



Weeding Toolkit

Yarra Riverkeeper Association
1st Expansion



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Cover images | Michael Cook

Acknowledgment of Country

The Yarra Riverkeeper Association acknowledges that the lands and waterways of the Yarra Catchment and beyond, are the unceded territories of the Wurundjeri Woi-wurrung people. We pay our respect to their Ancestors, who cared for Country since time began, and to all Wurundjeri Woi wurrung community, to all the Kulin Nation, to all Traditional Owners, who continue to speak and care for their Country. We acknowledge that the river now called the Yarra has always been known as the Birrarung by its custodians.

Introduction

The reduction of biodiversity around the world is a problem.

Invasive weeds are seen as a great threat to biodiversity and are seen in growing numbers throughout Australia. In the last 25 years, the number of invasive species recorded in Victoria has nearly doubled¹ in spite of our knowledge and efforts to manage and maintain this threat to biodiversity.

In this toolkit we aim to provide and share knowledge on:

- Weed Classification and how weeds are categorised
- The different Weed Control management types and techniques used to manage the many various weed species commonly found around the Yarra River (and Australia);
- Bare Ground and how this is often a weeds best friend
- Municipal Spread and how our actions can sometimes (unwittingly) lead to the spread of invasive weed species
- A quick look at the principles behind the indigenous practice of Cultural Burning
- 16 Weed Profiles on some of the most common weeds found around the Yarra River and its catchment area

By no means is this Toolkit the be all and end all of weeds in Victoria. It is a stepping stone for increasing or shared knowledge and community engagement with the landscapes we as Victorians share with so many unique and special species.

While weeding is a helpful and proactive way to involve ourselves in landscape maintenance, it can also cause harm to the ecosystem if we are not careful. Do not remove any plant that you are not 100% able to identify as a weed. Accidental removal of the wrong plants can end up causing more harm than good.

Environmental Weed

The classification of a weed as being an environmental weed, hinges on the capacity for a weed to cause harm to the flora, fauna and surrounding ecosystem that the species has moved into. An important point to note about environmental weeds is that the focus in classifying these plants is on the ecosystem more so than the plant; both exotic and native species can be classified as environmental weeds if the outcomes they are yielding for the ecosystem they are inhabiting are negative.

Noxious Weeds

In Victoria there are over 100 weeds classified as Noxious Weeds²

State Prohibited Weeds (SPW): are either not found in Victoria or do occur in Victoria but currently only to an extent to which eradication is possible³. The Victorian State Government is responsible for eradicating these weeds from all land regardless of ownership⁴.

Regionally Prohibited Weeds (RPW): are not widely spread within a region and are able to be eradicated from the region although hold the potential for greater spread if not managed³. It is the responsibility of the land manager to manage and eradicate RPW⁴.

Regionally Controlled Weeds (RCW): are only occurring in particular regions but have the potential for further spread, continuous management practices must be employed to restrict the spread of these weeds³. It is the responsibility of the land manager to prevent the growth and spread of RCW⁴.

Restricted Weeds (RW): It is an offence to sell or trade items contaminated with these weeds. They pose a risk to the biodiversity of other states and territories³. It is the responsibility of the land manager to prevent trade or spread of RW⁴.

Naturalised Plants

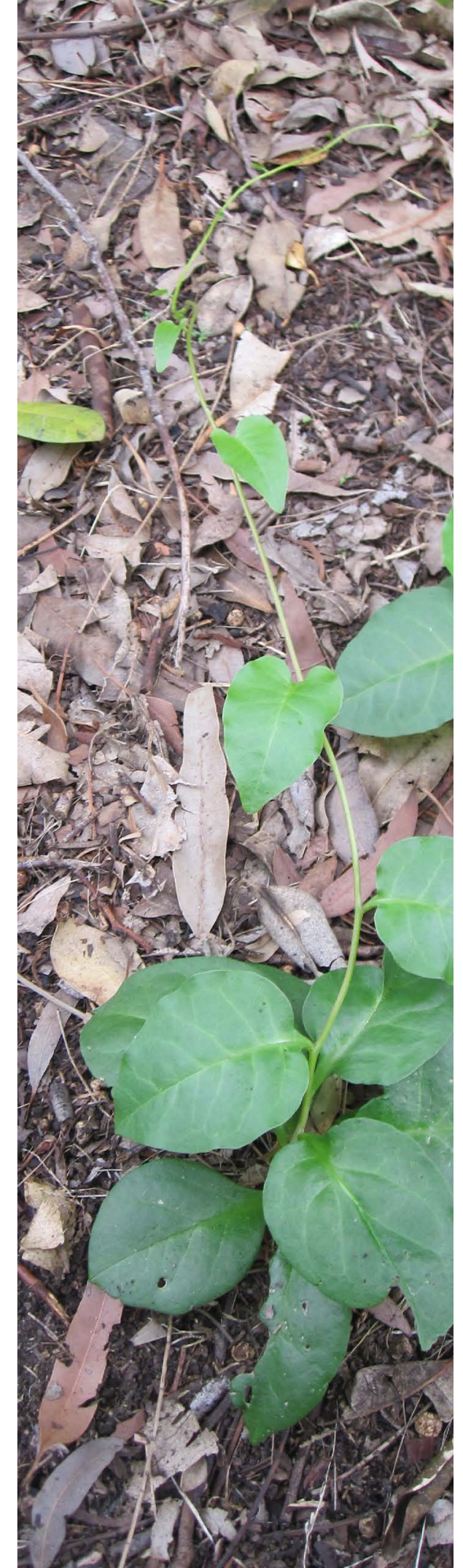
Plants are considered to be naturalised once they have established themselves as part of the local plant life in an area outside of their natural distribution.

Weeds of National Significance

In Australia we have a list of the most significant weed species, not just in the Yarra Catchment, but all over the country that are high priorities for management. These weeds are picked based on a number of attributes, including: their invasiveness and potential for spread, as well as their environmental, social and economic impacts⁵. A number of these weeds can be found in this toolkit denoted by this symbol:



Weed of national significance



Weed Control

Weed control can be broken down into two components: what type of management strategy is being employed? And, what techniques are being used to achieve this management goal?

Management goals for weeds can fall under four main categories: prevention, eradication, containment and asset-based protection⁶.

Prevention is management based on denying entry of new weeds into an area. This is the most effective way of reducing the spread and impact of weeds and is far cheaper than other management strategies.

Eradication is management used to permanently remove a species of weed from an area. It is difficult to achieve an expensive but highly beneficial to the ongoing biodiversity of an area.

Containment is management based on reducing/stopping the spread of a weed beyond the area within which it has become established.

Asset-based Protection is management based on maintaining the value of assets to which weeds

pose a threat, this may occur in spaces where value is derived from cultural, environmental or production assets.

As with the management types, control techniques can also be broadly categorised into four types of techniques, each containing a number of different practices.

The four general categories are:



Physical



Chemical

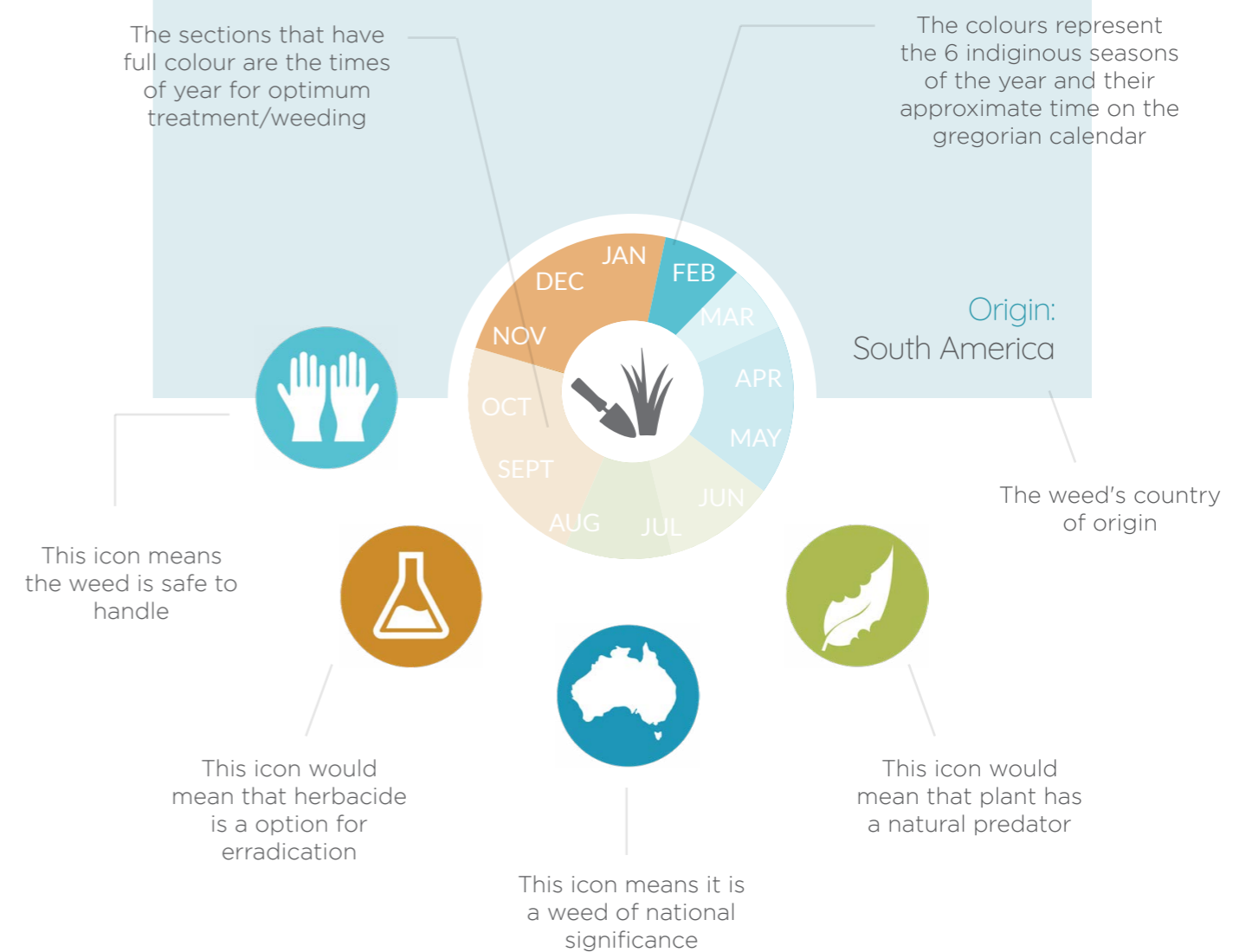


Cultural



Biological

Weed profile icons



Physical Control



Physical control of weeds is management based on the actual act of removing the weed either physically or mechanically. This can be achieved through a number of practices, the most common of which are: mowing/hay making/grazing, mulching, tilling, burning off, or removal by hand. Each of these types of physical weeding practice have their benefits and their use is often dictated by the context or the site and type of weeds that are being removed.

Mowing/Hay making/Grazing: this reduces the number of seeds in the area and reduces proliferation of weeds.

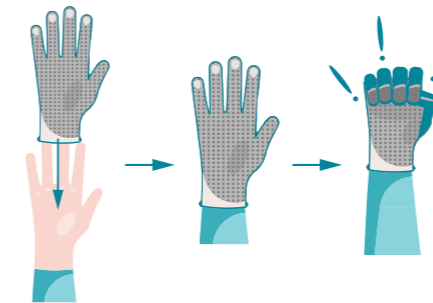
Mulching: creates a physical barrier (of soil) between weeds and sunlight and suppresses them in this way. Mulching has the added bonus of returning the moisture and nutrients of the weed plant in the soil which can not happen if removed.

Tilling: turns the soil over and creates a physical barrier between weeds and sunlight and kills weeds by virtue

of this. This allows the nutrients and moisture within the weed plant to be returned to the soil; however, tilling creates a large amount of soil disturbance, exposing the top soil to significant erosion and creates an easy landscape for weeds to grow on. This is generally used over large areas of land in farming (or other highly managed) systems.

Burn-off: burning-off weeds kills all parts of the plant above the surface and so should be conducted prior to seed dispersal. This method also exposes top soil to high levels of erosion and creates a landscape that is friendly to weed growth by removing all soil cover. It is generally used over large areas of land.

Hand removal: is an effective method of selective weed control giving the weeder the ability to distinguish between desirable and less desirable plant species within the area. Hand weeding is a very labour intensive process and so is generally applied to smaller areas at a time.



Wear gloves



Bags!



Pull from the bottom



Images | Rob Bushcare - Flickr

Chemical Control



Using chemicals in weeding practices is a point of growing contention; however, chemicals are used broadly and to some degree in many weeding management plans. Interventions that cover larger areas of land are often more reliant on chemical application due to the low labour input for their use.

In some situations chemical weeding is used as it is considered to be the most practical and cost effective way to complete the weeding job. At other times, chemical weeding is utilized in an attempt to minimize the amount of soil disturbance that can be caused by other weeding practices.

Herbicides can be generally classified according to four different attributes:

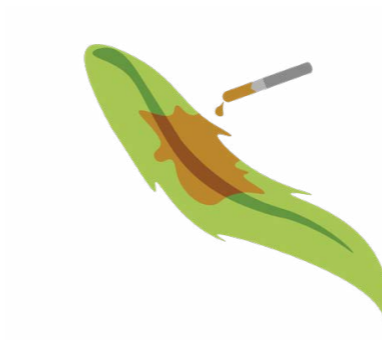
- The way that the chemical impacts the plant
- By changing the normal growth patterns of the plant
- By drying out (or desiccating) parts of the plant, generally either the stems or leaves
- By causing the plant to drop its leaves (defoliation)

Herbicides can also be classified by how a plant absorbs the chemical which can be:

Contact - where the plant is killed off at the point of contact between it and the herbicide;

Systemic - where a chemical is transported through the plant by its own circulatory system; or,

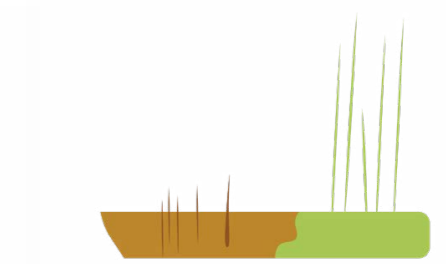
Residual - this form of herbicide is applied to the soil and suppresses any potential initial growth of plants.



Contact



Systemic



Residual



Image | Flagstaffphotos

Cultural Control



Cultural weed control is generally used within human managed systems such as farms as well as management of landscapes and bushland. This method of weed control relies on managing an area in such a way that weed growth is suppressed, rather than relying primarily on the removal or killing off of weeds. Cultural control is increasingly being utilised in restoration projects as a means of suppressing weeds through the inclusion of target plant species.

The common principles to this method of weed control include:

- Picking plant species that are naturally highly competitive and are able to outcompete weed species for sunlight, nutrients and water;
- Use high quality seeds and sow them close to one another and shallow within the soil so as to maximise early growth above ground;
- Vary your management plan across the area being managed. This ensures that weed species do not adapt to the management of the landscape

and find a niche within a cultural control management plan. The reason that this method for weed control is most often found in highly managed areas such as farms and other such landscapes is because of the rotational nature of the system.

In natural landscapes there are less active disturbances, such as harvests and large scale planting operations, like sowing a paddock for the growing season. When cultural control is used as a weed control method in restoration practices, we choose to plant trees or larger growing plants to reduce the amount of sunlight reaching the weeds below, and build from the canopy down.



Vary your management plan across the area to ensure that weed species do not **adapt** to the management of the landscape and find a niche.

Picking a native plant species that is highly competitive and are able to **outcompete** weeds for sunlight, nutrients and water is a form of cultural control.



Biological Control



Biological control is a method used for invasive weeds that are able to spread and proliferate with extreme ease due to the lack of natural regulators that would be found in their natural distribution. Whilst biological control has been used in Australia to great effect (the introduction of the *Cactoblastis* moth to regulate Prickly Pear), it can also lead to disastrous outcomes (the introduction of the Cane toad to regulate the Cane beetle).

In order to proceed with a biological control plan for weed management, a number of steps must first be taken:

- 1 An agreement must be made with the Invasive Plants and Animals Committee in the initial application for the use of a biological control;
- 2 Host Specificity testing to ensure that the risk the introduced species poses to the rest of the ecosystem into which it is being released as well as to agricultural stock and crops will be minimal (this is a requirement

of the Australian Government Department of Agriculture and Water Resource - Biosecurity);

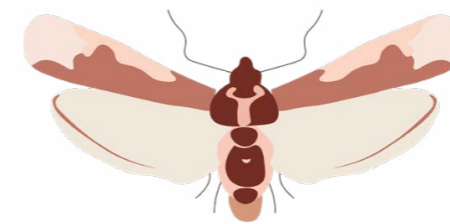
- 3 Upon successful completion of specificity testing, the biological control agent(s) must then be assessed in accordance with the requirements of the Quarantine Act 1908 and the Environment Protection and Biodiversity Conservation Act 1999. Both the Australian Government Department of Agriculture and Water and the Australian Government Department of Environment and Energy have parallel approval for this step and each must approve of the introduction of the biological control agent into Australia.

It is an extensive process to reach approval for use of this method; however, if approved (and successful), biological control can be an efficient and cost effective means of weed management.

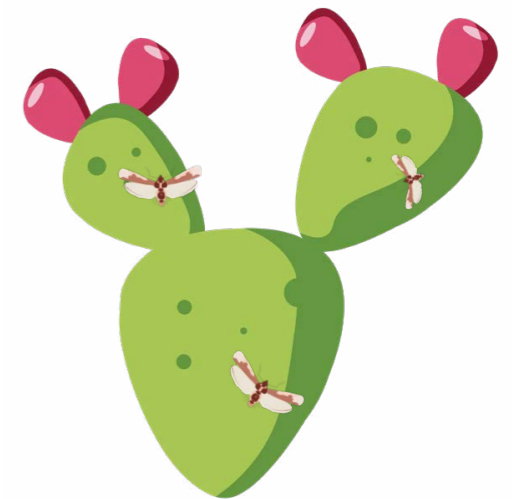
Integrated Weed Management

In addition to the four categories on the left, the practice of Integrated Weed Management is often employed in management plans. This involves the use of a number of different weeding techniques to most effectively manage weed spread and populations within a given area. This creates a more broadly encompassing action to reduce weeds and their spread by complementary practices being used in tandem.

The first release of *Cactoblastis cactorum* moths into the Australian environment in 1926, is regarded as one of the world's most spectacular examples of biological weed control



Cactoblastis moth



Prickly pear

Land Spread

Bare Ground

Bare and disturbed soil is an easy entry point for weeds to grow and spread. Weeds are not bad at all time, this is because weeds are often the first stage of the soil regenerating itself, as they help regain soil coverage and soil structure. However, when trying to contain the spread or even eradicate certain invasive species, leaving soil bare can provide an easy opportunity for these super adaptable plants to proliferate. It can be productive when clearing land to have a planting plan ready to provide the soil with all the benefits that plants provide to reduce soil degradation and erosion, as well as suppressing weed growth by creating competition for nutrients, water and sunlight.

Municipal spread

When we are planting, maintaining and appreciating our own backyards, something that can slip by unnoticed is how our practices at home lead to the spread of weeds and seeds. Up to as many

as two thirds of the weeds we find outside of our gardens started off as “garden escapees”¹¹. This spread can occur because garden waste, like clippings, are not disposed of properly. Alternatively, it could be for reasons out of our control (once the plants are in the ground), such as spread by wind and water or by animals such as birds. For this reason it is very important that disposal of gardening waste is managed appropriately and that, when and where possible, local native species are chosen to populate our gardens.

Indigenous Cultural Burning

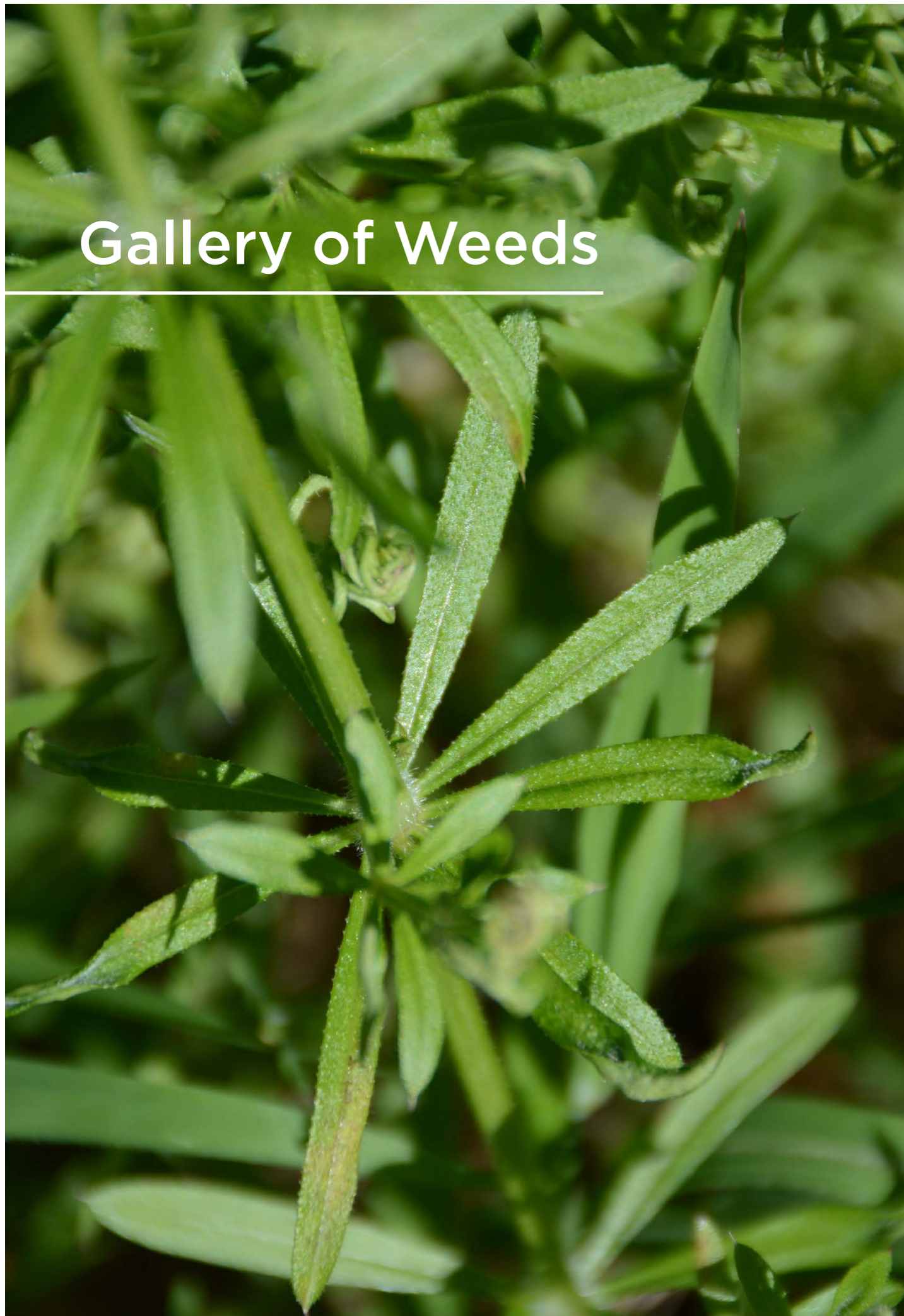
In Indigenous culture, using fire to conduct cultural burning (also known as cool burning) as a method of landcare holds great significance. It should be noted that invasive exotic weed species have been brought into Australia following European settlement and during this time, land management by Aboriginal people greatly reduced. As a result this practice is not necessarily tied to controlling

invasive weed species. However, it does share the principles of a number of weed management methods as cultural burning was a technique used by Aboriginal people to encourage the growth of beneficial plant species and cultivate a landscape that was highly resilient and functional¹².

Furthermore, acknowledging that the land on which we live was cultivated and managed under Indigenous occupation is an important and often overlooked part of the cultural and landscape history of present day Australia.



Gallery of Weeds



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HERB

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TREES

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SHRUB

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BULBS

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AQUATIC

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GRASSES

Common Name

Scientific Name

Bridal creeper	<i>Asparagus asparagoides</i> L.
Soursob	<i>Oxalis pes-caprae</i> L.
White flowered spiderwort	<i>Tradescantia fluminensis</i>
Cleavers	<i>Galium aparine</i> L.
Capeweed	<i>Arctotheca calendula</i>

Willows *Salix* spp.

Madeira vine	<i>Anredera cordifolia</i> (Ten.) Steenis
Blackberry	<i>Rubus fruticosus</i> L. agg
Prickly pear	<i>Opuntia stricta</i> Haw.
Jerusalem Cherry	<i>Solanum pseudocapsicum</i>

Angled onion	<i>Allium triquetrum</i> L..
Arum Lily	<i>Zantedeschia aethiopica</i>
Cape Tulip	<i>Moraea flaccida</i>
Crow Garlic	<i>Allium vineale</i>

Salvinia *Salvinia molesta*

Kikuyu grass	<i>Pennisetum clandestinum</i>
Serrated tussock	<i>Nassella trichotoma</i>
Pampas grass	<i>Cortaderia selloana</i>
Panic veldt-grass	<i>Ehrharta erecta</i>
African feather grass	<i>Pennisetum macrourum</i>



Herb plants are green, leafy plants, used to flavour or season food and as medicines. Herb weeds are invasive species, such as hardheads, angled onion, agapanthus, black nightshade, serrated tussock and Cleavers sticky weed. Herbs can be small like the stickyweed, with small white shaped flowers and sticky seed pods, while some other herbs like the Arum Lily can grow up to 1m height.

Bridal creeper

Asparagus asparagoides L.



Images | Michael Cook

Description

Bridal Creeper is a tuberous*, perennial* herb and climber growing to 1-5 m high. Its leaves grow to 30mm which deteriorates during summer presenting fire risks. Bridal Creeper has small white flowers and produces red berries around 8mm in diameter from around August to September. An extremely invasive weed which can smother surrounding plants. Found in bushland and riparian zones.

Manual removal may be done all year round.



Soursob

Oxalis pes-caprae L.



Images | Michael Cook

Description

Soursob is a herb with bright yellow trumpet flowers up to 4cm. It reproduces through underground bulbs or rhizomes* and is dispersed through soil, birds and humans. Soursob can be mistaken for native oxalis species which have shorter flower stalks and smaller leaves.

Manual removal can result in accidental spread of bulbs.



White flowered Spiderwort

Tradescantia fluminensis

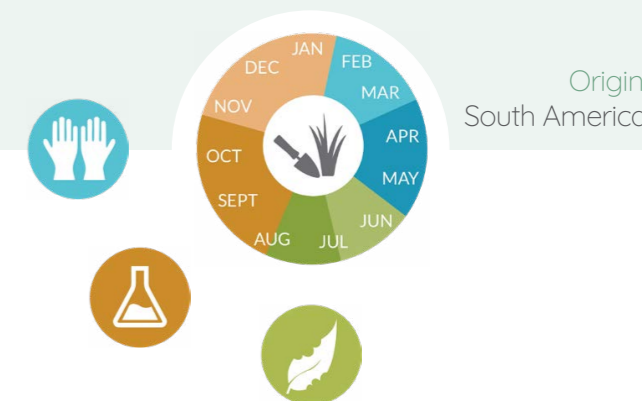


Images | Michael Cook

Description

White flowered spiderwort is a persistent invasive weed of natural areas where it carpets the ground and prevents native regeneration. It alters litter decomposition and nutrient cycling affecting ecological succession. It is a popular houseplant, and propagates and spreads easily from stem fragments. White flowered spiderwort is widely available via the internet, and its popularity increases the likelihood of further introductions is very high.

Hand weeding and rolling it up like a carpet are considered suitable for removal of small infestations. Chemical and manual removal methods has been proved highly effective.



Cleavers

Galium aparine L.



Images | Michael Cook

Description

Cleavers is a slender, annual herb with branched roots. The stems are green, soft, numerous and semi-prostrate*. They may be up to 120 cm long. Cleavers climb and ascend using adjacent vegetation. The stems have prominent ribs, and densely set with thorn-like spines. The leaves grow directly from the nodes in groups of 4-8. They are simple, narrow, lanceolate*, single-veined, 30-60 mm long and usually dark green. The flowers are 2 mm in diameter and white. The herb reproduces solely by seed, and mulching can prevent germination.



Origin:
Europe & West Asia

Capeweed

Arctotheca calendula



Images | Michael Cook

Description

Capeweed has the potential to infest turf and pasture and can compete with economically important crops. It can cause allergies and dermatitis in sensitive individuals and also negatively affects stock production. It is dispersed through wind, water, movement of contaminated soil or mud, and animals. It is likely to impact on soil moisture and nutrient availability, however, does not seem to compete well in natural undisturbed ecosystems. Can reproduce vegetatively by stolon fragments.

Chip out small infestations ensuring root is severed well below ground level to prevent re-sprouting from the crown*.



Origin:
South Africa

TREES

Trees weeds are certain varieties or species which are non-native and have high germination rates, which grow rapidly and colonize quickly. Few examples are the invasive salix willow, elm, grey poplar, white poplar and Chinese celtis. It has been recommended to remove these trees and replaced with Acacias like the golden wattle and lightwood trees, River red gum and eucalyptus species.

Willows

Salix spp.



Images | Anderida Accomodation

Description

Deciduous trees with different forms depending on species. Weeping willows with long slender weeping twigs can be found along the Yarra river and surrounding tributaries. All willows form large dense shallow root masses which consumer large amounts of water, slow flow of water and reduce aeration.

Water quality is also reduced through large leaf drops during autumn. Capable of regrowing from broken stems. Dispersed through water (stem fragments), wind (seed) and humans.

Manual removal of seedlings. Established trees may be cut down however should be monitored for 3-5 years for establishing stems or seeds.



Origin:
China



SHRUBS

Shrubs are woody plants with several stems growing from the base and it grows to lengths smaller than a tree. Examples of a few shrub weed species are Madeira vine, Blackberry, Jerusalem cherry, Cape broom, Boneseed, Privet, Boxthorn etc. These weeds can harbour various types of pest species as well as serve to eliminate other vegetation by excluding light from the soil surface. These can be replaced by Prickly Moses, Goodenias, Christmas Bushes and Kangaroo Apple bushes.

Madiera vine

Anredera cordifolia (Ten.) Steenis



Images | Michael Cook

Description

Madira vine is a rampant climber, with fleshy leaves. It flowers from March to April. It produces detachable warty tubers on branches, tuberous roots, and vines which smother other plants. Dispersed through water, garden refuse, gravity, soil movements, possibly birds. Plants can grow a metre per week in warm, humid conditions.

Manual removal of seedlings less than 3 cm high. Mature plants must have aerial and subsoil tubers removed to prevent reseeding. Long term herbicide regime recommended.



Blackberry

Rubus fruticosus L. agg

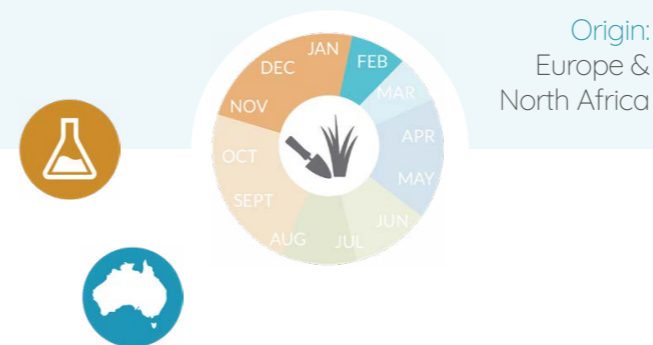


Images | Michael Cook

Description

Blackberry is a sprawling perennial woody shrub, with white or pink flowers to 1.5cm. It forms impenetrable thickets with sharp thorned green or reddish-purple spines. Their berries change from green to black when ripe. Blackberry can restrict access for native animals to waterways. Dispersed through water, animals (birds, foxes, other mammals) and humans.

Manual removal difficult due to prominent thorns throughout stems. Herbicide application regime recommended for several years.



Prickly Pear

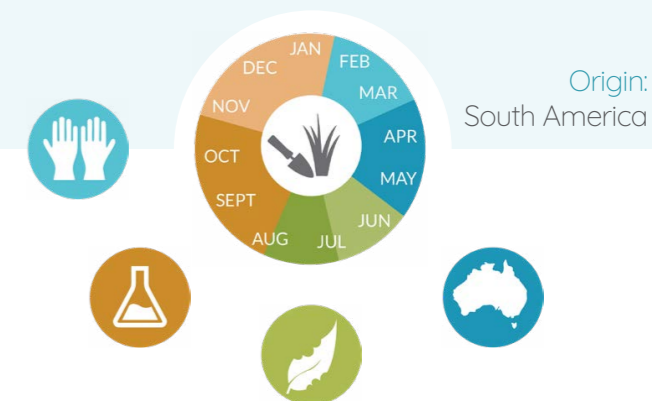
Opuntia stricta Haw.



Images | Neil Blair

Description

Prickly pear is an erect succulent that can grow between 1 to 2m high. The stems are dull green in colour with fleshy pads, which resemble other succulents like cacti. Each areole (potential growing point) contains barbed bristles with occasionally 1 or 2 yellow spines about 2-4cm long. Bright yellow flowers can grow from the areoles and are stalkless.



Jerusalem cherry

Solanum pseudocapsicum

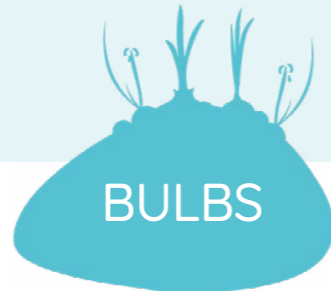


Images | Michael Cook

Description

A perennial and upright herbaceous shrub growing up to 1m high. It has greenish branches and ridged leaves that are oval-shaped up to 10cm long and 3cm wide. The shrub produces tomato-like cherries, which are **toxic** and have been known to cause death in animals and humans if consumed.

It had been declared a noxious weed in Victoria



Invasive bulbous plants are weeds which propagate from bulbs (or corm or tuber). Examples of a few weeds are Angled onion, Bulbil, Watsonia, Cape Tulip, Wild garlic and Montbretia. These plants spread rapidly by reproducing a large number of small bulblets (individually or nested in a larger bulb) each season and these bulblets may grow either above or below the ground. Some of the Bulbous weeds propagate through seeds as well. These weeds can be controlled by disposing of the bulb (which is the plant's seedbank) or applying herbicide to the entire plant.

Angled onion

Allium triquetrum L.



Images | Michael Cook

Description

Angled onion is a bulbaceous, perennial herb, growing to 48cm. Flowering occurs between August to October. Their flowers are a distinctive white bell shape and hang down. Stems smell strongly of onion when crushed. They are dispersed through water, soil, humans and possibly ants.

When manual weeding ensure that sub surface bulbs are removed.



Arum Lily

Zantedeschia aethiopica



Images | Michael Cook

Description

Arum lily is a herbaceous, perennial tuber with distinct large white trumpet shaped flowers. It grows up to 1m with leaves up to 45cm. It is dispersed through water, animals (birds, foxes, livestock), soil and humans. All parts of this plant are **toxic** if consumed.

Any herbicide regime must be conducted for several years as herbicide can send tubers into dormancy. Manual weeding difficult due to extent of sub surface tubers.



Cape Tulip

Moraea flaccida

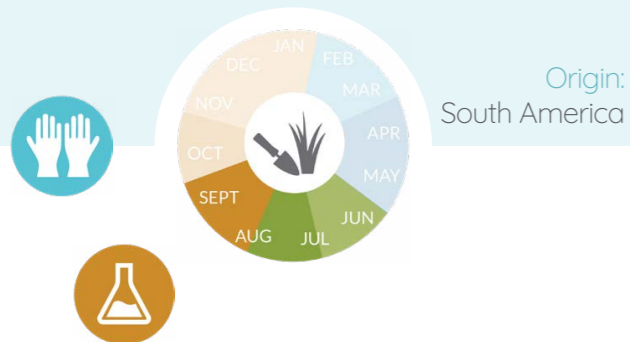


Images | Ronald Orenstein

Description

Cape tulip is a bulbaceous, perennial herb. It has a distinct pink-orange flower with six petals. It can reproduce and persist in prolific fashion, crowding out desirable plants and competing for soil nutrients, whilst reducing the carrying capacity of pastures and crop yields.

The plant is **toxic** to livestock and humans. Controlled herbicide use is an effective management technique.



Crow Garlic

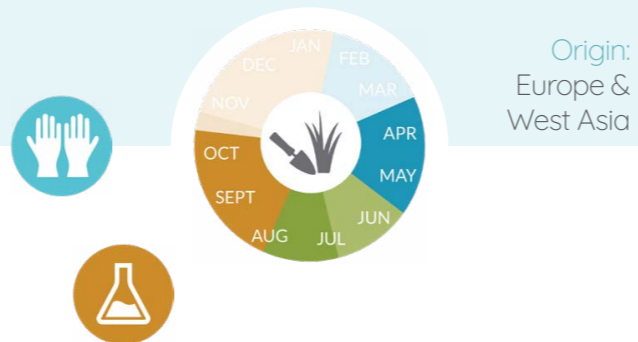
Allium vineale



Images | Austin Jennings
Layla Dishman (L)

Description

Crow garlic has cylindrical, hollow leaves and produces dense clusters of flowers from thin, unbranched stems. These flowers are white, pink, or greenish in colour. It is an erect, perennial herbaceous plant that can grow up to 1 m in height. The short-lived aboveground parts re-grow each autumn or spring from an underground bulb, and die back again during the summer



Aquatic weeds are unwanted or invasive vegetation that reproduce and grow in water. Few examples are Alligator weed, Duckweed, Arrowhead, Cambomba etc. Aquatic weeds are typically categorised into four main groups depending on their growth habit, which are: emergent, free floating, floating leaf and submerged weeds. If left unchecked the weeds may choke the water bodies by reducing sunlight penetration, limiting plankton production, upsetting the equilibrium of the physico-chemical properties of the water and causing an imbalance in the dissolved oxygen budget which could pose as a serious menace to pisciculture populations. Some weeds even release toxic gases that cause fishes to die and add a foul smell to water.

Salvinia

Salvinia molesta

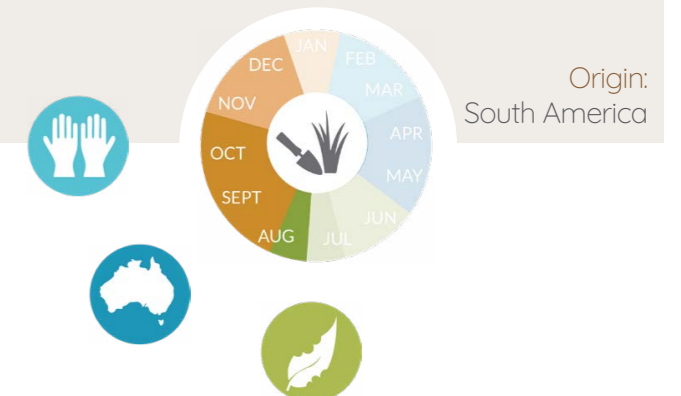


Images | Michael Moerkerk

Description

Salvinia is a free-floating fern-like plant that is light green in colour with oval-shaped leaves. These leaves have hairs on their surface to assist with buoyancy. In its primary growth stage, these plants can be mistaken for native Duckweed plants, which are not declared a weed.

Although difficult to be eradicated, it can be biocontrolled through use of weevil *Cyrtobagous salviniae*, which proved successful in warmer parts of Australia; also containment booms can be used.





GRASSES

Predominantly, many grasses are perennial, which can be a nuisance growing around stream banks, roadside areas and in areas of sandy soil. Few examples are Kikuyu grass, Serrated tussock, Pampus grass and Veldtgrass. Types of grasses, such as the African feather grass can suppress regeneration and cause displacement amongst native grasses. Some grasses thrive in neglected pasture lands, with sandy soils, and can be as tall as 2m in height.

Kikuyu grass

Pennisetum clandestinum

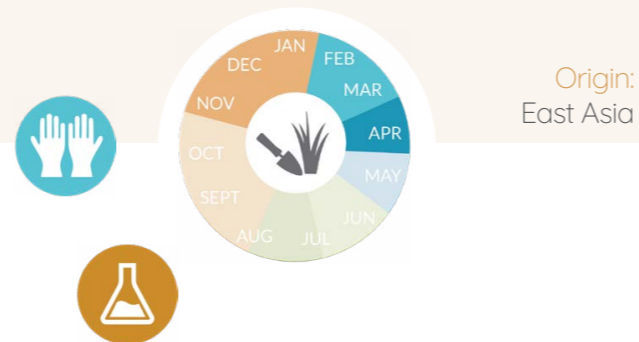


Images | Brisbane City Council

Description

Kikuyu grass is a favourite amongst lawn and pasture species, however, has rapidly spread across the country. The grass presents a serious threat as it can outcompete surrounding herbs and shrubs. Known to release allelopathic* substances which impact nearby species. Dispersed through grazing animals, garden refuse and soil movement. Grows rapidly forming dense mats.

Manual removal is difficult as subsoil rhizome must be removed.



Serrated tussock

Nassella trichotoma



Images | Harry Rose

Description

Serrated tussock is a upright grass which grows up to 45cm tall and 25cm wide. Leaves are whitish at base, tightly rolled and stiff. Resembles some native grasses such as poa tussock and wallaby grass. Dispersed primarily through wind and water however animals and humans also have a role.

Deep roots and seed banks make manual removal difficult even for small plants. Herbicide and planting of shading species is recommended for long term solution.



Pampas Grass

Cortaderia selloana

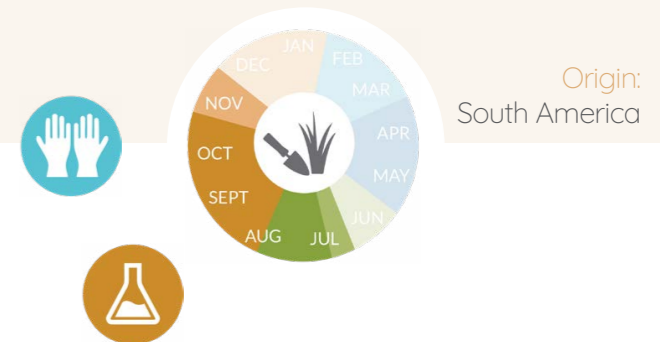


Images | Michael Cook

Description

Pampas grass is a perennial grass, up to 4 m tall and 2 m wide. It has large (1-3 m), grey-green leaves with serrulate* edges. They have large plumose pink to white heads producing thousands of wind-dispersed seeds. It forms dense, often impenetrable, stands that can damage farmland and affect visibility on roads. Pampas grass increases its density and colonizes semi-natural areas in a short period of time, being a threat to native plant diversity. The sharp leaves can produce superficial cuts and flowers may provoke allergies in summer.

Smaller plants and seedlings can be hand-pulled with protective gloves and larger plants can be removed mechanically.



Panic Veldt-grass

Ehrharta erecta



Images | Harry Rose

Description

Panic Veldt-grass is adapted to a wide range of soil conditions which explains the great variability of the species. The grass can spread rapidly and outcompeting native grasses and herbs by dominating the ground and understorey layers. Accumulates large amounts of litter beneath plants, which has been identified as one of the mechanisms of competitive exclusion.

For most people, panic veldt-grass is 'just another grass,' so raising awareness of the dangers it possesses is a must. Plants are easy to dig out, but care must be taken to remove all rhizome material and to dispose of it safely



Origin:
Africa

African Feather Grass

Pennisetum macrourum



Images | Davis Landscape Architecture

Description

African feather grass is an erect perennial grass, densely tufted and with a rhizome* up to 1 m or more. It is mainly a weed of pasture and other grasslands but also grows on roadsides, waste grounds and disturbed areas.

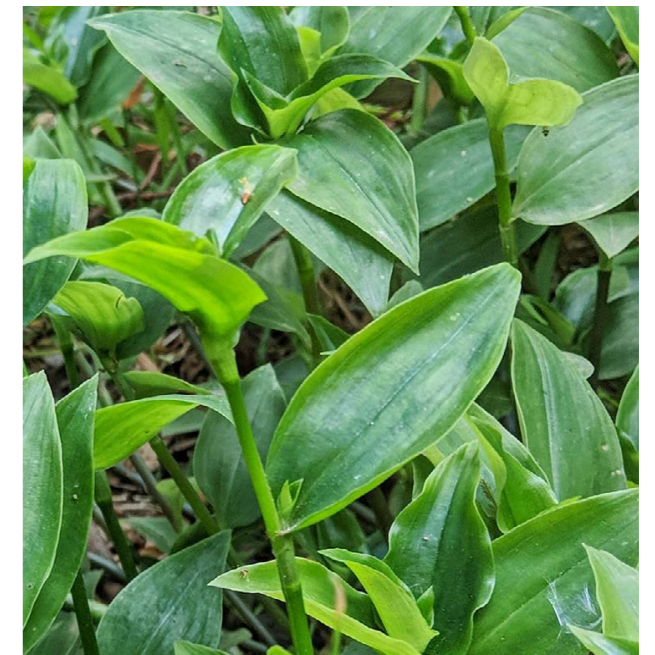
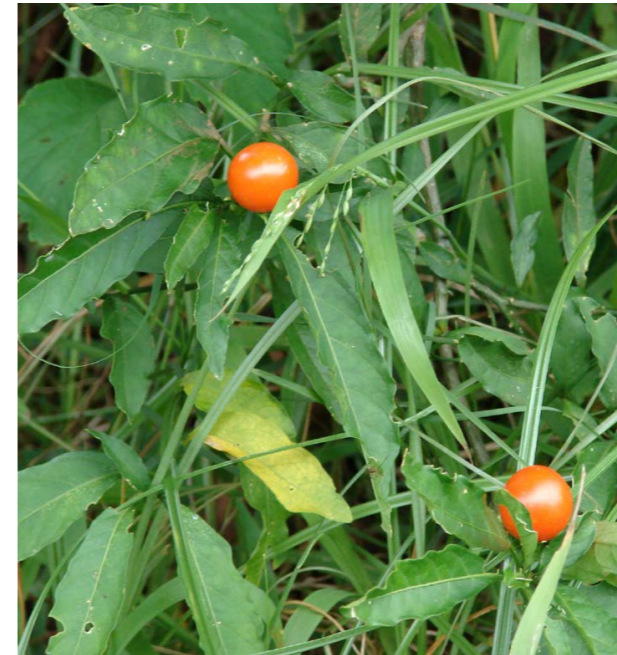
This species is particularly difficult to control because of the abundance of rhizomes and the ability of roots to regenerate from fragments. The grass should be slashed or burnt before seed set. Controlled herbicides can also be used during periods of active growth in the spring or autumn to curtail growth



Origin:
South Africa

Test Yourself !

Can you identify these weeds from the toolkit?



Find the answers in the appendix

Afterword

Encounters with Melbourne's weeds

Weeds are complicated. They are terrible invaders, plants that are a foreground to incalculable ecological losses, and a target for crucial professional work and often Herculean acts of physical labour by volunteers. Yet in aggregate, the establishment of these weeds is no more reversible than the movement of the sun across the sky.

Weeds grow from the heart of Melbourne's environmental history, both from the heritage that gets celebrated and from traumas that may one day be reconciled. When we find weeds along the Yarra River, they are not only invaders from outer space. Weeds were embedded in the founding of Melbourne, both by accident and intent, and they are a living embodiment of the accumulated change and dislocations that also put so many of us here along this river.

With intent and perseverance, efforts to rebalance river landscapes can be successful, supporting the plants, ecologies and values we need for a sustainable future. But we are stuck with weeds, and the Yarra is

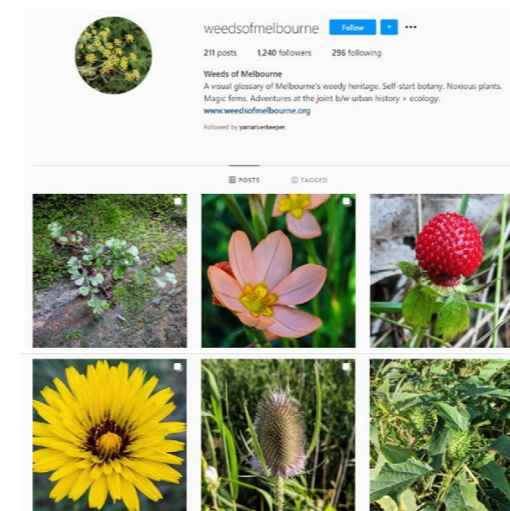
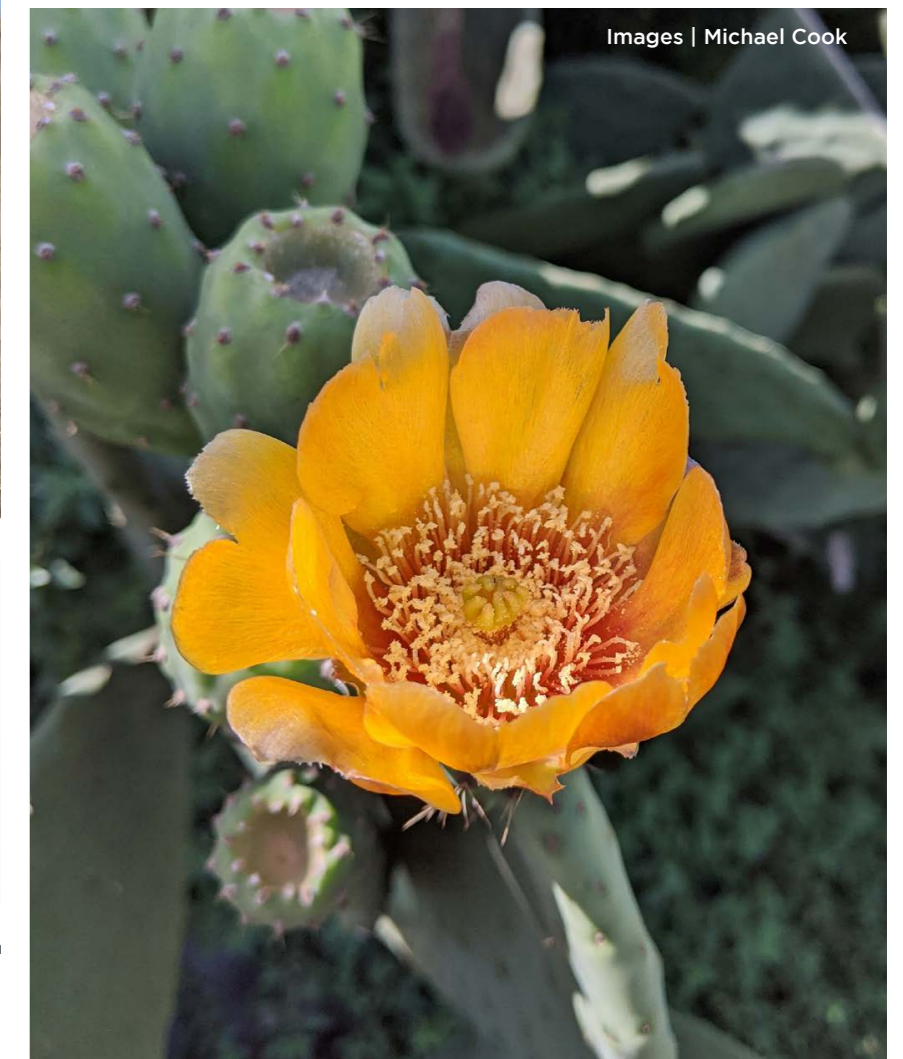
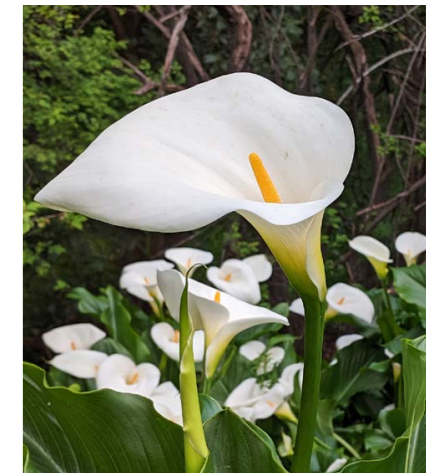
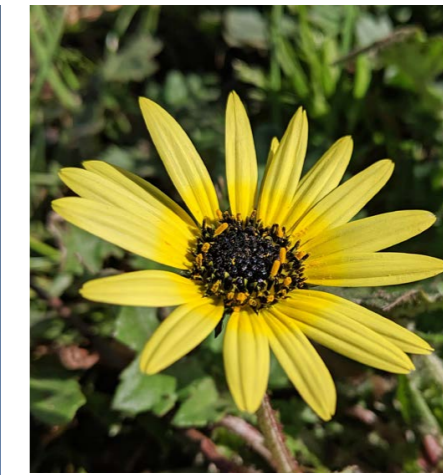
stuck with them. Standing in a sea of Angled Onion, or witnessing the annual arrival of Capeweed and Cleavers, there can be no uncertainty about the reality of the situation.

Learning weeds is an ongoing encounter with all of this—with the history and ecology of these plants, and with the tension strung between acknowledging their destructive consequence and appreciating their beauty as living things and as strange and irrevocable apparitions on the land and water of this place. While we'll keep pulling and slashing these weeds where they merit that treatment, it's worth being open to the other stories they might be telling us

Michael Cook - Weeds of Melbourne

Michael David Cook is a landscape architect and heritage consultant. He is the writer and photographer of Weeds of Melbourne, compiling a visual and historical glossary of the plants that grow as weeds within metropolitan Melbourne.

Find the project online at:
[instagram.com/weedsofmelbourne](https://www.instagram.com/weedsofmelbourne)
weedsofmelbourne.org



Appendix

List of comon terms

Leaf Shapes

Leaf axil: The angle between the upper side of the leaf and the stem

Lanceolate: lance shaped leaf, tapers to a point at either end

Toothed: having rough or jagged crevasses along the leaf edge, like teeth

Undulated: a leaf with wavy edges

Crenate: a leaf having rounded bumps/being scalloped along the edges

Seed pod: The case inside which the seeds of a plant are stored

Disturbed land: land with reduced habitat value due to factors such as removal of vegetation or topsoil, or changing land use such as being an agricultural landscape

Anthropogenic: originating from human activity

Allelopathic: the release of chemical that effect on the growth of neighbouring species

Perennial Plant: continual across seasons for at least two years

Annual Plant: a plant that completes its life cycle within one season

Inflorescence: the complete flowering head of a plant

Gowth Types

Bract: a specialised leaf particularly pertaining to the fruiting body of a plant

Erect: standing upright

Sprawling: predominantly lateral growth

Decumbent: grow predominantly on the ground but with an ascending extremity

Degrading: persistent declining structure, function and composition

Herbaceous: A vascular plant, lacking woody tissue

Tuberous: A plant that forms tubers at its roots, (think potatoes)

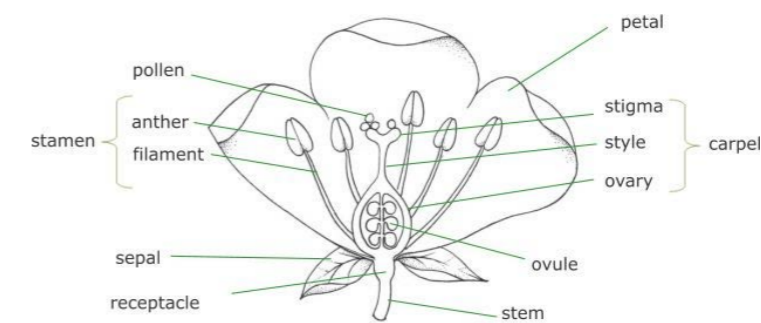
Naturalised (plant): a plant whose origin is elsewhere but has become established within the region

Foliage: the collective plural for a plants leaves

Floret: a small flower making up a composite flower head

Riparian: on the bank of a river

Rhizomes: A horizontal, usually underground stem that sends out roots and shoots from its nodes



Flower Diagram
Science and Plants for Schools (SAPS)

References

Further reading

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- 2 The North Central Catchment Management Authority: Weeds Identification Guide North Central Victoria (http://www.nccma.vic.gov.au/sites/default/files/publications/weeds_identification_guide.pdf)
- 3 Australian Government Department of Agriculture, Water and the Environment: Noxious Weed and Pest Animal Management: Your Legal Roles and Responsibilities (https://www.parliament.vic.gov.au/images/stories/committees/enrc/Invasive_Animals_on_Crown_land/210I_2016.09.13_Attachment_9_-_Noxious_Weed_and_Pest_Animal_Management_Roles_and_Responsibilities.pdf)
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- 9 Australian Government Department of Agriculture, Water and the Environment: Cultural Control (<https://www.environment.gov.au/biodiversity/invasive/weeds/management/cultural-control.html>)
- 10 Australian Government Department of Agriculture, Water and the Environment: Biological Control (<https://www.environment.gov.au/biodiversity/invasive/weeds/management/biological-control.html>)
- 11 City of Stonnington, Sustainable Gardening in Stonnington ([Sustainable Gardening in Stonnington booklet](#))
- 12 Creative Spirits, Aboriginal Land Management and Care (<https://creativespirits.info/aboriginalculture/land/aboriginal-land-care>)



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