



THE GROTTO BUSHCARE ACTION PLAN

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RESERVE INFORMATION

Reserve Name:	The Grotto Reserve
Reserve No's:	NNN086, NNN146, and NNN087
Land Tenure:	Council and Crown (Council as Manager)
Comm. Land Type:	Natural Area

1. BUSHCARE GROUP GOALS

The goals of the Grotto Bushcare Group are:

1. Weed Control/Bush Regeneration

- a) To maintain The Grotto as a high quality natural recreational area as per the Greys Beach and Grotto Plan of Management
- b) Strategically regenerate the endemic vegetation of The Grotto Reserve including the upper parts of the reserve and the lower riparian areas
- c) Ongoing strategic weed management and regeneration of areas of native vegetation

2. Access/Walking Tracks

- a) Monitor and assist with maintenance along the Wilson, Grotto and Waratah walking tracks and the service track.

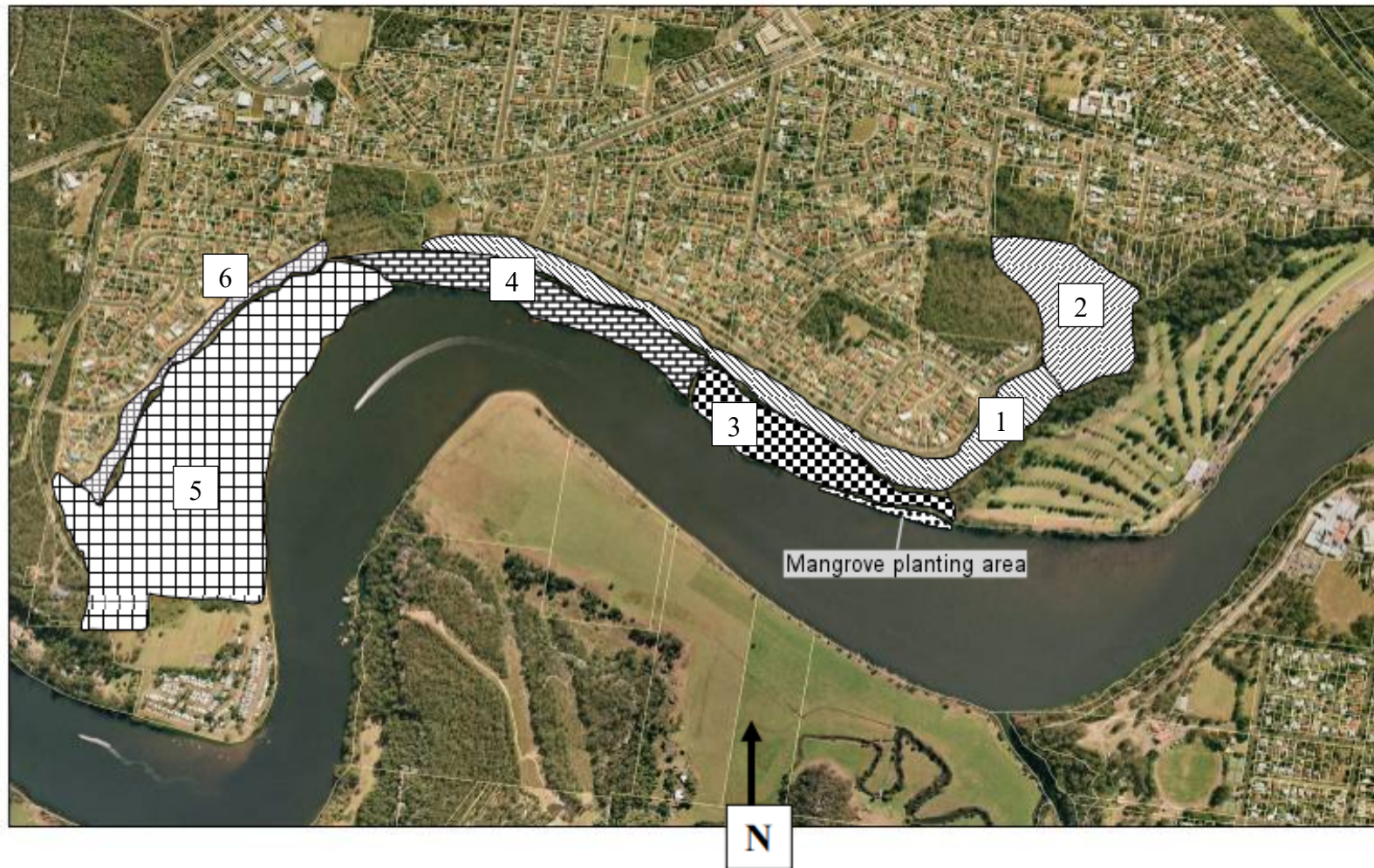
3. Cultural & Historical Education and Conservation

- a) To promote the natural, social and heritage values of The Grotto Reserve
- b) Continue to educate and raise awareness of the natural, social and cultural values of The Grotto Reserve to visitors, schools and local residents.

2. BUSHCARE GROUP ACHIEVEMENTS TO DATE

Actions	Lessons learnt
Formalisation and maintenance of walking tracks	
Extensive control of Lantana through 55 ha reserve area.	Splatter gun in autumn yielded good results
Extensive areas of weed control	

3. THE GROTTO BUSHCARE GROUP MANAGEMENT AREAS



MAP KEY - AREAS	
Area 1	
Area 2	
Area 3	
Area 4	
Area 5	
Area 6	

4. WALKING AND SERVICE TRACKS



5. SHOALHAVEN BUSHCARE GROUP ACTIVITIES TABLE

Priority: H = High (start within 12 months); M = Medium (start 1-3 years); L = Low (do if resources allow)

GROUP ACTION	PRIORITY	METHOD	TIME
WEED CONTROL/BUSH REGENERATION			
<p>AREA 1 – UPPER GROTTO (Eastern end of Yurunga Dr to Power line easement)</p> <p>1. Continue with maintenance weed control along this area. Priorities are:</p> <ul style="list-style-type: none"> a. Crofton Weed and Mist Flower around pumping stations and creeks b. Ground Asparagus c. Privet (Broad and Narrow Leaf) d. Lantana camara e. Mickey Mouse plant (<i>Ochna serrulata</i>) 	H	<ul style="list-style-type: none"> • Spot spray or manual removal of environmental weeds as required • Treat weeds as per site weed list, herbicide labels and Australian Pesticides and Veterinary Medicine Authority (APVMA) off-label permits • Monitor herbicide spray results 	<p>Ongoing</p> <p>Spraying of Ground Asparagus in spring and summer</p>

ACTIVITIES TABLE (cont.)

GROUP ACTION	PRIORITY	METHOD	TIME
AREA 3 – LOWER GROTTA PICNIC AREA			
1. Continue with weed control as per the following prioritised list: <ul style="list-style-type: none"> a. Escarpment areas previously treated/planted b. Riverbank zones previously treated/planted c. Areas where Black Wattle or other indigenous plants occur, providing competition to weeds d. New weed-dominated work areas 	H	<ul style="list-style-type: none"> • Follow-up control of weeds including Lantana, Moth Vine, Turkey Rhubarb and Tradescantia. Treat weeds as per site weed list, herbicide labels and APVMA off-label permits 	Ongoing
2. Replacement of existing plantings as needed	M	<ul style="list-style-type: none"> • Replacement of planting using attached species list 	Ongoing
3. Monitor for new emerging weeds on site and notify Council	H	<ul style="list-style-type: none"> • Monitor for emerging weeds and notify Council 	Ongoing
4. Monitor the river bank erosion between the golf course and the Grotto picnic area	H	<ul style="list-style-type: none"> • Monitor and notify Council 	Ongoing
5. Maintain and expand the mangrove planting program to assist with riverbank stabilisation	M	<ul style="list-style-type: none"> • Propagate and plant mangroves; maintain previous plantings; trial guards to protect mangroves from browsing 	Ongoing
6. Revegetate with suitable deep-rooted tree species between the walking track and the river to help control erosion	M	<ul style="list-style-type: none"> • Use appropriate, sturdy guards 	Autumn
7. Monitoring and maintenance of picnic area	M	<ul style="list-style-type: none"> • Bushcare group to notify Council if more frequent mowing is required. 	Spring/ Summer

ACTIVITIES TABLE (cont.)

GROUP ACTION	PRIORITY	METHOD	TIME
<p>AREA 4 – EASTERN END OF WARATAH WALK Picnic area to old wharf</p> <p>Prioritise control of environmental weeds to areas that have existing healthy native canopy cover</p> <ol style="list-style-type: none"> 1. Continue to undertake follow-up weed control of areas that have been treated with partial or open canopy 2. Supplementary/replacement planting in areas using pioneer species that can establish a canopy quickly 	<p>H</p> <p>L</p>	<ul style="list-style-type: none"> • Treat weeds as per site weed list, herbicide labels and APVMA off-label permits • Target control of Wild Tobacco Tree, regrowth lantana and secondary weeds such as Cape Ivy, Tradescantia and Turkey Rhubarb • Use species from attached revegetation list • Try to determine and address reason(s) for poor survival rate with earlier plantings 	<p>Ongoing</p> <p>Ongoing</p>

ACTIVITIES TABLE (cont.)

GROUP ACTION	PRIORITY	METHOD	TIME
<p>AREA 6 – WESTERN END OF YURUNGA DRIVE Upper Grotto at Ski Park end</p> <p>1. Target control of environmental weeds with the following priorities:</p> <p>a. Control Crofton Weed and Mist Flower on stormwater drain outlets and around pumping stations</p> <p>b. Control Ground Asparagus, Easter Senna and Winter Cherry</p>	<p>M</p>	<ul style="list-style-type: none"> • Council to distribute information concerning planting unapproved plants in reserves to reserve neighbours • Council to control Crofton Weed and Mist Flower in stormwater drains and pumping station areas. • Bushcare Group to spot spray Ground Asparagus and cut and paint Easter Senna 	<p>2019 and ongoing as needed</p> <p>Spring</p> <p>Spring & summer</p>

ACTIVITIES TABLE (cont.)

GROUP ACTION	PRIORITY	METHOD	TIME
MAINTENANCE AND ACCESS			
Council to maintain vehicle access via the Nowra Golf Club within available resources.	M	<ul style="list-style-type: none"> • Maintain access 	Ongoing
Bushcare to undertake minor repairs to park furniture and wire fencing (Upper Grotto walking track) as required	H	<ul style="list-style-type: none"> • Council to supply materials and equipment within budgets for Bushcare Group 	Ongoing
WALKING TRACKS			
<p>Assist Council to maintain the 11 km loop walk that combines Wilson, Grotto and Waratah Walking Tracks:</p> <ol style="list-style-type: none"> a. Monitor and help Council to maintain the walking track to allow safe access for walkers b. Explore the need and options for installation of handrails adjacent to Murrell Pt; between the picnic area and wharf; and stone steps from Gunyuma Cr to the lower Grotto. c. Improve safety of timber bridges 	H	<ul style="list-style-type: none"> • Bushcare Group to help Council monitor and address hazards • Council to assess • Consider options for anti-slip materials to improve safety in wet conditions. 	<p style="text-align: center;">Ongoing</p> <p style="text-align: center;">2019</p> <p style="text-align: center;">2019</p>

ACTIVITIES TABLE (cont.)

GROUP ACTION	PRIORITY	METHOD	TIME
CULTURAL/HISTORICAL & PUBLIC AWARENESS			
Investigate the design and installation of education signage on the walking track highlighting the European heritage of the area as per the Management Objectives in table 5.10 of the Plan of Management for Greys Beach and The Grotto. Highlighting the following areas: <ol style="list-style-type: none"> a. Original homestead site b. Old wharf site c. Campbell Farm site 	M	<ul style="list-style-type: none"> • Follow-up past investigations and preparations into this action • Apply for grants to design and manufacture signs 	2018 Ongoing
Protect areas of Aboriginal cultural significance as per the Management Objectives in table 5.10 of the Plan of Management	H	<ul style="list-style-type: none"> • Ensure areas of Aboriginal cultural heritage remain undisturbed 	Ongoing
Promote the use and appreciation of the reserve	M	<ul style="list-style-type: none"> • Develop a walking track map for local distribution and availability through information centre and website 	2019
Raise the awareness of local residents of the natural values of the bushland reserves and the negative impacts of: <ol style="list-style-type: none"> a. Dumping rubbish b. Dumping garden clippings c. Creating their own tracks 	H	<ul style="list-style-type: none"> • Distribute “Being a Bush Friendly Neighbour” to surrounding residents 	As required
Include area in Clean Up Australia Day events	M	<ul style="list-style-type: none"> • Bushcare Group to work with other interested community organisation to register for Clean Up Australia Day 	Ongoing

6. BUSHCARE GROUP WORKPLACE HEALTH AND SAFETY

New volunteers must be inducted in Shoalhaven City Councils corporate induction process and volunteers must comply with the Volunteer Induction Handbook.

Based on the activities included in this action plan, a new site hazard and risk assessment has been completed. Volunteers are to be inducted on this revised risk assessment with the adoption of this plan. The 'site hazard and risk assessment' is to be revised as need be, for example, upon the identification of a new hazard, or of a new control measure for an existing hazard.

The following activities are managed by Council through the following documents. Volunteers must comply with these standards.

Activity	WHS documentation
Manual Handling	SCC Policy P15 Hazardous Manual Tasks
Chemical weed control	SCC Policy P11 Hazardous Chemicals; SCC Procedure SWI29 Herbicide Spraying; Safety Data Sheets and product labels for chemicals used
Tree Planting and watering	SWI103 Water Cart SWI93 Trailers – towing
Brushcutting	SWI41 Line Trimmer

7. COUNCIL SUPPORT

- a) Technical advice and support
- b) Provision of PPE equipment – Group to advise when reissue required
- c) Supply tools, herbicide, plants, guards, stakes, water crystals and materials within the constraints of budget
- d) Administration support
- e) Assistance with grant application, administration and management
- f) Supply of water cart for watering plants
- g) Graphic design and printing assistance
- h) Slashing of the lower Grotto reserve, as access allows
- i) GPS mapping assistance with software and map production
- j) Maintenance of reserve access road (within available resources)
- k) Assistance with facilitation and negotiation with third parties

8. POSSIBLE FUTURE FUNDING

Project	Potential Funding source
Rehabilitation assistance (e.g., contractors to undertake weed control and replanting in Area 5)	Natural Resources Unit as funds are available; external funding
Equipment Purchase (e.g., Brushcutter)	Natural Resources Unit as funds are available; external funding
Environmental, Historical and Cultural Interpretive signage	Heritage/tourism grants
Regeneration of riparian vegetation and erosion control	Local Land Services; River health funding

9. REVIEW

This plan will be reviewed six years from its adoption but can be reviewed sooner if agreed.

10. REGIONAL MANAGEMENT PLANS OR STRATEGIES

Document	Year	Produced by
Generic Community Land Plan of Management - Natural Areas	2001 – last updated 2016	Shoalhaven City Council
Asset Management Plan - Walking Tracks	2016	Shoalhaven City Council
Plan of Management, Greys Beach and The Grotto, North Nowra	2004	Geolink for Shoalhaven City Council
Lower Shoalhaven River Flood Study	1990	Shoalhaven City Council

11. SUGGESTED SPECIES LIST FOR FUTURE SITE REVEGETATION

1. DRY SCLEROPHYLL FOREST	
DOMINANT TREES	
Above Cliffs	
BOTANICAL NAME	COMMON NAME
<i>Angophora costata</i>	Smooth barked Apple
<i>Allocasuarina littoralis</i>	Black She-Oak
<i>Casuarina glauca</i>	Swamp Oak
<i>Eucalyptus agglomerata</i>	Blue Leaved Stringybark
<i>Eucalyptus maculata</i>	Spotted Gum
<i>Eucalyptus paniculata</i>	Grey Ironbark
<i>Eucalyptus punctata</i>	Grey Gum
River Flats	
<i>Eucalyptus saligna</i> x <i>botryoides</i>	Hybrid Blue Gum/Bangalay
Hybridisation between these two species is common in the Illawarra.	
SHRUBS	
<i>Acacia terminalis</i>	Sunshine Wattle
<i>Babingtonia virgata</i>	Tall Baeckia
<i>Banksia spinulosa</i>	Hairpin Banksia
<i>Bursaria spinosa</i>	Native Blackthorn
<i>Ceratopetalum gummiferum</i>	Christmas Bush
<i>Correa reflexa</i>	Common Correa
<i>Crowea exalata</i>	Small Crowea
<i>Daviesia ulicifolia</i>	Gorse Bitter Pea
<i>Dillwynia retorta</i>	Parrot Pea
<i>Dodonaea triquetra</i>	Common Hop Bush
<i>Dodonaea trunciatales</i>	Angular Hop Bush
<i>Duboisia myoporoides</i>	Corkwood
<i>Elaeocarpus reticulatus</i>	Blueberry Ash
<i>Exocarpos strictus</i>	Brush Cherry
<i>Grevillea arenaria</i>	Sandy Places Grevillea
<i>Grevillea linearifolia</i>	Spider Flower
<i>Hakea dactyloides</i>	Finger Hakea
<i>Hakea sericea</i>	Needle Bush
<i>Kunzea ambigua</i>	Tick Bush
<i>Lambertia formosa</i>	Mountain Devil
<i>Leptospermum trinervium</i>	Flaky Barked Tea Tree
<i>Leucopogon juniperinus</i>	Prickly Bearded-Heath
<i>Leucopogon lanceolatus</i>	Lance Bearded-Heath
<i>Lomatia silaifolia</i>	Crinkle Bush
<i>Macrozamia communis</i>	Burrawang
<i>Olearia argophylla</i>	Silver Bush
<i>Olearia stellulata</i>	Snowy Daisy Bush
<i>Olearia tomentosa</i>	Toothed Daisy bush

SHRUBS (cont.)	
BOTANICAL NAME	COMMON NAME
<i>Ozothamnus argophyllus</i>	Spicy Everlasting
<i>Ozothamnus diosmifolius</i>	White Dogwood
<i>Persoonia levis</i>	Broad Leaved Geebung
<i>Persoonia linearis</i>	Narrow-Leaved Geebung
<i>Petrophile pedunculata</i>	Conesticks
<i>Phyllanthus hirtellus</i>	Thyme Spurge
<i>Platylobium formosum</i>	Handsome Flat Pea
<i>Pimelea linifolia</i>	Rice Flower
<i>Pomaderris elliptica</i>	Pomaderris
<i>Pomax umbellifera</i>	N/A
<i>Prostanthera incana</i>	Velvet Mint Bush
<i>Pultenaea blakeleyi</i>	Blakeley's Bush Pea
<i>Pultenaea daphnoides</i>	Daphne Bush Pea
<i>Zieria cytisoides</i>	Downy Zieria
HERBS	
BOTANICAL NAME	COMMON NAME
<i>Centella asiatica</i>	Arthritis Weed
<i>Commelina cyanea</i>	Wandering Blue
<i>Goodenia hederacea</i>	Forest Goodenia
<i>Goodenia heterophylla</i> ssp. <i>eglandulosa</i>	N/A
<i>Hydrocotyle</i> sp.	Pennywort
<i>Plectranthus parviflorus</i>	Cockspur Flower
<i>Pratia purpurascens</i>	Whiteroot
<i>Ranunculus inundatus</i>	River Buttercup
<i>Stylidium graminifolium</i>	Grass Trigger-plant
FERNS	
BOTANICAL NAME	COMMON NAME
<i>Cheilanthes austrotenuifolia</i>	Rock Fern
VINES/SCRAMBLERS	
BOTANICAL NAME	COMMON NAME
<i>Billardiera scandens</i>	Hairy Apple Berry
<i>Cassytha pubescens</i>	Devil's Twine
<i>Glycine clandestina</i>	N/A
<i>Hardenbergia violacea</i>	Purple Coral Pea
<i>Hibbertia dentata</i>	Trailing Guinea Flower
<i>Kennedia prostrata</i>	Scarlet Coral Pea
<i>Kennedia rubicunda</i>	Dusky Coral Pea
<i>Morinda jasminoides</i>	Sweet Morinda

ORCHIDS	
BOTANICAL NAME	COMMON NAME
<i>Pterostylis</i> sp.	Greenhood Orchid
Watch out for ground orchids in flower during the year	
GRASSES	
BOTANICAL NAME	COMMON NAME
<i>Anisopogon avenaceus</i>	Oat Speargrass
<i>Aristida vagans</i>	Three-awn Speargrass
<i>Briza maxima</i>	Quaking Grass
<i>Cymbopogon refractus</i>	Barbed Wire Grass
<i>Danthonia longifolia</i>	N/A
<i>Entolasia marginata</i>	Bordered Panic
<i>Imperata cylindrica</i>	Blady Grass
<i>Microlaena stipoides</i>	Weeping Grass
<i>Poa poiformis</i>	Tussock Grass
<i>Themeda australis</i>	Kangaroo Grass
OTHER MONOCOTYLEDONS	
BOTANICAL NAME	COMMON NAME
<i>Dianella caerulea</i>	Blue Flax-lily
<i>Laxmannia gracilis</i>	Slender Wire Lily
<i>Lepidosperma laterale</i>	N/A
<i>Lomandra filiformis</i>	Wattle Mat-rush
<i>Lomandra longifolia</i>	Spiny-headed Mat-rush
<i>Patersonia sericea</i>	Native Iris
<i>Phragmites australis</i>	Common Reed
<i>Schelhammera undulata</i>	N/A

2. GROTTO RAINFOREST

Can be defined as subtropical vine thicket or 'complex notophyll vine' forest (classification of Webb 1968), with dry rainforest ('microphyll vine thicket') characterised by Grey Myrtle (*Backhousia myrtifolia*) mid-cliffs. A very diverse southern remnant of subtropical type rainforest. Mills (1995) listed 51 trees and shrubs occurring in the Shoalhaven Vine Thickets. 37 have been listed so far at the Grotto site.

TREES

BOTANICAL NAME	COMMON NAME
<i>Acacia binervata</i>	Two-Veined Hickory Wattle
<i>Acacia filicifolia</i>	Fern-leaved Wattle
<i>Acacia maiden</i>	Maiden's Wattle
<i>Acmena smithii</i>	Lilly Pilly
<i>Alectryon subcinereus</i>	Native Quince
<i>Alphitonia excelsa</i>	Red Ash
<i>Backhousia myrtifolia</i>	Grey Myrtle
<i>Claoxylon austral</i>	Brittlewood
<i>Clerodendrum tomentosum</i>	Native Clerodendrum
<i>Cryptocarya glaucescens</i>	Murrogun
<i>Dendrocnide excelsa</i>	Stinging Tree
<i>Ehretia acuminata</i>	Koda
<i>Elaeocarpus kirtoni</i>	Pigeonberry Ash
<i>Eupomatia laurina</i>	Bolwarra
<i>Ficus coronate</i>	Sandpaper Fig
<i>Ficus rubiginosa</i>	Port Jackson Fig
<i>Ficus superba</i>	Deciduous Fig
<i>Glochidion ferdinandi</i>	Cheese Tree
<i>Guioa semiglauca</i>	Guioa
<i>Livistona australis</i>	Cabbage Palm
<i>Melicope micrococca</i>	White Euodia
<i>Notelaea longifolia</i> var. <i>longifolia</i>	Large Mock-olive,
<i>Omalanthus populifolius</i>	Native Bleeding Heart
<i>Pararchidendron pruinosum</i>	Snow Wood
<i>Pennantia cunninghamii</i>	Brown Beech
<i>Pittosporum revolutum</i>	Hairy Pittosporum
<i>Pittosporum undulatum</i>	Native Daphne
<i>Podocarpus elatus</i>	Plum Pine
<i>Rapanea variabilis</i>	Muttonwood
<i>Rhodamnia trinervia</i>	Scrub Stringybark
<i>Synoum glandulosum</i>	Bastard Rosewood
<i>Toona ciliata</i>	Red Cedar

RAINFOREST SHRUBS	
BOTANICAL NAME	COMMON NAME
<i>Commersonia fraseri</i>	Brown Kurrajong
<i>Goodenia ovata</i>	Hop Goodenia
<i>Phyllanthus gunnii</i>	Scrubby Spurge
<i>Prostanthera lasianthos</i>	Victorian Christmas Bush
<i>Rubus rosifolius</i>	Native Raspberry
HERBS	
BOTANICAL NAME	COMMON NAME
<i>Stellaria angustifolia</i>	Swamp Starwort
FERNS	
BOTANICAL NAME	COMMON NAME
<i>Adiantum aethiopicum</i>	Common Maidenhair
<i>Adiantum formosum</i>	Giant Maidenhair
<i>Adiantum hispidulum</i>	Rough Maidenhair
<i>Asplenium flabellifolium</i>	Necklace Fern
<i>Blechnum cartilagineum</i>	Gristle Fern
<i>Calochlaena dubia</i>	Common Ground Fern
<i>Cyathea australis</i>	Rough Tree Fern
<i>Davallia pyxidata</i>	Hare's Foot Fern
<i>Doodia aspera</i>	Rasp Fern
<i>Hypolepis muelleri</i>	Harsh Ground Fern
<i>Lastraeopsis decomposita</i>	Trim Shield Fern
<i>Microsorium scandens</i>	Fragrant Fern
<i>Pellaea falcata</i>	Sickle Fern
<i>Pteridium esculentum</i>	Bracken Fern
<i>Pyrrhosia rupestris</i>	Felt Fern

VINES	
BOTANICAL NAME	COMMON NAME
<i>Aphanopetalum resinosum</i>	Gum Vine
<i>Cayratia clematidea</i>	Native Grape
<i>Celastrus subspicata</i>	Large-leaved Staff Vine
<i>Cissus antarctica</i>	Kangaroo Vine
<i>Cissus hypoglauca</i>	Water Vine
<i>Eustrephus latifolius</i>	Wombat Berry
<i>Geitonoplesium cymosum</i>	Scrambling Lily
<i>Glycine clandestina</i>	N/A
<i>Legenophora moorei</i>	Round Leaf Vine
<i>Malaisia scandens</i>	Burny Vine
<i>Morinda jasminoides</i>	Sweet Morinda
<i>Pandorea pandorana</i>	Wonga Vine
<i>Parsonsia straminea</i>	Common Silkpod
<i>Piper novae-hollandiae</i>	Giant Pepper Vine
<i>Ripogonum album</i>	White Supplejack
<i>Rubus hillii</i>	Molucca Bramble
<i>Sarcopetalum harveyanum</i>	Pearl Vine
<i>Smilax australis</i>	Lawyer Vine
<i>Smilax glyciophylla</i>	Native Sarsparilla
<i>Stephania japonica</i>	Snake Vine
<i>Tylophora barbata</i>	Bearded Tylophora
ORCHIDS	
BOTANICAL NAME	COMMON NAME
<i>Bulbophyllum exiguum</i>	N/A
<i>Dendrobium linguiforme</i>	Tongue Orchid
<i>Dendrobium pugioniforme</i>	Dagger Orchid
<i>Dendrobium speciosum</i>	Rock Orchid
<i>Dendrobium striolatum</i>	Streaked Rock Orchid
GRASSES AND SEDGES	
BOTANICAL NAME	COMMON NAME
<i>Gymnostachys anceps</i>	Settlers Flax
<i>Oplismenus aemulus</i>	Basket Grass
<i>Vulpia bromoides*</i> Carpeting area adjacent to remnant rainforest on flats.	Squirrel Tail Fescue

12. SUGGESTED FAST GROWING CANOPY SPECIES FOR REVEGETATION

BOTANICAL NAME	COMMON NAME
<i>Acacia binervata</i>	Two Veined Hickory
<i>Acacia maideni</i>	Maiden's Wattle
<i>Acacia mearnsii</i>	Black Wattle
<i>Clerodendrum tomentosum</i>	Native Clerodendrum
<i>Eucalyptus saligna x botryoides</i>	Hybrid Blue Gum/Bangalay
<i>Ficus coronata</i>	Sandpaper Fig
<i>Omalanthus populifolius</i>	Bleeding Heart
<i>Pittosporum revolutum</i>	Rough Pittosporum
<i>Toona ciliata</i>	Red Cedar

13. SITE WEED LIST

All herbicide concentrations and applications to be according to herbicide label or Australian Pesticide and Veterinary Medicines Association off-label permits.

See attached Bush Regeneration Fact Sheets for more information on control of different weed types

Botanical	Common
<i>Ageratina adenophora</i>	Crofton weed
<i>Ageratina riparia</i>	Mistflower
<i>Cestrum parqui</i>	Green Cestrum
<i>Eragrostis curvula</i>	African Love Grass
<i>Lantana camara</i>	Lantana
<i>Ligustrum sinense</i>	Small Leaf Privet
<i>Rubus fruticosus</i>	Blackberry
<i>Sporobolus fertilis</i> / <i>Sporobolus indicus</i>	Giant Parramatta Grass / Parramatta Grass
<i>Senecio madagascariensis</i>	Fireweed
<i>Acetosa sagittata</i>	Turkey Rhubarb
<i>Araujia sericiflora</i>	Mothvine
<i>Asparagus aethiopicus</i>	Asparagus Fern
<i>Cinnamomum camphora</i>	Camphor Laurel
<i>Croscosmia x crocosmiiflora</i>	Montbretia
<i>Delairea odorata</i>	Cape Ivy
<i>Erythrina x sykesii</i>	Coral Tree
<i>Lilium Formosan</i>	Formosan Lily
<i>Lonicera japonica</i>	Japanese Honeysuckle
<i>Nephrolepis cordifolia</i>	Fishbone Fern
<i>Ochna serrulata</i>	Mickey Mouse Plant
<i>Senna pendula glabrata</i>	Easter Senna, Cassia
<i>Solanum mauritianum</i>	Wild Tobacco Tree
<i>Solanum pseudocapsicum</i>	Madeira Winter Cherry
<i>Solanum laxum</i>	Potato Climber
<i>Tradescantia fluminensis</i>	Wandering Jew

Control of Vines and Scramblers

Examples of vines include: ● balloon vine, morning glory, honeysuckle, cape ivy, jasmine, madeira vine, blackberry

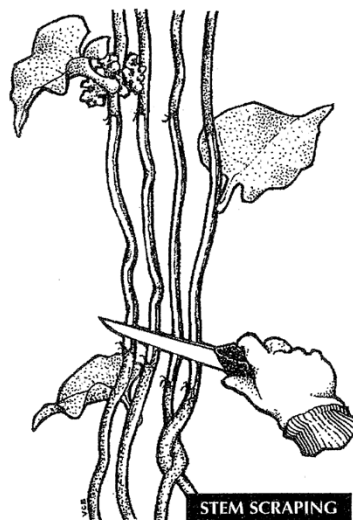
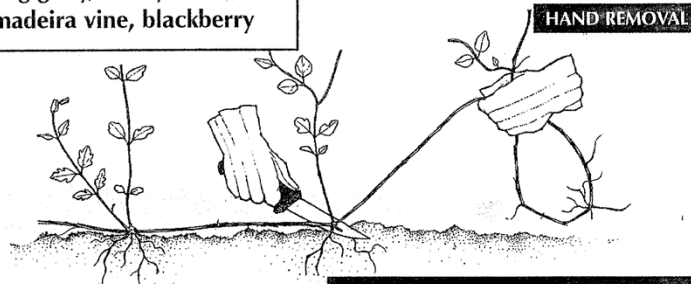
METHODS OF REMOVAL

1 HAND REMOVAL

- STEP 1** Take hold of one runner and gently pull it along the ground towards you.
- STEP 2** Check points of resistance where fibrous roots grow from the nodes. Cut roots with a knife or dig out with a trowel and continue to follow the runner.
- STEP 3** The major root systems need to be removed manually or scrape/cut and painted with herbicide.
- STEP 4** Bag any reproductive parts.

2 STEM SCRAPING

- STEP 1** With a knife, scrape 15 to 30 cm of the stem to reach the layer below the bark/outer layer.
- STEP 2** Immediately apply herbicide along the length of the scrape.



considerations

- A maximum of half the stem diameter should be scraped. Do not ring bark.
- Larger stems (>1cm) should have two scrapes opposite each other.
- Aerial tubers on madeira vine should die with the plant when stem scraping is used. Those that fall from the plant in the scraping process need to be bagged.
- Vines can be left hanging in trees after treatment.



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Control of Woody Weeds

Examples of woody weeds include:

- lantana, bitou bush, cotoneaster, privet (cut and paint)
- camphor laurel, Mickey Mouse bush (ochna) and cassia/senna (stem scrape)

METHODS OF REMOVAL

1 CUT AND PAINT —Useful for small to medium sized woody weeds up to 10cm basal diameter

- STEP 1** Make a horizontal cut as close to the ground as possible with secateurs, loppers or a bush saw.
- STEP 2** Immediately apply herbicide to the exposed flat stump surface.

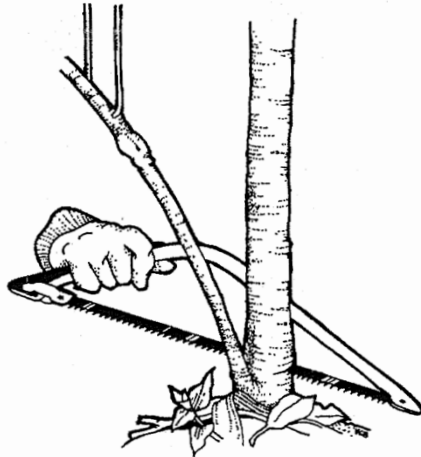
SAFETY CONSIDERATIONS

The following general precautions should be made when using herbicides:

- Read the label before opening the container and follow the instructions.
- Wear protective clothing as directed on the label.
- Wash hands after use and before eating or smoking.

considerations

- Cuts should be horizontal to prevent herbicide from running off the stump. Sharp angle cuts are hazardous.
- Herbicide must be applied immediately before the plant cells close and translocation of herbicide ceases.
- If plants resprout, cut and paint the shoots after sufficient regrowth has occurred.
- Stem scraping can be more effective on some woody weeds.



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Control of Weeds with Underground Reproductive Structures

- Examples: Weeds with
- Tap roots - catsear, dandelion
 - Rhizomes - asparagus fern, ginger plant
 - Bulbs and corms - oxalis, onion weed, watsonia, freesias, montbretia
 - Tubers - madiera vine, arrow head vine

METHODS OF REMOVAL

1 HAND REMOVAL OF PLANTS WITH A TAPROOT

Examples: Paddy's lucerne, dandelion

- STEP 1** Gently remove and bag seeds or fruit.
- STEP 2** Push a narrow trowel or knife into the ground next to the taproot. Carefully loosen soil. Repeat this step around the taproot.
- STEP 3** Grasp stem at ground level, rock plant back wards and forwards and pull gently.
- STEP 4** Gently tap the roots to dislodge soil. Replace disturbed soil and lightly pat down.

2 CROWNING (Many grasses can be crowned)

Example: asparagus fern

- STEP 1** Gently remove and bag stems with seed or fruit.
- STEP 2** Grasp the leaves or stems together so that the base of the plant is visible.
- STEP 3** Insert, at an angle, a knife or lever, close to the "crown".
- STEP 4** Cut through all the roots around the crown.
- STEP 5** Remove and bag the crown.



HAND REMOVAL



CROWNING

Control of Weeds with Underground Reproductive Structures cont..



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METHODS OF REMOVAL

③ REMOVAL OF PLANTS WITH BULBS, CORMS OR TUBERS

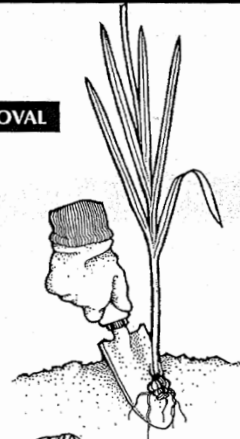
Examples: onion weed, watsonia, arrowhead vine, montbretia

- STEP 1:** Move leaf litter away from base of plant.
- STEP 2:** Dig down next to the stem until the bulb or tuber is reached.
- STEP 3:** Remove plant and carefully bag the bulb or tuber.

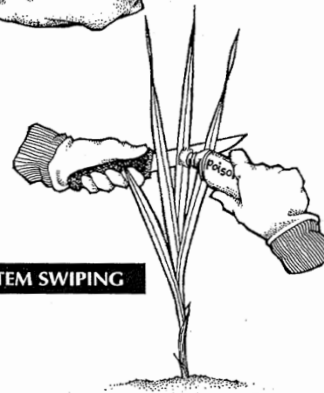
④ HERBICIDE TREATMENT - STEM SWIPING

- STEP 1:** Gently remove any seed or fruit and carefully place into a bag.
- STEP 2:** Using a herbicide applicator, swipe the stems/leaves.

HAND REMOVAL



STEM SWIPING



considerations

- Further digging may be required for plants with more than one tuber (e.g. arrow head vine).
- Some bulbs (e.g. oxalis, onion weed) may have small bulbils attached or present in the soil around it. These need to be removed.
- It may be quicker and more effective to dig out the weed.
- Make sure native plants and seedlings will not be affected.
- Learn and understand how the herbicide works - for bulb and corm species the most effective time is after flowering and before fruit is set.
- Have you addressed all safety issues ?