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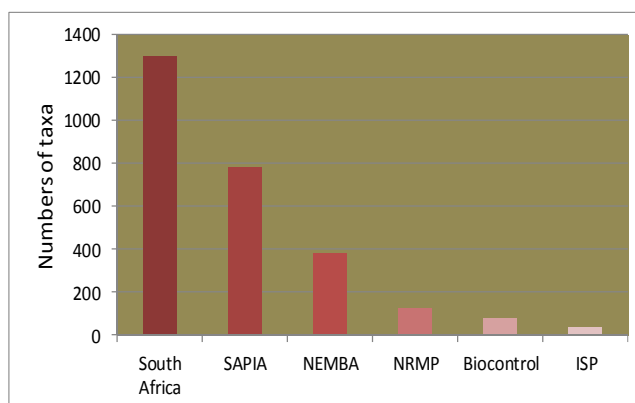
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Invasive Species Website: [invasives.co.za](http://invasives.co.za)

## The uphill battle against invasive alien plants

A review of invasion status and geographical extent of species catalogued in the Southern African Plant Invaders Atlas (SAPIA) from 2001 to 2016 has revealed some alarming statistics, and also some good news.

Over the past 15 years some invasive species have more than doubled their distributions and require urgent intervention. About 180 new taxa were detected growing outside of cultivation and have the potential to become the future invaders.

There have been some remarkable successes with biological control, with very little expansion and even range contraction, of some of our most prominent invaders. Some programmes have been so effective that no other intervention is necessary to reduce populations to acceptable levels.



### The uphill battle against invasive alien plants:

- ◆ at least 1 200 alien plant taxa (species and infra-specific taxa) are naturalised in South Africa (herbarium records, SAPIA and the literature),
- ◆ 780 taxa are documented in SAPIA,
- ◆ 379 taxa are listed invaders under NEMBA and by law must be controlled
- ◆ ~120 taxa have been targeted by Natural Resource Management Programmes (NRMP) of the DEA, of which 98% of effort has been directed at 40 taxa
- ◆ 77 taxa are subjects of active biological control programmes; 14 taxa are under complete control; 19 taxa are under substantial control
- ◆ ~40 taxa are targets for SANBI's Invasive Species Programme: Early Detection and Eradication

On average, 12 new taxa are detected as escapes from cultivation every year; and the great majority are ornamental plants

## Major invaders requiring urgent intervention

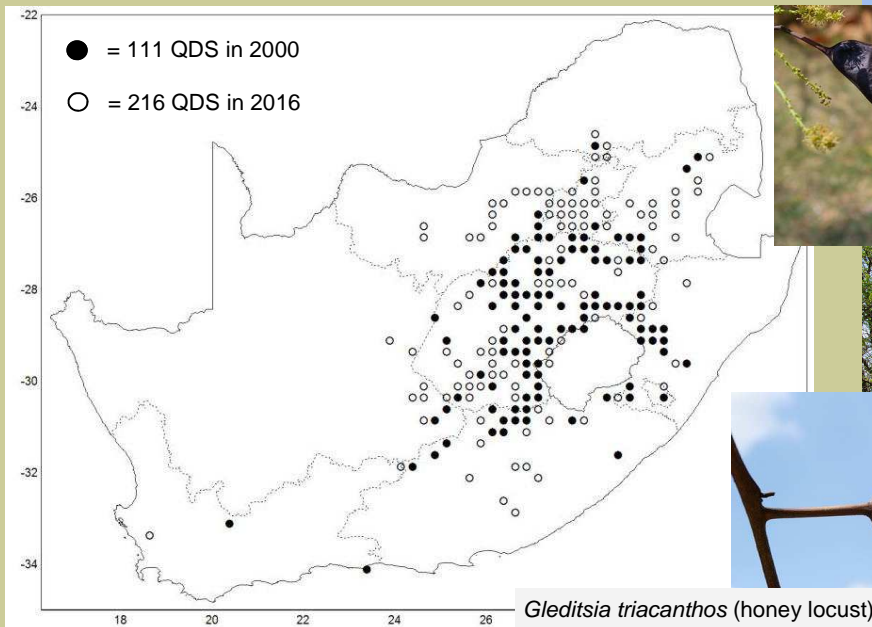
Species of major concern are those that have more than doubled their distribution areas in terms of quarter degree squares (QDS), and by more than 50 QDS, from 2001 to 2016. They are abundant, often forming thickets and extensive stands in places. *Pennisetum setaceum* (fountain grass), has spread outwards from towns and cities across South Africa, mainly along roadsides and railway lines, but is also invading dry watercourses and other natural habitats. *Gleditsia triacanthos* (honey locust), is planted for its edible pods and shelter on farms, but spreads from seed and suckering, into savanna, grasslands, pastures and along watercourses. Three cacti, *Opuntia humifusa* (creeping prickly pear), *O. engelmannii* (small round-leaved prickly pear) and *Trichocereus spachianus* (*Echinopsis spachiana* misapplied) are spreading unrelentingly across the interior of South Africa.

Currently there are no active state-sponsored control programmes against any of these species. There is limited biological control of the eastern Cape form of *O. engelmannii* from a long-established cochineal insect.



66 to 174 QDS

*Pennisetum setaceum* (fountain grass)



2



25 to 99 QDS

*Opuntia humifusa* (creeping prickly pear)



10 to 65 QDS

*Opuntia engelmannii* (small round-leaved prickly pear)



57 to 123 QDS

*Trichocereus spachianus* (torch cactus)



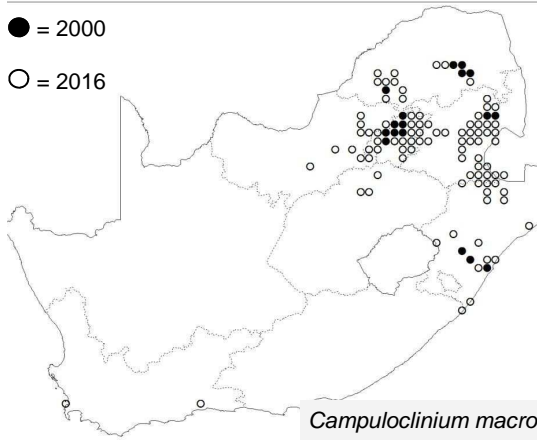
## Major invaders with biological control in progress

These species more than doubled their distribution in QDS from 2000 to 2016.

● = 2000

○ = 2016

Left uncontrolled they threaten biodiversity, agriculture and human health. Biological control programmes are still at an early stage and it will take some time before significant impacts will be measurable on the target plants.



*Campuloclinium macrocephalum* (pompom weed)

14 to 108 QDS

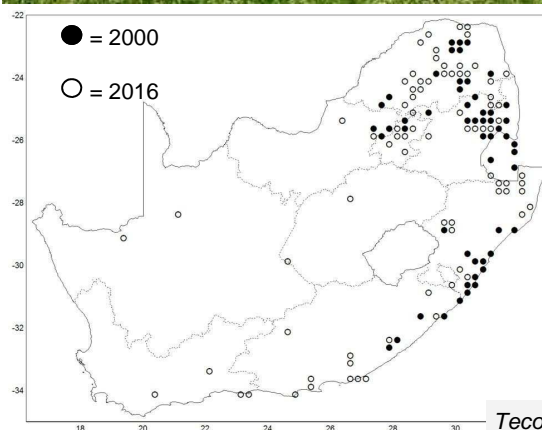


The rapid spread and potentially very harmful impacts of these species fully justifies the investment into biological control.



*Parthenium hysterophorus* (famine weed)

15 to 89 QDS



*Tecoma stans* (yellow bells)

57 to 139 QDS



*Cylindropuntia fulgida* var. *mamillata* (boxing glove cactus)

0 to 60 QDS

Biological control of boxing glove cactus is a success.

Under the management of SANBI's ISP, and with guidance from the ARC-Weeds Research, biocontrol has resulted in the total collapse of populations where the cochineal insect has been established.

This is one of six species of cactus for which biocontrol provides complete control and no other control measures are necessary to reduce the weed to acceptable levels.



## Biological control successes: reduced spread and contraction of range

Some long-running biological control programmes against invasive Australian Acacias have been so successful that over the past 15 years they have shown reduced rates of spread and only minor increases in distribution area—the most notable are *A. longifolia* (long-leaved wattle), *A. saligna* (Port Jackson) and *A. cyclops* (rooikrans), with increases of 2%, 5% and 6% respectively. These programmes have used seed-feeders and gallers to drastically reduce the amount of seed production and spread of the plants. Galling has also led to death of plants.



*Acacia saligna* (Port Jackson) galled by a rust fungus

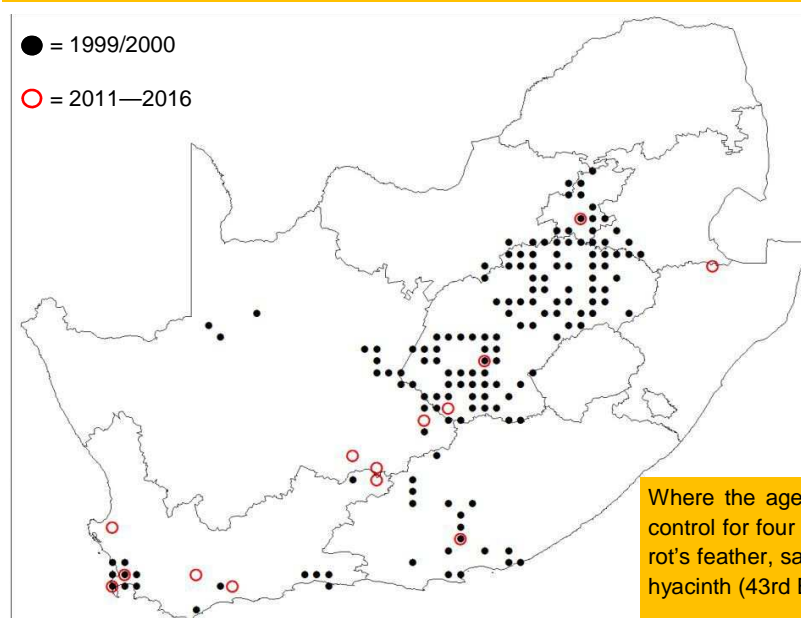


*Acacia longifolia* (long-leaved wattle) with bud galls



*Acacia cyclops* (rooikrans) with flower-bud galls

The most successful programme over the past 15 years has been against *Azolla filiculoides* (red water fern). By the late 1990s extensive mats of this floating aquatic occurred in water bodies across the interior of South Africa. A biocontrol programme, using a frond-feeding weevil, was launched at the end of 1997. By 2004 there were widespread local extinctions of the plant. Since 2010 there has been a 92% contraction in its range.



*Azolla filiculoides* (red water fern) before biocontrol. Photo: A.J. McConnachie



*Azolla filiculoides* (red water fern) after biocontrol. Photo: A.J. McConnachie

Where the agents are established, biological control provides complete control for four of the big five invasive aquatic plants (red water fern, parrot's feather, salvinia and water lettuce) - and substantial control for water hyacinth (43rd Biological Control of Weeds Workshop, July 2016) .

## ARC-PPRI, WEEDS RESEARCH PROGRAMME



### Plant Protection Research

The Weeds Research Programme of the ARC-Plant Protection Research (PPR) is responsible for research on the ecology and control of invasive alien plants in South Africa.

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