results show a mere snapshot of the total diversity that can be expected.

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A taxonomic study of the *Thesium goetzeanum* complex (Santalaceae)

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Thesium L. (Santalaceae) is a large genus (ca. 350 species) of hemi-parasites occurring world-wide, with the largest number of species found in southern Africa (ca. 180 species). The last comprehensive taxonomic revision of South African *Thesium* species was published by Hill in 1925 and is now outdated. Since this revision, 38 new southern African species have been described by several taxonomists, yet no attempt has been made to amalgamate and evaluate all of the available taxonomic information. Species concepts remain vague, as morphological characters often overlap and available descriptions are usually cryptic and incongruent with characters observed on type specimens. Furthermore, no up-to-date identification key exists, making the identification of specimens notoriously difficult. *Thesium* has consequently been identified as a high priority for taxonomic research in South Africa. As a first step towards a comprehensive taxonomic revision, 17 species that share morphological characters and are found in the grasslands of South Africa, here referred to as the *T. goetzeanum* complex, are revised. Specimens from 11 herbaria were studied, along with distribution information, available literature, and field observations. The results revealed that the number of species should be reduced from 17 to 10 and that a new species, *T. infundibuloides* N.Visser & M.M. le Roux *sp. nov.*, should be recognised. An overview of the morphology and geographical distributions of the 10 recognised species in the *T. goetzeanum* complex is presented.

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The impact of ethnobotanical inventories and quantitative analyses: New insights revealed by an inventory of all edible plants in the Flora of Southern Africa region

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A compilation of old and new edible plant use records, scattered throughout many different published and unpublished sources, resulted in a comprehensive inventory of ca. 1800 edible plant species for the Flora of Southern Africa (FSA) region. Comparisons of the species diversity of edible plants within plant families and food plant categories in the FSA region revealed unique patterns when compared to the rest of the world. We have found, for example, that the Apocynaceae contribute the highest number of edible plant species, and not the Rosaceae or Fabaceae, as might have been expected. A comparison of the inventory with the Red List of South African plants showed a total of 15 edible plant species with conservation concerns. A new approach to studying geographical patterns, here called the *Ethnobotanical Overlap Method,* has been developed, using ArcMap (GIS platform) and the plant collection data from the South African National Biodiversity Institute (SANBI). The method can be used to analyse the diversity and spatial patterns of useful plants by comparing the geographical distribution of each plant species with the geographical area of each of the 19 language/cultural groups that was reported to utilize the species. This new approach not only resulted in profound new insights into plant use patterns in southern Africa but also provides a methodology that can be used beyond the field to ethnobotany to explore diversity patterns in a geographical context.

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Plant invasions in South Africa: Insights from the 2017 National Status Report on Biological Invasions

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The impacts of biological invasions are increasing and are felt by all sectors of society. The Department of Environmental Affairs currently invests over R1.5 billion a year on managing biological invasions, mostly on alien plant control. In this talk we discuss the key findings of the first National Status Report on Biological Invasions in South Africa (produced October 2017). In contrast to many other countries, the most diverse, widespread, and damaging invaders in South Africa are plants. They are the third-largest threat to South Africa's terrestrial biodiversity; invasive trees and shrubs reduce surface water resources by between 3 and 5%; and they have reduced the capacity of natural rangelands to support livestock production by over 100 000 large livestock units. The size of the problem is increasing. While the risk from legally introduced alien species is being addressed, the risk due to accidental introductions is probably increasing. Data from the Southern African Plant Invaders Atlas (SAPIA) show that over the past decade, an average of ten plant species per year have naturalised, and even the most widespread invaders are still spreading. In short, South Africa has a major plant invasion debt. More taxa should be listed under national regulations, but ultimately more needs to be done to ensure that management is strategic and effective. One of the main success stories, however, is biological control. The technology has led to significant and on-going economic returns. If we are to improve policy and management decisions we need more systematic estimates of the area and abundance of plant invasions; more studies documenting the ecological and socio-economic impacts of plant invasions; better planning, including the setting of goals; and better monitoring of the effectiveness of current control operations.

We welcome ideas, in particular for how SAPIA should develop in future.

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Managing changes to the SA national checklist of naturalized plants

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South Africa has a well-established history of managing and maintaining the taxonomic integrity of a national checklist of indigenous plants. Naturalized plant names and taxon records have not been managed to the same extent and additions or changes to lists have lacked a systematic approach. The baseline for taxa included in SANBI's naturalized plant data is the list as published in the national status report on biological invasions in 2017. Some taxa have subsequently been removed where there was doubt about the authenticity of the record. Others have been added where additional information has become available. Taxonomic authority citation follows the standards used in SANBI's BODATSA database for the rest of our Flora. Since the data is now managed in the centralized SANBI database, taxonomic and nomenclatural changes can be systematically updated and synonymies managed, while keeping track of literature references, filed observations or voucher data relevant to such changes. The database vocabulary is discussed to show why BODATSA should henceforth be the primary authority from which up-to-date lists of naturalized plant name are extracted for most, if not all purposes in the field of invasion biology. Users are encouraged to contribute any new knowledge they may be aware of to this central platform. It is envisaged that all future legal listing processes will be based on this BODATSA content.

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Allelopathic inhibition of germination and seedling vigour of some selected crops and weeds by *Ceratotheca triloba* L.

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To investigate the allelopathic suppression of *Amaranthus hybridus* L., *Bidens pilosa* L., *Brassica oleraceae* L., *Lycopersicon esculentum* L., *Parthenium hystericious* L., *Phaseolus vulgaris* L., *Tagetes minuta* L. and *Zea mays* L. by leaf extract from *Ceratotheca triloba* L., germination bioassays were carried out under laboratory conditions. Aqueous extracts of various *C. triloba* plant parts, a medicinal plant, were evaluated at 0; 2.5; 5 and 10% (w/v) for their allelopathic potential. Extracts made from roots, stems and fruits of *Ceratotheca triloba* were used to germinate *P. vulgaris* seeds. The germination percentage at 0; 2.5; 5 and 10% leaf extracts ranged from 80 - 100%; 40 - 88%; 20 - 58% and 0 - 38%, respectively. The radicle length ranged from 20 - 118 mm; 10 - 115 mm; 5 - 61 mm and 0 - 11 mm. Further, the plumule length ranged from 27 - 109 mm; 19 - 106 mm; 10 - 53 mm and 0 - 11 mm. Extracts made from roots, stems, leaves and fruits caused a significant reduction in germination percentage, root length and shoot length of *P. vulgaris* seedlings at 5% and 10% concentration. The negative effects on both crop and weed plants may be due to active compounds and/or allellochemicals in *C. triloba* whose leaf could be used as an effective herbicide when applied to mature plants at 5 or 10%. However, the allelochemical(s) responsible for this allelopathic activity are yet to be identified.

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Posters

Preliminary screening of leaf extracts of *Elephantorrhiza elephantina* for phytochemicals and antioxidant activity

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Elephantorrhiza elephantina is a medicinal plant used traditionally in Southern Africa as a remedy to treat or ameliorate a wide range of human diseases. In this study, the ground dry leaf of *E. elephantina* was extracted separately with 95% ethanol, hot water and cold water. The dried extracts reconstituted in acetone was loaded onto thin layer chromatography plate (TLC) and eluted with appropriate solvents. The developed plates were sprayed with acidified vanillin and DPPH respectively to detect phytochemical profile and antioxidant activity. Also the presence of major phytochemicals was detected qualitatively using methods (Brain and Tuner 1975; Evans, 1999). The yield for hot water extract was the highest (1.14 g) and cold water extract (0.81 g) was the lowest. The vanillin treated bioautographic plates had few bands of dissimilar compounds. The presence of antioxidant activity on TLC plates is detected as yellow bands against purple background. All the extracts had at least one compound with antioxidant activity as visualised on treated plates. The phytochemicals (triterpenes and phytosterols) detected in the hot water and cold water extracts are presumably similar, while those detected in the 95% ethanol extract were saponins and alkaloids. Alkaloids, triterpenes, phytosterols, and saponins have been shown to exert antioxidant activity. The detection of this phytochemicals may in part be responsible for the antioxidant activity of the extracts. Antioxidant potential of plants has received great attention because of their disease protective effect. The finding supports the value of this indigenous plant in the treatment of many diseases.

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The influence of *Fusarium oxysporum* infection on the physiological and biochemical responses of cowpea seedlings

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Vigna unguiculata (cowpea) is a leguminous crop, cultivated in South Africa which possesses nutritional and medicinal benefits for both human and animal consumption. However, the susceptibility of this crop to a wide range of abiotic and biotic stressors negatively influence crop production and overall plant yield. The study examined the physiological and biochemical changes caused by the *Fusarium oxysporum* in cowpea (*Vigna unguiculata* L. Walp) by