



Newsletter of the Southern African Plant Invaders Atlas, an initiative of the Weeds Programme of Plant Protection Research, an institute within the Agricultural Research Council (ARC)



## The environment: our rights and responsibilities

The South African Constitution has made headline news over the past month. Are we—the public and state—aware of our rights and responsibilities towards the environment?

Section 24 of the Constitution says this about “**Environment**”:

“Everyone has the right –

- (a) to an environment that is not harmful to their health or well-being; and
- (b) to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that –
  - (i) prevent pollution and ecological degradation;
  - (ii) promote conservation; and
  - (iii) secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.”

This issue of SAPIA News focuses on just two projects which aim to address organisms that are harmful to the environment—one aims to prevent the widespread invasion of a potentially detrimental aquatic plant; — the other aims to put the brakes on invasive species which are a threat to agriculture through their toxicity and to biodiversity by displacing indigenous species.

### New and confusing cacti

The correct identification of cacti in South Africa is challenging. Most species have been introduced through the horticultural trade and information about their origins and correct identity has largely been lacking.

Dr Roberto Kiesling, curator at Herbario Ruiz Leal, Conicet, Mendoza, Argentina, provided much-needed expert identification of some South American cacti while on a recent visit to South Africa. His visit was sponsored by SANBI-ISP Programme and Rhodes University (Dept. Zoology and Entomology).

Potentially invasive species of *Austrocylindropuntia*, *Cereus* and *Trichocereus*, as well as confusion about the name of the increasingly invasive and problematic torch cactus, are discussed on page 5.



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

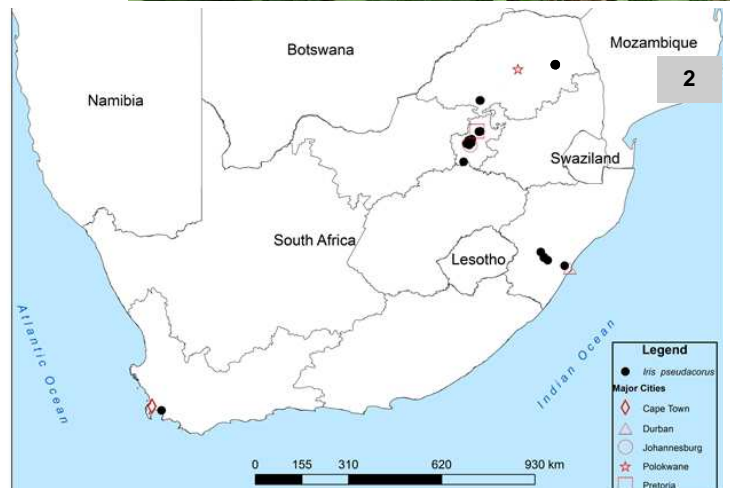
## Yellow flag iris (*Iris pseudacorus*): Not so pretty—STOP the spread!

Thulisile Jaca, Invasive Species Programme: EDRR, SANBI

**History:** Yellow flag iris is a semi-aquatic plant that is particularly showy during its short flowering season from September to October (**photo 1**). It is native to Europe, North Africa and western Asia (USDA-GRIN, 2016). In South Africa the species is a category 1a declared invader under NEMBA, requiring compulsory control, and further introductions and plantings are prohibited. The plant is popular in water gardens and in other ornamental plantings and has escaped cultivation in many regions of South Africa, United States of America, Canada and New Zealand (Cody 1961; Sutherland 1990; Katharine 2009; USDA 2010).

In South Africa there were only two known naturalised populations of this species in 2004; however a decade later more than 30 naturalised populations have been discovered (**photo 2**). These populations occur in the Western Cape, KwaZulu-Natal, Gauteng and Limpopo (Jaca & Mkhize 2015).

**The problem:** Yellow flag iris is a geophyte reproducing both by seeds and rhizomes (underground creeping root-stalks). It has high environmental impacts in riparian areas (**photos 3, 4 & 5**). It tolerates a range of water conditions from salinity to poor water quality and drought. The clonal nature of yellow flag iris allows it to form dense stands and thick submerged rhizome mats that prevent the growth of native species and eventually displaces them (Sutherland 1990). In wetlands of the eastern United States yellow flag iris has reduced the density of native sedges and rushes that serve as habitat for other species, especially waterfowl (Jacobs et al. 2010). All parts of the yellow flag iris are poisonous, causing gastroenteritis in livestock if ingested, and its resins can cause skin irritation in humans.



## Yellow flag iris (*Iris pseudacorus*): Not so pretty—STOP the spread!



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**How to recognise it:** Yellow flag iris is a herbaceous, perennial, semi-aquatic plant with showy yellow flowers (**photo 6**). It slightly resembles *Moraea huttonii* (large golden vlei moraea) and *Typha capensis* (bulrush) when not in flower. It differs from *M. huttonii* in that its rootstock is a pink creeping rhizome (**photo 7**), whereas *M. huttonii* has a corm (bulb-like underground storage organ) and differs from *T. capensis* in that the leaves have a raised midrib (**photo 8**) while in *T. capensis* the midrib is not raised.



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**Current work and future plans:** The ISP: EDRR Programme is currently mapping populations in order to determine the total population size and herbicide trials are in progress to determine a suitable herbicide to control the species.

### References

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- USDA (2010) The PLANTS Database. National Plant Data Center, Natural Resources Conservation Service, United States Department of Agriculture. Baton Rouge, LA., <http://plants.usda.gov>
- USDA-GRIN (2016). Taxonomy information sheet. *Iris pseudacorus* <https://npgsweb.ars-grin.gov/gringlobal/taxonomydetail.aspx?id=20385>

### How can you assist?

Report sightings of yellow flag iris to [T.Jaca@sanbi.org.za](mailto:T.Jaca@sanbi.org.za), 012 843 5143, or [alienplants@sanbi.org.za](mailto:alienplants@sanbi.org.za) and provide exact locality (landmarks and GPS co-ordinates if possible)

The ISP:EDRR is based within the South African National Biodiversity Institute and is funded by the Department of Environmental Affairs.



environmental affairs

Department:  
Environmental Affairs  
REPUBLIC OF SOUTH AFRICA



EXPANDED PUBLIC WORKS PROGRAMME  
CONTRIBUTING TO A NATION AT WORK

## New biological control initiatives against poisonous South American inkberries (*Cestrum* species) in South Africa

David Simelane, ARC-Plant Protection Research, Weeds programme

Several *Cestrum* species (Solanaceae), commonly known as inkberries, are declared invaders in South Africa. *Cestrum laevigatum* and *C. parqui* have become highly invasive in the country, while another two species, *C. aurantiacum* (orange-yellow flowers) and *C. elegans* (reddish-purple flowers), are less invasive. All four species have been declared as category 1 invaders under the National Environmental Management: Biodiversity Act (NEMBA).

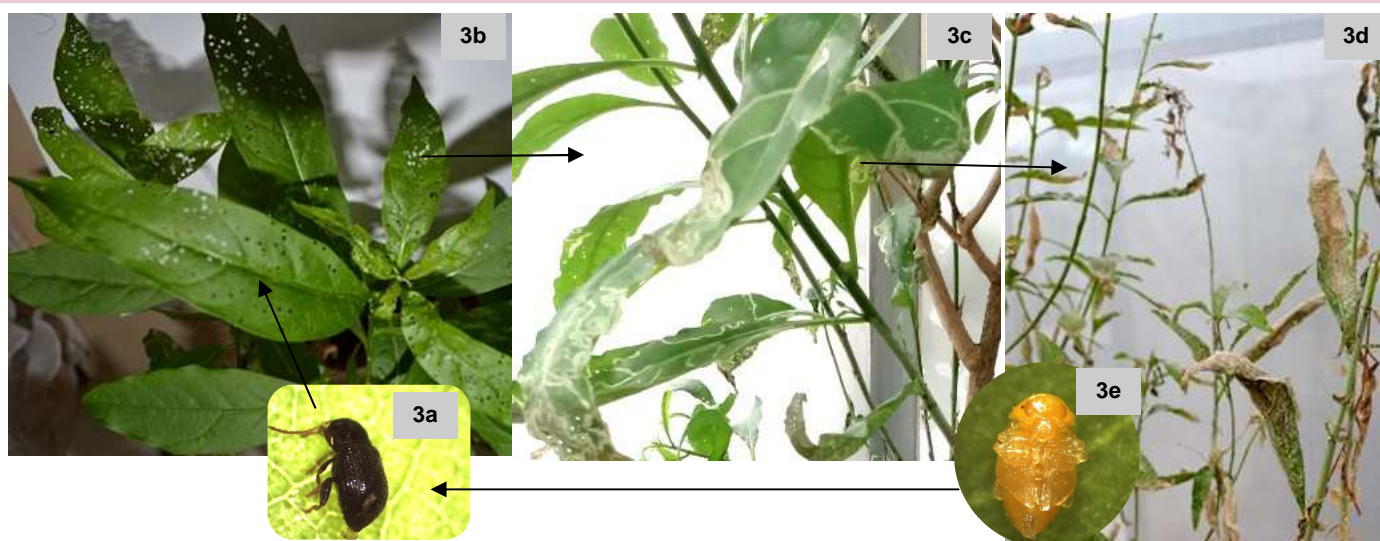
*Cestrum parqui* (photo 1), commonly known as Chilean inkberry, is predominantly found in inland provinces of Gauteng, North West, Limpopo, Free State and Mpumalanga while *C. laevigatum* (photo 2) is highly abundant in the coastal region of KwaZulu-Natal and the Eastern Cape. Both species are natives in Central and South America. *Cestrum* species are extremely toxic to animals including cattle, sheep, horse, pigs, poultry, and humans. Poisoning of cattle by *C. parqui* is characterised by depression, convulsions and death. Hence the rapid spread of *C. parqui* in inland provinces such as Gauteng and the North West poses a serious threat to the livestock industry in these regions.

The ability of *Cestrum* species to coppice, their high density and extent of infestations, together with prolific recruitment from seed, make mechanical and chemical control of the two inkberry species prohibitively expensive. An integrated control strategy, including mechanical, chemical and biological control, is therefore required if large scale control of *Cestrum* species is to be achieved. The ARC-PPR, Weeds Research Programme resumed a biological control programme of the invasive inkberries in 2012 with surveys to search for potential biological control agents within the native region (South America).



A leaf-mining flea beetle, provisionally identified as *Acallepitrix* sp. (Chrysomelidae), was selected as a suitable candidate agent, and was introduced into quarantine in South Africa in 2015. The adult beetle (photo 3a) feeds on the leaves, boring through the leaf tissue and causing minute circular holes (photo 3b). Females oviposit into the leaf tissue and larvae feed internally within the leaf, causing meandering mines (photo 3c). As the larvae develop, the leaf mines also increase in size, often causing defoliation (photo 3d). Larvae pupate inside the leaf (photo 3e).

Preliminary findings suggest that the flea beetle has the potential to be an effective biocontrol agent for the invasive *Cestrum* species in South Africa. The high degree of host-specificity and severe damage by both larval and adult stages, are among the important attributes of this beetle. The beetle has only caused significant damage and developed successfully on both *C. parqui* and *C. laevigatum*. Furthermore, the beetle species has a very short generation period with a rapid population growth rate. Based on the tests done so far, the beetle is a very promising biocontrol agent for both *Cestrum* species, and could minimise the threat posed by these weeds in South Africa.



## New and confusing cacti

### *Austrocylindropuntia verschaffeltii*

Much-branched, succulent shrub, forming low, dense clumps 10–30 cm high; joints globose to short-cylindric, 1–10 cm long, with cylindrical leaves when young. Flowers orange or coppery red, fruit fleshy, globose, 3 x 2 cm. Joints pale green when grown in partial shade, becoming brownish or purple-red. Globose joints are shed from the plant when stressed. Native to Argentina and Bolivia where it grows in high altitude grasslands on barren, rocky soils. Potentially invasive in the Karoo of South Africa. Not listed under NEMBA.



### *Cereus aethiops*

Much-branched, succulent shrub 1–2 m high; joints bluish green to purplish, 30 cm long, tapering towards apex, ribs 7 or 8; ~ 9 radial spines and a single central spine; flowers large, 22 x 12 cm, white, outer petals pink, night-blooming; fruit fleshy, ovoid, to 6 cm long, brown when mature.

Native to western Argentina. Cultivated in the Kimberley area of the Northern Cape where it is potentially invasive. Not listed under NEMBA.



### *Trichocereus pachanoi* (= *Echinopsis pachanoi*) San Pedro cactus

Columnar cactus 3–6 m high, branched from the base; stems light to dark green, sometimes bluish green, usually with 6–8 ribs; spines yellowish or brownish, 3–7 per cluster, sometimes spineless; flowers large, 19–24 x 20 cm, white, night-blooming. Similar to *Cereus jamacaru* but axils of scales on flower tube and fruit bear long, black hairs. Fruits are green, up to 6 x 3 cm.

Native to the Andes Mountains in South America. Contains various alkaloids, including Mescaline, a psychedelic drug. Widely cultivated in the Eastern Cape, and possibly elsewhere, and has started spreading. Potentially invasive and should be controlled. Not listed under NEMBA.



### *Echinopsis spachiana*, *E. schickendantzii*, *Trichocereus schickendantzii* or *T. spachianus*? Torch cactus

Multistemmed shrub 1–2 m high, stems with 10–15 ribs, spines amber-coloured, turning grey, radial spines 8–10, single central spine longer than radials. Flowers large, conical, 20 x 15 cm, white, night-blooming, floral tube and fruit covered with long black hairs.

The most likely correct name of this cactus is *Trichocereus spachianus* according to Kiesling. This follows the re-instatement of the genus *Trichocereus* (see Hunt 2013, The New Cactus Lexicon. Illustrations). The most recently applied name to this cactus in South Africa, *Echinopsis schickendantzii* (= *Trichocereus schickendantzii*), is a lower growing plant, 15–25 (–50) cm high, with dark green stems, 14–18 ribs, and 2–8 central spines.



## Summary of contents: SAPIA News Nos. 31–40

### Legislation (NEMBA: alien and invasive species):

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### SANBI'S Invasive Species Programme (EDRR) alerts:

yellow Himalayan raspberry (*Rubus ellipticus*) (authors: Reshnee Lalla & Michael Cheek) (31)

fringed wattle (*Acacia fimbriata*) (author: Kanyisa Jama) (31)

velvet bur cactus (*Opuntia pubescens*) (author: Dan'sile Cindi) (32)

goldenrods (*Solidago* spp.) in KwaZulu-Natal (authors: Jesse Kalwij and Michael Cheek) (34)

Kudzu vine (*Pueraria montana* var. *lobata*) (author: Bongani Mashele) (36)

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### Pompom weed (*Campuloclinium macrocephalum*):

Release of first biological control agent (author: Andrew McConnachie) (31), progress with biological control (author: Liamé van der Westhuizen) (35), an update on biological control (author: Liamé van der Westhuizen) (39)

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Factsheets and photos of about 600 plant species can be found at this website: [www.agis.agric.za/wip](http://www.agis.agric.za/wip) (31, 32), AGIS/WIP website no longer functional (33)

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**Ind:** indigenous

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## 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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