predicted by studying seed dispersal methods and seed viability of seed collected both from the plant and from soil samples.

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Antifungal activity of Gardenia brighamii leaf extracts

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Gardenia brighamii is an evergreen shrub that belongs to the Rubiaceae family. It is known for its antimicrobial activity, and is used as a remedy for a variety of diseases including malaria, fever, hypertension and ulcers of skin. Certain fungi belonging to the Fusarium genus, including F. verticillioides and F. proliferatum, are known to produce fumonisin mycotoxins, which have toxic effects on plants, animals and possibly humans. The problem of food and feed contamination with mycotoxins is of concern and has received a great deal of attention in developing countries. Furthermore, the use of chemical control of these fungi is expensive and it is neither environmentally safe nor friendly. The poor education background of the farmers often leads to misuse of pesticides.

Currently, the antifungal properties of plant extracts are being investigated with the aim of finding alternatives to the use of chemicals. The aim of this study was to investigate the antifungal activity of G. brighamii leaf extracts against five fumonisin producing Fusarium species and to isolate potential active compounds. The antifungal activity of the crude extracts was investigated in vitro using the microtitre dilution method and direct bioassay (TLC plates). The results from these two methods confirm the antifungal properties of this plant. The acetone leaf extract showed good inhibition against F. verticillioides and F. oxysporum. Methanol and dichloromethane extracts showed higher MIC values for the fungi tested. The TLC plates spotted with the methanolic extract showed good inhibition against F. verticillioides and F. proliferatum. By using glass column chromatography, 42 major fractions were collected and one pure compound was isolated. Structural elucidation is underway.

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Identification and prioritising invasive alien plants hot spot areas in Gauteng

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Understanding the potential distribution ranges of emerging invaders in South Africa will facilitate identification of those emerging invaders with the greatest potential to expand their ranges in southern Africa. This will allow protected area managers to focus action and monitoring efforts on areas most vulnerable to invasion. Research is needed to understand, monitor, and model parameters that may be favourable to invasions, such as climatic conditions, ecosystem disturbance patterns, and land use changes. Baseline research is needed to determine if a species is “new” to an area and to detect changes in pathways. Scientifically sound information is essential to support detection programs. This study was conducted in Gauteng. Information from the SAPIA database and Environmental Impact Assessment (EIA) data as well as reviewing information on permits issued for introduction of plants in South Africa was combined to create a comprehensive list of invasive alien plants in Gauteng. Information in the new list was verified and/or added to through selective field surveys. The distribution information was mapped using GIS and Vetech to identify the hotspots and potential distribution areas of alien invasive plant species in Gauteng. Even though some results are still pending, this study is the beginning of the development of a scientifically sound information database for the early detection and rapid response of alien invasive plant species.

Floristic diversity and phytogeography of the proposed Heritage Park in North-West Province, South Africa

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The Heritage Park project is an interdisciplinary approach towards the establishment of a large wildlife reserve. Key objectives of the overall project are to contribute significantly to conservation and socio-economic development in the underdeveloped and poor northern parts of North-West Province. Various subprojects have been identified to study the feasibility and potential of linking Pilanesberg National Park and Madikwe Game Reserve into a megareserve via a corridor. The biodiversity research includes a detailed survey of the diversity and distribution patterns of the Heritage Park flora. Objectives of the study are to quantify the presence of floristically important taxa (e.g. endemic, threatened, and problem plants) and demarcate Important Plant Areas. This will form the basis for assessing the conservation status and priority of the Heritage Park in the context of the western Central Bushveld Bioregion. Plant species data collected in the field was integrated with existing collection data from the PRECIS database (National Herbarium Pretoria (PRE) Computerized Information System).
Plant communities of the area leased for mining purposes by Impala Platinum, Rustenburg

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Systematic conservation planning provides a useful tool for land-use planning and impact assessment, particularly in the mining industry. A study was therefore done to provide sufficient biodiversity information for the establishment of a conservation plan. The major objective of this study is to collect data of areas with high plant diversity or endemism. This will then be integrated into the conservation plan with the intent to guide Impala Platinum in its future planning of land use practices. The licensed mining area, in the vicinity of Rustenburg, covers 29,334 ha which includes fourteen operational shafts. The area was stratified into three main categories based on landscape types namely: norite koppies, thornveld and rehabilitated areas. Areas of homogenous plant growth were identified in each category by visual observations and the use of aerial photography. The Braun Blanquet approach was used to sample 140 relevés, which were classified into plant communities. Additional software packages were used for capture, processing and presentation of phytosociological data (TURBOVEG) as well as a visual editor for phytosociological tables (MEGATAB). Ordinations were subsequently performed to confirm the communities. This was achieved by using a multivariate analyses computer programme called CANOCO. Six, three and four communities were identified respectively in the norite koppies, rehabilitated areas and thornveld. Specific environmental factors that influence community structure and composition in the norite koppies were found to be aspect and percentage of soil surface rockiness. The soil type proved to be the major determining factor for community structure and composition in the thornveld areas.

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A critical assessment of plant resource utilisation and park expansion in North-West

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In recent years many new park establishment and park expansion initiatives have been launched in North-West with a view to expand the existing conservation footprint. An unavoidable implication of expanding the conservation status of land is the limitation such as expansion places on access to resources, such as water, fuel, heritage, etc. The latter issues become even more serious and complex when dealing with tribal communities, since ownership of resources are shared.

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