The fairy circles in Namibia are an intriguing and unexplained feature of the pro-Namib and northern parts of South Africa. The presence of hundreds of almost circular patches where no plants grow were first mentioned in scientific literature in 1971 and since then scientist have tried to find an explanation for the existence of these circles. Although there are many hypotheses regarding the origin of these circles not one of these can explain the existence of these circles satisfactory. In this study a few different aspects of the fairy circles were investigated to search for variations in biotic and abiotic factors in the circles and in the areas between the circles. Total element analysis of the soil from the different microhabitats inside the circle, on the edge of the circle and between the circles, referred to hereafter as the matrix and at different depths in these microhabitats were performed by inductively coupled plasma mass spectrometry (ICP-MS) and analyzed by principle component analysis (PCA). No definite patterns could be detected regarding the concentration of the elements in the respective microhabitats. The occurrence of vesicular arbuscular mycorrhiza (VAM) in the roots of plants collected from the different microhabitats was also investigated. It was found that VAM occurred in the roots from plants collected in the matrix and from the edge but no VAM was found in plants collected inside the circles. The succulent species *Euphorbia damarana* has been implicated as a reason for the circles and investigated to determine the presence of germination inhibiting compounds. No such compounds were found. The crude extract of *E. damarana* was also tested for growth inhibition and found to significantly reduce the growth of seedlings. Pot experiments with soil collected from the different microhabitats were performed using the indigenous grass, *Stipagrostis uniplumis*, as bioindicator. The plants from these experiments exhibited the same trend as those in nature, confirming the results of previous researchers who did the same experiment using another grass species.

Traditional non-wood uses of wild plants in central-northern Namibia

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The specific aim of this study was to investigate the traditional uses of non-woody plants in central-northern Namibia with particular emphasis on sustainable management and changes in the availability of these resources over the years. The various wild plant species used for basketry, grazing, medicine, food, dyes, cosmetics, and cultural ceremonies are included here. Informal interviews were conducted with community members in Omanogondjamba and Epyeshona villages of Omusati and Oshana Regions respectively. Traditionally, people in central-northern Namibia used a wide variety of plants for various purposes. However, a decline in both the availability of plant resources and the extent to which they are used, from early settlement times to present times is observed. This decline is mainly due to increased agro-silvo-pastoralism, a poor land use system which has put the entire local environment under severe pressure. The rapid population growth in the area, overgrazing and clearing of land for subsistence crop farming together contribute to the observed scarcity and perhaps local extinction of some plant species within the region. Potential commercialization of plant products such as traditionally made baskets and the oil of *Citrulus lanatus* is one possible factor posing a threat to the remaining plant resources. There is therefore an urgent need to develop and implement a management plan that will ensure sustainable use of plants as a valuable natural resource in central-northern Namibia.

A taxonomic revision of the genus *Pentatrichia* (Asteraceae)

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A taxonomic revision of the genus *Pentatrichia* Klatt is here presented. Morphological data from previously described taxa: *P. alata* S. Moore, *P. avasmontana* Merxm., *P. petrosa* Klatt and *P. rehmii* (Merxm.) Merxm. were subjected to both univariate and multivariate statistical methods. Both herbarium material and voucher specimens collected during fieldwork were examined. Morphological character data were analysed by Unweighted Pair-group Method Arithmetic Average (UPGMA) clustering algorithms so as to obtain groupings as objectively as possible. This cluster analysis revealed the existence of three species in the genus namely: *P. alata*, *P. petrosa* and *P. rehmii*. *Pentatrichia avasmontana* Merxm. is reduced to subspecific level under *P. rehmii* (Merxm.) Merxm.; *P. rehmii* subsp. *avasmontana* (Merxm.) Klaassen and Kwembeya *comb. nov.* Two ordination methods, Principal Coordinate Analysis and Principal Component Analysis, were employed and confirmed the results obtained from cluster analyses. Leaf characters and presence/absence of ray florets proved to be the most important characters in diagnosing species in the genus. Red List assessments of all the species were undertaken. All species emerged as "Least Concern" with *P. rehmii* subsp. *rehmii* falling in the "Vulnerable" category. This revision includes a new key for the species, descriptions and distribution maps at the quarter degree level.