

The Savanna Elephant: The importance of correct management systems

Summary

African elephant (*Loxodonta africana*) conservation is a serious problem. The damage they can cause to local human communities is immense, yet the conservation of this species can bring a huge source of economical benefit to the area. At present management techniques are out of date and consequently culling is being reintroduced into Kruger National Park, South Africa to control the over populated Savanna elephant (*Loxodonta africana africana*). Ongoing research and development has been carried out and this report highlights that correct management systems is the way forward for the preservation of this species.



Source: Hardholt.R

Introduction

Over the last century, conservation of the elephant has been a topical discussion amongst conservationists and the public alike. African Elephants (*Loxodonta africana*) are genetically different from Asian Elephants (*Elephas maximus*) and are located in African countries, having varied habitats ranging from open savanna to desert and rainforests. They weigh up to 7,500kg and eat 150-225kg per day, travelling in matriarchal family units feeding for 18-20 hours, causing damage to trees, vegetation, crops and even homes. Elephants have long lives living for about 60 years with no predators apart from human poachers, (Smith, 1989).

The management of the African elephant is a complex job; in some areas in South Africa, populations are near to extinction where in other areas populations are so vast that new measures are being put into action, (Van Aarde & Jackson, 2006). For example in South Africa's Kruger National Park, the Savanna elephant (*Loxodonta*

africana africana) is over-populated to the extent that culling is being re-introduced to control numbers. While animal groups such as The International Fund for Animal Welfare (Ifaw) resent culling as a control method, Dr Leaky a known palaeontologist and conservationist, feels it a necessary measure and the only resort, (Black, 2008). Here I have explored some modern management techniques, to deal with the cause of increased elephant populations, instead of dealing with the symptoms that force conservationists into a seemingly necessary cull.

Methods

Culling was adopted in the 1960's where densities were supported by the concept of carrying capacity (the number of elephant individuals an environment can support without a negative impact on the environment or to the elephant population). According to Van Aarde & Jackson (2007), culling can disrupt population dynamics giving rise to immigration. Kruger National Park is a prime example of this; here, movement into culled areas increased, increasing elephant densities. Van Aarde & Jackson (2007) suggest that culling needs to be applied continuously and urge that the use of 'Metapopulation metaphor' method, a framework for management of populations needs to be adopted.

The 'Metapopulation metaphor' relies on spatial discontinuities imposed by landscape diversity, relying on regional populations remaining stable despite local instabilities. Dispersion of elephants into other areas is essential for their theory to work. They claim it relies upon 'source and sink' populations. Whereby dispersal from 'sources' move to 'sinks' and elephant mortality rates must be greater than birth rates. Immigration from sources limit populations and prevent increased local populations. Lastly human hunting at carrying capacity is the suggested means of controlling sinks.

Research carried out by Hoare and Du Toit (1999); evaluates the coexistence between people and elephants in the African Savannas. On going research from 1993 to 1998 concentrated on the decline in range and numbers of elephants as a result of expanding human activity in Zimbabwe. There they used a model of human elephant interaction that predicted a negative linear relationship between rising human density and declining elephant density. Showing that management in human – elephant populated areas need close monitoring to ensure elephant populations are not pushed into densely populated elephant areas, causing regional problems and a balance is found between the human and elephant communities.

Boone et al (2002) highlights the uses of the 'Savanna modelling system.' The system is a computer software management and assessment system, allowing users to access responses to alternative management actions. From their results I have concentrated on '*allowing livestock to graze in areas where they are currently excluded, that lead to large declines in wildlife populations, especially elephants.*'

Discussion

Hoare and Du Toit (1999) found that elephant density is unrelated to human density, until a threshold of human density is reached. This then results in elephants disappearing from the area. It was also shown that elephants disappeared from

remaining patches of untransformed habitat and did not become condensed within them once the areas of these patches was reduced to a 'low critical level.'

The Savanna modelling system found that when livestock were allowed to graze freely, elephant (*Loxodonta africana*) populations decreased by 22%. This was mainly due to the most densely populated areas occupied by Maasai cattle for cultivation, were most favoured by elephants.

The co-existence of human and elephant populations is a fine balance. On one hand elephant populations are important to maintain species diversity, as well as the local benefits of tourism and future development of parks. While on the other hand damage caused to vegetation, crops, homes and biodiversity can be detrimental.

It is obvious that new ways and management techniques are available and can be used to control local populations of elephants by setting a maximum threshold on the limiting factor without the lead to extinction.

I propose that by using the Metapopulation theory and the Savanna modelling system, 'non-expert' and local reserve managers can take responsibility for local populations to ensure regional stability. New ideas could be tested in the 'modelling system,' for example, using livestock as an economic control of the elephant.

With these methods and on-going research a greater understanding of elephant influencing factors can be determined to control the species in a sustainable, and modern way.

References

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