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**Patterns of plant diversity in the  
Hantam-Tanqua-Roggeveld Subregion  
of the Succulent Karoo,  
South Africa**

by

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I hitched my wagon to a daisy  
Direction vague and destination hazy  
But,  
Could any other star have guided  
me  
more exactly  
to where I most dearly loved to be?

- Cythna Letty

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**Abstract**

The Hantam-Tanqua-Roggeveld subregion is located within the Succulent Karoo and Fynbos Biomes, in the predominately winter rainfall area of the Northern and Western Cape Provinces. A phytosociological analysis identified and mapped eight plant associations and 25 subassociations. Forty Whittaker plots were surveyed to quantify the botanical wealth in the area. Each plant association produced its own species-area curves, with the curves of the Mountain Renosterveld and Winter Rainfall Karoo more similar to one another than to the Tanqua Karoo.

Species richness was highest for Mountain Renosterveld, intermediate for Winter Rainfall Karoo and lowest for Tanqua Karoo vegetation. The Mountain Renosterveld and Winter Rainfall Karoo values for evenness, Shannon and Simpson indices were not significantly different, but these values were significantly higher than for the Tanqua Karoo. An ordination of diversity data confirmed a clear Tanqua Karoo cluster, but the Mountain Renosterveld could only be partially separated from the Winter Rainfall Karoo.

Chamaephyte, cryptophyte and therophyte species dominated the study area. Comparisons of life form spectra among associations showed clear differences at a species and vegetation cover level. The percentage contribution of succulent species was low in Mountain Renosterveld, intermediate in Winter Rainfall Karoo and highest in the Tanqua Karoo. Results confirmed the Tanqua Karoo and Winter Rainfall Karoo inclusion into the Succulent Karoo Biome and the strong karroid affinities of the Mountain Renosterveld.



Abandoned croplands of various ages surveyed in the Roggeveld revealed that species richness increased with age yet no similar increase in evenness, Shannon or Simpson indices was found. An abandoned cropland of approximately 33-years should be as species rich as the natural vegetation but was floristically still very different. Recovery rates of the different life forms varied across the different ages of the abandoned croplands.

A ten-year post-fire study in the Mountain Renosterveld indicated that species richness and Shannon index values usually reached a maximum within three years and then declined. A Principal Co-ordinate Analysis of species compositional data separated the first two years from the following eight years. Succession seemed to follow the 'initial floristic composition' model of Egler (1954).