The future survival of African elephants: implications for conservation

Abstract

In 2007 the elephant population in Africa was estimated at between 470,000 and 690,000. However, this population is rapidly decreasing. Today, African elephants are highly endangered and are listed as ‘vulnerable’ on the International Union for Conservation of Nature Red List. In this review, we outline the major factors affecting the future survival of elephants. We identify elephant poaching in Central Africa as the primary cause of elephants’ decline, and this issue has duly received the majority of attention from conservationists and policy-makers. However, poaching is not the only factor: climate change, habitat loss, and human-elephant conflict also have an adverse impact, and all have received relatively little attention due to the predominant focus on poaching.

Keywords: Loxodonta Africana, elephants, conservation, poaching, extinction

Introduction

African elephants (Loxodonta Africana) comprise two subspecies: the savanna elephant (Loxodonta Africana) and forest elephant (Loxodonta Africana cyclotis). These animals are found across Sub-Saharan Africa, inhabiting swamp forests, savannas and desert. Savanna elephants live in Eastern and Southern Africa, whereas forest elephants are predominantly found in Central Africa. Moreover, both savanna and forests elephants can be found in small numbers in Western Africa, although their taxonomic status remains undefined.

Southern Africa hosts the majority (± 55%) of the continent’s elephant population; Eastern Africa holds ±28%, while Central Africa includes ±16%, and the remaining ±2% are found in Western Africa (Figure 1). Management strategies are challenging. For instance, in Western Africa, human population increase and the consequent growth in human-elephant conflict (HEC) has emerged as a highly pertinent issue, to the extent that fewer elephants can be found in Western Africa than in other regions. In 2007, Africa’s elephant population was estimated at between 470,000 and 690,000. However, these figures declined by 144,000 by 2014 and have continued shrinking by 8% every year (Figure 2). Between 2010 and 2012, ±100 000 elephants were killed. A principal cause of the killing constituted illegal poaching and the trade of wildlife products, especially ivory. Elephant poaching for ivory is most reported in Central Africa, the largest amount in Tanzania.
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 Threats to the elephant population

 Human-elephant conflict

 Figure 1 Elephant population in African regions (Adopted from Nelleman C et al.).

 Figure 2 Africa’s elephant population trend (Adapted from Chase MJ et al.).
Climate change

Initially, climate change was associated with natural processes such as the circulation of oceanic currents. However, today it is increasingly believed that human activities such as fossil fuel combustion, deforestation and industrial activities cause climate change. High temperatures affect animals in different ways, but such changes are particularly severe for those that cannot dissipate heat easily, such as elephants.

High temperatures: Many species of mammals use sweat glands or pant to cool down when air temperatures are high. However, elephants do not have a sweat duct, rendering heat dissipation a major issue. When temperatures are high, they must use non-evaporative techniques such as flapping their ears in order to maximize heat transfer. They may also use behavioral strategies such as hiding in shaded areas under trees.

Drought: Elephants’ lives are contingent on the availability of water. Elephants tend to congregate in areas with sufficient water to drink and in which to bathe and play, especially in coastal lowlands and along river valleys. This is essential because they require a large amount of water, about 150-300 liters of water per day. During drought events, elephants may die due to limited amounts of water availability. Nevertheless, the effects of drought tend to be less severe for desert-adapted elephants, such as those found in northern Namibia and Central Africa.

Interaction between climate change and HEC: Climate change may enhance conflict between humans and elephants as they must compete for increasingly limited land, water and other natural resources. Moreover, climate change may stimulate humans to alter their living patterns and livelihoods. For example, increased vulnerability to flooding may cause people to move and establish new settlements in elephants’ habitats. Droughts may equally cause people to migrate to other areas in search of food, fodder and water both for themselves and for their livestock. In seasons with limited rainfall, pasture fertility may be low and so fodder reserves for livestock are also constrained. When farmers run out of fodder, they often seek grazing areas elsewhere, especially in forests, which is where many elephants live.

Elephant poaching

Poaching can be defined as the illegal killing of wildlife animals. According to CITES, poaching is a major and growing threat to elephant populations (Figure 3). Indeed, the increase in the illegal trade of wildlife products has driven biodiversity loss among elephants.
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In South Africa, and especially in the Eastern Cape, elephants have been killed so that they do not exceed certain numbers and trample crops. The issue is that within an elephant population, it is difficult to identify a particular culprit. In many cases, the wrong elephant is killed, which fails to solve the problem. Even if the offender is killed, others potentially replace it.

What can be done?

Numerous measures can be taken to assist elephants in coping with a changing climate. These include safeguarding elephants’ access to water sources, whether natural or artificial. Elephants require space in which to roam, find food and water as well as other elephants for mating. Thus, securing land for elephants and enabling them to move between them, in some cases across national borders, is necessary.

Deforestation is caused by imprudent land use as well as the expansion of industrial areas. In Africa, the unregulated building of shacks cannot be ignored. Therefore, organizations such as the Food and Agriculture Organization (FAO) should put mechanisms in place to minimize deforestation. For instance, effective measures for the management of deforestation and the practice of afforestation are yet to be implemented.

It is also important to reduce pressure on elephants’ habitats. This may be achieved by supporting community livelihood activities to enable people to cope during livestock food shortages, such as assisting in rangeland management to conserve fodder for livestock so that cattle do not need to be grazed in pastures used by elephants. Improvements to agricultural practices should also be made through sustainable agriculture. Working with communities to undertake land-use planning increases the space available for their activities, including for livestock and agriculture as well as for elephants and other wildlife.

In the case of crop raiding, elephants should not be killed. This is because elephants are slow breeders. For instance, when an elephant is killed it will take 15 years for a female to replace it. Therefore, when raiding crops, elephants should either be denied food or given a place in which to live.

Identifying the principal causes of elephant poaching is complex. However, it is well-acknowledged that China and Thailand are the largest ivory traders, and ivory tends to be transported from Kenya, Tanzania and South Africa. Therefore, improving and tightening law enforcement may play a significant role. For instance, collaborations between the military, anti-poacher units and the police may help fight poachers, and boost the elephant population in regions such as Southern Africa. A similar strategy should also be implemented in Western, Central and Eastern African regions, where poaching represents a principal cause of elephants’ decline. Nevertheless, highly trained anti-poachers will be required, necessitating considerable financial resources.

Elephants may also benefit poor people living close to wildlife parks through the development of tourism. Policy-makers, managers and wildlife conservationists should develop sustainable means of including elephants in tourism so that their conservation will be guaranteed.
Conclusion

Elephants will soon become extinct if no proper conservation strategies are implemented. This review has revealed that elephants do not only face issues of poaching, but also habitat loss and climate change connected with human activities. When all of these factors are combined, they are capable of eradicating elephant populations across Africa. This issue is particularly pertinent because Africa is comprised of poor and developing countries. In most cases, the development strategy is to expand industrial areas and agriculture in order to create new job opportunities. More roads continue to be built and people continue to move from rural to urban areas in search of superior jobs and lifestyles. This alone may lead to elephants’ extinction through habitat loss and global warming. People still need to be educated about the value of elephants. However, given that many people in Africa are illiterate, this will constitute a significant challenge and will require considerable financial resources. Therefore, developed countries as well as organizations such as the FAO and the United Nations might play an important financial role.

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Conflicts of interest

The authors declare no conflicts of interest.

References

9. CITES. 13th Meeting of the Conference of the Parties to CITES. Switzerland: Global Species Programme, WWF factsheet; 2004.


