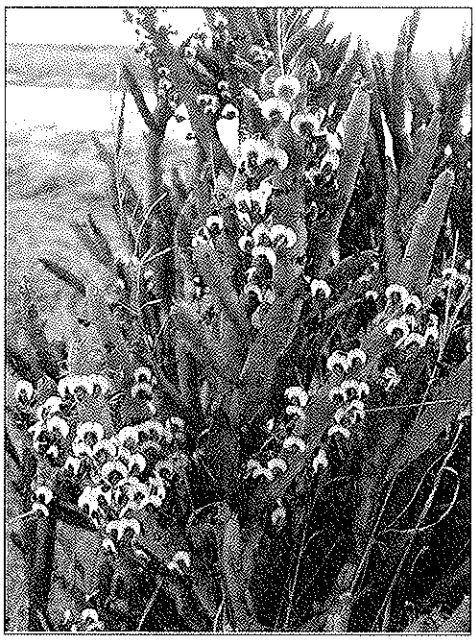
FLORA

RECOVERY OF A SANDPLAIN STANDOUT!

Gillian Stack

Wongan cactus (*Daviesia euphorbioides*) is a striking species that gets its common name from the pithy cylindrical branches and greatly reduced spiny 'leaves'. Clusters of small red and orange pea flowers are produced in June-July. Like many daviesias, it is a disturbance opportunist, being relatively short-lived above ground, but having the ability to persist in the soil as hard-coated seed. It has been known to germinate after appropriate fire and grading of roadsides or similar mechanical disturbance. It is highly restricted, occurring in sandplain vegetation in the Wongan Hills and Dowerin-Goomalling areas. This vegetation type has been widely cleared for agriculture, and currently known populations occur mainly in small road and rail reserves.



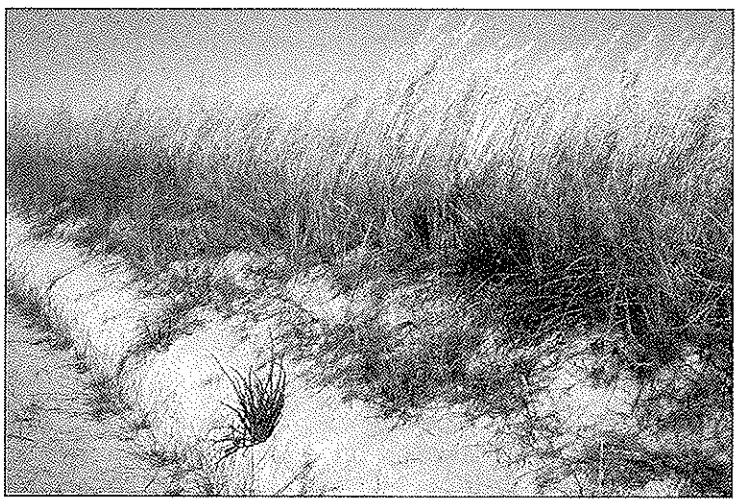
A plant in full flower. (Photo: J. Collins)

It is presumed that Wongan cactus is insect-pollinated (many small-flowered daviesias are pollinated by native bees), but pollination has not been observed in this species. Although daviesias typically produce many triangular seed pods after flowering, many of these abort before maturity. DEC's experienced Threatened Flora Seed collector Andrew Crawford has said although it is possible to get better results, it is not terribly surprising to find only 10 or 20% of the seed pods on a *Daviesia* sp. to contain 'good' seed. Wongan cactus does fit this pattern, producing relatively little seed each season, but the seed that is produced generally has very high rates of germination under the right conditions, and may endure in the soil for many years.

Wongan cactus is listed as Declared Rare Flora, and is currently ranked as Critically Endangered due to the low number of plants known and ongoing threats, including damage to existing plants through maintenance activities, competition from weeds, grazing of young plants and absence of disturbance.

A recovery plan was prepared for Wongan cactus in 2000, which aimed to abate identified threats and maintain or enhance wild populations to ensure the long-term preservation of the species in the wild. The plan will be considered a success if the number of individuals within populations and/or the number of populations have increased over the life of the plan. The plan gathered together available information on the species and recommended a range of recovery actions, including stimulating germination at populations containing dead plants, and undertaking a translocation.

Over the last few years, attempts have been made to stimulate germination of Wongan cactus from soil seed banks, inferred to exist where adult plants were previously known to occur.



A Wongan cactus plant living dangerously - on the backslope of a road in Dowerin Shire. (Photo: P. Hussey)

A management burn was done on a roadside in the Shire of Dowerin near some recently dead plants in 2005, and some good follow-up rains assisted germination of a number of new plants. These were fenced with rabbit netting, are surviving well, and may flower this year.

Following this success, a range of treatments was applied in 2006 at several selected sites to compare their effects. At all sites, the areas treated were fenced with rabbit netting to protect any seedlings from grazing or trampling. One site with one recently dead plant was burned, following the methodology of the successful fire last year. One adult Wongan cactus plant in poor condition was recorded some ten years earlier at another badly weed-affected

continued on page 9

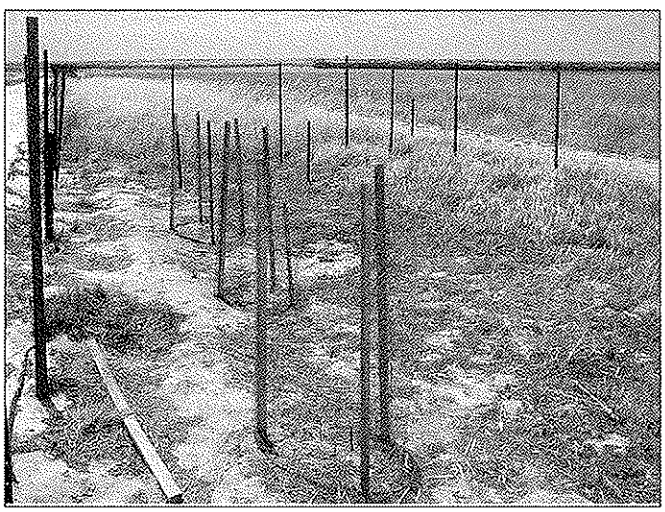
continued from page 8

Wongan cactus

FLORA

Burning near dead plants on a roadside in 2005. Live plant in foreground. (Photo: G. Stack)

disturbed road verge site. An area of approximately 100m in this vicinity was mechanically disturbed with a small tractor-drawn rotary hoe. The area was divided into paired plots, of which half were also treated with smoke water. It was hoped that any other native vegetation seed still present may also be germinated, enhancing the flora values of the roadside. At a third site, ground around a recently dead plant was treated with smoke water only. Other small populations in the vicinity were able to act as control plots to see if germination came up in areas where no treatment was applied.



A treatment site, December 2005. (Photo: J. Collins)

Unfortunately, 2006 did not enjoy the same follow-up rains, and there has been no germination of Wongan cactus at any of these sites. On the bright side, weed germination has been sparse too, with follow-up weed control needed only at the very weedy mechanically disturbed site. Perhaps a wetter winter this year may encourage some germination of Wongan cactus in the second year after disturbance!

A translocation has also been undertaken, in an attempt to establish a population on conservation lands that may be more viable in the long-term than narrow road and rail verge populations. Approximately 70 Wongan cactus plants were cultivated at the Botanic Garden and Parks Authority nursery and planted into a suitable site in a nature reserve.

This site was chosen because it had similar soil and plants as the wild populations, was on conservation estate and was therefore secure for the future, and importantly, also because it was already disturbed. This part of the reserve had previously been cleared and used by a farmer for storing hay. A surprising choice for a conservation site? Not really, this translocated population will experience relatively frequent disturbance in the future to keep the population 'ticking over'. This frequency of disturbance would be very destructive to much of the existing vegetation in the reserve. With little remnant vegetation remaining in many wheatbelt shires, the cost of damaging the other flora and fauna of this nature reserve for the sake of this one species would be too high. The separation of this translocation site from high quality vegetation was an important consideration. Fortunately, despite its history, the site is not excessively weedy.

In the future, seed may be collected from plants stimulated through the disturbance trials to propagate additional plants for this translocation site, broadening the genetic diversity available. The long-term goal is for this site to be self-sustaining, with little management necessary other than occasional disturbance to provide germination opportunities.

Efforts are continuing to conserve this unique part of our floral heritage, with important contributions made by volunteers, Shire and DEC staff. If you believe you have this plant on your property, or would like further information on this species, please ring Joel Collins at DEC's Avon-Mortlock District on 9622 8940, or email him at joel.collins@dec.wa.gov.au.

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