

Human Animal Conflict in the South Luangwa Valley of Eastern Zambia

Excerpt from my thesis, “Legalizing the Ivory Trade and “New” Conservation; the Role of Community in
the Future of the Zambian Elephant.

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ADMADE	Administrative Management Design for Game Management Areas
CAMPFIRE Areas (Zimbabwe)	Communal Areas Management Program For Indigenous Resource
CBC	Community Based Conservation
CBNRM	Community Based Natural Resource Management
CITES	Convention on International Trade in Endangered Species
CRB	Community Resource Board
GMA	Game Management Area
IUCN/SSC	World Conservation Union/Species Survival Commission
LIRDP	Luangwa Integrated Resource Development Program
NGO	Non-Governmental Organization
NORAD	Norwegian Agency for International Development
NPWS	National Parks and Wildlife Service
SLAMU	South Luangwa Area Management Unit
SLNP	South Luangwa National Park
VAG	Village Area Group
WWF	Worldwide Fund for Nature
ZAWA	Zambian Wildlife Authority

Elephant Population and Conservation in Africa

Humans and elephants in Sub-Saharan Africa have been jockeying for land, food, and water for over one hundred years, but this history of interaction was poorly documented until the 1960s, when high levels of poaching and rapidly decreasing elephant populations gained the attention of the international community. Accurate population estimates for elephants are difficult to obtain even today despite improvements in counting methods. Estimates before 1960, or aerial surveying are even less certain than more recent counts. However, it is thought that the elephant population of sub-Saharan Africa was between 3-5 million in the early 1900s. By 1979 there were roughly 1.3 million and in 1998 the IUCN/SSC African Elephant Specialist Group counted between 300,000 and 480,000.¹ As of the last count by the IUCN in 2002, the population was measured at 402,067, an incredible decline from the estimates at the turn of the century, and even from the population of the 1970s. Despite the international pressure to protect the African elephant, countries such as South Africa, Namibia, Botswana, Zimbabwe and most recently, Zambia are arguing that although the elephant population remains low compared to the total population across the southern half of the continent before the 1950s, in the southern region of sub-Saharan Africa, it has recovered, and even begun to show signs of overpopulation. This argument provides the basis for the campaign to de-list the elephant under CITES, which would once again legalize trade in ivory. This thesis examines the argument for delisting in Zambia. Zambia submitted a proposal in 2002 to delist and was rejected but plans to resubmit again once they have more information about their elephant population.

¹ <http://www.iucn.org/themes/ssc/sgs/afesg/aed/aesr2002.html>. This is the website for the World Conservation Union.

In the South Luangwa National Park (SLNP) the elephant population was estimated around 35,000 between 1970 and 1975.² Many factors contributed to the rise in poaching and steep decline in the population following 1976, including economic depression, a rise in the price of ivory and rhino, poorly funded wildlife enforcement, and an influx of refugees from bordering countries that were still fighting for independence.³ In 1987 the population was near 15,000 and the by the next year it had plummeted to 2,500 (due partially to out-migration as well as poaching). In the late 80s and early 90s, funding became available to support increased protection, within the park. Since then the population has remained between 4,000 and 9,000 (determined by annual aerial surveys). This trend between 1970 and 1985 is fairly common across the region, although the staggering population decline happened earlier in other countries; many poachers moved into Zambia from other countries as population decline made hunting more difficult in those areas.⁴

The Inclusion of Communities in Wildlife Management

Before examining the environmental history of SLAMU, it is helpful to review the background to CBNRM, paying special attention to its role in conservation, the place of NGO's in south Africa, and the relations between people and elephants. The history of CBC lies in the conservation movement of the last few decades; consequently, it must be placed within the framework of this history. The broader history is helpful as an introduction to the development of CBC in the South Luangwa Valley of eastern Zambia.

² All population data from the South Luangwa Park and surrounding areas is from their own records.

³ Clark, Gibson, *Politicians and Poachers*, Cambridge University Press, Cambridge: 1999, his analysis of this was supported by interviews conducted in the South Luangwa, 2003.

⁴ Interview with Mr. Mkumbi, former Park Ranger, August 2003.

Community-based natural resource management programs developed in Africa in the mid to late 80s. The project in the South Luangwa, originally called LIRDPA was one of the earliest of these kinds of programs, beginning officially in 1985. The Communal Areas Management Program for Indigenous Resources (CAMPFIRE) project was another that began fairly early. Zimbabwe instigated the program in 1989, the same year that the international ivory ban was ratified. While each CBNRM program has its own unique history, they all marked a formal departure from a traditional centralized system of wildlife management and land control. Prior to this shift toward attempting to work with rural communities, most nations in southern Africa directed all of the profits from safari hunting as well as the revenue from tourism and all other park operations directly to the central government and paid little, if any, attention to the needs of these communities. When this revenue was re-invested in the rural areas that it came from, it was usually to improve wildlife management operations, also providing negligible benefit at the community level. In sub-Saharan Africa post-colonial administrations created and maintained parks, or game reserves which were later converted into national parks, to protect wild animals from local populations, who were assumed to be unfit to manage them.⁵ This prejudice stemmed from colonial attitudes toward those communities that competed with them for resources, whether this was game or agricultural land.

This attitude, along with colonial interests in agricultural land resulted in the removal and resettlement of millions of Africans throughout the first half of the 20th century. Following this lengthy period of disconnection and disempowerment,

⁵ Neumann, Roderick, Imposing Wilderness, University of California Press, Berkeley: 1998. Clark, Gibson, Politicians and Poachers, Cambridge University Press, Cambridge: 1999. Western, David and Michael Wright, Natural Connections, Island Press, Washington D.C.: 1994. Chatty, Dawn and Marcus Colchester, Conservation and Mobile Indigenous Peoples, Berghahn Books, New York: 2002.

independent governments instigated similar, and in many cases more stringent restrictions barring people from protected areas and adhering to a strictly preservationist approach to conservation. By “preservationist approach” I refer to the western method of protecting land from human activity by designating a boundary and prohibiting human settlement (some now have questioned whether this can actually be considered free of human influence, for simply by designating land protected we manipulate the ecological makeup of the area). David Turton has contrasted the western view (alternatively called the modern or urbanist view) of land use with that of many rural communities; the western assumption being that, “to explore, exploit, understand, paint, photograph, document or in other ways control and dominate nature is to fulfill our potential as human beings.” The Omo, of Ethiopia, whom he discusses in an article titled “The Mursi and the Elephant Question,” view animals as a backup food source, occasionally used for trade, that competes with their livestock for grazing land.⁶

As countless authors, including Turton, have pointed out, the preservationist system was, unfortunately for many sub-Saharan African nations, unsuccessful in protecting wildlife. It removed any incentive for local communities to report or resist commercial poaching activities which flourished at a huge cost to wildlife populations, and further, it encouraged members of local communities to resist or retaliate against the imposed authority of the state. In South Africa, the *Mkambati* refer to these types of activities as, “ukujola,” or, “taking by stealth what is rightfully yours.”⁷

⁶ Turton, David, “The Mursi and the Elephant Question,” Conservation and Mobile Indigenous Peoples, Berghahn Books, New York: 2002.

⁷ Fabricius, Christo and Chris de Wet, “Land Restitution in South Africa,” Conservation and Mobile Indigenous Peoples, Berghahn Books, New York: 2002.

Community-oriented management attempts to rectify these injustices and also to create a system that is sustainably successful in protecting wildlife populations as well as the interests of communities. Most programs were developed as a joint effort between the central government and one or several international NGOs. In Zambia, President Kenneth Kaunda played a central role in developing the program in the South Luangwa despite objections from the National Parks and Wildlife Service (now ZAWA).⁸ The birth of LIRDP in 1986 marked the early stages of a general trend in sub-Saharan Africa to try to include communities in wildlife management. In Zambia it was also an attempt to end the corruption of state officials and park employees who were benefiting from safari hunting.⁹

Many early efforts to develop CBNRM failed, either due to a lack of understanding about - or communication with - the communities intended to benefit from the programs. A predecessor to the current CAMPFIRE program in Zimbabwe, named Windfall, never succeeded in conveying the relationship between wildlife conservation and monetary incentives; consequently it lasted only a short time.¹⁰ Another example comes from Cameroon, where Korup hunters were invited to participate in the design of a local CBNRM program. Despite this invitation, the hunter's interests were not recognized, and failing to see any benefits in the proposed conservation strategy, they decided not to reduce their hunting.¹¹ These short lived attempts to instigate CBNRM reveal some of the difficulties inherent in changing the way a community relates to a

⁸ Clark, Gibson, Politicians and Poachers, Cambridge University Press, Cambridge: 1999.

⁹ Ibid.

¹⁰ Metcalfe, Simon, "The CAMPFIRE Program: Community-Based Wildlife Resource Management in Zimbabwe," Reasons for Hope, Kumarian Press, West Hartford: 1997.

¹¹ Little, Peter, "The Link Between Participation and Improved Conservation," Natural Connections, Island Press, Washington D.C.: 1994. (p362).

resource. One of the stages necessary in this process is determining what comprises the community. This is frequently overlooked, as in the cases above, if you do not know who will be making decisions about how to distribute funds from safari hunting, or how many people benefit from the current system, it is impossible to know what is necessary to change.

As Gibson and Agrawal discuss in Communities and the Environment, there are many possible definitions of “community.” An attempt to discuss the problems and benefits of CBNRM, will, naturally be dependent on numerous factors such as size and land tenure systems of the community in question.¹² Approaches must also take into consideration previously existing methods of allocating power and be aware of which systems have been upheld by authority of the central government.

Investigating the South Luangwa Area Management Unit

Today, the 15,000 sq kilometer South Luangwa Area Management Unit (SLAMU) is often cited as an example of vastly improved wildlife management, as a successful demonstration of the potential of Community Based Natural Resource Management (CBNRM).¹³ Within this section, I cover the economic and political climates that influenced conservation policy in this area, as popular notions regarding the most effective way to achieve either sustainability or conservation mean very little if they are not supported by the political ruling body. Additionally important, however, are the reactions to political moves and attitudes about conservation within the communities themselves. As Bradford Strickland, an anthropologist who conducted research in the

¹² Agrawal, Arum, and Clark Gibson, Communities and the Environment, Rutgers University Press, New Brunswick: 2001.

¹³ SLAMU consists of the South Luangwa National Park (SLNP) and Lupande GMA.

South Luangwa Valley states, “knowledge of state power for most rural Africans is informed by the cumulative impact of diverse but interrelated state policies. Village history-telling thus often becomes a pointed critique of the state, and informs future relationships to the state.”¹⁴ Below, the South Luangwa is considered from both the community level, and the political and economic level.

Historical Relations in the South Luangwa Valley

The larger community (comprised of many smaller communities) of the Lupande Game Management Area (GMA) must be viewed considering the relations between distinct groups. The SLNP was formerly a game reserve, in 1972 it was designated a national park along with all the other state owned reserves in Zambia. Tourists (Europeans, mostly the British since they were the colonizers of Rhodesia, which is today Zambia and Zimbabwe) began visiting the park as early as the 1950s for game hunting and viewing. At this time the elephant population of the valley was large (estimated at well over 30,000) and culling operations were implemented to reduce habitat destruction and interference with agriculture.¹⁵ This was done by British colonialists, not by the African populations living around (and at one time in) the game reserve. During the early 70s roads were built through the park and to the nearest town; an airport was built to encourage tourism. Following this, commercial poaching increased dramatically,

¹⁴ Strickland, Bradford, “*My Grandfather’s Gun was Called Field of Children*”: *Ecological History as Indictment of State Development Policy*, *Africa Today*, Vol. 48.1, 2001.

¹⁵ Dalal-Clayton, Barry, and Child, Brian, *Lessons from Luangwa*, International Institute for Environment and Development, London: 2003.

reducing the elephant population to a tenth of its former size and eventually leading to the local extinction of the rhino.¹⁶

A combination of political and ecological factors contributed to the instigation of a CBNRM program in the valley. As mentioned above, the president was highly supportive of improving conservation, clearly realizing the potential of the tourist industry in Zambia's economic future. Ultimately, he had enough political power to allow NORAD, a Norwegian NGO to develop a five phase plan for community based conservation in the area. This influenced the National Parks and Wildlife Service (NPWS) to develop similar programs in other wildlife rich areas, all of which are encompassed under ADMADE (ADministrative MAnagement DEsign). The conflict between who had authority over the SLNP (NORAD or the NPWS) was somewhat resolved in 2000 when ZAWA replaced the NPWS and SLAMU was once again included in domain of the state wildlife authority. This also allowed Zambia to apply in 2002 to delist the elephant, as the SLNP contains one of the largest populations in the country.

SLAMU is currently in the last phase of the original CBNRM program (LIRDP). It has undergone significant modifications and redesign since its conception twenty years ago, mostly in the realm of community oriented plans. Currently a well established community network exists throughout all six chiefdoms; which will be discussed further below. Although it is far from perfect, it is at least at the stage where problems may be addressed jointly by the community and ZAWA, something not many CBNRM programs in this region have achieved. Currently the problem of greatest concern is that of human animal conflict. The reasons why this conflict is significant to the community are obvious, their crops are eaten, lives threatened, and they have no meat because they

¹⁶ Roads intended to provide access for tourists also allowed poachers to easily reach the valley.

cannot hunt. For ZAWA, resolving this conflict is centrally important to the effort to delist the Zambian elephant because it heavily influences the relationship between the wildlife authority and the surrounding communities.¹⁷ Below this problem is considered within the historical, political, social, and ecological history of the area.

Studying Problem Animals and People in the Luangwa Valley

In 2003 I spent two months in the Luangwa Valley conducting research on human-animal conflict in Lupande GMA (4840 km²) and adjacent Sandwe chiefdom (of Petauke GMA which borders Lupande to the south).¹⁸ Both of these GMA's share their wildlife with the adjacent park (there are no fences, only a river to serve as a boundary, so animals are free to pass between areas). The South Luangwa National Park was converted from a game reserve into a park with designated boundaries in 1972. In the 1960s the central government encouraged people to move out of the protected areas by building health clinics and schools in areas where settlement was desired (what is today the Game Management Area bordering the park).¹⁹ The park has the highest density of wild game in the country, and has long been known for its abundant wildlife. The Luangwa River designates the boarder between the park and the GMA which lies east of the river and is comprised of six chiefdoms. The head chief has traditionally been chief Nsefu, the northernmost chiefdom bordering the park. The Kunda people, who populate this area, have traditionally relied on minimal subsistence agriculture and wild animals

¹⁷ <http://www.cites.org/eng/cop/12/prop/E12-P09.pdf>

¹⁸ I would like to thank the Watson Institute at Brown University for funding my research through the Luce Fellowship, special thanks to Laura Sadovnikoff for help in working with the Watson Scholars, Francesca Chisangano, for allowing me to go with her to Zambia, James Milanzi, Tindi Chimba, and Malam Njovu for their help conducting research.

¹⁹ Stickland, Bradford, "My Grandfather's Gun was Called Field of Children": *Ecological History as Indictment of State Development Policy*, *Africa Today*, Vol. 48.1, 2001.

for nourishment. The Kunda have inhabited the Luangwa Valley since the 18th century, when they migrated from the Luba area of the Congo, which is in the southern part of the state, bordering present-day Zambia. The Luba, who still live in the Congo are Bantu speaking people. The valley has, however, been inhabited for at least 50,000 years.²⁰ Several different groups settled in the valley during the time between the stone-age and the migration of the Kunda. The influence of these groups, which include Ngonis from Zululand (present day South Africa), Arab traders (mainly interested in the valley for ivory), and Portugese traders who frequented the valley until pushed out by the British in the mid to late 19th century, still may be seen in the valley.²¹ Multiple religions are practiced by the Kunda, including various forms of Christianity, Muslim, and pre-colonial belief systems, although the latter is fairly uncommon.

Anthropologist Brad Strickland wrote about the perception of those living along the Luangwa River that in the past a gun could essentially grow food to feed people's families; the food was wild animal meat. The Kunda still view wild game as meat, the word for animal, *nyama*, also means meat. Agriculture has remained minimal in the valley (compared to surrounding areas) because domestic livestock cannot be kept for plowing; tse tse flies are too abundant, and the animals contract sleeping sickness (trypanosomosis).²²

²⁰ While I was conducting research in the valley, there were archeologists setting up a dig within the park. The excavations were expected to provide information about the stone-age inhabitants of the park area.

²¹ Dalal-Clayton, Barry, and Child, Brian, Lessons from Luangwa, International Institute for Environment and Development, London: 2003.

²² Ibid.

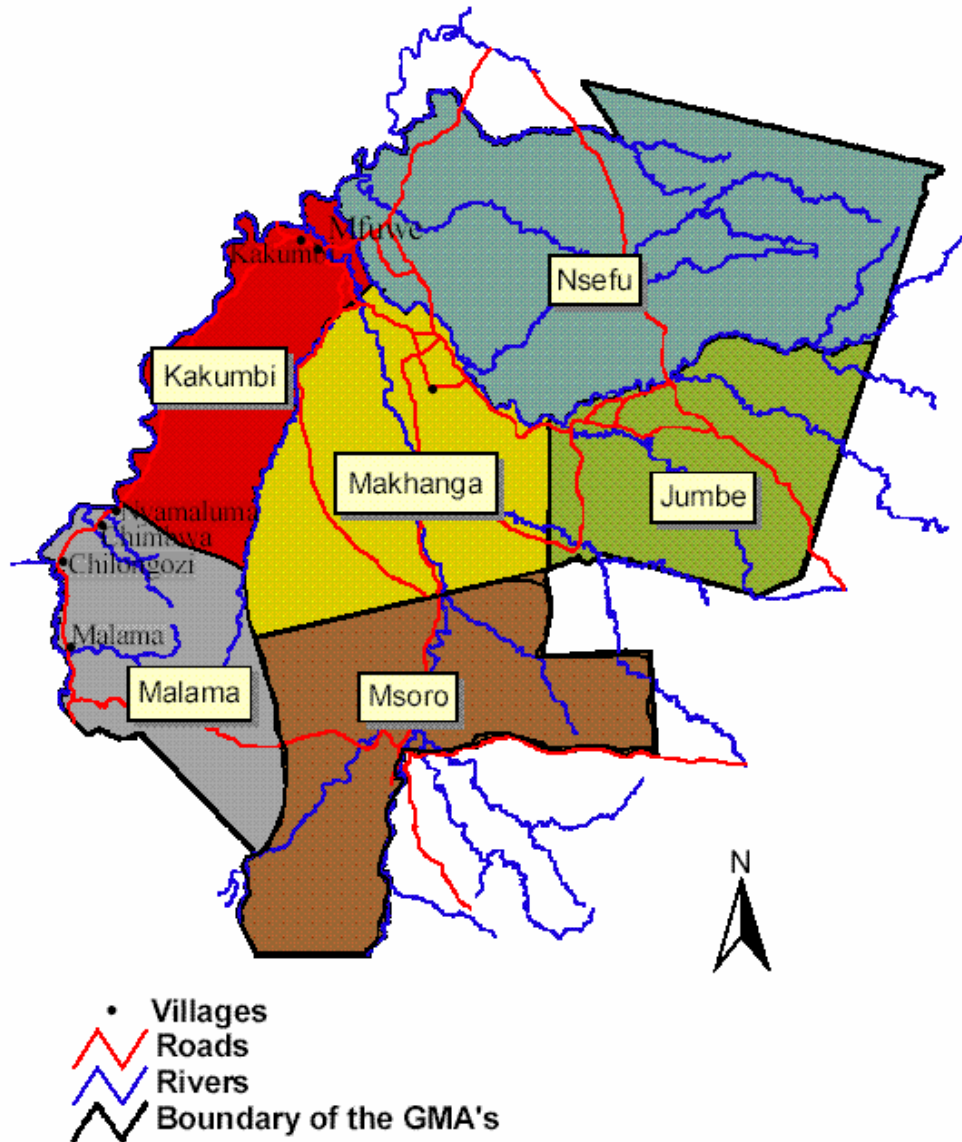
Methods and Components of the Research

My research consisted of two main sources of information: records from the research division of SLAMU, (and those from LIRDPA) and interviews in Lupande and Sandwe. The aim of the study was to collect information on the differing problems within each chiefdom (and corresponding environmental conditions) to gain an understanding of the historical setting and specific causation of these problems in order to develop possible solutions to local conflicts (de-listing the elephant is one of the solutions ZAWA has considered).²³

The majority of the study was conducted by interviewing members of each chiefdom in Lupande GMA and Sandwe Chiefdom in Petauke GMA (again, for purposes of comparison). Lupande GMA and the adjacent South Luangwa National Park have been under the management of the Luangwa Integrated Rural Development Program (LIRDPA) since 1988. LIRDPA was transformed to the South Luangwa Area Management Unit (SLAMU) in 2000 with the simultaneous shift of the NPWS to ZAWA. Additionally, in 2000 Petauke GMA was included in the SLAMU jurisdiction.

²³ http://elephantpepper.org/downloads/Final_S_Luangwa_report.pdf. This map is from a report by the WWF written in 2002 on human elephant interactions in the Luangwa Valley. The name of one chiefdom is misspelled, instead of Makanga, it should read Mhankanya.

Lupande GMA



The important difference in jurisdiction between these two areas is that Lupande GMA was integrated into an NGO funded program in 1985, while Sandwe (of Petauke GMA) was not included until 2000, therefore only recently gaining access to the funding that has been available to Lupande GMA for twenty years. Lupande GMA has a population of roughly 40,000 and is comprised of six chiefdoms; Chiefdoms Nsefu, Kakumbi, and

Malama boarder the park to the east, and Chiefdoms Jumbe, Mnkhanya, and Msoro boarder the other the three Chiefdoms. Chief Sandwe is south of the park, and adjacent to the southern end of Chief Malama.²⁴ In 2002 the population was 5372 in Chief Nsefu, 8121 in Chief Mnkhanya, 4183 in Chief Kakumbi, and 5818+ (population data was incomplete) in Chief Jumbe.²⁵ There were no population data for 2002 for Chief Malama or Chief Msoro because the land use survey had not been completed in these two chiefdoms.

Kakumbi, Malama, and Nsefu Chiefdoms boarder the park; consequently, they are predicted to have higher densities of wild animals, and a higher prevalence of problem animals. This study was designed to concentrate mainly in these three chiefdoms, focusing less on the other side of the GMA, but including sufficient research there so that an accurate comparison could be made. Due to difficulties in securing transportation not as many interviews could be conducted in Chief Malama as it is much farther from the research station than the other two chiefdoms bordering the park. However, as the population of Chief Malama is much smaller than any of the other chiefdoms, an adequate amount of information was obtained to analyze the problems of that area. Similar problems arose with traveling to Chiefs Msoro and Sandwe, and the number of interviews that were conducted provide only enough information for general comparisons.

I conducted sixty three interviews throughout the two GMAs, (17-Kakumbi, 12-Nsefu, 10-Mnkhanya, 7-Malama, 7-Jumbe, 4-Msoro, 6-Sandwe). Interviews lasted

²⁴ Population information was provided by the CBNRM division of ZAWA 7/2003.

²⁵ I have used a method of referring to chiefdoms as “chiefs” which is used by the Kunda, it seems at first as if I am referring to the chief himself, but this is how people talk about the different chiefdoms, a word I almost never heard.

between 40 minutes and one hour, depending upon the interpreter and the individual interview. Most were conducted with the aid of an interpreter; only a few interviewees spoke English with great enough fluency to permit an interview in English. The interpreter for the majority of the interviews was James Milanzi, the ecologist for SLAMU (employed by ZAWA). When he was unavailable, Tindi Chimba (head of the CBNRM division) and Malama Njovu (the Human Wildlife Coordinator) helped interpret.²⁶ Because of constraints on time and transportation, one of the CBNRM staff conducted several interviews (after training to maintain continuity in the results) in Chief Nsefu and then delivered the interview forms to the research office.

Interviews were conducted with one individual, but for the majority of the interviews multiple people participated. These people were most often additional members of the family, although occasionally they were from nearby houses, or even villages. The input of these other individuals increased the amount of information obtained from each interview, as participants would discuss between themselves, and questions that were not answered by the interviewee were generally responded to by someone in the group. The participation of additional people was noted on each interview; roughly 200 people contributed to the interviews.

To obtain a better sense of the history of resource use in this region of Zambia it was necessary to interview community members that had lived in the area for a long period of time. Consequently we sought out older members of the community in each area that we visited. This did not completely de-randomize the selection process; we

²⁶ Incidentally, njovu is the Kunda word for elephant. When colonialists asked people in this area their last names, they thought that they were being asked for their clan names; consequently many people have a small number of last names that are tied to characteristics of the area they are from. Malama, as I have mentioned before, is the chiefdom with the highest elephant density.

interviewed people of all age groups and many times younger family members volunteered information during interviews with their elder relatives. It does however, explain the age curve of informants in Figure 1. The length of habitation was similarly affected by this process, as may be seen in Figure 2.

Figure 1.

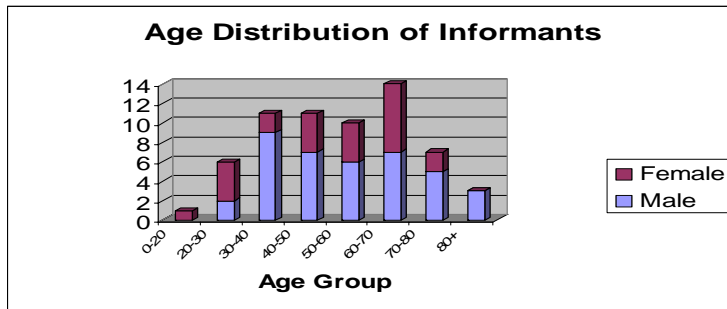
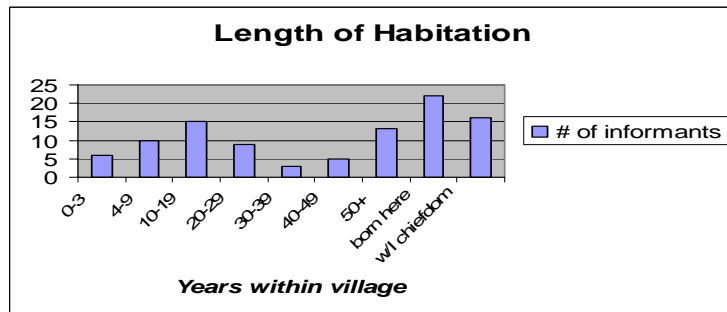


Figure 2.



Household size and occupation are not dependant upon the length of time that a person has lived in their respective villages, and so contribute a great amount of general information about the lifestyles of people in this region. The majority of inhabitants are subsistence farmers. Because of tsetse fly (the vector for trypanosomosis, or sleeping sickness) livestock, including cattle, goats, and pigs, cannot be kept in the valley. Consequently, people have small farms relative to other farming areas within Zambia; the family must be able to tend fields and harvest crops independently. Also, despite the

proximity to one of the most popular tourist destinations in Zambia, relatively few people have employment related to the park.

In this study household size was defined as the number of people supported by the interviewee, or by the interviewees' parents, if they lived together. (This was also somewhat dependent upon the age of the person being interviewed). A typical living situation includes three generations, although families that settled more recently tended to consist of parents and their children only. See Figure 3 and 4.

Figure 3.

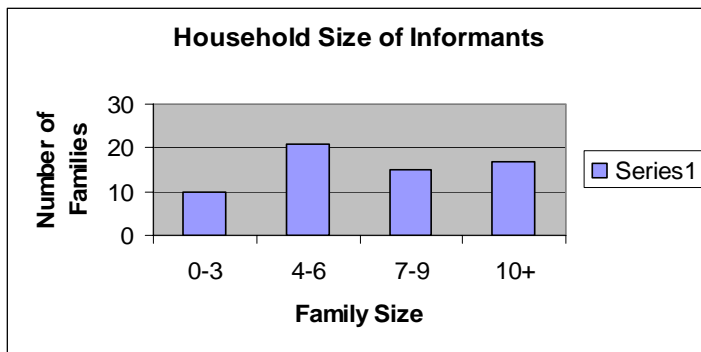
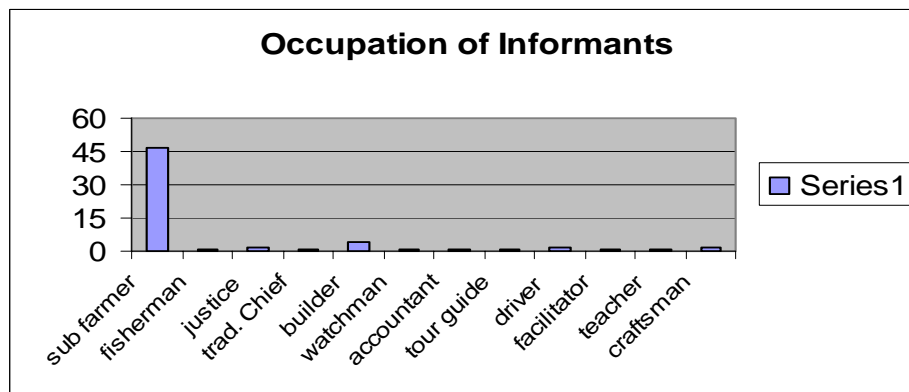


Figure 4.



These data and preliminary analysis reveal general trends in animal problems, crop damage and animal control throughout the study area, yet there are several areas which may be more complex than suggested by these data. At first glance

the large increase in number of problem animal reports since the year 2000 would suggest a recent sharp increase in the number of animals destroying crops. While this is certainly plausible, there may also have been an improvement in the method of record keeping, and or an improvement in the method of reporting itself. Consequently, this information (the records of ZAWA) must be compared with the compiled statements from the interviews. The year 2000 marked the shift from the National Parks and Wildlife Service (NPWS) to the Zambian Wildlife Authority (ZAWA). While office buildings remained the same, there were significant personnel changes because SLAMU was under the jurisdiction of ZAWA, but not its predecessor NPWS. The transition signified a new procedure for recording human animal conflict; it also may have resulted in poor maintenance of records on problem animals and crop damage.

Before going onto describe the crops that are grown, problem animals themselves must be discussed. The term “problem animal” most often refers to wild animals that eat or destroy crops; it is also used to describe predatory animals such as lions and hyenas that threaten human lives and eat chickens. ZAWA (previously NPWS) has kept semi-regular data on problem animals since the late 1980s, which now may help inform the attempt to determine what the elephant population should be within the park. Comparing population and crop damage over a period of twenty years reveals the underlying factors of current problems as well as what course of action may most effectively remedy them.

Problem-Animal Reports and Crop Damage

A significant part of the study involved analyzing problem-animal reports from 1988 and 1994-2003. These data were collected from LIRDPA and SLAMU crop damage

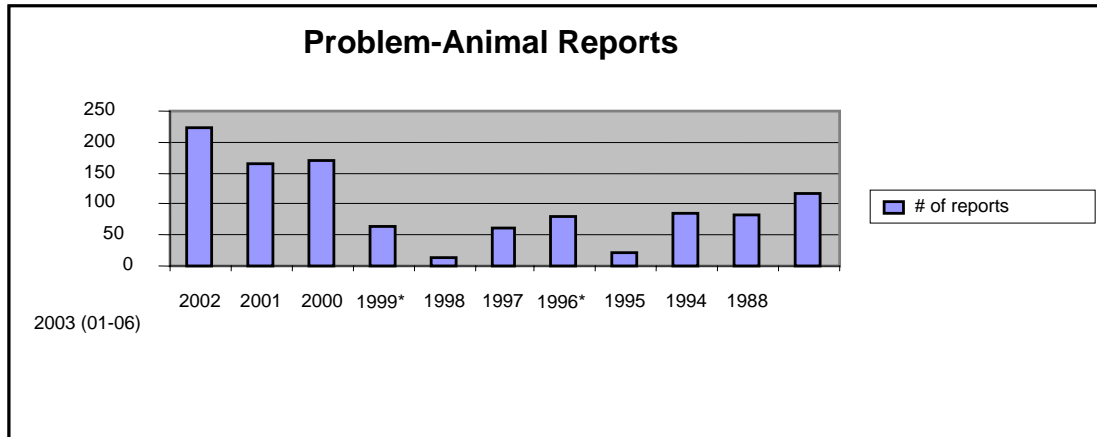
and animal control reports and from the annual reports of the research section of ZAWA (SLAMU) and LIRPD. Problem-animal reports before the year 2000 must be considered partially incomplete, since the numbers do not match up with those in the annual reports both for number of complaints and for the number of animals controlled. For the years 1996 through 1999 (excluding 1997) there are no annual reports to compare the collected data with, but for the years 1995 and 1994 the number of problem animal complaints may be checked against those from the report. The information collected from 1997 is more accurate because there was sufficient information from the reports. This conclusion has been verified by comparing the numbers with the mid-year report for 1997. Other than the reports for 1988 and 1989, the annual research reports available before 1994 do not include any information about problem animals.

The number of problem-animal reports has increased most significantly in the last three years (from 63 in 2000 to 223 in the first half of 2003). There are several possible factors underlying this trend, which will be discussed below. Other than the years 1996 and 1999, for which there was very little data on problem animals, the trend in animal problem reporting remained relatively constant from 1994 to 2000. Problem-animal reports increased in 2001, followed by a slight decrease in 2002, (still significantly higher than the previous years) and a large increase again in 2003. (Figure 5).

Comparing these results with the information compiled from the interviews suggests that the increase in the number of complaints does represent an increase in the number of problem animal-cases, and not simply an improvement in reporting methods. During interviews community members were asked when their problems with animals

had started, 45% of interviewees reported that the situation had begun, or had gotten worse in the last three years. Another 45% reported that the problem had existed either

Figure 5.



their entire life, or for the duration of the time that they had lived in the area. Ten percent of the interviewees reported that the problem had existed for the last five to ten years. From this it would appear that although wild animals have always been a problem, the conflict has certainly been increasing over the period of time that the CBNRM program has been in place; not one single participant reported a decline in recent times.

The most commonly reported problem animals are elephant and hippo, and consequently, the trends in reporting for these two species follow the trend in overall problem animals. Seventy five percent of interviewees reported incidences with elephants, making it the most commonly reported animal. Elephants were followed by baboons, reported as problem animals by 40% of interviewees, bush pig, 29%, hippo, 25%, lion (24%) and hyena (21%). (Figure 6).

Comparing these data to problem animal reports received by LIRD and SLAMU shows that there is a discrepancy between problem animal reporting and animals that people cite in interviews as causing crop damage. According to the compiled reports,

60% of problem-animal cases are elephants, 32% hippo, 2% baboon and bush pig, and less than 1% for porcupine, leopard, and lions, (lions and leopards were reported as threats to domestic livestock and human life). Two percent of reports concerned buffalo and less than 1% of the reports were in regard to crocodiles. These reports pertained to human safety, not to crops, but they must also be considered when examining human animal conflict.

The majority of interviewees only brought up problem-animal cases that included some destruction of personal property, but in written complaints, people frequently mentioned animals that posed a threat to human life. Lion, leopards, hippo, and elephant were mentioned during the interviews and in problem-animal reports as threatening and occasionally harming humans. Judging from the reports, there seems to be much greater concern over animals that may potentially kill or injure someone. More individuals report about an isolated occurrence in the case of dangerous animals to ask for help from the authorities, and many people seem to include the threat to human life as an added incentive for ZAWA (or NPWS) to come and control an animal that is eating their crops. The absence or presence of potential threat to human life provides one possible explanation for under-reporting of small problem animals such as porcupine, baboons, bush pigs, warthogs and birds. These animals may be considered to be underreported because they appear far less frequently in official complaints than they did in the interviews.

Figure 6.

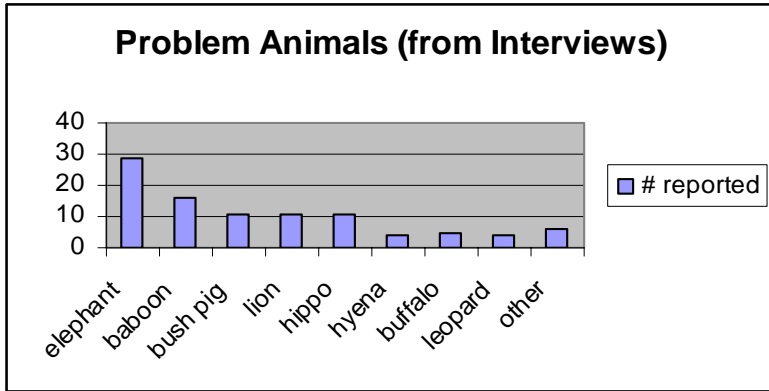


Figure 7.

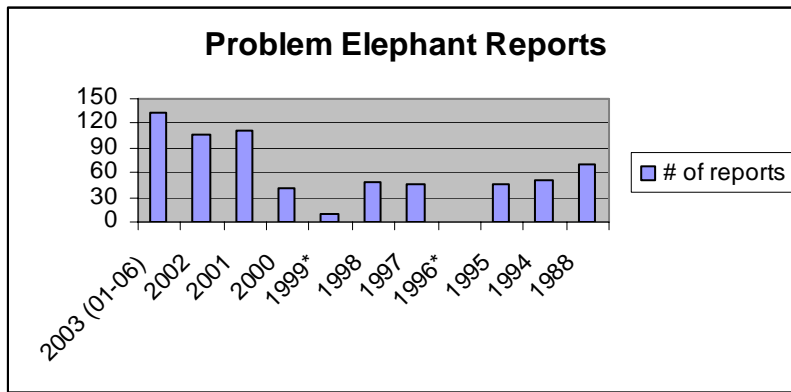
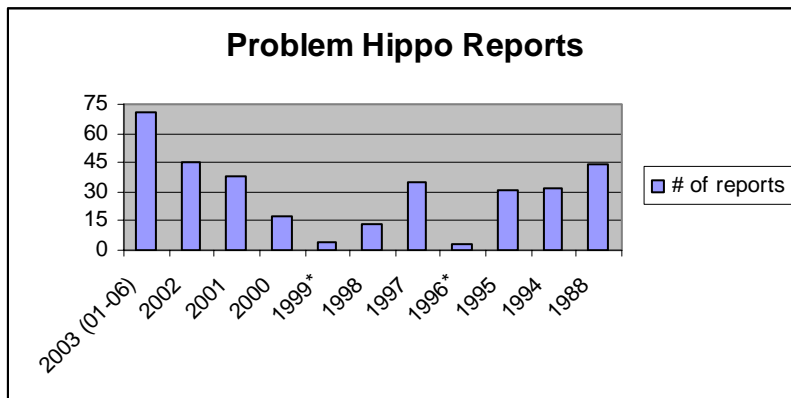


Figure 8.



Problem-Animal Reports from Chiefdoms

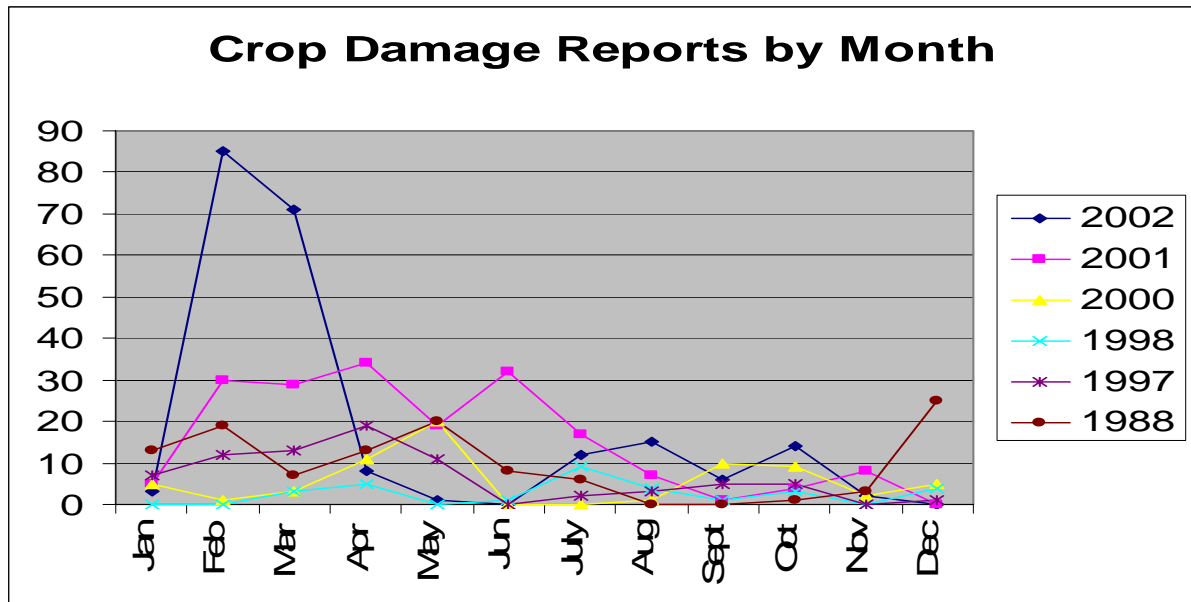
The highest number of problem-animal reports (for the period 1988, and 1994-2003) came from Chief Kakumbi, followed by Chief Nsefu, Chief Malama, Chief Jumbe, Chief Mnkhanya, and Chief Msoro. There were slightly more problem-animal reports from Petauke GMA than there were from Chief Msoro, and a small number from other areas. This trend was generally supported by the information gathered in the interviews, as everyone interviewed in Chief Kakumbi, Nsefu, and Malama reported having encountered wild animals. All of those interviewed in Chief Sandwe also reported encountering wild animals, but the severity was not as extreme in other areas; the animals most frequently mentioned were baboons and bushpigs.

The record of reports from each chiefdom shows that Kakumbi consistently had the highest amount of problem-animal reporting. It should also be taken into consideration, however, that the offices for ZAWA, and LIRPD are located within Kakumbi, increasing the ease of reporting. Within Kakumbi, one of the current headman (formerly the Village Area Group, or VAG, chairperson), has been responsible for a large part of the reports coming from Kakumbi. The reports are not all concerning his fields, but because he can write in English, community members go to him with their complaints and he drafts a letter for them. While it is fairly certain that Kakumbi generally did have more animal problems than other chiefdoms, this difference may appear larger than it actually is due to the ease and efficiency of reporting from that location.

Seasonal Crop Damage from Problem Animals

Information compiled from problem-animal complaints in 1988 and 1994-2002 indicate that February through May is the most problematic season in terms of crop damage. The largest number of reports came in February, followed by a declining trend each month through May. July followed May in reports received, and December and June, and then January followed closely. The fewest reports were received in November, and increased consecutively in September, August, and October. (Figure 13). This information coincided with that collected in interviews, with the exception of information from Nsefu Chiefdom, which reported the highest number of incidences in Apr-Nov.

Figure 13.



Crop damage information is not included in every problem-animal report, because many complaints either were not assessed (crop damage information is recorded by the scout and turned into the wildlife authority for consideration) or they contained

incomplete information.²⁷ The most common reports of crop damage were to maize (34%), followed by sorghum (13%), groundnuts (10%), rice (9%), and cotton (9%). Sweet potatoes, bananas, and mangos all were at (5%). These results were similar to the information compiled from interviews, in which 19% of interviewees that provided information about which crop had been damaged reported maize, 12% sweet potato, 9% banana, 7% sorghum, pumpkin, and cotton, 5% groundnut, and 4% rice. (See figure 9 and 10). These results were basically expected, as the community utilizes about 70% of its cultivated land to grow maize and sorghum, the remaining 30% for cotton, sunflower and rice. Additionally, residents reported as late as 2003 that they gained almost 30% of their nutrition from wildlife foods.²⁸

Figure 9.

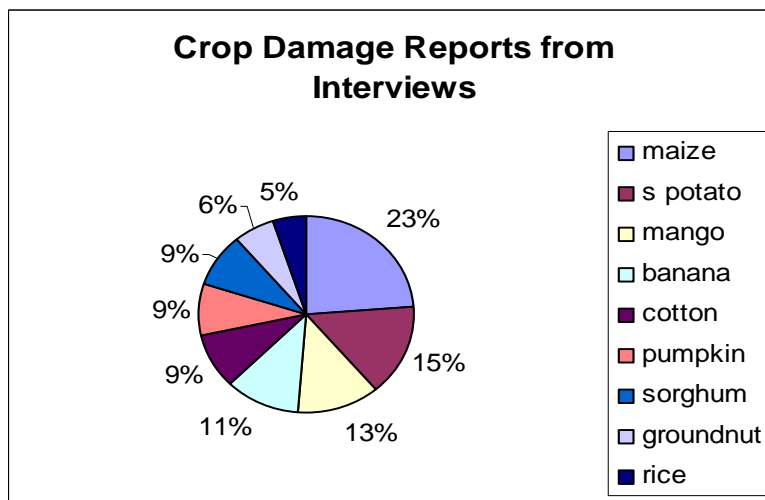
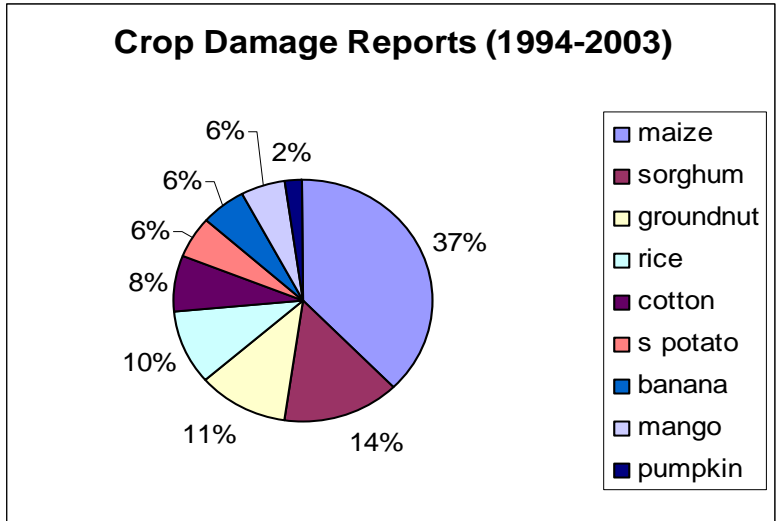


Figure 10.

²⁷ This failure to assess all reports of crop raiding by wild animals is one of the problems that has contributed to tense relations between the community and the parks authority. ZAWA was scheduled to train community scouts to use firearms so that they could guard fields at night, but it was never clear why they weren't being asked to make crop damage assessments. Possibly there was no funding to pay them, or alternatively, it was a priority of the central ZAWA offices that was not effectively disseminated to the regional office.

²⁸ Dalal-Clayton, Barry, and Child, Brian, *Lessons from Luangwa*, International Institute for Environment and Development, London: 2003.



Wild Animal Control

According to the information compiled from annual reports of the research division of LIRD and SLAMU, the number of animals controlled has remained relatively even since 1994 except for the year 2002, in which three times as many animals were controlled as any year previously. The data suggest a slight upwards trend since 1997, but this may simply be a symptom of poor record keeping in the past. The data for the first half of 2003 indicate a slightly lower incidence of animal control than that of 2002, but still higher than any year previous. It is difficult to conclusively determine from reports whether any trend exists in the number of animals controlled because there is no data prior to 1994, hence this information is compared with that collected in the interviews.²⁹

The information compiled from interviews coincides with that from reports in that it indicates problem animals were controlled more often in the past than they are

²⁹ Both elephants and hippos have been culled in the valley in the past. Culling, also referred to as cropping is a large killing of animals to reduce their population when it is so large that it threatens habitat. The last cropping of elephants in the 70s is well remembered; part of the research station is named Cropping, and sits on the site where the event took place.

currently. For the purposes of this survey participants were asked to compare the period before LIRD began (1988 in terms of community programs) to the period after, including the present conditions under SLAMU/ZAWA. Therefore, references comparing the past and present refer to these two periods for all of the information compiled from the interviews. When asked how problem animal cases were solved in the past, 30% of the solutions mentioned reporting either to the chief or directly to NPWS (commonly referred to as “Game”) and 25% reported that the animal would then be controlled (the other 5% reported that the animals would be scared away by scouts). An additional 9% reported that they would control the animal on their own and then report to NPWS. Consequently, 34 % of the possible solutions involved killing the animal. (Figure 11).

When participants were asked how they currently deal with problem animals 87% responded that they still report, (now to ZAWA) but only 6% reported that animals were now controlled; 49% reported that there was no response at all from the ZAWA. Alternatively, 41% reported that scouts would come and scare animals away. The other 4% did not indicate whether or not they reported. Participants were also asked what response they expected when they did report; of those that responded to the question (92%), 48% replied that they expected scouts to come and kill the animal. Additionally, 19% expected to be compensated, either with meat from the controlled animal, or with money to replace what had been damaged by the animal. 31% of the respondents expected scouts to scare the animal only and the remaining 2% had no expectation at all (either because people living in their area were used to receiving no help from ZAWA, or

because they had never been told that they would receive assistance in scaring animals).
 (Figure 12).

Figure 11.

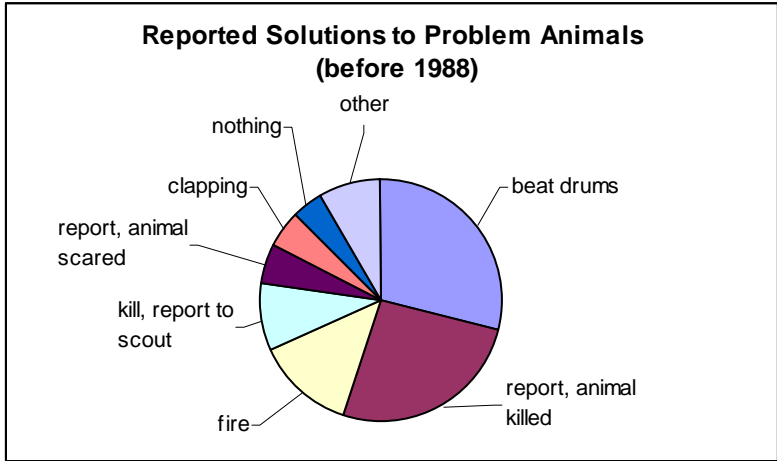
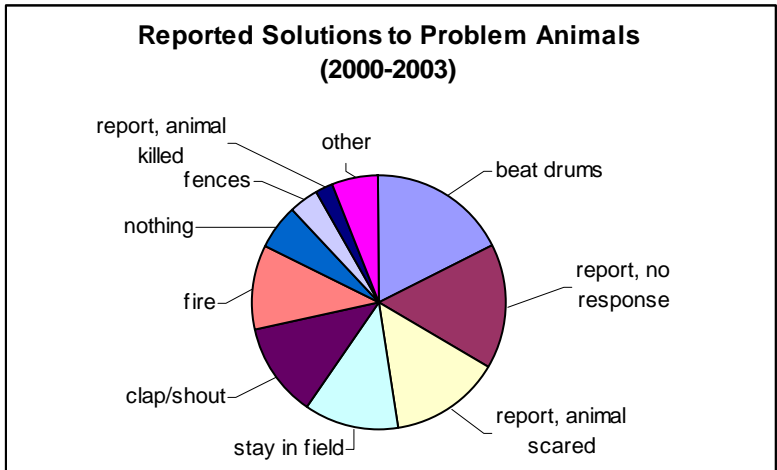


Figure 12.



The decline over the last five to ten years in the number of animals controlled raises the issue of what incentives encourage people to report some problem animals over others. The incentive to protect human safety has been discussed above; ZAWA’s behavior in controlling animals presents another possible incentive. ZAWA (previously NPWS) has the responsibility of deciding whether or not to control (kill) a problem animal. When these animals are killed they have historically been given to the

complainant as compensation for the crop that was eaten. Elephants and hippos are quite large, and therefore provide meat for multiple families when they are killed.

Most interview participants (88%) reported that in the past problem animals were killed, either by scouts after a report, or by the villagers themselves, who would then report to the scouts that they had killed the animals. Now, however, participants said that animals are rarely killed by scouts and that they are not allowed to kill any problem animals. Ninety five percent of interviewees that used to report to “game” (NPWS/ZAWA) said that they still report, but half of these also said that scouts no longer respond to their complaints at all. This has helped to create the present tension between villagers, who feel that their problems are being ignored, and the wildlife authority, which is charged with protecting the populations of wild animals. Included in the problem animal reports and crop damage assessments were reports from scouts sent out to guard crops against returning problem animals. A few of their accounts revealed the tenseness of the situation in SLAMU. In one report from 2001 a scout sent out to guard a field for two or three nights reported being harassed and threatened by the villagers who told him that if he did not kill an animal he would be beaten. The problem animal did not come the first night he was in the field, therefore he could not kill an animal, and so he had to return to the wildlife authority the next morning for his own protection.³⁰

Access to Meat

One last qualification regarding people’s incentives to report problem animals must be made. During the interviews participants were questioned about their

³⁰ Another cause of tension between the wildlife authority and the community was an incident in 1999 in chief Kakumbi where two villagers were shot by wildlife scouts investigating a case of three poached elephants. The scouts were trying to arrest the suspects in the village and they turned out to be armed.

expectations for assistance when they had wild animals invading their crops. Sixty-five percent of those that responded to the question said that they expected either compensation (meat, or money to replace crop/buy meat) or that the animal be killed (and the meat given to village members whose crops had been damaged). People living in this area are generally too poor to buy meat, and may not have transportation to the market, over a two hour drive from Lupande GMA, when they do have extra money. Although many people keep chickens they do not necessarily eat them, they either sell the eggs or sell the chicken to generate income. Other than domestic livestock there are not any viable meat alternatives as the cost for permits and hunting licenses prohibit all but a few people from eating wild animals (other than perhaps buying meat illegally from a poacher).

I will discuss the issue of poached meat informally, as I was not able to broach the topic in interviews because of my relationship to the wildlife authority. I could have questioned people during interviews, but it is unlikely that they would have answered truthfully, and if they had it might have put them or others in danger of prosecution. Describing a few of the occurrences that took place while I was there will illustrate my general impression of the frequency with which people had access to poached meat.

The first event which caught my attention was one evening in July when two of the community based ZAWA employees that I worked with, Tindi Chimba and Malama Njovu were returning to the research station from conducting fieldwork and picked up a man hitching a ride. This is an extremely common occurrence, almost every single trip we made we would give between five and fifteen people rides for various stages of the trip. When the man, who was heavily intoxicated, got into the car Chimba and Malama

could smell meat, and asked what he was carrying. Realizing he had just made a costly mistake, he was reluctant to open his package, which contained buffalo meat that he had gotten from a friend. He was taking the meat home to his family. The man was arrested, the source from the meat identified and also arrested, and there was an attempt to discover who else had bought some of the meat, although I never heard if this was successful.

Two things were interesting about this occurrence. Firstly, the attitude of Malama and Chimba, who had to have the man arrested, were somewhat ambivalent. They thought it quite hilarious that the man had asked for a ride, the whole story actually was told as kind of a joke, but also, as ZAWA employees, they recognized their responsibility to turn him in. This attitude is similar to that towards poachers who are caught and stay in jail cells (barred rooms open to the outside air) at the research station. ZAWA staff is responsible for enforcing the law and trying to protect animals, the park, and their employment, but this does not lead to an attitude of harsh condemnation toward the offenders. The conversations that I participated in or witnessed mainly reflected an attitude of reproach and underlying sympathy, as if they understood the incentive for people to poach (meat, poverty, etc), but considering the punishment if caught didn't understand the individuals choices. In their opinion, the harm to these men's families when they were arrested is greater than the benefit that poaching would construe. This attitude is interesting, because, unlike the international view of poaching, theirs is not criminalizing to such a serious degree. Clearly everyone living in this community is familiar with the lack of meat. Limited (or non-existent) access to meat was the most common complaint I heard while in the South Luangwa.

Interview participants were questioned about what kinds of domestic livestock they can or do keep, and whether this provides them with sufficient meat. The types of animals kept varied from chiefdom to chiefdom. Generally the three chiefdoms adjacent to the national park do not keep as many domestic animals as those farther from the park. Interviewees said that this was because livestock would be eaten by wild animals (lions, leopards, and hyenas) or that they would be killed by sleeping sickness (trypanosomosis). Sixty two of the sixty three people interviewed said that they could not get sufficient meat. This is an issue of primary concern that local leaders have addressed to ZAWA; at least until this point, there has been little prospect of a solution. Inconsistencies arise when the expectations of communities are considered in relation to the actual progress that has been made in SLAMU. It must be addressed, however, as it greatly influences the reputation of the wildlife authority in the community.

Specific Problems Require Specific Solutions

In order to address the problems that my research revealed, such as the lack of meat and the strain that is consequentially places on community-authority relations, the differences between chiefdoms must be fully dissected. The settlement history has been influenced by ecological and social factors (some of these have been mentioned already, such as the health clinics, schools, and wells that drew more concentrated settlement in smaller areas), but it has also had an ecological effect. The densely settled villages closest to the park have highly strained relations with animals. Without looking at the history of the six chiefdoms, it is difficult to see how this problem arose, or how it can be solved.

The population of SLAMU is not a static population; if the current growth rate continues in some of the more popular settlement areas, competition for land and resource use could develop. Migration in and out of various chiefdoms (and the greater area) has significantly shifted the settlement patterns in the last 15 or 20 years. There have been several key factors that have influenced this shift, one of the most significant being the development in chief Kakumbi between the airport and the park entrance.

The paved road between the airport and the park entrance, which provided access for commercial poachers in the past, now provides an attraction for people settling in the area because it facilitates transportation, contact with tourists and with other villagers, access to schools, wells, and the health clinic. Similarly, other factors have proven just as powerful in encouraging people to leave certain chiefdoms. The most apparent example of this is between chief Kakumbi and chief Malama, which have contrasting migration histories. Malama has the highest elephant density in the GMA and is separated from other chiefdoms during the rainy season due to poor road conditions. Poor clinics, schools, crop conditions, and roads have encouraged many people to leave Malama and move to other more accessible chiefdoms. Kakumbi is the closest to Malama in terms of roads (Msoro also borders Malama, but there are few people living near that boarder.) Many of the people that I met in chief Kakumbi (where I stayed) were from Malama.

When I interviewed chief Malama he told me to look at all the empty villages (once inhabited areas no longer have mud homes; they are recognizable because of the large shade-giving mango trees that mark most settlements). The declining population relies on fewer fields, and hence there is a perception, and probably also a reality, of increased danger from wild animals. Crops are more accessible to animals, especially

hippos and elephants and more heavily protected. Animals are also more likely to pass randomly through human settlements if they are far and few between instead of clustered together in one area. Malama is, as of now, the only chiefdom with electric fences, and recently a method of elephant diversion has been borrowed from Zimbabwe. Chili oil is rubbed on twine, which is then strung on fences to protect crops from elephants. The twine fence could be pushed down in an instant if an elephant wished to do so, but the chili smell is thought to deter them enough so that they will graze elsewhere. Building these fences is a new endeavor and it will take some time before they are widely used, if they are indeed determined to be successful in pest deterrence.

Kakumbi, on the other hand, has a very different history. Directly adjacent to the park, Kakumbi is also plagued by problem animals. The road mentioned above, connecting the Mfuwe airport and the park, the ZAWA offices and several of the tourists lodges (the reason for both the road and the airport to begin with) has attracted a large population. Schools, clinics, and stores all line the road, meaning that living along it provides easy access to these places. However, higher population density also means higher crop density (even though these are away from the road). While animals are well aware to stay away from this area during the day, they also know that at night it promises food, especially during certain seasons of the year. One of the most heavily trafficked times of the year is mango season, from October to December, when many inhabitants reported nightly invasions by several species, but mostly elephants.

The differences between these two chiefdoms suggest there will need to be very different approaches to solving human/animal conflict. In Malama, there is a need for projects benefiting individual's attempts to repel animals, but in Kakumbi, this would be

almost impossible. If every field were surrounded by chili fences it is quite likely that the elephants would overcome their aversion to the fences at the prospect of so much food. On the other hand, if an area of land was designated as community crop land (either divided, or totally communal) this area could be more easily protected. There are many possibilities for this kind of situation. Either people could use the area to grow food in individual plots, or the area could be used to grow food for replacing that eaten by wild animals. Community members could guard the area at night, thereby creating another part time occupation to decentralize involvement in community/wildlife relations.