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**Home ranges, activity patterns and habitat preferences of leopards in Luambe
National Park and adjacent Game Management Area in the Luangwa Valley, Zambia**

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Abstract

Leopard (*Panthera pardus*) populations are declining worldwide. There are limited data on leopard ecology, especially activity patterns and habitat use, but these are vital to facilitate their conservation. In Zambia we radio tracked two female and three male leopards to study home range sizes, activity patterns and habitat preferences in Luambe National Park (LNP), and an adjacent Game Management Area used for trophy hunting. Home range sizes (MCP 95%) comprised 28.3 - 55.7 km² for males and 3.1 – 42,3 km² for females; Kernel densities (50%; 95%) were 32.5 - 80.6 km² for males and 3.0 -23,0 km² for females. The home range for one female shrank during motherhood. Analysis of habitat use and activity patterns of leopards revealed sex-specific differences. Males showed a higher mobility than females. During 24-hour observations all individuals showed a minimum mobility during noon hours and maximum mobility before sunrise and sunset. Analyses of habitat preferences using the Jacob-Index and R package adehabitatHS showed that leopards prefer denser vegetation types and rather avoid grassland. These findings should be taken into account in conservation decisions, for example in the granting of trophy hunting activities.

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