The Ethics of Managing Elephants

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ABSTRACT
If humans may indeed legitimately intervene in conservation areas to let nature be and to protect the lives of all the diverse individual animals under their care, then the management of elephants must be legitimate as part of the conservation of natural world diversities. If this is so, to what extent are current management options ethically acceptable? In this article I address the ethics of the management options available once the judgement has been made that there are too many elephants in a conservation area. I evaluate the ethical acceptability of four options, i.e., the simulation of nature, translocation, contraception, and culling. I furthermore ask whether the harsh blow of culling under very specific conditions can be softened by the taming and training of African elephants. I then examine the ethics of decision making about these issues. Before I do so, two issues must be discussed that decisively influence the management of elephants. The one is whether it is ethically justifiable to fence in elephants. The second is the ethical requirements of the scientific practice that informs management decisions. In the article I come to the conclusion that all four options are ethically flawed. All four require some violation of the important injunction to let nature be and to treat individual animals with respect. However, to do nothing and allow a loss of other species violates the important goal of conserving natural world diversity.

The Ethics of Managing Elephants

1   Introduction[1]

In most places in Africa where elephants in conservation areas are protected from poaching, their numbers tend to increase steadily at a rate of 5 to 7% per year. From 1967 to 1994 the Kruger National Park in northeastern South Africa annually culled approximately 500 elephants to keep their numbers steady between 6,000 and 8,000. This was based on the conviction that the massive park of 19,000 square kilometers has a "carrying capacity" of around 7,000 elephants. This practice of culling based on quotas set by annual aerial counts was stopped in 1994, after the management was confronted by angry animal rights and animal welfare groups. Management promised that the policy of the park would be reviewed. Now, many years later, the Kruger National Park, is still in the process of reviewing their elephant management plan. In the meantime, elephant numbers have grown to more than 12,000. Some conservationists are crying wolf about the impact elephants have on the vegetation and are predicting a loss of other species as a result of what they observe to be the destruction of the habitat. Others are saying that the Kruger National Park does not yet have an elephant problem, but can actually accommodate substantially more elephants. Which messenger is proclaiming a false message? Only time will tell.

In this essay I want to address the ethics of the management options available once the judgement has been made that there are too many elephants in a conservation area. I will discuss this issue in the light of the following assumptions about human intervention in conservation areas that have implications for the management of elephants. These assumptions, argued for elsewhere, are as follows.

1. Humans have already massively interfered with nature over many centuries, harming or destroying many wilderness areas. For this reason we ought to intervene responsibly to conserve wilderness areas in as natural a state as possible for current and future generations.

2. The conservation of natural world diversity should be the broad, overarching goal of the conservation of wilderness areas. This goal requires an ethics that gives priority to the effects of human actions on the well-being of ecosystems of various scales. An environmental holistic ethics sometimes requires us to sacrifice the interests of individual living beings for the sake of the larger life-enabling and life-sustaining wholes. Every human being, alive now and in future, must have an opportunity to visit such wilderness areas and observe the splendors of the rich diversity of the natural world of the African savannah. This wilderness reconnects us with our evolutionary history.

3. Humans have a moral responsibility to treat individual animals humanely. Elephants deserve a special moral status within the animal kingdom, as they have some of the most complex sets of behavior and intricate inner lives of all animals. The relative moral standing of animals is determined inter alia by the complexity of the behaviour, consciousness, and characteristics of the species. For this reason, there is no convincing reason why elephants deserve a moral status similar to humans, as they are much closer to other animals than to humans. The moral responsibility to treat animals humanely translates into an individualist consequentialist ethical view, through which human actions are judged unethical if they produce harm, suffering, or death to individual animals without sufficient justifying reasons. This view is trumped, however, by the ethics of environmental holism mentioned above that champions ecosystems that enable and sustain the lives of individual animals and species.

4. The legitimacy of the conservation of wilderness areas can be established partly through benefiting the people most closely affected by conservation in their daily lives: those who were removed from land in order to establish conservation areas and those who often bear the cost of conservation by living in fear of African wildlife crossing boundaries to raid their crops, kill their cattle, and harass or kill their kin.

If humans may indeed legitimately intervene in conservation areas to let nature be and to protect the lives of all the diverse individual animals under their care, then the management of elephants is legitimate as part of the conservation of natural world diversities. If so, to what extent are current management options ethically acceptable? Do the simulation of nature, translocation, contraception, and culling deserve the same ethical endorsement, or are some of these methods superior in our ethical judgment? In the light of the above moral views, all four options are ethically flawed. All four require some violation of the important injunction to let nature be and to treat individual animals with respect. However, to do nothing and allow a loss of other species violates the important goal of conserving natural world diversity. These provisional remarks signify that the topic of elephant management has brought us into the real world, where decisions can often only strive to realize the best of several bad options. The best option by far is not to interfere with the lives of elephants, to respect each elephant life, *and* to conserve all individuals belonging to other species, whether plant, mammal, reptile, insect, fish, or whatever. There are compelling reasons and specific circumstances why these goals cannot be simultaneously achieved.

In this essay I will evaluate the ethical acceptability of four options for managing elephants, i.e., the simulation of nature, or the translocation, contraception, and culling of elephants. I ask whether the harsh blow of culling under very specific conditions can be softened by the taming and training of African elephants. I then examine the ethics of decision making about these issues and conclude by comparing the so-called "elephant problem" with the much more serious "human problem." Before I do so, two issues must be discussed that decisively influence the management of elephants. The one is the question whether it is ethically justifiable to fence in elephants. The second is the ethical requirements of the scientific practice that informs management decisions.

2   Should elephants be fenced in to avoid conflict with humans?

We live in an imperfect world where humans have so populated the earth – from 1.480 billion in 1895 to 5.384 billion in 1991 – that the spaces and habitats available for wildlife have shrunk dramatically. Gröning comments that the "greatest threat to elephants …comes from the alarming shrinkage of their living-space as a result of the human population explosion" (Gröning 1999, pp. 454, 458). Their numbers have already declined in the 20th century from an estimated 20 million in Africa at its beginning to only about 700,000 at its close.

A world in which elephants can roam free and unhindered does not exist anymore. They are at our mercy in specially created sanctuaries. In some conservation areas without fences they also inhabit limited peripheral areas. Unless humans make large areas of land available that far exceed the size of all available conservation areas, elephants can only survive in spaces currently demarcated for the conservation of wildlife.

Many people believe elephants must be fenced in because destructive conflict between humans and elephants is inevitable. Sitati (et al) state it simply: "Wherever people and elephants coincide, …human–elephant conflict will occur." Observations in their case study, in the TransMara district in south-west Kenya, show that "both humans and elephants have suffered injury and death as a result of their interactions." They describe the conflict in the area of their case study as "a model of

a common situation across Africa where elephants and people co-exist in disharmony" (Sitati *et al* 2003, pp. 675, 669). Conflict between humans and elephants is indeed an important African problem. Osborn and Parker (2003b: 80) say that human–elephant conflict is "a major concern for wildlife management and rural development initiatives across Africa." According to Ginsberg (2002: 1189), eighty percent of Africa's elephants live outside protected areas. If in future elephant population numbers increase whilst habitat continues to decrease, "conflict with humans may replace poaching as the major threat to the persistence of large, free-ranging herds of elephant."

Elephants are often the cause of significant economic losses for humans. Raman Sukumar (2003: 363) confidently states that the economic losses of human-elephant conflict "runs into several ten of millions of dollars each year across the two continents (Africa and Asia)." There is no doubt that elephants endanger the livelihoods of many rural African villagers. Ferrel V. Osborn (2002: 674 – 677), for example, did research on effective elephant repellents to help people cope with the threats elephants pose to their lives. The people involved in Osborn's research had serious problems with elephants endangering their livelihoods in the communal lands in the Sebungwe region of Zimbabwe next to the Sengwa Wildlife Research Area. In Northern Cameroon, Weladji and Tchamba (2003: 77, 78) have found that several species of wildlife inflict "substantial losses on crops and livestock." The damage to crops affected mainly the crops of staple foods, thus "affecting food security." The main culprits were elephants and baboons, with elephants being "responsible for the greatest percentage loss to crops."

In an interesting ethnographic study, Renee Kuriyan (2002: 949 – 957) found that Samburu pastoralists had both appreciation for elephants, as well as anger over the destruction they cause. The Samburu in northern Kenya experienced the costs of elephants as "occasional conflict over water and human or cattle deaths," while the elephants also benefit them as they "create paths to water, dig dams, and break branches that people can use for firewood." Clearly the losses outweigh the benefits.

When elephants cause economic losses for humans the consequences for elephants can be severe. Some of the most vicious recorded human–elephant conflicts occurred in the Eastern Cape province of South Africa in the early 20th century between commercial farmers and elephants. These elephants later became the nucleus of the current population in the Addo Elephant National Park. After a professional hunter, commissioned by the government, failed to kill all the elephants, the government set aside a small area as sanctuary for the remaining 15 elephants. The game ranger described them as "panic-stricken, revengeful giants," as a result of "continuous persecution (that) made the elephants cunning almost beyond belief and extremely vicious under certain circumstances. No wonder they had the reputation of being the most dangerous elephants in the world" (National Parks Board of Trustees of South Africa. (n.d.): 9–15)

To protect elephants and humans from one another, fences become a preferred option. Whitehouse and Kerley (2002: 247) see the solution of human–elephant conflict simply: "Protection of elephants that are coming into conflict with humans cannot be achieved by giving the animals protected status on paper or geographically; a secure barrier between the elephants and humans is needed." We live in a world overpopulated with humans, where human food crops are more attractive food for elephants than the vegetation of the African savannah. Fences protect humans and elephants from conflict that lead to loss of life on both sides. Without fences, elephants will be the losers over the longer term.

3 Ethical requirements for "elephant science"

The question, "Are there too many elephants in our conservation areas?" seems deceptively simple.

To answer this question requires a complex judgement, informed by inputs from different sciences. Why does this simple question resist a simple answer? Why do elephant researchers face ethical requirements in their scientific practice?

One factor complicates any science about elephants, i.e. there are huge gaps in our knowledge about them. These gaps must be honestly acknowledged and be made the focus of continued research efforts. We do not have enough reliable data and information available about the lives of elephants and their habitats in previous centuries when they, and not us humans, dominated Africa. This lack of reliable, detailed knowledge about bygone eras implies that we do not have benchmarks or standards for comparing current elephant impacts on the different kinds of environments with the impacts elephants had on those same areas in the past.

Not only do we have limited reliable scientific knowledge about the past worlds of elephants. Much of the knowledge about elephants gained in the past 50 years is fragmentary, specialized, and narrowly focused. Some studies were done by elephant researchers using anthropological methods, others were done by zoologists or botanists, still others by ecologists. The results of these studies cannot be easily integrated, as the environments & ecosystems & habitats where elephants were studied differ, the scientists used a variety of scientific methods, and they asked different kinds of questions about elephants.

To understand both the role of elephants within ecosystems and their impact on biodiversity we need more than sharply focused research projects from narrow disciplinary perspectives. Not even a multi-disciplinary approach is sufficient in which scientists from different disciplines separately investigate an aspect of the elephant problem in terms of their own disciplinary theoretical framework. The complexity of the issues raised by the role of elephants in ecosystems and their impact on biodiversity is so vast that the combined knowledge, skills, and research tools of diverse specialists are required to develop shared theoretical perspectives to guide detailed empirical investigations. Such research must be guided by specific scientific virtues to develop a reliable elephant science to inform conservation management decisions. For example, different kinds of scientists must investigate different aspects of elephants, as well as observe the dissimilarities of their eco-systemic and environmental contexts. In the Kruger National Park in northeastern South Africa, for example, the range of issues to be examined to enable responsible decision-making for dealing with an overpopulation of elephants include: the role of fire in the regeneration of vegetation, the role of artificial waterholes in decreasing the mortality rate of elephants, the functions and effects of the feeding patterns of elephants, the role of the feeding patterns of other herbivores on the regeneration of vegetation, the role of droughts and floods in keeping elephant numbers down, all other factors influencing the regeneration of vegetation, the factors impacting on the birth rate of elephants, etc. Although detailed study of such issues is needed, the approach, methods and results of the different projects must be debated amongst the various scientists working on aspects of elephant lives within the broader context of their ecosystems in an attempt to reach consensus on integrating results. Perhaps ecologists should be the project leaders by virtue of the wide scope and holistic view of their discipline?

The following scientific virtues can be extracted from the above requirements set for a reliable elephant science. In dealing with a complex ecological issue the ability to view matters holistically and to integrate perspectives and information from different disciplines seem crucial. In this context the role of broader theories for interpreting the nature and functioning of ecosystems becomes important. The extent to which these theories are either still speculative or reasonably well confirmed by evidence must be weighed and factored in. Scientists must have an openness for new information, new approaches, and new evidence. An awareness of the fallibilist nature of all scientific knowledge and the provisional nature of all research results must engender a willingness

to review one's pet theories and to revise assumptions and results. Fairness to all stakeholders involved in the research and concern for the interests of all living beings affected by the outcomes require that scientists must ask penetrating questions to ensure all perspectives on an issue have been included and all possible information has been taken into account.

When conservation managers consider culling elephants because they are too many for a specific conservation area, they have an ethical responsibility to elephants, human stakeholders in elephants and conservation, other species, and ecosystems to use science in an ethically responsible way. If not, they might be making decisions based on prejudice, casual observation, or even high quality, but one-sided scientific information based on the tunnel vision of scientists.

4   Options for limiting elephant numbers

Once conservation managers have been convinced that there are too many elephants in the conservation area under their supervision, they have four management options available for limiting elephant numbers. Those are (i) any actions that simulate nature's own processes for limiting elephant numbers, (ii) the translocation of excess numbers of elephants to other conservation areas, (iii) the use of chemical substances to effect contraception in elephant cows and thus limit the birth rate of a specific elephant population, and (iv) the culling of elephants to limit numbers to the ideal amount of animals, which managers judge a conservation area can accommodate. To what extent are these options ethical and feasible?

4.1   Simulate nature

This option has as a goal to let nature be, to allow natural ecological processes to function as they did for millions of years before any human intervention took place. A major spoke in this wheel is that most conservation areas today are smallish tracts of land in the midst of agricultural or urban zones, where wildlife is not allowed. Human intervention with wildlife by means of land occupation is so massive that conservation areas are too small to allow large-scale supposedly self-regulating ecological processes to operate over vast areas as they did for most of the earth's history until a few centuries ago. One smaller-scale strategy is to eliminate all forms of human intervention in conservation areas that made those areas unnatural, such as artificial waterholes in drier areas of conservation areas. Eliminating waterholes might in any case be required for other ethical reasons, but as yet there is no convincing evidence that such removals have either stabilized or reduced elephant numbers substantially in conservation areas. Thus, this suggestion has not yet been proven to be a feasible management option for limiting or reducing elephant numbers. Nevertheless, this option may be an important one to record and implement so as to judge the long term consequences for an elephant population.

A second more radical suggestion for simulating nature is a suggestion to kill young calves between the ages of 4 and 8 years old. The reason supporting this suggestion is that culling this group is merely simulating what would happen to this vulnerable age group in the elephant population during a severe drought. They would be some of the first ones to die anyway. Although this might be true, it is still a drastic *human* intervention through lethal means that would cause major suffering to the mothers and the other members of an elephant herd. Traumatizing elephant herds through human intervention known to them might also affect their behaviour towards humans. A variant of this proposal, i.e. to kill young cows just before they have their first calves, has the same ethical difficulties (see Whyte, 2001: 153).

4.2   Translocation

Translocation is a high risk operation. The challenge is to transport the largest land animal in the world that can weigh up to 7 tons or more. Translocation traumatizes elephants in several ways. The trauma begins with a helicopter flying intimidatingly low over their heads and the elephants being darted. The older cows are darted first to ensure the matriarch goes down quickly. This practice confuses and disorients the younger ones and they thus do not run off, but stay close to the matriarch. The powerful anesthetic drug M99, of which a few drops can kill a human being, takes between 6 and 10 minutes to knock out an elephant. Obviously the elephants are aware of being drugged and that they are losing bodily functions and consciousness. When the elephants awake, they find themselves inside a cramped steel compartment, with humans both injecting them to keep them sedated and prodding them with electric shocks to move them into position.

The captured elephants travel for hours in a semi-sedated condition until they are loaded off in a strange place they don't know. Once there they are disoriented – their vast store of knowledge about the physical features, feeding areas, and waterholes of their home range has been disabled. They must start all over again, this time without their family and bond groups that they regularly met with great excitement and intense communication. Sometimes they even formed a larger herd with them. In translocation operations, reliable and exact selection of a smallish herd is difficult. Some family members might have wandered off on their own, or might be socializing with another herd close by. The capture team deliberately selects for size (a smallish herd) and location (conveniently accessible for large trucks). Selecting a herd from a helicopter can be unsuccessful and some close family members might consequently be permanently separated from the herd despite the best intentions of a capture team.[2]

Katy Payne's description of a bond group explains why incorrect selection of a group to be translocated can so easily happen. "A bond-group consists of two or more families led by closely associated matriarchs who spend 35 – 70 percent of their time in close proximity." She refers to the fission-fusion nature of elephant societies, "affiliations form, dissolve and re-form opportunistically, providing evidence of mutual recognition in a large social network" (Payne 2003: 64, 66).

If one weighs and compares the costs and benefits produced by culling or translocating elephants, the limited trauma of translocation (and possible separation of members of a herd) is not as bad for elephants as to have their lives terminated through culling. For this reason, the expensive procedure of translocation is ethically preferable to culling. Although the financial cost and required expertise might in some cases prohibit the use of this option, a far more important factor almost excludes translocation as a serious alternative to culling. Human encroachment on elephant habitat has vastly diminished the land available for elephant relocation. Only small pockets of land are available for the specialized needs of elephants and only some parts are properly fenced, which is a high cost as well. Where not fenced, conservation areas invariably experience elephant-human conflict, as our two species do not comfortably co-exist.

In most cases, available land for elephants in Africa is populated with elephants already, so vacancies in elephant habitat are scarce. Ian John Whyte, a researcher at the Kruger National Park in South Africa, says that "the markets for such animals are extremely limited. Current demand is in the order of 60 animals a year which could not serve as an alternative to larger scale methods" (Whyte, 2001: 152). For this reason, translocation is an extremely limited option. This option mostly merely temporarily exports the elephant problem to other conservation areas and game reserves. These areas soon have similar problems of overpopulation. The exciting new idea of trans-frontier parks to be established all over Southern Africa will create at least some extra space for excess numbers of animals, although not nearly enough to accommodate the large numbers of excess elephants.

4.3   Contraception[3]

New research on elephants suggests that contraception might provide a long-term solution for limiting elephant numbers in game reserves (see Grobler, Delsink, and Lötter 2003). What makes this solution attractive is that it seems both humane and practical. How does contraception in elephants work? The first attempts at contraception unsuccessfully tried hormonal control. The vaccinated cows were induced into a state of false estrus, as a consequence bulls tried to mate with these unreceptive cows. This led to the cows being intimidated by bulls and they were separated from their herds and calves. Some calves even died because of this behavior. Scientists judged these effects to be unethical, as a result the research project was discontinued (see Whyte 2002).

Current experiments with contraception in elephants do not make use of hormones, but a vaccine called "porcine zona pellucida" (pZP). pZP is made from glyco-proteins present in the ovaries of pigs. The source for pZP is pigs slaughtered for human use as meat, so no pigs are killed specially for the purposes of manufacturing the vaccine. Adult elephant cows are darted with the pZP vaccine. The dart falls to the ground after the vaccine has been released into the elephant's body. The vaccine stimulates the cow's immune system to produce anti-bodies that prevent sperm fertilizing egg cells. Vaccination with pZP is safe for pregnant cows. It is difficult to determine which cows are pregnant. Some pregnant cows will thus be vaccinated. No pregnancy has thus far been affected and no abortion has been observed.

Initial studies have shown that one series of vaccinations can prevent pregnancy in cows for a period of up to 18 months. Two vaccinations four weeks apart are required to accomplish this. Some veterinarians have recently introduced a so-called "one shot vaccine" that can bring about contraception for a longer period, possibly up to five years. This vaccine is currently being tested and the first results are positive.

Contraception as method of population control in elephants raises four major issues. They are the efficacy of the vaccine, behavioral changes in elephant herds, the practicality of implementing such a program, and the ethical value of contraception as a method of population control rather than culling or translocation.

The first three issues are examined in a research project done at Makalali Private Game Reserve near Hoedspruit. For more than three years Audrey Delsink has led a research project to control Makalali's small elephant population of approximately sixty animals. Preliminary results show that the vaccinations are effective. No vaccinated cows have calved since the project started. Makalali's elephant population has stabilized on the desired number for the reserve. Delsink has observed the behaviour of the elephants over a long period of time and she knows every elephant by name and personality. She has not observed any change in the behaviour in the family herds led by the matriarchs. There is also no change in behaviour between the cows in the family herds and the much smaller herds of bulls. Bulls show no signs of any abnormal interest in the cows.

The research at Makalali shows that smaller game reserves can use contraception as a method to keep their elephant numbers stable. The vaccine is not expensive and a helicopter is not needed to dart the animals, as darting can be done from a vehicle or on foot. In reserves with small elephant numbers individual cows can be monitored. When pZP is used to stabilise a population, there is no reason why all cows should be vaccinated at the same time. Ideally, pZP will be used to limit the number of calves born, not to prevent all cows from becoming pregnant. This means that all herds will still have at least some babies being born regularly. The social structure of the herd will thus not be disrupted severely. The effect will be similar to the slowing down in birth rate induced in elephants by severe drought or the near complete depletion of food sources.

Contraception is clearly more ethical than culling, as no existing elephants are deliberately killed. When elephants are culled, whole herds are shot and killed by sharpshooters from helicopters. Contraception merely prevents elephants being born and thus can be administered to slow down their birth rate to reach the desired population size over a longer period of time.

However, can contraception be applied as a method of population control in elephants in the bigger game reserves like the Kruger National Park? What pZP cannot do, is to bring down the numbers in Kruger from the estimated 11,671 in 2003 to, let's suppose, a desired number of 7,000 elephants. pZP is only effective in keeping the numbers of elephant populations stable. However, there are good reasons to be optimistic that contraception might be the long term answer to keep elephant numbers constant even in the bigger reserves.[4] The reasons are as follows. pZP is a vaccine that causes no physical harm to individuals or behavioral disturbances in elephant herds. If vaccination with pZP can work for five years, it can be financially viable and be implemented practically. Elephants are territorial and highly social. Herds have home ranges and a herd generally stays together until it gets too big and a smaller group splits off. If one member of a herd is radio-collared, the movements of a herd can be tracked—as is being done already to determine the home ranges of herds. Thus, records can be kept about vaccination of cows in the herd. In a large conservation area like the KNP, managing vaccination might pose complex problems, but not impossible ones.

Darting elephants on foot in a big reserve like the Kruger National Park seems impractical if thousands of elephants need to be darted in dense vegetation with many predators lurking around.. Darting by helicopter might be expensive, but then translocation and culling are not cheap either. The Kruger National Park has an annual census of elephants by air – perhaps darting and counting can be combined? The possibility of a once in five years vaccination opens interesting options of reducing cost – not all cows need to be darted every year.

Contraception thus seems to be a promising alternative that might go a long way to satisfy opposition to culling. Contraception now promises a safe method of population control with no physiological side-effects or social disturbances. It might soon be administered by means of vaccination for a period of up to 5 years. But note the words used: "a promising alternative," "promises," and "might soon." We still have to wait for the outcome of long term scientific studies with strongly confirmed evidence on the effects of the vaccination on elephant physiology and social behavior. The logistics and cost of the vaccination are other complex issues that have not yet been sorted out. There is no ethical justification to use methods in an experimental stage, and not yet adequately tested, on large elephant populations. There are good reasons for caution when implementing new management strategies for elephant populations. Human understanding of the complexities of elephant life is not yet sufficiently advanced to be able to predict the outcomes of management interventions. The consequences of management interventions may also take several years to become manifest, due in part to the longevity of elephants and the complexities of their social structure.[5]

Contraception is not without its own ethical problems, though. This invasive method is a drastic human intervention in the bodies and lives of small female herds that form part of an elephant population. The possibility that contraception can cause sterility over the longer term must be examined, as well as the effects of cows that normally come into estrus and mate once every 5 to 9 years would now come into estrus every 15 weeks and mate without falling pregnant (Whyte, 2001: 164). Long term studies must monitor the possible effects on their reproductive physiology and their social behaviour in detail. The social effect of fewer calves on the size of herds might not be so problematic, as smaller herds (between 10 and 20) often have kin groups with whom they might rejoin if under stress. The more important issue is that young elephant cows might be denied the process of learning to become a mother through allo-mothering. If their own mothers and aunts

won't have any calves for five years or more, they might not get the chance to serve their motherhood apprenticeship properly before they give birth for the first time. Elephants do have to learn how to be mothers from their elders.

4.4   Culling

Culling is gruesome.[6] In an ideal world we would not even consider it. However, we live in an utterly flawed world. Selecting the best of several bad options is often the only responsible choice available to us.

Culling raises serious ethical issues: (1) Is it wrong to kill special mammals solely for the reason that they are too numerous? (2) If we do have to kill elephants, then which methods are the most humane? (3) Does the practice of killing the matriarch before the others cause unnecessary, though very brief, suffering? (4) What is the significance of elephants communicating their experience of culling through infrasound to other herds in a radius of approximately 10 kilometers?[7] (5) Will elephants that are aware of culling practices in or close to their home range become aggressive to humans and threaten tourists? (6) Is it ethical to involve many people in the complex logistics of culling and the removal and disposal of carcasses? Many workers are made co-responsible for the killings as they are needed to implement and execute culling by means of operations such as flying a helicopter, selecting appropriate groups, shooting and killing, slitting throats, removing carcasses, slaughtering and operating an abattoir, selling the meat, and disposing of waste material.[8]

In terms of our strong moral obligation not to harm or destroy animals of exceptional psycholochical, social, behavioural, and physical complexity that approximates our own human complexity, I want to argue that culling elephants can only be justified similarly to justifying killing human beings in a just war. As in a just war where the interests of the state, the larger community of citizens, override the well-being and safety of the individual, so the interests and well-being of a diverse network of ecosystems and the life forms they sustain can trump the interests of groups of individuals, if those individuals threaten the continued well-being of the greater whole. So culling, then, can only be ethically justified if a clear and convincing case can be made that it is *the last resort* for dealing with an urgent problem *after all other options have convincingly been shown to have failed.* Analogous to justifying a war in which fellow humans will be killed, culling can be justified only as an ethically flawed procedure to be employed under strict conditions. These conditions are as follows.

(1) Culling can only be employed to deal with a serious and imminent threat to the continued existence of the rich diversities of the natural world. The intention must be to protect other living beings and their habitats from destruction. Elephants are too special to be killed for anything other than the most serious and weighty reasons (Whyte, 2002: 299). Conservationist and natural scientist Ian J. Whyte (2002: 299) articulates this sentiment clearly, "To sit quietly in the close proximity of a herd of elephants who are going about their business is an emotional experience that cannot be described to anyone unfamiliar with these animals. Their sheer size alone induces a feeling of awe, and you will not have to sit for long before their intelligence, playfulness, compassion, and tolerance become evident. All of these attributes of elephants combine to instill in those lucky enough to have experienced them, a feeling of empathy that intensifies the longer that exposure to elephants lasts. These emotions are not comfortable bedfellows with the concepts of killing these wonderful elephants" (Whyte 2002: 299).

When only the weightiest moral considerations can justify the killing of elephants, a decision to this effect must be grounded on the best possible information. Reasons for culling elephants must be

firmly supported by the best available scientific information. One reason is that the behaviour and circumstances of these adaptable mammals vary quite dramatically. These variations, between elephant populations in different geographic locations, must be taken into account. For example, for Hanks (1979: 127) it is quite clear that "death rates in elephant populations vary not only throughout Africa but also within any one area or population as a result of environmental extremes." This makes intuitive sense, if one would compare extremes such as elephants in subtropical southern Kruger National Park with elephants in the desert areas of the Kaokoveld in Namibia. Good scientific information will also ensure that due care is taken not to blame elephants for habitat degradation caused by other browsers, fires of human origin, the effects of human management practices such as the installation of artificial waterholes, or a combination of such factors. A good example of this kind of nuanced scientific information comes from Jacobs and Biggs. They argue that "management practices such as increased elephant populations and a fixed fire policy have contributed to the decline of marula trees" in a particular landscape in the northern section of South Africa's Kruger National Park. Not only elephants, but the "combination of annual burning and herbivory prevents marula trees in the lower canopy from developing into the upper canopy" (Jacobs and Biggs 2002: 7, 10)[9]

In terms of the preservation of natural world diversities, the numbers of elephants appropriate for a conservation area ought to be set to balance elephant impact that modifies their habitat—to set up spaces that provide living opportunities for other forms of life—with their impact that causes destruction and degradation of the environment.[10] The interests of individual animals are subservient to the well-being of the larger whole. The optimum number requires a complex judgment in order to determine how many elephants are sufficient for them to fulfill their creative ecosystemic function of opening up woodland to establish habitat requirements, open up living space, and generate opportunities for other species to flourish. Cumming and Cumming (2003: 561) refer to large herbivores as "important ecological 'architects' or 'ecological engineers' …in African savannas that serve to structure and modify the habitat for other organisms." A different way of explaining the role of elephants is to refer to them as a keystone species, defined as a species whose "activities can affect the niches and population levels of a variety of less dominant forms" (Chadwick 1992: 81. See also Whyte 2002: 299). In the light of this role, the complexity of the judgement to determine how many elephants a particular conservation area can accommodate should not be underestimated. There are many variables to take into account and, seemingly, no general rules can be laid down for all climatic conditions and vegetation types. Michelle E. Gadd learnt from a study of the impact of elephants on marula trees, in three private game reserves barely 30 kilometers apart, that "woody vegetation communities and elephant impact rates vary spatially, even in close proximity, and cannot be extrapolated from one area to another" (Gadd 2002: 335). Aristotle's advice about the kind of judgement a virtuous person would make is apposite in a case where people deal with such dazzling variations as mentioned above (see Rosenstand 2000: 350). A virtuous person would respond neither too much nor too little, but would respond at the right time, in the right amount, in the right way, and for the right reason. Custodians of wilderness areas are required to make this kind of refined judgement that accurately fits the specific situation at hand.

Elephants have too high a moral standing to be killed for any reasons other than a serious and imminent threat to the continued existence of the rich diversities of the natural world. Factors that bestow moral standing on them are characteristics like their sheer size and power, their intelligence and memory, their gentle nature and range of emotions, and their capacity for complex social behaviour. The latter capacity makes their communities very similar to human communities. Societies capable of socially complex behaviour are defined as individualized, longitudinally stable, and capable of acquiring social skills through the "cultural transmission of habits and knowledge." Elephant society can clearly be described as socially complex, though less so than human societies (see De Waal *et al* 2003 and Payne 2003). Furthermore, their social bonds and their sense of death,

and in general, the close resemblance between their lives and ours give them a strong moral standing within the human world.

As humans we differentiate between the moral standing of living beings, mostly based on the level of complexity they express in their consciousness, individual behaviour, social organisation, and physiology. Most people have no problems eating meat from cattle and sheep, but would struggle to have dogs killed for human culinary purposes. Many people do not mind killing a rat that nests in their ceiling, but would find it far more difficult to kill a cat under the same circumstances. Elephants definitely belong to the upper class of animals that we judge to have high moral standing. Gröning and Saller express what is a typical human judgement of the elephant species as "the most magnificent of the land animals," that have a "special status amongst the large animal species," and they have "near-human qualities of character" (Gröning 1999: 11, 12). Although there are many resemblances between humans and elephants, the similarities must not be overstated and the differences should not be ignored. Humans differ from elephants even in respect to the aspects of the world we observe through our senses. David Larom (2002: 136), who did research on elephants' use of infrasound, gives an interesting perspective on this issue: "…when I consider the very different sensory world elephants inhabit, I am led to believe that their inner world must be equally strange to humans." These differences add up to support the judgement that humans and elephants definitely do not have the same moral standing. Elephants do not have equal moral standing with humans, as they do not match the intellectual, behavioural, or emotional complexities of our species that demand so much moral respect. Elephants are also not capable of the full range of moral behaviour that would make them moral agents on a par with humans. Yet, they are still important moral patients, i.e., beings to whom we owe considerable moral respect, although not to the same degree as to members of our own species.

(2) Culling elephants is only ethically acceptable when all other less drastic options have been proven to be fruitless for solving the problem of overpopulation. Culling can never be the first option, as destroying animals with high moral standing is a serious moral offence. Before culling elephants, all other options must have been explored to determine if the killing can be avoided at an acceptable cost to the interests of humans, ecosystems, or other living beings. For this reason, wildlife managers must peruse all scientific information on all aspects of the elephant problem and be clear in their minds about the goals and purposes of their conservation area. Only if they have explored all other options diligently and urgently to no avail, can they seriously consider culling. If culling is chosen, it must be the only option left to avoid a conservation disaster. Culling must genuinely be the last resort, the only method or procedure left to avoid harm to conservation efforts and to the maintenance of the rich diversities of a specific biosphere of the natural world. Only in such a case do the interests and well-being of the ecological units of varying sizes, such as ecosystems, trump the interests of individual elephants.

(3) In the process of making a decision on culling, custodians of conservation areas and their scientific advisers must be just and fair in their judgements on whether the point has been reached to start culling elephants. They must be able to produce accurate, sufficient, and convincing evidence that the impact of elephants on the habitat of other species and as well as on their own habitats has become destructive and excessive. Custodians, responsible for the natural world diversities in their care, who are accountable to concerned citizens everywhere, must sketch management alternatives, portray their discussions and debates of the alternatives, and indicate the decision-makers and the processes they are to follow to reach a decision. They must account for the processes and contents of their determination that the elephant impact in their conservation area has become dangerously destructive.

(4) If culling is to be done, well-trained, professional teams should be used to avoid prolonging any

suffering by killing the elephants as humanely as possible, in as short a time as possible. The methods used for culling must be as humane as current knowledge and technology allow. Issues that need careful attention are (i) how to reliably select a herd when all close family members are together and none has wandered off elsewhere, so as to avoid leaving some deeply traumatized herd members behind on their own; (ii) to know which animals to shoot first so that the herd does not scatter in all directions and some escape the culling with terrible memories of the killings of family members; resulting in deep and long-term trauma; (iii) to use only highly trained sharpshooters who almost never miss their target; so as to reduce the suffering of the elephants' last moments to a minimum; (iv) to avoid using substances like scoline that immobilize elephants so that they slowly suffocate to death whilst still being conscious;in other words, to prevent a cruel death; (v) to use methods of killing that is as instantaneous as possible so as not to prolong the suffering caused by a protracted process of dying. The Kruger National Park earlier used scoline (succinylcholine chloride) to cull elephants, but research revealed that that after a dose of scoline "the animal was fully conscious but paralyzed and unable to breathe, and therefore died of suffocation if it could not be brain shot immediately after becoming recumbent" (Whyte 2002: 303). However, when using rifles as an alternative method to kill elephants, it is unclear how easy it is to kill an elephant with one shot. Some people contend that one shot easily and humanely kills an elephant, while Gröning (1999: 334) says it is "particularly difficult to fire a shot into the brain that will be immediately fatal." This issue needs further careful consideration.

(5) The aim of the "last resort" of culling must be to establish a "just peace," i.e. a park without any form of culling or a conservation area where all other living beings, individuals and species, can prosper. If conservation managers choose culling they must ensure that they use just enough force to counter the threat, i.e. not one more elephant must be culled than is absolutely necessary. Thus, the number of elephants to be culled must be proportionate to the threat they pose. Only so many elephants must be killed as is necessary to protect natural world diversities.

If elephants are to be killed, then whole family herds and bachelor herds must be culled, as this is the most humane to all elephants concerned. One important reason for killing whole herds is that young orphaned elephants cannot become 'normal' elephants without the teaching and guidance from older elephants. The disastrous aggressive behavior of a group of young male adult elephants, orphaned through culling—that killed more than forty rhinos and 2 tourists in the Pilanesberg National Park between 1992 and 1997—was quelled by the introduction of six older mature bulls. Elephant adolescents need a hierarchy of seniority determined by age and strength to keep their levels of aggression within limits (Meredith 2001: 198). We can only speculate to what extent memories of their herd being culled affected the behaviour of the Pilanesberg juvenile delinquents.

One possible exception to killing all members of a herd might be to use the young elephants to populate elephant sanctuaries that aim to bring humans in close contact with relatively tame elephants. If such young elephants are humanely treated and properly trained, then they can fulfill ambassadorial roles to sensitize thousands of people to the magnificence of their species. The magnificence of elephants is apparent in their special qualities that cause wonder, awe, and amazement in humans, such as their massive size, their gentle social interaction, their acute sense of smell, and the impressive range of sounds they produce and react to. This ambassadorial option appears ethically justifiable in terms of the value of both fighting ignorance about elephants and generating love and understanding between humans and elephants. Giving people close-up experiences of elephants often positively changes their minds about the nature and value of elephants. In a case like this, however, extreme caution will be needed. Young elephants, for example, need a mother figure. A study of young elephants who survived a culling operation showed that such young elephants are "extremely nervous after capture" and they display "distress, depression, abnormal behavior, and loss of appetite" (Garai 1997: 90, 128). The study also showed

that they immediately accept an older cow as surrogate mother.These traumatic effects of culling on young elephants must be dealt with wisely, sensitively, and appropriately.

The fundamental reason for culling whole herds rather than just certain individual members of a herd, i.e., to avoid exposing elephants to intense trauma that heals exceptionally slowly, also explains why I am hesitant to justify any form of elephant hunting, aside from hunting so-called problem animals and perhaps lone bulls. The intimate structure of female elephant herds, the long gestation period of females (22 months), and the difficulties of distinguishing male from female animals imply that a pregnant female elephant with two juveniles of different ages can easily be mistaken for a male and be shot. Orphaned young elephants often do not survive, especially those under four years of age. The solitary nature of some bulls who generally shun even bachelor herds might make them the only acceptable target of hunting, provided they form part of a population that qualify for culling. I would thus only justify hunting in the case of a lone bull elephant that would otherwise in any case have been culled.

Perhaps a note on hunting is appropriate in this context. Although many committed conservationists are opposed to hunting on moral grounds, others find it perfectly acceptable. John Hanks (1979: 122), for example, says that professional hunting, "if controlled and supervised, …is a perfectly legitimate form of conservation." The controversy about hunting, says Chadwick (1992: 121), is "universally such a bitter, emotionally charged disagreement." My aversion to the idea of elephants being hunted comes from the negative effects hunting has on them. One such negative effect is their hostile or nervous reaction to humans in response to being shot at. Already in 1937, game ranger Stevenson-Hamilton noticed that "unrestricted shooting of elephants has been going on in Portuguese East Africa." Some of those elephants crossed into the Kruger National Park. For Stevenson-Hamilton it was easy to identify the newcomers, as the "smallest whiff of human scent is enough to send them off at once in panic" (Whyte 2001: 68, 69). I find Viljee Carinus's description (1998: 56, 57, 59) of his elephant hunt in Zimbabwe particularly unacceptable. His "great moment" of killing an elephant cow and his pride in his trophy—that serves as a "wonderful remembrance" of his "biggest hunt yet" —lose all significance if one reads his own version of the hunt. He clearly did not understand the dynamics of elephant society, as he most possibly shot the matriarch of a herd of 14 elephants without realizing it or without caring. This cow most possibly had 2 to 4 offspring in that herd. Is it strange that he described the regularly hunted elephants in that area as "very aggressive"?

(6) As much as possible, the evidence of a cull must be removed from the conservation area for the sake of the remaining elephants. Elephants are very aware of death and fascinated by the dead bodies of their kin. They show specific reactions when they encounter an elephant carcass or merely dry elephant bones. Some elephant researchers suggest that elephants can recognize the identity of the remains of an elephant if they knew each other. Carcasses and other evidence must be removed as soon as possible so as not to confront the remaining elephants with the signs of the slaughter and so instill fear in them.

(7) In some cases there might be convincing arguments not to select certain elephants as part of a culling program. One could argue a case that magnificent trophy animals ought to be excluded from culling in order to be kept for tourist viewing – few people have had the privilege to observe huge tuskers since the ivory slaughter of the 1970s and 1980s in Africa. The case for not killing elephants in special relationships with humans needs almost no argument. For example, to kill elephants that are being studied by elephant researchers violates not only the lives of those elephants, but the emotional and psychological lives of the researchers as well. The depth of feeling and the emotional ties that Cynthia Moss (1988, 1992), for example, has developed towards elephants during her research is part of the reason for her revealing, ground-breaking studies of elephants. To kill the

elephants she has known intimately over many years and with whom she has built up special relationships would be the same as subjecting her to emotional terror. No elephant researcher should ever suffer again the way Katy Payne has, when her elephant research participants were slaughtered in a cull in Zimbabwe (see Payne 1998: 213 – 224). In addition, it seems pointless to wreck research projects and to waste precious intellectual and financial research investments.

(8) If culling is justified in a specific case, then the meat, hide, and ivory must be utilized for the benefit of conservation. The utilization of elephants as a sustainable resource for human consumption cannot be a justification for culling mammals with such high moral standing. The Kruger National Park denies that this factor has ever played a role in their culling decisions between 1967 and 1994. A.J. Hall-Martin (1992: 83) states it categorically that "the economic benefits derived from culling played no role whatsoever in the motivation for elephant population control" in the Kruger National Park, as the park management adhered to the principle that "the financial benefits accruing from culling should not influence the culling quotas within a national park."

It is unimaginable to leave the carcasses for scavengers, fully exposed to the particularly sharp senses of the remaining elephants. Elephants are deeply affected by the death of other elephants. The trauma and fear engendered if the remains of culling were left behind would disrupt elephant behaviour too negatively. It would also be grim to set up Auschwitz-like structures where the carcasses can be burnt. Utilization of meat, hides, and ivory can be to the benefit of conservation agencies and support research on alternative methods of elephant population control and to better understand the role elephants play in ecosystems. Utilization can also result in projects to set up imaginative partnerships with a conservation area's poor neighbors, such as developing small industries to process meat and hides. In both cases conservation can benefit from the painful procedures of killing members of a "flagship" species, i.e., those special mammals that draw the crowds to conservation areas, open up hearts and minds for conservation, and move people to generously donate money for wildlife conservation. Some people also refer to species like elephant as Africa's charismatic mega-fauna, the star attractions for tourists to visit African conservation areas (Sukumar 2003: 353, 400).

4.5   Tame and train African elephants?

In Asia many elephants have been trained and used by humans for centuries. Might taming and training African elephants perhaps be a solution for dealing with at least some of the overpopulated elephants that might have to be culled? Thus far many people have firmly believed that the African elephant cannot be tamed and trained. The few attempts so far to tame and train African elephants had to be abandoned, partly because of the public outcry against the harsh training methods borrowed from Asian elephant trainers. These incredibly cruel methods rely on "breaking the spirit" of the elephantsand use a variety of harsh disciplinary measures to force the elephants into submission and to coerce them into obedience. Instruments inflicting severe pain on the elephants are commonly used. When Asian elephants trained by these methods perform degrading tricks in a circus, which make them look ridiculous, animal lovers rightfully object to these inhumane practices.

A Zimbabwean expatriate living in South Africa, Rory Hensman, has achieved remarkable success in training African elephants in what seems to be ethically acceptable ways. This is a provisional judgement, awaiting more detailed information about the training methods involved. Why this provisionally favorable judgment? In the light of available evidence, the training methods do not rely on painful punishment, but on B.F. Skinner's operant conditioning. Operant conditioning is widely used as ethically acceptable training method for animals like dolphins and dogs. By asking for, and rewarding, certain behaviour, no punishment or breaking of the elephant's spirit takes

place. What exactly the role of prodding instruments is and how much pain they inflict, is not yet clear. This aspect is worrisome, as these trainers do in fact refer to human dominance of elephants. Whether this dominance is established in ethically acceptable ways or not needs further investigation.

Coupled with operant conditioning, the elephants are continually groomed so as to get used to friendly, loving human behaviour. At no stage do the trainers or handlers require stupid, demeaning acts of the elephants. The elephants are mostly trained to carry humans on their backs for safaris through the African bush and sometimes they are trained to track human beings through their very acute sense of smell. There is also a possibility that elephants can be used by game rangers to patrol conservation areas, to limit poaching, and track down poachers.

Part of what makes Hensman's taming and training of African elephants acceptable, is that the elephants don't live in cages, but can roam freely in the African bush after their daily training session of up to 3 to 4 hours. Not only do they have a daily choice to permanently join the wild African elephants in their conservation area, but they have the opportunity to engage in the activities elephants naturally do in the African bush every day. These elephants return to their trainers and handlers out of their own free will. One could thus judge that they have been treated with respect as they are granted the daily choice whether or not to continue their training and work with humans.

If their training is ethically justifiable, if the elephants are not required to do demeaning, humiliating tricks, and if they have a daily option of returning to the wild, then are there any counter-arguments against the taming and training of elephants? There are strong arguments available. Some people consider the taming of African elephants unnatural and thus unbecoming of such wonderful animals. Elephants ought not to be used as mere objects for commercial exploitation and also not as soulless instruments for human recreational and tourist purposes either. Others judge that it is immoral to separate young elephants between the ages of 8 and 11 years old from family herds to train them, as they are still in need of the contact and guidance of the older elephants in the herd.

There is no question that ideally African elephants should be allowed to roam freely on the African plains and savannah so as to live their own lives in their natural habitat according to their judgement and the rules of the wilderness, free from any human interference. However, when an overpopulation of elephants necessitates the removal of elephants from a conservation area through culling, the taming and training of young elephants might become an option if done ethically. Instead of killing young elephants destined for culling, they get an opportunity to become ambassadors for their species. Giving them another chance for life, albeit a uniquely different one in close contact with human beings, seems clearly more acceptable than destroying them.

Despite the trauma of separating highly intelligent and social animals from family herds that have provided the species with a long history of successful survival, young elephants get a different opportunity to live their lives in close association with human beings. In the process they work through the trauma of the violent loss of other herd members partly by establishing new bonds. They become part of a tamed and trained herd, that might even become a "cross-species pack," like the close associations between humans and dogs. These elephants develop new ties with the other tamed and trained elephant partners, but also with human beings. In the process, they provide numerous human beings with unique close-up experiences of elephants. They also provide humans with unique experiences of the African environment and wildlife, as safaris on the backs of elephants are safe from predators and other dangerous animals.

Most people find such close encounters with elephants awe-inspiring, much like the close contact between humans and dolphins. If humans with such experiences of elephants develop a deep appreciation for elephants and would fight for their survival and flourishing in the remaining areas of conserved African wilderness, then have these elephants not served their species well as ambassadors of good will, rather than having been killed? Do they not deepen people's appreciation of elephants and thus serve the cause of elephant survival? Perhaps we should acknowledge the incredible ability of some members of our human species to tame and train animals and the amazing capacity of our species to establish unique relationships with members of other species. Such relationships can have deep meaning and special value in educating humans about the special nature of those animals.

5   The ethics of decision making on culling

Who should be involved in discussing and deciding whether a culling policy decision should be accepted for conservation areas? Public conservation areas exist within the framework of a country's constitution, laws, regulations, and governmental decisions. Such conservation areas thus belong to the state and its citizens. Kerley *et al* (2003: 20) observe that in democratic societies, "conservation of biodiversity is ultimately a social activity, with politicians responding to public support for conservation, and legislation and funding reflecting the level of public interest." For this reason Kerley et al (2003:20) argue that educating tourists about biodiversity assumes a new relevance as it "may play an important role in generating political support for the conservation of biodiversity."

Wildlife scientists and managers, as well as operational and administrative managers and staff, are appointed to run these conservation areas under the guidance of national or provincial conservation governing bodies. These people are custodians that are entrusted to guard, protect, and maintain conservation areas according to the goals formulated by national or provincial legislatures and embodied in laws and policies. Conservation areas as public property have been legally placed in their care as trustees who administer for the benefit of all citizens. As custodians and trustees they use their professional, scientifically informed judgment within the broad goals and purposes set by national and provincial governments on behalf of citizens. Within this framework of constitutional values, governmental laws, and bureaucratic regulations, they have discretion and independent judgment to do what is best for a particular conservation area. They are accountable to government and citizens through regular reports and feedback.

In the global village, conservation areas do not only belong to the citizens of a specific country anymore. Most conservation areas have special significance as a result of their unique natural world diversities and such areas can thus be judged to be common property of all human inhabitants of our planet, a kind of global commons. One could make an argument that citizens in foreign countries have rights of access to the few remaining wilderness areas still in existence in our world. We could also argue that foreign citizens have an interest that such areas be protected for the sake of the health of our global environment, on which we all depend. They also have an interest that the rich diversities of our globe's different natural worlds be protected and conserved, as many of us want to observe and experience those diversities, even though they are located in other countries.

However, when a matter as controversial and emotional as the culling of elephants arises, wildlife managers of public reserves must be held to account for whatever decisions they take. They also ought to consult thoroughly with all stakeholders.[11] In a moral dilemma like culling, the management of a particular conservation area or the national management body of all areas takes on a role similar to individual moral agents in their ethical decision-making. As a collective body, they are morally responsible for the conservation areas under their care. They must give a public account

of how they discharge their moral duties in their custodial role. They have the responsibility to take all information available into account and to place the information in the public domain for inspection and discussion by interested parties. They must be transparent in their decision making so that everyone can follow the logic of their reasoning and the factual basis of their claims. They are accountable to their stake-holders and must be prepared to engage stakeholders in dialogue.[12] This much is required of any person in public office in a constitutional democracy who is paid by public funds. Public officials must manage and administer matters that are important to citizens and thus they must account for whether the fulfillment of their duties was done in the interest of the public and to the public's benefit.

Stakeholders do not all have the same interests, nor do they have claims of equal value or weight. The categories of stakeholders and the weight of their interests must be carefully distinguished. For example, the interests of villagers harassed by elephants crossing the boundaries of conservation areas into human communities, must be judged more urgent than the interests of people in distant countries who have never visited the area. Imaginative methods for consultation with stakeholders can be used: workshops, hearings, invitations for submissions, requests for comments on proposed policies and their revised versions, public meetings, opinion polls, exit polls for ecotourists visiting conservation areas, and so on.

Wildlife managers and governing bodies are trustees and custodians of conservation areas on behalf of citizens from their own country and citizens from the rest of the world. They cannot compromise future generations in their decision making on national parks. Citizens of a specific country ought to be sovereign in their decision-making, although they can legitimately limit their sovereignty through involvement in genuine multilateral international organizations like IUCN and CITES. In these organizations countries co-operate as equal partners through shared decision-making for the well-being of biodiversity on our planet. Wildlife enthusiasts from all over the world should be allowed to provide input for decisions on culling, but not to the same extent as the citizens of the country concerned shouldering the long term responsibility for taking care of, and living with, the flora and fauna of their conservation areas. The diversity of wildlife enthusiasts from foreign countries should be acknowledged and heard; not only activists with loud voices, but also tourists that visit, or might want to visit, national parks and game reserves.

6 Conclusion

In this essay I have presented arguments to support the following conclusions:

1. Although expensive, translocation of family units or lone bulls remains one of the ethically most acceptable ways of dealing with elephant overpopulation, the procedure is risky, the animals are traumatized, and they are severely disoriented. But at least they are still alive and can enjoy the company of their core family group, depending on if the selection of the translocated herd was wisely done, and of course, with some good luck as well. However, translocation has limited value, as the demand for elephants is minimal compared to the supply.

2. Despite the apparent promise of a successful non-violent intervention to limit elephant numbers, contraception raises ethical issues of its own. This method should be used judiciously in small elephant herds on an experimental basis, and be carefully studied and monitored. Perhaps in future well-supported evidence might show this method to be physiologically harmless, ethically most justified, as well as logistically feasible for large populations in bigger conservation areas.

3. The option to let nature be, to allow natural ecological processes to function as they did for millions of years as method to control elephant numbers cannot work in conservation areas where

fences and human populations artificially restrict ecological processes that operate over large areas. Although we should aim to allow natural processes to function without human interference, the extent of human influence on the relatively small area set aside for conservation makes it difficult to rely only on such processes to control elephant numbers.

4. If culling is to be used, it must only be used as a last resort once reasonable people judge that all possible other options have been explored and exhausted. If chosen, then culling must be done as humanely as possible.

5. Wildlife managers as custodians must engage in dialogue with stakeholders, to develop a democratically defensible policy that can be explained and supported by good reasons to their various stakeholder groups.

I write this article with a deep sense of sadness. My heart finds it difficult to follow the lead of my head. I wish I could avoid the conclusion that culling can be justified under certain circumstances. But I cannot. The continued survival of the elephant species depends on them being in dynamic co-existence with all other living species without wrecking the habitat for others. The demand to preserve ever-changing ecosystems that provide living conditions for a vast diversity of species trumps the interest many individual elephants have in living their lives freely in wilderness areas until they die of natural causes.

What I say about the negative effects of an overpopulation of elephants on wilderness environments must be said with so much more vigor and urgency about the impact of humans on this world. We should apply similar standards to humans and our impact on the environment as the ones we apply to elephants in conservation areas. We must discuss human encroachment on land available for wildlife. Hanks (1979: 7) states it simply, "There is no doubt that the greatest single threat to the future of wildlife and wildlife habitats in the whole of Africa is the very high rate of human population growth." We must protest human abuse and destruction of the environment. We must reject human exploitation and pollution of the environment. We must show serious concern about the lack of human population control. We must also worry deeply about the growing loss of biodiversity through species extinction that result from irresponsible human activity.

The elephant problem merely reminds us of a much more complex and far more serious problem that we as humans must face collectively. We, the utterly dominant species who have become masters of the earth through using our vast set of impressive capacities, can only survive if we can suitably adapt the message of the elephant problem to ourselves. We must use our best scientific knowledge, wisest ethical values, and best practices of humane behavior to stop the destruction and exploitation of our natural and cultural environments. We must limit human population numbers through ethically acceptable means. Only then can we live in creative interaction and sustainable balance with our earth's environment, our only habitat. Perhaps then we will regard ourselves as part and parcel of the community of living beings on earth, livings as partners caring for our shared world. As Aldo Leopold (1981: 204) has said so beautifully, "All ethics so far …rest upon a single premise that the individual is a member of a community of interdependent parts." He adds further that "The land ethic simply enlarges the boundaries of the community to include soils, waters, plants, and animals, or collectively: the land … a land ethic changes the role of *Homo Sapiens* from conqueror of the land-community to plain member and citizen of it."

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[1] I presented earlier versions of this article at different places: (i) the annual conference of the Southern African Philosophical Association (Pietermaritzburg in January 2004), (ii) The Great Elephant Indaba organized by the Wildlife and Environmental Society of South Africa (Nelspruit in August 2004), (iii) a teleconference organized by the Transboundary Protected Areas Research Initiative (March 2004) and (iv) the departments of Philosophy and Zoology at the University of Johannesburg (February 2004 and April 2004).I would like to thank the following people for their discussions and debates with me on elephants issues, as well as for enabling me to observe elephant behaviour, impacts, and habitats:Michelle Henley, Steve Henley, Ian Whyte, Audrey Delsink, Douw Grobler, David Mabunda, Josias Chabani, Howard Blight, Norman Owen-Smith, Johan du Toit, Lucas Rutina, Frederick M. Dipotso, and Elizabeth Masuku. Marc Basson improved my use of the English language..

[2] Comments made by Ian J. Whyte during a presentation at a conference of the Ethics Society of South Africa in Johannesburg on Tuesday 30 March 2004.

[3] Information used in this section comes from in depth interviews with Audrey Delsink, researcher and ecologist at Makalali Game Reserve near Hoedspruit.

[4] Vaccination with pZP is extensively used for controlling the growth rates of populations of white-tailed deer and wild horses in the United States of America. See Peter Hawthorne (1996: 70).

[5] Whitehouse and Kerley (2002: 243 – 244) discuss these reasons for a cautious management style for elephants as a prelude to their discussion of long term data on the management practices of the Addo Elephant National Park.

[6] See the detailed descriptions by Douglas H. Chadwick (1992: 430 – 436) of culling operations in Zimbabwe, where culling teams killed the herd studied by Katy Payne. See her response to the devastating news of the culling of this herd. She knew each and every elephant in that herd intimately through her field observations (Payne 1998: 213 – 224).

[7] The exact nature and functions of infrasound in elephants is still very much under investigation. McComb (et al) (2002: 317 – 329) have shown that female elephants can recognize the social identity of an elephant caller most effectively over distances up to 1 kilometer, sometimes even up to 2.5 kilometres. David Larom (2002: 133 – 136) has proven that infrasound used by elephants travel much further at night than during the day.

[8] Detailed descriptions of what these activities involve can be found in John Hanks (1979: 47 – 59).

[9] In a study of the regeneration of two tree species in the Kruger National Park, Kelly (2000: 53) argues that evidence points to "other browsers such as antelope as having had the major impact on the regeneration of baobabs." Kelly (2000: 47) judges that elephants, contrary to expectations, did not play "any significant role in structuring the populations of either *Adansonia digitata* or *Sterculia rogersii.*" Ian John Whyte (2001: 32) points out that fire is a contentious issue in conservation and "little is yet known of the much

longer-term potential impacts of fire on biodiversity or how best to manage fire to maximize biodiversity."

[10] The elephant management policy of the Kruger National Park describes elephants as "important agents of disturbance" that "create heterogeneity and thus contribute to biodiversity (intermediate disturbance hypothesis)" (I.J. Whyte, H.C. Biggs, A. Gaylard, and L.E.O. Braack 1999: 120).

[11] Carol C. Gould (2002: 3 – 20) gives an insightful discussion of stakeholder theory, explaining how the different stakeholders and their legitimate interests must be determined and weighted. An interesting example of park management engaging stakeholders in dialogue occurred in the 1990s when the Kruger National Park reviewed their elephant management policy. They held a public meeting at Kyalami, outside Johannesburg. Angus Begg (1995: 6, 7, 9) published a lengthy report of the debates at this meeting in the magazine of the Wildlife and Environmental Society of South Africa.

[12] For a detailed and thorough discussion of deliberative democracy where accountability and openness play major roles, see Amy Gutmann & Dennis Thompson (1996).