The demography of a fragmented population of the savanna elephant (*Loxodonta africana* Blumenbach) in Maputaland

By

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I haue rid vpon an elephant ſince I came to this Court, determining one day (by Gods leaue) to haue my picture expreſſed in my next Booke, ſitting vpon an Elephant,

Tom Coriate 'Traveller for the English Wits: Greetings' (1616).

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Abstract

The savanna elephant is a flagship species for conservation in Maputaland, a biologically diverse centre of endemism. At present Maputaland's elephants are fragmented into two sub-populations, those confined to the Tembe Elephant Park (TEP) and those roaming across the Maputo Elephant Reserve (MER) and along the Futi Corridor. Fragmentation may have affected the sub-populations by skewing age and sex ratios, decreasing survival, isolating the sub-populations, and restricting landscape selection.

My evaluation of historical population estimates suggest that the size of the elephant populations has been under estimated both before and after the construction of an electrified fence that fragmented the population. The application of a series of mark-recapture models to sight-resight data collected in TEP resulted in a population

estimate of 179 (95% CI=136-233). The Bowden's estimator was the most suitable model under prevailing conditions.

My results confirmed that small populations of elephants are difficult to census in closed habitats. Estimates derived from aerial counts significantly under-estimated minimum population size determined from a registration count. Estimates derived from mark-recapture models approach or exceed those from registration counts.

Both population fragments are increasing in numbers: TEP's at 4.6% per year, MEP's at 3.1% per year. Demographic variables are significantly different, age at first calving is 11.5 years and 9.9 years, and calving interval is 4.2 years and 2.2 years for TEP and MER respectively. Age distribution was similar for females but not for males, as TEP showed a bias for adult males.

At the population level bulls in TEP favoured sand forests while breeding herds preferred reedbeds, but these preferences did not prove to be statistically significant. Individual bulls appeared to select for closed woodland landscape type but no statistical significance could be determined.

My study highlights the inconsistencies inherent in using historical data to determine population trends. Caution must be used when management decisions are based on such estimates. Sight-resight models are suitable for the enumeration of elephant populations. My results do not support landscape selection in elephants. The differences between population variables for the sub-populations are probably due to age and sex ratios imposed when the population was fragmented and the different levels of protection afforded to the sub-populations.

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La luta continuar.

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