

# Effects of divergent migratory strategies on access to resources for Cape buffalo (*Syncerus caffer caffer*)

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## Abstract

Populations of large herbivores frequently display divergent migratory strategies, a likely consequence of the trade-off between the costs and benefits of migration. Globally, physical and environmental barriers disrupt migrations, leading to increased residency, which can have detrimental consequences. In the Okavango Delta, Botswana, veterinary cordon fences erected in 1982 may have caused enforced residency in some subpopulations of Cape buffalo (*Syncerus caffer caffer*). We used data from GPS-enabled collars fitted to females in 1 resident and 1 migratory subpopulation of buffalo to test the hypotheses that 1) residents have access to less-productive forage than migrants, 2) residents occupy smaller home ranges and live in smaller herds than migrants, 3) reproductive productivity is lower in resident herds, and 4) residents have poorer body condition than migrants. Forage characteristics varied between resident and migrant ranges, both between and within seasons. Reproductive productivity and body condition did not differ between subpopulations, but residents occupied smaller home ranges during the rainy season and lived in smaller herds than migrants. Enforced residency could have decreased carrying capacity when the fence was erected, so resident buffalo may have adapted by forming smaller herds, allowing them to maintain their body condition. The area that residents occupied was located in a more central region of the Okavango Delta than that of migrants; therefore, this area would receive higher levels of nutrients from the annual flood, which would have increased heterogeneity in resident ranges, potentially compensating for effects of disrupted migrations. These results highlight the importance of conserving landscapes with spatially and temporally heterogeneous resources to buffer effects of anthropogenic activities such as artificial barriers on migrations.