

Spear, Dian¹, Foxcroft, Llewellyn C.^{1,2}, Bezuidenhout, Hugo³ and McGeoch, Melodie A.^{1,4}

¹ Centre for Invasion Biology, Natural Sciences Building, Private Bag X1, Stellenbosch University, Private Bag X1, 7602; dspear@sun.ac.za

² Conservation Services, South African National Parks, Private Bag X402, Skukuza, 1350; LlewellynF@sanparks.org

³ Scientific Services, South African National Parks, P.O. Box 110040, Hadison Park, Kimberley, 8306; HugoB@sanparks.org

⁴ Cape Research Centre, South African National Parks, P.O. Box 216, Steenberg, 7947; MelodieM@sanparks.org

BACKGROUND

Invasive alien species (IAS) are a major threat to global biodiversity. As a result **trends in IAS** was selected as one of 22 Headline Indicators to measure progress towards the

Convention on Biological Diversity's (CBD) 2010 Target (2002):

To achieve by 2010 a significant reduction in the current rate of biodiversity loss at the global, regional and national level, as a contribution to poverty alleviation and to the benefit of all life on Earth.

CBD framework (2004):

Goal 6: **Control threats from invasive species**

Target 6.1: *Pathways for major potential alien invasive species controlled*

Target 6.2: *Management plans in place for major alien species that threaten ecosystems, habitats or species*

The national and global indicators for IAS include **number of IAS** and **number of operational management plans for IAS**. We intend to scale these indicators to the resolution of national parks.

We will test the application of the global indicator at a local scale and modify it where necessary.



Invasive species monitoring, control and eradication plans

10. (1) Listed invasive species control and eradication plans or strategies to be developed by organs of state and management authorities of protected areas must include the following information:

- A detailed list and description of any listed invasive species occurring on the relevant land;
- a description of the parts of that land that are infested with such listed invasive species;
- an assessment of the extent of such infestation;
- a status report on the efficacy of previous control and eradication measures;
- the current measures to monitor, control and eradicate such invasive species, as appropriate; and
- measurable indicators of progress and success, and indications of when the control plan is to be completed.

This work is directly relevant to **National Legislation** (see box above) and to the **SANParks draft Coordinated Policy Framework** governing Park Management Plans section 4.5.8. on IAS.

We will determine to what extent SANParks control objective: **To ensure the effective and timely development and implementation of integrated control strategies, in such a manner that both rapid response and long-term maintenance goals are met** is being achieved.

The work is also directly applicable to SANParks research objective: **To promote and develop a coordinated research programme in order to develop a clearer understanding of the dynamics and impacts of alien species invasions.**

IAS (based on CBD definition):

A species outside of its indigenous range whose introduction and/or spread threatens biodiversity

OBJECTIVES

- Determine whether the global IAS indicator is scalable to national parks in South Africa.
- Determine the status of alien species and their management in national parks in South Africa.

METHODOLOGY

All alien species (plants, vertebrates and invertebrates) will be assessed:

1. at the park level: species known in park
2. using a top down approach: species whose introduced range encompasses national parks



INFORMATION SOURCES

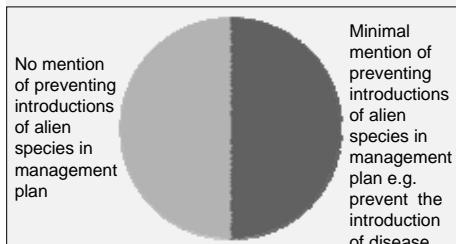
- Park Management Plans (PMPs)
- Lower level business/management plans for IAS
- State of Knowledge reports for southern parks
- Invasive Species Control Unit Working for Water (WfW)
- Publications on alien species in parks
- Lists for South Africa
- Databases
- Lists for parks
- Reference books and atlases
- Park scientists
- Park managers and rangers

A rating of data availability will be established for each of the parks.

The number of alien species that are controlled by mechanical, chemical and biological control will be determined as well as whether this is done by WfW or the park.

OUTCOMES

- Alien species lists for National Parks
- Lists of species controlled in National Parks
- Whether IAS concerns are included in PMPs
- Similarity of alien species assemblages btw parks
- Data and management gaps

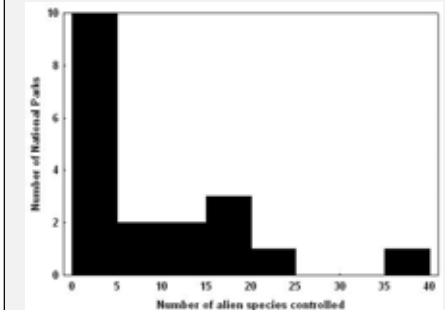


DO PARK MANAGEMENT PLANS CONSIDER THE PREVENTION OF ALIEN SPECIES INTRODUCTIONS?

THE CONTROL OF ALIEN PLANT SPECIES IN NATIONAL PARKS BY THE WORKING FOR WATER PROGRAMME

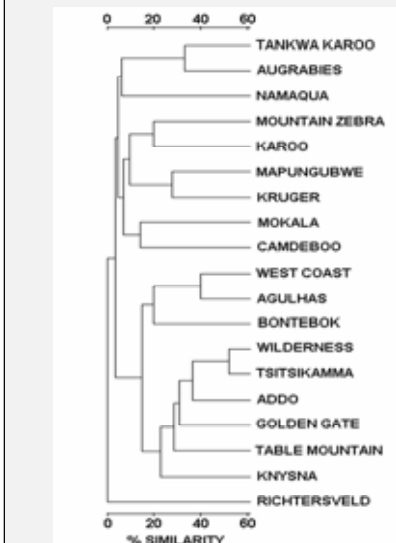
- Contract data for the clearing of alien plant species in national parks was obtained from the Working for Water Information Management System (WIMS).
- Only records with full species names were used i.e. any *Genera spp.* records were excluded.
- The species cleared by WfW contractors according to WIMS were noted for each park.
- The number of species cleared in each park was summed.
- The similarity of cleared alien species assemblages between pairwise comparisons of parks was calculated using Jaccard's index of similarity in Estimate S.
- Jaccard's similarity values were used to build a cladogram using cluster analysis (group averaging) in Primer 5.1.2. to show the similarity of cleared alien plant assemblages in national parks in South Africa.

71 alien plant species have been identified as having been cleared in 19 National Parks in South Africa.



The number of alien plant species identified as being cleared in 19 National Parks in South Africa

Few (<5) alien plant species have been controlled in most parks and the species that have been controlled are similar for parks in close proximity or similar environments.



The similarity of cleared alien plant species assemblages in National Parks in South Africa