Metadata: datasets

PhD: Biogeographical insights from ecotones and phytogeographic regions in southern Africa: case studies on invertebrates and alien plants

Sanet Hugo

Contents

Vegetation attributes of savanna-grassland ecotone in the west of the Free State province

Abstract: Vegetation attributes of understory vegetation - dominant plant species cover, plant height, plant density and bare ground cover - were recorded at a savanna-grassland ecotone in the west of the Free State province. The attributes were recorded at each of five sampling grids, positioned 250m apart in five sampling sites. The sampling sites were positioned several kilometers apart across the ecotone (total distance approximately 30km). Dominant plant species (i.e. >5% cover) and bare ground were estimated as percentage cover of four 2m x 2m quadrats within each sampling grid. Vegetation height and density were each measured at 20 random points at each sampling grid.

Purpose: For PhD thesis, Chapter 4, titled "Patterns of Beetle and Spider Richness and Composition Across a South African Savanna-Grassland Ecotone".

Supplemental info: Column headings of dominant plant species cover dataset: Spno - species identity number; Type - growth form of plant, classified as grass, shrub, herb, or sapling; Genus/species – genus and/or species name of those plants that could be identified in the field; SC1-5 (i.e. five columns) - Savanna core grids; SI1-5 - Savanna intermediate grids; E1-5 - Ecotone grids; GI1-5 - Grassland intermediate grids; GC1-5 - Grassland core grids (Note: The first two rows contain data on (A) the percentage of area that is bare (bare ground cover), and (B) the percentage of area that is covered by leaf litter.). Column headings of plant height dataset: SC1-5 (i.e. five columns) - Savanna core grids; SI1-5 - Savanna intermediate grids; E1-5 - Ecotone grids; GI1-5 - Grassland intermediate grids; GC1-5 - Grassland core grids. Column headings of plant density dataset: SC1-5 (i.e. five columns) - Savanna core grids; SI1-5 - Savanna intermediate grids; E1-5 - Ecotone grids; GI1-5 - Grassland intermediate grids; GC1-5 - Grassland core grids.

Usage: Environmental variables used to examine invertebrate composition and richness, and to describe the savana-grassland ecotone habitat.

Files: Vegetation density.xls, Vegetation height.xls, Dominant plant species.xls

---

Invertebrate survey across a savanna-grassland ecotone in the western Free State Province

Abstract: Spiders and beetles were collected in the nine pitfall traps set at each sampling grid in 2009 and 2010. Five sampling grids were placed 250m apart in a sampling site, five sampling sites were placed several kilometers apart across the ecotone (total distance approximately 30km). The invertebrates were sorted and identified to morphospecies level.

Purpose: For the PhD thesis, Chapter 4 titled "Patterns of Beetle and Spider Richness and Composition Across a South African Savanna-Grassland Ecotone".

Supplemental info: Column headings: species - species identity number; SC1-5 (i.e. five columns) - Savanna core grids; SI1-5 - Savanna intermediate grids; E1-5 - Ecotone grids; GI1-5 – Grassland intermediate grids; GC1-5 - Grassland core grids. Coordinates of all sampling grids are provided in a separate file.

Usage: Used in cluster analyses and ordination to determine species composition differences, and used to determine species richness and diversity patterns across the savannagrassland ecotone.

Files: Grid coordinates.xls, Spider species 2010.xls, Spider species 2009.xls, Beetle species 2010.xls, Beetle species 2009.xls

---

Alien plant species richness, distance to the nearest ecotone, and environmental variables

Abstract: A dataset covering South Africa and Lesotho at a quarter degree resolution. Includes all of the variables used to examine the relationship between the spatial location of ecotones and alien plant species richness. More information is provided in the thesis, Chapter 3.

Purpose: Used in the PhD thesis, Chapter 3, titled "Are Environmental Transitions More Prone to Biological Invasions?"

Supplemental info: Column headings: ID - identity number of grid cell; longitude - longitudinal coordinates in decimal degrees; latitude - latitudinal coordinates in decimal degrees; biome - plant biome; natives - native plant species richness derived from the PRECIS database; aliens - alien plant species richness for selected invasive species as derived from the SAPIA database; distance - distance from the midpoint of a grid cell to the nearest ecotone. Based on the ecotones between the Low & Rebelo (1996) vegetation types.; min - minimum temperature; ndvi - January normalised difference vegetation index, a measure of primary productivity; altitude - altitudinal range in metres; geology - number of geological substrate types per grid cell; rainfall - range of total precipitation (mm) within each grid cell, based on points calculated at an 8 minute resolution.

Usage: Multiple regression of environmental variables in relation to 'ecotone distance' and 'species richness'.

Files: Ecotones vs alien plants all variables.xls

Distribution of naturalised alien plant species of southern Africa

Abstract: Presence records of all naturalised alien plant species for South Africa, Lesotho, Swaziland, Namibia and Botswana, at a quarter degree spatial resolution.

Purpose: Used in study presented as Chapter 2 of the PhD thesis.

Supplemental info: Column headings: SPNO - Species ID number; Taxon - Latin species and/or subspecies names; GRIDREF - ID number of grid cells (mostly quarter degree)

Usage: Used in a cluster analysis to determine alien phytogeographic regions. This dataset may be outdated as the original PRECIS database is often revised (SANBI).

Files: Naturdist.xls
