



SAPIA NEWS

SOUTHERN AFRICAN PLANT INVADERS ATLAS

October 2008

ARC-Plant Protection Research Institute

No. 9



SANBI launches emerging invasive alien species project

The South African National Biodiversity Institute (SANBI) has launched a new project on the **Early Detection & Evaluation of Emerging Invasive Alien Species**. The project is funded by Working for Water. The National Coordinator of the project is Philip Ivey, stationed at Kirstenbosch in Cape Town. Three regional coordinators will be stationed in Cape Town, Durban and Pretoria.

The SAPIA project will be an integral part of the new project and all information on the distribution of emerging invasive alien plant species will be captured in the SAPIA database and will be accessible online at the Weeds and Invasive Plants website.

Inside this issue:

SANBI launches emerging invasive alien species project	1
Pompom weed alert!	1
Weeds and invasive plants in the Karoo and Garden Route	2
Emerging ornamental weeds Madeira vine Greater periwinkle Bottlebrushes	3
More emerging weeds and invasive plants in the southern Cape	4

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

Editor and SAPIA coordinator:
Lesley Henderson
ARC-PPRI, Weeds Division
c/o SANBI
Private Bag X101
Pretoria
0001
South Africa

e-mail: Henderson@sanbi.org
Tel: 012 843 5035
Fax: 012 804 3211
website:
www.agis.agric.za/wip

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

All the SAPIA Newsletters are posted at WIP and can be downloaded free of charge

Pompom weed alert!

It is that time of year when we must be on the alert for Pompom weed (*Campuloclinium macrocephalum*) which will be emerging after the winter break. **Now is the time to take steps to control the weed!**

Any sensible control plan will start with the isolated plants and small patches first and then progress towards the big stands. Containment is the first priority.

Three herbicides have been registered for use against Pompom weed—Brush-Off made by DuPont, Access 240 made by Dow AgroSciences, and Climax which is a Volcano product. Herbicides should be applied onto actively growing plants that are starting to produce inflorescences.

Go to the Pompom weed webpage (www.arc.agric.za) for information on how to distinguish pompom weed from similar-looking indigenous species, 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.



Weeds and invasive plants in the Karoo and Garden Route

This issue of SAPIA News reports back on a survey of weeds and invasive plants in the southern Cape along the famous 'Garden Route' stretching from George, Wilderness and Knysna to the Tsitsikamma and Humansdorp and also the adjacent Karoo from Graaff-Reinet to Jansenville and Willowmore.

Torch cactus (*Echinopsis spachiana*) (photo 1) has the potential to become as much of a pest as the prickly pear (*Opuntia ficus-indica*), prior to a successful biocontrol campaign, in the early 1900s when it formed extensive and impenetrable stands in the Karoo. Torch cactus has been planted in most towns and farms as an ornamental plant and hedge. It produces succulent, edible fruits (photo 2) and seeds are dispersed by birds and possibly other animals. The plants are spreading along roads, fences, watercourses, under trees and shrubs, and on rocky hill-sides. In places they form thickets. There is an urgent need to control this invasive cactus.



Fountain grass (*Pennisetum setaceum*) (photo 3) is still localized but stretches for many kilometres at a time on road verges. In places it is invading the adjacent Karoo veld.

Tamarisks (*Tamarix* spp.) (photo 4), mainly hybrids between the indigenous and alien species, invade watercourses and drainage lines. These invaders are a threat to the water resources in the Karoo and should be controlled.



Australian tree fern (*Cyathea cooperi*) (photo 5) is invading the Knysna forest in several locations. It can be distinguished from the indigenous forest tree fern (*Cyathea capensis*) by the brown scales (as opposed to black) on the frond stalks and absence of moss-like, much-reduced leaves which occur in the stem crown of *C. capensis* (photo 6).

Willow Hakea, (*Hakea salicifolia*) (photo 7), a commonly planted ornamental tree, hedge and windbreak is spreading in many sites from seed. Apparently, unlike its relative the silky hakea (*Hakea sericea*), it does not require fire to release seed from its fruits (follicles) and appears to like moist sites. In its native Australia it grows in wet sclerophyll forest and edges of rainforest—similar habitats are abundantly available along the Garden Route.

Sweet pittosporum (*Pittosporum undulatum*) (photo 8) is invasive along the garden route. It is easily overlooked because it likes forested and wooded areas and streambanks. The bright orange fruits contain sticky orange-red seeds dispersed by birds and other animals. It also spreads by suckering.



Emerging ornamental weeds

Madeira vine

Madeira vine (*Anredera cordifolia*) is a perennial climber with semi-succulent leaves and stems. It is native to subtropical South America and is a member of the family Basellaceae.

Its leaves are bright green and glossy. The flowers are white, showy, fragrant and produced in spikes up to 300 mm long from February to May. It does not produce seed but reproduces vegetatively from aerial tubers that drop to the ground and take root.

Madeira vine is cultivated as an ornamental and for its edible tubers. It invades woodland and riverbanks usually close to human habitation. It is widespread in South Africa, from Cape Town in the W Cape, to the

southern and eastern Cape, KZN, Mpumalanga and Gauteng.

Legislation: It is a category 1 (prohibited) invader under CARA.



Aerial tubers



Photo: G.R. Nichols

Greater periwinkle

Greater periwinkle (*Vinca major*) is a perennial, evergreen herb with erect flowering stems to 450 mm high and trailing stems that root at the nodes. It is a native of Europe and is in the family Apocynaceae.

It can be distinguished from the lesser periwinkle (*Vinca minor*) by its minutely hairy leaf margins, petioles and sepals visible with a hand lens and by the slightly larger violet-blue flowers measuring 30-50 mm across. It seldom produces seed; spreading vegetatively by trailing stems

Greater periwinkle has been cultivated as an ornamental groundcover but can spread prolifically. It prefers moist, shaded sites,

forest edges and streambanks. Once established it smothers and prevents the regrowth of native vegetation.

It is naturalised and invasive in many parts of the world, including Australia, New Zealand, the USA, Chile and Japan. It is abundant in places along the Garden Route.

Legislation: None. It has been proposed as a category 1b (prohibited) invader under the revised CARA.



Bottlebrushes

Bottlebrushes (*Callistemon* species) are evergreen shrubs or trees with showy clusters of bottlebrush-like flowers with long-exserted stamens. They are native to Australia and New Caledonia and belong to the same family as the eucalypts or gums, family Myrtaceae.

Bottlebrushes and paperbarks (*Melaleuca* species) are very similar, being separated by the stamens grouped (usually distinctly fused) into 5 bundles (paperbarks) and stamens not in 5 bundles, usually free (bottlebrushes). The fruits are small woody capsules containing numerous small seeds.

Bottlebrushes have been cultivated as ornamentals. They invade watercourses, wetlands, roadsides, disturbed and burnt sites, in fynbos and savanna.

Legislation: None. Three species have been proposed as declared invaders under the revised CARA.

Lemon bottlebrush (*C. citrinus*) and stiff-leaved bottlebrush (*C. rigidus*) are stiff shrubs 1-3 m high with erect foliage, while the weeping bottlebrush (*C. viminalis*) is a tree to 8 m high with pendent branches and foliage.



C. viminalis

More emerging weeds and invasive plants in the southern Cape

This page illustrates more emerging weeds and invasive species recorded during a SAPIA roadside survey in October 2008.

The landscape is dominated by alien acacias and pines. Black wattle (*Acacia mearnsii*) (**photo 1**) infests the river systems. Australian blackwood (*Acacia melanoxylon*) (**photo 2**) invades rivers and edges of forests.



The remaining phyllodinous *Acacia* spp. Rooikrans (*A. cyclops*), Port Jackson (*A. saligna*), long-leaved wattle (*A. longifolia*) and golden wattle (*A. pycnantha*) (**photo 3**) are heavily galled by biocontrol agents.

Cluster pine (*Pinus pinaster*) (**photo 4**) and radiata pine (*Pinus radiata*) are very invasive in mountain fynbos.



European bramble (*Rubus fruticosus*) (**photo 5**) with its large pink or white flowers in elongated, prickly, inflorescences is abundant on road and forest verges. A less common species, American dewberry, *R. flagellaris* (**photo 6**), has very large white flowers that are borne singly or in small clusters and has slender, straight spines on the stems.

Australian brush-cherry (*Syzygium paniculatum*) (**photo 7**), Camphor tree (*Cinnamomum camphorum*) (**photo 8**), with its reddish young leaves, and ash-leaved maple (*Acer negundo*) (**photo 9**) are emerging weeds along the Garden Route.



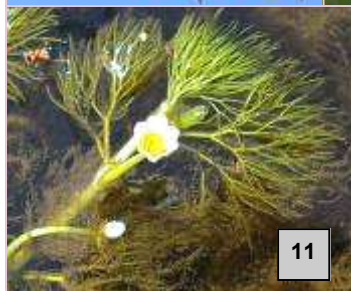
Wandering Jew (*Tradescantia fluminensis*) (**photo 10**) invades forest edges and other shady sites.

Water crowfoot (*Ranunculus* cf. *ripii*) (**photo 11**) looks very similar to fanwort (*Cabomba caroliniana*) but has alternate (and not opposite) leaves. It is doubtfully indigenous and occurs on the Sundays River north-east of Graaff-Reinet.



Chainfruit cholla (*Cylindropuntia fulgida*) (**photo 12**) is invasive at Graaff-Reinet.

Pride-of-Madeira (*Echium candicans*) (**photo 13**) is a potentially new invader which has been noticed in disturbed sites along the Garden Route.



ARC-PPRI, WEEDS DIVISION

ARC-Plant Protection Research Institute

Weeds Research Division
Private Bag X134
Queenswood
0121

Phone: +27 (0)12 356 9840
Fax: +27 (0)12 356 9852

Contact: Acting Division Manager:
Dr. Roger Price
e-mail: PriceR@arc.agric.za

General enquiries: Mrs. Hildegard Klein
e-mail: KleinH@arc.agric.za



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. 77 for the following news from the Weeds Research Division:

- Renewed biocontrol research on crofton weed (*Ageratina adenophora*).
- The insect community in the seed capsules of the River Red Gum (*Eucalyptus camaldulensis*), in South Africa and some lessons to be learnt.

Biological control of invasive plants



Long-leaved wattle (*Acacia longifolia*) with galls formed by a bud galling wasp (*Trichilogaster acaciaelongifoliae*)

Photos: S. Nesper and J.H. Hoffmann

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 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.