



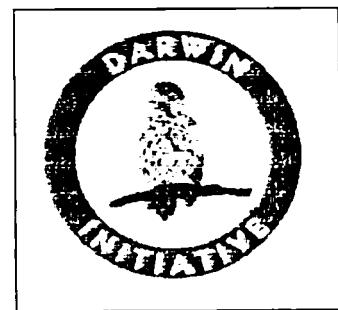
**A PRELIMINARY STUDY OF THE BLACK RHINOCEROS
(*DICEROS BICORNIS MICHAELI*)
IN THE NGORONGORO CRATER, TANZANIA**

By: PAUL IMMANUEL SARAKIKYA

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**The Durrell Institute of Conservation and Ecology
UNIVERSITY OF KENT
CANTERBURY**



ABSTRACT

The number of black rhinoceros (*Diceros bicornis*) in Tanzania is about 32 and is composed of two subspecies namely *D. b. michaeli* and *D. b. minor* with 22 and 10 individuals respectively. The taxonomic unit found in NCA is *D. b. michaeli* with 13 individuals, but there might be transient individuals present in the NHFR. Poaching was the main reason for the population decline in the past three decades. The shift in sex ratio, population structure and small N_e were associated with poaching pressure. NEMP and NRCP were established as an attempt to minimise poaching.

In this study, it was possible to identify individual rhinos by using morphological characteristics as well as their behaviour and distribution. Among 13 individuals identified, six were adults (1 male, 5 females), five sub-adults (2 males, 3 females) and two female calves. With the exception of one individual, the core areas for all the rhinos were Lerai Forest and Shamba ya Faru. Apart from one individual, all the rhinos were found to interact and resting (lying down) was a predominant day time activity.

The sex ratio (male: female) was 1: 3.3 for all age classes combined, while for adults only was 1: 5 and 60% of the adult females had calves. The cow: calf ratio was 100: 40. Ten calves were born between June 1990 and June 1996 (NEMP 1995; This study) and the calving interval was found to be 2-3 years.

Effective population size, rates of increase/decrease, heterozygosity and inbreeding coefficients of this population were discussed and the future fate was predicted by a Recessive Lethal Vortex Model. The controversial N_e was 3 and the genetic diversity was about 0.83 with subsequent inbreeding coefficient of 0.17. Poaching was the only catastrophe which was modelled in the Vortex simulations by incorporating annual 5%, 10%, 20%, 25% and 50% probabilities of each individual being poached and survival probabilities of 0.95, 0.96, 0.94, 0.92 and 0.90 respectively. With 50% annual poaching prediction, the population appeared to be severely depressed, while the rest of other poaching percentage measures made the population to reach an asymptote at about 25

years. The annual population growth rate between 1983 and 1996 was - 0.034 but the instantaneous rate of increase was 0.0342. The population is likely to remain small for a long period of time.

The pastoralist population growth and their consequent activities within the area are likely to jeopardise the future of rhinos if pragmatic measures are not taken. Recommendations were made to the NCA Management, basing on the likely trend in the population and the current poaching plight.