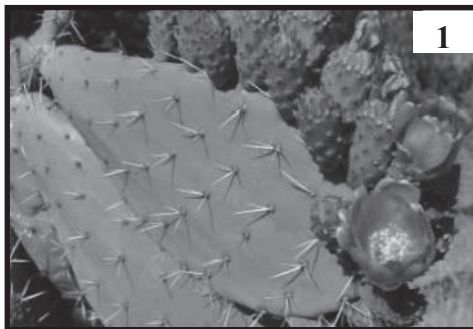

Karoo invasion: is history repeating itself?

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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.



Sweet prickly pear, *Opuntia ficus-indica*

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.

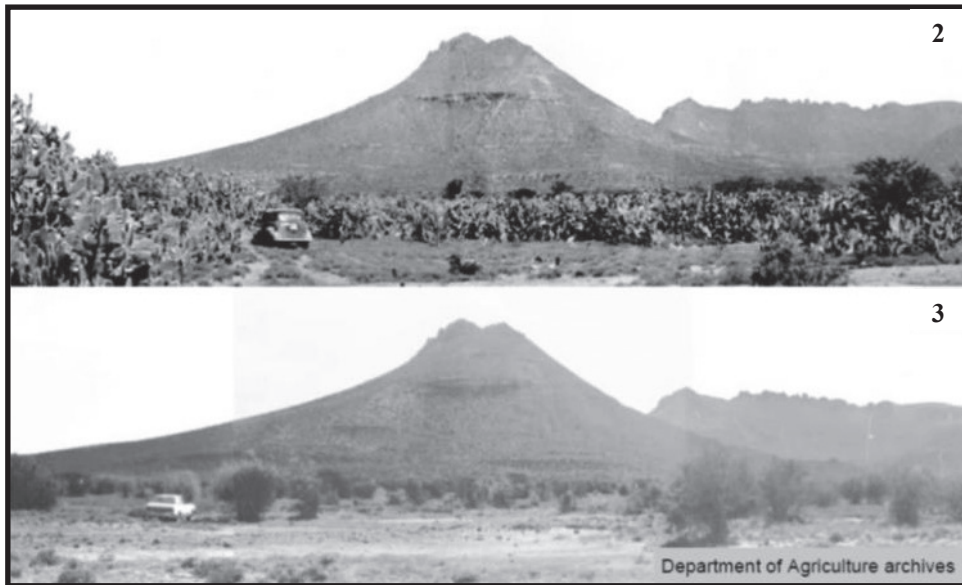
By 1932 the infestations extended across the length of South Africa from the southern Cape to the far north (see map). In the Cape alone it had invaded 20000 square km. Half of the area invaded consisted of dense infestations which resulted in little natural vegetation for grazing animals and led to huge livestock mortalities. The highly irritant spines on the prickly pear plants also rendered them unpalatable.

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. 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.

Feature



Pretoria National Herbarium Archives



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 Tandjesberg in the background.

Feature

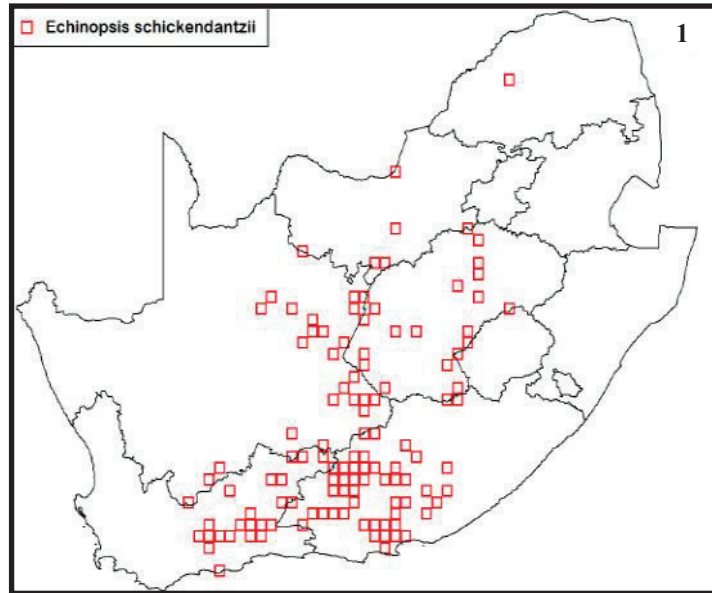
The next onslaught of invasive cacti

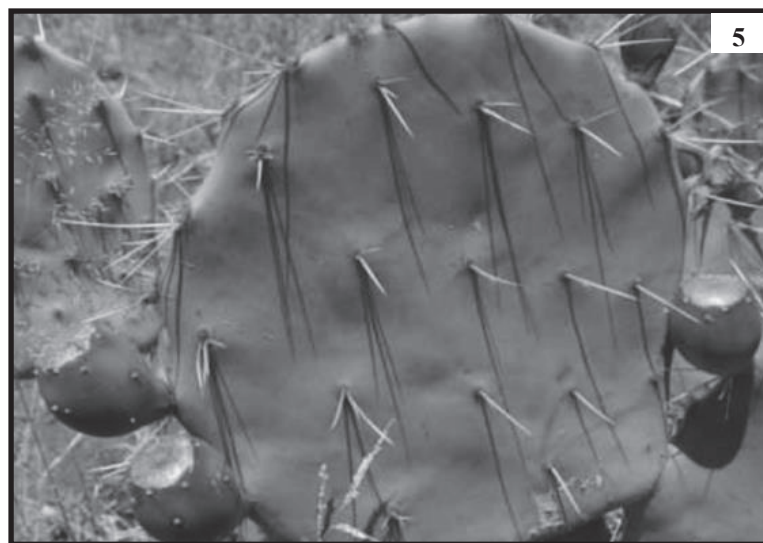
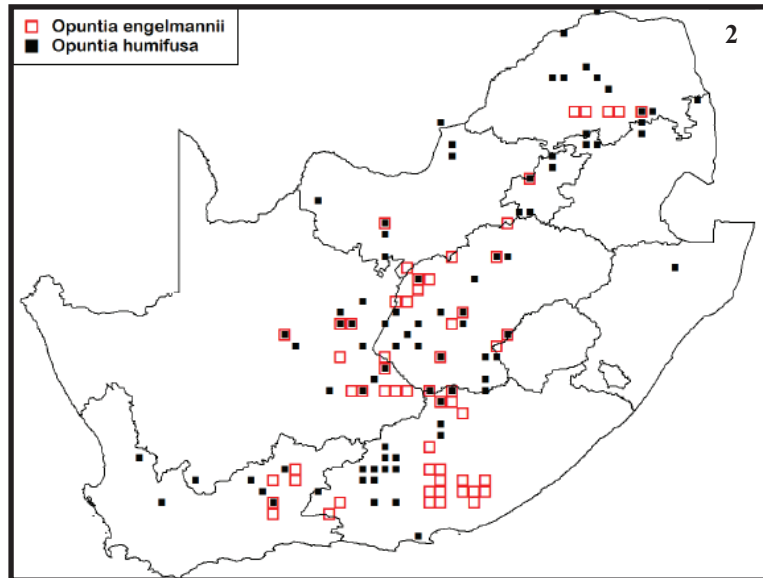
The successful control of sweet prickly pear and reclamation of the Karoo is now a distant memory and the Karoo again faces invasion by a whole new suite of cacti. Some species can be effectively controlled biologically but for others there are currently no prospects for biological control, and to make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

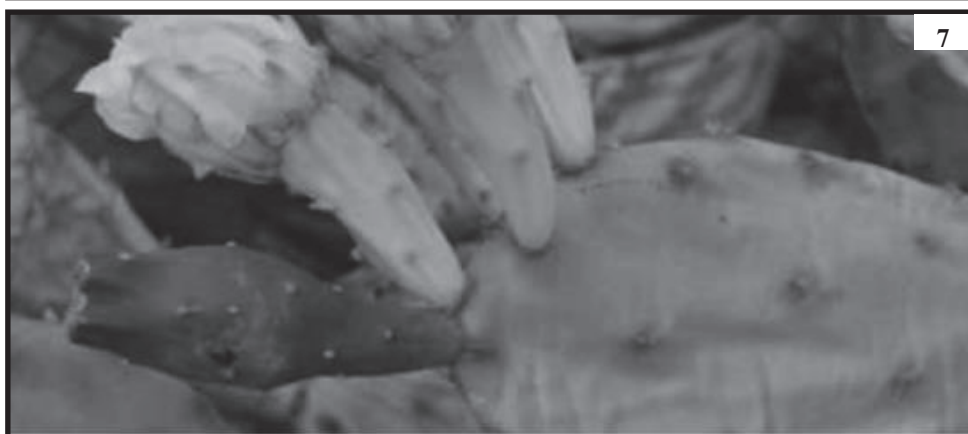
The species which have already spread tremendously and pose a huge threat to agriculture and the environment are:

Torch cactus, *Echinopsis schickendantzii*, (photo 4 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 5 and map 2), and creeping prickly pear, *O. humifusa* (photo 6 & 7 and map 2), have been category 1 declared invaders since 1984 and 2001 respectively. Both species have been cultivated for ornamental purposes. 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 Hildgard Klein, ARC-PPRI).







Creeping prickly pear, *Opuntia humifusa*

Feature

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 9 and map 3), pink-flowering sheathed cholla, *C. pallida* (photo 10 and map 3), and pine cone cactus, *Tephrocactus articulatus* (photos 11 & 12 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.

Obeying the law and being responsible

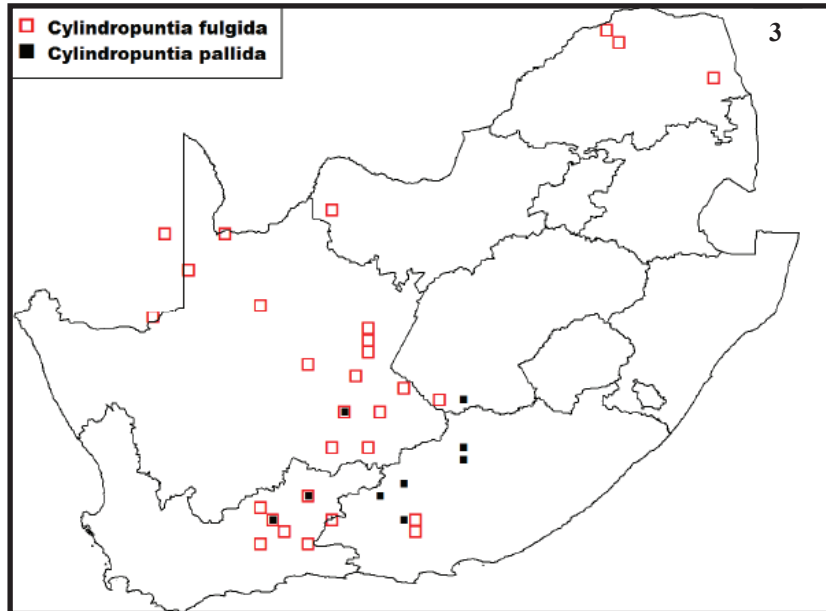
Hundreds of species of cactus have been introduced into South Africa as ornamentals. Approximately 40 species have been recorded as spreading from cultivation, and 34 species are currently declared

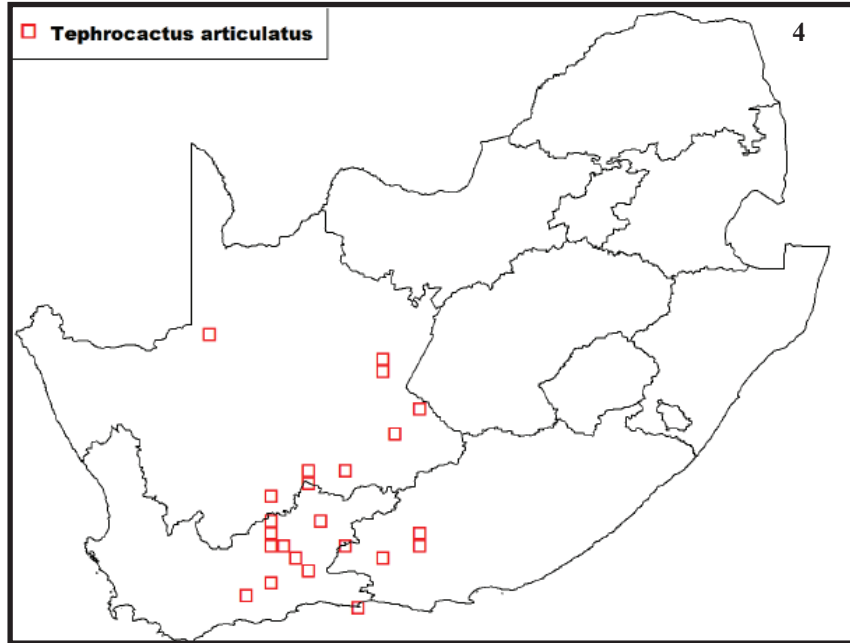
invaders under NEMBA. See SAPIA News No. 25 for a guide to invasive cacti in South Africa <http://www.arc.agric.za/Pages/Newsletters.aspx>) and the NEMBA legislation at <http://www.invasives.org.za/legislation.html>. NEMBA prohibits the introduction of any new species (i.e. not already in South Africa) 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.

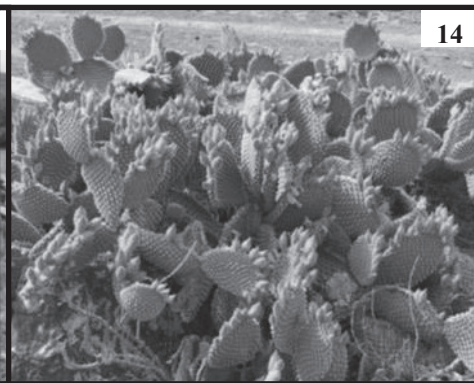
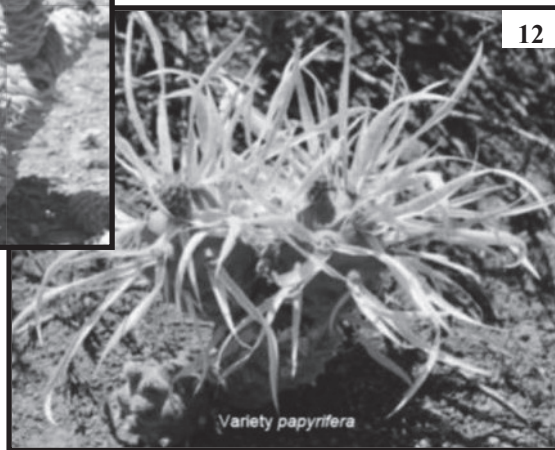
Do not throw unwanted plants over the fence. Municipalities should not allow the dumping of plants on the urban boundary or on vacant land. Cactus invasions start from the irresponsible dumping of plants. Beware of buying cacti from uninformed nurseries and backyard sellers who illegally sell declared invaders.



The Obesa Nursery (photo 8) 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.







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.

