Hennie Lötter

The ethics of managing elephants

First submission: April 2005

If human beings may legitimately intervene in conservation areas to let nature be and to protect the lives of all animals under their care, managing elephants must be legitimate as part of the conservation of natural world diversities. If this is true, are current management options ethically acceptable? This article investigates the ethics of four management options: the simulation of nature, translocation, contraception, and culling. It draws the conclusion that all four options are ethically flawed, since they all require some violation of the important injunctions to let nature be and to treat individual animals with respect.

Die etiek van olifantebestuur

Indien die mens regmatig in bewaringsgebiede mag inmeng ten einde die natuur toe te laat om sy gang te gaan en sodoende alle diere onder menslike sorg te beskerm, dan is die bestuur van olifante legitiem as deel van bewaring. As dit waar is, tot watter mate is die huidige bestuursopsies eties aanvaarbaar? In hierdie artikel word die etiek van vier bestuursopsies ondersoek: simulasie van die natuur, verskuiwing, voorbehoeding en uitdunning. Die gevolgtrekking is dat al vier opsies eties afwyk van die belangrike beginsels dat die natuurlewe in wildernisgebiede sonder menslike inmenging moet kan voortbestaan en dat individuele diere met respek behandel moet word.

Prof H P P Lötter, Dept of Philosophy, University of Johannesburg, P O Box 524, Auckland Park 2006; E-mail: hppl@lw.rau.ac.za

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.[1] From 1967 to 1994 the Kruger National Park in north-eastern South Africa culled approximately 500 elephants annually to keep their numbers steady between 6000 and 8000. This action was based on the conviction that the massive park of 19000 square kilometers has a "carrying capacity" of around 7000 elephants. The practice of culling based on quotas set by annual aerial counts was discontinued in 1994, after the management had been confronted by angry animal rights and animal welfare groups, and promised that the policy of the park would be reviewed. Now, over a decade later, the Kruger National Park authorities are still in the process of reviewing their elephant management plan. In the meantime, elephant numbers have grown to more than 12000. Some conservationists are emphasising the impact of elephants on the vegetation and predicting a loss of other species as a result of what they consider the destruction of the habitat. Others are asserting that the Kruger National Park not only has no elephant problem as yet, but that it could actually accommodate substantially more elephants. What is the truth? Only time will tell.

This study will address the ethics of the management options available to a conservation area adjudged to have an overpopulation of elephants. Certain assumptions relating to human intervention in conservation areas, with implications for the management of elephants form the context of the study:

- For several centuries humans have been interfering with nature on a massive scale, harming or destroying many wilderness areas. For this reason we ought to intervene responsibly, in order to conserve wilderness areas in as natural a state as possible for current and future generations.

- The conservation of natural world diversity should be the broad, over-arching goal of the conservation of wilderness areas. This goal requires an ethics that focuses on the effects of human actions on the well-being of ecosystems of various scales. Holistic environmental ethics sometimes requires us to sacrifice the interests of individual living beings for the sake of larger, life-enabling and life-sustaining wholes. Every human being, now and in future, must be afforded the opportunity to visit such wilderness areas and observe the splendours of the rich diversity of the natural world of the African savannah which, in its primeval beauty, reconnects us with our evolutionary history.

- The relative moral standing of animals is determined *inter alia* by the complexity of the behaviour, consciousness, and characteristics of the species. All human beings have a moral responsibility to treat all animals humanely, and elephants deserve a special moral status within the animal kingdom as their behaviour and inner lives are more complex and intricate than most animals. However, elephants deserve a moral status similar to humans, as they are much closer to other animals than to humans. Our moral responsibility to treat animals humanely translates into an individualist consequentialist ethical view, in terms of which human actions are judged unethical if they involve harm, suffering or death for individual animals without sufficient justification. This view is trumped, however, by the ethics of environmental holism, which champions ecosystems that enable and sustain the lives of individual animals and species.

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

If human beings may indeed legitimately intervene in conservation areas to let nature be and to protect the lives of the diversity of animals under their care, then the management of elephants is legitimate as part of the conservation of natural world diversities. If so, how ethically acceptable are current management options? Do the simulation of nature, translocation, contraception, and culling all deserve equal 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, simply to do nothing and to permit the loss of other species would be to violate the important goal of conserving natural world diversity. These provisional remarks indicate that the topic of elephant management has put us in touch with a reality in which decisions can often only lead us to select the least harmful of several bad options. The best option by far is to refrain from interfering in 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 any other life form. But there are compelling reasons and specific circumstances why these goals cannot be simultaneously achieved.

In this essay, the ethical acceptability of four options for managing elephants will be evaluated *viz* the simulation of nature or the translocation, contraception and culling of elephants. It will be asked whether the harsh blow of culling under very specific conditions could be softened by the taming and training of African elephants. The ethics of decision-making about these issues will be examined and the so-called "elephant problem" will be compared with the much more serious "human problem". Initially, however, two issues that decisively influence the management of elephants must be discussed. One is the question of whether it is ethically justifiable to fence in elephants. The second concerns the ethical requirements of the scientific practice in terms of which management decisions are taken.

1. Should elephants be fenced in to avoid conflict with human beings?

We live in an imperfect world which human beings have so populated — from 1 480 billion in 1895 to 5 384 billion in 1991 — that the spaces and habitats available for wildlife have shrunk dramatically. Gröning (1999: 454, 458) comments that the "greatest threat to elephants [...] comes from the alarming shrinkage of their living-space as a result of the human population explosion". Over the twentieth century, their numbers in Africa declined from an estimated 20 million to only about 700 000 at its close.

A world in which elephants can roam free and unhampered no longer exists. They are at our mercy in specially created sanctuaries. In some unfenced conservation areas, they inhabit limited peripheral areas. Unless large areas of land are made available that will far exceed the size of all available conservation areas, elephants will only be able to survive in spaces currently demarcated for the conservation of wildlife.

Many people believe elephants should be fenced in since destructive conflict between them and human beings is inevitable. Sitati *et al* (2003: 667) state it simply: "Wherever people and elephants coincide, [...] human-elephant conflict will occur". Observations in their case study, which was conducted 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 as "a model of a common situation across Africa where elephants and people co-exist in disharmony" (Sitati *et al* 2003: 675, 669). Conflict between people and elephants is indeed an important African problem. Osborn & Parker (2003b: 80) assert that it is "a major concern for wildlife management and rural development initiatives across Africa". According to Ginsberg (2002: 1189), 80% of Africa's elephants live outside protected areas. If elephant population numbers increase while 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 to people. Raman Sukumar (2003: 363) confidently asserts that the economic losses of human-elephant conflict "run into several tens of millions of dollars each year across the two continents" (Africa and Asia). There is no doubt

that elephants endanger the livelihoods of many African villagers. Ferrel V Osborn (2002: 674-7), for example, conducted research on effective repellents to help people cope with the threats elephants pose to their lives. The people involved in Osborn's research were experiencing serious problems with elephants, which were endangering their livelihood in the communal lands in the Sebungwe region of Zimbabwe adjoining the Sengwa Wildlife Research Area. In Northern Cameroon, Weladji & Tchamba (2003: 77, 78) found that several species of wildlife were inflicting "substantial losses on crops and livestock". The damage to crops affected mainly 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: 949-57) found that Samburu pastoralists felt both appreciation for elephants and anger at the destruction they cause. The Samburu in northern Kenya experienced the cost of elephants as "occasional conflict over water and human or cattle deaths", while the benefit was that they "create paths to water, dig dams, and break branches that people can use for firewood". Clearly the losses outweighed the benefits, however.

When elephants cause economic losses to people, the consequences for the 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 twentieth century between commercial farmers and elephants. These elephants later became the nucleus of the current population of 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 a sanctuary for the remaining fifteen. 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 [s a]: 9-15).

To protect elephants and people from one another, fences become a preferred option. Whitehouse & Kerley (2002: 247) see the solution of human-elephant conflict as a simple one:

> 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 which is overpopulated by humans, and where human crops represent more attractive food to elephants than the vegetation of the African savannah. Fences protect people and elephants from conflict leading to loss of life on both sides. Without fences, elephants will be the long-term losers.

2. Ethical requirements for "elephant science"

The question of whether there are too many elephants in our conservation areas is deceptively simple. To answer it requires a complex judgement, informed by inputs from various 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 relating to elephants — there are huge gaps in our knowledge about them, which should be sincerely acknowledged and made the focus of continued research efforts. We do not have enough reliable data and information concerning the lives of elephants and their habitats in previous centuries when they, and not human beings, 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 various kinds of environment with that of the past.

We do not only have limited reliable scientific knowledge about the past worlds of elephants. Much of the knowledge about elephants gained over the past fifty years is fragmentary, specialised, and narrowly focused. Some studies have been conducted by elephant researchers using anthropological methods. Others were conducted by zoologists or botanists; yet others by ecologists. The results of these studies cannot be easily integrated, since the environments, ecosystems and habitats in which elephants were studied vary, 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 require more than sharply focused research projects from narrow disciplinary perspectives. Insufficient likewise is

the multi-disciplinary approach in which scientists from various disciplines separately investigate single aspects of the elephant problem in terms of their own disciplinary theoretical frameworks. The complexity of the issues raised during examinations of 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 needs to be guided by specific scientific values for the development of a reliable elephant science leading to informed conservation management decisions.

Various kinds of scientists must investigate various aspects of elephants, as well as observe the dissimilarities of their eco-systemic and environmental contexts. In the Kruger National Park in north-eastern South Africa, for example, the issues to be examined in the promotion of 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, factors impacting on the birth rate of elephants, and so on. Although detailed studies of such issues are needed, the approach, methods and results of the various projects must be debated among the various scientists employed in studying aspects of elephant lives within the broader context of their ecosystems in an attempt to reach consensus on integrating the results. Perhaps ecologists should be the project leaders by virtue of the wide scope and holistic view of their discipline.

The following scientific values may be extracted from the above requirements 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 various disciplines appears to be 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 be open to new information, new approaches, and new evidence. An aware-

ness of the fallible nature of all scientific knowledge and the provisional nature of all research results should engender a willingness to review pet theories and 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 scientists to ask penetrating questions to ensure that all perspectives on specific issues have been included and that all possible information has been taken into account.

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

3. Options for limiting elephant numbers

Once conservation managers have been peersuaded that there are too many elephants in the conservation area under their supervision, there are four management options for limiting elephant numbers available to them, namely any actions that simulate nature's own processes for limiting elephant numbers; the translocation of excess numbers of elephants to other conservation areas; the use of chemical substances to effect contraception in elephant cows and thus limit the birth rate of a specific elephant population, and the culling of elephants to limit this population to the ideal number of animals judged suitable by managers for accommodation in a conservation area. How ethical and feasible are these options?

3.1 Simulating nature

The goal of this option is to let nature be, to allow natural ecological processes to function as they were doing for millions of years before any human intervention took place. A major obstruction in this regard is the fact that the majority of conservation areas today comprise inextensive tracts of land in agricultural or urban zones, where wildlife is not allowed. Human intervention in respect of 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 until a few centuries ago. One smaller-scale strategy is to eliminate all forms of human intervention that make conservation areas unnatural, such as artificial waterholes in drier areas. Eliminating waterholes might in fact be required for further ethical reasons, but as yet no convincing evidence exists to show that such removals have either stabilised or substantially reduced elephant numbers in conservation areas. Thus, this suggestion has not yet been shown to be a feasible management option for limiting or reducing elephant numbers. Nevertheless, it may be an important one to record and implement in order to determine its long-term consequences for elephant populations.

A second, more radical, suggestion for simulating nature is to kill calves between the ages of four and eight years. The reason offered in support of this suggestion is this: culling merely simulates what would happen to this vulnerable age group during a severe drought, when they would be among the first to die. Although this may be true, it is still a drastic human intervention by lethal means that would cause major suffering to the mothers and the other members of an elephant herd. Traumatising elephant herds by means of human intervention apparent to them might also affect their behaviour towards people. A variant of this proposal, namely to kill young cows just before they have their first calves, raises the same ethical concerns (cf Whyte 2001: 153).

3.2 Translocation

Translocation is a high-risk operation. The challenge is to transport the largest land animal in the world, which can weigh in excess of seven tons. Translocation traumatises elephants in several ways. The trauma is set off when a helicopter flies intimidatingly low over their heads and the elephants are darted. The older cows are darted first to ensure that the matriarch goes down quickly. This practice tends to confuse and disorientate the younger ones, which thus do not run off, but remain close to the matriarch. The powerful anaesthetic drug M99, of which a few drops are enough to kill a human being, takes between six and ten minutes to render an elephant insensible. Obviously the elephants are aware of being drugged and that they are losing consciousness and control over their bodily functions. When the elephants awake, they find themselves confined inside a cramped steel compartment, with humans

injecting them to keep them sedated and prodding them with electric shock apparatus to move them into position.

The captured elephants travel for hours in a semi-sedated condition until they are off-loaded in a strange place. Once there, they are disorientated — their vast store of knowledge about the physical features, feeding areas, and waterholes of their home range has been rendered useless. They are forced to resume their lives all over again; this time without their family and the bond groups that they regularly used to meet with great excitement and intense communication, sometimes even forming larger herds with them. In translocation operations, reliable and exact selection of a smallish herd is difficult. Some family members may have wandered off on their own, or be socialising with another herd close by. The capture team deliberately selects for size (a smallish herd) and location (conveniently accessible to large trucks). Selecting a herd from a helicopter can turn out to be an unsuccessful exercise and some close family members may consequently become permanently separated from the herd despite the best intentions of a capture team.[2]

Katy Payne's (2003: 64) description of a bond group explains why incorrect selection of a group to be translocated can so easily occur: "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 also 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: 66).

If the costs and benefits of culling or translocating elephants are weighed up, 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 by means of culling. For this reason, the expensive procedure of translocation is ethically preferable to culling. Although the cost and the required expertise may 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 relocation. Only small pockets of land are available for the specialised needs of ele-

---

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.

phants and only some parts are properly fenced on account of the high cost involved. Where not fenced, conservation areas invariably become prone to elephant-human conflict, since the two species do not co-exist comfortably.

In Africa, most land available to elephants is already populated by elephants, so vacancies in elephant habitat are scarce. Ian John Whyte (2001: 152), 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 sixty animals a year, which could not serve as an alternative to larger scale methods.

For this reason, translocation represents an extremely limited option. Mostly this option merely temporarily exports the elephant problem to other conservation areas and game reserves which soon tend to experience their own overpopulation problems. The exciting new idea of trans-frontier parks to be established all over Southern Africa would at least create some extra space for excess numbers of animals, although not nearly enough to accommodate the large numbers of excess elephants.

3.3 Contraception

New research on elephants suggests that contraception[3] might provide a long-term solution for limiting numbers in game reserves (cf Grobler *et al* 2003). What makes this solution attractive is that it seems both humane and practical. How does contraception work in elephants? The first, unsuccessful attempts at contraception attempted hormonal control. The vaccinated cows were induced into a state of false oestrus. As a consequence bulls tried to mate with these unreceptive cows. This intimidated the cows and led to their being separated from their herds and calves. Some calves even died on account of this. Scientists judged these effects to be unethical and the research project was discontinued (cf Whyte 2002).

In current experiments with contraception in elephants no use is made of hormones, but of a vaccine called "porcine zona pellucida" (pZP), which is made from glyco-proteins present in the ovaries of pigs. The vaccine comes from pigs slaughtered for human use as meat, so no

---

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

pigs are killed specifically for the purpose. Adult elephant cows are darted with the pZP vaccine. After the vaccine has been released into the elephant's body, the dart falls to the ground. The vaccine stimulates the cow's immune system to produce antibodies that prevent sperm from fertilising egg cells. Vaccination with pZP is safe for pregnant cows. Since it is difficult to determine which cows are pregnant, some pregnant cows will thus have been vaccinated. No pregnancy has thus far been affected and no abortion has been observed.

Initial studies have demonstrated that one series of vaccinations can result in the prevention of pregnancy in cows for a period of up to eighteen months. Two vaccinations, four weeks apart, are required. 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 proving positive.

The use of contraception as a method of population control in elephants raises four major issues: the efficacy of the vaccine; behavioural changes in elephant herds; the practicality of implementing such a programme, and the ethical value of contraception rather than culling or translocation as a method of population control.

The first three issues have been examined in a research project conducted at Makalali Private Game Reserve near Hoedspruit. For more than three years Audrey Delsink has led a research project aimed at controlling Makalali's small elephant population of approximately sixty animals. Preliminary results have demonstrated that the vaccinations are effective. No vaccinated cows have calved since the project was started. Makalali's elephant population has stabilised on the desired number for the reserve. Delsink, who has observed the behaviour of the elephants over a long period of time, knows every elephant by name and personality. She has observed no change in the behaviour of the family herds led by the matriarchs. Moreover, no change was observed in behaviour between the cows in the family herds and the members of the much smaller herds of bulls, which have shown no signs of an abnormal interest in the cows.

The research at Makalali has demonstrated that contraception can be used at smaller game reserves as a method keeping elephant numbers stable. The vaccine is inexpensive and no helicopter is needed to dart the animals, since darting can be done from a vehicle or on foot. In reserves containing 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 falling pregnant. This means that all herds will at least have some calves being born on a regular basis. The social structure of the herd will thus not be severely disrupted. The effect will be similar to the decreased birth rate induced in elephants by severe drought or almost complete depletion of food sources.

Contraception is clearly more ethical than culling, as no existing elephants are deliberately killed. When elephants are culled, entire herds are shot and killed. Contraception merely prevents births and can thus be administered to slow down the birth rate to achieve the desired population size over a longer period of time.

However, can contraception be applied as a method of population control in bigger game reserves such as the Kruger National Park? The pZP cannot reduce the numbers in the Kruger Park from the estimated 11671 in 2003 to a desired number such as 7000. The vaccine is effective only in keeping the numbers of elephant populations stable. However, there are good reasons to be optimistic that contraception may prove to be the long-term answer to keeping elephant numbers constant even in the bigger reserves.[4] The pZP vaccine causes no physical harm to individuals nor behavioural disturbances in herds. If vaccination with pZP is found to be effective for five-year periods, it will be financially viable and feasible. Elephants are territorial and highly social. Herds have home ranges and a herd generally remains together until it becomes too big and a smaller group splits off. If one member of a herd is radio-collared, it becomes possible to track the movements of the herd — as is already being done to determine the home ranges of herds. Thus, records can be kept about vaccination of cows in a herd. In a large conservation area like the Kruger National Park, the management of vaccination might pose complex, but not insoluble, problems.

The idea of darting elephants on foot in a big reserve like the Kruger National Park seems an impractical one if thousands of elephants need to be darted in dense vegetation with many predators around. However,

---

4   Vaccination with pZP is extensively used for controlling the growth rates of populations of white-tailed deer and wild horses in the USA. Cf Hawthorne (1996: 70).

although darting by helicopter is an expensive exercise, translocation and culling are not cheap either. Since the Kruger National Park undertakes an annual census of elephants by air, it may be possible to combine darting and counting. The possibility of five-yearly vaccination would reduce cost, as 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 the opposition to culling. It now promises to be a safe method of population control without physiological side-effects or social disturbances. It may soon be administered by means of vaccination for a period of up to five years. However, the words used must be noted: "a promising alternative," "promises," and "may 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 behaviour. The logistics and cost of the vaccination are other complex issues that have not yet been determined. There is no ethical justification for the use of methods which are still in an experimental stage, and have not yet adequately been 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 for us to be able to predict their outcomes. The consequences may also take several years to manifest, due partly to the longevity of elephants and the complexities of their social structure.[5]

Contraception is not without its own ethical problems, however. It is a drastic human intervention in the bodies and lives of the small female herds that form part of an elephant population. The possibility that contraception can cause sterility in the longer term must be examined, as well as the effects of the fact that cows that would normally come into oestrus and mate once every five to nine years would now come into oestrus every fifteen weeks and mate without falling pregnant (Whyte 2001: 164). Long-term studies must closely monitor the possible effects on their reproductive physiology and their social behaviour. Having fewer calves may not be problematic in social terms, as smaller

5   Whitehouse & Kerley (2002: 243-4) identify 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.

herds (between ten and twenty) often have kin groups which they may rejoin if under stress. The more important issue is that young elephant cows may be denied the process of learning to become mothers through allo-mothering. If their own mothers and aunts have no calves for five years or more, they may not have an opportunity of serving their mother-hood apprenticeship properly before they themselves give birth for the first time. (Elephants have to learn from their elders how to be mothers.)

3.4 Culling

The process of culling is a gruesome one.[6] In an ideal world it would not even be considered. However, we live in an utterly flawed world. Selecting the least offensive among several bad options is often the only responsible choice available to us.

Culling raises serious ethical issues: Is it wrong to kill specific mammals solely for the reason that they are too numerous? If we do have to kill elephants, then which methods are the most humane? Does the practice of killing the matriarch before the others cause unnecessary, if very brief, suffering? What is the significance of elephants communicating their experience of culling through infrasound to other herds within a radius of approximately ten kilometers?[7] Will elephants that are aware of culling practices in or close to their home range become aggressive towards humans and threaten tourists? 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 helicopters, selecting appropriate

6   Cf the detailed descriptions by Douglas H Chadwick (1992: 430-6) of culling operations in Zimbabwe, where culling teams killed the herd studied by Katy Payne. See also her response to the devastating news of the culling of this herd. She knew each and every elephant in the herd intimately through her field observations (Payne 1998: 213-24).

7   The exact nature and functions of infrasound in elephants are still very much under investigation. McComb *et al* (2002: 317-29) have shown that female elephants can recognise the social identity of an elephant caller most effectively over distances up to a kilometer, sometimes even up to 2.5 kilometres. David Larom (2002: 133-6) has demonstrated that infrasound used by elephants travels much further at night than during the day.

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 an exceptional psychological, social, behavioural and physical complexity approximating our own, I would argue that the culling of elephants can only be justified in the way that the killing of human beings in a just war is seen as being justified. As in a just war where the interests of the state, the larger community of citizens, are seen as overriding 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 be seen as trumping the interests of groups of individuals, if those individuals threaten the continued well-being of the greater whole. Seen in this context, culling can only be ethically justified provided that 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 been convincingly demonstrated as having failed. Analogous to justifying a war in which fellow human beings will be killed, culling can be justified only as an ethically flawed procedure to be employed under the following strict conditions:

3.4.1 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 exceptional to be killed for anything other than the most serious and weighty reasons. The conservationist and natural scientist Ian J Whyte (2002: 299) clearly articulates this sentiment:

> 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.

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

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. The reasons for culling elephants must be firmly supported by the best available scientific information, particularly since the behaviour and circumstances of these adaptable mammals vary quite dramatically from one geographical location to another. For example, to 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 compares extremes of elephant habitat such as subtropical southern Kruger National Park with the desert areas of the Kaokoveld in Namibia. Moreover, good scientific information will 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 & Biggs (2002). 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 & Biggs 2002: 7, 10).[9]

In terms of the preservation of natural world diversities, the number of elephants appropriate to a conservation area ought to be determined in order to balance elephant impact that modifies their habitat — setting up spaces that provide living opportunities for other forms of life

---

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, contrary to expectations, elephants 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".

— with impact that causes destruction and degradation of the environment.[10] The interests of individual animals are subordinate to the well-being of the larger whole. A complex judgement is required to determine how many elephants are sufficient to fulfil their creative ecosystemic function of opening up woodland to establish habitat requirements, create living space, and generate opportunities for other species to flourish. Cumming & 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; cf also Whyte 2002: 299). In the light of this role, the complexity of the determination of how many elephants a particular conservation area can accommodate should not be underestimated. There are many variables to take into account and no general rules can apparently be laid down for all climatic conditions and vegetation types. In a study of the impact of elephants on marula trees, in three private game reserves barely 30 kilometers apart, it was found by Gadd (2002: 335) that

> [...] woody vegetation communities and elephant impact rates vary spatially, even in close proximity, and cannot be extrapolated from one area to another.

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 (cf Rosenstand 2000: 350). A virtuous person would respond neither too much nor too little, but at the right time, in the right amount, in the right way, and for the right reasons. Custodians of wilderness areas are required to make the kind of refined judgement which accurately fits the specific situation at hand.

---

10   In terms of the elephant management policy of the Kruger National Park, elephants are described as "important agents of disturbance" that "create heterogeneity and thus contribute to biodiversity (intermediate disturbance hypothesis)" (Whyte *et al* 1999: 120).

Elephants have too high a moral standing to be killed for any reason other than a serious and imminent threat to the continued existence of the rich diversities of the natural world. The factors in terms of which moral standing may be bestowed on them are characteristics such as their sheer size and power, their intelligence and memory, their gentle nature and range of emotions, and their capacity for complex social behaviour. This latter capacity renders their communities very similar to human ones. Societies capable of socially complex behaviour are defined as individualised, longitudinally stable and capable of acquiring social skills by means of the "cultural transmission of habits and knowledge". Elephant societies can clearly be described as socially complex, though less so than human societies (cf De Waal *et al* 2003, Payne 2003). Furthermore, their social bonds, their sense of death, and the close general resemblance between their lives and ours give them a strong moral standing from the perspective of the human world.

As human beings, we differentiate the moral standing of living beings, mostly in accordance with the level of complexity they express in their consciousness, individual behaviour, social organisation and physiology. Most people have no objection to eating meat from cattle and sheep, but would baulk at having dogs killed for human culinary purposes. Many people do not mind killing a rat nesting in their ceiling, but would hesitate to kill a cat under the same circumstances. Elephants definitely belong to the upper echelon of animals which we consider to have high moral standing. Gröning and Saller express a typical human judgement of the elephant species as "the most magnificent of the land animals", with a "special status amongst the large animal species" and "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. Human beings differ from elephants even in regard to the aspects of the world we observe through our senses. David Larom (2002: 136), who conducted research on elephants' use of infrasound, provides 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.

The differences combine to support the judgement that human beings and elephants do not share the same moral standing as human beings since they fail to match the intellectual, behavioural and emotional complexities of our species that demand so much moral respect. Moreover, elephants are incapable of the full range of moral behaviour that would turn them into moral agents on a par with human beings. Nevertheless, they are important moral beings — beings to which we owe considerable moral respect, although not as much as to members of our own species.

3.4.2 Culling elephants is ethically acceptable only after all other less drastic options have failed to solve the problem of overpopulation. Culling can never be the first option, as destroying animals of a high moral standing is a serious moral offence. Before culling elephants, all other options must have been explored to determine whether the killing can be avoided at an acceptable cost to the interests of human beings, ecosystems or other living beings. For this reason, wildlife managers must peruse the available scientific information on all aspects of the elephant problem and be clear about the goals and purposes of their conservation area. It is only after all other options have diligently and urgently been explored by them to no avail, that culling can be seriously considered. If culling is chosen, it must be the only remaining option for avoiding 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 in the natural world. Only in such cases should the interests and well-being of the ecological units of varying sizes, such as ecosystems, be permitted to override the interests of individual elephants.

3.4.3 In the process of making a decision on culling, the custodians of conservation areas and their scientific advisers must be just and fair in their judgements on whether the time is ripe. They must be able to produce sufficient accurate and convincing evidence that the impact of elephants on the habitat of other species as well as on their own has become destructive and excessive. Custodians, responsible for the natural world diversities in their care and accountable to concerned citizens everywhere, have to sketch management alternatives, publicise their discussions and debates in respect of, identify the decision-makers and indicate the processes they are to follow in order to reach a decision. They

must account for the processes and their determination that the elephant impact in their conservation area has become dangerously destructive.

3.4.4 If culling is to be practised, well-trained, professional teams should be employed in order to avoid prolonging any suffering by killing the elephants as humanely and speedily as possible. The methods used for culling must be as humane as current knowledge and technology permit. Issues requiring careful attention include finding a reliable way to select a herd when all close family members are together and none has wandered off elsewhere, in order to avoid abandoning certain deeply traumatised herd members behind on their own; knowing which animals should be shot first so that the herd does not scatter in all directions with some escaping the culling but retaining terrible memories of the killings of family members, resulting in deep, long-term trauma; using only highly trained sharpshooters who hardly ever miss their target in order to reduce the suffering of the elephants' last moments to a minimum; avoiding using substances that immobilise elephants so that they slowly suffocate to death while still conscious; using methods of killing that are as close to instantaneous as possible in order to reduce the duration of the suffering.

The Kruger National Park earlier used scoline (succinylcholine chloride) to cull elephants, but research revealed 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, it is difficult to determine the possibility of killing 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.

3.4.5 The aim of the "last resort" of culling must be to establish a "just peace" — a park that does not require 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 only use sufficient force to counter the threat — not one more elephant should be culled than is absolutely necessary to protect natural world diversities.

If elephants are to be killed, then entire family herds and bachelor herds should be culled, as this course of action is the most humane to all the elephants concerned. One important reason for killing entire herds is that young orphaned elephants cannot become "normal" without teaching and guidance from older elephants. The disastrous aggressive behaviour of a group of young male elephants, orphaned through culling — which killed more than forty rhinos and two tourists in the Pilanesberg National Park between 1992 and 1997 — was quelled by means of the introduction of six 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 the culling of their herd had precipitated their delinquent behaviour.

One possible exception to killing all members of a herd might be to use the young elephants to populate elephant sanctuaries aimed at bringing humans into close contact with relatively tame elephants. If such young elephants are humanely treated and properly trained, they can fulfill ambassadorial roles and sensitise thousands of people to the magnificence of their species, apparent in the special qualities that cause wonder, awe, and amazement in human beings, 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 dispelling ignorance about elephants and of generating love and understanding between human beings and elephants. Giving people close-up experiences of elephants often positively changes their minds about their nature and value. In a case such as this, however, extreme caution is needed. Young elephants need a mother figure. A study of young elephants that survived a culling operation showed that they are "extremely nervous after capture" and display "distress, depression, abnormal behaviour, and loss of appetite" (Garai 1997: 90, 128). The study also showed that they immediately accept an older cow as a surrogate mother. The 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 an intense trauma that heals exceptionally slowly, also explains why I am hesitant to justify any form of elephant hunting, except in the case

of 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 males from females 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 do not often survive, particularly if they are under four years of age. The solitary nature of those bulls which generally shun even bachelor herds might make them the only acceptable target for hunting, provided they form part of a population that qualifies for culling. I would thus justify hunting only in the case of a lone bull elephant that would have been culled in any case.

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, according to Chadwick (1992: 121), is "universally [...] a bitter, emotionally charged disagreement". My aversion to the idea of hunting elephants derives from the negative effects it has on them. Among these is their hostile or nervous reaction to human beings in response to being shot at. As early as 1937, the game ranger Stevenson-Hamilton noted that "unrestricted shooting of elephants [had] been going on in Portuguese East Africa". Some of the elephants involved crossed into the Kruger National Park. For Stevenson-Hamilton it was easy to identify the newcomers, as the "smallest whiff of human scent [was] enough to send them off at once in panic" (Whyte 2001: 68, 69). I find Viljee Carinus's (1998: 56, 57, 59) description of his elephant hunt in Zimbabwe particularly unacceptable. His "great moment" of killing an elephant cow and his pride in his trophy — a "wonderful remembrance" of his "biggest hunt yet" — lose all significance when one reads the details of the hunt. He clearly failed to understand the dynamics of elephant society, as he very possibly shot the matriarch of a herd of fourteen elephants without realising or caring. This cow probably had two to four offspring among the herd. Is it strange, therefore, that he described the regularly hunted elephants in that area as "very aggressive"?

3.4.6 As far as possible, the evidence of a cull should 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 encountering an elephant carcass or even at the sight of dry elephant bones. Some researchers suggest that elephants are able to recognise the identity of the remains of a known elephant. Carcasses and other evidence must thus be removed as soon as possible in order that the remaining elephants may not be confronted with the signs of the slaughter and thus have fear instilled in them.

3.4.7 In some cases there may be convincing arguments not to select certain elephants as part of a culling programme. One could argue the case that magnificent trophy animals ought to be excluded from culling in order to be kept for tourist viewing — few people have enjoyed the privilege of observing huge tuskers since the ivory slaughter of the 1970s and 1980s in Africa. The case for not killing elephants which have special relationships with human beings requires almost no argument. For example, the killing of elephants that are being studied by researchers violates not only the lives of those elephants, but also the emotional and psychological lives of the researchers. The depth of feeling and the emotional ties that Cynthia Moss (1988, 1992), for example, has developed with elephants during her research has enabled her to produce such revealing, ground-breaking studies of the species. To kill the animals she has known intimately over many years and with which 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 did, when her elephant research participants were slaughtered in a cull in Zimbabwe (cf Payne 1998: 213-24). In addition, it seems pointless to wreck research projects and to waste precious intellectual and financial research investments.

3.4.8 If culling is to be justified in a specific case, the meat, hides, and ivory must be utilised for the benefit of conservation. However, the utilisation of elephants as a sustainable resource for human consumption cannot serve as a justification for culling mammals of so high a moral standing. The Kruger National Park authorities deny that this factor played any role in their culling decisions between 1967 and 1994. A J Hall-Martin (1992: 83) categorically states "[t]he 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 unthinkable that the carcasses should be left for scavengers, and fully exposed to the particularly sharp senses of the remaining elephants. Elephants are deeply affected by the death of others of their kind. The trauma and fear engendered by the remains of culling would affect elephant behaviour too negatively. It would likewise be a grim solution to establish Auschwitz-like structures in which to burn the carcasses. The utilisation of meat, hides, and ivory could benefit conservation agencies, support research on alternative methods of elephant population control and lead to a better understanding of the role played by elephants in ecosystems. Utilisation may also result in imaginative partnerships with a conservation area's poor neighbours, 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 — those special mammals that draw the crowds to conservation areas, open hearts and minds to conservation, and move people to donate money for wildlife conservation. Some people also refer to species such as elephants as Africa's charismatic mega-fauna, the star attractions inducing tourists to visit African conservation areas (Sukumar 2003: 353, 400).

3.5 Tame and train African elephants?

In Asia, elephants have for centuries been trained to work for human beings. Might not taming and training African elephants be a solution for dealing with at least some of the overpopulated elephants that might otherwise need to be culled? Thus far, it has been generally believed that the African elephant cannot be tamed or trained. The few attempts to tame and train African elephants that have taken place have had to be abandoned, partly on account 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 elephants and a variety of harsh disciplinary measures are employed to force the elephants into submission and coerce them into obedience. Instruments by means of which severe pain is inflicted 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 rightly object to these inhumane practices.

However, a Zimbabwean expatriate living in South Africa, Rory Hensman, has achieved remarkable success in the training of African

elephants in what seem to be ethically acceptable ways. This is a provisional judgement, awaiting more detailed information about the training methods involved. In the light of available evidence, the training methods are not reliant on painful punishment, but on B F Skinner's operant conditioning, which is widely used as an ethically acceptable training method for animals such as dolphins and dogs. Certain behaviour is invited and rewarded, with no punishment or breaking of the elephant's spirit taking place. The exact role of prodding instruments and the amount of pain inflicted by them is not yet clear. This is a worrying aspect, since these trainers do in fact claim to achieve human dominance over elephants. Whether this dominance is established in ethically acceptable ways or not is a matter which requires further investigation.

Coupled with operant conditioning, the elephants are continually groomed to become accustomed to friendly, loving human behaviour. At no stage do the trainers or handlers require senseless, demeaning acts to be performed. The elephants are trained mostly to carry humans on their backs for safaris through the African bush and at times to track human beings with the aid of their very acute sense of smell. There is a further possibility that they may be used by game rangers to patrol conservation areas, in order to track down poachers and limit poaching.

Part of what makes Hensman's taming and training of African elephants acceptable is the fact that the elephants do not live in cages, but are free to roam in the African bush after their daily training sessions of up to three or four hours. Not only do they have a daily choice of permanently joining the wild African elephants in their conservation area, but they also have the opportunity of engaging in the activities elephants naturally perform in the African bush every day. These elephants return to their trainers and handlers of their own free will. One my therefore conclude that they are being treated with respect as they are granted the daily choice of whether or not to continue their training and work with humans.

As long as their training is ethically justifiable, they are not required to perform demeaning, humiliating tricks, and as long as they have a daily option of returning to the wild, can there be any arguments against this taming and training of elephants? In fact, there are strong arguments in circulation. Some people consider the taming of African elephants unnatural and thus unbecoming to such wonderful animals. Elephants ought not to be used as mere objects for commercial exploita-

tion or as soulless instruments for human recreational and tourist purposes. Others judge that it is immoral to separate young elephants between the ages of eight and eleven from family herds to train them, as they still need the contact and guidance of the older elephants in the herd.

There is no doubt that African elephants should ideally be allowed to roam freely on the plains and savannah in order to live their own lives in their natural habitat according to their own judgement and the rules of the wild, free from any human interference. However, when an over-population necessitates the removal of elephants from a conservation area through culling, the taming and training of young elephants, if done ethically, may become an option. Instead of being culled, these young elephants would get get an opportunity to become ambassadors for their species. This chance of life, albeit a different life, in close contact with human beings, clearly appears to be preferable to destruction.

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, such young elephants would be given a different opportunity, living their lives in close association with human beings. In the process they would work through the trauma of the violent loss of other herd members, partly by establishing new bonds. They would become part of a tamed and trained herd that might even become a "cross-species pack", enjoying close associations similar to those between human beings and dogs. Trained 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 and of the African environment and wildlife, as elephants render the riders safe from predators and other dangerous animals.

Most people find such close encounters with elephants awe-inspiring; much like the close contact between human beings and dolphins. If people with such experiences of elephants develop a deep appreciation of them and would fight to see them survive and flourish in the remaining areas of conserved African wilderness, these elephants may be seen as having served their species well as ambassadors of goodwill, rather than having been killed? Do they not deepen people's appreciation of the species 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, as well as the amazing capacity of our species to establish unique relationships with members of others. Such relationships can have a deep meaning and a special value in educating human beings concerning the particular nature of such animals.

4.   The ethics of decision-making on culling

Who should be involved in discussing and deciding whether a policy decision on culling should be adopted 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 the custodians entrusted with guarding, protecting and maintaining 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 to be administered for the benefit of all citizens. As custodians and trustees they must use their professional, scientifically informed judgement within the broad goals and purposes established by national and provincial governments on behalf of citizens. Within this framework of constitutional values, governmental laws, and bureaucratic regulations, they have the discretion and independent judgement to do what is best for a particular conservation area. They are accountable to the government and the citizens by means of regular reports and feedback.

In today's global village, conservation areas no longer belong only to the citizens of a specific country. Most conservation areas have special significance as a result of their unique natural world diversities. Such

areas can therefore be judged as being the common property of all human inhabitants of our planet, a kind of global commons. One could advance the argument that citizens of all countries have rights of access to the few remaining wilderness areas still in existence in our world. We could also argue that they have an interest in the protection of such areas for the sake of the health of our global environment, on which we all depend. They also have a stake in the protection and conservation of the rich diversities of our globe's various natural worlds, as many of them want to observe and experience those diversities, even when they happen to be located in other countries.

However, in the case of a matter as controversial and emotional as the culling of elephants, the wildlife managers of public reserves must be held to account for whatever decisions they take. It also behoves them to consult thoroughly with all stakeholders.[11] In a moral dilemma such as culling, the management of a particular conservation area, or the national management body of all areas, takes on a role similar to that of an individual moral agent in ethical decision-making. As a collective body, it is morally responsible for the conservation areas under its care. It must render a public account of the way in which it discharges its moral duties in its custodial role. It is responsible for taking all available information into account and placing it in the public domain for inspection and discussion by interested parties. It has to be transparent in its decision-making so that everyone can follow the logic of its reasoning and the factual basis of its claims. Being accountable to its stake-holders, it must be prepared to engage them in dialogue.[12] In a constitutional democracy, this is required of anyone in public office who is remunerated from public funds. Public officials manage and administer matters that are of

---

11 Carol C Gould (2002: 3-20) gives an insightful discussion of stakeholder theory, explaining how the various stakeholders and their legitimate interests should be determined and weighted. An interesting example of a park management engaging stakeholders in dialogue occurred in the 1990s when the Kruger National Park reviewed its elephant management policy. A public meeting was held 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, cf Gutmann & Thompson (1996).

importance to citizens. Thus they must account for the fulfilment of their duties in the interests of the public and to the public's benefit.

Stakeholders do not all share similar interests, or have claims of equal value or weight. The categories of stakeholders and the relative weight of their various interests must be carefully distinguished. For example, the interests of villagers harassed by elephants which are crossing the boundaries of conservation areas into human communities must be judged with more urgency than those of people in distant countries who have never visited the area. Imaginative methods may be used for consultation with stakeholders: workshops, hearings, invitations for submissions, requests for comments on proposed policies and their revisions, public meetings, opinion polls, exit polls for eco-tourists visiting conservation areas, and so forth.

As trustees and custodians of conservation areas on behalf of citizens of their own country and the rest of the world, wildlife managers and governing bodies 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 that sovereignty by means of involvement in genuine multilateral international organisations such as IUCN and CITES. In these organisations countries co-operate as equal partners by means of shared decision-making for the preservation 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, who must shoulder 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 the vocal activists, but also the tourists who visit, or might wish to visit, national parks and game reserves.

5.   Conclusion

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

- Although expensive, the translocation of family units or lone bulls remains one of the most ethically acceptable ways of dealing with elephant overpopulation. The procedure is risky and the animals are

traumatised and severely disorientated, but at least they are still alive and able to enjoy the company of their core family group, if the selection of the translocated herd was conducted wisely, and, of course, with some good luck as well. However, translocation has limited value, as the demand for elephants is minimal in comparison to the supply.

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

- The option of letting nature be, and allowing natural ecological processes to function as they did for millions of years as a method of controlling elephant numbers cannot work in conservation areas where fences and human populations artificially restrict the ecological processes designed to 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 exclusively on such processes for controlling elephant numbers.

- If culling is resorted to, it must only be used as a last resort once reasonable people have judged that all other possible options have been explored and exhausted. If culling is decided upon, it must be done in as humane a manner as possible.

- As custodians, wildlife managers must engage in dialogue with stakeholders to develop a democratically defensible policy susceptible of explanation, with 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 under certain circumstances be justified. But I cannot. The continued survival of the elephant species depends on their being in dynamic co-existence with all other living species without wrecking the habitat of others. The demand to preserve the ever-changing ecosystems that provide living conditions for a vast diversity of species overrides the interests of many individual elephants in living their lives freely in wilderness areas until they die of natural causes.

The negative impact of an overpopulation of elephants on wilderness environments is matched, if not surpassed, by the impact of human beings on the world. We should apply similar standards to the human impact on the environment as we apply to elephants in conservation areas. We must discuss human encroachment on the land available for wildlife. Hanks (1979: 7) puts the case 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 against human abuse and destruction of the environment. We have to reject human exploitation and pollution, and demonstrate serious concern about the lack of human population control. We must also address the growing loss of biodiversity by means of species extinction which results from irresponsible human activity.

The elephant problem merely reminds us of a much more complex and far more serious problem that we as human beings must face collectively. We, the utterly dominant species who have become the masters of the earth by dint of 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, our wisest ethical values, and the best practices of humane behaviour to halt the destruction and exploitation of our natural and cultural environments. We must limit human population numbers through ethically acceptable means. Only then will we be able to live in creative interaction and sustainable balance with our earth's environment, which is our only habitat. Perhaps then we shall regard ourselves as part and parcel of the community of living beings on earth, as partners caring for our shared world. As Aldo Leopold (1981: 204) has so beautifully said:

> All ethics so far […] rest upon a single premise that the individual is a member of a community of interdependent parts [...] 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.

Bibliography

BEGG A
1995. The great elephant debate: to cull or not to cull. *African Wildlife* 49(4): 6, 7, 9.

CARINUS V
1998. Olifantjag hier tot baie se voordeel. *Landbouweekblad* 27 Maart: 56, 57, 59.

CHADWICK D H
1992. *The fate of the elephant*. San Francisco, CA: Sierra Club Books.

CUMMING D H M & G S CUMMING
2003. Ungulate community structure and ecological processes: body size, hoof area and trampling in African savannas. *Oecologica* 134: 560-8.

DE WAAL F B M & P L TYACK (eds)
2003. *Animal social complexity: intelligence, culture, and individualized societies*. Cambridge, MA: Harvard University Press.

GADD M E
2002. The impact of elephants on the marula tree Sclerocarya birrea. *African Journal of Ecology* 40: 328-36.

GARAI M E
1997. The development of social behaviour in translocated juvenile African elephants *Loxodonta Africana* (Blumenbach). Unpubl doctoral dissertation, Faculty of Biological and Agricultural Sciences. Pretoria: University of Pretoria.

GINSBERG J
2002. CITES at 30, or 40. *Conservation Biology* 16(5): 1184-91.

GOULD C C
2002. Does stakeholder theory require democratic management? *Business & Professional Ethics Journal* 21(1): 3-20.

GROBLER D, A DELSINK & H LÖTTER
2003. Putting jumbos on the pill does the trick. *The Sunday Independent* 21 September: 7.

GRÖNING K (with text by M Saller)
1999. *Elephants: a cultural and natural history*. Cologne: Könemann.

GUTMANN A & D THOMPSON
1996. *Democracy and disagreement*. Cambridge, MA: Harvard University Press.

HALL-MARTIN A J
1992. Distribution and status of the African elephant *Loxodonta Africana* in South Africa, 1652-1992. *Koedoe* 35(1): 65-88.

HANKS J
1979. *A struggle for survival: the elephant problem*. Cape Town: Struik.

HAWTHORNE P
1996. Africa's barren plains. *Time* 25 November: 70.

JACOBS O S & R BIGGS
2002. The status and population structure of the marula in the Kruger National Park. *South African Journal of Wildlife Research* 32(1): 1-12.

KELLY H L P
2000. The effect of elephant utilisation on the *Sterculia Rogersii* and *Adansonia Digitata* populations of the Kruger National Park. Unpubl MSc dissertation, Faculty of Natural and Agricultural Sciences. Pretoria: University of Pretoria.

KERLEY G I H, B G S GEACH & C VIAL
2003. Jumbos or bust: do tourists' perceptions lead to an underappreciation of biodiversity? *South African Journal of Wildlife Research* 33(1): 13-21.

KURIYAN R
2002. Linking local perceptions of elephants and conservation: Samburu pastoralists in northern Kenya. *Society and Natural Resources* 15: 949-57.

LAROM D
2002. Auditory communication, meteorology, and the *Umwelt*, *Journal of Comparative Psychology* 116(2): 133-6.

LEOPOLD A
1981. *A Sand County almanac*. Oxford: Oxford University Press.

MCCOMB K, D REBY, L BAKER, C MOSS & S SAYIALEL
2002. Long-distance communication of acoustic cues to social identity in African elephants. *Animal Behaviour* 65: 317-29.

MEREDITH M
2001. *Africa's elephant: a biography*. London: Hodder and Stoughton.

MOSS C
1988. *Elephant memories: thirteen years in the life of an elephant family*. London: Elm Tree Books

1992. *Echo of the elephants: the story of an elephant family*. London: BBC Books.

NATIONAL PARKS BOARD OF SOUTH AFRICA, TRUSTEES
[*s a*]. *The Addo elephants*. Pretoria: Aurora

OSBORN F V
2002. *Capsicum Oleoresin* as an elephant repellent: field trials in the communal lands of Zimbabwe. *Journal of Wildlife Management* 66(3): 674-7.

OSBORN F V & G E PARKER
2003a. Linking two elephant refuges with a corridor in the communal lands of Zimbabwe. *African Journal of Ecology* 41: 68-74.

2003b. Towards an integrated approach for reducing the conflict between elephants and people: a review of the current research. *Oryx* 37(1): 80-4.

PAYNE K
1998. *Silent thunder: in the presence of elephants*. New York: Penguin Books.

2003. Sources of social complexity in three elephant species. De Waal & Tyack (eds) 2003: 58-85.

REGAN T
1984. *The case for animal rights*. London: Routledge & Kegan Paul.

REGENSTEIN L
1985. Animal rights, endangered species and human survival. Singer (ed) 1985: 118-32.

ROLSTON III H
2002. Values in and duties to the natural world. Schmidtz & Willott (eds) 2002: 33-8.

ROSENSTAND N
2000. *The moral of the story: an introduction to ethics*. Mountain View, CA: Mayfield.

SCHMIDTZ D & E WILLOTT (eds)
2002. *Environmental ethics: what really matters, what really works*. New York: Oxford University Press.

SINGER P
1985. Prologue: ethics and the new animal liberation. Singer (ed) 1985: 1-10.

SINGER P (ed)
1985. *In defense of animals*. New York: Blackwell.

SITATI N W, M J WALPOLE, R J SMITH & N LEADER-WILLIAMS
2003. Predicting spatial aspects of human-elephant conflict. *Journal of Applied Ecology* 40: 667-77.

SUKUMAR R
2003. *The living elephants: evolutionary ecology, behaviour, and conservation*. Oxford: Oxford University Press.

WELADJI R B & M N TCHAMBA
2003. Conflict between people and protected areas within the Bénoué Wildlife Conservation Area, North Cameroon. *Oryx* 37(1): 72-9.

WHITEHOUSE A M & G I H KERLEY
2002. Retrospective assessment of long-term conservation management of elephants in Addo Elephant National Park, South Africa. *Oryx* 36(3): 243-8.

WHYTE I J
2001. Conservation management of the Kruger National Park elephant population. Unpubl PhD thesis in Zoology. Pretoria: University of Pretoria.

2002. Headaches and heartaches: the elephant management dilemma. Schmidtz & Willott (eds) 2002: 293-305.

WHYTE I J, H C BIGGS, A GAYLARD & L E O BRAACK
1999. A new policy for the management of the Kruger National Park's elephant population. *Koedoe* 42(1): 111.