



Title: Livestock grazing has minimal effect on the species richness and diversity of semi-arid shrubland in the Western Little Karoo, South Africa.

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The Succulent Karoo, one of two arid biodiversity hotspots in the world, is known for its high plant species richness, but little is known about the influence of topography and how it mediated the potentially deleterious effects of grazing. Changes in vegetation species composition, cover and species diversity were examined along piosphere gradients on northerly slopes, bottomlands and low-lying plains on 45 farms. Landscapes differed in the plant species- and life-form composition, species richness and cover, with the more species-rich, heterogeneous grassy northerly slopes distinct from the plains and bottomlands, which were dominated by *Pteronia pallens*, *Psilocaulon junceum* and *Drosanthemum* spp. with more annual and ephemeral species. Overall, species richness declined linearly with decreasing rangeland condition. A weak grazing effect was detected only on the north-facing slopes, where shrubs and grass decreased with intense grazing. Years of overgrazing have resulted in the widespread dominance of *Pteronia pallens*, especially on the plains and bottomlands, rendering them insensitive to grazing. The current condition of the northern slopes should be maintained and managed as such that palatable species can spread to more degraded areas of the landscape.

Keywords: cover, evenness, piosphere effect, species richness, veld condition

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