

Seasonal variation in home range sizes and distance to the nearest ephemeral surface water for African savannah elephant (*Loxodonta africana*) in semi-arid eastern Okavango panhandle, northern Botswana

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Abstract

African elephants (*Loxodonta africana*) are megaherbivores of the African savanna that require extensive ranges to provide key resources critical for their survival and reproduction, both at spatial and temporal scales. We studied seasonal differences in home range sizes and daily distance travelled to the nearest ephemeral surface water sources by five male and ten female African elephants in the eastern Okavango Panhandle in northern Botswana between 2014-2017. We hypothesized that (i) elephant home ranges would be larger in the wet season than in the dry season (because forage and water sources tend to be more plentiful and widely distributed in the wet season than in the dry season, and elephants would not be restricted to localized resource areas), and that (ii) distances traveled by elephants to the nearest ephemeral surface water sources would be larger in the dry season than in the wet as these ephemeral water sources successively dry up. Our findings supported the hypotheses of the study. Elephants had larger home ranges in the wet season than in the dry season and the daily distances traveled to the nearest ephemeral surface water sources were larger in the dry season than in the wet season. The findings indicate the need to consider seasonal variations in elephant space use in land use planning and protected area management to minimize restricting elephants access to critical resources as seasons change or droughts intensify due to climate change.

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