



University of Venda

**Spatial and reproductive differentiation of small terrestrial mammals in a complex environment in the western Soutpansberg Mountain, Limpopo Province.**

BY

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## ABSTRACT

The study was conducted in Lajuma conservation area, Limpopo province, South Africa, from August 2010 to August 2011. The aim of the study was to establish baseline ecological data on small mammal community structure, to identify small mammal habitat preferences, to determine small mammal reproduction pattern and population dynamics, as these could allow early detection of subtle changes in the ecosystem due to climate change.

Data on small mammal abundance were collected on square grids of 100 live Sherman traps, set out over an area of 100 x 100m. Traps were positioned at 10m intervals. Data was collected from wetland, grassland and rocky outcrop habitat and trapping was done monthly. All small mammals were identified in the field and Durban museum.

The statistical software EstimateS (version 8.2, Colwell, 2009) was used to calculate expected species richness. The R Statistical program was used to test the influence of season, habitat and six climatic variables on both index of abundance, Minimum Number Alive (MNA) as well as on species richness. Generalized Linear Models (GLM) were applied to develop five different models to test for the relative importance of different predictor variables, alone and in combination. The statistical software PAST (Paleontological statistics) was used to run Correspondence analyses (CA) and cluster analysis to determine species-habitat associations based on species abundance in various habitats. The model performances were compared using Akaike Information Criterion (AIC).

Trap success varied between months with mean trap success of 23.6% (7-37.7%) and peaked during autumn. There were a total of eight species of Rodentia namely *Dasymys incomtus*, *Dendromus mystacalis*, *Lemniscomys rosalia*, *Mus minutoides*, *Micaelamys namaquensis*, *Otomys angoniensis*, *Aethomys ineptus* and *Rhabdomys pumilio*. There was only one species of Macroscelidae, namely *Elephantulus myurus* and three species of Soricomorpha, namely *Crocidura cyanea*, *Crocidura mariquensis* and *Myosorex varius*. The most abundant species was *Rhabdomys pumilio* with 29.87 % value of the total capture.

The diversity and evenness of small mammal varied between habitats. Wetland habitat provided greater diversity of small mammals than grassland and rocky out crops. The results indicated both seasonal and year round breeding patterns for different species. The species diversity of small mammals, was found to correlate more with season and habitat rather than other parameters. The research found that there is a strong relationship between habitat type and small mammal richness, diversity and abundance.