

The impact of predation on Grevy's zebra (*Equus grevyi*) population on Lewa Wildlife Conservancy

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Abstract:

Lewa Wildlife Conservancy (LWC) is home to a large number of herbivores that form the prey base of a growing predator population. Similarly, LWC is home to at least 20% of the world's remaining wild population of Grevy's zebra. This is a significant breeding population with the potential for restocking former range lands of the species. Research and monitoring of this population is thus of paramount importance to understand and subsequently implement management interventions to ameliorate factors that constrain the growth of this population. This research focused on explaining one factor limiting the growth of Grevy's population: predation by lions and hyenas and the availability of suitable resources. These issues required information on births, foal survival, mortality resulting from predation and proportion of Grevy's zebra hairs found in scat samples. This data was collected for a period of six months from October 2008 to April 2009. Five foals were born during the study period and three confirmed dead. Vegetation study was carried out to determine the distribution and abundance of food available to the Grevy's zebra in the study area. Vegetation transects were set on different vegetation types and data gathered using a pin frame. Species diversity was found to be low (Simpson Diversity index (D) = 0.8) with *Pennisetum stramenium* being the dominant grass species. Green grass attracted more Grevy's zebra for both dry and wet season than areas dominated by brown grass but this was not statistically significant ($F(1, 33) = 0.98$, $P > 0.05$). Grevy's also preferred areas with high grass biomass (11,095 kg/ha, $SE \pm 419$ kg/ha) as opposed to low grass biomass (9,964 kg/ha, $SE \pm 647$ kg/ha), $t = -3.53$, $P < 0.05$, $DF = 248$. Tree density as a measure of cover was high at the core home ranges of both Grevy's zebra and lions (68 trees/ha). Wildlife mortality data was collected based on daily field reports. The dead species was identified and cause of death as observed from the carcass recorded. Mortality data was analyzed using Jacobs Index to determine prey preference. Scat analysis results indicate that both species of zebras found on LWC, formed basic diet for the lion population. Based on the findings of this research work, practical and relevant adaptive management interventions have been mentioned: Habitat manipulation to open up closed areas thus increasing the visibility of Grevy's zebra and also translocation of lion