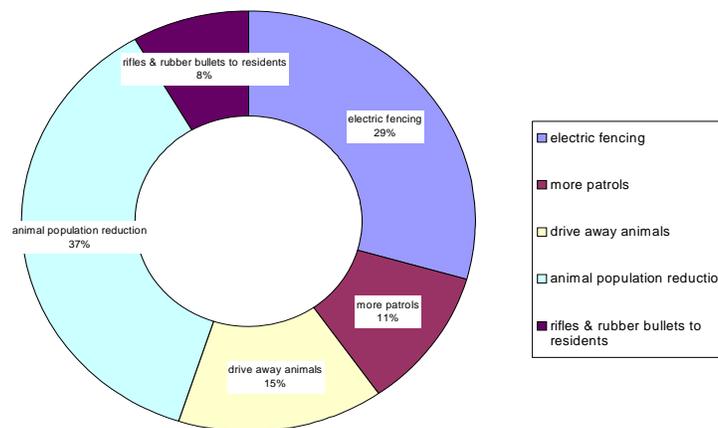


Figure 3 Resident suggested solutions to the human/wildlife conflict in Kariba town

The suggestion that the entire Kariba Game Park be electric- fenced calls for enormous financial resources from the state and commitment from residents. There were problems of vandalism however, elsewhere in Zimbabwe where fences were constructed as a conservation measure (Tendeupenyu, 2006).

Increased armed patrols by Parks Scouts to protect people against wild animals requires increased costs. Although this could be a way of employment creation to locals and involving them into conservation, it should be noted the costs might out weigh the benefits which could be obtained by other cheaper methods. Thirteen percent (13 %) of the respondents noted competition for space the major cause of the conflict. The general feeling (80%) was that animals were being given more preferential treatment than humans, citing the overall size of the hectarage of Kariba Game Park relative to space for human activities. In this regard residents (90%) perceived officials of the Department of National Parks and Wildlife Management (DNPWM) as insensitive in the enforcement

the National Parks and Wildlife Act of 1976. Education of the local community on the contents and requirements of this and related legislation could help in reducing the conflict.

Some respondents suggested that competition of space resulted from animal over-population in the game park on one hand or increased demand for space by the residents as urban development within a game park leads to shrinkage of wild life habitat. Research models of population growth have in the past noted the expansion of wildlife population to unsustainable levels with game parks becoming too small (Gwimbi and Dirwai, 2003). However, in the models, there is no mention made of any in-depth study to determine the effects of drought, which have modified animal habitats over the last twenty years or so. It should be considered that run-off to seepage ratio has been reduced due to degradation. Water availability and vegetation composition has been adversely affected, hence changes to food availability for wild animals. These factors should be considered further to determine the present day carrying capacity of the game park before embarking on culling. It therefore stands to reason that even if human population is maintained at fixed numbers, animal habitat will still shrink as the park becomes overpopulated due to food shortage.

Only 2 % of the respondents felt that the location of Kariba inside the game park left no space for future housing development and suggested the revision of related laws to allow acquisition of more land from that currently reserved for wildlife conservation. The economic base for the town is fishing, tourism and wildlife rather than crop farming and animal rearing. There should however, be a restraint in the continuous opening of land for human habitation at the expense of wildlife. Some balance must be achieved if sustainability is to be attained in the near future.

Many respondents felt that people who suffer losses should be compensated or assisted in some way by the Government. Unfortunately the existing statutes, that is, Environment Management Act of 2002 and the National Park and Wildlife Management Act of 1976 do not have any such provision and this upsets the affected individuals and communities. On other hand a compensation scheme that was tried by one district was abandoned when the number of claims quadrupled in the second year of operation (Taylor, 1993). Apart from vastly exceeding the expenditure budgeted for payments, this increase suggested that either bogus claims were being submitted or that farmers had reduced efforts to defend their crops. The district was later allowed by central government to implement a locally administered programme of wildlife utilisation and retain the revenue gained from it after they discontinued the compensation scheme in 1991 (The World Conservation Union, 1995).

Respondents expressed the desire to receive some meaningful benefits from the Kariba Game Park and felt they could have a positive attitude in co-existing with animals (Table 1). Suggested benefits included proceeds from culling and selling of game meat to locals at cheaper rates as well as

building of schools, tarring of roads and development of other amenities from tourism proceeds and revenue earned from Kariba Game Park. Others (54%) suggested the setting aside of monthly quotas for residents to gather firewood, manure and to harvest medicinal plants from the Game Park. However, this is not permissible under the existing laws.

Table 1. Desired benefits from the Game Park

Perceived Benefit from the Game Park	Percentage of Respondents
Culling & selling game meat at discounted rates	65
Building schools	75
Building of clinics	80
Tarring roads	45
Employment creation from tourism	58
More education on human/wild life co-existence	31
Fire-wood quota for residents from game park	54
Manure quota for residents from game park	28
Other developmental projects in Kariba	28

Most residents proposed for elimination of animals from the Kariba Town. The idea of culling took the highest rank out of realisation that it could result in meat reaching the pot of the ordinary resident. Bush meat is an important source of animal protein in both rural and urban households throughout Africa, but the magnitude of exploitation and consumption varies with countries, and is determined primarily by its availability governmental controls on hunting status and cultural prohibitions (Ntiamoa-Baidu, 1997). The process of culling could be done for such animals like the elephants which can cause serious destruction to the forests in times of food shortage or when population increases to levels above carrying capacity. If done properly and the disposal of the meat done openly, communities could realise the value of conserving game and this could be used as a starting point in environmental education. However, some international conventions have restricted the killing of such animals like the elephant.

Merits and demerits of culling should also be analysed both in its practicality and costs. Culling requires that an animal population census be carried out to determine what numbers of each species should be culled, what age groups and how to retrieve the carcasses from the parks' thick forest. The population census requires computer equipment, general labour and professionals to undertake the exercise, setting-up and maintenance of camps, use of aircraft like helicopters, as most of the parks hinterland is not accessible by vehicles. The costs are prohibitive hence the last partial species count in Kariba Game Park was conducted in 1997 (Jackson, 1995). Other important developmental benefits could have been realised elsewhere in communities where community

based wildlife management programmes are being implemented in Zimbabwe. The idea of developing clinics, roads and schools to mention a few, is the brainchild of the Communal Area Management Programme For Indigenous Resources (CAMPFIRE), which is currently operating in 39 districts in Zimbabwe (Jackson, 1995). The programme activities could be extended into Kariba Town as a strategy to reduce chances of conflict and promote community desire to conserve wildlife resources.

Suggestions that some residents be armed with rubber bullet-guns to occasionally shoot and scare away wild animals from residential places also have a cost implication. This calls for training of the community to avoid abuse as the exercise may only serve to make some animals more aggressive or impact negatively on their behaviour. Some respondents felt that humans initiated conflict in a number of ways as indicated in Table 2 in their order of importance.

Table 2: Ways in which humans were perceived to initiate human/wildlife conflict

Ways in which humans initiate conflict
1. Trips to the game park to fetch firewood, manure
2. Intrusion into the game to fetch manure
3. Teasing animals
4. Feeding animals
5. Chasing away animals that pass through the residential places using stones, lit papers or logs
6. Growing crops that attract animals
7. Snaring of animals

Humans constantly visited the game park to fetch firewood and manure for their gardens and fields. Animal excreta are collected from places where animals aggregate for water or shade seeking shelter during the middle of the day. Animal viewers visit watering points or open grasslands towards sunset when the animals have resumed grazing. Animals hence are likely to be scared by a large number of intruders in their habitat, thus creating chances of attacks and reprisal killings.

Some programmes like CAMPFIRE have tried to dissuade communities in wildlife areas from growing crops as a conflict reduction measure (Dzingirai, 1975), but due to constant rise in the cost of living in Zimbabwe, proceeds from organised wild life harvesting have not been enough to sustain the families all year round. Crop fields in the Kariba urban periphery naturally become areas of food concentration, which attract wild animals. Other cropped areas include small vegetable residential areas where animals like the baboon and monkeys are attracted. Since cases of animal intrusion were more frequent in the generally unfenced but hedged high-density areas, residents could be

encouraged to fence off their properties as a conflict reduction strategy, but this may not work for robust animals like the elephant and the buffalo.

Personal survival needs have driven some residents to “poaching for the pot” and this is testimony to their low standards of living. The only legal extraction of resources from parks could occur through implementation of community based conservation programmes like CAMPFIRE. Another way of improving attitudes towards wildlife conservation could be the training and employing of local residents in conservation related professions like tour guides, game scouts, hotel industry, etc. However, at present this industry is at its lowest ebb and this could discourage people to engage in an industry whose future is bleak.

Conclusion and Recommendations

Large and small, outdoor and indoor animals in Kariba Town were in conflict with humans in Kariba town. More attention was however, given to large animals because of their physical size and ability to kill and maim. Conflict ranges from threat to property to even life of the residents. Some animals like the baboon were seen in the conflict daily and their presence and that of monkeys near the residential areas attract the deadly leopards and the lion. Humans sometimes started the conflict by teasing the animals as they go to the lake for water, and sometime through encroaching into their habitat. Humans and animals hence always compete for resources and space in Kariba. Positive perception of residents towards wildlife could only occur when residents become aware and start to value wildlife conservation and this could only be achieved through involving them at all levels, from the formulation of rules, setting up of administrative and monitoring structures to the making of harvesting decisions. Residents should be encouraged to actively participate in planning, management and utilisation of the game park. In cases where communities participate in game management programmes like CAMPFIRE, communities get meaningful returns and have sense of ownership of the game park resources.

It appears if meaningful changes are made to the statutes for transfer of proprietorship, management, control, etc., the perception of the local communities who live with these animals could change. It is suggested that views of respondents should be given further consideration and modified where necessary for them to participate more fully in game management programmes.

The survival of wild life in Kariba Town is dependant on reducing the existing conflicts from both a policy formulation and implementation perspectives. In this regard a number of recommendations were made basing on the findings.

- i) Compensation in the form of transport at discount cost or equivalent monetary value should be given to residents who suffer damage from wild animals.
- ii) Town planning should be done in such a way that game corridors are left open to allow animals access to their traditional routes.
- iii) Residents should be educated on the values of game conservation for them to have a positive perception.
- iv) Substantial portions of earnings from the game park should be directed to the local communities as opposed to the current position where more earnings are sent to central government as revenue.
- v) Law enforcement in the game park should be in regard of the needs of the local communities.
- vi) Residential hunting under licence (at lower fees) should be permissible for local residents.
- vii) Formulation and drafting of game park management policy should encompass the views, concerns and other ideas of the affected residents.
- viii) Population of animals in game parks should be kept at sustainable levels, i.e. at the carrying capacity of the game park, for animals not to be forced to wander into residential areas in search of water and vegetation.
- ix) Culling should be undertaken more often and game meat sold at low cost to local communities.

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