NEWSLETTER

NATIVE PLANT REGENERATION STUDY GROUP
Vol.2 No.2 Date 29/9/96 ISSN 1324-3934

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An article in TREATS (Tree for the Evelyn and Atherton Tableland) wereNigel Tucker talks on the Australian world view of revegetation.

16 Farm Tree for the Mount Lofty Ranges
A Handbook for all people who are contemplating agro-revegetation no mater where they are in Australia. Some of the species may be different but the principals are the same.

18 A Queenslander perspective of regeneration
Jan Sked give us a impression of some of the difficulties and also some of the rewards that are found in regeneration projects in Queeensland

Landcare Groups has been a big supporter of the Native Plant Regeneration Study Group and have given a lot of information to this group for the preparing of a newsletter. In this edition we hear what from the landowners and members of SGAP about some of their experiences

Editorial

Well the year is almost over and by now like myself you should be finishing the planting the plants that you have grown (or were aided by some one else to get enough native plants) to revegete with.

In this edition I have accumulated some your response to revegetation for this edition. Your response have been in the form of articles out of a local newsletter/newspapers that you have come across.

I am currently trying to find more newsletter that have the information that we so desperately want on how to be successful revegetators.

The copy deadline for the next newsletter is mid November for a December Newsletter. Sent article, newspaper clippings cartoon or logos that have been supporters or aided in revegetation to

P.O. Box 2089
Normanville
SA 5204

Cheers

Matt Pearson

QUALITY ASSURANCE PROGRAM FOR REVEGETATION

To carry out this snap shot survey of how success full we are at revegetation I need to know the following -

- Soil Type
- Rainfall
- Species of plant
- What type of tree guard use if any
- If a herbicide was used if any fertiliser used if any
- Burning the area prior to planting
- What method of planting was used.
- Information on what the growing conditions were like e.g. was dry year on a north facing slope and I had 70% survival of species X and 20% survival of species Y
- And or any other relevant information that will be help full. In the third edition of this newsletter

All information will published hear in the newsletter of the Native Plant Regeneration Study Groups and other newsletters. and also a copy of the information will be sent to you for participating in the survey

TECHNICAL *Outlining the 'pros and cons' of linear stands of trees and shrubs for conservation of wildlife.*

WILDLIFE CORRIDORS — THEIR POTENTIAL ROLE IN THE CONSERVATION OF BIODIVERSITY IN RURAL AUSTRALIA

ANNE-MARIE WILSON — Centre for Resource and Environmental Studies, ANU, Canberra, Australian Capital Territory.

DAVID LINDENMAYER — Centre for Resource and Environmental Studies, ANU, Canberra, Australian Capital Territory.

Summary

In Australia, revegetation efforts have been used to address soil and water conservation problems such as streambank erosion, wind erosion and salinisation. Planted areas such as linear strips of vegetation (or corridors) are often also considered to have other important values such as for the conservation of biodiversity. This paper examines this potential role given that the establishment of vegetation corridors is a widely advocated response to address wildlife conservation issues resulting from the widespread clearing of native vegetation in rural landscapes.

Wildlife corridors may complement the existing reserve network by potentially increasing the effective habitat area for wildlife and enhancing the links between remaining and revegetated patches of vegetation. However, wildlife corridors may not be effective for the conservation of all species. Therefore, their establishment is not the solution to all biodiversity conservation problems. Both the advantages and the disadvantages need to be considered when determining whether the establishment of a corridor network is desirable for nature conservation. A corridor development process, linked to other landscape management approaches such as property planning and catchment management, may help incorporate these considerations through the participation of landholders, extension personnel and scientists.

Tree survey answers many farm questions

Trees on farms have long been promoted as having a number of useful functions — but little has been known about the extent of trees on farms, or their nature, purposes, costs and benefits, says Australian Bureau of Agricultural Recource and Economics executive director Bernard Wonder.

However, the new report, Survey of trees on Australian farms: 1993-94, would fill that information gap, Mr Wonder said in releasing the report.

On average, three out of every 10 broadacre and dairyfarmers planted trees on their farms in recent years.

He said the survey report showed that the primary functions of planted trees on farms were to provide shelter and shade, to rehabilitate degraded land and/or protect land from degredation, and to conserve natural vegetation and wildlife.

"Of the recent tree plantings on farms, 25 pc were established with some assistance, and only 2 pc under joint venture or tree sharefarming agreements," said Mr Wonder.

The survey findings also revealed that in 1994, native forests and woodlands occupied around 20 pc of farms in the wheat/sheep and high rainfall zones of Australia.

"According to farmers, the main function of native forests and woodlands on farms is to provide shelter and shade rather than than wood production," Mr Wonder said. "Farmers in the high rianfall zone intend to clear 5 pc of their native forests and woodlands over the next five years, while those in the wheat/sheep zone intend, on average, to clear 10 pc.

"By far the largest proportion of intended clearing is in Queensland."

The survey recieved financial support from RIRDC under its agroforestry program which aims to promote tree-planting for sustainable farming and increased timber supply in Australia.

STOCK JOURNAL
DEC 1995
pp 27

SOME EXPERIENCES OF NATIVE PLANT REGENERATION IN SOUTHERN TASMANIA

We are doing some bush regeneration on a couple of small public reserves as well as on our own 2 hectare block at Kettering, south of Hobart.

In our work we try to follow the Bradley Method ie starting from areas of lesser weed infestation and moving to more heavily weeded areas later. However it is not always possible to use this method particularly if a heavily weed infested area in close proximity to the areas being worked constitutes a seed source for re-invasion.

The main woody weeds we encounter are blackberries, briar roses and Spanish heath. We are having some success in controlling these and thought the methods we are using may be of interest to others as these weeds are so common.

BLACKBERRIES

Where there are thickets of blackberries these are slashed during midwinter and the canes removed and burnt. When dealing with isolated plants the canes are removed, cut into small pieces, and left on the ground as mulch. If soil conditions are suitable during winter and early spring we try to remove the root crowns and as many lateral roots as possible. We find that if we are working in sandy or loamy soils we do not cause too much soil disturbance removing the roots, however we have found that if the soil is clay or waterlogged an unacceptable amount of soil disturbance is caused. We also try not to disturb the soil during periods when weeds are producing seeds as this results in further weed infestations of sites being worked.

New growth usually commences here in September and by early November there is vigorous shooting but no runners have been formed. As the plants are now usually isolated and compact they are individually hand sprayed with triclopyr. If there are native plants nearby, these can be screened with plastic sheeting. The use of low pressure permits the formation of larger droplets from the sprayer and these will settle rather than drift. We usually find that a few more blackberry plants will grow during the summer and a second spray is applied to these in April. If some have produced runners these are coiled around the base of the plant to reduce the area exposed to spray. Followup spraying in subsequent years is usually necessarily however the number and volume of plants is much reduced. We add an indicator dye to the weedicide solution to indicate what plants have been sprayed.

BRIAR ROSE

We have found the easiest way of removing this weed is to cut the stems close to the ground and immediately apply triclopyr diluted with diesel to the cut surfaces using a small paint brush.

SPANISH HEATH

The easiest, cheapest and most effective way of dealing with this weed is to phyically remove it from the ground. Care must be taken to remove the entire tap root, as they will resprout if any of the root remains in the ground. When dealing with large plants that are too firmly anchored to pull out we have found that cutting the stem and treating immediately with either triclopyr or glyphosate diluted in diesel was effective. These plants seed prolifically and the seed remains viable in the soil seed bank for some years so be prepared for years of followup handpulling in heavily infested areas. We have experimented with both triclopyr and glyphosate as sprays on a small number of plants of Spanish heath, but neither proved effective.

John Hamilton and Jean Taylor

TECHNICAL

Recognition that willows spread by seed introduces new problems and possibilities in the field of river protection.

WILLOWS SPREADING BY SEED — IMPLICATIONS FOR AUSTRALIAN RIVER MANAGEMENT

KURT CREMER — CSIRO Division of Forestry, Canberra, Australian Capital Territory.

CHRIS VAN KRAAYENOORD — Palmerston North, New Zealand.

NEIL PARKER — Private Forests (Tas.), Kings Meadows, Tasmania.

SUE STREATFIELD — Greening Australia, Canberra, Australian Capital Territory.

Abstract

*This is an initial assessment of the spread of willows (**Salix**) by seed in Australia. Its main aims are to assist river managers and provide a basis for further research. Extensive observations, mainly in the Canberra-Cooma region, are supported by a review of literature.*

All willow species in Australia have been introduced. Each plant is usually either wholly male or female. Until recently, it was thought that in most species only one gender had been introduced, so that production of seed would rarely or never occur, and local spread would be only by the deliberate planting of cuttings or by the rooting of accidentally detached branches.

*This assessment has shown that there are at least a dozen willow species and varieties spreading beyond parks and gardens. There are females of ten 'species', and all but one of these (**S. babylonica**) have now been proved to produce viable seed and resulting seedlings in rivers. There are also males of ten 'species', and these hybridise with species of either the tree willow group or the shrub willow group. The seedling populations found varied from a few dozen individuals to half a million; they ranged from Tasmania through Victoria and eastern New South Wales. Seedlings of most species became established only in exceptional years, and the oldest seedlings found were about 15 years old.*

*Regeneration by seed depends mainly on a favourable seedbed, a fertile mother within seeding distance (about 300 m) and a fertile, compatible father within pollinating distance (about 300 m). Except for **S. cinerea** (which has spread not only along rivers, but also into swamps, and even into moist forest), and **S. nigra** (which has spread along rivers as well as road ditches), willows have regenerated only on the continuously wet bare margins of rivers. Their seeds live only a few days, and need favourable conditions as soon as they fall, around November, and for several weeks or months thereafter.*

*Willows can be valuable for river bank protection, where erosion is extreme, but their use for this purpose should be restricted to 'species' that do not spread readily into the river channels either by seed or by the rooting of detached branches. It is therefore recommended that, where willows are clearly preferable to native plants, only permanently male or sterile clones be used at river margins, provided that their branches are not fragile. Selective removal of fragile males (especially **S. fragilis**) growing in streams and any currently or potentially fertile females growing within 300 m of streams should be carried out. Females should not be planted anywhere.*

*Key Words: **Salix**, seed, seedling, natural regeneration, bank protection, river management.*

TECHNICAL *Continuing the saga of difficult rehabilitation work on disturbed sites in Tasmania.*

SCOTTS PEAK REVEGETATION TWENTY YEARS ON

MIKE COOPER — Parks and Wildlife Service, Hobart, Tasmania

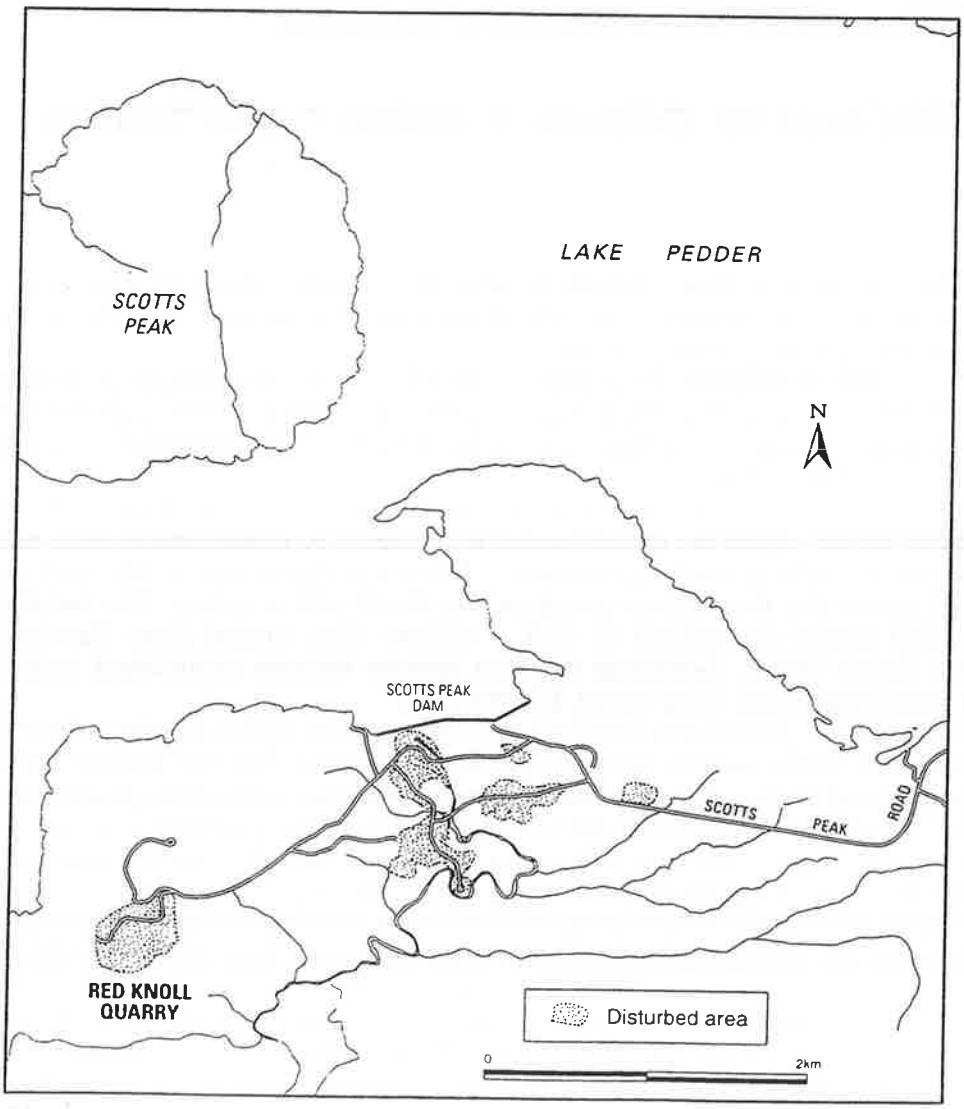


Figure 1. Plan of the Scotts Peak area in south-west Tasmania.

In south-west Tasmania the headwaters of the Huon River are impounded within the enlarged Lake Pedder behind the Scotts Peak Dam. Scotts Peak Dam and Road were constructed by the Hydro-Electric Commission (HEC) in 1971, and at the end of the project an additional area of about 30 hectares of disturbed land remained for rehabilitation. A few small areas close to the dam are still owned by the HEC, but otherwise Lake Pedder and most of the Scotts Peak area r lie within the Southwest National Par.

Scotts Peak Dam was constructed from rock obtained from Red Knoll Quarry, which remained the largest single disturbance (about 12 ha). The quarry is visible from many locations within the Southwest National Park, and there were many complaints about its stark appearance.

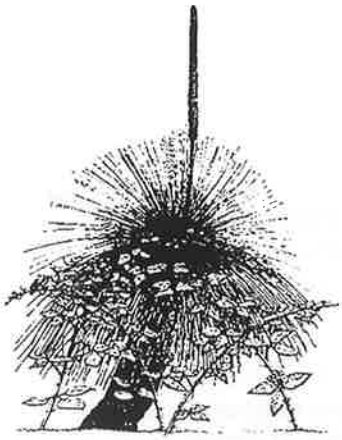
Other disturbances at Scotts Peak included gravel pits, works areas and campsites. Sites range in altitude between 300 and 400m and receive an annual rainfall exceeding 2000 mm.

RED KNOLL QUARRY

The geology of Red Knoll was described by Roberts *et al.* (1975). "The rock sequence consists predominantly of siltstone and metaclaystone (argillit- with a minor proportion of qua. sandstone and quartzite, the whole sequence dipping NE at 40° to 80°." Rock was extracted from this quarry and hauled to the damsite.

Overburden from the quarry was pushed downhill on the southern side. From here it slumped further; several tonnes appears to have been eroded in a single event. The bare disturbed site continued to release fine material into nearby streams, and the sediment covered vegetation on adjacent low lying areas. The sediment is located on Figure 1 to the south of the quarry.

When extraction finished the quarry received none of the earthworks nowadays employed to assist rehabilitation - there was no blasting or ripping of roads, no shaping or spreading of loose rocks or fines, and no spreading of soil,

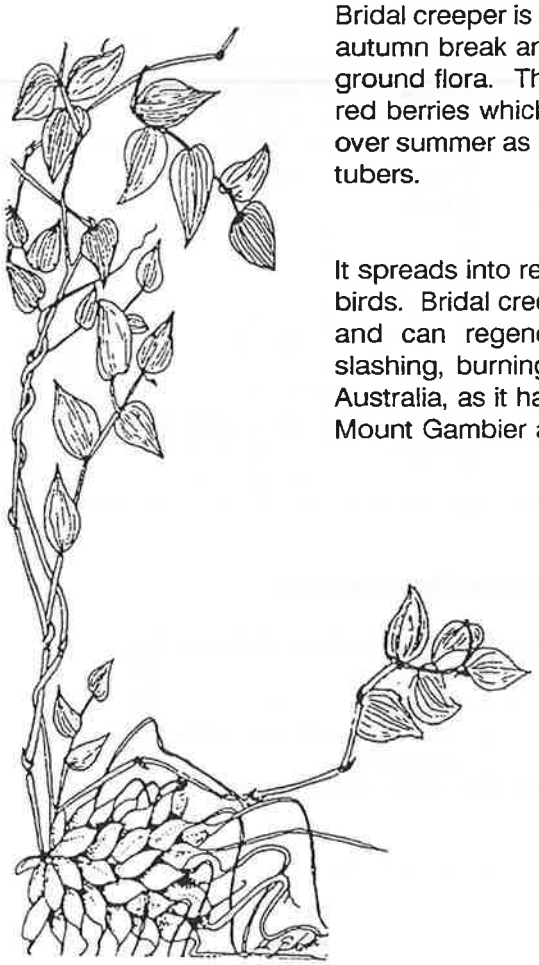


SAVE THE BUSH from WEEDS

Bridal creeper - strangling native vegetation

By David Cooke, Botanist

Bridal creeper, *Myrsiphyllum asparagoides*, twines around native vegetation, smothering it. It is a light green hairless climber with thin stems; the oval, pointed leaves are 2-3 cm long and shiny. It was introduced from South Africa as an ornamental plant, but is now a weed in gardens and the bush.



Bridal creeper is a hardy winter-spring growing perennial. It appears at the autumn break and grows through the winter, rapidly covering shrubs and ground flora. The small white flowers appearing in early spring produce red berries which persist until the plant dies down in summer. It survives over summer as a dense tangle of underground stems with many dormant tubers.

It spreads into relatively undisturbed scrub as the seeds are dispersed by birds. Bridal creeper will shade out native shrubs and low-growing plants, and can regenerate repeatedly from its underground reserves after slashing, burning or spraying. It has not yet reached its limits in South Australia, as it has a patchy distribution extending from the West Coast to Mount Gambier and the lower Flinders Ranges.

Bridal creeper is now a proclaimed plant throughout the State. Landowners are required to control this weed on the land they occupy, and may have to pay for its control on the adjoining road reserves by local animal and plant control boards. To prevent further cultivation, selling the plant is prohibited.

Illustration: Frank Gigliotti, Simply Designs

Produced by the
SA ANIMAL & PLANT CONTROL COMMISSION
GPO Box 1671, Adelaide 5001
With assistance from the
SAVE THE BUSH - REMNANT VEGETATION PROGRAM

For further information contact your local Animal and Plant Control Board or telephone 08 2264888

October 1991

Control of bridal creeper

Control is feasible in small reserves and roadside infestations, although all methods require much work. It is possible to eradicate small infestations, so give these first priority. Isolated plants can be dug out, as the tubers are normally close to the surface; although individual tubers will not regrow, any underground growing point left in the soil will produce a new plant.

Repeated slashing or spot-spraying with a non-selective herbicide can exhaust the tubers, allowing the native plants to regenerate free of bridal creeper. Use only glyphosate in native vegetation; spray the weed while it is actively growing during late winter but before flowering begins in spring.

In degraded vegetation, for example a road reserve where only weeds are growing under remnant native trees, an alternative treatment is to spray bridal creeper with metsulfuron-methyl. This relatively persistent herbicide may damage native ground flora and delay its regeneration.

HERBICIDES FOR CONTROL OF BRIDAL CREEPER

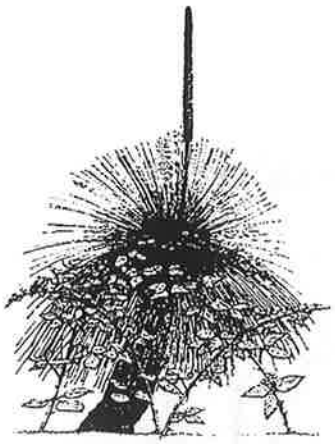
Mixing rates of glyphosate for control of bridal creeper in bushland

Herbicide	Product Concentration	Rate	Amount for 5 L sprayer
Comkil Non-residual Systemic Herbicide® Glypho Weedkiller (Chemspray)® Tumbleweed Weedkiller Concentrate® Wipeout Total Weedkiller® Zero Weedspray®	100 g/L glyphosate	36 ml/L water	180 ml
Glyphosate 360 Herbicide® Roundup Herbicide®	360 g/L glyphosate	10 ml/L water	50 ml
Glyphosate 450 Herbicide® Glyphosate CT Broadhectare Herbicide® Roundup CT Broadacre Herbicide®	450 g/L glyphosate	8 ml/L water	40 ml plus 5ml organosilicon surfactant

Metsulfuron-methyl for spraying bridal creeper away from desirable vegetation

Herbicide	Product concentration	Mixing rate
Ally® Brushoff®	600g/kg metsulfuron-methyl	10g/100L water plus 100ml surfactant

Read and heed the label of any herbicide!

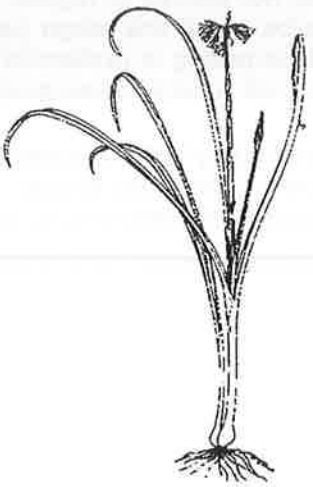


SAVE THE BUSH from WEEDS

Bulb weeds - flowerbeds gone wild

By David Cooke, Botanist

Settlers during the 19th century planted many kinds of spring-flowering foreign bulbs in their cottage gardens. These perennials grow from the autumn break to late spring, forming an underground bulb which survives through the dry summer. They are therefore well adapted to our climate, and have spread slowly into the bush or have been dumped there with garden refuse. Although they look attractive, these plants take the place of native wildflowers such as orchids and lilies.



Three-cornered garlic

In general, modern hybrid bulbs do not become weeds as they have been selected only for their performance under cultivation. But the hardy wild-type species do, especially those that produce small bulbs or bulbils along the stem and do not depend on seed to reproduce.

The most conspicuous are the watsonias, which grow a metre or more tall with red to pink tubular flowers. Bulbil watsonia, *Watsonia bulbillifera*, is the most aggressive species. Aunt Eliza or *Chasmanthe* is a similar plant with long, curved red or yellow flowers followed by large orange seeds.

Watsonia

The cream-flowered and red-flowered species of *Sparaxis* are now very common on roadsides in the Adelaide Hills.

The Cape tulips, *Homeria*, are poisonous weeds of pastures but they also invade the bush along roadsides.

The white flowers of three-cornered garlic, *Allium triquetrum*, are very conspicuous along roads in the Hills and the plant is recognised by its smell of onions.

Thread iris, *Gynandriris setifolia*, has tough fibrous leaves and tiny lilac iris-shaped flowers close to the ground.

There is even one South African orchid, *Monadenia bracteata*, that is now naturalised in the bush from wind-blown seed.

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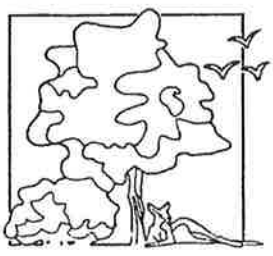

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Control of Bulb Weeds in Bushland

Cape tulips are proclaimed for control in all parts of the State; bulbil watsonia and three-cornered garlic are also proclaimed in some areas.

Check the identity of suspected bulb weeds before starting a program of weeding, as some native lilies and orchids can be mistaken for garden escapes.

Bulb weeds, apart from Cape tulip, can be pulled up by hand. If you do this when the previous year's bulb is exhausted and the new bulb has not yet formed, most will not survive to regrow in the next year. In general, bulbs reach this stage just before the flowers appear. Hand-pulling is preferable to digging as any disturbed soil will provide a seedbed for more weeds.

Spot-spray larger infestations with glyphosate at the label rate for perennial weeds. This is also most effective if done at the time of bulb exhaustion.

One-leaf Cape tulip

HERBICIDES FOR CONTROL OF BULB WEEDS IN BUSHLAND

Mixing rates for control of bulbs in bushland

Herbicide	Product Concentration	Mixing rate	Amount for 5 L sprayer
Comkil Non-residual Systemic Herbicide® Glypho Weedkiller (Chemspray)® Tumbleweed Weedkiller Concentrate® Wipeout Total Weedkiller® Zero Weedspray®	100 g/L glyphosate	36 ml/L water	180 ml
Glyphosate 360 Herbicide® Roundup Herbicide®	360 g/L glyphosate	10 ml/L water	50 ml
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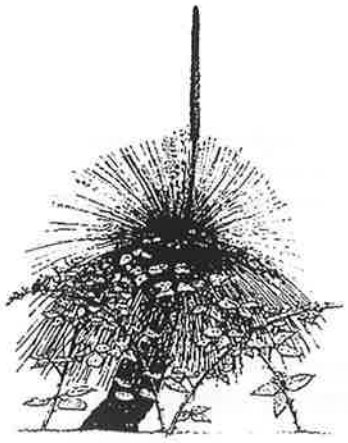
Illustrations: Dept of Agriculture, Tasmania; Dept of Agriculture, SA



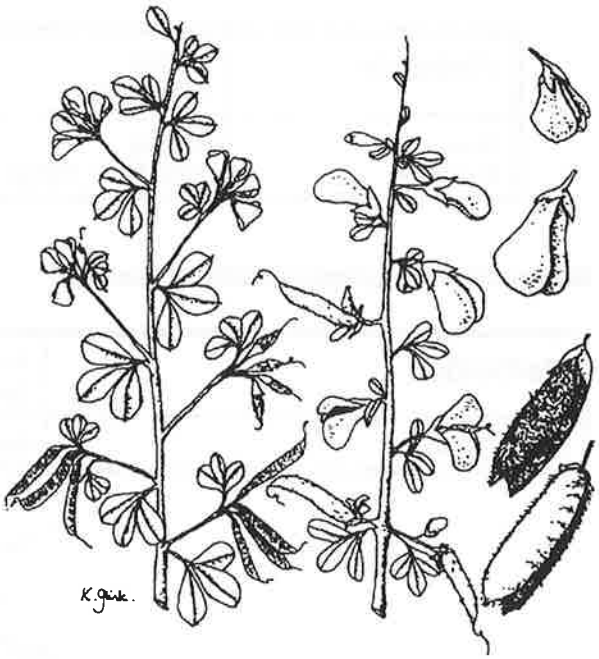
SAVE THE BUSH from WEEDS

Gorse & Brooms - replacing the wattles

By David Cooke, Botanist

Gorse, *Ulex europaeus*, is a spiny shrub which was introduced from Britain as a hedge plant. It is almost leafless with finely-branched green hairy twigs each ending in a spine. Bright yellow pea-like flowers appear throughout the year and hard shiny seeds are produced in short brown pods.

Gorse has spread by seed into abandoned paddocks, and also into less dense types of bush. Once established, it forms dense permanent thickets which prevent the regeneration of native shrubs, harbour rabbits and are very inflammable. Under the gorse is just bare ground with large numbers of gorse seeds. These are long-lived in the soil, and after a bushfire the seedlings come up thickly before native shrubs can regenerate.



English broom, *Cytisus scoparius*, and Cape broom, *Genista monspessulana*, are shrubs similar to gorse but without spines. They have yellow flowers and lucerene-like leaves which, in English broom, soon fall leaving green upright stems. They grow rapidly and produce large numbers of fire-resistant seeds.

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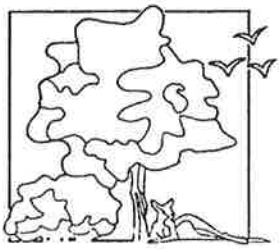

October 1991

All these shrubs act like wattles, regenerating in large numbers from resistant seeds after severe bushfires. As they have few natural enemies, they tend to replace the native wattles in this role. Gorse is a proclaimed plant throughout the State, and the two broom species are proclaimed for some Board areas.

Control of Gorse and Brooms in Bushland

Cut down the mature bushes and if possible remove them from the site to prevent shedding more seed or forming a fire hazard. Large infestations may also be spot-sprayed, preferably with triclopyr. Treatment in two successive years will be needed to kill all the mature shrubs.

Many seedlings will appear on the exposed ground. Spot-spray these with glyphosate before they develop woody trunks. Follow-up treatments will be necessary for several years.

HERBICIDES FOR CONTROL OF GORSE AND BROOMS IN BUSHLAND

Mixing rates for spraying gorse in bushland

Herbicide	Product Concentration	Mixing rate	Amount for 5 L sprayer
Garlon 600®	600 g/L triclopyr	1.7 ml/L water	9 ml
Glyphosate 360 Herbicide® Roundup Herbicide®	360 g/L glyphosate	10 ml/L water	50 ml plus 5 ml surfactant

Rates of metsulfuron-methyl for spraying gorse away from desirable vegetation

Herbicide	Product Concentration	Mixing rate	Amount for 5 L sprayer
Ally® Brushoff®	600g/kg metsulfuron-methyl	15g/100L water plus 200ml surfactant	0.75g plus 10ml surfactant

Mixing rates for spraying broom in bushland

Herbicide	Product Concentration	Mixing rate	Amount for 5 L sprayer
Garlon 600®	600 g/L triclopyr	1.7 ml/L water	9 ml

Spine and fruit of gorse

RESEARCH

Investigating data on soil losses occurring in the aftermath of bushfires, with particular emphasis on vegetation effects and the role of soil water — repellence.

RUNOFF AND SOIL EROSION IN BUSHLAND FOLLOWING THE SYDNEY BUSHFIRES

CHRISTOPH ZIERHOLZ — CSIRO Division of Water Resources, Canberra, Australian Capital Territory.

PETER HAIRSINE — CSIRO Division of Soils, Canberra, Australian Capital Territory.

Co-author — FRED BOOKER, University of California, Berkeley, U.S.A.

bstract

This article reviews the findings of previous studies on runoff and erosion in overseas ecosystems similar to those affected by the January 1994 fires around Sydney, N.S.W. Relevant studies in Australia are also examined. Observations of changes in rates of soil erosion and overland flow generation in the north-eastern part of Royal National Park are described. Effects on infiltration and formation of water-repellence or 'hydrophobicity' are reported. The role of soil cover by plants and litter mulch during the regenerative phase in protecting the soil against raindrop impact and flow-driven erosion is described.

Key Words: Fires, soil erosion, runoff, water-repellence, ground cover, revegetation.

Australian Journal of Soil and Water Conservation Vol. 9 No. 2, May, 1996

RESEARCH

Testing the role of root ripping, row seeding and different tree seed sizes in the rehabilitation of degraded mallee areas in South Australia.

REGENERATION OF DEGRADED MALLEE VEGETATION USING DIRECT SEEDING

PHIL BARRON — Primary Industries (SA), Sustainable Resources, Murray Bridge, South Australia.

GEOFFREY BISHOP — Primary Industries (SA), Sustainable Resources, Adelaide, South Australia.

GREG DALTON — Primary Industries (SA), Sustainable Resources, Murray Bridge, South Australia.

Abstract

Natural regeneration of degraded remnant mallee vegetation is often unreliable. It is limited by competition from mature mallee trees, the lack of a natural viable seed source or soil seed bank for the original diversity of perennial species, grazing or harvesting fauna, and the prevailing climatic and soil conditions. With the urgent need to rehabilitate remnant vegetation, reliable cost-effective techniques are required to assist the task.

*This trial evaluated root ripping of neighbouring mallee eucalypt trees for competition control and two variations to the row method of direct seeding of trees and shrubs for rainfall and runoff harvesting. These treatments were evaluated with large seeds (mostly **Acacia** spp.) and fine seeds (**Eucalyptus** spp.) to see if the different seed types had different responses to the treatments.*

Root ripping significantly improved survival rates by reducing competition for moisture. There was no significant difference between the direct seeding methods, although the above average rainfall experienced during the trial period may have eliminated any possible difference. Large-seeded species established better than fine-seeded species.

Glue improves seeding

THE revegetation of Australia's more arid areas may be boosted by incorporating a glue in the tree-seeding process. A trial in South Australia's northern Murray Mallee region, where the average annual rainfall is about 250mm, saw spraying of a PVA product, Curasol, immediately after tree seed was sown and resulted in a significantly higher rate of seed germination.

Revegetation officer with Woods and Forests, Mr Alex Knight, said tests are being conducted to compare untreated seeds with a Curasol treatment and a bitumen treatment, which were both used as a soil sealant during direct seeding of trees.

Mr Knight said that when germination of the large-seeded native hop bush was assessed, the Curasol treatment produced nearly three times more plants than the untreated seeds.

He said sealants such as the PVA product and bitumen were used to improve water catchment and to decrease sand blasting of seedlings.

However, Curasol was superior to bitumen because the surface crust which followed its application was porous.

Curasol had been sprayed in Murray-Darling Basin Commission funded trials at two rates of 0.01 and 0.05 litres a square metre. These were compared with germination results where bitumen was used at 0.3 litres a square metre, and where neither sealant was sprayed.

A Rodden 111S direct tree seeder was used to cultivate the bed, plant seed and apply sealant in one operation.

At 0.05 litres, 14 hop bushes germinated a metre of row compared to 10 bushes at the lower rate, three germinated with bitumen and five where no sealant was used.

Trials also were conducted using the sealants on the smaller seeded species of the red mallee, which showed Curasol at the lower rate to be the best sealant.

Mr Knight said Curasol was cheaper than bitumen, which costs about $35 for every kilometre of row. Curasol costs between $7 and $14 cheaper, depending on the rate used.

While Curasol was the best performer in drier conditions, it is possible bitumen may be better in colder, wetter areas. Curasol has not yet been tested in colder areas.

Advertiser 30/12/92

NIGEL IN WASHINGTON ... and HAWAII

from Nigel Tucker, Manager, Lake Eacham QNPWS Regional Nursery

This June I attended a conference with the grandiose title of 'Accelerating Succession on Degraded Tropical Lands', sponsored by the World Bank and held in Washington D.C. The conference as attended by delegates from across the world's tropics including, Colombia, Brazil, Puerto Rico, Hawaii, Indonesia, Malaysia, Thailand, Malawi and the Congo. Australia was represented by myself, Rod Keenan and Oliver Woldring (Qld Forest Service) and David Lamb (University of Queensland). Many delegates including myself applied a standard set of experimental protocols to their own tree planting projects in order to gain a more comparative view of relative success and common problems across the tropics.

The colonial opulence of Washington D.C. seemed inappropriate for a conference on degraded tropical lands but I went anyway! Whilst most presentations

ealt with natural regeneration in timber plantations, there were 4 papers given on regeneration in tree planting projects similar to our own in N.Q. Common problems in these projects were, the lack of regeneration of large fruited species (seed size greater than 20mm), on-going exotic grass invasions and the non-appearance of bird guilds such as canopy and ground storey insectivores. These are also problems we face locally but they may be naturally corrected over time, and could simply be a reflection of our own impatience. These and other problems are to be addressed in Stage 2 of the experiment though no details are as yet available.

Prior to arrival in Washington I spent 4 days on the Hawaiian islands as a guest of the U.S. Forest Service, currently headed in Hawaii by the eminent ecologist J.J. (Jack) Ewel. My impression of Hawaii (crass intrusions like Honolulu aside) was of an 'ecological nightmare'. Having evolved in the isolation of the Pacific Ocean, the island's flora and fauna were totally unprepared for the havoc wreaked by waves of introduced plants and animals following human settlement, first by the Polynesians and then white man. Weeds such as lantana, fire tree (*Myrica faya*) cherry guava (*Psidium cattleianum*), our own Eucalyptus, *Casuarina, Grevillea* and *Melaleuca* and many fire tolerant grasses have colonised thousands of hectares. Feral animals including, pigs, cattle, goats and sheep have become serious pests and control attempts only moderately successful. Hawaii's birds have suffered tremendously, 30 species lost in modern times and a third of remaining species are seriously threatened.

Despite these problems the Hawaiian landscape is tremendously interesting particularly because of the active volcanism of the southern islands. The active Mt Kilauea crater was breathtaking in its size and savagery, rendered more immediate by the sulphur laden steam which pervades the nostrils.

I enjoyed the entire trip immensely and was surprised at the interest shown in our work. There is no doubt we are the world leaders in this field of science! I recently received an enquiry from Chiang Mai University in Thailand, interested in sending two students to us next year to be trained in ecological rehabilitation. None of this would have been possible without dedicated and enthusiastic TREAT members doing the hard yards for many years, so in conclusion my thanks and congratulations to you all!!

Congratulations to Nigel Tucker on being invited to present our truly innovative North Qld rainforest revegetation experiences at this major international conference. Next month - TREAT NEWS features more first-line research allied with practical tree-planting – the great NQ Cane-rat story!

TREAT NEWS NO 11. August 1996 p4
Trees for the Evelyn and Atherton tablelands INC.
PO Box 119 Atherton Qld 4883

Farm Tree for the Mount Lofty Ranges
A review

Australians have widely recognised the consequences of over clearance and have begun the huge task of working towards a balance between cleared and 'treed' areas. Primary producers are seeking this balance—they have to make a living out of the land as well as look after it.

Many land managers are looking for ways to make treed areas productive financially as well as providing environmental benefits. Agroforests can produce commercial timbers such as pine or blackwood and other plant products such as broombush, and can enhance agricultural production by protecting stock and crops. It makes a lot of sense to combine the two aspects.

Agroforestry, which simply uses 'trees' for productive farming, is relatively new to Australia.[1] *Agroforestry involves managing trees to improve farm profitability while protecting and enhancing our soil and water resources and habitat for wildlife.*

The long-term nature of agroforestry means that you, the 'pioneer' grower, may not see all the financial returns. But your long-term commitment to the land will benefit future generations. As subsequent generations replace the trees as they are harvested, returns will be enjoyed by each generation..

This handbook has been prepared to provide *more detailed* information on the range of options for 'would-be' agroforesters than is currently available. While a number of sound publications on agroforestry are available, this handbook provides the detail needed to design and manage projects specifically for the Mount Lofty Ranges. For example, you will find information on the best location for your farm trees, which species are suitable for your project site, how far apart to plant the trees, whether or not to prune them, how much time pruning might take, how much timber might be produced, what value the timber might have and when it should be harvested.

A lot of the information in this handbook is fundamental to establishing and carrying out a successful project, but there is no need to read the handbook from cover to cover.

Initially you will need to:

- have a good understanding of what you expect from a planting in order to work out your planting priorities and planting design from the first few pages of *Farm tree planning* (chapter 1);
- work out the 'tree-growing capacity' of your chosen project site by using *Assessing the project site* (chapter 4) to work out your *site type*. This can be done by matching the buds and fruits of any remnant vegetation on your site with the diagrams in this chapter;
- shortlist your species, according to your site type and needs and objectives, from the tables and lists in *Selecting species* (chapter 5).

After these initial steps the handbook can help refine your plan as you become more aware of the possibilities, and can help with most of the steps in carrying out your project. Go straight to the sections that interest you. The flow chart shown in figure 1 may help you to plot your path.

You may wish to refine your farm tree planning by investigating the best ways to:

- *protect stock and crops (chapter 2)*
  the value of sheltering stock and crops, effective location and orientation, the effect of a shelterbelt's height, width and permeability on the area protected, the required number of rows of tall, medium and short plants, how far apart to space the trees and shrubs, incorporating timber trees in a shelterbelt and alternative layouts for shelter systems

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[1] The word 'trees' is used here to embrace all the components of natural plant communities.

- *use trees to control salinity (chapter 3)*
  what can be realistically expected of trees, where to plant for greatest water use and planting on saline areas

You may need information on:

- *which wood products to grow (chapter 6)*
  firewood, posts and poles, sawlogs, craftwood, Christmas trees and landscape chip
- *growing firewood (chapter 7)*
  firewood qualities, spacing seedlings, harvesting, marketing, managing regrowth and estimating growth rates and costs and returns

You may need to study the 'how-to' information for:

- *designing woodlots, wide-spaced agroforests and timberbelts (chapter 8)*
  advantages and disadvantages, fencing requirements, tree spacing, pruning requirements, grazing management and pointers for success
- *growing and managing your agroforest (chapters 9 and 10)*
  agroforestry species, layout and spacing, suitability of direct seeding, pine cuttings versus seedlings, fertilising, stock management, pruning and thinning
- *harvesting and marketing (chapter 11)*
  contractors versus do-it-yourself, and selling the wood

Finally, you can use:

- *the proforma to estimate costs and returns and labour requirements (chapter 12)*
  for fencing, planting, pruning, thinning, grazing and pasture management, nutrition and annual maintenance
- *the agroforestry 'case studies' as a guide for estimating costs and returns and labour requirements (chapter 13)*
  hypothetical estimates for the 14 examples illustrated in chapter 1
- *the summary of the Gumeracha Agroforestry Demonstration Area to interpret it when you visit (chapter 14)*
  site preparation, species, layouts and fire hazard

Information on other aspects of growing trees—for instance, seedling propagation, seedling planting and direct seeding—is already widely available, and so has not been duplicated here. References and suggestions for further reading are provided at the end of the handbook. A glossary explains the terms used in the text as well as other commonly used forestry terms.

Make sure that you seek further guidance from reliable sources on species selection and, Just as for any commercial venture, prepare a business plan based on a market evaluation and estimates of costs, yields and returns.

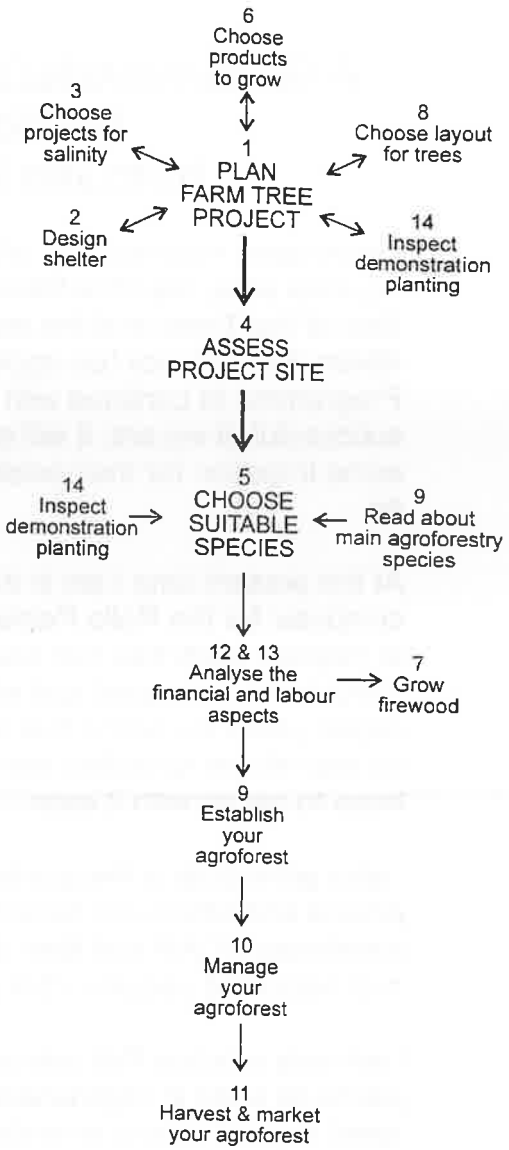

Figure 1 How to successfully navigate through Farmtree$ *(the numbers refer to the chapters)*

Available from the Mt Lofty Ranges Catchment Centre.
at.
5c Cameron St
Mt Barker
SA 5251
ph (08) 8391 7500
Fax (08) 8391 7524

A Queenslander's engagement in regeneration of bushland in her local areas

From Jan Sked (eddited by Matt Pearson)

I have been involved with various regeneration and revegetation projects in my local area, the Pine Rivers Shire, over the years. Some have been with Men of the Trees and the rest with the Pine Rivers Branch of SGAP. The Pine Rivers Sire Council has applied for a grant from the One Billion Trees Programme to continue with our planting. We are waiting to hear if we are successful. If we are, it will enable us to plant another 500 trees and provide some irrigation for their establishment. We have planted about 1500 trees so far.

At the present time I am in the process of compiling a database on my computer for the Rollo Petrie Rainforest. When it is complete, I should be able to pinpoint each tree that has been planted. This will enable me to check which trees have died and will also help with measurement of growth rate. In recent years my health has been a bit "iffy" and I have not been able to keep up with all the recording that I intended. However, I feel much improved and hope to get on with it soon.

I also grow quite a few plants for regeneration projects. Some of these are private and others are for local community groups and the previously mentioned SGAP and Men of the Trees projects. We have some very good and dedicated people in this area.

I am very anxious that only indigenous species and preferably local provinance plants be used in regeneration and revegetation work. To this end I have spent a great deal of time identifying and compiling lists of the plant communities in the Pine Rivers Shire. From this has resulted a book called "The Flora of the Pine Rivers Valley", which lists all the indigenous species so far known to me in the Pine Rivers Shire. This book is published by Pine Rivers SGAP. The Pine Rivers Shire Council uses the book and also asks me to do vegetation studies on various areas of land that they administer. This, of course, also adds to my knowledge of our local vegetation and ensures that they plant the right species. I'll enclose a copy of the Pine Rivers Flora also.

In revegetation projects, I have found that I get most success from planting rainforest species grown on to 140mm pots or larger. Rainforest species usually are slow to produce roots and so require a longer time in their container. Eucalypts, acacia and heathland plants grow better when planted from tubestock. I have not tried direct seeding for myself. In my work as a horticultural researcher for a landscape architect firm, I have advocated using acacia and other leguminous shrub species in the seed mix for hydro-seeding, but have not seen the final result.

We use Roundup for weed control in the Rollo Petrie Rainforest. Where the area is above flood level we also mulch, but find it a waste of time in the area that goes under flood. One of the worst weed species we have in the rainforest is Snakeweed or Stachytarpheta. It is very difficult to eradicate, but is very gradually dying out where the canopy has thickened. Lantana is always with us, along with Crofton Weed, Billygoat weed, exotic grasses and herbs. Seedlings continually pop up of garden escapes, such as Ochna serrulata (Ochna), Schinus terebinthifolius (Broad-leafed Pepper), Celtis sinensis (Chinese Elm), Schefflera actinophylla (Umbrella Tree), Asparagus Fern, Duranta repens, Aristolochia elegans (Dutchman's Pipe), various Morning Glory vines, Privet and Camphor Laurel. All these are becoming quite important environmental weeds in our area. I wonder how many more species we are planting in our gardens now will become environmental weeds in the future. We should be very wary of any plants, both exotic and native, that prove to be prolific self-seeders or very attractive to fruit-eating birds.

I am afraid I cannot comment on control of willows. I have no experience with them. I do not think they are a major problem in Queensland, although I have seen them planted along some of our streams. Our biggest problem is the Camphor Laurel, which colonises our stream banks and prevents native species regenerating. Unfortunately, it is very popular with fruit-eating birds, so continues to spread.

In our coastal areas we are also over-run by various exotic vine species. Morning Glory vines in various forms are very prolific. Cat's Claw Vine (Macfadyena unguis-cati), Asparagus Vine, Aristolochia elegans, Madiera Vine (Anredera cordifolia), Moth Vine (Araujia hortorum), Braxilian Nightshade (Solanum seaforthianum), various Passiflora species, Siratro (Macroptilium atropurpureum) and Glycine Vine (Neonotonia wightii) are all doing their best to destroy our few remaining remnants of coastal forest. Trying to combat them is a frustrating and often fruitless effort.