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Plant Protection Research Institute

SAPIA NEWS

SOUTHERN AFRICAN PLANT INVADERS ATLAS

January 2015

No. 35

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

environmental affairs
Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

Inside this issue:

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SAPIA newsletters are posted at the ARC website: www.arc.agric.za under 'Newsletters'

Karoo invasion: is history being repeated?

1

2

Almost 100 years ago sweet prickly pear, *Opuntia ficus-indica,* had invaded vast tracts of land in the Karoo resulting in massive losses to agriculture (**photo 1** near Graaff-Reinet with the Tandjiesberg in the background) (Department of Agriculture archives). Today torch cactus, *Echinopsis schickendantzii* (previously known as *E. spachiana* in South Africa) is invading the same Karoo with potentially disastrous consequences (**photo 2**).

Pompom weed: progress with biological control

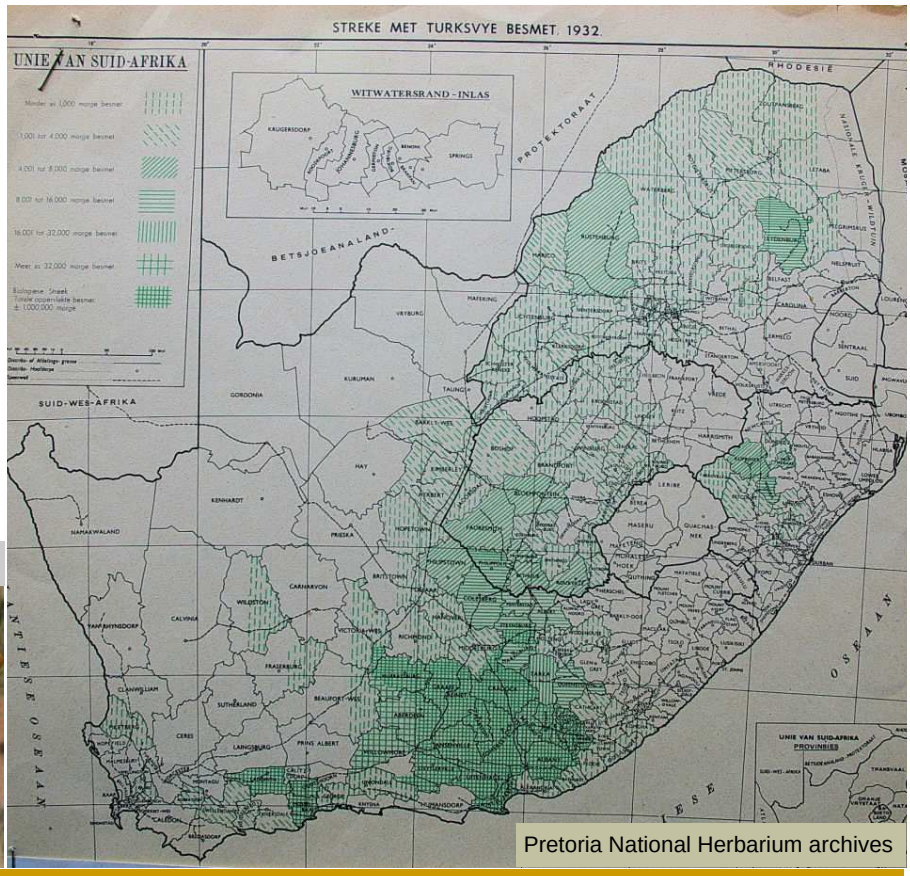
Pompom weed, *Campuloclinium macrocephalum*, is in full flower, creating splashes of pink across the countryside. Busy at work, and not yet obvious, is the stem- and leaf-feeding thrips, *Liothrips tractabilis,* which was released as part of a biological control campaign against pompom weed.

Read more about progress with the biological control campaign which was started in October 2013, and how you can get involved, on page 6.

Karoo invasion: the history of sweet prickly pear

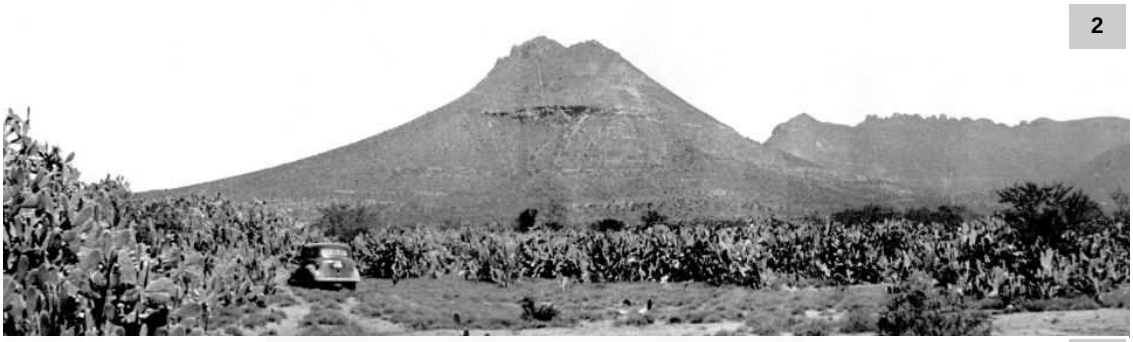
Sweet prickly pear, *Opuntia ficus-indica* (**Photo 1**), was introduced more than 350 years ago for its edible fruits and as a fodder and hedge plant. The original plants were spineless cultivars, but by the 1880s spiny forms had emerged and had become invasive in the Eastern Cape. From as early as 1883 various methods of mechanical and chemical control were tried but without much success. By 1932 the infestations extended across the length of South Africa from the southern Cape to the far north (see **map**). In the Cape alone it had invaded 20 000 square km. Half of the area invaded consisted of dense infestations which resulted in little natural vegetation for grazing animals and led to huge livestock mortalities. The highly irritant spines on the prickly pear plants also rendered them unpalatable.

1



Pretoria National Herbarium archives

After 50 years of failed attempts at mechanical and chemical control, a biological control campaign was started in 1932 using two of sweet prickly pear's natural enemies which were specially imported—the cochineal insect and the prickly pear moth. By the late 1950s 80% of the very dense infestations had been cleared.



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Photos 2 and **3** show an infestation of sweet prickly pear before and after biological control.

These historical photos were taken near Graaff-Reinet with the Tandjiesberg in the background.

3

Department of Agriculture archives

It took 80 years (1880s to late 1950s), of intense effort to reduce the very dense infestations of prickly pear to manageable populations.

This would not have been possible without biological control.

Today, after 80 years of biological control, populations of sweet prickly pear have stabilized and pose no further threat to agriculture and the environment despite pockets of infestation in some reserves.

Karoo invasion: the next onslaught of invasive cacti

The successful control of sweet prickly pear and reclamation of the Karoo is now a distant memory and the Karoo again faces invasion by a whole new suite of cacti. Some species can be effectively controlled biologically but for others there are currently no prospects for biological control, and to make matters worse, it appears that, apart from the dedication of a few landowners, little attempt is being made to control them using other methods .

The species which have already spread tremendously and pose a huge threat to agriculture and the environment are:

Torch cactus, *Echinopsis schickendantzii*, (**photo 1** and **map 1**). This cactus has been a category 1 declared invader since 2001 yet there appears to have been little attempt to control its spread. It has been cultivated for hedging and ornament. It produces succulent fruits and the seeds are spread by birds and probably monkeys and other mammals. Currently there are no prospects for biological control.

Small, round-leaved prickly pear, *Opuntia engelmannii* (= *O. lindheimeri*) (**photo 2** and **map 2**), and **creeping prickly pear**, *O. humifusa* (**photo 3a & b** and **map 2**), have been category 1 declared invaders since 1984 and 2001 respectively. Both species have been cultivated for ornament. The succulent fruit is eaten, and the seeds dispersed, by birds and mammals. Again, little attempt has been made to control these cacti. However, recent trials using the *stricta* biotype of cochineal gives hope that it might be possible to incorporate biological control within integrated control programmes for both species (personal communication Hildegard Klein, ARC-PPRI).


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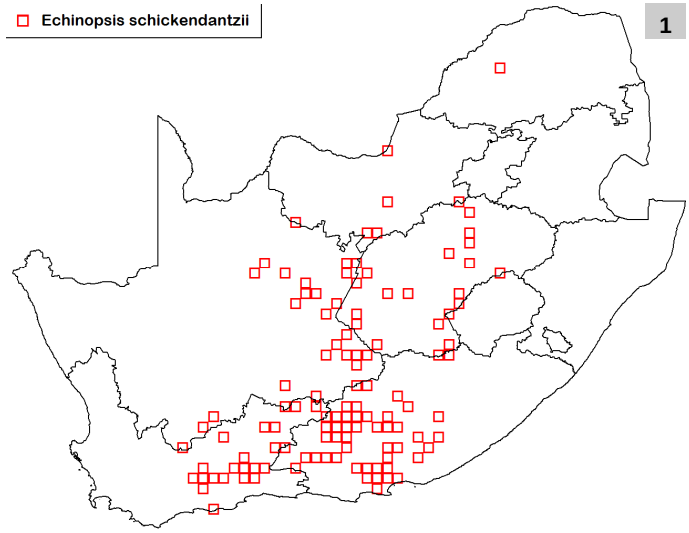

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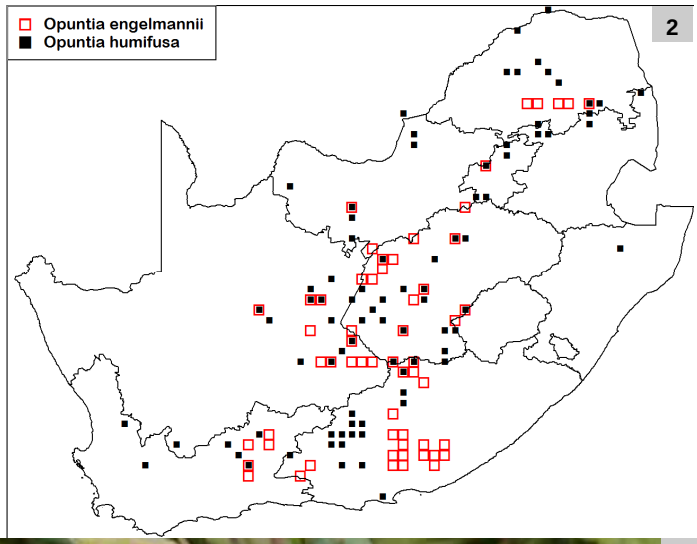

2


3a


3b

Karoo invasion: prevention is better than cure

Some cacti are currently the targets of SANBI's early detection programme but their control may already be beyond the capabilities of this programme. These include: boxing glove cactus, *Cylindropuntia fulgida* var. *mamillata* (**photo 4** and **map 3**), pink-flowering sheathed cholla, *C. pallida* (**photo 5** and **map 3**), and pine cone cactus, *Tephrocactus articulatus* (**photos 6a & b** and **map 4**). Fortunately biological control, using cochineal, is very effective for boxing glove cactus, but there is nothing yet available for the other two species.

4

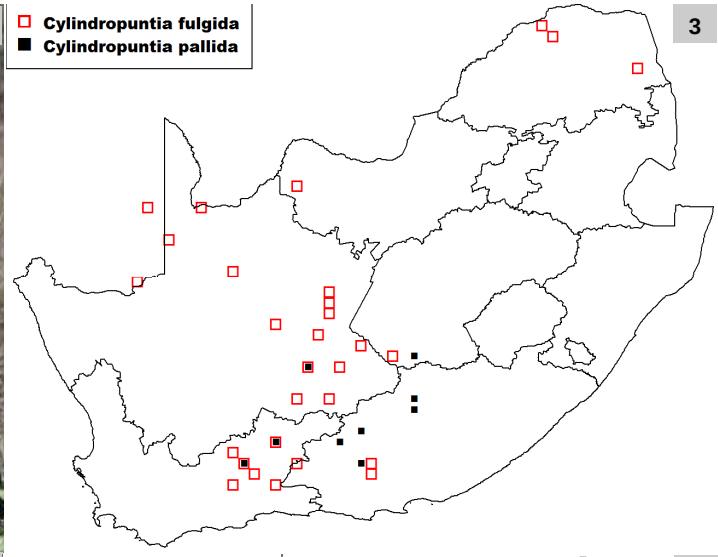

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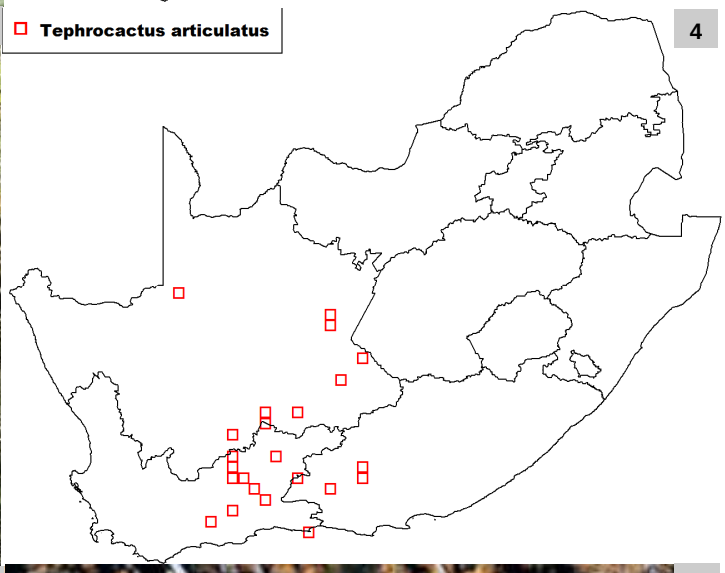
Photo: B. Mashope



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6a

6b

Variety *papyrifera*

Karoo invasion: obeying the law and being responsible

Hundreds of species of cactus have been introduced into South Africa as ornamentals. Approximately 40 species have been recorded as spreading from cultivation, and 34 species are currently declared invaders under NEMBA. See SAPIA News No. 25 for a guide to invasive cacti in South Africa (http://www.arc.agric.za/Pages/Newsletters.aspx) and the NEMBA legislation at http://www.invasives.org.za/legislation.html

Obey the law

NEMBA prohibits the introduction of any new species (i.e. not already in South Africa) of the following genera:

Cylindropuntia (chollas),

Harrisia (prickly apples),

Opuntia (prickly pears) and

Pereskia.

Further invasions of cacti can be prevented by not growing, cultivating or spreading any NEMBA-listed species.

All landowners must control invasive cacti on their properties


1

The Obesa Nursery (**photo 1**) in Graaff-Reinet is a very large supplier of cacti for sale in South Africa and overseas. Wholesale nurseries, such as Obesa, have a very big responsibility not to sell any declared invaders or those that have the potential to become invasive.

Be responsible

Do not throw unwanted plants over the fence. Municipalities should not allow the dumping of plants on the urban boundary or on vacant land. Cactus invasions start from the irresponsible dumping of plants.

Beware of buying cacti from uninformed nurseries and backyard sellers who illegally sell declared invaders.

Farmers often cause their own problems with invasive plants by cultivating them at the entrances to their farms and around their homesteads. **Photos 2** and **3** show bunny-ears or teddy-bear cactus, *Opuntia microdasys,* planted and spreading at the entrance to a farm. Matters are made worse when the farms are abandoned and the cacti left to spread.


2


3

Pompom weed: progress with biological control

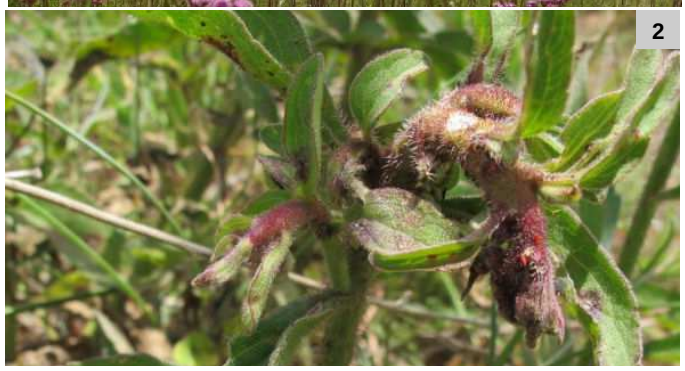
Mrs Liamé van der Westhuizen, ARC-PPRI, Rietondale, Pretoria

Since the initial release of the stem- and leaf-deforming thrips (*Liothrips tractabilis*) on pompom weed (*Campuloclinium macrocephalum*) in October 2013 at Rietvlei Nature Reserve (**photo 1**) (and SAPIA News No. 31), over a hundred thousand adults and nymphs have been released in over 45 localities throughout the Gauteng, Limpopo, Mpumalanga and North West Provinces.

Follow-up surveys and feedback from landowners have confirmed the persistence of the insects and methods are currently being investigated to increase their dispersal within and between pompom infestations. Although it is predicted that the thrips will decrease the number of flowers and ultimately the number of seeds produced by the weed, it is important to keep in mind that pompom has been invading our grasslands for many years prior to the introduction of the biocontrol agent. Therefore it is likely that the sea of pink will continue to dominate our grasslands for a number of years to come, before we will be able to see their numbers declining.

Liothrips tractabilis is currently being mass-reared at the ARC-PPRI facility in Cedara, KwaZulu-Natal, and couriered to ARC-PPRI in Pretoria from where releases are being coordinated according to guidelines provided by the National Pompom Steering Committee. Once releases have been completed in all areas prioritized by the steering committee, and mass-rearing expands to Gauteng, insects will be more readily available to meet the ever increasing requests of residents' associations and private land owners.

1



2

The thrips feed on pompom stems and leaves, causing deformed growth, and reduced flowering (**photo 2** at Rietvlei 20/01/2015)

Anyone wanting to include biological control in their management strategy against pompom weed can have their names, contact details and locality added to an existing database by contacting:

Almie van den Berg (vdbergam@arc.agric.za) or Liamé van der Westhuizen (vdwesthuizenl@arc.agric.za). Liamé has taken over from Dr Andrew McConnachie as project leader for this pompom weed biocontrol project.

Information leaflets on both pompom weed and the thrips, as well as general guidelines on the management of pompom can be found on the ARC website through the following link: http://www.arc.agric.za/arc-ppri/Pages/Pompom%20weed/Pompom-Weed.aspx

ARC-PPRI, WEEDS RESEARCH PROGRAMME

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The Weeds Research Programme of the ARC-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

Weeds Research URL:

http://www.arc.agric.za/arc-ppri/Pages/Weeds%20Research/Weeds-Research.aspx

see Plant Protection News

for current news from the Weeds Research Programme