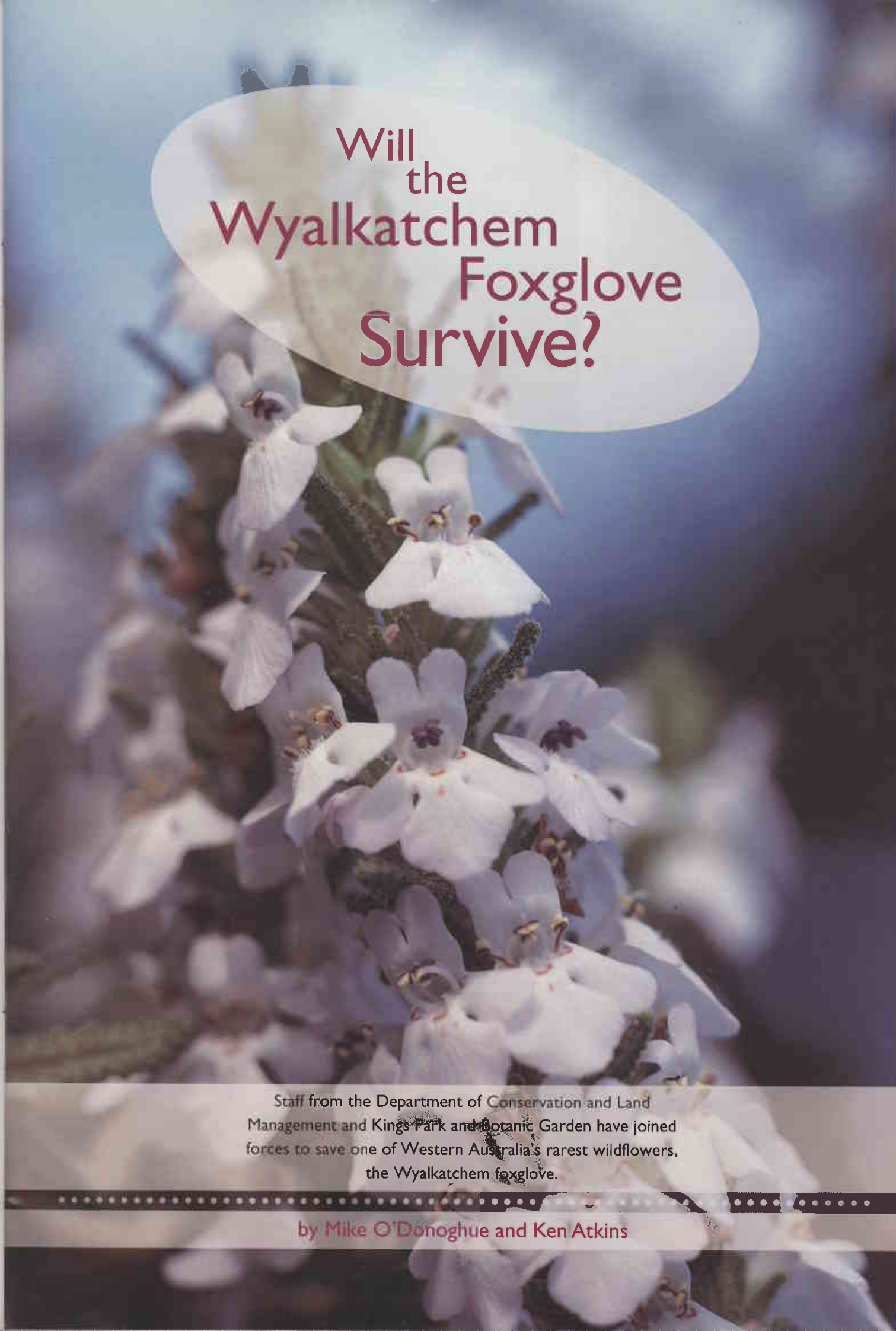

Will the Wyalkatchem Foxglove Survive?

Staff from the Department of Conservation and Land Management and Kings Park and Botanic Garden have joined forces to save one of Western Australia's rarest wildflowers, the Wyalkatchem foxglove.

by Mike O'Donoghue and Ken Atkins

The Wyalkatchem foxglove (*Pityrodia scabra*) is on the brink of extinction in the wild. Since its first collection in 1959, it has only been known from a single population scattered along the Koorda-Wyalkatchem Road verge. By 1987, only eleven plants were present at the site; six on the degraded road verge, and the other five on an area that had been excavated for railway ballast. This latter site was extremely inhospitable to the plants, as the vegetation and upper soil had been removed. The plants had probably regenerated after the site disturbance, but all were suffering from stress, particularly during the dry summer months.

Following the 1987 assessment, recommendations were made for the management of the species. In spite of this, six of the plants were dead by 1990. Their deaths were probably due to the naturally short life of the species, the exposed nature of the sites and the impact of road maintenance activities. Only one of the roadside plants and four in the excavated site were still alive, and the latter plants were obviously stressed. There had been one small success, however: a survey had located a new plant in an area of degraded private bush adjacent to the original site.

The species had become critically endangered. The Department of Conservation and Land Management (CALM) asked the Minister for the Environment to declare it as rare flora, and it was so declared in 1990. Such declaration provides the species with special protection under the Wildlife Conservation Act and highlights the need for management of the species.

After the summer of 1991–92, all 11 of the original plants had died, either from natural causes or because of the hostile environment of the excavation site. For a time, the plant found in 1990 was the only representative of the species growing in the wild. Further intensive surveys to find more plants were undertaken by CALM staff and consultants, through funding provided by the Australian Nature Conservation Agency (ANCA). These surveys were successful: two young plants were located, bringing the current number of plants in the wild to three. But the older plant is collapsing, as this species does with age, and is unlikely to survive the summer of 1995–96.

INTERVENTION

The status of this short-lived species had become precarious in the wild. In 1993, the sites where the plants had been known to occur were scarified, in an attempt to stimulate seed germination. But no foxglove seedlings appeared after this treatment.

A second method was needed. Kings Park and Botanic Garden had been developing a new propagation technique aimed at germinating native seed by applying smoke direct to the seed, or direct to an area thought to contain a native seed source, and at first this method seemed promising. Although it was still in an early stage of development, impressive results had already been achieved, and some of Western Australia's native plant species had been stimulated into life following the smoke treatment. A major advantage of the method is that it can be undertaken in the field without any site disturbance.

With great expectations, smoke trials were begun at the site of the foxglove where, it was hoped, a viable seed store had accumulated in the soil. Scientists waited anxiously for early results, and systematically monitored the treated areas. However, much to the disappointment of all those involved, the trials proved unfruitful and the status of the species in the wild remained unchanged.

CALM scientists looked for another method. Where germination had failed, perhaps translocation would succeed.

One of the last Wyalkatchem foxglove plants left growing in the wild on private property. Protection from grazing and site disturbance is the highest priority for these remaining plants.
Photo – Andrew Brown

The Wyalkatchem foxglove (*Pityrodia scabra*) is a shrub approximately one metre in height, with a single main stem when young. The white mint-like flowers are arranged along the tips of the branches, contrasting with the small, rough, dark-green leaves. It appears to be naturally short-lived, relying on regeneration from seed. As it ages, many branches develop, radiating out to a width similar to the height. With age, the structure breaks down and it appears to collapse, the lateral branches dying over several seasons.

A number of people have been involved in attempts to rescue the plant. The CALM group is led by Senior Botanist, Dr Ken Atkins, and includes Wildlife Branch staff Brenda Moran and Mike O'Donoghue; Merredin District Manager Mike Fitzgerald and Operations Officer Nick Woolfrey; and Andrew Brown, botanist with CALM's Threatened Species and Communities Unit. Kings Park and Botanic Garden staff include Curator Roger Fryer, propagator Sophie Juszkiewicz, and horticulturalists Dave Blumer and Tim Parker.

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The spectacular flowers of the threatened Wyalkatchem foxglove.
Photo – Steve Hopper

Top: Close-up of a Wyalkatchem foxglove flower. It is believed this species is insect-pollinated—possibly by native bees.
Photo – Andrew Brown

If plants could be moved into the field, plant numbers in the wild would increase and thus provide the species with some insurance against extinction. Management guidelines and a translocation proposal were prepared and approved.

The BankWest *LANDSCOPE* Conservation Visa Card provided some financial resources for the re-establishment trials. Kings Park and Botanic Garden staff got to work to produce the plants.

GRAFTING, CUTTING, MOVING

Kings Park and Botanic Garden had begun work on propagating the Wyalkatchem foxglove in 1990, as part of its program to research propagation methods for Declared Rare Flora. Their attempts to use tissue culture were frustrated by the difficulty of sterilising the material, and early attempts to strike cuttings were also unsuccessful. However, material was successfully grafted onto other host rootstock from the related species *Dicrastylis fulva* and *D. corymbosa*.

These plants grew well and provided clean, healthy material for further work in propagating the species by cuttings. The success of this work enabled plant numbers in cultivation to increase. Some collections were made from the wild as new plants were found, ensuring that all the available genetic diversity was captured. Each clone was propagated separately by both grafting and cuttings.

Early trials at pollination indicated that the plants may be unable to produce viable seed using their own pollen, so they were cross-pollinated by hand. Seed from this method proved difficult to germinate normally, but seedlings were produced by the embryo excision method, whereby the seed embryo is removed from the rest of the seed and grown on special media. A mix of seedlings and cuttings from the parent plants made up the 119 plants prepared for the translocation.

The obvious area to reintroduce the Wyalkatchem foxglove was the private land on which the species was known to occur in the wild. Even if the plants could be successfully established, however, the species would still only be present at one site, and would be susceptible to local perturbations. A second population was needed. Surveys were undertaken to find a secure site within the general vicinity, one which had suitable habitat for the species.

Such an area was located. It is a Crown reserve 14 kilometres north-west of the original population, and CALM staff found it to have similar habitat to that in which the Wyalkatchem foxglove grows. No plants of this species were located in the vicinity, nor were any species taxonomically similar to the rare plant; it is therefore likely that the foxglove will not interfere genetically with other native flora species in the area. It is also likely that the two populations, once established, will be genetically isolated; scientists believe that the plant is probably insect-pollinated and the second site is separated from the first by a salt-lake system. At CALM's request, the reserve has been set aside specifically to establish a population of the Wyalkatchem foxglove.

WAIT AND SEE

A planting strategy was prepared for the two sites, aimed at maximising the interaction between the plants. This should enhance their ability to cross-pollinate and produce fertile seed—highly necessary if the population is to be viable in the future. With the permission of the property owner, 50 plants have been carefully planted into the fenced area on private property that contained two of the last remaining wild plants. The property owner has kindly agreed to maintain a fence around the site to protect the rare plants from accidental damage. Sixty-nine plants have also been planted into the Crown reserve, with assistance from adjacent property owners John and Llewyn Green and Beth Booth.

Above: CALM and Kings Park and Botanic Garden staff planting the first plants on private property along the Koorda–Wyalkatchem Road.
Photo – Ken Atkins

Left: Plant propagator Sophie Juszkiewicz tends a young plant in the Kings Park laboratory.
Photo – Steve Hopper

After planting, each plant was watered and tagged, and site details were recorded for future reference. Llewyn Green kindly agreed to monitor the progress of the new plants and provide regular reports. If a normal winter rainfall is received, the introduced plants should establish quickly before the onset of the dry summer period. Such is the enthusiasm of the local farmers, however, that they offered to hand-water the seedlings during the critical weeks following transplant, if the winter rains are delayed.

The monitoring will also report on other problems. Grassy weeds, if causing competition problems, will be controlled using a selective herbicide. Rabbit netting has already been installed around each plant after reports of rabbits eating and pulling out some of the new plantings. CALM will also monitor the new populations to determine if cross-pollination produces viable seed, and if natural regeneration of the species occurs at these sites. More plantings may take place next year, if necessary.

The Wyalkatchem foxglove has, at least for the time being, been brought back from the brink of extinction. Only time will tell if its long-term future in the wild has been secured.

Ken Atkins is CALM's Senior Botanist and Mike O'Donoghue is an administrative officer in CALM's Wildlife Branch. Both can be contacted on (09) 334 0455.

LANDSCOPE

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The threatened Wyalkatchem foxglove is being given a helping hand by scientists from CALM and Kings Park and Botanic Garden (see page 17).

This nesting pair of splendid fairy-wrens is one of the many 'Birds of the Stirling Range' (see page 36).

WA Goldfields timbers are fast becoming recognised as prime materials for producing world-class musical instruments. See 'Musical Timbers' on page 48.

A new CALM book, Dive & Snorkel Sites in Western Australia, *will encourage novice divers and snorkellers to explore the rich and diverse coastline of WA. See 'Secrets of the Sea' on page 10.*

The common rock-rat, photographed here in the Kimberley, has recently been recorded in the Kennedy Range National Park. See page 28 for a profile of this wonderful wilderness area.

FEATURES

REGULARS

COVER

The brilliant purple flowers of the twining fringed lily (*Thysanotus patersonii*) entwined around the burnt stem of a slender banksia (*B. attenuata*). See 'After the Burn' on page 21.

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