

Micro scale heterogeneity of spiders (Arachnida: Araneae) in the
Soutpanberg, South Africa: a comparative survey and inventory
in representative habitats

by

Maria Mafadza

A dissertation submitted in partial fulfillment of the requirements for the degree

of

Master of Science

In the
Department of Zoology
School of Mathematics and Natural Science
University of Venda, South Africa

Supervisor: Prof S.H. Foord

Co-Supervisor: Prof: J.E. Crafford

Thohoyandou
January 2016

UNIVEN LIBRARY
Library Item : 20161831



ABSTRACT

Coarse-scale studies that focus on species distributions and richness neglect heterogeneity that may be present at finer scales. Studies of arthropod assemblage structure at fine (1×1 km) scales are rare, but important, because these are the spatial levels at which real world applications are viable. The study investigates fine-scale variation in spider assemblages, comparing five representative vegetation types in the western Soutpansberg, Limpopo Province, South Africa. We assess these vegetation types in terms of their family and species composition, as well as levels of endemism, relating these differences with vegetation structure. The study inventoried 297 species (9752 individuals), representing 158 genera, and 50 families in an area less than 450 ha were collected during the three sampling periods, namely May 2004 (late) Autumn, November 2004 (late) Spring and March 2005 (late) Summer as part of the South African National Survey of Arachnida database (SANSA).

Analysis of the results suggests spider abundance and richness was highest in November as compared to March in five habitat types with 34% of the spiders caught in spring being adults decreasing to 25% later in the season. Endemic taxa are associated with Tall Forest and, to a lesser extent, Woodland. The Woodland had the highest species diversity, and much of the variation observed in spider assemblage structure is explained by these two vegetation types. Inventory completeness was more than 70% for all the habitats except the Mosaic Grassland. Twenty three species had significant IndVals > 70 and majority of indicators were associated with the Woodland (13), followed by Tall Forest (8), which was dominated by web builders such as *Nephila pilipes*, *Leucauge decorata* and *Glenognatha* sp. The restricted distribution of taxa at the local scale, often overlooked at the broader regional scale, is confirmed by the observation that only 27.4% of the species were found in all the habitats, at a scale less than 2 km in extent. Based on vegetation structure variables that explained significant variation in spider assemblages, human influence through bush encroachment will result in a change of spider assemblages to that of Short Forest and Mosaic Woodland vegetation types, with implications for biodiversity maintenance and heterogeneity. Beating targeted the most species, followed by ground collecting and leaf litter sifting.

Key words: endemism, South Africa, spider, SANSA, conservation, Soutpansberg