



For residents in the Shire of Capel and landowners in the South West We need to control the weeds.

It's Out! Weed!

Where can you get help?

Department of Primary Industries and Regional Development (DPIRD)
Pest and Disease Information Service (PaDIS)
Phone: (08) 9368 3080
Email: padis@dpiird.wa.gov.au
MyPestGuide Reporter
Web: mypestguide@dpiird.wa.gov.au
Leschenault Biosecurity Group Inc.
Email: info@lbginc.org.au
Mobile: 0488 021 344

Capel Land Conservation District Committee (LCDC)
Email: capel_lcdc@yahoo.com
Facebook: landconservationdistrictcommittee
Shire of Capel
Phone: (08) 9727 0222
Web: www.capel.wa.gov.au
Email: info@capel.wa.gov.au

Website resources

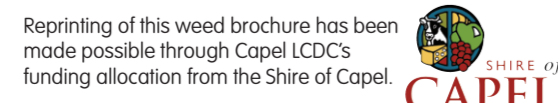
Declared Plant Control Handbook (DPIRD)
www.agric.wa.gov.au/herbicides/declared-plant-control-handbook
My Pest Guide (DPIRD)
www.agric.wa.gov.au/pests-weeds-diseases/mypestguide
Pest and Disease Information Service (PaDIS)
www.padis.wa.gov.au/n/1207
Leschenault Biosecurity Group Inc.
www.lbginc.org.au
HerbiGuide - provides information and control techniques for over 600 weeds
www.herbiguide.com.au

Nature Conservation Margaret River Region: Woody Weeds Booklet
www.natureconservation.org.au/wp-content/uploads/2017/09/woody-weeds-booklet-2013.pdf
Managing Environmental Weeds Information Sheet
www.natureconservation.org.au/wp-content/uploads/2019/07/Managing-Environmental-Weeds.pdf
Arum Lily Control Information Sheet
www.natureconservation.org.au/wp-content/uploads/2019/07/Arum-Lily-Control.pdf

Be aware research is ongoing into the control of weeds. Consider contacting the office of your Recognised Biosecurity Group, Shire or Landcare Officers to obtain the latest information. Website information on specific weeds is available from the Department of Primary Industries and Regional Development. www.agric.wa.gov.au/pests-weeds-diseases/weeds

There are Landcare and Biosecurity Groups operating in our region. Why not consider joining one of them, even if you have a small block of land. They are a great source of information. Contact your local Landcare and Biosecurity Groups for more information. See above for contact details.

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An electronic version of this Weed Brochure highlighting the important weeds in our area, and their management, can be found on the Shire of Capel website www.capel.wa.gov.au

Compiled by Michael Tichbon OAM, assisted by Donna Brown, from personal photographs and photographs and information from external sources.



African Lovegrass
Eragrostis curvula
Photo by Michael Tichbon



Apple of Sodom
Solanum linnaeanum
Photo © State of Western Australia, DPIRD, WA



Arum Lily
Zantedeschia aethiopica
Photo by Michael Tichbon



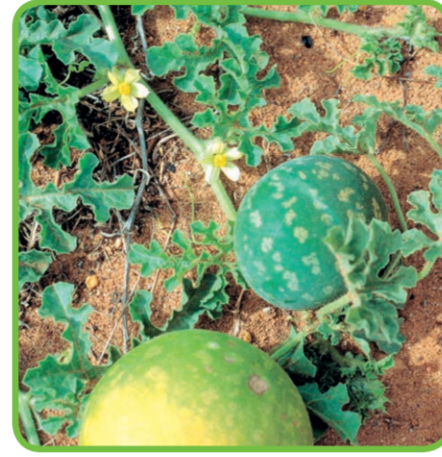
Blackberry
Rubus species
Photo by Denmark Weed Action Group



Blackberry Nightshade
Solanum nigrum
Photo by Michael Tichbon



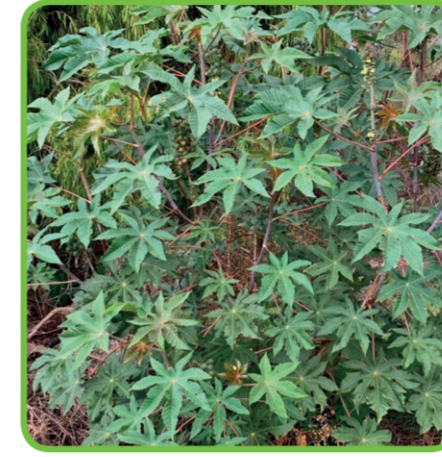
Bridal Creeper
Asparagus asparagoides
Photo by Michael Tichbon



Camel Melons
Citrullus amarus
Photo © State of Western Australia, DPIRD, WA



Cape Tulip
Moraea species
Photo © State of Western Australia, DPIRD, WA



Castor Oil Plant
Ricinus communis
Photo by Michael Tichbon



Cotton Bush
Gomphocarpus fruticosus
Photo © State of Western Australia, DPIRD, WA



Dock
Rumex species
Photo by Michael Tichbon



Doublegee
Rumex hypogaeus
Photo © State of Western Australia, DPIRD, WA



Evening Primrose
Oenothera species
Photo by Michael Tichbon



Fleabane
Conzya species
Photo by Michael Tichbon



Geraldton Carnation Weed
Euphorbia terracina
Photo by Michael Tichbon



Inkweed and Pokeweed
Phytolacca octandra (photo) and
Phytolacca americana
Photo by www.HerbiGuide.com.au



Paterson's Curse
Echium plantagineum
Photo © State of Western Australia, DPIRD, WA



Watsonia hybrid
Watsonia borbonica hybrid
Watsonia meriana var. *bulbillifera*
Photo by Michael Tichbon



Wattles, eastern states
Acacias (feral)
Photo by Michael Tichbon



Wild Radish
Raphanus raphanistrum
Photo by Michael Tichbon

Important considerations

- Identify what weeds you are dealing with on your property and if in doubt, seek expert help.
- Keep watch for and control new weed infestations as soon as you find them. It is easier to manage a few plants straight away, rather than waiting for them to set seed and become a real problem later, eg Flaxleaf Fleabane.
- Problems in paddocks are less likely if the pasture is well managed. This includes maintaining beneficial species, reseeding when necessary and treating weeds at the optimum time.
- Be aware before you buy hay that you may be bringing in weed seed, such as Dock, Paterson's Curse, Cape Tulip and Doublegee.
- Where practical, always feed purchased hay in the same location to limit the risk of spreading new weeds.
- Have a management plan for replacing weeds with desirable species.
- Large areas of dead weed look untidy, take up pasture space, but also may present a fire risk.

- Burning of weeds may resolve the immediate fire hazard and visual effect of weeds, however, this practise can stimulate germination and regrowth of weeds. Written approval is required from Council prior to burning any Council controlled land, including road verges.
- For gardens, the best, low maintenance strategy is to fill the area with suitable local native plants. Use either tubestock, direct seeding or cover the area with mulch. See 'References' for help.
- A well mulched garden will help to suppress weeds. Select an appropriate mulch or ask your supplier about its composition to ensure it does not contain weed species.

Controlling your weeds

- By controlling weeds – identifying, managing, removing or containing them - you can protect your property, native plants, animals and ecosystems.**
- Ask for advice on the best method to use to control weeds on your property before you start work.
 - Control or destroy weeds before they fruit or seed to prevent new generation of weeds growing on your property.
 - If your weeds need chemical control, find out the best herbicide to use, rate of application and how to apply it.

- After treating weeds, ensure that appropriate follow up control measures are undertaken.
- Consider further researching the weeds on your property to check current control methods and to learn more about how to eradicate or control.
- Liaise with neighbours who have the same weed issues.
- You may need permission or qualifications to use herbicides on public land or near vineyards.

Disposing of weed waste

Dumping of garden waste can spread weeds – please dispose of your weed waste wisely.

- Don't dump weeds or garden waste in bushland.
- Weeds can be bagged and burnt when it is safe to do so.
- Take garden waste to an approved landfill.
- Use a tarpaulin to cover your load.
- Do not compost harmful weeds.
- Be extra vigilant if you reside next to or nearby a reserve or natural area. Keep your property free of invasive weeds.
- Contact your local Council for information on green waste disposal sites.

What is a Weed?

A weed is a plant growing in the wrong place, often out of control. A weed is also any plant that grows or reproduces aggressively, or is invasive outside its native habitat. Many of the weeds in Western Australia have come from overseas or other states, where in their native conditions they do not usually pose a problem. However, in a new environment and in the absence of natural predators, they can quickly become dominant. Weeds take over bushland, smothering and inhibiting native vegetation, impacting on habitat and food sources that are essential for native animals and bird species. If weeds and grasses are allowed to take over, there is the potential for fire risks, especially on roadside verges. They compete vigorously for available space, crowding out the native species, and in some cases may block waterways. On farmland they can poison stock, affect the usage of land, reduce pasture areas and interfere with fodder quality. Weeds can produce large numbers of seeds, assisting their spread. Weeds are often excellent at surviving and reproducing in disturbed areas.

We need to get control of the weeds!

Your responsibilities...

Whether you have a small block or a large farm, as a landowner the weeds on your property are your responsibility. This leaflet is not a complete list of all the weeds you may have on your land, but a selection of the most problematic ones in the Shire of Capel.

Some of the listed plants may be "declared" under the Biosecurity and Agriculture Management Act 2007. Link to BAM Act: https://www.legislation.wa.gov.au/legislation/statutes.nsf/main_mrtitle_2736_homepage.html

If a plant is declared, all landholders are obliged to control the plant on their properties. Declared plants fall into categories which define the action required. The category varies over the State, ranging from prohibition or eradication, to control, or just preventing the spread into neighbouring areas.

A full list of declared plants and their categories can be found by searching for the scientific name of the species under the Western Australian Organism List (WAOL) link: www.agric.wa.gov.au/bam/western-australian-organism-list-waol

References ...

- Hussey, B.M.J., et al, *Western Weeds*. (Second edition). A guide to the weeds of Western Australia. The Weeds Society of Western Australia (Inc.) 2007.
- Moore, J.H., Wheeler, J., 2020. *Southern Weeds and their Control*, 4th edition, South Coast Natural Resource Management. Department of Primary Industries and Regional Development, Bulletin No. 4914.
- Moore, C.B., Moore, J.H., 2020. *HerbiGuide - The Pesticide Expert on a Disk*. HerbiGuide, PO Box 44, Albany, Western Australia 6331, www.herbiguide.com.au
- Schelltema, M., and Harris, J. (Eds) 1995. *Managing Perth's Bushland*. Greening, Western Australia.
- Serpentine-Jarrahdale LCDC. 1999. *A Guide to the Control of Declared Plants and Weeds in the Northern Peel Region*. Agriculture Western Australia, WA.
- Landcare-SJ – *Keeping it local. Local native species list for landcare projects in the Mid Swan Coastal Plain*. July 2017.
- www.sjshire.wa.gov.au/Profiles/sj/Assets/ClientData/Documents/Page-Centre/Community/Landcare-SJ-Keeping-it-Local-Plants-Guide-July-2017-Edition.pdf

WEED CONTROL INFORMATION

Categories (Cat) C1 Exclusion, C2 Eradication, C3 Management, NCC No Control Category, PP Pest Plant. www.agric.wa.gov.au/organisms

WoNS are Weeds of National Significance and were prioritised by Australian governments based on their invasiveness, potential for spread and environmental, social and economic impacts. Consideration was also given to their ability to be successfully managed. Landowners and land managers at all levels are responsible for managing WoNS.

Common & Botanical Names	Plant Description	Control Options
African Lovegrass <i>Eragrostis curvula</i>	Large, vigorous, drought resistant, densely tufted perennial grass to 1.2 m tall. Its hairless stems are usually slender, robust and upright, although sometimes curved or weeping when mature at the lower nodes. Leaves are greyish-green to dark green and often purple at base. Can flower for most of the year. The fine seed head is leaden grey and initially long and narrow, but opens widely with age. Reproduction is by seed and seed is produced without fertilisation (apomictic). Seeds are dispersed by water, wind, in the gut of animals, farm machinery, road construction, vehicles and can contaminate soil, grain and hay. Old plants resprout in spring. Roots are fibrous and tough. The young growth before production of seed heads is generally palatable to stock. Older growth has low palatability and is avoided by animals. Owing to this, it can spread and dominate sparse pastures by remaining ungrazed by animals and forming pure, dense infestations. Has become a serious fire hazard, often only top-killed by fire and rapidly resprouts. Found on roadsides, disturbed ground and now invading bushland. Native to South Africa. (NCC)	Cultivation and continuous grazing usually provides reasonable control. It is difficult to remove manually, because it has a tough fibrous root system and the tillers tend to break off and regrow. Grub out plants in sensitive areas and ensure that the entire tussock crown is removed. If burning an infestation, then treat regrowth once it has reached 15-20 cm high using glyphosate. Flupronate at 2 L/ha provides fairly selective control in roadside vegetation. Do a test strip to determine if any off target damage is acceptable. It is slow acting so wait 6-12 months before assessing the efficacy. 3-4 L/ha glyphosate(450g/L) annually in winter provides good control and helps reduce spread. Grass-selective herbicides generally provide little or no control. Small infestations of African Lovegrass can be sprayed at any time of the year with a mixture of 100 mL glyphosate(450g/L) in 10 L water. Repeat applications are usually required to control seedlings that emerge after spraying.
Apple of Sodom <i>Solanum linnaeanum</i>	Prickly, rounded, erect, branching, woody, perennial shrub species usually 1-2 m high, can reach 5 m. Stems range from green or purple to brown in colour and are irregularly branched. Along the stems are numerous straight or slightly curved prickles, 3-12 mm long. Spiny, deeply lobed leaves with long curved spines on both surfaces of leaf. Flowers in spring and summer, about 2 cm across, usually purple (sometimes white) with yellow centre. Flowers have five petals joined to form a star. Fruit are a green with white mottling globular berry at first, then yellow when ripe. It produces thousands of seeds per plant. If left to establish it can result in dense patches which crowd out other vegetation and can harbour foxes, rabbits and snails. Warning: The fruit is poisonous to humans and stock. Native to South Africa. (NCC)	Seedlings and young plants can be hand pulled with gloves, remove roots also. Collect all fruit from the infested area. Burn isolated plants and all pulled plant material, including seedlings, fruit etc. Apply a mixture of 120 mL amifrole (250g/L) in 10 L water and spray the bush until thoroughly wet. Cultivation, followed by treatment of regrowth and seedlings with picloram + 2,4-D, is effective. Control infestations within 5 km of the target area to reduce the spread of seed by birds. To reduce Apple of Sodom seedling germination, plant perennial species which provide shade and a good mulch on the soil surface.
Arum Lily <i>Zantedeschia aethiops</i>	A robust perennial herb to 1 m high, often forming large dense clumps. Dark green, shiny arrow-shaped leaf blades sprout from tuberous roots. Conspicuous large white tubular flowers are funnel shaped at the top with a slit down one side. It flowers mainly in late winter and spring. Berries are oval, yellowish, about 1 cm in diameter and contain several round seeds about 3 mm in diameter. Berries are spread by birds and during flooding. Widespread serious weed growing in heath, sand dunes, pasture, bushland, creeks, irrigation ditches and areas of summer-moist land, but also invading drier sites. Warning: Impedes water flow and is toxic to stock, especially cattle. Causes eczema in humans. Keep flowers out of reach of children. Introduced to WA from South Africa as a garden plant. (NCC)	Best results are obtained when plants are actively growing between July and October. Spray with 1 g chlorsulfuron or metsulfuron plus 25 mL Pulse® in 10 L water OR 100 mL 2,4-D amine500 plus 25 mL Pulse® in 10 L water. Chemicals can also be wiped on. Spraying is not as effective after the flowers start to wither. In wet areas, spray after water levels have fallen. Some tubers may emerge later in the season and will require a follow up spray. Mechanical removal is only effective if all root fragments and tubers are removed. Glyphosate is not very effective. Contact neighbours to develop a neighbourhood wide control program.
Blackberry Rubus species (WoNS)	A Weed of National Significance (WoNS). Scrambly, very thorny, semi-erect perennial shrub to 2 m high with canes up to 7 m long. Spread by seed, rooting of cane tips and by suckers from lateral roots. Long, rough, tangled and arching stems root, forming impenetrable thickets that crowd out native plants and provide shelter for vermin such as foxes and rabbits. While in pink five petalled flowers appear from late spring to summer, followed by clusters of black berries. Fruit is globe-shaped 1-3 cm across, initially green, ripening through red to black and composed of numerous small juicy segments. Seeds in ripened fruit pass through gut of birds and mammals (especially foxes) and may spread infestations some distance. Smothers most low growing species, inhibiting the establishment of native plant seedlings and impedes access. Introduced to WA for their fruit, but now invade pastures, riversbanks and creek lines. (NCC)	Blackberry is difficult to control by manual methods. Grazing with goats is reasonably effective but remnants need to be sprayed when the goats are removed. Very high levels of control are achieved by spraying with 100 mL Grazon® plus 25 mL Pulse® in 10 L water. Large infestations may be reduced by spraying with 1 g metsulfuron plus 25 mL Pulse® in 10 L water as this is much cheaper. 100 mL glyphosate plus 25 mL Pulse® in 10 L water also provides reasonable control. Spray any time from late spring to autumn when the Blackberry is actively growing with plenty of foliage.
Blackberry Nightshade <i>Solanum nigrum</i>	A common erect herb or small short-lived bushy shrub to 1 m high. Leaves are 2-7.5 cm long, entire or very shallowly lobed. Flowering occurs 5-9 weeks after germinations and continues until plant dies. Flowers are white in short-stalked clusters of 4-12 flowers. Each flower is star-shaped, white or tinged with purple or white with a greenish-yellow star and about 10 mm across. Soft, juicy, globular, drooping berries are at first green, but becoming dull black or purplish in colour at maturity. Produces prolific seeds with each berry containing 25-35 seeds with seeds having high germination rates. Up to 178,000 seeds can be produced by one plant. Readily spread by birds into bushland. Competes vigorously for space and nutrients. Remove stock from infestations. A weed of horticulture, gardens, crops, pasture, stock yards, wetlands, waterways, wasteland and disturbed areas. Warning: Young fruit is toxic, especially to children and stock. Native to Europe. (NCC)	Prevent seed set for several years. In bushland situations, manually remove plants before flowering. On larger infestations, 1 L/ha Starane® or Lontrel® or 20 mL in 10 L water, applied when the weed is actively growing in summer, will provide reasonably selective control. Control infestations within 5 km of the target area to reduce dispersal of seed by birds. 1 L/ha 2,4-D amine500 or 20 mL in 10 L water is also used for the control of young plants in early summer and at these rates causes little damage to most established native species. Plant perennial species or encourage shrub species and litter build up to provide a good mulch over the summer period as this will reduce re-invasion. Blackberry Nightshade usually only germinates in bare soil.
Bridal Creeper <i>Asparagus asparagoides</i> (WoNS)	A serious, highly invasive environmental WoNS destroying large areas of native vegetation. It has annual climbing stems from a perennial root system, consisting of many tubers grouped along a central rhizome. It forms a dense canopy which smothers other vegetation, preventing seedling establishment and destroying understorey plants. It has tiny creamy white flowers with six petals. Flowering time is spring. It produces pea-sized green berries, which ripen to red and usually contain one to four black seeds. It has become a common weed along roadsides, in town allotments, orchards, wasteland, disturbed scrubland, invades dry coastal vegetation, rock outcrop vegetation and can invade undisturbed bushland as its seeds are spread by birds. It is frost tolerant and its perennial root system enables it to survive summer drought. Biological control agents have been released for bridal creeper. It entered the country as a garden plant from South Africa during the 1870s and is now a major weed. (NCC)	Biocontrol agents include a leaf rust and leaf hopper. These reduce the spread and seed set of the creeper, but rarely kill the plant. It is difficult to control manually because it has many underground tubers and rhizomes. Repeated removal of the top growth over several years will exhaust the tubers. Metsulfuron provides good control and at low rates of 2 g/ha can be sprayed or misted over most trees and shrubs without damaging them when applied in August or September. This treatment is very slow acting and results may not be apparent until the following season when fewer Bridal Creeper plants emerge. A mix of 1 part glyphosate plus 2 parts water can be used to carefully wipe onto the vine, avoiding contact with supporting vegetation.
Camel Melons <i>Citrullus amarus</i>	Often called Afghan Melon it is an annual summer trailing vine with long leafy, trailing prostrate stems up to 2 m long with bristly hairs and are rough to touch. Deeply lobed leaves up to 20 cm long. Flowers are yellow, 3-4 cm across with male and female flowers on the same plant. Sets fruit late summer to autumn. Large, smooth-skinned fruit up to 15 cm across with mottled green stripes at first, but becoming yellow with age. Has large brown seeds which germinate readily in warm soils in spring and summer after rains. Seeds may remain dormant in the soil for several years. Once established they are very drought tolerant and usually set melons and seed. Common on road verges, paddocks, firebreaks and grows easily on disturbed ground in summer. Warning: Suspected of being toxic to stock. Stock losses have been associated with eating the melon, but the smell of the plants generally makes them unpalatable. Originated from southern and tropical Africa. (NCC)	Small outbreaks can be collected by hand before they are mature. Prevention of seed set by mechanical removal is feasible on small areas. Triclopyr600 at 250 mL/ha plus 1% spray oil provides good control, but care will have to be taken using this product near vineyards. The effectiveness is increased by applying to small plants and by adding a spraying oil at 1% to the mixture. Best results occur when young plants are treated. Use 1 mL triclopyr600 plus 10 mL spray oil per litre of water for spot spraying. High rates of glyphosate on young plants are also effective.
Cape Tulip <i>Moraea</i> species	One-leaved Cape Tulip (<i>Moraea flaccida</i>) and two-leaved Cape Tulip (<i>Moraea miniata</i>) are both serious toxic weeds of pasture. One-leaved Cape Tulip has only one leaf per plant which is 1-2 cm wide and can be up to 1 m long. The erect flowering stem can reach up to 60 cm in height. The flowers are usually orange to salmon pink with a yellow centre, but occasionally plain yellow. The small brown seeds are produced in a three-valved capsule up to 5 cm long. The underground corm has a light brown fibrous covering. Two-leaved Cape Tulip is very similar in appearance, but has two or three leaves per plant. It does not produce seeds, but produces a large number of small corms around the parent corm, and in the angle where the leaves join the stem. The underground corm has a hard black covering. Both species are commonly found in pastures, woodlands and disturbed land. Warning: It is toxic to livestock, especially cattle and there is no treatment readily available. The plant remains toxic even when dry, so contaminated hay can also be a problem. Prevent poisoning by avoiding contact with the plants. Map where infestations are located to avoid spreading by cultivation. Originated from South Africa. (NCC)	Control by manual removal is difficult due to many dormant corms in the soil. Dig up plants with the surrounding soil and incinerate or drench with diesel. Cultivation to 150 mm provides control if done after the old corm shrivels and is exhausted and before the new corms form. This is often in June or July, but may be September. Dig up plants to determine the stage of their corms. Clear trash by burning or cultivation in late summer. Hand spray until just wet in June to early September each year with one of the following mixtures: 0.2 g of chlorsulfuron(750g/kg) or metsulfuron(600g/kg) plus 25 mL Pulse® in 10 L water provides high levels of control and also kills clovers, but usually doesn't leave the area bare. 100 mL glyphosate(450g/L) in 10 L water plus 25 mL Pulse® tends to leave the area bare. Use 50 mL amifrole(250g/L) plus 25 g simazine(900g/kg) plus 50 mL 2,4-D amine500(L) plus 25 mL Pulse® in 10 L water for areas such as firebreaks. In sensitive areas in spring, use a blanket wiper or sponge glove using 1 L of glyphosate or 2 g of chlorsulfuron(750g/kg) or metsulfuron(600g/kg) in 2 L of water. In clover based pastures, an annual 'spray graze' with 750 mL/ha 2,4-D amine500(L) is cheap and effective. Spinaker® is useful in other legume pastures. Control normally takes several years and follow up is essential. Cultivation to expose the corms a few weeks after spraying may improve control.
Castor Oil Plant <i>Ricinus communis</i>	Large soft-wooded spreading shrub growing to 5 metres. Glossy large palmate leaves are alternate or spirally arranged and widely spaced on branches. Leaves start off dark reddish purple and gradually change to a dark green, sometimes with a reddish tinge, as they mature. Unpleasant odour when crushed. It has yellow male flowers and reddish female flowers on the same raceme. Flowering time spring to autumn. Capsules split open when ripe, dispersing seeds explosively several metres. Dispersal by water flow, seed-infested soil and garden refuse. Fire triggers germination of the soil seed bank and seeds are viable for 1-10 years. Warning: Seeds are very poisonous to humans, horses, dogs, poultry and livestock. Fresh and dried leaves are equally toxic. Common on road, rail verges, wastelands and creek lines. Introduced to Australia before 1803. Originated from tropical Africa and Asia. (NCC)	Small trees can be controlled by overall spraying with a mix of 1 L glyphosate(450g/L) plus 250 mL Pulse® in 100 litres of water. For large trees, basal bark treatment with triclopyr or Access®, applied in a (1:60) mixture with diesel to basal 50 cm of the trunk of the tree is effective. Older trees with rough bark may require more wetting. If the trees are cut down best results occur if cutting occurs within 15 cm of the ground level and the cut stump is painted with the triclopyr mix above or neat glyphosate. Small infestations can be manually removed however, protective clothing, gloves and eye protection should be worn because it is toxic. Check known sites regularly for any new seedlings.
Cotton Bush <i>Gomphocarpus fruticosus</i>	Narrow-leaf cotton bush is an erect slender short-lived shrub growing to 2 m high and is also known as swan plant because of the shape of its seed pods. Tall slender, pale green stems. Leaves are narrow, taper to a point and are opposite each other in pairs. White to cream flowers form in loose drooping clusters of 3-10 flowers from October to April. Distinctive puffy air-filled seed pods, swan-shaped structures covered in soft spines. Reproduces by seed and suckers. Can be found at any time of year, but easy to identify in summer and autumn when mature plants have flowers and fruits. Found in pastures, around creeks and wetlands, on roadsides and disturbed sites. Can form dense thickets covering many hectares. Warning: All parts of the plant exude a milky white sap when damaged and is toxic to humans and livestock and may cause deaths in livestock if mixed in hay. Native to South Africa. (C3)	Small plants can be removed by grubbing or hand pulling, ensuring you get all the roots to prevent suckering. At this growth stage they are unlikely to have seeded and can be disposed of by drying and burning. Take appropriate measures to avoid contact with the toxic sap, such as wearing rubber gloves and overalls, and washing hands thoroughly before eating. Contact with the sap could cause a rash, or other symptoms and then medical advice should be sought. Destroy any seeds in a way to avoid spreading the plant. Larger infestations are effectively controlled by spraying with 4 L/ha glyphosate or Grazon® from September to December before flowers form. Thorough coverage with spray is essential. The addition of a wetting agent or penetrant at 0.25% is beneficial. In bushland areas, wipe the leaves with a mixture of 1 L glyphosate plus 2 L water before flowering when the plants are actively growing in spring to early summer. Larger infestations are best dealt with by a combination of spraying, slashing, burning and pasture management.
Dock <i>Rumex</i> species	Docks are vigorous annual or perennial plants often with thick, stout taproots, a basal rosette of leaves and erect and branching flowering stems. Flowers in winter, spring and early summer. The small flowers are arranged in whorls up the flower spike. Docks are prolific seeders and can produce up to 60,000 seeds per plant. Some seed remains viable for 20 years. Leaves are hairless, often with short stalks and may be narrow or broad, depending on the species. Each year new leaves arise from the perennial rootstock. Spread by seed and root fragments. Invades paddocks, found in damper soils, creeks and disturbed wetlands. There are three native species, but there are over ten Dock species that are nuisance weeds in WA. (NCC)	Remove isolated plants by cutting their roots at least 20 cm below ground level. Grazing, mowing or cultivation usually leads to greater stands. Small areas can be spot treated with metsulfuron methyl or glyphosate. Glyphosate or dicamba can also give good control when applied to rosettes of Dock that usually appear before the main germination of the annual pastures. This is more likely to occur when there is a late break to the season and treatments can be applied mid to late April. Occasionally Dock may also be treatable with metsulfuron in November-December after the pastures have set seed. There are no herbicides that selectively control established 'Old Man' Dock in clover based pastures. These need to be controlled in a grass or cereal phase and then seedlings may be controlled with an application of 750 mL/ha of 2,4-D500 or 1.5 L/ha MCPA500 in early winter every year as a spray graze treatment in the following clover based pastures to prevent re-establishment.
Doublegee <i>Rumex hypogaeus</i>	Hairless annual, usually prostrate, but is upright when growing amongst tall plants and may grow to 40 cm high. Several stems grow from each crown. Leaves are triangular to oval, 3-12 cm long. Insignificant greenish flowers in winter. When fruits mature, the colour will change from brown to brown, hard and woody, 7-11 mm long with three rigid spines and is well equipped for dispersal. No matter how it lies on the ground one spine always points upwards, attaching it to almost anything which passes over or is placed on it, particularly shoes, rubber tyres and feet of animals. Individual plants can produce up to 1,100 seeds. New infestations are likely to appear first along tracks, around buildings and at stock watering points. Has potential to seriously affect agricultural production and can have a large impact on land value. Warning: Can contaminate and spread in hay and is occasionally toxic to livestock. Native to South Africa. (NCC)	Small infestations and isolated plants can be grubbed out. If the plants are seeding, then they should be destroyed by burning them. A control program must aim at killing all plants shortly after emergence and needs to be continued for several years. Prickle rollers can be used to gather and remove seed from the ground surface, but are not very effective. The best control in clover pastures is achieved with 25 g/ha Broadstrike® plus 50 g/ha diuron900 plus 1% spray oil when the Doublegees have less than six leaves. A follow up spray may be required in some years when late germinations occur. For spot spraying use a mix of 1 L picloram+2,4-D plus 10 g metsulfuron in 100 L water and spray the young plant, plus a 1 m buffer area to control the parent plant and seeds that germinate after spraying. Small areas should be fenced off to prevent stock, people and vehicles spreading the seed. High levels of seed dormancy and longevity make Doublegee hard to eradicate. Spraying with glyphosate tends to lead to greater infestations because it leaves the area bare and weeds with hard seeds like Doublegee germinate and flourish. A permit may be required for spraying herbicides like 2,4-D close to vineyards and market gardens.
Evening Primrose <i>Oenothera</i> species	Annual, biennial or perennial straggly, spreading, softly-hairy weed growing to 1 m tall with a basal rosette of large narrow leaves and a leafy spike of flowers. Grows throughout the year depending on available moisture and growth may be slow in the cooler months. The bright yellow showy flowers open early in the morning or late in the afternoon, becoming tinged with red and withering the following day as the flower above it opens. The flowers are up to 10 cm across with a slender tube and four large spreading petals. Seeds germinate from autumn to spring. The seed vessel is long and slender. It has a tuberous rootstock and difficult to remove by hand. Common invader of roadside verges, paddock margins, wasteland and disturbed sites. Moth pollinated. Most of the approximately 80 species originate in the Americas, with at least nine naturalised in WA. (NCC)	Difficult to remove by hand because it tends to break off and regrow from the rootstock. If removing manually, use a fork and ensure that all the fleshy rootstock is collected and burnt or buried more than 1 m deep. Grazing normally provides control. Spray young actively growing plants and a 5 m buffer area in spring or autumn with 50 g/ha Logran® plus 1% spray oil. Use 1 g Logran® plus 100 mL spray oil in 10 L water for hand spraying. Alternatively, 4 L/ha 2,4-DB(400g/L) may be used. Both herbicides are relatively selective in bushland situations and 2,4-DB is preferred in areas where there are many seedlings of native species. The best control is obtained when the plants are sprayed before the six leaf stage and resprayed as regrowth appears. Evening Primrose is relatively tolerant of glyphosate. A permit may be required for spraying herbicides like 2,4-DB close to vineyards and market gardens.
Fleabane <i>Conyza</i> species	A leafy, grey and hairy, erect tap-rooted annual or biennial plant to 1 metre. Stems are branched, often with the side stems taller than the main stem giving it a condelabra-like shape. Fluffy compact seed heads mature with a parachute of fine hairs. Produces small lightweight fluffy seeds throughout the year and the pappus on the seed enables it to be readily dispersed long distances by wind. Fleabane is a prolific seed producer, with each mature plant producing up to 110,000 seeds and of these, up to 80% can be viable. The seeds do not possess dormancy so in WA they can germinate whenever temperature and moisture requirements are met, but is most common in spring. It is a major weed of cultivation, disturbed areas, roadsides, pastures and competes for the vital resources. Prevention of seed-set is vital for control. Emergence is staggered, so it is difficult to control all seedlings. Fleabane refers to the flea insect repellent properties of the ground seed. Warning: Suspected to be toxic, but is rarely eaten if other feed is available. Sap causes a skin irritation. Native to South America. (NCC)	Hand remove isolated infestations prior to seed set. Hand pulling after stem elongation is effective on loose soils, but on heavier soils a weed fork is required to prevent the plant breaking and regrowing from the base. A mixture of 1 L glyphosate(450g/L) plus 2 L water can be used to wipe the stems of plants in these situations also. Mowing is not an effective form of control. Small plants are far easier to control than plants that are more than 100 mm diameter or are at an advanced stage of maturity. Young plants may be controlled with 1.5 L/ha 2,4-D amine500, but larger plants require 1 L/ha glyphosate(450g/L) followed by 1 L/ha 2,4-D amine500 at the rosette and up to the flowering stage using a boom spray when the plants are actively growing. Lontrel®750 at 200 g/ha or 4 g Lontrel®750 plus 25 mL wetting agent in 10 L water can be used for fairly selective control in bushland when the Fleabane is at the rosette stage. Isolated patches can be sprayed with a mixture of 50 mL picloram+2,4-D in 10 L water for control of plants and residual control of seedlings.
Geraldton Carnation Weed <i>Euphorbia terracina</i>	An erect, pale green, ascending, hairless perennial growing to 1 metre tall. The flower head is yellow-green in summer. Peak flowering time is August-September. It dies back to a woody base over summer, producing new stems with autumn rains. Seedlings have rapid growth within a few months, prolific seed production in the first season and can set seed any time following rain. Mature plants have a deep root system and re-sprout readily when cut, grazed or burnt. Seeds are viable for up to five years, are scattered by an explosive action and are dispersed by birds, ants and water flow. This weed poses a serious threat with the ability to invade agricultural land, road verges, coastal heath, disturbed soil, swamps and woodlands. Once established, it can form dense monocultures and invade relatively undisturbed vegetation. Following fire many plants will re-sprout from woody bases and also may cause mass germination of soil-stored seed. Warning: Produces a very toxic and irritating milky sap when cut. Contact with the sap can cause painful inflammation of skin and temporary or permanent blindness. Native to the Mediterranean. (NCC)	Plants left lying on the soil surface can go on to produce seed and plants re-sprout from base or root material left in the soil, so care must be taken to remove the entire plant. Hand removal can stimulate germination of the soil seedbank. Avoiding contact with sap is essential. Ensure adequate personal protective clothing is worn, as well as safety glasses and gloves. Undertake control after any event. Spray until just wet with a mix of 40 mL glyphosate(450g/L) plus 0.2 g metsulfuron(600g/kg) plus 25 mL Pulse® in 10 L water any time the plant is actively growing. For overall spraying use 2 L/ha glyphosate(450g/L) plus 10 g/ha metsulfuron(600 g/kg) plus wetting agent in non-selective situations or 40 g/ha triasulfuron(750g/kg) plus 1% spray oil where contacting companion plants cannot be avoided.
Inkweed <i>Phytolacca octandra</i>	Inkweed is a short lived bushy, stout, spreading perennial surviving 2-3 years. Growing to 2 m high with oval leaves 4-25 cm long and has a very deep, pliable taproot. Flowers are hollow, smooth, angular and often tinged reddish purple. Much branched and soft near the top with several small white to pale green flowers in dense spikes. Stems throughout the year with a peak from August to October. Berries are in dense cylindrical clusters and are at first green, then red, then shiny, purple-black and succulent with red juice. Grows and matures quickly, producing many well dispersed, long-lived seeds. A weed of roadsides, creek lines, poorly-managed pastures and disturbed sites. Birds and foxes eat the berries and distribute seed. Also spread by water flows, road works and dumping of garden waste. Warning: Reported to be toxic to humans, horses, cattle, sheep, pigs, fowl and dogs. Native to tropical South and Central America. Inkweed (Phytolacca octandra) flowers are borne on very short stalks (i.e. pedicels) only 2-3 mm long and usually have 7-8 stamens. The mature fruit are relatively small (4-6 mm across) and usually have eight slight lobes (i.e. they usually contain eight seeds). The taproot is stout, rarely more than 25 mm diameter. (NCC)	Remove stock from Inkweed infested areas. Burning generally provides little control as the plants re-shoot from the base. Remove individual plants by cutting through the roots at least 50 mm below ground level to prevent re-sprouting. Small infestations may be treated with 100 mL Grazon® in 10 L water. This will control existing plants and has residual activity for control of seedlings. Hexazinone can be used for control in pine plantations. Larger infestations can be controlled with 50 g/ha metsulfuron600 plus 1% spray oil or 1 g metsulfuron600 plus 100 mL spray oil in 10 L water for hand spraying. Half these rates will control seedlings. Single plants may be controlled with a basal bark spray of 1L Triclopyr600 in 60 L diesel. Large Pokeweeds plants may be controlled by drilling a 20 mm hole about 100 mm deep into the rootstock and putting 10 mL Triclopyr600 into the hole. Infestations within 5 km of the target site will need to be controlled to prevent birds spreading seeds. Otherwise, seedlings will need to be controlled annually wherever birds roost. Seedlings may be manually removed, but older plants tend to break off and regrow.
Pokeweeds <i>Phytolacca americana</i>	Inkweed (Phytolacca octandra) flowers are borne on very short stalks (i.e. pedicels) only 2-3 mm long and usually have 7-8 stamens. The mature fruit are relatively small (4-6 mm across) and usually have eight slight lobes (i.e. they usually contain eight seeds). The taproot is stout, rarely more than 25 mm diameter. (NCC) Versus ... Pokeweeds (Phytolacca americana) flowers are borne on relatively long stalks (i.e. pedicels) 5-10 mm long and usually have 10-11 stamens. The mature fruit are relatively large (5-11 mm across) and have ten or eleven slight lobes (i.e. they contain ten or eleven seeds). It can develop a taproot that is up to 150 mm diameter. Pokeweeds was recently found in the Balingup area and is under eradication in WA. (C1)	
Paterforn's Curse <i>Echium plantagineum</i>	Invasive, large, erect, coarse, bristly annual, occasionally biennial commonly 60 cm high, but can grow up to 150 cm. Grows as a large basal rosette parallel to the ground in autumn and winter and may be so dense that they completely dominate other species. Stems are light-green in colour and densely covered with coarse bristles, branching mainly towards the top. Easily identifiable by its funnel-shaped flowers which develop in clusters in spring and early summer. Flowers are usually purple but may be blue, pink or, rarely, white. A very prolific seed producer that can produce seed 4-6 weeks after flowering commences with more than 5,000 seeds per plant with large soil seed banks of up to 30,000 seeds per square metre. These accumulate in the soil and can remain dormant for at least five years. Seed can be spread by vehicles and farm implements, water, animals (ants, birds, livestock), on clothing and in grain, hay, silage, wool and soil. Livestock can carry viable seed in their digestive tract or directly on their coats. Widespread on agricultural land, roadside reserves, disturbed sites and often covering entire paddocks. Warning: Reduces pasture productivity and is toxic to livestock, causing cumulative chronic liver damage, loss of condition and sometimes death. Can kill horses and pigs and irritate the udders of dairy cows. Some people are allergic to the pollen. The rough hairy texture of the leaves and stems causes skin irritation in people having close contact with the plant. Originated from Europe. (NCC)	Hand weeding is effective on single plants preferably before they begin to flower. It is important that plants are removed from the site prior to the seeds dropping to the ground. Burn removed plants so that developing seed does not replenish soil seed bank. In established pastures, burning has a more detrimental effect on the pasture than on the weed. Preventing its spread to un-infested areas should be given a high priority. Clean machinery and vehicles before moving out of infested areas and avoid moving stock to infested areas. Hold stock in a quarantine paddock for at least seven days if they are known to come from an infested area, or if their origin is unknown. Spray graze pasture with 500 mL/ha Tigrex® or 1 L/ha 2,4-D amine500 in early winter before the weed has reached the six leaf stage and repeat if necessary. Blanket wipers applying 5-10 g/ha metsulfuron600 or chlorsulfuron750 provide good selective control in spring. For isolated plants, spray leaves until just wet plus a 10 m buffer area, with a mixture of 100 mL picloram+2,4-D in 10 L of water. This will kill most broad leaf plants, but not grasses, and leaves residual herbicide in the soil that controls seedlings for about a year. For larger areas spray with 0.5 g chlorsulfuron750 plus 25 mL wetting agent in 10 L water in winter. This will also control seedlings for several weeks. Cultivation controls existing plants, but also tends to encourage a new germination. Winter grazing tends to increase infestations. Glyphosate and metsulfuron also provide good control of existing plants. Several biocontrol insects provide varying degrees of control with the crown borer causing the most damage.
Watsonia / Wild gladioli <i>Watsonia borbonica</i> hybrid <i>Watsonia meriana</i> var. <i>bulbillifera</i> <i>Gladiolus</i> species	Tufted weed with stiff, sword-shaped, upright leaves to 1 m high, but occasionally reaching 2.5 m in height and are strap-like in appearance. The upright flowering stems are often reddish, usually unbranched and grow up to 2 m high. Watsonia flowers in spring and early summer and range from orange, red to salmon pink in colour. It has many large trumpet shaped flowers which are widely spaced along an elongated spike at the tips of the stems. This plant grows each year from underground 'bulbs' (i.e. corms), then dies back after flowering. After flowering, <i>W. meriana</i> forms many small corms at each node up the flowering stalk, and these spread it very efficiently along rivers. Watsonias are a serious weed in wetter areas, choke native vegetation and are a serious fire hazard. Generally survives fire and has prolific flowering and seed set following a fire. Corms may be dispersed during soil moving activities, in dump, in dumped garden waste and by slashers and other vehicles. Is regarded as a significant and serious weed of roadsides, along watercourses, railway lines, gardens, pastures, coastal environs, disturbed sites, waste areas and often invades bushland. A garden escapee, native to South Africa, now common in the south west. (NCC)	Grazing provides effective control. Dig up isolated plants and burn corms. Thick infestations require herbicide treatment. Cultivation to 100 mm provides good control if done after the old corm is exhausted and before the new corms form or before the flower stem emerges. A follow up cultivation is usually needed. Mowing and slashing are usually ineffective unless repeated very regularly. 100 mL glyphosate(450g/L) plus 25 mL wetting agent per 10 L water provides good control. Apply from flower stem emergence to mid flowering for the best control. Wiping with a sponge glove using 1 L glyphosate(450g/L) plus 2 L water is ideal for sensitive areas. Only a few leaves need to be wiped to give good control. Eradication from an area can usually be achieved in 2-3 years. Start control at the top of the catchment to reduce re-invasion by bulbils carried in water flows.
Wattles, eastern states <i>Acacias</i> (feral)	Cootamundra Wattle (<i>Acacia baileyana</i>), Sydney Golden Wattle (<i>Acacia longifolia</i>) and Flinders Range Wattle (<i>Acacia iteaphylla</i>) are not a problem in their own natural geographic locations where local seed-eating insects keep them in check. But this natural control does not occur in WA where these wattles reproduce prolifically by seed, especially after a fire. Many eastern state wattles have been planted in gardens, timber plantations or for rehabilitation. Most are capable of becoming naturalised. WA wattles are frequently planted outside their natural range and, since rehabilitation works usually utilise aggressive colonising species for a fast result, these translocated species may displace localised and less fashionable wattle species. The planted species may also hybridise with indigenous wattles. Eastern states wattles are often larger than most local species and have the potential to seriously alter the structure of WA bushland. (NCC)	In large dense stands, a hot fire may be used to kill old trees and encourage seed to germinate. For species that tend not to sucker or re-sprout cutting at the base, ring-barking or bulldozing and hand pulling seedlings provides good control. For suckering species herbicides usually provide better control. Use glyphosate, Garlon®, Grazon® Access® or Tordon® Timber Control to paint the stumps immediately after felling or inject herbicide into the trunk. For species with smooth bark a basal bark treatment is often the most cost effective. Apply a mixture of 1 L of Access® in 60 L of diesel to the lower 50 cm of the trunk and repeat in six months if necessary. Good control of most species can be achieved by injecting the stems with 1 mL Tordon® Timber Control herbicide per 1.5 metres of height in autumn or spring when trees are actively growing. Young Acacias less than 2 m tall can usually be controlled by spraying the leaves until just wet with a mix of 100 mL glyphosate(450g/L) plus 25 mL Pulse® in 10 L water. A concentrated mix of 1 part glyphosate with 2 parts water can also be applied using a window washer bottle. Apply about 3 mL of this solution per square metre of foliage. Lontrel®750 at 2 kg/ha may provide more selective control in some situations. A large number of seedlings often emerge in the season after felling, burning or spraying. If these are left, the infestation may become worse. Follow up every 2-3 years to ensure no trees reach an age where they set seed. Some Acacia species may be more tolerant of glyphosate than others. If glyphosate is not providing good control then try Garlon®, Grazon®, Hotshot®, Starane® or clopyralid(750g/kg). Don't buy these species or plant them in gardens.
Wild Radish <i>Raphanus raphanistrum</i>	Common rapid growing much branched weed to 1 m tall. Lower stem leaves are covered with prickly hairs, deeply lobed and when crushed, these leaves have a strong turnip-like odour. Flowers are in clusters on the ends of stem branches. They have four petals, which may vary in colour from pale yellow or white and sometimes purple, pink or brown. Petals often have light or dark distinct veins. Flowers mainly in spring. Can emerge at any time of the year if there is sufficient soil moisture, although most seeds germinate during autumn and winter. Produces prolific seed in a very short time from germination with high longevity and dormancy (20 years). Seed pods break up into distinct segments when ripe. Seeds pods before crop harvest, enabling it to persist in cropping systems and can cause a yield loss of 10-90%. Very competitive as seedlings establish rapidly and grow relatively fast. Easily distributed by wind, water, machinery and as an impurity in hay, chaff and grain. Found on roadsides or where the ground has been disturbed. Frost hardy and regarded as a habitat threatening, invasive species in many areas. Warning: It is an alternative host for a number of pests and diseases and it can cause animal health problems when grazed. Poisonous in large quantities to mammals. Originated from the Mediterranean. (NCC)	Hand remove isolated plants several times throughout the year. Grub out plants in sensitive areas. In bushland situations, fairly selective control can be achieved with 100 mL spray oil plus 0.5 g Logran® in 10 L water. 5 mL Broadal® is often added to this mix to provide residual control of seedlings. Spray the plants until just wet from the seedling stage up to ppm formation. Areas around isolated plants that are removed manually and burnt if flowering or seeding can have a 10 m buffer area sprayed with 10 mL Broadal® in 10 L water to control seed that germinates later in the season. 500 mL/ha of glyphosate(450g/L) can be used at flowering to reduce the seed set on roadsides without causing significant damage to most native plants. Wild Radish often regrows after spraying with glyphosate earlier in the year. Spray grazing with 750 mL/ha 2,4-D amine500 or Tigrex® in early winter provides good control in clover based pastures.

The Shire of Capel encourages residents and visitors to report any outbreaks of weeds in road and bushland reserves so effective control can be achieved while outbreaks are small and before they seed.

Important Disclaimer: Wherever possible, non-chemical methods of weed control are recommended before use of herbicides, however large scale weed control by chemical methods has been found by farmers to be the most effective. Ensure you purchase the correct product for your needs. If in doubt, seek advice. Always consult your dealer to ensure you are using the correct product. Mention of trade names does not imply endorsement or preference of any company's product and omission of a trade name is unintentional. Read the manufacturers' labels and safety data sheets and follow manufacturers' instructions before using any herbicides. Always conform to manufacturers' recommendations as to safety. Note that some herbicides are non-selective e.g. Glyphosate, and will kill everything. Some weed killers are selective. A permit may be required for spraying hormone herbicides like 2,4-D, 2,4-DB, clopyralid (Lontrel®), dicamba, fluroxypyr (Starane®), Grazon®, MCPA and triclopyr close to vineyards and market gardens. This booklet has been produced by the Capel LCDC on a voluntary basis to assist landowners to identify weeds and suggested control measures have been recommended by government agencies. The Capel LCDC takes no responsibility for the outcome from the use of any chemical recommendation. Control options in this booklet are suggestions only.