SAPIA NEWS

SOUTHERN AFRICAN PLANT INVADERS ATLAS

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ARC • LNR

WORKING FOR WATER

Patron in Chief: Nelson Mandela

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You are invited to participate in the SAPIA phase II project.

Submit records online at : Weeds and Invasive Plants website www.agis.agric.za/wip

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SAPIA progress and appeal for public participation

This issue of SAPIA News reports back on a survey of pompom weed and other invasive plants in Mpumalanga in January 2008. Triffid weed and mistflower, close relatives of pompom, are expanding their range; parthenium is a threat to biodiversity and human health—read about these and more on page two and four.

Burgan, an emerging invader in Fynbos is a cause for concern—see page three.

SAPIA needs your support!

Please submit records to the Weeds and Invasive Plants website www.agis.agric.za/wip

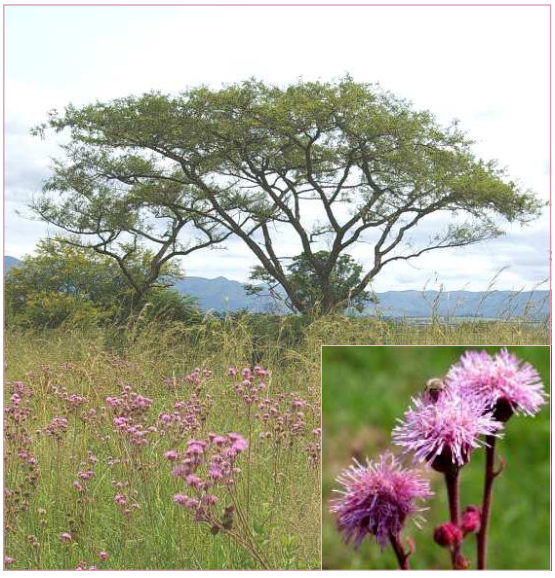
Public participation is vital to the SAPIA II project. If you should have any trouble in submitting records at the WIP site then rather e-mail them to Lesley Henderson at Henderson@sanbi.org

Pompom weed update

Pompom weed (*Campuloclinium macrocephalum*) is expanding its range in Mpumalanga, around White River, Nelspruit and Barberton; the largest infestations occurring in the Barberton/Nelshoogte/Badplaas area. Working for Water will start a control programme this January. Isolated plants have been recorded near Sabie, Graskop, Lochiel, The Brook and Chrissiesmeer—these should be primary targets for control.

Unconfirmed reports of pompom weed have been received from the Eastern Cape in the Queenstown area. **Please report any sightings of Pompom in the E Cape and submit photos of the plants for confirmation.**

The pompom weed webpage is fully functional and can be accessed at the ARC homepage at www.arc.agric.za. It provides assistance in distinguishing pompom weed from similar-looking indigenous and alien plants, information on chemical control, progress with biological control, contacts in the national Department of Agriculture for law enforcement, research projects and current distribution of the weed.



Pompom weed near Barberton

Invasive alien plants in Mpumalanga

The lowveld and escarpment areas of Mpumalanga are very heavily invaded by a wide variety of alien plant species. Some very harmful invaders are still relatively scarce or even absent from large areas of Mpumalanga and steps should be taken to curb their spread—these include parthenium, triffid weed and mistflower—and more are illustrated on page four.

Parthenium (*Parthenium hysterophorus*), belonging to the daisy family, Asteraceae, is a softly hairy, annual erect herb, 0.3–0.5 (–2.0) m high, with deeply incised leaves, longitudinally grooved stem and tiny white flowers, about 3 mm across, in terminal clusters. It is invading roadsides, watercourses, abandoned and cultivated fields, overgrazed land and other disturbed sites. It occurs in southern Kruger Park and southwards to Swaziland and northern KZN where it occurs in dense stands. Parthenium poses a major health problem and a threat to Agriculture. It inhibits the growth and seed germination of other plants through allelopathy and also causes asthma and serious dermatitis in humans.

Parthenium (*Parthenium hysterophorus*) Photos: L. Fish

Triffid weed (*Chromolaena odorata*)

Triffid weed (*Chromolaena odorata*), rated as the most serious conservation weed in KwaZulu-Natal and very invasive in the Tzaneen area, has invaded the major perennial river systems in Limpopo and Mpumalanga. It still has the potential to spread much more in both provinces and much effort should be made to keep it out of new areas. On the recent field trip it was recorded for the first time in the Schagen Valley (where pompom weed was also recorded) north-east of Nelspruit.

Mistflower (*Ageratina adenophora*)

Mexican ageratum (*Ageratum houstonianum*)

Did you know that..... triffid weed, mistflower and ageratum are close relatives of pompom weed? They all belong to the tribe Eupatoriae of the Family Asteraceae. All are invasive.

Mistflower (*Ageratina adenophora*), has a wider potential distribution than triffid weed. It is known to be invasive in Limpopo at Magoebaskloof, in the Magaliesberg in North West, Pietermaritzburg in KZN, near Plettenberg bay, Stellenbosch and the Cape peninsula in the W Cape. On the recent field trip it was recorded for the first time at Kaapsehoop in Mpumalanga. See page four for a description of this species.

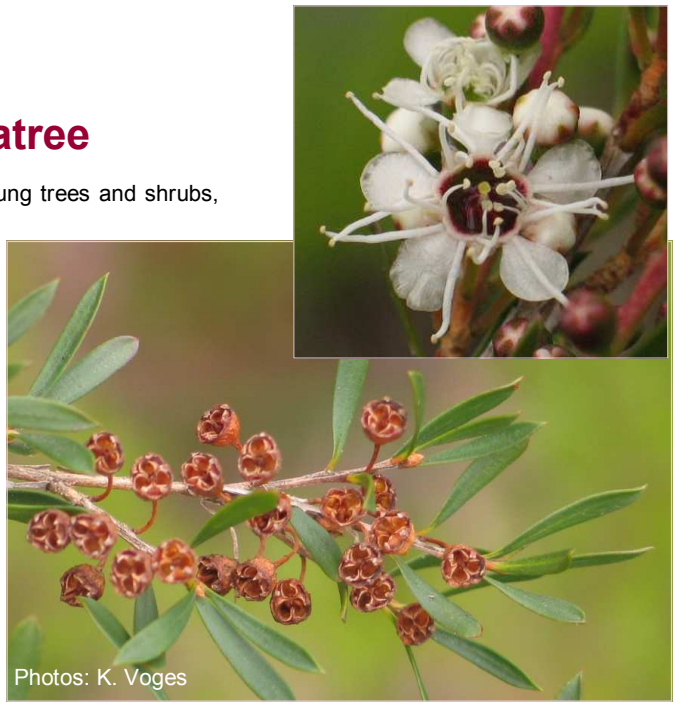
No progress with legislation

There is no progress to report on the revised regulations under the Conservation of Agricultural Resources Act, Act 43 of 1983 (CARA) nor the regulations on alien and invasive species under the National Environmental Management: Biodiversity Act, 2004 (Act 10 of 2004) (NEMBA).

CARA
(Department of Agriculture)
and
NEMBA
(Department of Environmental Affairs and Tourism)

Emerging weeds

Burgan, kanuka or white teatree


Photos: K. Voges

Burgan, kanuka or white teatree (*Kunzea* ericoides)(= *Leptospermum* ericoides) is an evergreen shrub or small tree up to 5 m high, native to south-eastern Australia and New Zealand where it grows in a wide range of habitats. It is a member of the myrtle family, Myrtaceae.

The bark is grey and flaky; leaves are aromatic, quite thick, soft, typically 4-12 mm long and 1-2 mm wide. It can be distinguished from similar species in South Africa by its clusters of flowers and fruits which are borne on long stalks and stamens which are much longer than the petals.

Burgan easily invades any habitat containing open forest complexes and proceeds to out-compete other young trees and shrubs, shading out ground-layer plants. It has invaded a single river catchment in the George area of the W Cape.

Legislation: None. It should be banned from the nursery trade and prioritized for eradication (category 1a under CARA).

Sword ferns

Sword ferns (*Nephrolepis exaltata* and *N. cordifolia*) are stiff, evergreen, terrestrial or epiphytic ferns, forming extensive colonies.

N. exaltata, sometimes called Boston sword fern, is native to Tropical America and has larger arching fronds up to 1. 5m high or more. *N. cordifolia*, erect sword fern, has a pantropical distribution, its native range being obscure; it has shorter, more erect fronds, usually less than 1 m high. Both species spread by stolons and in Africa, both species produce tubers.

There has been some confusion regarding the identity of the introduced *Nephrolepis* species and most reference has been only to *N. exaltata.*

Sword ferns have invaded the margins and understoreys of forests, plantations and coastal bush.

Legislation: *N. exaltata*, excluding cultivars, is a category 3 plant under CARA (2001). No new planting, trade or propagation is permitted. Both species have been proposed as category 1b (prohibited) under CARA in Limpopo, Mpumalanga, KZN, E & W Cape.

NB: go to the WIP website for a full description, more photos and distribution map of *N. exaltata*.

Mistflower

Mistflower (*Ageratina adenophora*)(= *Eupatorium adenophorum*) is a perennial herb or soft shrub up to 2 m high and is native to Mexico. It is a member of the family Asteraceae and is closely related to triffid weed (*Chromolaena odorata*) and pompom weed (*Campuloclinium macrocephalum*)

The leaves and stems are densely glandular-hairy. The leaves are ± rhombic in shape, 30-60 mm wide, strongly 3-nerved from the base, and non-aromatic. Flowers are white, in terminal clusters about 5 mm long, from August to December.

Mistflower has been cultivated as an ornamental. It invades roadsides, streambanks, forest margins and plantations.

Legislation: It is currently a category 1 plant under CARA (2001). It is illegal to harbour, propagate or sell the plant. landowners are compelled to control the plant.

NB: go to the WIP website for a full description, more photos and distribution map of this species .

More emerging weeds in Mpumalanga

All the species described here are already invasive in parts of Mpumalanga but they have the potential to become much more abundant. Take steps to control them! See WIP for more photos, descriptions and distribution maps.

Balloon vine (*Cardiospermum grandiflorum*) (**photo 1**) is a rampant invader of forest margins, watercourses and urban open spaces. It drapes itself over and smothers indigenous tree species.

Mexican sunflower (*Tithonia diversifolia*) (**photo 2**) is a shrub up to 3. 5 m high that forms dense stands along riverbanks and roadsides.

American elderberry (*Sambucus canadensis*)(= *S. nigra* subsp. *canadensis*) (**photo 3**) is a softly woody shrub up to 3 m high with bright green foliage, terminal heads of white flowers and black berries. It is thicket-forming even in its native America, favouring streambanks and forest edges. New growth is toxic to livestock. A similar species, European elderberry (*S. nigra*) is also invasive.

Yellow bells (*Tecoma stans*) (**photo 4**) is an ornamental evergreen shrub or small tree up to 6 m high. It produces bright yellow flowers through the summer months, followed by long pod-like fruits that split open to release masses of windblown seeds.

Granadina (*Passiflora subpeltata*) (**photo 5**) is a tendril climber related to the granadilla but the fruits are suspected of being poisonous to mammals but not to birds which eat the fruits and disperse the seeds.

Indian shot (*Canna indica*) (**photo 6**) invades streambanks, wetlands and other moist sites.

Formosa lily (*Lilium formosanum*) (**photo 7**) invades grasslands, wetlands, plantation edges, roadsides.

Kudzu vine (*Pueraria montana*) (= *P. lobata*) (**photo 8**) is a perennial hairy vine once promoted to control soil erosion but it is such a vigorous grower that it is almost impossible to curb its spread. Under ideal conditions it can grow 18 m per year. In the southern USA legend says that 'you must close your windows at night to keep it out the house'! An old and very bad infestation of kudzu vine occurs in the Schagen Valley between Sudwala and Rosehaugh. Has anyone tried to control this infestation?

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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

New publication:

Henderson, L. 2007. Invasive, naturalized and casual alien plants in southern Africa: a summary based on the Southern African Plant Invaders Atlas (SAPIA). *Bothalia* 37,2: 215–248.

This publication summarizes all the information in the SAPIA database from 1979–2000 and includes a complete species checklist up to May 2006. The dataset includes all roadside surveys by Lesley Henderson from 1979–1993 and the SAPIA phase I project from 1994–1998. A pdf of the publication is obtainable from Lesley Henderson at henderson@sanbi.org

Biological control of invasive plants

Salvinia (*Salvinia molesta*) before and after biocontrol with the weevil *Cyrtobagous salviniae*
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 release 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 27 invasive alien plant species under biological control. In the process, 99 species or biotypes of natural enemies were released, 74 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 and Forestry.