

Kula Jilo*, Nejash Abdela, Ahmed Mohammed

Jimma University College of Agriculture and Veterinary Medicine, School of Veterinary Medicine, Jimma, Ethiopia

Dates: Received: 05 April, 2016; Accepted: 14 April, 2016; Published: 16 April, 2016

*Corresponding author: Kula Jilo, Jimma University College of Agriculture and Veterinary Medicine, School of Veterinary Medicine Jimma, Ethiopia, E-mail: Kula.jilo1@gmail.com

www.peertechz.com

Keywords: Zebra; Equus grevyi; Yabello

Review Article

Current Status of Grevy Zebra: A Review

Abstract

Grevy's zebra is a member of the horse family Equidae and so is closely related to horses, asses and other zebras. They inhabit dry desert regions and open grasslands. Grevy's zebra is one of the world's most threatened wild equids and is IUCN red-listed as endangered. Historically, the Grevy's zebra *Equus grevyi* ranged from east of the Rift Valley in Kenya to western Somalia and northern Ethiopia. Nowadays, Grevy's zebra is found only in Kenya and small isolated populations in Yabello Sanctuary Park in Ethiopia. They are regionally extinct in Djibouti, Eritrea and Somalia. The number of *Equus grevyi* has declined rapidly by 85% over the last 27 years in the late 1970s the number estimates to be 15,000 but the current estimation is between 1,700 and 2,100. The species of grevy zebra are on the verge of extinction due to habitat degradation and loss, competition for resources with livestock, hunting, drought, disease, hybridisation and predation. Therefore, routine conservation strategies should be implemented as soon as possible.

Introduction

Grevy's zebra is a member of the horse family, Equidae, and so is closely related to horses, asses and other zebra (all of which share the same genus, as the family is monotypic). Class: Mammalia, Order: Perissodactyla, Family: Equidae, Genus: *Equus*, Species: *grevyi* and they inhabit dry desert regions and open grasslands [1]. Historically, the Grevy's zebra *Equus grevyi* ranged from east of the Rift Valley in Kenya to western Somalia and northern Ethiopia [2]. Grevy's zebra is one of the world's most threatened wild equids and is IUCN red-listed as Endangered [3]. The number of *Equus grevyi* has declined rapidly in recent times from estimates of 15,000 in the late 1970s to current estimation between 1,700 and 2,100. This indicates a maximum decline of 85% over the last 27 years.

The range of Grevy's zebra has also dramatically reduced in size. This species once ranged over large tracts of south western Somalia and northern Kenya and large areas of Ethiopia through to northern Djibouti and southern Eritrea. But, nowadays, Grevy's zebra ranges through Kenya and small isolated populations in Ethiopia. They are regionally extinct in Djibouti, Eritrea and Somalia with 93% of the population occurring within Kenya [4].

Regarding the current population survey, Grevy's zebras in Kenya occur in high numbers in Samburu rangelands and Laikipia plateau, while in Ethiopia is in the northeast of Lake Turkana, the Alledeghi plains; the Yabello Sanctuary and around Lake Chewbahir (IUCN, 2003). Nevertheless, Grevy's zebra exists in much of its former range in Kenya mainly east of the Rift Valley and Lake Turkana, north of Mount Kenya and the Tana River, and east towards western Somalia. As mentioned in the introduction, the population has undergone a sharp decline over the past few decades. At present the population in Kenya is about 1600 - 2000 individuals while in Ethiopia it is less than 150 individuals (Low, 2004).

Due to a number of reasons like habitat degradation and loss, competition for resources with livestock, hunting, drought, disease,

hybridisation and predation the population of Grevy zebra is dramatically decreasing, raising fear of extinction.

So the objective of this review;

- Determine the distribution and provide a minimum count of Grevy's zebra across in the world
- Provide baseline data from which to identify future locations where populations have declined and those where populations have increased.

Threats grevy's zebra population decline

Since early records of their distribution, Grevy's zebra have undergone one of the most substantial reductions of range of any African mammal. Historically, they were found more widely across the horn of Africa including Djibouti, Eritrea, Somalia, Ethiopia and Kenya with a reported sighting in Sudan but today they persist only in Kenya and Ethiopia [5].

There have also been significant declines in the numbers of Grevy's zebra (Table 1) towards the end of the 1970s; the global population of Grevy's zebra was estimated to be approximately 15,000 animals the present-day estimate is 3,318 that include 491 individuals in captivity in Europe representing 78% decline in global numbers over the past four decades.

In Ethiopia the populations of Grevy's zebra declined from an estimated 1900 in 1980 to 577 in 1992 [6], to 110 in 2003 (Williams et al. 2003). The trend from 1980 to 2003 represented a decline of 94% [3]. In the early 1970s, the largest population of Grevy's zebra in Ethiopia was in the Chew Bahir Wildlife Reserve, which had an estimated 1500 animals; today less than 280 Grevy zebra is expected in Ethiopia.

In Kenya, between 1977 and 1988, populations of Grevy's zebra declined from 13 718 to 4276 individuals (Table 1). This dramatic decline was attributed to hunting [6], the loss of access to habitat due

**Table 1:** Grevy zebra distribution.

Year	1970	1977	1980	1988	1992	2000	2003	2004	2006	2007	2008	2011
Kenya		13,718		4,278	577	2,571		1,600-2,000	1468-2135	1,838-2,319	2,407	2546
Ethiopia			1,900				110					281
World	15,000											3,318

Source: KWS [10].

to the presence of domestic livestock, and to low juvenile survival rates in areas where Grevy's zebra share resources with livestock [7]. In 2000, Nelson & Williams reported a further decline, with a total population estimate of between 2435 and 2707 individuals. By 2006, the population in Kenya was estimated to be between 1468 and 2135 (B. Low pers. comm. 2007). In 2007, population estimates slightly increased to 1838 to 2319 individuals, suggesting that more animals were being accurately observed or that the population might be stabilizing and increasing (Mwasi & Mwangi 2007). However, even if the numbers of Grevy's zebra are stabilizing in Kenya, the population has seen a significant decline from 1988 to 2006 (between 50 and 60%) and remains vulnerable to extinction.

The significant factors held responsible for the alarming decline of these animals are mainly hunting, habitat degradation and loss, competition for food and water resources from livestock and pastoralists and predation. In addition; Grevy's zebra is used for medicinal purposes by some pastoral communities, thus encouraging hunting [8].

Habitat degradation and loss

Habitat degradation results in soil erosion and vegetation changes with annuals replacing the perennials, thus reducing food availability [9]. In addition, heavy utilization of the available forage by high livestock densities especially during the wet season amounts to the same. On the other hand, water points in the community areas are occupied by pastoralists and their livestock forcing Grevy's zebras to drink at night increasing their vulnerability to be preyed upon by the nocturnal big cats. This also engages them in long movements to get water jeopardizing the survival of the foals which is highly dependent on the distances made by the mothers in search of the fundamental resources [7].

Heavy, sustained grazing by relatively high densities of domestic livestock resulting in changes to the vegetation communities and erosion. Human activities such as upstream abstraction of water. Increasing climatic variability such as frequency and duration of drought. Habitat degradation is by far the most serious threat to Grevy's zebra across most of its range. All Grevy's zebra in their historic range of Grevy's zebra. Habitat loss has resulted in a large reduction in the range of Grevy's zebra [10].

Competition for resources with livestock, reduction of water sources and restricted access to water

Pastoralists are becoming more sedentary around permanent and seasonal water sources, leading to the exclusion of wildlife. Overgrazing, soil compaction and excessive soil erosion largely impair forage productivity (Herlocker, 1992). Inappropriate distribution and

introduction of non-native livestock species resulting into change in vegetation composition and communities worsen the situation [11].

It is a common feature in savanna grasslands to find association of Grevy's zebras with other wild animals. This implies the existence of some level of interspecific competition. Competition with relatively high densities of domestic livestock for limited resources; particularly in the dry season of reduction of water include upstream abstraction, river flow, human occupation, and human settlement near water, siltation, and falling water table. Unsustainable extraction of perennial river water for irrigation in highland areas and exclusion of wildlife from water sources by people [12].

Competition caused by displacement, encroachment and harassment by herders causes overall reduction of water, competition for resources with livestock threatens Grevy's zebra population are sympatric with pastoral people and their livestock of their range. Restricted access to water threatens the small and potentially isolated populations in the more arid parts of their range [10].

Hunting

Historically, hunting has been responsible for the large decline in Grevy's zebra number due to the killing of Grevy's zebra for skins, for meat and utilization for medicinal and cultural purposes. At present, killing of animals for meat and medicinal purposes. This is one of the threats in areas like El-Barta, North Horr, South Horr and non-target shooting in Tsavo in Kenya [7].

Drought

However, drought is expected to favour Grevy's zebras as argued by IUCN [8], because they can forage on inconsumable plant materials by the livestock in such periods. Nevertheless, competition with livestock deciphers to low survival of the foals in the pastoral areas increases. Despite the hardy nature of Grevy's zebras, competition with pastoralists and their livestock force them to migrate to other risk sites or vacate their ideal breeding areas [13].

Disease

Unvaccinated livestock making both domestic stock and wildlife susceptible to the disease especially for species occurring in low numbers especially anthrax and babesiosis. Especially anthrax which has caused a devastating effect on the population in the late 2005 and early 2006. Frequency of emerging /re-emerging diseases is on the increase due to increasing interaction of wildlife livestock and humans and climatic change [4].

Hybridisation

Sympatric hybridization between Grevy's and plains zebra on the



edge of Grevy's zebra range is declining the replacement of original population. Hybridization has the potential to be a threat and the extent to which this is a threat needs further investigation in both populations [2].

Predation

There is top-heavy predation of Grevy's zebra specifically by lions and hyenas impacting on Grevy's zebra population growth.

Recommendation and Conclusion

Grevy's zebra share common food resources with livestock in pastoral community.

The grazing lands are becoming bare mostly because of overgrazing. Water is scarce and poorly distributed, especially over the dry period. Diseases perilous to the survival of the Grevy's zebra in community grazing lands have not special attention, as revealed in the recent anthrax outbreak.

So, based on the above outlines the following recommendation are forwarded.

- Both the Grevy's zebra conservationists and the community need to formulate grazing systems which will allow a balance in forage availability and utilization
- Elders who have the prime decision on forage use among the community in order to facilitate the formulation and implementation of the grazing system
- There is a need for concerted conservation efforts to save the species from extinction.
- Steps should be in arresting the land degradation need to be taken.
- Proper stocking rate, reseeding programmes and other soil erosion control measures need to be considered to halt the severe soil erosion and gulley formation.
- Herders need to be educated on how they can coexist well

with Grevy's in their community grazing fields.

- More research on common diseases and their epidemiology need to be explored and control measures put in place

References

1. Williams, Stuart D (2002) Status and action plan for Grevy's Zebra *Equus grevyi*. *Equids: Zebras, asses, and horses: Status survey and conservation action plan* 34: 11.
2. Bauer IE, McMorro J, Yalden DW (1994) The historic ranges of three equid species in North-East Africa: a quantitative comparison of environmental tolerances. *J Biogeogr* 21: 169–182.
3. Moehlman PD, Rubenstein DI, Kebede F (2008) *Equus*
4. Low B (2006) Anthrax update in Northern Kenya. (Downloaded via Microsoft internet, Low, B., et al. "Report on the national survey of Grevy's Zebra in Kenya. 24-29 (2008).
5. Switzerland and Kingdon J (1997) *The Kingdon Guide to African Mammals*. Academic Press, San Diego.
6. Rowen M, Ginsberg J (1992) Grevy's zebra (*Equus grevyi* Oustalet). In: Duncan P (eds) *Zebras, asses and horses. An action plan for the conservation of wild equids*. IUCN/SSC Equid Specialist Group, IUCN, Gland 10–12.
7. Williams DS (1998) *Grevy's Zebra: Ecology in Heterogeneous Environment*.
8. IUCN (2002) *Equids: Zebras, Asses and Horses*. IUCN, Gland.
9. Herlocker DJ (1993) *Vegetation types, Range Management Handbook of Kenya*.
10. KWS (2012) *Conservation and Management Strategy for Grevy's Zebra (Equus grevyi) in Kenya, (2012-2016)*, 2nd edition. 40, Kenya Wildlife Service, Nairobi, Kenya.
11. Herlocker DJ (1990) *Range Vegetation of Isiolo District*. Ministry of Livestock.
12. Muoria PK, Muruthi P, Rubenstein D, Oguge NO, Munene E (2005) *Cross Sectional*.
13. Olson DM, Dinerstein E (1998) *The Global 200: A Representation Approach to Conserving the Earth's Most Biologically Valuable Ecoregions*. *Conservation Biology* 12: 502-515.
14. Bronner G (1990) *Vegetation and land use in the Matthews Range area, Samburu-district, Kenya*.

Copyright: © 2016 Kula J, et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.