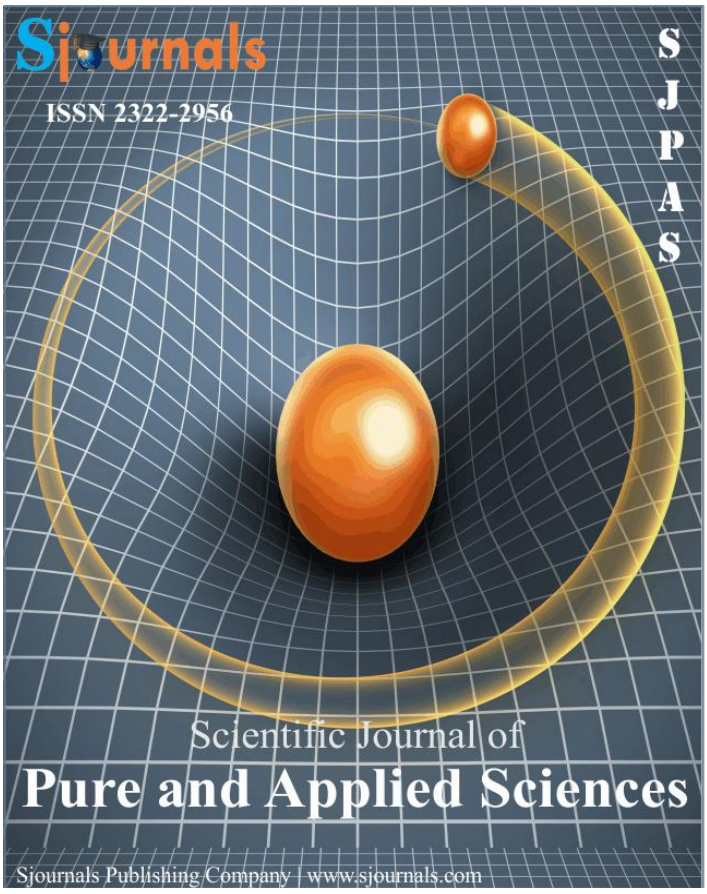

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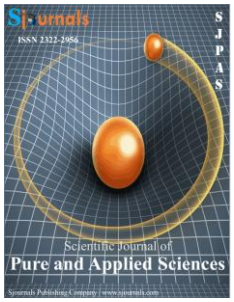

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Short communication

Human-elephant conflict mitigation measures in Hwange

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ABSTRACT

This study assessed the human-elephant conflict mitigation measures in Victoria Falls town, Hwange West communal area and the resettlement areas of Don Rovin, Mubiya and Kalala. The observation method was the main instrument used for data collection. Results indicate that the common form of preventing elephants from raiding crops in the area is guarding. During the survey, the researcher observed villagers who were guarding their crops to prevent elephants raids. The villagers indicated that guarding was effective as they were doing it collectively as a village. People take turns to guard crops. One group guard in the afternoon and another guards during the night. A fire is used to show presence of people. Electric fence is also used to prevent elephants from entering in the fields. The electric fence restricts the movement of elephants into the residential areas of the Victoria Falls town. During the survey, the researcher observed some trenches dug to prevent elephants from entering crop fields. Trenches are also used to prevent elephants from entering a vegetable gardens in the area.

1. Introduction

Conflict between humans and elephants is one of the greatest challenges currently facing biodiversity conservation. In most cases, the conflict has been observed to occur where humans and elephants share the same

territory, a scenario driven by the availability of a resource preferred by both species (Parks et al., 2007). Human-elephant conflict is prevalent in situations where elephants requirements overlap with those of human populations, leading to increased competition for resources. The conflict is a major cause for concern as elephants are protected and listed as endangered species under the Convention of International Trade in Endangered Species (CITES). A conflict which leads to elephants deaths attracts a lot of attention from conservationists. From a sociological and humanitarian perspective, elephants can be referred to as problem animals, if they attack and kill people. Faced with the dilemma of increasing human-elephant conflict, the most crucial step is to design effective strategies to address the issue. Addressing the issue of human-elephant conflict requires researchers to investigate the current human-elephant conflict measures implemented in a particular area.

This research has the potential of assisting policy makers to develop long lasting solutions to the problem of human-elephant conflict which are unique for the Victoria Falls town. Such knowledge can act as a basis for the development of mitigatory strategies which are relevant to the study area. Developing effective human-elephant conflict mitigation strategies is critical for Victoria Falls as the town is situated in the middle of the national parks. Solving human-elephant conflict issues is crucial for Victoria Falls as it is one of the most visited tourist destinations in Zimbabwe. People are attracted by the majestic and magnificent Victoria Falls and the wildlife of the area. Failure to address the problem of human-elephant conflict can create a bad image for this most visited tourist destination in Zimbabwe.

2. Observation instrument

Observation is a technique that involves systematically selecting, watching and recording behaviour and characteristics of living beings, objects or phenomena (Marshall and Ross man, 1989). An observation technique was employed in collecting human-elephant conflict data. The technique of observation was used to collect data on the potential determinants of human-elephant conflict during the survey. So after recording the coordinates of each of the human-elephant conflict site, the researcher took time to observe and record information on factors that are likely to determine human-elephant conflict near the human-elephant conflict site. This information included water points, presence of crop fields and settlements, forest remnants and protected areas. The observation tool was used to collect data on the types of human-elephant conflict in each study area. Some of the information observed was recorded using a video camera.

3. Strengths and weaknesses of the observation method

The major strength of the observation technique is that it is a holistic way of understanding of the phenomena under study as objectively and accurately as possible. The method is complementary with other methods and hence allows the use of more than one technique in data collection through tri-angulations (Kawulich, 2005). The observation technique has its own limitations. For instance, the method is time consuming and resource intensive. To address this, ample time was allocated for data collection as well as budgeting enough money for the research. The method is susceptible to observer bias as the researcher is the data collection instrument. The presence of the observer influences the behaviour of those being observed. This might undermine the validity and reliability of the data collected (Kawulich, 2005). However, this limitation is not applicable to this particular research.

4. Data collection procedures

4.1. Application of the observation instrument during data collection process

The technique of observation was employed to collect data on human-elephant conflict mitigation in the study area. The researcher used the observation technique to look out for signs of elephant presence indices near each of the human-elephant conflict site. Some of the information was also solicited from interviewing local people.

5. Results

5.1. Methods used to manage human-elephant conflict in the area of Victoria Falls town, Hwange communal area, resettlement

The common form of preventing elephants from raiding crops in the area is guarding. Fig. 1 illustrates the temporary watchtower shelter where people guard their crops from.

Fig. 1. Watchtower used when guarding crops (Source: field survey).

During the survey, the researcher observed villagers who were guarding their crops to prevent elephants raids. The villagers indicated that guarding was effective as they were doing it collectively as a village. People take turns to guard crops. One group guard in the afternoon and another guards during the night. A fire is used to show presence of people. Elephants normally fear the presence of people and do not raid crops. People in the Mvutu area have intensified human vigilance and formed teams which collectively guard crops during the day and during the night to prevent elephants from raiding their fields. These teams have constructed a temporary watchtower shelter where they stay whenever they come to guard crops.

5.2. Electric fence

An electric fence is also used to prevent elephants from entering in the fields. Fig. 2 shows a small scale farm protected by an electric fence. The researcher discovered that elephants stopped entering this field soon after the installation of the electric fence, implying that an electric fence is an effective human-elephant conflict deterrent.

Fig. 2. Field surrounded with an electric fence (Source: field survey).

5.3. Trench for preventing elephants from entering human settlements and fields

During the survey, the researcher observed some trenches dug to prevent elephants from entering crop fields. Fig. 3 depicts a trench that was dug to prevent elephants from entering fields and settlements. The trench

failed to prevent elephants from entering the fields. The loose Kalahari sands here were pushed back into the trench by elephants. Elephants then crossed the trench after filling the trench. This method only works well in areas where the soils are not loose.

Fig. 3. Trench for preventing elephants from entering fields (Source: field survey).

5.4. Trench for preventing elephants from entering gardens

Fig. 4 illustrates a trench which was used to prevent elephants from entering a vegetable garden near the airport. The soil here is not very loose, making it difficult for elephants to push the soil back into the trench.

Fig. 4. Trench for preventing elephants from entering a garden (Source: field survey).

5.5. Protecting water infrastructure

The researcher also observed that the people in the town of Victoria Falls protect their tapes from being damaged by elephants. Fig. 5 depicts an old stove put on top of a tape to prevent elephants damage.

Fig. 5. An old stove for preventing elephants from damaging tape (Source: field survey).

Elephants damage water infrastructure in Mkhosana suburb. The old stove in Fig. 5 isused to cover and hide the tape so that elephants which come searching for water during the night will not be able to see it.

5.6. Non-electric fence protecting the Victoria Falls

Fig. 6 shows a fence surrounding the Victoria Falls to prevent dangerous wild animals and elephants from entering the rainforest and the Falls area.

Fig. 6. Non electric fence protecting Victoria Falls and the rainforest (Source: field survey)**.**

The fence was constructed using strong material and it is used to restrict the movement of elephants and other dangerous wild animals from entering the Victoria Falls and the rain forest. This fence protects tourists who come to view the Victoria Falls from being harmed or disturbed by potentially dangerous animals, like elephants and other predators.

5.7. Elephants inside the electric fence in Victoria Falls national park

Fig. 7 shows a photograph of elephants inside Victoria Falls national park.

Fig. 7. Elephants inside the Victoria Falls national park fence (Source: field survey).

The electric fence restricts the movement of elephants into the residential areas of the Victoria Falls town. However, during the survey the researcher observed that there are some sections of the park which are not fenced. Elephants use these points to sneak from the park and enter residential areas of Victoria falls town and Hwange communal area and cause various human-elephant conflict manifestations.

6. Conclusion

It can be concluded that the common form of preventing elephants from raiding crops in the area is guarding. Electric fence is also used to prevent elephants from entering in the fields. As it restricts the movement of

elephants into the residential areas of the Victoria Falls town. Villagers dug trenches to prevent elephants from entering crop fields and vegetable gardens in the area.

Recommendations for human-elephant conflict management

There is need for the participation of all stakeholders such as scientists, wildlife managers, policy makers and local communities in addressing the issues of human-elephant conflict effectively. Community awareness is the first step that can be adopted in the process of human-elephant conflict resolution process. Community awareness involves informing all the people who are in human-elephant conflict hot spots that they are in high human-elephant conflict zones. The next step is to suggest short and long term conflict resolution measures which can minimise the problem of human-elephant conflict for each area. Education and training activities could be directed towards disseminating innovative techniques required for conflict prevention and resolution. The following section presents possible human-elephant conflict mitigation strategies which have the potential to minimise the human-elephant conflict in the future.

Implications of the results to human-elephant conflict management in Hwange West communal areas

Results indicated that distance from the forest is significantly and negatively related to human-elephant conflict probability, implying that all the areas located close to the boundary of the forest protected area are vulnerable to human-elephant conflict incidents. These areas include Ndlovu, Mvutu, and Chikandakubi and Chenamisa in Jambezi are human-elephant conflict hot spots because they share a boundary with the forest. The most critical point to consider when applying the mitigatory measures in the communal land of Hwange is that conflict hot spots are located near the forest and elephants routes. This implies that mitigation measures to minimise human-elephant conflict in the communal area of Hwange should consider the position of elephant routes and forests. Based upon these findings, the following mitigation strategies are suggested to address the issue of human-elephant conflict in the communal area of Hwange West.

The first step is to inform all these people that they are in a high risk zone in terms of human-elephant conflict incidents. These communities and concerned stakeholders such as the District Adminisrators, wilflife managers, Ministry of Lands and Rural Resettlements, are informed and educated on the effective ways which can be adopted to minimise the human-elephant conflcit issue in Hwange communal area. The farmers in Hwange West communal area can alternatively cultivate unpalatable crops to prevent elephants from raiding their fields. These include the growing of chillies. The chillies should be grown by people in the areas such as Ndlovu, Mvutu, Chikandakubi and Chenamisa villages. This is because areas are located in hot spots for human-elephant conflict, since they share a boundary with the Fuller forest protected area.

Acoustic deterrents can also be used by farmers who are in high human-elephant conflict risk zones to scare elephants away. These methods can be adopted by farmers in human-elephant conflict hot spots and they include the beating of drums, tins and the cracking of whips to prevent elephants from entering their fields. Shouting, yelling and whistling are some of the noises which can be used to keep elephants away from human settlements and fields. Elephants can be scared by the people located near the forest before proceeding to raid crops from the fields located further away from the forest. Alarm systems can be used to alert farmers to the presence of elephants. The farmers can then respond to these alarms by chasing the elephants away to prevent crop raids. The noise of alarms like cow bells scare elephants away.

Disturbance shooting can also be used to prevent crop raiding. In this case gunshots are fired over the heads of crop-raiding elephants. This can be performed by trained personnel from Hwange Rural District Council or any other trained person who is authorised to carry out such activities. Olfactory deterrents can alternatively be adopted to prevent crop raiding by elephants in the communal land of Hwange. This involves spraying a chemical compound which produces an unpleasant or painful smell like chilli pepper. This is because chilli pepper produces an irritating and an unpleasant smell to the elephants. These chemicals can be sprayed along the routes which elephants use to enter the community. Spraying these chilli peppers at crossing points used by elephants to enter the villages has got a great potential of scaring elephants away.

One strategy of addressing the issue of human-elephant conflict would be to avoid crop cultivation near the forest boundary and elephants routes. This strategy is effective, but it can be surpassed by other factors. During the survey the researcher observed some fields near Lupinyu village which had been abandoned because of

elephant raids. However, in Mvutu village, the researcher observed some fields which are located close to the forest boundary. These farmers indicated that they had been attracted by the fertile soils of the area. The farmers value the fertile soils which characterise the area.

These farmers take turns to guard their fields during the day and during the night to prevent elephant raids. Alternatively, people in this area can be encouraged to practice cattle ranging and do away with crop cultivation. The strategy of digging trenches to prevent elephants from entering fields can also be adopted by the people in the area. However, this strategy only works well in areas which are not characterised by loose soils. During the survey the researcher came across areas where the trench had failed to work because of the loose Kalahari sand soils. Elephants refilled the trench by pushing the loose soil back into the trench, making it easy for them to cross into the fields and raid crops. The researcher also observed one of the trenches near the airport, which successfully prevented the elephants form entering the vegetable garden. The soil at this site is not loose, making it difficult for elephants to refill the trench to cross into the vegetable garden. An effective strategy which can minimise human-elephant conflict is for land use planners to prevent settlements near the protected areas. This is because some people can sacrifice to settle in high human-elephant conflict zones as long as the soil conditions support crop cultivation, but cry for assistance when they experience various manifestations of human-elephant conflict.

References

Kawulich, B.B., 2005. Participant observation as a data collection method. Forum Qual. Soc. Res., 6, 2.

Kusena, K., 2009. Land cover change and its support to human-elephant conflict in the Zimbabwe, Mozambique and Zambia Trans boundary Resource Management Area. CBM Swedish Biodiversity Centre.

Larmaque, F., 2009. Human-elephant conflict in Africa: Causes, consequences and management strategies. FAO Forestry Paper.

Leimgruber, P., 2003. Fragmentation of Asia remaining wildland: Implications for Asian elephant conservation. Anim. Conservat., 6, 347-359.

Marshall, C., Ross man, G.B., 1989. Design Qual. Res. Sage.

Parker, G.E., Osborn, F.V., Hoare, R.E., Niskanen, L.S. (eds.), 2007. Human-elephant conflict mitigation: A training course for community-based approaches in Africa. Participant's manual. Elephants Pepper Development Trust, Livingstone, Zambia and UCN/SSC AfESG, Nairobi, Kenya.

Smith, N.O., 2006. A scientific perspective on the management of elephants in the Krugar National park and elsewhere. South Afr. J. Sci., 102.

Smith, R.J., 2000. A spatial analysis of human-elephant conflict in the Tsavo ecosystem, Kenya. Human-elephant conflict task force of IUCN.

Tchamba, T.N., 1996. History and present status of the human-elephant conflict in the Waza Logone district. Biol. Conservat., 75, 35-41.

Treves, A., 2000. Balancing the needs of people and elephants: When elephants damage crops and kill livestock. Land Tenure Brief 7.

Umaru, I.G., 2009. Research methodology: Principles of applications in behavioural sciences.

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