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A classification of Nama Karoo vegetation in southern Namibia – first results

Presented by:
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BIOTA

Federal Ministry of Education and Research

Aims

– Providing a classification of vegetation types in rangelands of south-central Namibia

– Identifying associated environmental parameters

– Testing whether a 100 m² or a 1000 m² scale is more suitable for classification

Study area

– 1800 km², north of Keetmanshoop (26° 34′ S, 18° 8′ O)

– Hot and dry climate (mean annual temperature: 18 to 20 °C, mean annual precipitation: 150 mm)

– Predominantly wide, open plains with rocky outcrops and riverbeds

– Vegetation is part of the Nama Karoo Biome, mainly consisting of grasslands and dwarf shrublands

Fig. 1: Study area

Methods

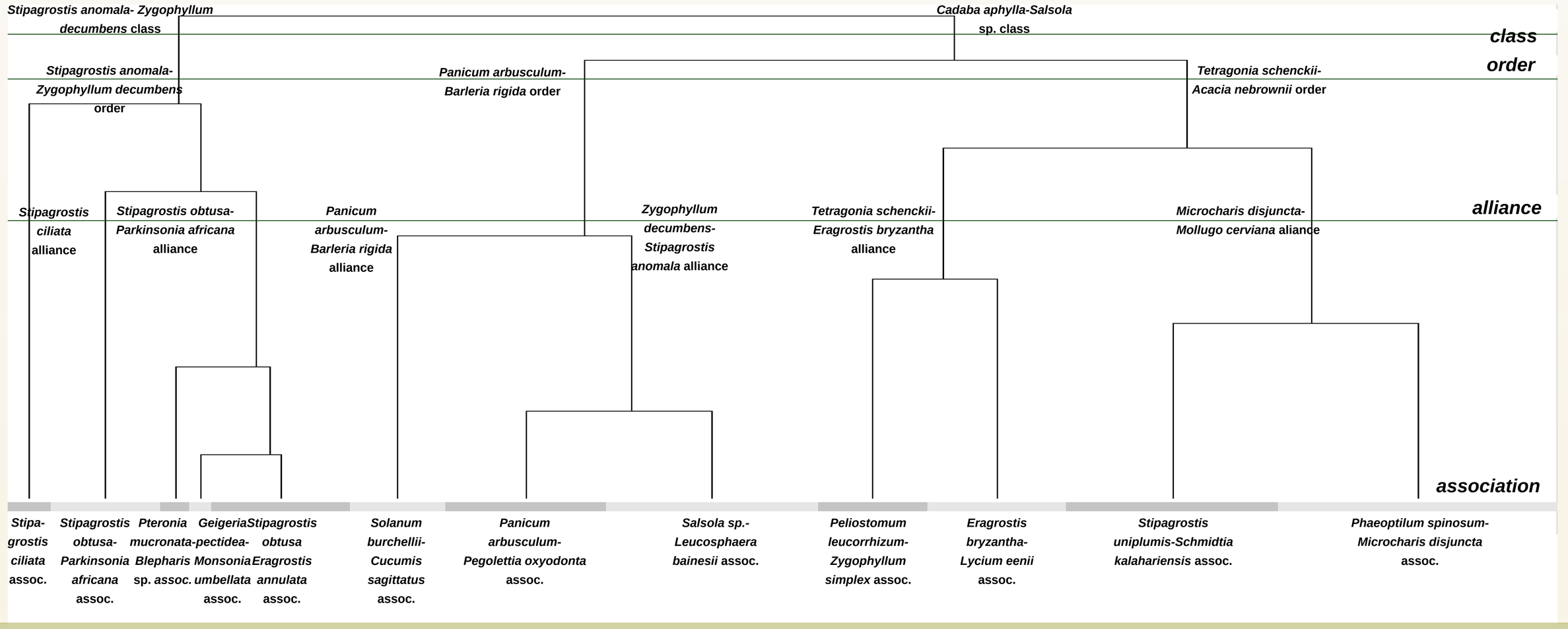
– In addition to vegetation relevés, we took soil samples and recorded ecological parameters.

– Data were handled with the aid of BIOTABase

– We used modified Two-Way Indicator Species Analysis (TWINSPAN) to classify the relevés.

– We tested which of the two spatial scales resulted in more clearly delimited units.

– Finally, the more meaningful classification (1000-m² scale) was transformed into a hierarchical phytosociological classification.



Stipagrostis ciliata association

Pteronia mucronata- Blepharis sp. association

Stipagrostis obtusa Eragrostis annulata association

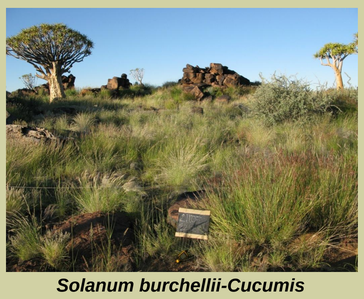
Panicum arbusculum- Pegolettia oxyodonta association

Peliostomum leucorrhizum- Zygophyllum simplex association

Stipagrostis uniplumis-Schmidtia kalahariensis association

Stipagrostis obtusa-Parkinsonia africana association

Geigeria pectidea-Monsonia umbellata association



Solanum burchellii-Cucumis sagittatus association

Salsola sp.-*Leucosphaera bainesii* association

Eragrostis bryzantha-Lycium eenii association

Phaeoptilum spinosum-Microcharis disjuncta association

Results

Throughout the study area, 243 plant species from 54 families were recorded. The species with the highest constancy were the perennial grass *Stipagrostis uniplumis* (76% constancy), and the annual grasses *Schmidtia kalahariensi* (64%) and *Aristida adscensionis* (60%).

Of the recorded parameters, the main driving factors for vegetation differentiation were soil depth, pH value and lime content. The final classification resulted in two classes, three orders, six alliances and 12 associations (whose formal description according to ICPN is in prep.). The modified TWINSPAN for the 1000-m² scale delivered better interpretable results for Nama Karoo vegetation than the 100-m² scale.