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An Assessment of Puku (*Kobus vardonii*) Populations in Kafue National Park, Zambia Using Ground Transects Other than the Road Network

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ABSTRACT In the past, ground counts in Kafue National Park (KNP) were predominantly confined to the road network owing to the vastness of the Park. Though essential information was yielded, results could not be generalized for the entire area as the road network did not traverse all habitats. Thus, using Distance Sampling methods, an attempt was made in 2010 to obtain unbiased and precise estimates of puku population and structure. Puku was chosen, because it acted as an indicator species for the SEED Programme and secondly its distribution during the dry season was predominantly confined to areas that were relatively accessible. The study area was defined using dry season distributions obtained from daily patrol data and from previous aerial survey reports. With an effort of 152.74km, 90 observations were yielded in groups ranging from 1–76 individuals with a modal size of one. This remained consistent with other studies that have shown that puku usually occur in small groups. Age ratios indicated that there were significantly more adults (81.7%) than sub-adults and juveniles together (18.3%), and may well be a concern to management. Sex ratios were more skewed towards the females, a norm for wild populations. Density estimates (0.433, CV = ± 24.7%) fell within the upper limit of the 2008 aerial count estimate (0.329/km^2). Together, these results suggest that Distance Sampling using transects rather than the road network is a more useful and effective technique for estimating densities of puku and should in future be extended to incorporate other large mammals.

INTRODUCTION

From 2006-2011, activities of wildlife research in the Kafue National Park (KNP) had been steered by the Support for Economic Expansion and Diversification (SEED) Programme. The SEED Programme was a project developed and implemented by the Government of the Republic of Zambia, through the Ministry of Tourism, Environment and Natural Resources (MTENR) and Zambia Wildlife Authority (ZAWA), with funding assistance from the World Bank, Global Environment Facility and the Government of Norway. The goal of the SEED Programme was to reverse the loss of biodiversity in the park and its surrounding Game Management Areas (GMAs), and develop sustainable tourism. The programme was implemented through six components namely: Park administration and management, Infrastructure development, Resource protection, Wildlife research and monitoring of critical habitats, Community based natural resources management, and Private sector-public partnership. One objective of Component Four of the SEED Programme (Wildlife research and monitoring of critical habitats) was to adopt an active adaptive management approach to monitoring and research of ecological and other processes in the park and its surrounding GMAs (ZAWA 2004). To this end, one of the tasks of the SEED Programme in the Kafue National Park (KNP) was to undertake monitoring of animal populations, which helped in determining their population sizes and demographic status. Aerial and ground count surveys were the planned activities in achieving this task.

Traditionally ground count surveys have been conducted along the road network in KNP, particularly in the photographic tourism areas namely, Busanga; Lufupa; Kafwala; Hippo; Chunga; Ngoma; and Nanzilla (Bond and Scott 2003; Miyauchi 1992, 1993, 1994; Mkanda et al. 2005; Mkanda and Simpamba 2005; Simpamba 2007; Namukonde and Simpamba 2009). These surveys have provided essential information on the procreation potential, encounter rates and densities of several large mammal species. Though useful, this information could not be generalized for the entire Park as the road network in KNP does not traverse all habitats. Further, some of the species sampled had varying habitat requirements and their distribution was

Fig. 1. Areas sampled during road counts in KNP 1992-2008. From bottom left to right Nanzhila, Ngoma, Busanga, Lufupa, Hippo, Kafwala and Chunga