

Anthrax Related Wildlife Mortality Preliminary Report (2004 – 2010)

Introduction

In September of 2004, a total of 47 animals that included buffaloes and elephants died from anthrax (*Bacillus anthracis*) in areas from Serondela to Ihaha (WP/RES 15/3/1 of September 14 2004). As a result of this outbreak, the areas from Serondela to Ihaha were closed to the public. For the purpose of this report, only mortalities that were recorded from the time around July to December which is regarded as the anthrax period are used in the analysis from the year 2004 to 2010. It needs to be noted that this report will be mainly looking at data collected on buffaloes and elephants as they were and still the most affected during the disease active period. This is not to say that other animals are not affected.

Mitigation plans

As a measure to reduce and eliminate the effects of the disease in wildlife in future, the Regional Wildlife Office has put measures in place. These measures will be outlined below; however some of them include the Anthrax Action Plan, the Carcass Disposing Team and the Anthrax Workshop.

Anthrax Action Plan

This action plan was developed by the former Senior Veterinary Officer Dr Okori. The purpose of this action plan was to divide duties among the divisions, however as easy as it may seem on paper it is not always to implement this action plan on the ground as a result of challenges that we encounter as we move along. These challenges will be outlined under the challenges section of this report. The success of this action plan is dependent on a number of factors which in the past have led to the successful disposal of the carcasses. These factors are:

- Staff availability
- Vehicle and fuel availability
- Disposal equipment and reagents (chemicals e.g. formalin)

Table 1. The Anthrax Action Plan

| Item | Responsibility | Coordinator | Schedule in Weeks 2005 | | | | | | | | | | | | Collaborators |
|----------------------------------|----------------|-----------------|------------------------|---|---|---|---------|---|---|---|----------|---|---|-------------------------------------|---------------|
| | | | September | | | | October | | | | November | | | | |
| | | | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | |
| Wildlife Surveillance | DWC | Research | ■ | | | ■ | | | | | | | | Air-wing-DWNP Vet Unit-DWNP | |
| Stock Pile Wood Fuel | DWC | PAC/M&U | ■ | ■ | | | | | | | | | | Capture Unit | |
| Protective Gear | DWC | Supplies/Stores | ■ | ■ | ■ | | | | | | | | | Vet Unit-DWNP | |
| Disposal Equipment and logistics | DWC | Parks | ■ | ■ | ■ | | | | | | | | | BDF Private Sector | |
| Transport | DWC | Parks/PAC | ■ | ■ | | | | | | | | | | CTO-Kasane | |
| Animal Disposal | DWC | Parks/PAC | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | Veterinary Unit-DWNP | |
| Human Health Concerns | DWC | Parks | ■ | ■ | ■ | | | | | | | | | Ministry of Health Vet Unit-DWNP | |
| Disease Diagnosis | DWC | Research | ■ | ■ | ■ | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | NVL / DAHP | |
| Cross border Communication | DWC | DWC | ■ | ■ | ■ | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | Namibia District Administration | |
| Disposal Reagents and Chemicals | DWC | Supplies/Stores | ■ | ■ | | | | | | | | | | Admin-DWNP Vet Unit-DWNP | |
| Public Awareness | DWC | Parks/M&U | ■ | ■ | ■ | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | Private Sector District Council | |
| Strategy Review | DWC | Research | | | | | ■ | | | | ■ | ■ | | ALL | |

Anthrax workshop/meeting

On the 8th of November 2010 a stakeholders meeting on anthrax awareness was held. Present at the workshop was the private sector which comprised of safari companies. These were And Beyond Safaris, Chobe Chilwero, Bushtracks, Baobab 1 and 2. However I must say that the turn up of the private sector was disappointing as more invitations were sent compared to those who pitched. Government departments that showed up for workshop were Department of Forestry and Range Resources (DFRR), Botswana Defence Force (BDF), Department of Water Affairs and Department of Wildlife and National Parks. The turn up of the government departments was also disappointing compared to the invitations that were sent. The main aim of holding the meeting was to sensitise and bring awareness about the past and current anthrax situation in the Chobe region. Also of importance was to form new allies and to strengthen the existing ones by sharing ideas on what the best way forward is since these mortalities are not an issue for DWNP only because others may be affected either directly or indirectly. Concerns we raised about the longer time taken to respond to reports. These were addressed and resource constraints and lack of vehicles pointed out as the major constraints. Out of the meeting some lodges offered pledges in the form of vehicles for use during the time when we do not have any vehicles available

Anthrax team

Every season two teams of about 15 members are formed with the aim of working on a rotational basis. The team patrols the park especially along the river front for carcasses to detect carcasses early. Also the team relies on information from the BDF and game drivers about carcasses that they are able to find. Before the team can resume work, each member is put on a doxycycline treatment that they take until they leave the operation or for 30 days. However, a team cannot take more than 30 days on the field. In the financial years 2009/2010 and 2010/2011, it was not possible to form a solid team to perform the task of disposing off carcasses. For 2009/2010, the main constraint was staff availability where as for 2010/2011 the main constraint was transport and fuel situation in the district.

Operation Results

Main focus of this report is placed on buffaloes and elephants because they have been the most affected as they had the highest mortality rate compared to other species. Other species that were affected can be seen on figure 2. As is shown in Figure 1 the highest concentration of mortalities of both the elephants and buffaloes was in the regions along the Chobe River front in the areas between Serondela and Ihaha where the highest concentrations were. In areas away from the Chobe River, carcasses were found along water points such as in Linyanti. Of all the animal mortalities recorded buffaloes had the highest mortalities (219 carcasses) followed by elephants with 189 carcasses out of a total of 470 carcasses (Figure 2). It should also be noted that the number of mortalities have shown a decrease over the years six years since the outbreak. This is a positive sign that all the hard work that is put in on the operations is paying off. The sudden increase in the number of mortalities of elephants in 2010 should be looked into so that we are not caught off guard in 2011.

The most effect of mortalities on the populations of both elephants and buffaloes was felt on males as shown in Figure 3. The animals with unknown sexes were those that could not be identified either as a result of them being decomposed or difficulties in identifying. The reason I mention difficulties in identifying the sex of an animal is especially directed towards buffaloes which show sexual dimorphism in the horns at adulthood. The difficulties in differentiating between the two sexes should be experienced on buffaloes at sub adult and juvenile stages of their lives. The high numbers of carcasses with unknown sex (Figure 3 and 5) might be a result of longer periods of time between the time of death and detection time

which might be taken as a measure of effort put in detecting the carcasses. As already stated before that the greatest effects were in males, also there is a trend that shows that there is an increasing effect on the animals with aging (Figure 4 and 5) in both species. This is a reflection that the carriers of the disease were mainly adult animals which in turn passed it off to the young. As a mitigation effort, carcasses of all animals that were found were disposed by either burying (previously used method) or burning (the current method used). A total of 361 animals were disposed (Figure 6) compared to the 109 animals left undisposed. As previously stated, resource constraints were issues affecting the successful execution of the operation processes.

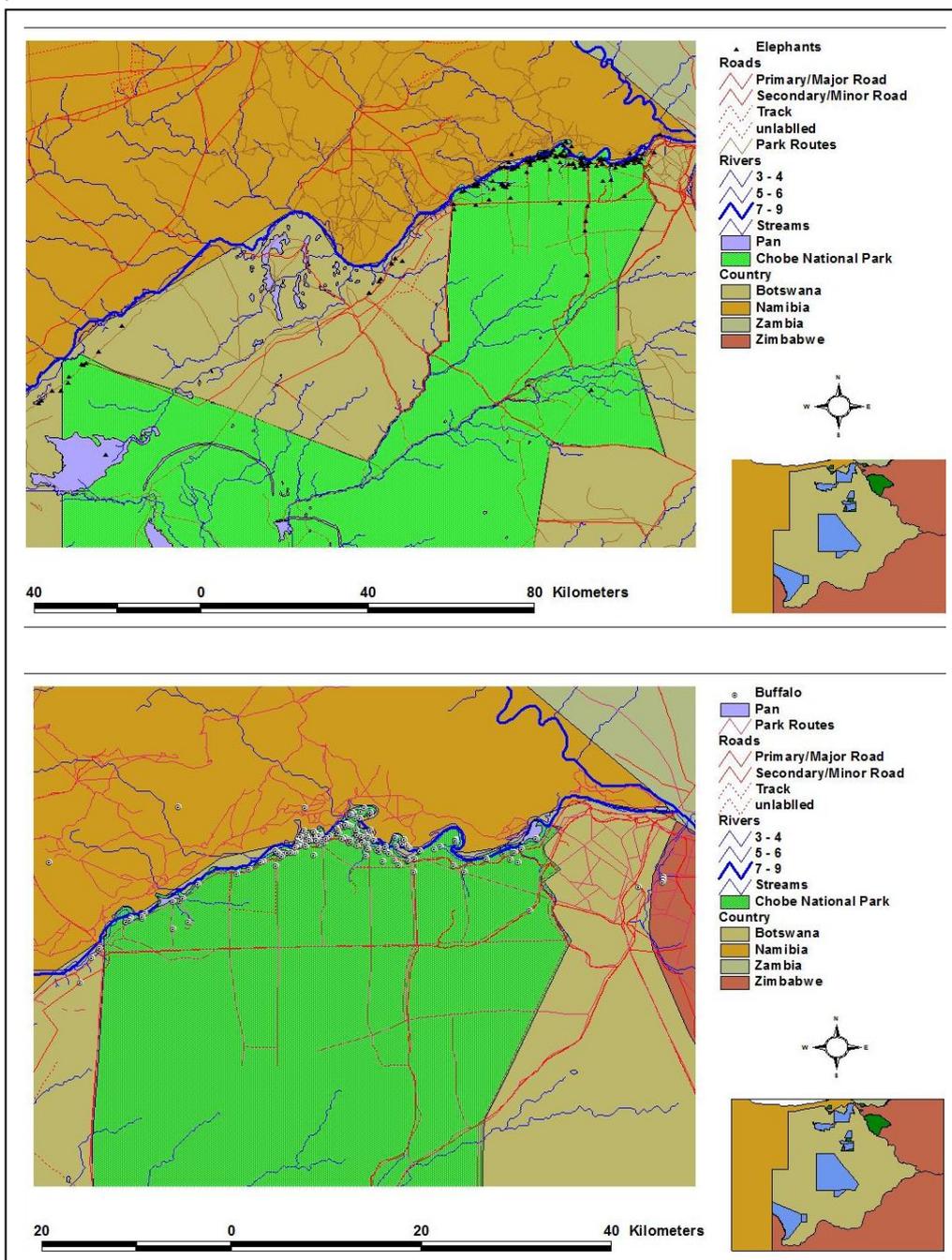


Figure 1. Buffalo and elephant carcass distribution in the Chobe National Park and surrounding areas from 2004 to 2010.

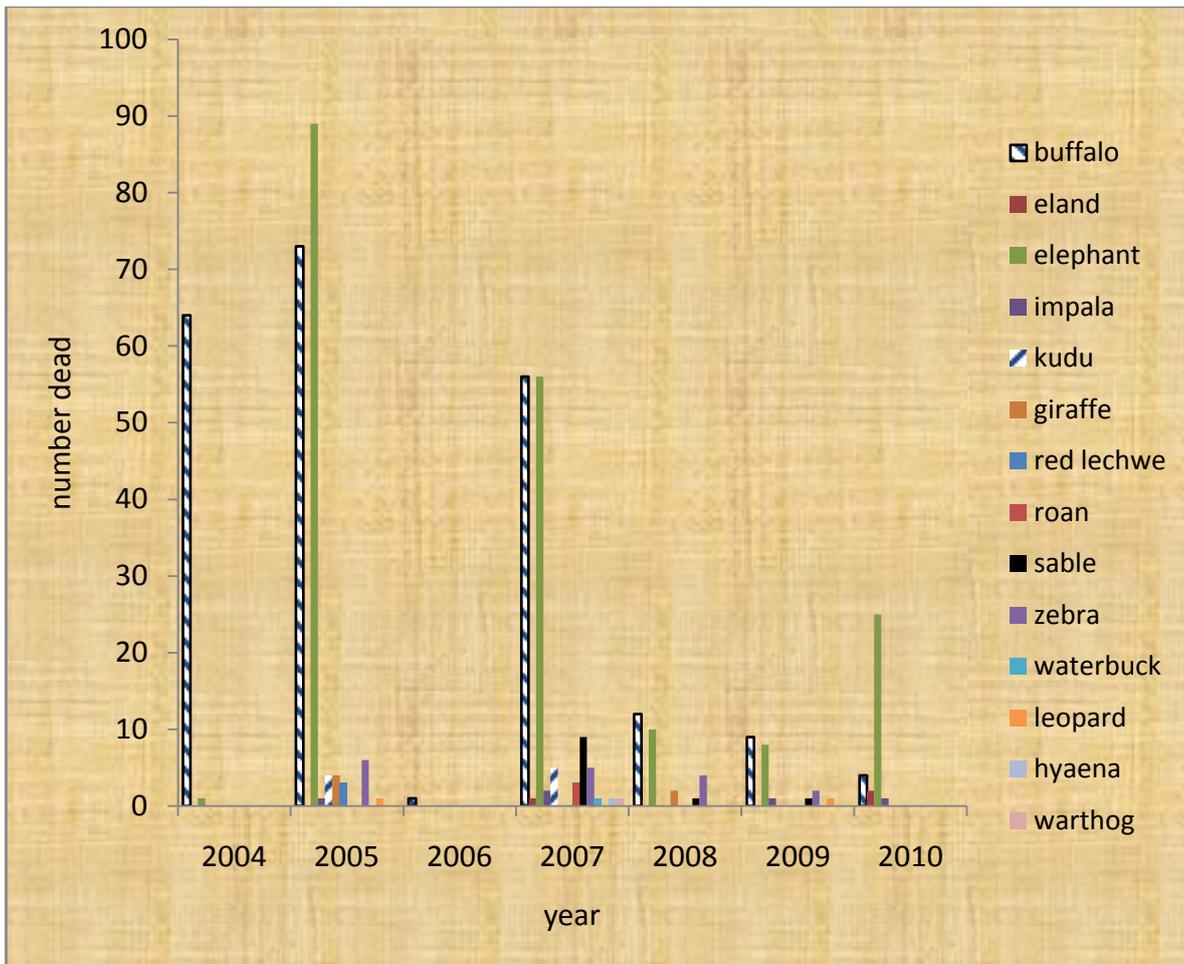


Figure 2 animals mortalities recorded during the anthrax season from 2004 to 2010

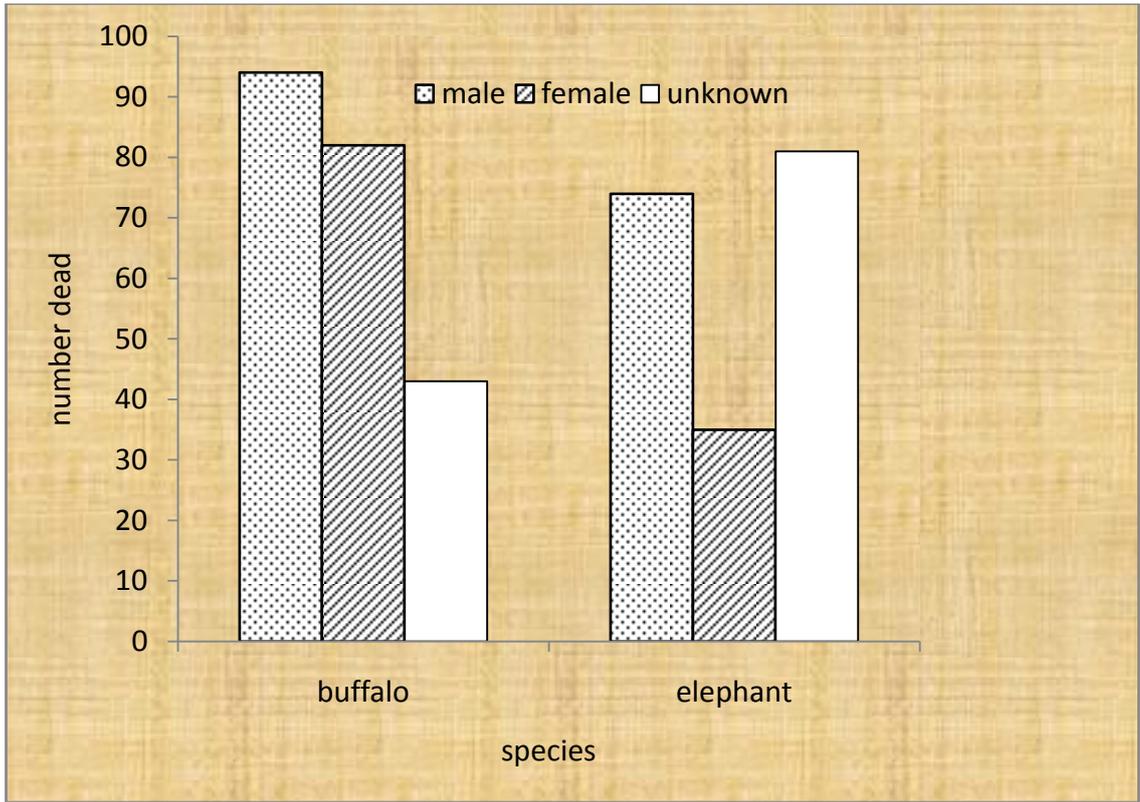


Figure 3 mortality rates in the different sexes in buffaloes and elephants

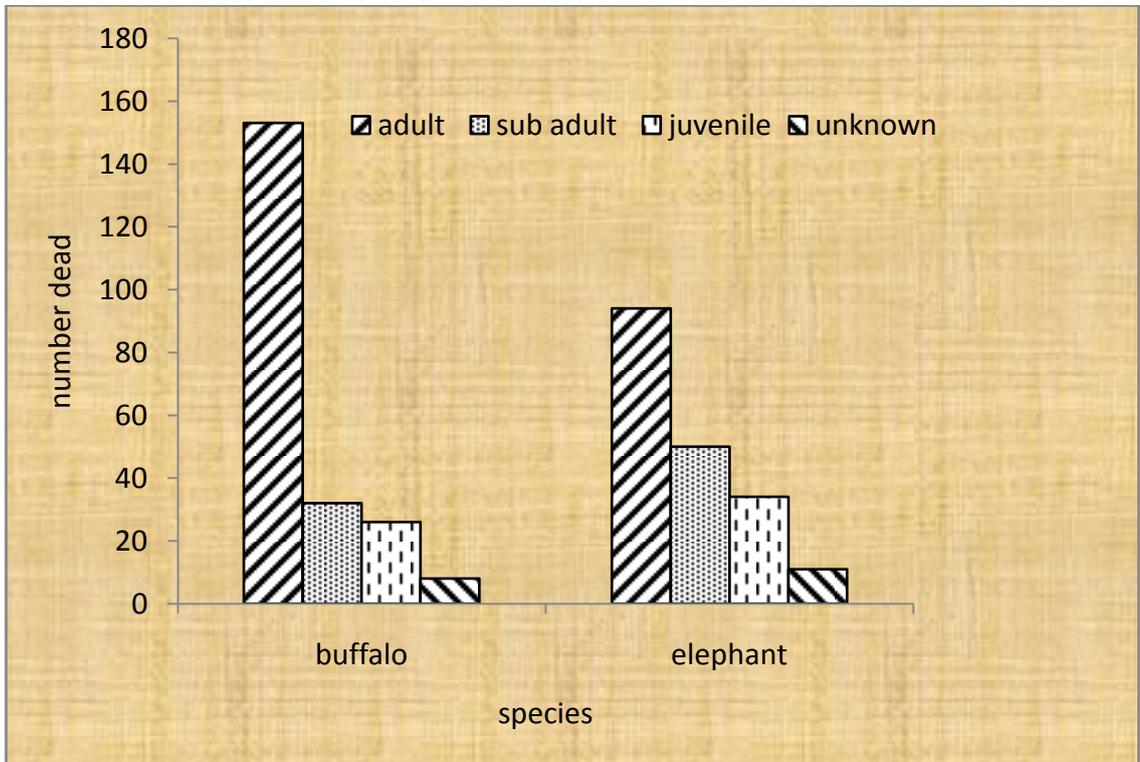


Figure 4. mortality rates in buffaloes and elephants at different life stages (age)

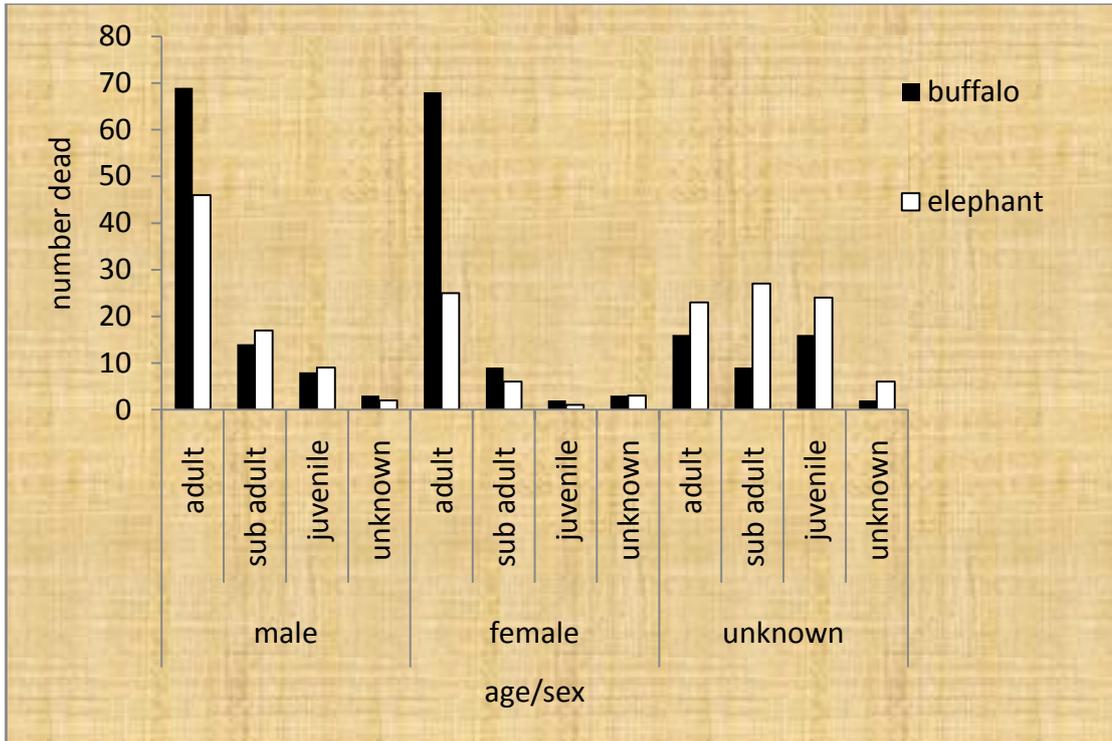


Figure 5. Analysis by sex and age

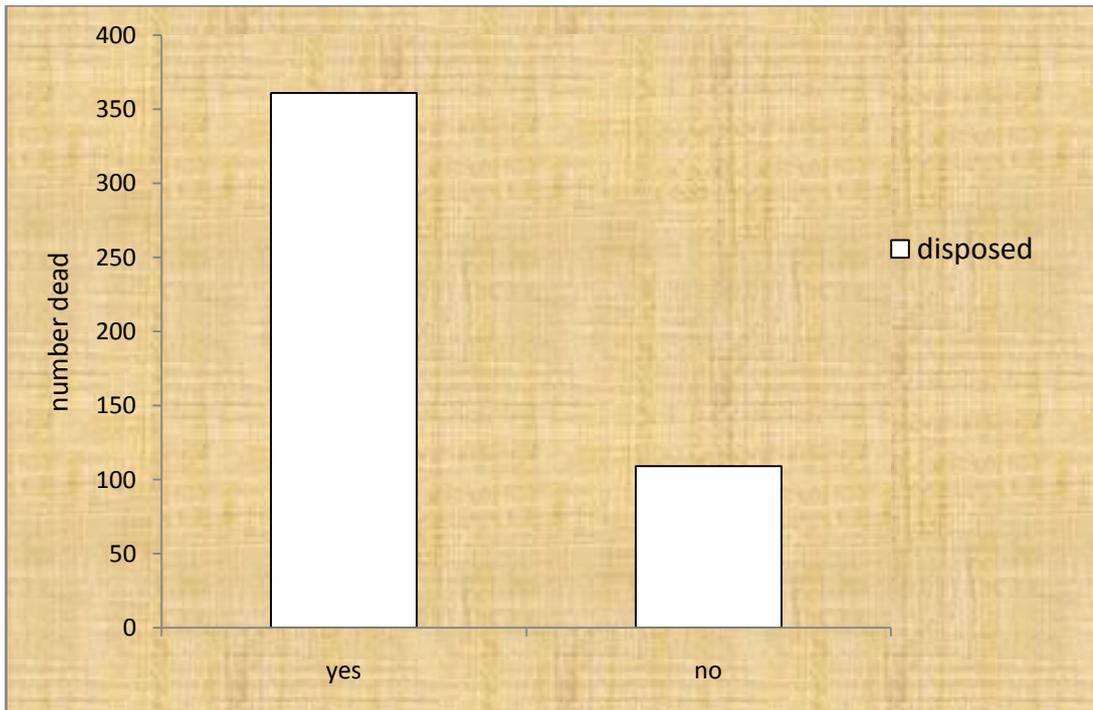


Figure 6. the number of carcasses disposed relative to those undisposed

Challenges

It should be noted that for any task there are always going to be challenges therefore like any task this operation had its own challenges. However, despite those challenges we were always to perform the tasks at hand. These challenges are listed below

- Staff availability: on its own the Research Division is manpower limited, therefore sourcing manpower from other divisions always proves to be a challenge. This is because it is either staff in those divisions is either on trips or away on off days.
- Vehicle and fuel availability: vehicle breakdowns along with fuel availability have the major constraints of the operation. The fuel situation in Kasane in has been worrisome because there are times when there is no diesel thus hindering the operation processes. This was in the month of October 2010 when there was no diesel. However it is my understanding the fuel situation is a national issue as Kasane is not the only place affected by fuel shortage.
- Disposal equipment: these in the past were bought, however of late it has been difficult to access funds that are meant for diseases and pest control because they had been used for other things not related to the purpose they were intended for. However, this was a lesson because for the years to follow these funds will be used earlier so as to avoid .them being used up before all the equipment can be bought. The problem is that even though these funds may be available to purchase all the equipment necessary for disposal, it can not be used to purchase protective clothing used during the operation. It should be noted that each team member is required to have some of protection during the operation. The issue here is it is purchased using funds that are used for purchasing uniform, therefore when funds are not enough to buy uniform for all staff members it becomes difficult to source protective clothing for the team members. Below is a list of the materials required for operations together with their quantities,

| Item description | Specification | quantity |
|--------------------------|----------------------|-----------------|
| House Gloves | PVC red/yellow long | 60 |
| Gloves leather long | 270mm | 60 |
| Respirator masks singles | | 60 pieces |
| Respirator cartridges | | 120 |
| Acid resistant overalls | Different sizes | 30 pairs |
| Gum boots | | 30 pairs |
| Dust masks | | 20 boxes |

Conclusions recommendations

Despite the challenges that we encountered, they have not always prevented us from successfully performing our tasks to the best of our abilities given the limited resources that we have at times. As the results suggest, the population of both the elephants and buffaloes are mainly affected at adulthood stage. Therefore, we need to come up with mitigation measures that will control the adult population since they appear to be the carriers of the disease. Alternatively, the predator/prey interactions in the areas affected needs to be understood to determine whether there are few predators hence the out break was a mechanism for putting stability on the already stressed environment of the Chobe River front thus allowing the environment to recover. Also of concern is the method of disposal that we are currently using. At the moment there has been nothing done to determine what the effects of disposing these animals has on the vulture population of the Chobe area (another threatened species).