

Alpine Shire Weeds

Identification and control of important weeds
in the Alpine Shire



Prepared by Abzeco Flora & Fauna Consulting for the Alpine Shire Council
November 2006



ALPINE SHIRE

Useful weed contacts and information sources for weeds of the Alpine Shire

The Alpine Shire website includes weed information, www.alpineshire.vic.gov.au and click on 'environment'. The Shire's Environment Officer is a good first point of contact for weed information, phone 5755 0555. Each Shire office holds a reference set of pressed specimens of important local weeds which is available to help with identifications.

The Department of Primary Industries website has information on many weed species, www.dpi.vic.gov.au and search by weed common or latin name. DPI provides Weed Spotter training and is responsible for enforcing the Catchment and Land Protection Act. Contact 136 186 and ask for weeds officers in your local area. DPI's Chemical Standards Branch Benalla Office provides information on the regulation and use of herbicides – 5761 1532.

The North East Catchment Management Authority manages weeds and provides funding to landholders controlling weeds and enhancing vegetation near waterways, www.necma.vic.gov.au.

Landcare groups offer practical experience and advice on land and vegetation management matters. Find groups at www.landcareonline.com or by contacting the North East Regional Landcare Coordinator landcare@necma.vic.gov.au at the NECMA, on (02) 6043 7600.

Parks Victoria manages weeds in parks in the area, www.parkweb.vic.gov.au or contact 13 19 63 and ask for offices in Bright or Mt Beauty.

The Cooperative Research Centre for Australian Weed Management has good quality information on its website, www.weeds.crc.org.au, including excellent technical guides for the control of important weed species, www.weeds.crc.org.au/publications/weed_man_guides.html

Advice on control methods for environmental weeds can be sought from the Enviroweeds email list server, www.weeds.crc.org.au/main/enviroweeds.html

Weeds Australia website has information on many weed-related matters, www.weeds.org.au, and includes a weed identification aid, www.weeds.org.au/weedident.htm

National Herbarium of Victoria at the Royal Botanic Gardens Melbourne provides a plant identification service for a small charge, contact 9252 2315 or www.rbv.vic.gov.au

Chemcert or farm chemical users training should be undertaken by anyone using herbicides. It is provided locally by www.tafco.com.au, www.wodonga.tafe.edu.au and www.gotafe.vicedu.au

Australian Pesticides and Veterinary Medicine Authority (APVMA) has a search tool for finding registered herbicides for particular weeds, www.apvma.gov.au and then click on "Search Pubcris for a product" to search for registered controls for weeds (by common name only).

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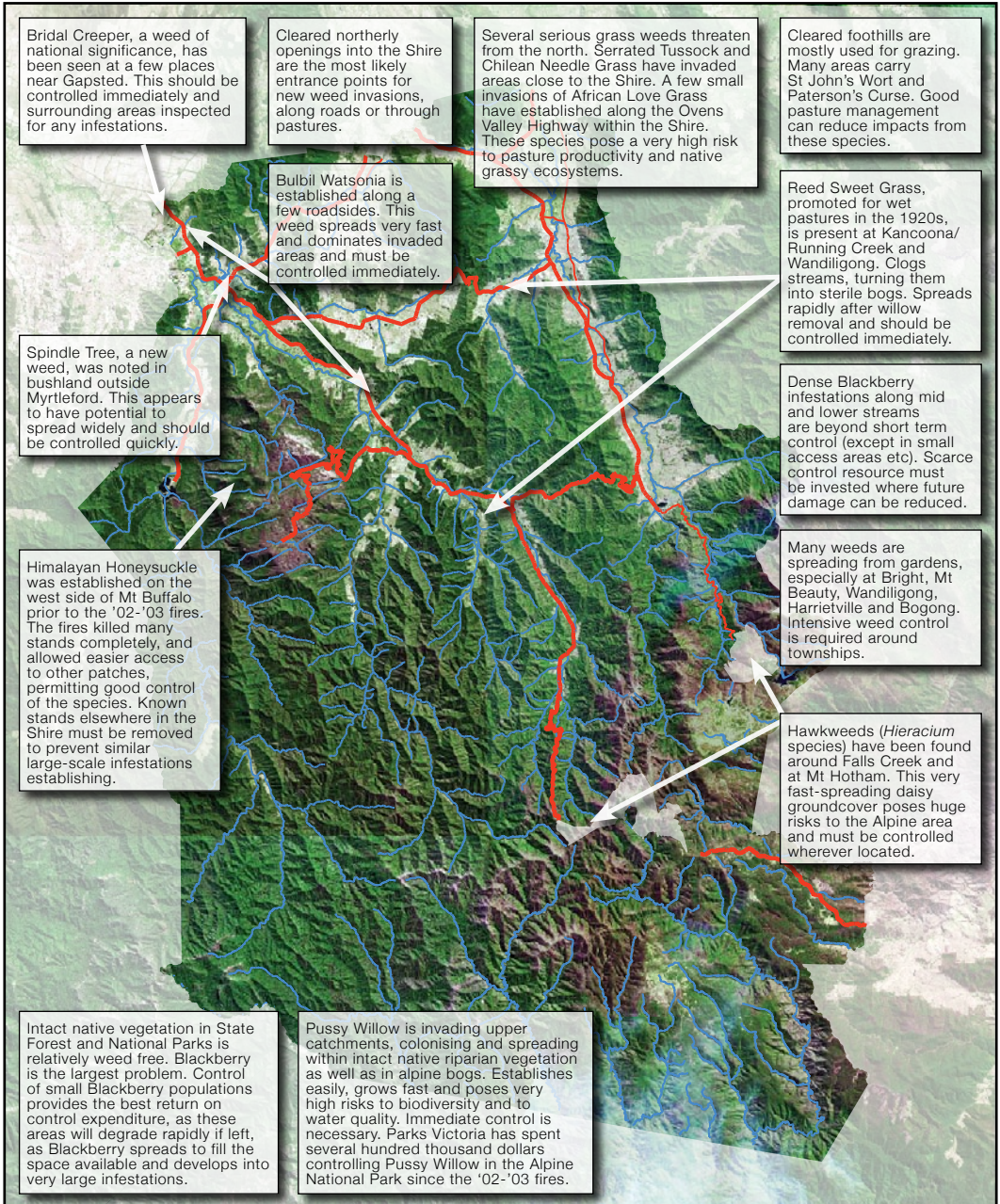
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Some key weed issues in the Alpine Shire



About Weeds

This booklet is intended to help you identify and control weeds in the Alpine Shire. Not all weeds are described — the focus is on the most destructive and the most common weeds, particularly of valleys in the Shire. *Alps Invaders*, an identification guide for weeds of the Australian Alps is available from local Parks Victoria offices.

What is a weed and what are their impacts?

Weeds are plants that are not wanted where they grow. They cause, or have the potential to cause, ecosystem disturbance, economic loss to agriculture, degradation to waterways, harm to people or animals or other negative impacts.

Weeds impact on many different aspects of our environment. They present a huge risk to biodiversity, as relatively few weed species spread widely and displace many native plant species. Weeds often reduce resources available to native animals, and cause the animals to die from lack of food or depletion of other habitat resources.

Many weeds are toxic. Reed Sweet Grass, a weed in some wetlands in the Alpine Shire, is toxic to livestock. Hemlock, a weed of creek and river banks, is extremely toxic to humans and livestock.

Many weeds change the environment around them. Willows cause major changes to the structure and life of wetlands, creeks and rivers. Willows change stream form, increasing erosion and flooding. They alter water chemistry and reduce water quality, eliminate vegetation from the banks, and displace the animals that rely on those plants.

Some weed species worsen fires. Phalaris, a common pasture grass, produces very large quantities of fine fuel which can burn with much greater intensity than native grasses and understory plants.

Inaction on weeds will lead to major future problems. Weeds must be managed if we wish to enjoy a healthy natural environment and productive landscapes.

Where do weeds come from?

Weeds are usually plants from other parts of the world or of Australia which arrived in the Alpine Shire through agricultural plantings, from accidental introductions and through gardening.

Weeds spread by seeds by wind, water, animals, humans and vehicles, by suckers and from illegally dumped garden waste. Many weeds are still spreading from gardens.

Weed biology

Weeds are plants that are well suited to our climate and landscapes. They often lack the insects, fungi and other parasites which check their growth in their natural home range, so they are able to thrive in our Shire.

Many weeds are unable to 'break into' an ecosystem unless there is a suitable niche open, or a disturbance event which makes it possible. Cape Weed, St. John's Wort and Paterson's Curse invade and spread in overgrazed pastures, where there is bare earth between the grasses.

Blackberry invades vegetation that has been disturbed by flood scour or track works. Careful management can reduce establishment, but once established they are difficult to eradicate.

Some weeds do not require an obvious disturbance event in order to proliferate, being able to germinate in an intact native vegetation community and just thrive. Spindle Tree, a new weedy shrub found near Myrtleford, has invaded native grassy hillsides that are ungrazed by domestic stock and are not disturbed.

What should we weed?

A purist approach would be to weed all non-native or non-productive plants. There isn't enough time in life to pull every undesirable plant, so we need to set control priorities.

The ultimate objective of environmental weed control should always be the restoration of more desirable (ie indigenous or productive) vegetation. Weeding without follow-up planting and weed control may actually worsen the situation — in some cases weedy vegetation is better than no vegetation! If you cannot influence what will happen after you weed, it is sometimes better not to weed.

Sometimes it is vitally important to weed as soon as possible. Small weed colonies in otherwise intact ecosystems should be removed immediately — the colony may spread fast and degrade the good area quickly.

New weeds should be exterminated, as they are an unknown quantity, and could well be the next Blackberry. Weeds known to disperse widely via animal eaten seed or other means should also be dealt with quickly.

Well established weed infestations are often the hardest to control and provide the poorest return on control efforts invested. Early weed control is an efficient use of resources — a small amount of effort now is more effective than a large quantity of effort in the future.

What happens after weeding?

In some situations all that is required is weed control. If you remove a weed from high quality bushland, chances are the plant that replaces it will be something native. If you remove a weed from weed-infested bushland, chances are the plant that naturally grows to replace it will be another weed. In heavily grazed pastures a weed will replace a weed. The best way to control weeds after weeding is with competition from desirable plants. Competition means weeds do not have a free run, access to all of the water, sunlight and nutrients that are available, and they will not be able to grow and reproduce as successfully. Regulation of grazing pressure, addition of desirable seed or plantings and protection from disturbance may all help the good competitors outgrow the weeds.

Soil seed bank

Weed seed sitting in the soil will usually germinate for years to come. Competition from other species may prevent such germinants from surviving but follow-up weeding is usually required after initial weed control works, often for many years. The frequency of follow-up weeding must be shorter than the growing and reproductive period of the weeds — if a weed takes eight months from germination to fruiting, the time between follow up weeding should not be more than, say, six months. In this way the soil-seed bank is never restored by seeding plants, and, over time, the soil weed seed bank will be completely depleted.

Weed Control Methods

Competition

Competition is an often neglected aspect weed control. Weeds will grow best when they are not challenged. If other plants compete for water, light or nutrients weeds will be constrained and may not even survive.

Careful management of grazing pressure can help eliminate weeds from pastures. In bush re-establishment of a dense layer of native grasses or shrubs can help prevent weeds from recolonising an area that has been treated for weeds.

If natural regeneration is likely to be inadequate follow-up planting or seeding should be undertaken whenever weeds are controlled, or else the same weed or another undesirable plant is likely to reinvade.

Hand weeding

Hand weeding is the manual removal of plants, with hand tools or simply by hand (wear gloves — some plants are irritant or toxic!), to prevent them growing and reproducing. Hand weeding can be time consuming, but it is also effective, as it is very selective and does not rely on chemical absorption, the absence of rain after spraying etc.

When hand weeding take care to remove all of the reproductive parts of the plant. For some weeds a great deal of soil disturbance and effort is necessary to remove enough of the underground material to prevent regrowth. In these cases it is better to carefully use herbicides to achieve a complete kill of the plant, roots and all.



Hand Weeding, taking care to remove large roots whilst minimising soil disturbance.

The Bradley Technique

Joan and Eileen Bradley, pioneering Australian bushland workers, used hand weeding methods and created a very effective approach to weed control;

1. Minimum disturbance — minimising soil and vegetation disturbance reduces opportunities for new weeds to colonise.
2. Weed best areas first, worst areas last — best areas naturally regenerate quickest from surrounding native vegetation and are the most vulnerable to weed colony expansion.
3. Do not overclear — overclearing allows weeds to recolonise — the work must be done at a pace slow enough for the indigenous plants to re-establish themselves. Too fast and the weeds will move back in.

The Bradley Technique was developed around bushland that was able to self-regenerate, due to adequate native vegetation being nearby. Where natural re-establishment is insufficient, revegetation is achieved by planting or direct seeding.

Ringbarking

Cutting a ring of tree bark around the trunk down to the wood will kill some species. The cut must be low down, go right around the trunk and be wide enough that scar tissue cannot heal

over the gap. The plant may take over a year to die. Note: many weed species will resprout if ringbarked and require herbicide controls. To kill them see Drill & Fill or Frill & Fill.

Slashing

Slashing or mowing can remove aerial biomass, potentially reducing seeding and the regeneration of underground energy reserves. It is suited to plants which regrow from a buried bulb, tuber or crown, such as Watsonia and Blackberry, which can be slashed and then followed up with herbicide treatment when sufficient leaf has regrown.

If maintained for long enough slashing can remove some weeds altogether. It must be undertaken regularly, and there are usually ideal times of year to slash, relating to the growing and reproductive cycle of the plant.

Fire

Fire can be a very useful tool in weed control, disrupting flowering and seeding, stimulating herbicide-susceptible regrowth, removing dead stems and easing access. Obviously, great care must be taken when using fire, and appropriate permission and control methods are necessary.

Carpet overlay & Solarisation

Old carpet, tough plastic or other material can be laid over infestations of weeds to starve them of light and kill them. Many weeds must be covered for months to die — the material must be durable enough to prevent new shoots pushing through. Some weed seeds die under such mats — others survive and germinate when the mat is removed.

Plastic sheet can be used in summer to cook weeds that are in the sun via 'solarisation'. Plants with large root systems and seeds may survive.

Herbicides

Herbicides are plant-killing chemicals. Their use is regulated by law, and application outside of legally permitted uses (ie: "off label") may be an offence, and liability for any negative consequences of such application may rest with the user. Some herbicides present some risks to the operator if used incorrectly. **Always read the label, always follow the instructions.**

There are many types available and they are not equally good for all target species.

Translocated herbicides are transported through the plant after application. Some granular herbicides are applied to the soil beneath plants where they wash down into the soil and are absorbed by the plants roots. Selective herbicides do not kill all types of plants — they can be very useful in situations where weeds are mixed with desirable plants.

Advice on optimal herbicide application methods can be sought from the Enviroweeds email list server — www.weeds.crc.org.au/main/enviroweeds.html

Finding registered herbicides

Herbicide labels contain information about the weeds for which they have been tested, shown to work and subsequently registered. The Australian Pesticides & Veterinary Medicines Authority (APVMA) maintains the "PUBCRIS Registered Product Search Engine", which lists all registered chemicals for different weed species. Go to www.apvma.gov.au, then click on "SEARCH PUBCRIS for a product" and select the

appropriate common name for the weed you wish to control in the “Disease/Pest” field. The Pubcris database will return a list of chemicals registered for the control of that weed.

Timing herbicide use

Herbicides should be applied when the target plant is free of stress (e.g. heat and moisture stress) and is actively growing. Herbicide treatment of annual plants after seeding is obviously futile and wasteful of herbicide.

Foliar herbicide spraying

Herbicide spraying of foliage allows the largest area of plants to be treated in the least time and is often the best method to control large dense infestations of herbs or low-growing shrubs. Risks of off-target damage are highest when herbicides are sprayed and a high level of operator care and skill is essential to prevent injury to the operator, killing of neighbouring plants and the contamination of waterways.

Trees, large shrubs and scattered individual plants are not so well suited to foliar herbicide spraying as it is often difficult to apply the chemical to the leaves and the risks of off-target damage are relatively high.



Herbicide spraying of foliage — take care to avoid off-target damage

Cut & Paint herbicide application

Cut & Paint is a method for applying herbicide to the cut stems of smaller shrubs and trees (stem diameters of less than 10 cm) in order to poison their root systems and prevent them regrowing. Herbicides used in Cut & Paint are often applied neat, and are commonly used with an agent to help them penetrate through the timber in the stem and roots.

Great care must be taken to avoid spills and human exposure to high concentration herbicide. Brushes can flick liquid off into the eyes and skin of the weeders. Small squeeze bottles with narrow openings can safely dispense herbicides. Workers should always wear goggles, gloves and protective clothing.



Cut & Paint — quickly apply herbicide to the cut stem

Cut & Paint relies on the ‘draw-down’ of herbicide into the roots of the cut plant to be effective. When the plant is growing normally liquids in the stem are held up by suction from the leaves. The moment the vessels in the stem are cut this suction fails and the liquids start to withdraw towards the roots. Herbicide must be quickly applied after the stem is cut if it is to be drawn down into the roots — ideally within ten seconds.

Drill & Fill and Frill & Fill herbicide application

Beneath the outer bark of trees and shrubs is a layer of living tissue called the phloem, where the plant’s sap flows, carrying sugars, minerals, amino acids and liquids around the plant. Drill & Fill and Frill & Fill rely on the movement of this liquid to disperse herbicide throughout the plant. These methods are precisely targeted, preventing off-target damage, and if done well they are very effective.

When drilling a hole is made on a downwards angle through the bark and into the moist living tissue (but not right into the dead wood). When frilling the entry into the phloem is made with a tomahawk or chisel cut downwards through the outer bark and into the moist living tissue. The hole is then filled with herbicide, which is usually applied neat, sometimes with an agent to aid penetration.

Optimal depths for holes are generally 1–5 cm, depending upon the species, the thickness of the outer bark and the depth of the moist phloem tissue. Holes should be at 5 cm spacing around the stem, as close to the ground as possible.

For many species ringbarking does not usually work as the plant will quickly shut-down its phloem transport and vigorously re-shoot. Frill cuts must not ringbark the tree. They should be spaced around the plant to leave at least half the diameter of the stem uncut and able to still move sap up and down. Two rows of offset frill cuts can be made with a vertical spacing of at least ten centimetres for species requiring high doses of herbicide.

Basal bark herbicide application

Some herbicides can be applied directly to the bark at the base of a tree or shrub. As the spray area is limited risk of off-target damage is reduced.

Scrape and paint herbicide application

Climbers are sometimes best controlled by lightly scraping sections of their stems to remove the tough outer bark and painting the exposed moist inner tissue with herbicide which is translocated through the plant to kill roots and aerial parts.



Drilling through the bark



Frilling the entry into the phloem



Filling the hole with herbicide



Scrape & Paint. The protective outer stem is scraped from creepers / climbers and herbicide is applied to the exposed stem.

Who is responsible for the control of weeds?

The Victorian *Catchment and Land Protection Act* (1994) sets out responsibilities for the control of weeds which are listed as being ‘noxious’ in Victoria. Categories of weeds and responsibilities for their control are as follows:

Category	Control responsibilities
‘State Prohibited Weed’	Weeds that do not occur in Victoria and pose a serious threat or that do occur and can reasonably be expected to be eradicated. The Victorian Government is responsible for eradication and can direct land owners to prevent the weeds growth and spread.
‘Regionally Prohibited Weed’ in the North East CMA region.	Landholders (including government agencies) are responsible for control on their own land, VicRoads, DSE and Shire responsible for infestations of roadsides.
‘Regionally Controlled Weed’ in the North East CMA region.	North East CMA region. Landholders (including government agencies) are responsible for control on their own land, and on adjoining local roads. VicRoads is responsible for control along roadsides on major roads, DSE responsible for control along roadsides on undeclared roads.
‘Restricted Weed’ in the North East CMA region.	Trade in and spread of these weed is prohibited.

Landholders are responsible for their own land

Generally (except for a few very high threat weeds) the landholder of any given piece of land is responsible for the control of weeds on that land.

The Alpine Shire Council is responsible for the management of weeds on its owned and leased land. The Department of Sustainability and Environment is responsible for the management of unleased crown land and State forests. Parks Victoria is responsible for the management of National Parks and some other parks. Private landholders are responsible for the management of weeds on their land and for land (including Crown land) which they lease.

Garden plants going feral

Many, many weeds are escapees from gardens. Trees, shrubs, herbs and grasses have escaped from gardens in the Alpine Shire and have spread across the district and Australia.

St. John's Wort *Hypericum perforatum* is reported to have first escaped from a garden in Bright and now infests many thousands of hectares of pasture and grassy woodlands and forests across south-eastern Australia.

Many trees and shrubs planted in gardens and along town streets are serious weeds or threaten to become serious weeds. Desert Ash *Fraxinus angustifolius* is invading streams and floodplains down the Murray River. Acers are just starting to spread into riparian woodlands around the Shire.

English Ivy, *Hedera helix* and Blue Periwinkle, *Vinca major* are spreading from settlements to invade forests and riparian vegetation. Japanese Honeysuckle, *Lonicera japonica* is established along some streams and is just starting to get away along others.

Many gardens still have Brooms, *Genista* species, which continue to spread, dropping very long-lived seed which will germinate for many years to come.

As you read this book you may notice plants from your garden that have become weeds in the Shire. Removing weedy garden plants and replacing them with less troublesome species is an important step towards reducing invasions in the area. The Alpine Shire Weed Strategy includes an appendix listing observed weedy garden plants and suggested priorities for their removal.

More information:

www.weeds.crc.org.au/bushlandfriendlygardens/listweeds/U/VICEastern.html

www.wwf.org.au/publications/ListInvasivePlants/

www.ngia.com.au/publication_resources/NP_Pdf/NP_2000-12.pdf

African Love Grass, *Eragrostis curvula*

Family Poaceae **Origin** South Africa **Status** 'Regionally Prohibited Weed' in the North East CMA region.

Description African Love Grass forms a medium sized tussock with leaves 25–35 cm long and arching flowering stems to 1.2 m long tending to sprawl up and out from the centre of the plant and with a lead-grey seed head. African Love Grass can be distinguished from other native and exotic *Eragrostis* species by the presence of hairs around the stalk and leaf bases — sometime it is necessary to pull up several stalks before one still bearing hairs is found.

Ecology This tough fast growing grass invades pastures and is unpalatable to stock beyond its early growth stages. Proliferates as other species are selectively grazed and dominates pastures in a very short period. Poses a significant risk to the productivity of grazing lands in the Alpine Shire. Seed spread by wind, water, slashing, on clothing, animals.

Control Methods Small infestations best removed by digging out plants. If in flower seed heads should be cut and bagged to avoid scattering seed. Take care that seed heads do not adhere to clothing, shoes or vehicles. Plants can be treated with herbicides. Follow up weeding or spraying will be required to remove emergent seedlings.

More Information

www.dpi.vic.gov.au/dpi/vro/vrosite.nsf/pages/weeds_perennial_african_lovegrass



African Love Grass, *Eragrostis curvula*. Flowering stems to 1.2 m tall. Inset: leaf and stem bases with hairs.

Chilean Needle Grass, *Nassella neesiana* formerly *Stipa neesiana*

Family Poaceae **Origin** South America **Status** 'Restricted Weed' in the North East CMA region.

Identification Similar to many native *Austrostipa* species. Leaves about 30 cm long and 5mm wide (sometimes inrolled), with conspicuous parallel veins. Flowering stems are to about 1m high. Lusher lighter green colour than most native tussock grasses, and generally grows in pure dense stands. Seed heads usually have a purplish colour. Seeds are very sharp and have a long awn. Native *Austrostipa* grasses can be distinguished from the weed species by a distinctive seed feature. *Nassella neesiana* (and its weedy relatives) have a ring around the top of the mature seed called a 'corona' (smaller and pale on immature seed, so its absence is not an assurance of a native species, but its presence is an assurance of weediness). Flowers mostly October to February, but can continue until April.

Ecology Extremely threatening weed. Forms dense stands excluding all other ground flora. Very destructive in native ecosystems, displacing all other herbaceous plants, and has poor feed value, so reduces grazing productivity. Seed bank is long-lived, making a long term control necessary. Produces self-fertilized 'stem seeds' inside base of flowering stems in the spring/early summer, so removal of flower heads is insufficient — entire plant needs to be killed as early as possible in the growing season to reduce all reproductive material. Potential distribution of Chilean Needle Grass in Australia is 41 million ha. Most of the valley country in Shire could be affected. Spread is by needle-sharp seeds able to dig into skin, dispersing widely and via stem seeds.

Control Small infestations best removed by digging out plants after carefully removing any seed heads present. Should be bagged, binned and buried, or completely burnt in a very hot fire. Large infestations are hard to control due the large long-lived seed bank. Burning stimulates seed germination allowing easier access for control, however the open ground after burning is very suitable for germination of the weed's seed. It is important to ensure the grass is challenged by strong competition to reduce the survival of seedlings. Carefully timed intensive grazing can help control the species when it is mixed amongst other more desirable grasses.

More Information www.weeds.crc.org.au/documents/wmg_chilean_needle.pdf



Upper two seeds are Chilean Needle Grass, *Nassella neesiana* with distinctive corona. Lower seed is a native *Austrostipa* seed, lacking a corona.



Chilean Needle Grass, *Nassella neesiana*

Serrated Tussock, *Nassella trichotoma*

Family Poaceae **Origin** South America
Status 'Regionally Prohibited Weed' in the North East CMA region. Weed of National Significance.

Description Serrated Tussock is a fine-leaved tussock grass with tightly inrolled leaves. Leaves have fine upward pointing serrations that can be felt with the fingers. The direction of the serrations means it is easier to slide fingers up the leaf than down. Can be distinguished from native species

because; the tussock remains green right through summer, leaf bases are very slender and densely packed, inrolled leaves roll very easily between the fingers and ligule (small appendage at junction of leaf blade and leaf sheath) is ~1mm long and white without hairs – other grasses have ligule with hairs or teeth or do not have a ligule at all. Seeds are ~3mm long and have a needle-like awn 25-35 mm long. Flower heads droop to the ground when seeding, before breaking off entire.

Ecology Forms dense stands excluding all other ground flora. Very destructive in native ecosystems, displacing all other herbaceous plants, and has no feed value, so dramatically reduces the productivity of grazing land (some reports show a 95% reduction). Because it is seldom grazed the tussock has a strong competitive advantage and spreads rapidly as neighboring plants are eaten down. Seed heads are wind-blown and seeds attach to stock, humans and vehicles, so the species spreads fast. Generally does not grow in swampy areas (unlike the similar looking native *Poa* grasses, which are often in low-lying areas).

Control Methods Mature Serrated Tussock plants are vulnerable to disturbance and accessible infestations can be controlled by cultivation, cropping and pasture improvement. Individual plants can be chipped out with a mattock. Soil disturbance will stimulate seed germination, so follow-up control is essential. Where access is a problem herbicides can be used. Seeds will germinate for years to come, so twice annual checks and controls are essential to prevent re-infestation. Easing grazing pressure will ensure desirable plants have an opportunity to compete. A good cover of other species is essential to prevent germination of the weed.

More Information www.weeds.crc.org.au/documents/wmg_serrated_tussock.pdf
www.dpi.vic.gov.au and search for Serrated Tussock



Serrated Tussock *Nassella trichotoma* flowering
 Courtesy of Tasmanian Land and Water Professionals

Lower risk or less common grass weeds

Large Quaking Grass, *Briza maxima*

Light green annual grass with distinctive hanging seed heads. Large numbers germinate in autumn. Dominates ground flora in spring displacing indigenous species, dies in summer. Short lived seed bank can be mostly extinguished by good control in one year. Hand weed or sear with gas burner at 2–3 leaf stage. Anecdotal advice indicates that low doses of a grass-specific herbicide applied when plants are young selectively kills *Briza* without killing perennial native grasses or herbs — ask www.weeds.crc.org.au/main/enviroweeds.html

Pampas Grasses, *Cortaderia* species

Huge tussock grasses with flowering stems to 4 m high. Widely planted in gardens. Colonise disturbed ground. Not yet weedy in Shire but expected to become so. High fire risk from large fine fuel mass. Spread by windblown seed and rhizomes. Dig plants out or slash low and herbicide spray fresh regrowth.

Reed Sweet Grass, *Glyceria maxima*

Promoted in 1920s as pasture species for wet areas. Toxic to livestock. Forms dense pure infestations in swampy areas. Broad dark green foliage. Apparently flowers poorly in Shire, but spreads by rhizomes. Control by physical removal of all rhizomes (likely to be difficult) or application of registered herbicide.

Yorkshire fog, *Holcus lanatus*

Densely hairy widely planted pasture grass with dense flower head often tinged purple. Occasional invader of swampy vegetation. Produces high fuel loads. Dig out or herbicide treat.

Canary Grass, *Phalaris aquatica*

Widely planted pasture grass. Highly invasive, forms large tussock to 1m tall with flowering stems to 1.5 m. Dense



Large Quaking Grass, *Briza maxima*



Pampas Grasses *Cortaderia* species



Reed Sweet Grass, *Glyceria maxima*



Yorkshire fog, *Holcus lanatus*



Canary Grass, *Phalaris aquatica*

Great Brome, *Bromus diandrus*

leaves lead to extremely high fine fuel loads. Particularly invasive in damper vegetation, but also invades woodlands and forests, displacing all other ground flora. Very deep roots. Requires grazing or slashing to control tussock size. Control by physical removal or herbicide spraying in winter-spring. Burning removes dead leaves easing spray access to regrowth.

Great Brome, *Bromus diandrus*

Common grassy weed on graded and sprayed roadsides, also colonising disturbed stream banks. Bears drooping seeds with long awns in spring. Not noted as a significant environmental weed in the Shire and unlikely to persist against competition. Control by herbicide spray, physical removal or establishment of competitive plants.

Kikuyu, *Pennisetum clandestinum*

Kikuyu, *Pennisetum clandestinum*

Dense lush green mat-forming grass commonly planted in lawns and pastures. Invades damp areas and creek banks forming a thick mat of foliage suppressing all other ground flora. Rhizomes are difficult to dig out. Repeated herbicide spraying of infestation will kill entire plant. Do not disturb plant for days after spraying to allow herbicide to translocate through rhizomes.

Bamboo, *Phyllostachys aurea*

This Bamboo is a massive grass to 6 m tall spreading aggressively by rhizomes to form a large stand. Current infestations near Myrtleford do not threaten natural assets but could spread to do so. Control by slashing and spraying regrowth when it reaches 1 m tall, repeating until rhizomes are exhausted.

Bamboo, *Phyllostachys aurea*

Paspalum, *Paspalum dilatatum*

Commonly occurs on frequently disturbed verges along roadsides. Not noted as a serious weed in the Alpine Shire. Summer growing, control with herbicides when temperatures higher than 20°C.

Paspalum, *Paspalum dilatatum*

Blue Periwinkle, *Vinca major*

Family Apocynaceae **Origin** Mediterranean
Status Not listed in the North East CMA region.

Description Spreading creeper with paired waxy leaves and solitary blue/mauve flowers, to 50 cm tall in dense patches.

Ecology A very tough plant which is shade tolerant and forms dense stands excluding other ground flora. Plants spread rapidly by stoloniferous reproduction, particularly from dumped garden waste.

Control Small infestations are best removed by digging out plants and roots. Solarisation during warmer months also has some success. Spray large infestations during warmer months. Trials have found glyphosate to be the most effective herbicide, with follow-up spraying required after 6–12 months. Surfactants may increase herbicide effectiveness.

More Information

www.weeds.crc.org.au/main/envioweeds_archives_herbicides.html#periwinkle

Trad, Wandering Jew, *Tradescantia fluminensis* formerly *Tradescantia albiflora*

Family Commelinaceae **Origin** South America **Status** Not listed in the North East CMA region.

Identification Foliage is very glossy, due to its thick waxy cuticle. Leaves are 3–6.5 cm long and 1–2.5 cm wide, deep green, ovate with a distinctive stem-sheathing leaf base. Stems are paler green, and roots grow at the nodes when the stems touch the ground. Flowers are in small clusters at the end of branches, each has three white petals 7–10 mm long. Flowering time is September to February.

Ecology Extremely invasive weed of riparian zones, dominating river-flats and banks, and excluding all other flora. Does not reproduce



Blue Periwinkle, *Vinca major*



Trad, Wandering Jew, *Tradescantia fluminensis*

by seed, simply spreading by rooting at the leaf nodes where the stem contacts the earth. Dumped by irresponsible gardeners, and survives to form a new infestation. If dumping is in the head of a gully, the whole gully and creek system becomes infested.

Control Forms such dense infestations that it can be weeded simply by rolling one edge back on the rest of the infestation like a thick rug. Root system is shallow and small broken off roots should not be a problem — all stems must be removed, as they can resprout. Weeded plants should be removed for destruction by complete composting, heating or buried in landfill. Waxy cuticle on the leaf surfaces reduces the penetration of chemicals — an approved surfactant additive to herbicides may aid chemical penetration and effectiveness.

More Information www.nrw.qld.gov.au/factsheets/pdf/pest/pp97.pdf

Angled Onion, *Allium triquetrum*

Family Liliaceae **Origin** Western Mediterranean **Status** Not listed in the North East CMA region.

Identification Garlicky smell when trodden on or pulled. Has an underground bulb 1–2 cm in diameter, and grows 2 to 5 bright green 15–50 cm long and 5–20 mm wide slightly fleshy leaves per bulb. Flowering stems are triangular in cross section and up to about 50 cm long, each bearing white flowers hanging in a loose cluster in spring.

Ecology Forms dense pure stands along shaded river flats and in drainage lines completely excluding other understory vegetation. Reproduces via seed and also produces underground daughter bulbs from the parent bulb each year. Flooding and movement of soil are the main agents spreading seeds and bulbs.

Control Bulbs tend to be present in the top ten centimetres of the soil, so in small infestations they can be carefully dug up with spades and removed from the site. Slashing of foliage will also help reduce bulb vigour, reducing the density of an infestation and easing subsequent weeding. Plants can also be killed with a translocated herbicide, sprayed during spring, when bulbs are most depleted. Multiple year treatment will be required to kill all the bulbs.



Angled Onion, *Allium triquetrum*

Bulbil *Watsonia*, *Watsonia meriana* var. *bulbillifera*

Family Iridaceae **Origin** A human modified cultivar of a South African plant. **Status** Not listed in the North East CMA region.

Identification Sword-like leaves to approximately 80 cm long and 8 cm wide, with tapering pointed tips. Dull green leaves grow in a flat plane side by side, directly from ground level. Parallel leaf veins are clearly visible and can be felt on the leaf surfaces. Bears corms, rounded storage organs about 4–7 cm diameter which divide and provide a means of vegetative reproduction. Flowering stems are showy, to 2 m high, with many bright orange to red tubular flowers. Lower parts of flowering stem do not bear flowers, but grow rounded reproductive bulbils. Flowers from October to December, dies back to corms in late summer.

Ecology Does not produce viable seed but has two means of vegetative reproduction. Bulbils grow like seeds on the flowering stalk, drop to the ground and 'germinate'. Underground corms divide, and the resultant two corms grow independently. Forms dense stands which enlarge rapidly, completely dominating ground flora in areas where established. Spread by the movement of bulbils and corms in soil and water, but most commonly by slashing of stems with bulbils on them.

Control Cutting stems prior to bulbil formation is the easiest way to reduce the spread of the plant. Repeated slashing of the leaves of the plant depletes the energy stores of the corms. Small numbers of plants can be dug out individually, taking care to remove the parent corm and any daughter corms attached or nearby in the soil. Only a percentage of corms grow in any year, so controls must be used for several years to kill an infestation. Larger infestations can be removed by shaving the top ten or fifteen centimetres of soil away in order to remove all the corms present. Skilled bobcat or backhoe drivers can cover a large area quickly with this technique. Removed soil and corms should be buried deep in landfill, or killed by high temperatures (e.g. leaving in full sun for eight weeks over summer in black garbage bags).

Various herbicides are registered to control Bulbil *Watsonia* but the hard surface of their leaves tends to prevent chemical penetration. Bruising the leaves by bashing with a stick or club immediately before spraying may increase the effectiveness of applied herbicides. Surfactant chemical additives may also aid herbicide penetration.

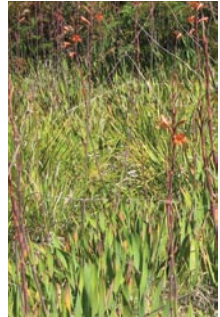
More Information www.dpi.vic.gov.au and search for “Wild *Watsonia*”



Bulbil *Watsonia*, *Watsonia meriana* *bulbillifera* flowers



Bulbil *Watsonia*, *Watsonia meriana* bulbils



Bulbil *Watsonia*, *Watsonia meriana* infestation

St. John's Wort, *Hypericum perforatum*



St. John's Wort, *Hypericum perforatum*

Family Clusiaceae Origin Europe, North Africa, Asia
Status 'Regionally Controlled Weed' in the North East CMA region.

Description Yellow flowered, upright herb to 1m tall with several stems emerging from a woody rootstock. Leaves are small, about 1.5–2.5 cm long and variable in width, with narrow and broader leaf forms existing. Leaves have small pale oil gland dots which are visible when looking through the leaf held up to bright light, and they have a prominent mid-vein. The yellow petals sometimes have black gland dots visible along their margins.

Ecology St. John's Wort is a very hardy herb with a perennial rootstock and rhizomes. It usually infests grazed grassy hillsides where competition from other plants is reduced by the grazing, but can invade relatively undisturbed areas. It can form a large percentage of the ground flora, displacing other indigenous plants and more desirable pasture species. Ingestion by livestock can cause photosensitization, loss of condition and death. Paler and less hairy animals are more susceptible to harm, and impacts are worse in sunny weather. Spread is by seed on livestock and machinery and by wind, water, dumped garden waste and lateral rhizomes.



St. John's Wort, *Hypericum perforatum*

Control Small infestations best removed by hand pulling, although care should be taken with larger plants to ensure they don't break off leaving the underground rhizome which will re-sprout.

St. John's Wort can be controlled with herbicides, which are most effective on seedlings and young plants, with larger plants likely to require repeated applications. Large infestations are hard to control, partly because they are often in steep, treed country where slashing or herbicide application is difficult.

Carefully managed grazing is reported to help reduce infestations. Grazing should be undertaken during winter when plants are more palatable and contain less toxin, using animals more resistant to the effects of the plants toxins, i.e. sheep, goats and dark cattle. Grazing should not be so intense that other vegetation is suppressed, as this allows St. John's Wort to germinate and spread.

More Information www.weeds.crc.org.au/documents/st_john_wort.pdf

Soursob, *Oxalis pes-caprae*

Family Oxalidaceae **Origin** South Africa **Status** Not listed in the North East CMA region.

Description Low growing herb with lush, soft green clover-shaped leaves and bright yellow flowers. Occurs in thick dense patches and scattered clumps.

Ecology Plants grow at very high densities and have a severe impact on native ground flora, often displacing all other plants. Fleshy roots and underground bulbils allow the plant to survive hot and dry periods and to rapidly proliferate in the cooler, wetter months. Plant's only weak point is when underground storage organs are depleted in winter/spring, just prior to flowering. Spread is believed to be vegetative, via bulbils. Bulbils are often spread by dumped garden waste, soil disturbance, machinery and earth movements. Once established plants spread very rapidly, and infestations can become very large.

Control Physical removal is not recommended as small bulbils will be left and these will regrow prolifically. Herbicides applied at the right stage of growth can kill most (but not all) of a vigorous infestation when applied just prior to or very early in the flowering period when the bulbs storage organs are most-depleted and most susceptible to the effects of the chemicals. This date is usually in mid-winter to spring, depending upon the latitude, elevation and variation of seasons. Follow up required for at least 2–3 years.

Black Knapweed, *Centaurea nigra*

Family Asteraceae **Origin** Western Europe **Status** State Prohibited

Description Upright perennial herb to 1m tall with hairy, ridged stems which are green darkening to purple as they age and are rough to the touch. Leaves are grey-green or green, hairy and rough. Basal rosette and lower stem leaves are variable in shape and commonly stalked, upper stem leaves are smaller (1–8cm) and stalkless. Flower heads are 12–15mm across (at base of flowers), occur on branch ends and are surrounded by dark bracts with long fine teeth on them. Individual flowers have large forked wide-spreading purple outer petals.

Ecology Not grazed by livestock and apparently has an 'allelopathic' effect, suppressing the growth of plants nearby. Occurs in small colonies and as scattered plants. Spreads by root growth, by short-range seed fall and by seed attached to animals, vehicles, etc. Known from lowland pastures and disturbed land along the Ovens River between Smoko and Porepunkah.



Oxalis pes-caprae
infestation



Oxalis pes-caprae fleshy
tubers and easily detached
round bulbils.



Black Knapweed *Centaurea*
nigra

Control As a State Prohibited weed there is an expectation that this species can potentially be eliminated from Victoria, and the State government is responsible for the control of the species but can direct land owners to prevent its growth or spread. Do not control infestations yourself, report them immediately to DSE on 136 186.

Paterson's Curse, *Echium plantagineum* Viper's Bugloss, *Echium vulgare*

Family Boraginaceae **Origin** Europe **Status** Both species are 'Regionally Controlled Weed' in the North East CMA region.

Identification *Echium plantagineum* Infestations of Paterson's Curse are often recognizable from a distance in grazing land, as they colour whole fields and hills purple. It has a stout taproot and a basal rosette of hairy, slightly glossy green leaves sometimes with a crinkled look and usually 10–20 cm long and up to 7 cm wide, which grow almost flat to the ground. Bristly aerial stems develop from the centre of the rosette in early spring, and bear leaves that are smaller and hairier than the rosette leaves. Flowers are purple, trumpet shaped and about 2–3 cm long. Flowering Time is from July to January.

Viper's Bugloss, *Echium vulgare* has more blueish (rather than purple) flowers which are only 12–15 mm long, shorter than those of Paterson's Curse. Viper's Bugloss has a very leafy flowering stalk, covered in small leaves.

Ecology *Echium plantagineum* infests open pastures and woodlands, and can dominate the ground flora. Germinates in autumn with the first rains, and quickly grows a basal rosette, allowing it to compete with other plants. It produces huge quantities of seeds.

Echium vulgare does not tend to form the same large dense infestations as Paterson's Curse, and can become established in more heavily trees areas.

Control Both species can be removed by hand pulling or mattocking.

Care must be taken to remove the taproot. Uprooted plants do not re-root, so can be left in the field. Aerial stems develop in the spring, and if they are present and have flowers or seeds on them they should be removed and burned or disposed of in landfill (immature seeds may be able to develop on the cut stems). Basal rosette plants can be spot sprayed with herbicide; the best time is March to June.

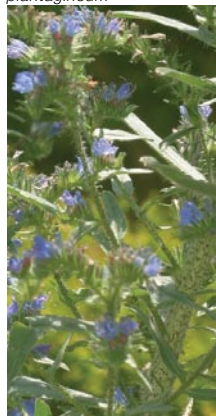
Careful grazing management can help with Paterson's Curse control — contact DPI for more information.

More Information

www.weeds.crc.org.au/documents/fs25_physical_pato.pdf



Paterson's Curse, *Echium plantagineum*



Viper's Bugloss, *Echium vulgare*

Orange Hawkweed, *Hieracium aurantiacum* King Devil Hawkweed, *Hieracium praealtum*

Family Asteraceae Origin Europe Status 'State Prohibited Weed'

Description Orange Hawkweed has bright red-orange flower heads to 15 mm in diameter on a stem 15–40 cm tall, usually with a single flower head per plant. Leaves are 10–15 cm long, dark green on their upper surface and lighter beneath. Stems are covered in conspicuous hairs 3–5 mm long. The plant bears leafy runners which spread across the ground.

King Devil Hawkweed looks a bit like some common yellow-flowered daisies, with yellow flower heads up to 20 mm in diameter on stems up to 60 cm tall. Stems are covered in sparse, long spreading hairs. Numerous stems are often borne on a plant. Leaves are up to 20 cm long, and are blue-green to red in colour, darker above than below, with scattered coarse hairs 2–4 mm long on their upper surfaces. The plant bears leafy runners which spread across the ground.

Ecology Hawkweeds are extremely invasive species that spread by runners and seed, forming dense mats which completely exclude most other species. They are extremely invasive in alpine ecosystems and have had massive impacts on the biodiversity of ecosystems in New Zealand, Canada and the United States. They have been found at Falls Creek and Mt Buller in the past decade. Seed is very easily spread by people, animals, wind, water, vehicles and in dirt.

Control If you find these plants anywhere, leave them undisturbed and immediately inform Council, Parks Victoria or the Department of Primary Industries. Incorrect efforts to control these plants will most likely result in their spread.

More Information www.weeds.crc.org.au/documents/wmg_orange_hawkweed.pdf



Orange Hawkweed, *Hieracium aurantiacum*

Lower risk or less common herb weeds

Spear Thistle, *Cirsium vulgare*

Spiny herb to 1.5 m, thin wings along stems lined with sharp spines. Flowers small and purple, in a dense head 2–5 cm across surrounded by spiny bracts. Common weed of pasture and along roadsides. Hand pull or spot spray with herbicides. Slashing before seed formation prevents seeding reducing plant numbers over time.



Spear Thistle, *Cirsium vulgare*



Caper Spurge *Euphorbia lathyris*

Caper Spurge *Euphorbia lathyris*

Irritant sap — do not handle without gloves

Erect herb 1–1.5 m, with paired, slightly succulent, smooth surfaced blueish-green leaves, 5–10 cm long and 1 cm wide. Stems and leaves bleed white latex irritating to the skin and eyes. Proliferates on disturbed stream banks, usually amongst other exotic riparian weeds. Plants easily hand pulled but wear gloves, glasses and protective clothing to protect from the irritant sap.

Hemlock, *Conium maculatum*

Extremely toxic — do not handle without gloves

Herb to 2 m tall. Soft, feathery leaves resemble parsley or some fern leaves. Hollow green stems with reddish-purple spots, at least close to the ground. Small white flowers in 'umbels' on ends of upper branches. Common near drains and creeks where it usually occurs amongst other weedy herbs and grasses. Dig out, taking care to remove the entire taproot. Do not handle this plant without gloves and adequate clothing, as a very small quantity of its toxin can kill an adult human. Apply chemical controls when plant is actively growing in spring.



Hemlock, *Conium maculatum* leaf



Hemlock, *Conium maculatum* stem base

Purple-top Verbena, *Verbena bonariensis* / *Verbena incompta*

Common herb on roadsides, disturbed ground and in cultivated areas. Not noted as a significant environmental weed in the Shire. Control by hand pulling removing major roots or by herbicide — see PUBCRIS database on www.apvma.gov.au

Fleabane, *Conyza* species

Soft-leaved herb with basal rosette and upright flowering stem about 1 m tall. Common on roadsides, disturbed ground and in cultivated areas. Control by hand pulling removing major roots or by herbicide spraying at rosette stage.



Purple-top Verbena, *Verbena bonariensis* / *Verbena incompta*



Fleabane, *Conyza* species

Japanese Honeysuckle, *Lonicera japonica*

Family Caprifoliaceae **Origin** East Asia **Status** Not listed in the North East CMA region.

Description A shrubby climber with paired light green leaves 3–8 cm long and 1–4 cm wide which can form a dense infestation. Strong-scented white and yellow-cream flowers are paired in the upper branches and have five narrow petals which are fused in the lower parts, and split into two lips higher in the flower. It produces shiny black berries 6–10 mm long. Stems are covered with dense, short hairs when young. Flowering is mostly autumn and winter.

Ecology A fast growing weed of riparian areas and damp forests. It is very invasive, covering large areas of ground and growing over indigenous plants, starving them of light. Spread is predominately by vegetative production, but also by seed. Commonly spread by dumped garden waste and water. Birds spread seed by ingesting fruit.

Control Small infestations are best treated by digging out plants and roots, taking care to remove all of the root crown and major roots. Aerial ports can be left to die provided they are not in contact with the ground. Follow-up checking will be necessary in the following year to remove regrowth from missed roots.

Small stems can be treated with the 'cut & paint' method. Larger infestations can be sprayed with a herbicide, however, care must be taken to avoid killing neighbouring plants. Repeat controls will most likely be required.

Removal of climbing stems can damage the native trees and shrubs it grows through. Such growth can be cut off well above ground level, leaving it to wither and die in the indigenous tree and shrub canopy. Any fruit on remaining stems should be removed to prevent further dispersal.



Lonicera japonica in flower



Lonicera japonica over shrub

English Ivy, *Hedera helix*

Family Araliaceae **Origin** Europe **Status** Not listed in the North East CMA region.

Description A groundcover and prolific climber with variable dark to light green thick-textured lobed leaves that are darker green on top, with a slightly waxy surface and with more matt, paler green undersides. Leaves on climbing flowering stems are diamond shaped. Stems are rough and covered in fibrous roots which attach it to the bark of trees. Flowers are small and inconspicuous. Mature fruits are black, about 5–10 mm diameter and are borne in a hemispherical umbel during winter-spring.

Ecology Invades many types of forest vegetation, covering the ground completely, then climbing tree trunks, producing non-lobed leaves and then beginning to flower. Slowly kills supporting trees, due to its weight and increased fungal infection caused by the Ivy roots penetrating the tree's bark. Does not flower when growing on the ground, only becoming reproductive when it is climbing. Older infestations can cover large areas and prevent any recruitment of native species. Plants can live over 100 years. Spread by seed and stem rooting. Birds and foxes disperse seed after ingesting berries. Also spread by water, machinery and dumped garden waste. Fruits can survive the mulch decomposition process and germinate in spread mulch.

Control The most important thing to do in controlling *Hedera helix* is to prevent it flowering by stopping it climbing. Climbing stems should be cut off well clear of the ground (so they cannot re-root) and can simply be left to die in the tree. The dead ivy foliage is not very attractive, but the tree will now survive.

Control of stems across the ground requires more effort. These must be removed completely (any bits left can re-shoot) or sprayed with an appropriate herbicide (with surfactant). At the very least stems should be pulled a metre or more away from the base of any trees to slow their climbing.



Hedera helix in fruit



Hedera helix flowering



Hedera helix stems on Eucalyptus

Bridal Creeper, *Asparagus asparagoides*

formerly *Myrsiphyllum asparagoides*

Family Asparagaceae **Origin** South Africa **Status** 'Restricted Weed' in the North East CMA region.

Description A scrambling climber, forms a dense canopy on top of other plants. Has masses of glossy green leaves, usually to 30 mm long and 15 mm wide. Leaves have multiple, almost parallel, veins running from base to tip. Flowers are pale greenish-white, and bears round red berries 6–10 mm in diameter. Grows a few fine stems from numerous underground tubers which occupy most of the space beneath dense infestations. Flowers August to December, fruits November to January.

Ecology Has rapidly naturalised extensive areas of south-eastern Australia in the past twenty years, dominating some vegetation types. Of great concern because it can completely displace understory vegetation and grow over shrubs and small trees, starving them of light and killing them whilst also preventing seedling recruitment. The mass of underground tubers acts as a huge energy and moisture reserve, allowing it to survive very dry conditions and to re-grow very rapidly each autumn. Spread is by seed which is widely animal dispersed, as well as by the extension of root masses and from dumped waste, machinery and vehicles.

Control Bridal Creeper can be treated by physical removal, spraying with herbicides and biological control. Stems of Bridal Creeper break very easily from the underground tubers, making hand weeding difficult. Plants must be dug out of the ground intact, and should be disposed of in landfill. Care should be taken to ensure the whole root mass is removed.

Herbicides are very useful for controlling this species. Application should occur during Autumn and Winter in the growth phase before flowering and fruiting. Herbicides applied as it dies back in the summer are likely to be ineffective. Care must be taken not to kill native species that Bridal Creeper is growing over and near. Anecdotal reports indicate that Metsulfuron-methyl herbicides (registered for this species) are effective when applied in winter, but death often does not occur until the Spring.

Two biological controls have been particularly successful, a leafhopper, *Zygina* sp., and *Puccinia myrsiphyllia*, a rust fungus. The leafhopper can be propagated and dispersed by community and school groups. Contact Keith Turnbull Research Institute on 9785 0135 for more information.

More Information www.weeds.crc.org.au/documents/wmg_bridal_creeper.pdf
www.ento.csiro.au/weeds/bridalcreeper/index.html
www.ento.csiro.au/weeds/pdf/BC_Brochure.pdf



Bridal Creeper, *Asparagus asparagoides*

Madeira Vine, *Anredera cordifolia*

Family Basellaceae **Origin** South America **Status** Not listed in the North East CMA region.

Description Red stems and rounded thick-textured fleshy leaves, which often have undulating edges. The vine bears long plumes of small creamy white flowers, and light brown or green potato-like aerial tubers about 1 to 2 cm in diameter grow on its stems and drop from the vines to be spread by water, animals and in garden cuttings or mulch.

Ecology A very serious weed of remnant bushland and riparian areas in coastal eastern Australia where it grows up and over shrubs, dominating the vegetation community. Hard to control because the aerial tubers are not easily killed, and drop to recruit in large numbers if the parent plant is cut. It has not proven to be very weedy inland to date, however this may rapidly change with climate change. Spread is mostly from aerial tubers which are dropped from the vines branches, and which are easily transported in soil or by water.

Control During hand removal the aerial tubers can easily break off the plant and fall to the ground. A ground sheet can be used to capture the tubers, which should be disposed of in landfill. Subterranean tubers and roots are easily broken when they are dug from the ground so great care should be taken if digging this plant out. Herbicides can be applied by spraying over the plant or by Scrape & Paint application to sections of the lower stems. Fluroxypyr herbicides are registered for Madeira Vine and anecdotal reports indicate they work well.



Madreira Vine, *Anredera cordifolia*

Spindle Tree, *Euonymus europaeus*

Family Celastraceae **Origin** Europe and Western Asia **Status** Not listed in the North East CMA region.

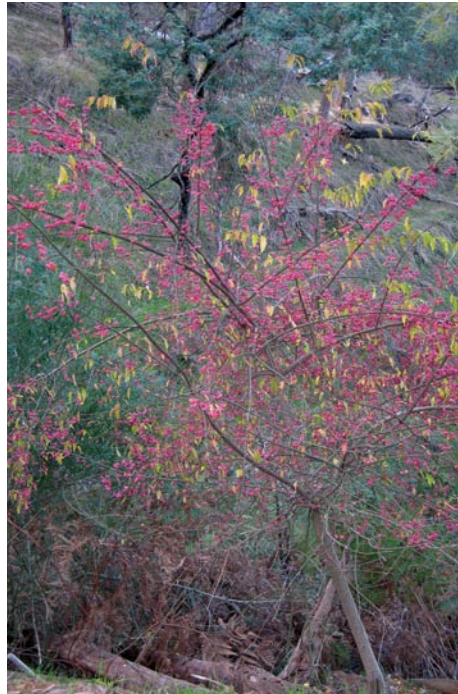
Description A multi-stemmed shrub to 4m tall with paired leaves about 4–6 cm long and conspicuous pink fruits in the early winter, which open to reveal seeds with bright orange covering within.

Ecology A previously unknown weed in Australia, behaving in an aggressive manner near Myrtleford. Has shown some ecological range successfully colonising land from Phragmites Reed dominated areas under River Red Gums on the flood plain upslope into grassy hillside Narrow-leaf Peppermint forest. Appears to have the potential to become a serious weed in the Alpine Shire. Known to be weedy on the north island of New Zealand and in eastern United States. Apparently successfully spreading by seed as no suckering obvious and plants are widely spaced. Given the conspicuous fruit and wide spacing of plants it is likely that the seeds are bird dispersed. Range of sizes suggests successful recruitment is happening repeatedly.

Control No experience of control to date. Cut and paint is likely to work, with removal of all aerial material for incineration or deep burial.



Spindle Tree, *Euonymus europaeus*



Spindle Tree, *Euonymus europaeus*

Hawthorn, *Crataegus monogyna*

Family Rosaceae **Origin** Western Asia, Europe **Status** 'Regionally Controlled Weed' in the North East CMA region.

Description Large, tough thorny shrub or small tree, often with stunted appearance. Leaves are about 4–6 cm long and lobed. Hawthorn bears copious numbers of fragrant white flowers in spring followed by small red berries.

Ecology Hawthorn appears to be best able to colonise lightly disturbed bushland, such as land carrying some grazing pressure but still with tree canopy and some indigenous understory. It can form very dense thickets excluding all other woody species. Dense stands of Hawthorn impact on grazing productivity and displace native vegetation, reducing the re-establishment of native trees.

Seedlings were noted establishing amongst a dense sward of indigenous grasses, suggesting that it has further invasive potential. Seed is apparently relatively short-lived, so control of existing stands should result in rapid reduction in plant numbers, without a requirement for extensive follow-up. Spread is via seed and suckers. Foxes, birds and native animals disperse seed after consuming fruit. Also spread by machinery, vehicles and dumped garden waste.

Control Young plants can be removed by hand, taking care not to snap off any major roots which would re-shoot. Plants with stems less than 10 cm are easily removed by the 'cut & paint' method. Large old plants are best controlled using 'drill (or frill) & fill' method, undertaken during the spring-summer growing season. Drill holes 25–35 mm deep, 5 cm apart in trunk close to the ground and fill holes with herbicide.



Hawthorn, *Crataegus monogyna*

Montpellier Broom, Cape Broom, *Genista monspessulana*
English Broom, Scotch Broom, *Cytisus scoparius*
Tree Lucerne, Tagasatse, *Chamaecytisus palmensis*
Gorse, Furze, *Ulex europaeus*

Family Fabaceae **Origin** Europe **Status** *Genista monspessulana*, *Cytisus scoparius* and *Ulex europaeus* are all 'Regionally Controlled' weeds in the North East CMA region. *Chamaecytisus palmensis* is not listed in the North East CMA region.

Description These shrubs are all from the pea family and bear bright yellow flowers (except Tree Lucerne, with white flowers) that have a distinctive pea-flower structure, with five distinctively arranged petals.

Genista monspessulana is an erect shrub usually about 1.5–2 m tall with silky-hairy leaves divided into three leaflets. Leaves are borne all over the plant.

Cytisus scoparius is an upright shrub to 2.5 m tall, with dense strongly ridged and five-angled stems which are held erect. Stems bear small three-leaflet leaves, but these drop early and the plant is often almost leafless. Red-yellow flowered varieties are not uncommon. Seed pods are almost hairless.

Chamaecytisus palmensis is a softly haired shrub to about 1.5 m tall with many leaves divided into three leaflets.

Ulex europaeus is an extremely spiny evergreen shrub which appears to be leafless and has stems completely covered in very sharp spines.

There are many native peas with similar flowers — carefully identify before control.

Ecology All species are invasive and can establish in pasture, grassy and shrubby forests and riparian zones. They form dense infestations and are capable of excluding all other vegetation. They are prolific seed producers, so enormous seed banks form beneath infestations. They burn with intensity and fire stimulates mass germination of their seeds. They all have long-lived seed, which means control of seedlings is necessary for many years after parent plants have been killed.

Genista monspessulana and *Cytisus scoparius* form dense stands in many forest types.

Chamaecytisus palmensis is a useful fodder plant that is widely planted on grazing properties and occasionally becomes weedy.

Ulex europaeus is a particularly bad weed of neglected pastures which it completely dominates preventing stock access. Gorse provides harbour for rabbits and foxes and big stands have huge biomass with high surface area and burn with extreme intensity.

The species are all spread by seed, which moves in soil livestock in hooves and commonly by earth moving machinery. *Genista* and *Ulex* flick seeds metres away from the parent plant as seed pods dry and twist open. Birds, ants, vehicles, dumped waste and water also spread seeds. Seed spread from road work activities is a particular problem with these shrubs, and care must be taken to ensure gravel pits are free of these weeds.

Control Small infestations are best removed by hand, as the roots are strong and hand pull easily. Gorse stems are more brittle and break off more easily, so follow-up digging may be required.

Well established populations are best killed by herbicide during the spring/summer growing season. Dense stands may require several treatments in order to get good spray access to all areas of foliage, and a registered surfactant may increase herbicide efficacy. 'Cut & paint' can be applied to scattered larger plants.

Seed remains viable for many years and well established infestations will have a large seed bank in the soil. The seed bank can be depleted by burning, which will stimulate a large percentage to germinate, followed up by rigorous control of seedlings. This approach should be utilised wherever possible. Plants will continue to germinate several years after fire. Tree Lucerne infestations could usefully be slashed and harvested for stock feed, with spraying of the regrowth.

More Information

[www.weeds.crc.org.au/
documents/broom.pdf](http://www.weeds.crc.org.au/documents/broom.pdf)



Tree Lucerne, Tagasatse, *Chamaecytisus palmensis*



Montpellier Broom, Cape Broom, *Genista monspessulana*



Gorse, Furze, *Ulex europaeus*



English Broom, Scotch Broom, *Cytisus scoparius*

Himalayan Honeysuckle, *Leycesteria formosa*

Family Caprifoliaceae **Origin** Himalayas **Status** Not listed in the North East CMA region.

Description A large shrub with many hollow stems up to 5 m tall, and with paired green leaves tapering to a narrow point. White flowers occur in drooping spikes, and are surrounded by red-purple bracts.

Ecology Occupies areas also suited to Blackberry, with which it commonly occurs. Can form dense stands excluding all other understory vegetation and was well established on the flanks of Mt. Buffalo prior to the 2002 bushfires, where it had moved from damper areas onto drier hillsides. Following the January 2003 fires there was extensive regeneration in drainage lines however hillside populations were eliminated, presumably due to the intensity of the fire destroying the seed bank. Spreads by suckers, root fragments, rooting from stem segments and seeds. Fruits eaten and dispersed by deer, foxes, native animals.

Control Small plants can be removed by hand, taking care to remove the roots. Anecdotal reports indicate that larger plants have been reported to be successfully controlled using commonly used herbicides by spraying or the 'cut & paint' method, however the PUBCRIS database indicates that no herbicides are registered for this species. Any controls should be undertaken in spring before fruits have developed when plants are actively growing. Herbicide treatment during the colder months may be ineffective due to plant dormancy. Dense infestations can be slashed and then regrowth sprayed the following year. Follow up may be required for all forms of control. Ensure cut material is disposed of appropriately to prevent re-rooting from stems.



Himalayan Honeysuckle, *Leycesteria formosa* infestation



Himalayan Honeysuckle, *Leycesteria formosa* fruits

Broad-leaf Privet, *Ligustrum lucidum*

Family Oleaceae **Origin** East Asia **Status** Not listed in the North East CMA region.

Description A large shrub or small tree growing up to 10 m, with rather thick, broad, dark green leaves, pointed at the tip, growing in pairs. Small white flowers occur in large clusters at the end of branchlets, followed by masses of oval to round berries which mature to black.

Ecology Forms dense stands along creeks and rivers and in damp gullies densely shading the understory and excluding all other species. An extremely problematic weed of coastal NSW and Queensland likely to become a very bad weed in the Alpine Shire. Spread by seed and root suckers. Birds and bats disperse seed after ingesting fruit.

Control Small plants can be removed by hand, taking care to remove all major roots within the soil to prevent them resprouting. Removed material should be bagged and deep-buried or incinerated.

Larger plants can be controlled using registered herbicides applying the 'cut- paint', 'drill & fill' or frilling method with close-spaced holes or cuts to maximise herbicide treatment. Effectiveness can be increased when applying the 'cut & paint' method by stripping back below the cut and applying to the exposed trunk as well as cut surface. Follow up is likely to be required as plants are known to re-shoot after treatment.



Broad-leaf Privet, *Ligustrum lucidum*
www.invasive.org



Broad-leaf Privet, *Ligustrum lucidum*

Blackberry, *Rubus fruticosus* aggregate

Family Rosaceae **Origin** Europe **Status** Weed of National Significance (WONS). 'Regionally Controlled Weed' in the North East CMA region.

Description The *Rubus fruticosus* aggregate includes several closely related species. Very widespread large climbing shrubs that form dense thickets often 2–4 m high, sometimes much higher. They have arching canes covered in large thorns and dark green leaves. Bear white five-petalled flowers and produce masses of edible berries, red when young, turning black on maturity.

Ecology Establish in gullies, along rivers, on damp hill slopes, in pasture and forestry plantations, forming huge infestations covering hectares. Apparently most vigorous in areas of increased fertility. Infestations reduce land productivity, cause track closures, prevent access to waterways and can totally displacing native flora species and act as harbour for feral animals. Impacts are particularly extreme along waterways where plants completely displace riparian vegetation communities, alter stream ecology and contribute to erosion. Disturbance (road building, road grading, overgrazing, clearfelling, a flood which strips away creekside vegetation, animal diggings etc.) appears to make establishment easier, and once established a small infestation can spread vegetatively using rooting cane tips as much as 6 meters in the growing season.

Has considerable root mass, largely in shallowly buried crown, which is the only truly perennial part of the plant and lives for several years (individual canes live for one or two years). Control efforts must kill the root crown.

Plants dormant through the winter and drop some or all of their foliage during this time. Seedlings germinate and canes grow rapidly in spring and flowering and fruiting occurs during the summer months. Canes tip-root in autumn.

Spread by seed and tip rooting of canes. Seeds move large distances due to ingestion of fruit by birds, foxes and native fauna. Also spread by water, machinery, roadworks and dumped waste.

Control Wear protective gloves and clothing. Small infestation removed by digging out plants taking care to remove the entire root crown, or using the Cut & Paint herbicide application method. Broken cane segments on ground can re-root and grow. Cut & Paint is best method native vegetation where avoidance of off-target damage is critical.

Root crowns can be ripped from ground with earth moving equipment with follow-up spraying, slashing or ripping of resprouting shoots. Slashing increases susceptibility to Rust Fungus infection, but must be undertaken every few weeks to be effective in directly suppressing the plant. Do not slash before herbicide application, as the reduced leaf area reduces herbicide uptake.

Large infestations most effectively controlled using herbicide sprays, applied during the late spring, summer or early autumn, only when plants not under heat or drought stress. In large infestations an access corridor cut or bulldozed into the patch can ease access making spraying larger areas possible. One study found that Glyphosate was the most effective

herbicide if used during good growing periods (Metsulfuron-methyl was not tested in the study) and that all herbicides were much less effective if applied to moisture stressed plants. Anecdotal reports indicate that Glyphosate + Metsulfuron-methyl herbicides are very effective against Blackberry (note: this herbicide combination is very effective at killing many plants — great care must be taken to avoid off-target damage — this herbicide combination anecdotally reported killing mature *Eucalyptus* trees standing over sprayed Blackberries). Sprayed Blackberries should be clearly signposted and environmentally benign dyes should be used to warn Blackberry fruit collectors.

Dead canes can be burnt to improve access for further control or follow up rehabilitation works. Rehabilitation using indigenous plant is important as competition is essential for preventing invasion by other species or re-invasion by Blackberry. Direct seeding with native colonising species (e.g. daisy shrubs, peas, wattles & some grasses) can help suppress seed germination, but is unlikely to suppress plants resprouting from healthy crowns.

Biological control using Rust Fungus has had some success in the past, reducing Blackberry infestation vigour and size. New strains have been released in '05/'06 in a few locations in north-east Victoria, and it is anticipated that these new strains will affect the weed in the Alpine Shire over the next few years. Some Blackberry types will not be affected by rusts and controls should be focused on plants that are not affected to prevent them spreading into the niches vacated by the rust-susceptible types.

Prioritising Control Areas Complete control of Blackberry is unlikely for decades and then only if much effort is invested. Suggested criteria to establish optimal areas for control are where; Access is not too difficult, There are high risks to rare native vegetation types, e.g. lowland riparian vegetation, Impacts to agriculture are greatest, Rust fungus is not establishing, There are threats to adjoining land, There are land stability issues that Blackberry control will help mitigate.

Further information www.weeds.crc.org.au/documents/wmg_blackberry.pdf
www.weeds.crc.org.au/documents/blackberry.pdf



Blackberry infestation spreading from disturbed earth along trackside



Blackberry, *Rubus fruticosus*

Cotoneaster, *Cotoneaster* species

Family Rosaceae **Origin** northern temperate Europe and Asia. **Status** Not listed in the North East CMA region.

Description Cotoneasters are multi-stemmed shrubs with discolorous leaves that are green on top and whitish underneath. They have many white or pink flowers to approximately 1 cm across and masses of small red fruit, 6 to 8mm in diameter that are eaten and dispersed by many different birds.

Ecology Cotoneaster's red berries are attractive to birds, and they are dispersed widely as a result. They form large multi-stemmed shrubs in cooler, moister forest types.

Control Cotoneasters sucker very readily. They must be completely dug out of the ground, roots and all, and disposed of, or be treated with herbicide in place.

Herbicides are best applied by lightly scraping stems down to the living bark and painting the living tissue with herbicide, or by cutting all stems off just above ground level and very quickly painting all of the cut stumps with an approved herbicide mixture.



Cotoneaster glaucophyllus



Cotoneaster divaricatus



Cotoneaster glaucophyllus



Cotoneaster pannosus

Sweet Briar, *Rosa rubiginosa*

Family Rosaceae **Origin** Europe, Asia **Status** 'Regionally Controlled Weed' in the North East CMA region.

Description Upright, thorny shrub, with typical rose-like appearance and leaves divided into leaflets typically 1–2 cm long. Often has a number of stems growing from a central base to 1–1.5 m tall. Bears attractive flowers with pink-white petals and has distinctive, smooth, egg shaped red fruits (rosehips).

Ecology Infestations of Sweet Briar are most severe in grassy woodlands where there is a lack of competition and only moderate grazing pressure. Spread is by seed, suckers and root fragments. Birds and animals disperse seed after ingesting fruit. Seed and cuttings also spread by water, machinery and dumped garden waste.

Control Small plants can be removed by digging out plants and roots. Larger plants should be 'cut and painted', preferably during spring before fruit develops. All cut fruiting material should be disposed of appropriately to prevent spread of seed. Larger infestations can be sprayed in spring before formation of berries.



Sweet Briar, *Rosa rubiginosa*

Tutsan, *Hypericum androsaemum*

Family Clusiaceae **Origin** Europe **Status** 'Regionally Controlled Weed' in the North East CMA region.

Description Woody upright shrub to one meter high. Reddish-green stems with broad green to reddish leaves without stalks. Conspicuous yellow flowers followed by large berries, 1 cm in diameter, red turning black when ripe and containing purplish juice.

Ecology Very invasive and destructive weed in other parts of Victoria, on par with Blackberry for its ability to invade and displace native vegetation. Spread by seed which foxes and birds eat and by water, machinery, vehicles and dumped garden waste.

Control Small infestations can be removed by hand, taking care to remove all major roots. Larger infestations manually treated or controlled using the Cut & Paint method applying herbicide to each cut stem or by spraying with herbicide. A rust fungus has had some success in other parts of Victoria and may prove to be effective in the north-east. For more information on this fungus contact your local land management authority.



Tutsan, *Hypericum androsaemum* flowers



Tutsan, *Hypericum androsaemum* berries



Tutsan, *Hypericum androsaemum*

Spanish Heath, *Erica lusitanica*

Family Ericaceae **Origin** South-western Europe **Status** Not listed in the North East CMA region.

Description *Erica lusitanica* is an upright shrub that commonly grows to 1.2 m but can grow taller than 2 m, often with many erect stems branching off low on the plant. It has crowded small thin leaves 4–7 mm long and about 0.5 mm wide. Young stems are covered in unbranched hairs.

Spanish Heath bears masses of small drooping flowers white and pink flowers in the upper branches, and flowers from June to September.

Ecology Spanish Heath invades and dominates roadsides and some dryer woodlands and forests where it can form very dense stands. It spreads via its very fine pepper-like seed, which is able to blow in the wind and by suckering, particularly after it is slashed.

Control Any control techniques must ensure that the roots are killed or mostly removed to prevent resprouting. Slashing usually just results in the regrowth of multiple suckers. Small plants can be hand pulled, and the root system will come out of the ground (weeding after rain helps). Larger plants may need to be dug out with a shovel or mattock. Stems cut just above ground level and immediately painted with an appropriate herbicide usually die. Peeling back the outer bark on the lower part of the stems and herbicide painting the inside of the bark and the exposed inner bark will increase the amount of herbicide absorbed by the plant, and improve the chances of killing the root system. Larger infestations can be sprayed.



Spanish Heath, *Erica lusitanica*

Holly, *Ilex aquifolium*

Family Aquifoliaceae **Origin** Europe **Status**
Not listed in the North East CMA region.

Description Holly is a large shrub or small tree to 10 m tall with glossy dark green leaves, with paler, dull undersides and very sharp spine-tipped lobes. Leaves are often undulate, so spines stick out at irregular angles. Holly bears small pale pink or dull white flowers in threes at the base of its leaves, and develops bright red fruits about 1 cm long in summer and autumn.



Holly, *Ilex aquifolium*, with spine-tipped leaves and bright red fruit

Ecology Holly is a formidable weed in wet forests in various parts of Victoria. Fruits are bird dispersed, and are able to germinate and grow in heavy shade. The plant thrives in moist forest environments and can form impenetrable thickets.

Control Holly control requires thick gloves and commitment! It is firmly rooted so only hand pull small plants. Drill/Frill and Fill is the best method for larger plants as it does not necessitate removal of the very spiny foliage, and requires relatively small quantities of chemicals to be used. Drill low on the stem, cut and mid-sized plants. Take care to remove broken-off stem pieces, as they may re-root.

Lower risk or less common shrub weeds

Irish Strawberry Tree, *Arbutus unedo*

Small to medium evergreen shrub/tree, leathery green leaves with serrated edges. Flowers bell shaped in drooping clusters, followed by round, warty fruit turning from green to orange-red. Noted on damp rock face near Bright.

Firethorn, *Pyracantha angustifolia*

Evergreen shrub to 5 m high and wide, covered in thick-textured, narrow leaves and sharp rigid spines. Masses of flowers over spring-summer, followed by small orange berries which cover the length of branches in clusters. A minor weed of roadside areas in the Shire and appears to be dispersed by birds to a limited degree. Beware of sharp spines!



Irish Strawberry Tree, *Arbutus unedo*

Cherry Laurel, *Prunus laurocerasus*

Shrub with large glossy leaves 9–18 cm long, 3–6 cm wide with sparsely toothed margins. Invades bush on town fringes, presumably by bird dispersed seed. Dense inflorescences grow up from branches in spring, purplish black fruits about 12 mm long. Stems root when touching ground. See www.weedsbluemountains.org.au/cherry_laurel.asp.

Sallow Wattle, *Acacia longifolia*

A rounded shrub usually 1.5–3 m tall with phyllodes (leaves) 5–20 cm long and 5–15 mm wide. Victorian native not naturally occur in the Alpine Shire and now escaping from gardens to invade drier woodlands and forests.

Butterfly Bush, *Buddleja davidii*

A large sprawling shrub with tangled stems bearing paired leaves which are 4–20 cm long and 1–8 cm wide, usually with toothed margins. Upper leaf surfaces dark green undersides with dense white hairs. Dense inflorescence of small white, violet or purple flowers, with orange inside, on ends of branches.

Control of above species Remove small plants by hand, taking care to remove all major roots. Control medium plants using cut & paint, and large with drill & fill or frill & fill.



Sallow Wattle, *Acacia longifolia*, shrub about 2 m tall



Butterfly Bush, *Buddleja davidii*



Firethorn, *Pyracantha angustifolia* close up of leaves and fruits. Fruits are less than 1 cm diameter



Cherry Laurel, *Prunus laurocerasus* toothed leaves commonly 10–15 cm long

Apple, *Malus domestica*

Family Maloideae **Origin** Europe **Status** Not listed in the North East CMA region.

Description Small to medium deciduous tree with light green leaves 3–13 cm long and 1.5–7 cm wide. Leaf undersurfaces are usually covered in a dense layer of fine hairs. White/pink flowers form in spring followed by apples in the summer.

Ecology Widely established close to roads in the Shire from where they appear to spread slowly into bushland. Seed is spread by discarded apple cores which are commonly thrown from cars and by birds and animals after ingesting fruit.

Control Small plants can be removed by hand, taking care to remove all major roots. Larger plants can be controlled using the Cut & Paint method. Trees can be controlled using the Drill or Frill & Fill method.



Apple *Malus domestica*

Cherry Plum *Prunus* species

Family Rosaceae **Origin** Europe, Asia **Status** Not listed in the North East CMA region.

Description Small to medium deciduous tree, with finely toothed thin-textured leaves from lush green to reddish-purple. White flowers appear with or before the appearance of the leaves in early spring and develop into plums in the summer. Young branches sometimes spiny. It is likely that a range of cultivars and possibly several species of Plum are present in the Shire.

Ecology *Prunus* trees are establishing widely in the Alpine Shire, colonising creeklines and areas of drier woodland. Spread by seed which is ingested by foxes, birds and other animals. Also spread by water, contaminated soil, dumped garden waste and discarded pips — commonly thrown from cars.

Control Small plants may be removed by hand but can become quite difficult to remove when only a few years old. Large plants can be controlled using the Cut & Paint or Drill or Frill & Fill method. Follow-up work may be needed as plants occasionally re-shoot.



Cherry Plum *Prunus* species

Olive, *Olea europaea*

Family Oleaceae **Origin** SW Asia and Mediterranean **Status** Not listed in the North East CMA region.

Description Small to medium sized bushy, spreading evergreen tree, with thick, paired narrow leaves (generally about 1 cm wide and 5–8 cm long) olive-green above and paler below. Bears inconspicuous funnel shaped cream-yellow flowers followed by oval green fruit which turns to purple-black when ripe.

Ecology Olives are native to places with climates very much like south-eastern Australia. They are widely planted as a fruit crop and readily invade dryer woodland and forest types, forming extensive stands and becoming very serious environmental weeds. Olive do best in places with high winter rainfall and dry summers, suggesting they will do very well in many parts of the Alpine Shire. Trees are very tough and long lived and are quite hard to kill, resprouting from cut stumps and after fire. Olives are flammable and can increase fire risks. Spread by seed and suckers. Foxes and birds disperse seed widely after ingesting fruit. Abandoned olive groves are a substantial source of seed.

Control Small infestations and young plants can be controlled by hand pulling, taking care to remove the entire root system. Larger infestations and older plants are best controlled using the Drill or Frill & Fill method. Cut and paint is reportedly less effective. Treatments can be applied throughout the year, avoiding the summer months when moisture stress may reduce herbicide effectiveness.



Olive, *Olea europaea*

Desert Ash, *Fraxinus angustifolia*

Family Oleaceae **Origin** Mediterranean, Asia **Status** Not listed in the North East CMA region.

Description Medium sized deciduous tree with coarse grey bark and leaves divided into 5–9 paired, light green serrated leaflets. Inconspicuous flowers are followed by masses of drooping green-brown winged seed capsules.

Ecology Desert Ash is very hardy and is widely planted as a street and garden tree. It escapes into riparian and lowland vegetation where it can form substantial colonies, displacing native vegetation and affecting water quality with its autumn leaf fall. Seeds are reported to travel a long way in water and plants in the Alpine Shire may be providing seed to infestations becoming well established in Red Gum Forests along the Murray River. Seeds spread by water, wind, garden mulch and dumped waste.

Control Small plants can be removed by hand, taking care to remove all major roots. Larger plants should be controlled using the drill & fill or cut & paint herbicide application method. Drill several holes about 5 cm deep around trunk close to the ground. Fill with herbicide.



Desert Ash, *Fraxinus angustifolia* with young fruits

Early Black Wattle, *Acacia decurrens*

Family Mimosaceae **Origin** New South Wales **Status** Not listed in the North East CMA region.

Description Spreading tree to 10 m tall with dense dark green leafy canopy. Leaves are 'bipinnate', meaning they are divided into leaflets, which are further divided into segments called pinnules (like the locally indigenous species Black Wattle and Silver Wattle). Early Black Wattle can be distinguished from the local species by its longer (5–15 mm long), darker, glossier green pinnules, and by the presence of conspicuous ridges extending down the bark on stems from the base of the leaves. Has flowers in small yellow balls which appear in winter.

Ecology Similar to native wattles making prevention of off-target damage from control more difficult. A good coloniser which is relatively short-lived but which has very long-lived seeds that recruit strongly after soil disturbance or fire. In the Alpine Shire it has been observed colonising cleared land with pasture as well as intact bushland and disturbed river flats. Drops massive seed reserves onto surrounding soils which will germinate for many years after parent plants are removed. Seed spread by birds (particularly Pigeons), ants, water and by earth moving machinery.

Control Small plants easily removed by hand. Larger plants can be removed using the 'cut & paint' or 'drill & fill' method. Larger plants will probably not re-shoot once cut at ground level so herbicide may not be needed. Large seed banks develop in the soil and remain dormant for many years. Fire stimulates a germination cohort which can then be controlled to deplete the seed bank.



Acacia decurrens leaf showing different levels of division. The smallest segments (pinnules) are 5 mm or longer. Local native wattles have pinnules less than 5 mm.



Dark green *Acacia decurrens* infestation in high quality bushland. .

Box Elder, *Acer negundo* Sycamore Maple, *Acer pseudoplatanus*

Family Aceraceae **Origin** *A. negundo* North America; *A. pseudoplatanus* Europe **Status** Neither species listed in the North East CMA region.

Description Medium sized deciduous trees with bright green leaves. *A. negundo* has leaves divided into 3–9 leaflets. Leaves turn to yellow before falling in Autumn. White- pinkish flowers hang in clusters, appearing usually before or with the regrowth of leaves, followed by drooping, winged seed capsules.

A. pseudoplatanus has large five-lobed leaves, the undersides of which are light green to purple. Yellowish-green flowers occur in narrow drooping clusters at the end of branches.

Ecology Fast growing trees able to establish from seed. Young plants found in intact native vegetation particularly in riparian woodland. Older plants are sparse, suggesting invasions are relatively new and that problem may worsen. Spread by seed in water, by wind, garden mulch and dumped waste.

Control Small plants can be dug out, taking care to remove all major roots. Herbicide control larger plants when they are in leaf using Cut & Paint method for stems less than 10 cm diameter and Drill or Frill & Fill method for larger stems. Drill holes 2–3 cm deep and 5 cm apart around trunk close to ground. Fill holes with herbicide.



Box Elder, *Acer negundo* seedling



Sycamore Maple, *Acer pseudoplatanus*

Tree of Heaven, *Ailanthus altissima*

Family Simaroubaceae **Origin** China **Status** 'Regionally Controlled Weed' in the North East CMA region.

Description Fast-growing deciduous tree forming dense thickets, with very large leaves (50–120 cm long) divided into smaller leaflets, each usually with two distinctive glands towards their base. Small yellow-green flowers borne in clusters on the end of branches during spring/summer. Fruits are 'winged', with a black seed surrounded by a flat papery membrane. In autumn / winter when the Tree of Heaven drops its leaves infestations look like a field of unbranched spikes.

Ecology Well established in the Shire in places where it has spread from abandoned garden sites. Noted in high quality indigenous riparian vegetation along a small creek above Wandiligong, suggesting that it is a good competitor and can challenge indigenous species for dominance. Spreads mostly by suckering from roots. A number of young scattered plants were noted, indicating that some establishment from seed is occurring. Produces chemicals toxic to other plants. Can cause contact dermatitis and water contaminated by fallen leaves is toxic to humans, causing dermatitis and gastritis.

Control Vigorous reproductive nature means that ongoing control efforts are required. Cutting trees is ineffective as they sucker abundantly for years. Young plants can be removed by hand, taking care to remove all roots. Larger plants and young shoots from the roots of larger trees can be controlled using the Cut & Paint method or Drill or Frill & Fill method for larger plants. Effective chemical application is essential to prevent suckering from roots. Anecdotal reports indicate that Triclopyr and Metsulfuron-methyl based herbicides are effective in Cut & Paint or Drill or Frill & Fill applications, and Glyphosate is ineffective applied in this way. Glyphosate and Metsulfuron-methyl based herbicides are reportedly effective for foliar spraying of suckering regrowth.



Tree of Heaven, *Ailanthus altissima*, tree



Tree of Heaven, *Ailanthus altissima*, sucker

Willows, *Salix* species

Family Salicaceae **Family Northern Hemisphere** **Status** Willows (except for some exceptions including Weeping Willow) are weeds of National Significance and are listed as 'Restricted Weeds' in the North East region.

Description Willows are fast growing deciduous trees that establish along waterways and on floodplains. There are many species of Willows and hybrid 'species' which may backcross to one of the parent species making identification very difficult. A willow identification key is available from: www.ffp.csiro.au/publicat/articles/willows/willkey3.htm



Yellow crowns of Pussy Willow, *Salix cinerea*, invading undisturbed riparian vegetation.

Crack Willow *Salix fragilis* is a multi-stemmed tree that grows in dense stands along rivers forming continuous thickets. Twigs of Crack Willow easily break off at their base with a noticeable cracking sound. Leaves are narrow, finely toothed and shiny dark green on their upper surface and bluish whitish on their lower surface and are held erect, not weeping at all.

Black Willow *Salix nigra* usually has only one main roughly fissured trunk. Leaves are narrow, finely toothed and bright green on both sides.

Pussy Willow *Salix cinerea* is a small multi-stemmed tree with a rounded crown. It has leaves which are broader and more rounded than the other willows in the area, and which are often slightly hairy on both sides and are usually irregularly toothed, particularly towards their bases.

Ecology The main weedy species in the Alpine Shire are Crack Willow *Salix fragilis*, Black Willow *Salix nigra* and Pussy Willow *Salix cinerea*. Weeping Willow *Salix babylonica* spreads slowly and it is not considered a high-risk weed.

The seeding Willows Black Willow *Salix nigra* and Pussy Willow *Salix cinerea* are of greatest concern, and have spread very rapidly in the past two decades. Seeding Willows produce huge amounts of very small plumed seeds, in November which are blown in the wind and will germinate if moist gravel or mud banks are available at that time. Many young plants of Pussy Willow are stabilised high in watersheds throughout the Shire and it appears that the species is spreading very rapidly. Without control this species is likely to dominate a high percentage of creeklines and gullies, displacing native plant species, reducing habitats for animals, reducing water quality and increasing erosion.

Willows are extremely disruptive in riparian ecosystems. They reduce stream water quality because they drop their foliage in a single big burst each Autumn, causing a brief dramatic increase in water nutrient levels which causes algal blooms and deoxygenation of the water,

killing fish and other organisms. Native vegetation does not drop foliage in a single burst, so water quality and food supply is maintained consistently throughout the year.

Willows displace all other streamside vegetation, suppressing grasses, shrubs and regenerating trees and eventually resulting in habitat that carries little or no ground vegetation, has very poor resistance to erosion and is completely unsuitable for native animals. When native animal habitat is lost the natural pest control function provided by these animals is also lost. The heavy shade cast by Willows reduces the range of habitats available to freshwater organisms and lowers the biological productivity of streams. Some Willows produce masses of very fine roots, which grow into the watercourse in a dense mat, slowing water flow, causing streams to widen and worsening flooding, especially in flat landscapes. By covering stream-sides and -bottoms with mats of root Willows also reduce suitability of streams for Platypus habitat.

Some Willows with numerous upright branches trap sediments, and cause mounds to form in the watercourses. These can induce a braided stream structure, which can result in stream spread and worsen the effects of floods.

In some circumstances Willows do have a role in stabilising streambanks, so care must be taken to prevent erosion that might be caused by their removal. Areas where Willows are removed should be immediately revegetated with fast-growing colonising native species to quickly enhance bank stability.

Most Willows spread by broken stem segments which root and grow into trees, and by suckering from roots. Willows often spread down catchments in flood waters. *Salix cinerea* is particularly threatening because it also spreads by seed which is able to blow up into catchments, invading intact native vegetation high upstream.

Control Mature willows are best controlled by Drill & Fill herbicide application, which results in effective root killing with minimal risks of off-target herbicide damage to waterways or other plants. Drill holes or frills should be low on stem and close-spaced maximum 5 cm apart. When big Willows are controlled in large numbers and where access permits dead trunks and limbs should be removed to prevent their collapse into streams and subsequent log jams in floods, which can destroy bridges and infrastructure downstream. Killed stumps and roots should be left in ground to reduce soil erosion. Herbicide treated trees should be left for a year after treatment before cutting to ensure a comprehensive kill has been achieved.



Crack Willow, *Salix fragilis*, has finely toothed leaves with blueish undersides. Leaves do not weep and have small brown glands on leaf stalk at base of leaf blade (inset, arrowed).



Black Willow, *Salix nigra*. Usually has a single main stem



Black Willow, *Salix nigra*, showing finely toothed leaves which are green on both sides.



Willow, *Salix cinerea*, flowers and leaves. Leaves are roughly toothed near their bases.

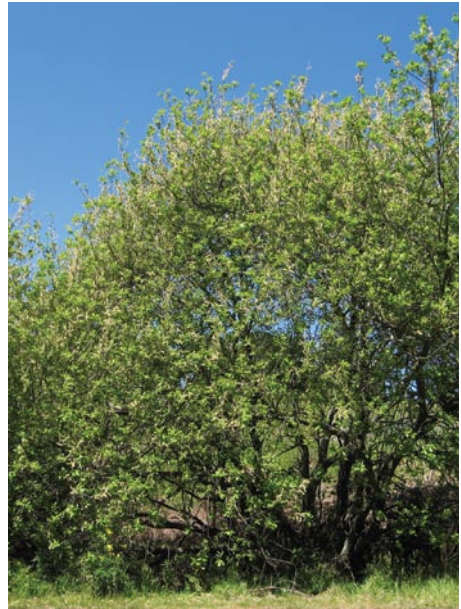
Follow-up checks must be made for at least three years after cutting to ensure that re-sprouts from stumps are killed.

Small plants and resprouts are most easily treated with Cut & Paint herbicide application. Any living timber, woodchips or branches must be removed from moist earth suitable for growth as they will re-root and live.

The smallest plants can be hand weeded, taking care to remove all major roots.

Salix cinerea poses the greatest threat to streams and ecosystems in the Alpine Shire and should be controlled as a first priority.

Further information www.weeds.crc.org.au/documents/wmg_willow.pdf



Pussy Willow, *Salix cinerea*. Rounded shrub usually with multiple stems.

Radiata Pine, *Pinus radiata*

Family Pinaceae **Origin** Southern California **Status** Not listed in the North East CMA region.

Description Cone-shaped tree to 30 m tall extensively planted in softwood plantations. Dark green foliage with a distinctive pine scent. Leaves needle-like, 8–15 cm long, clustered in groups of three (sometimes two) on the stem. Older trunks have thick deeply ridged grey and dark brown bark. Female cones 8–15 cm long and noticeably non-symmetrical. Male cones are much smaller and almost cylindrical.

Ecology A fast growing tree which is able to colonise undisturbed bush and out-compete native tree and shrub species. Tolerant of dry conditions and shade. Wind blown seed is able to disperse widely, dropped from cones opening on the tree.

Control Does not sucker, so mature plants can be easily controlled by cutting or ringbarking low on the stem. Small plants can be hand pulled, taking care to minimise soil disturbance. Weeded plants can be left on the ground to decompose. Herbicides are unnecessary for Radiata Pine control.



A young Radiata Pine invading native forest.

Lower risk or less common tree weeds

Himalayan Strawberry Tree, *Cornus capitata*

Small tree with thin textured matt-green leaves lighter colour beneath, slightly rough to the touch, drooping down in warm weather. Stems smooth, grey-brown. Conspicuous hemispherical 'compound' fruits (made up of many smaller fruits) on the ends of branches. Widely planted in gardens and as street tree. Fruits probably bird dispersed. Few plants were noted in bushland around the Shire, may pose a 'sleeper weed' risk.

Loquat, *Eriobotrya japonica*

Medium sized tree with wide dense crown of large elliptical toothed leaves, commonly 20–30 cm long and 6–8 cm wide. Young stems and the underside of young leaves with rusty coloured hairs. Occasional weed of creeklines and damp bushland.

Walnut, *juglans regia*

Cultivated deciduous nut tree noted escaping into bush near farmland. Large leaves divided into leaflets about 10–12 cm long, with conspicuous veins and sometimes with toothed margins. Known to exude chemicals from roots which inhibit other plants. Leaves purple-brown when developing, shiny green when mature, very aromatic when crushed.

Douglas Fir, *Pseudotsuga menziesii*

A straight stemmed conifer with soft blue-green leaves 20–40 mm long. Grown in plantations and observed escaping into neighbouring bushland.

Elm, *Ulmus species*

Commonly planted deciduous street and ornamental tree. Leaves are usually pale green, thin textured and conspicuously veined, often having tothing along the margins. Spreads by suckering and noted forming large stands where planted at old homes sites, along some roadsides and at some picnic areas.



Elm, *Ulmus species*, leaves

Robinia, *Robinia pseudoacacia*

Deciduous tree to 25 m tall with spines on branches. Leaves divided, with 11–21 rounded and paired leaflets, each on its own short stalk. Plumes of showy white pea flowers which mature into drooping pea pods. Spreads by suckering, forming large stands around abandoned garden sites. Produces seed but most reproduction is via suckers from roots. Beware of sharp spines!

Control of above species Remove small plants by hand, taking care to remove all major roots. Control medium plants using cut & paint, and large plants by drill & fill or frill & fill.



Cornus capitata, Himalayan Strawberry Tree



Loquat, *Eriobotrya japonica*



Walnut, *Juglans regia*



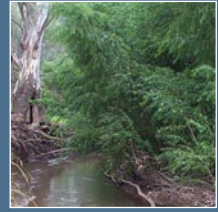
Douglas Fir, *Pseudotsuga menziesii*



Elm, *Ulmus* species, tree and suckers



Robinia, *Robinia pseudoacacia*



The Alpine Shire has experienced very serious weed invasions in the past which continue to reduce agricultural productivity, prevent access to streams and tracks, and disturb bushland, displacing native plants and animals.

Weeds continue to pose major risks to biodiversity, agricultural productivity, streams and water quality and new weeds are at the Shire's door.

All landholders are obliged to act to control weeds on their land. Without effort from everyone weed control will not be achieved and the quality of our environment will suffer.

This booklet contains the information to allow you to identify and control existing well established weeds and new weeds in the Alpine Shire.

