



SAPIA NEWS

SOUTHERN AFRICAN PLANT INVADERS ATLAS

April 2010

ARC-Plant Protection Research Institute

No. 15

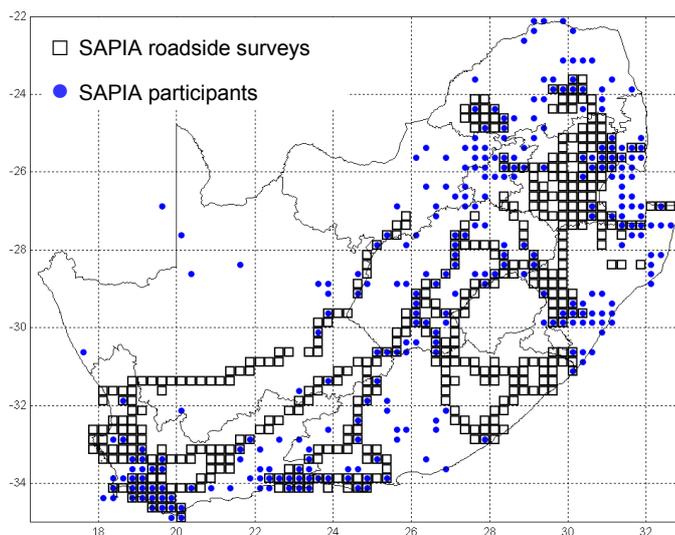


SAPIA—the past 5 years and the next 5 years

More than 13 000 locality records of invasive alien plants (IAPs) were added to the SAPIA database from April 2005 to March 2010, bringing the total to 70 000 records. Approximately 12 000 records of all IAPs, including the well-established species, were added from roadside surveys by Lesley Henderson. The remaining 1000 records were submitted by another **93 participants**, and significantly, included most of the newly emerging species. 106 species were added to the SAPIA database with about **83 emerging weeds** or escapes from cultivation. A very big thanks to all the people who contributed. Most of the records were received via e-mail. The online submission of records at the Weeds and Invasive Plants website was poorly supported—complaints being that the template is too complicated and more often than not there was an internal error. Continued on page 2.

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1/4 degree squares sampled from April 2005 to March 2010

Swift action against pompom weed

The KZN Department of Agriculture and Environment took swift action against pompom weed (*Campuloclinium macrocephalum*) in the Champagne Valley after the plants were first reported in January 2010. More than 1300 plants were treated chemically at the beginning of February with a follow-up in April. The plants appeared to have originated from a single site at Wits End where 1000 plants were treated! Well done to Michael Braack, Lucricia Johansen and their teams.



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Photos by Lesley Henderson
unless otherwise acknowledged

SAPIA—what has been achieved over the past 5 years

Some important findings:

106 species, with **83 newly recorded or emerging species**, were added to the **SAPIA database** bringing the total to ± 660. **W Cape tops the list with 56 emerging species**, KZN is next with 29 emerging species and Limpopo in third place with 10 emerging species.

Most emerging species are ornamentals and were located close to habitation, plantings, along roads, rivers and in disturbed sites.

Some parts of the country were re-surveyed after almost 20 years revealing **large increases in the number of IAPs**.

In February 2006 a **major discovery was made of a submerged aquatic weed, hydrilla** (*Hydrilla verticillata*), at the Pongolapoort Dam in KwaZulu-Natal (**photo 1**, note leaves in whorls and distinctly serrated margins)



The **columnar torch cactus** (*Echinopsis spachiana*) (**photo 2**) is spreading alarmingly in the karoo and could become as much of a pest as the prickly pear in the 1900s if urgent steps are not taken to control it.



More attention should be paid to **invasive grasses** particularly in the W Cape where they are invading Fynbos (**photo 3**, *Bromus diandrus*) and succulent karoo.

A new generation of IAPs in the Fynbos of the W & E Cape threaten to replace the older generation IAPs, many of which have been successfully controlled biologically. These new species are mainly ornamentals. The family Myrtaceae is prominent with several species of bottlebrush (*Callistemon*) (**photo 4**) and tea-tree/paperbark (*Melaleuca*), as well as other genera.



The **Weeds and Invasive Plants website** (www.agis.agric.za/wip) provides **fact sheets with photos for 260 species**, including all declared species under the Conservation of Agricultural Resources Act (CARA) (2001); **distribution maps** are provided for all species; **six standardized reports** are available. Unfortunately problems with the operational development at AGIS has hampered progress with the addition of new species information. Internal errors are a problem.

SAPIA—what is planned for the next 5 years

To continue surveys of IAPs in South Africa started by Lesley Henderson in 1979 and which form the basis of the SAPIA database; and **to encourage the public to report sightings of IAPs**.

Particular emphasis will be placed on emerging weeds and to provide support for the South African National Biodiversity Institute (SANBI)'s **Early Detection and Rapid Response of Emerging Invasive Alien Species project (EDRR)**.

To provide **baseline information** needed for the revision of species under the Conservation of Agricultural Resources Act (CARA) and National Environmental Management: Biodiversity Act (NEMBA), such as invasive status, distribution and correct identity of the species.

To make all the information available at the **Weeds and Invasive Plants website** providing the operational problems within AGIS are resolved.

SAPIA needs your support

Please submit sightings of invasive alien species directly to Lesley Henderson at L.Henderson@sanbi.org.za or to the Weeds and Invasive Plants website (www.agis.agric.za/wip)

A national plan of action for pompom weed

Pompom weed (*Campuloclinium macrocephalum*), an invasive Asteraceous perennial herb from South and Central America, was first recorded in South Africa in the Fountain's Valley, Pretoria in the early 1960s. During the 1970s and 1980s it showed a slow expansion in the Pretoria area and spread to parts of Limpopo and KwaZulu-Natal. In the 1990s and 2000s there was a dramatic, exponential expansion phase, with vast tracts of land invaded in Gauteng, and parts of Limpopo, North West Province and Mpumalanga. In the past five years the SAPIA project has noted an almost doubling in the number of ¼ degree squares in which it has been recorded, from 48 known ¼ degree squares in March 2005 to 93 known ¼ degree squares in March 2010.

The **dramatic expansion of pompom weed over the past five years** is testament to the lack of a co-ordinated national control programme. The only regionally co-ordinated effort over the past three years has been in KZN by the Department of Agriculture and Environment, under the leadership of Michael Braack. Pompom weed has been chemically treated at all known sites in this province. The single known site in the W Cape near George was treated in 2008 by Cape Nature Conservation.

In 2009 SANBI's EDRR programme established a national steering committee for pompom weed management. This committee, under the leadership of Phetole Manyama, will assist in the development, planning, implementation and evaluation of a rapid response approach to restrict the spread of pompom weed prior to the release of appropriate biocontrol agents. Considerable progress has already been made. The few sites in the Free State were treated for the first time in 2009 and control programmes in North West, Limpopo and Mpumalanga were co-ordinated for the first time in the 2009/2010 season.

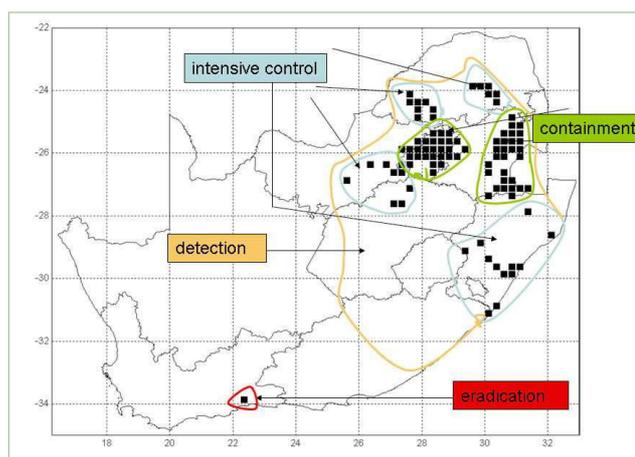


This stand of pompom weed at the 'Downs' in the Wolkberg was treated in 2009/2010



Photo: P. Manyama

Contractors at work near Krugersdorp



A national plan to control pompom weed

The map shows the national plan to control pompom weed. Containment prior to release of biocontrol agents is planned for the most heavily invaded areas in Gauteng and Mpumalanga. Intensive control in Limpopo, North West, Free State and KZN. Eradication in W Cape and detection in the remaining areas.



International Year of Biodiversity

Only 2% of South Africa's grasslands are conserved

Grasslands are threatened by forestry and mining activities and invasive alien plants like pompom weed

A total of 39 contracts were issued by SANBI's EDRR programme in 2009/2010: 1 in the Free State, 5 in North West, 12 in Limpopo and 21 in Mpumalanga. The main aim of the control operations is to as far as possible poison all known plants of pompom weed and to reduce the spread of pompom weed in all known locations. All the appointed contractors were expected to carry out two rounds of herbicide application in all the identified sites and by mid-April most of them had already completed the chemical control operations in all four provinces (Limpopo, Free State, Mpumalanga, North West provinces). The EDRR programme is currently in the process of consolidating and assessing all the data gathered by the chemical control teams which will make future control efforts more efficient. **Contact: Phetole Manyama at P.Manyama@sanbi.org.za**

Ant tree (*Triplaris americana*) is: Beautiful.....but dangerous!

History...*Triplaris americana* originates from South America, and was deliberately brought into our country in the 1970's for ornamental purposes. KwaZulu-Natal seems to have been the "province of choice" as no records of this species in other provinces can be found. The earliest records of this species at the KZN Herbarium date back to 1980 and these were of specimens grown in cultivation.

Beautiful....The ant tree is a tall and beautiful tree (photo 1) which produces pink flowers during its flowering season (April/May). Male and female flowers occur on separate trees, and while male flowers (photo 2) are inconspicuous, it is the attractive pink female flowers (photos 3 & 4) that are the main reason this species can be seen growing in many private gardens within the eThekweni suburbs, as well as part of the landscape in recreational areas (parks, shopping centres, golf-estates, etc.).

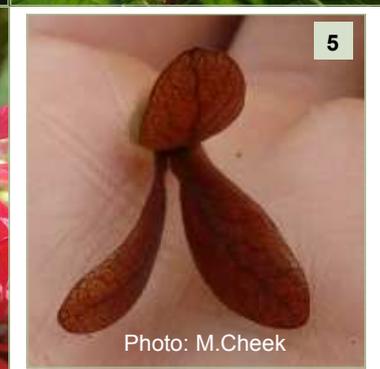
But dangerous....However, the danger lies in the seedlings of this species which are mass produced as a result of the production of large numbers of wind-dispersed fruiting bodies (photo 5) containing the seed. Not surprisingly, this species has been referred to as a garden thug, since it escapes gardens by jumping the fence and seedlings can be found spreading along roadsides and streams, invading natural areas, sometimes smothering other vegetation in the process. Ant tree is listed as a category 1 plant, Declared Invader under the Conservation of Agricultural Resources Act (CARA), 1983, and amended in 2001; and poses a threat to our country's biodiversity.



The plant can be positively identified by the wrap-around petiole evident at point of contact of leaf and stem.



Young leaves are golden brown and the undersurface is furry.



Help the EDRR programme: The KZN unit of the Early Detection and Rapid Response of Invasive Alien Plants programme (EDRR), positioned in the South African National Biodiversity Institute (SANBI), and funded by the Working for Water programme (Department of Water Affairs), is focusing on "stopping the spread" of ant tree in KZN while populations are relatively few and not very widespread. We currently have records of nine distinct populations in KZN and have identified the Berea/Musgrave suburb of Durban as a high priority area. We have embarked on an awareness-raising campaign to alert private home-owners and the public about the dangers of the ant tree. We urge people to report localities of this species to us. The opportunity to completely eradicate this species from KZN is directly proportional to **DETECTION...**i.e. we need to know **WHERE** these trees are if we wish to control them!

The EDRR programme can be contacted at alienplants@sanbi.org.za. Article compiled by Reshnee Lalla, EDRR programme, SANBI.



Water Affairs and Forestry
Agriculture
Environmental Affairs and Tourism



Emerging ornamental weeds

Great mullein

A species of *Verbascum*, possibly a cultivar of *V. thapsus*, great mullein or Aaron's rod, has been recorded as an escape from cultivation in the E Cape and in the Bronberg Conservancy to the east of Pretoria.

Great mullein is an erect biennial herb 0.5—2.0 m high. It is native to Eurasia and is in the snapdragon family Scrophulariaceae.

The large woolly white to grey leaves up to 500 mm long occur mainly in basal rosettes. The flowering stem is unbranched, usually leafy at the base, and carries many yellow flowers 12—20 mm across.

The plant illustrated here appears to be in the early stage of becoming an invasive

weed in South Africa (pers. comm. Prof Braam van Wyk, University of Pretoria).

A similar species, *V. virgatum*, twiggly mullein, has long been recorded as a weed in South Africa. It is more slender, leaves are smaller and not woolly.

All mulleins are poisonous to livestock.

Legislation: None.



Photos: J. Morris

Veined verbena

Veined verbena (*Verbena rigida*) (= *V. venosa*) is a herbaceous perennial up to 0.3 m tall. It is native to South America and is a member of the family Verbenaceae.

Stems are erect to spreading, forming spreading clumps. Leaves are roughly hairy, rigid, coarsely serrated, stalkless and clasp the stem. The stems end in cylindrical spikes of violet-purple flowers, with the corolla tube up to 9 mm long. The fruiting spikes measure 20—50 mm long.

This is an ornamental that has long been known as an escape from cultivation. In the 1960s it was only occasionally recorded but today it is becoming more and more con-

spicuous as a roadside weed and as an invader of grassland. Like the pompom weed it can become established in climax grassland (pers. comm. Prof Braam van Wyk, University of Pretoria).

Legislation: None.



Slender arrowhead

Slender arrowhead (*Sagittaria platyphylla*) (= *S. graminea* var. *platyphylla*) is a perennial aquatic herb up to 1.5 m tall with creeping stolons. It is native to Central and North America and belongs to the water plantain family Alismataceae.

Submerged leaves are narrow and strap-like; emergent leaves are wider, pointed, and abruptly narrowed into the petiole; petioles ± triangular in cross-section. Upright flowering stems, always below leaf height, bear 2—12 whorls of white, 3-petaled male flowers above small, green petalless female flowers. Spreads by seed,

creeping stolons, corms and entire floating plants.

Cultivated for ornament and invades streambanks.

It has become a pest in parts of Australia. A rapid and effective control programme will be needed in South Africa to stop this species.

Legislation: None. It should be proposed as a category 1a weed.



Photo: R. Glen



Photo: C.K. Willis

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The Weeds Research Division of the Plant Protection Research Institute is responsible for research on the ecology and control of invasive alien plants in South Africa. These plants were introduced either intentionally (e.g. for ornamental use or agroforestry purposes), or accidentally (e.g. in livestock feed) and now threaten biodiversity and agriculture. In addition, they reduce run-off from water catchments, thus diminishing flow in streams, and adversely affect the quality of life of communities.

- Biological control
- Chemical control
- Bioherbicides
- Integrated control
- Monitoring the emergence and spread of invasive alien plants

We are on the Web:

www.arc.agric.za

see PPRI Newsletter

for current news from the
Weeds Research Division

Read PPRI Newsletter No. 83 for the following news from the Weeds Research Division:

National initiative to halt further expansion of pompom weed

Survey for biocontrol agents against eastern Australian acacias

Lantana herringbone leafminer now in Madagascar

Biocontrol of *Hydrilla verticillata* at Pongolapoort Dam by an immigrant moth, *Parapoinx diminutalis*

Biological control of invasive plants



**Water hyacinth
(*Eichhornia crassipes*) and
the leaf-feeding & stem-boring
weevil (*Neochetina bruchi*)**

Photos: C.J. Cilliers

Biological weed control is the use of natural enemies to reduce the vigour or reproductive potential of an invasive alien plant. The principle is that plants often become invasive when they are introduced to a new region without any of their natural enemies. The alien plants therefore gain a competitive advantage over the indigenous vegetation, because all indigenous plants have their own natural enemies that feed on them or cause them to develop diseases. Biological control is an attempt to introduce the alien plant's natural enemies to its new habitat, with the assumption that these natural enemies will remove the plant's competitive advantage until its vigour is reduced to a level comparable to that of the natural vegetation. Natural enemies that are used for biological control are called biocontrol agents.

The potential risk posed by a candidate biocontrol agent is determined by biocontrol researchers through extensive host range studies (specificity tests) that are carried out in a quarantine facility. These trials determine the range of plants that a potential biocontrol agent is able to use as host plants throughout its life cycle, as well as its host plant preferences. Permission to re-

lease a biocontrol agent will be sought only if the host-specificity tests prove without doubt that the potential agent is sufficiently host-specific for release in this country. To be regarded as sufficiently host-specific, the candidate agent must be either monophagous (i.e. the insect feeds on only one plant species, the target weed in this case) or it could have a slightly wider host range, provided that none of the additional host plants occur in South Africa or surrounding countries, either as indigenous or introduced crop plants.

South Africa is regarded as one of the world leaders in the field of biological control of invasive alien plants. Since the 1930s we have brought 29 invasive alien plant species under complete or substantial biological control. In the process, 111 species or biotypes of natural enemies were released, 85 of which became established. Remarkable successes have been achieved with either controlling or reducing the invasive potential of many invasive plants including cacti, aquatic weeds, Australian wattles, chromolaena and lantana. Seed feeders feature strongly in many of our projects. Tested and safe biocontrol agents are distributed in co-operation with the *Working for Water* Programme of the Department of Water Affairs.