



The Worst Weeds in City and Floreat Beaches

A volunteer's guide to their removal

May 2019

About this guide

This handy field guide will help with weed identification and act as a quick reference tool for their removal. This guide is specifically aimed at the weeds found at the City and Floreat Beaches in the Perth region of Western Australia and has been produced in partnership between Cambridge Coastcare Inc. and Perth NRM. This guide has been written for the volunteers that donate their time to maintaining the coastal areas of City and Floreat Beaches, however, the weed species found in this guide are common along the metropolitan coast and other coastcare groups may find this guide useful.

The guide is ordered alphabetically by scientific name in the weed categories of Grass, Herb, Succulent, and Woody Weed. It includes the common name, plant descriptions, and photographs to assist with identification. If the recommended removal technique for the weed requires the use of herbicides, we strongly advise that you consult with the land owner (local government agency or state government agency) and request their permission and assistance before taking action.

This guide provides a basic overview of the best methods for the removal of weeds from Perth's metropolitan coastal areas. It is designed as a "window" into weed removal and while containing common weeds found on the metropolitan coastal areas it does not cover all species, only those known to be a problem in the City and Floreat beach areas. This guide also does not give specifics for concentration mixtures for herbicides (see page 6 for more detail).

For more information and to view other NRM resources, visit our website: www.perthnrm.com

What is a weed?

A weed is a plant that is not endemic to a location and has been introduced from another country or region in Australia. Generally speaking, weeds are plants that are considered to have harmful effects on the environment, human health, infrastructure, or the economy. A weed may come in any size and form, from small herbs, grasses, and sedges to large trees.

Weeds are problematic because they have a tendency to germinate, grow, and reproduce faster than endemic plants. These traits make them excellent opportunists for any habitat disturbance, such as fire. They suppress the regrowth of endemic species and alter the inherent biodiversity value of the coast.

Weed control methods

Manual removal:

- *Hand weed*: physically pulling out the weed by hand.
- *Crowning*: a knife is used to sever the plant from the root system just below the soil-line. Used for grass and herbaceous weeds.
- *Cutting*: sever the plant all the way through until it is in separate pieces. This guide will specify if *painting* is required after cutting. Used primarily for woody weeds.
- *Dig out*: using a shovel or trowel to dig out a plant and its root system.
- *Solarisation*: spreading clear plastic tarp over the weed infested area for four to six weeks.

Weed control methods

Herbicide control:

- *Inject*: drilling or slicing into the sapwood tissue of a plant and filling the hole/cut with herbicide. This does not necessarily require the use of tree injectors.
- *Wipe*: where herbicide is wiped directly onto the plant. This guide will specify if *wiping* is required on the leaves, stems, or trunk of the plant.
- *Paint*: where a plant has been *cut*, herbicide is then painted onto the cut section to prevent regrowth.
- *Basal bark*: spraying the full circumference of a tree's trunk or stems to a height of 30 to 60cm.
- *Spray*: the application of herbicide using appropriate distribution equipment. Great care must be taken when spraying to reduce risk of off target damage.

Before using herbicide

Always consult the land manager before applying any herbicide. Perth NRM encourages communication and cooperation with land managers in any herbicide use situations.

WARNING: As Perth NRM cannot guarantee that the users of this guide have been certified in herbicide use, only the recommended herbicide names have been provided and not the necessary concentration mixtures. Do not attempt any herbicide use without correct training and knowledge of concentration mixtures as it is very dangerous.

For more information and before any herbicide use, visit the Australian Pesticides and Veterinary Medicines Authority: apvma.gov.au

Weeding hazards

There are risks involved in weeding, particularly in the summer months. The greatest priority when weeding is volunteer health and safety. Here are some hazards you may encounter while weeding.

Risk of trips, strains, and sprains – moving, sandy surfaces often lead to unstable footing, which increases the risk of personal injury. Where possible, avoid working on steep slopes and be ensure you're in a stable position before commencing any weeding activity.

Muscle injuries can occur for volunteers of all ages. Take the time to warm up and stretch before weeding. Be careful not to strain too hard when pulling out well-rooted weeds (for example: *Pelargonium capitatum*).

Be aware that there is a risk of falling backwards when a weed you are straining to pull out comes suddenly free. There are multiple tools and techniques for weeding, so seek advice from experienced Coastcarers and use the right equipment for the job!

Dehydration and sunburn – appropriate footwear, a hat, long pants and sleeves are essential when working in the sun. Make sure you take a water bottle with you and take frequent breaks to drink or rest in the shade.

Snakes – particularly in warm weather, be aware that there are plenty of venomous snakes in the sand dunes. These snakes are often more afraid of you than you are of them, but they will defend themselves if they feel threatened or unable to escape. Wear gloves and look carefully before reaching into shrubs or thick clumps of weeds. If working in a group, avoid encircling a weeding site so there is an escape route for snakes and other native animals.

Toxins – some plants are noxious and many herbicides carry health warnings. The Identification and control methods section of this guide will advise if a plant is toxic. All herbicides should be handled while wearing personal protective equipment and only by people certified in herbicide use. If a site has been recently treated with herbicide, avoid volunteer activity at that location until safe.

Damaging native plants – be very careful where you tread. When working in dunes - particularly in dry weather – there is the possibility that you may be doing more harm than good by proceeding. It's best to seek advice from experienced Coastcarers.

Grass, Herb, Succulent, Woody Weed

Identification and control methods



Ammophila arenaria

Grass

Marram Grass

Description: An erect, perennial grass up to 1.2m high. Growing in dense tussocks, leaves are hairy on the upper surface, linear with an acute tip and grey-green in colour, 200 to 700mm long and 10 to 25mm wide though appear 6mm wide because of rolling. The stems are hairless and rigid, unbranching with few nodes. Flowers are individual densely clustered into a spikelet at the tip of the stem, narrowly oblong, green turning to beige with maturity. Native to Europe and North Africa and was introduced to Australia as a dune stabiliser and for erosion control. Highly invasive on coastal foredunes.

Removal Method: Hand weed or dig out small infestations - January to December - ensuring that all root matter is removed.

For larger infestations, spot spray - August to November - consult land manager (glyphosate + penetrant). Slashing to stimulate growth prior to chemical control can increase effectiveness of herbicide uptake. Frequent follow up control will be required.

Note: a plan for immediate revegetation or erosion control must be in place before removal of this weed occurs.



Queensland Herbarium

Avena barbata

Grass

Bearded Oat

Description: Mature plants grow to 1.5m tall, stems are round in cross-section, hairless, the leaves are flat and up to 200mm in length. It has a large membranous ligule with a rounded, jagged top.

Removal Method: Hand weed small outbreaks June to November.

Spray at 3 - 5 leaf stage from July to October to prevent seed set - consult land manager (Fusilade Forte® + wetting agent or fluazifop-p + wetting agent).



Sian Mawson,
Friends of Queens Park Bushland

Bromus diandrus

Grass

Great Brome

Description: Tufted annual to 1m in height, leaves have a loose sheath, panicles open, loose and branching spikelets with 5-14 flowers.

Removal Method: Hand weeding June to August most effective.

Optional to spray plants at 3 - 5 leaf stage from June to August - consult land manager (Fusilade Forte® + wetting agent or fluazifop-p + wetting agent).



Sian Mawson,
Friends of Queens Park Bushland

Cynodon dactylon

Grass

Couch

Description: Perennial grass that forms a thick mat through stolons and rhizomes. The leaf is round and hairless. The flower consists of 3-7 slender spikes up to 60mm long and have a bristled appearance.

Removal Method: Dig out small outbreaks November to February ensuring removal of all rhizomes and stolons. Follow up spraying may be required.

Spray November to February - consult land manager (new growth: Fusilade Forte® + wetting agent or fluazifop-p + wetting agent. Mature plants: Glyphosate). For very sensitive areas, paint runners and crowns with glyphosate only after consulting land manager.



Sian Mawson,
Friends of Queens Park Bushland

Lagurus ovatus

Hare's tail Grass

Grass

Description: Annual grass that forms clumps growing 500mm tall with pale green grassy foliage and numerous short, oval green flower heads, turning to a buff colour as they ripen.

Removal Method: Hand weed or dig out small infestations - July to December - before seed set.

Spot spray -June to August (September) - before flowering. Consult land manager (Fusilade® Forte + spray oil or fluazifop-p + spray oil).



Tigerente, Creative Commons

Lolium rigidum

Annual Ryegrass

Grass

Description: Annual grass that grows in open tussocks, the root is fibrous and grows to 1 metre tall. The leaves are 50- 250mm long and 3- 5 mm wide.

Removal Method: Hand weed small infestations - July to December - to prevent seed set.

For larger infestations, spot spray - June to October - before seed set. Consult land manager (Fusilade® Forte) (glyphosate for areas where weed may have become resistant to Fusilade® Forte).

Best treatment time is four to six weeks after heavy rainfall at the end of summer.



Harry Rose, Creative Commons

Arctotheca calendula

Herb

Cape Weed

Description: A broad, annual herb. Leaves are green on top, white and hairy underneath, 30-300mm long and 10-80mm wide. The leaves form a dense rosette and have deeply lobed or bluntly toothed margins. The flower stalks are erect, 50-250mm long and covered in white hairs with a single flower at the tip. The petals are 10-25mm long and pale yellow with bright yellow bases, the undersides are greenish or purplish. The number of petals vary, but they are numerous (between 12 and 20).

Removal Method: For small infestations, sever the roots below ground level (approximately 80mm) to prevent crown regrowth. Digging out can be effective but ensure all plant material and stolons are removed from site or the weed will re-establish.

For large infestations, spot spray - June to November. Consult land manager (glyphosate or Lontrel® during early growth).



Xemenendura, Creative Commons

Arctotis stoechadifolia

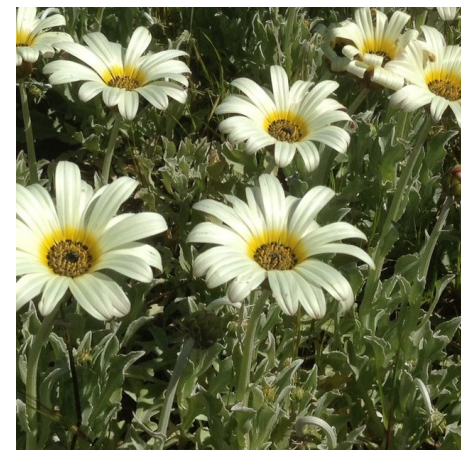
Herb

White Arctotis

Description: A sprawling perennial herb up to 350mm tall. The leaves are toothed, grey-green and hairy, 40 to 100mm long and 5 to 30mm wide. Flowers sit above the foliage on erect, pale-green stalks. Petals are normally white but can have orange/yellow or pink tones, with mildly tapered tips. Possesses a disk floret that is dark grey to brown.

Removal Method: Hand weed or dig out small infestations - March to October - before or during early flowering.

Spray large infestations - August to September - before seed set. Consult land manager (glyphosate).



Craig Wilson, Perth NRM

Asphodelus fistulosus

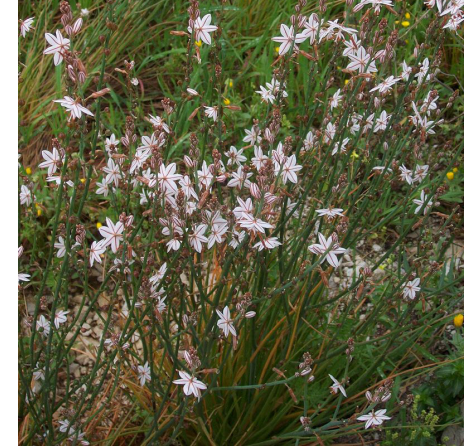
Herb

Onion Weed

Description: A tufted herb, 400mm tall. Leaves are hollow and onion like 30- 55mm long and 1.5- 8mm wide, hairless. The flowering stem is erect and hairless, 1- 9mm long. The flowers are 15- 29mm wide and have six petals white or pinkish with a distinctive reddish stripe through its centre.

Removal Method: Hand weed small infestations - January to December.

For large infestations, spot spray - July to October - when flowering. Consult land manager (metsulfuron methyl + spray oil).



Fan of Zhirkov, Creative Commons

Brassica tournefortii

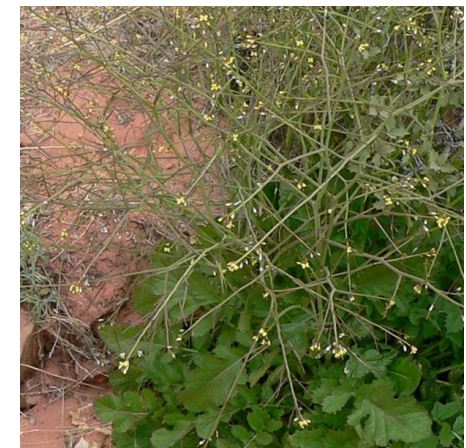
Herb

Mediterranean Turnip

Description: An erect annual herb up to 60mm tall. Initial leaves are large and form a basal rosette from which multiple primary stems extend. Stems are many branching and the stem leaves will gradually reduce in size from the base to the tips. Leaves vary from 70 to 300mm long, and have 8-14 toothed lobes per leaf. The inflorescence are racemes of 6-20 flowers. Each flower is 15mm wide with 4 dull yellow petals and a protruding pistil and stamen.

Removal Method: Early detection and removal is essential to controlling this weed. Hand weed before seed set - June to September.

Consult land manager for chemical control options.



Stan Shebs, Creative Commons

Cakile maritima

Herb

Sea Rocket

Description: An annual spreading herb up to 500mm tall. Flowers all year round, 4-petalled that are white, pink or purple, egg shaped and 5-14mm long. Stems are many branched and hairless. Leaves are deeply lobed, 30-100mm long and 15-40mm wide, succulent and hairless.

Removal Method: Hand weed/dig up - January to December - ensuring to remove all material from site. If seed pods have developed they will continue to mature after weeding.

Spot spray - June to November - consult land manager (Logran® or glyphosate).

This weed will need follow up control every 8 to 10 weeks.



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Euphorbia paralias

Herb

Sea Spurge

Description: An erect, perennial herb up to 600mm tall. Leaves are overlapping, blue-green to dull green with some red, 5-30mm long and 2-15mm wide, normally oblong or kidney shaped with an acute tip, hairless. Stems are hairless, multi-branching from a woody base and releases a toxic, sticky, milky sap when broken. Inflorescence a cluster of yellow-green petal-less flower clusters emerging from a whorl of leaves.

Removal Method: Wear gloves and protective clothing. Avoid contact with sap.

Hand weed - January to December - ensuring to wear protective gloves and eyewear. Be extremely cautious of the sap and wash any traces from exposed skin immediately.

Spot spray - September to January - before seed set. Consult land manager (glyphosate + metsulfuron + Pulse®).



Tigerente, Creative Commons

Euphorbia terracina

Herb

Geraldton Carnation Weed

Description: This weed can grow all year round depending on rainfall. Stems are green to reddish and hairless, at the tip it will split into four or five small flowering branches above a whorl of leaves. Leaves are hairless and bright to bluish green, alternately arranged and 10- 40mm long and 2- 8mm wide. Flowers are small cup-like clusters surrounded by protective leaves at the ends of the flowering stems, green to yellow in colour.

Removal Method: Wear gloves and protective clothing. Avoid contact with sap.

Hand weed - January to December - requires frequent follow up.

Spot spray when weed is young - usually June to August, but as required - as the weed becomes more resistant to herbicide as it matures. Consult land manager (Logran[®] + Pulse[®]).



Sian Mawson,
Friends of Queens Park Bushland

Oenothera drummondii

Herb

Beach Evening Primrose

Description: A perennial, sprawling herb up to 600mm tall. Leaves are dull green, with toothed margins, ovate, and have an acute tip. Stems are brown, hairy, and many branched. Flowers are bright yellow, 70mm in diameter, 8 large egg-shaped petals and 8 protruding stamen.

Removal Method: Hand weed at seedling stage - July to December. Ensure removal of all root material.

Spot spray at seedling stage - July to October. Consult land manager (chlorsulfuron + spray oil).

Mature plants are resistant to herbicide and difficult to manually remove. Alternatively, dig out or cut the stems to ground level frequently until taproot is exhausted.



Ximenex, Creative Commons

Pelargonium capitatum

Rose Pelargonium

Herb

Description: A perennial herb that can grow to resemble a small shrub or sprawl at 1m tall/long. Leaves are circular, hairy with three to seven deep lobes, 20- 80mm long and wide. A compact, umbrella-like flower head contains eight to 10 flowers and measures 25- 40mm across. Petals are pink or white with dark pink markings, spoon shaped, 10- 20mm long with five petals per flower, the back two petals larger than the front three. This weed has an aromatic, distinctive scent when crushed.

Removal Method: Hand weed - June to November, though potentially all year round - ensuring that the entire stem is removed to prevent reshooting.

Spot spray - June to October - consult land manager (metsulfuron methyl + Pulse®).



Kurt Stuber, Creative Commons

Trachyandra divaricata

Dune Onion Weed

Herb

Description: A perennial herb around 350mm tall. The leaves are 500mm long and 10mm wide, bright green, ribbon-like and crinkled tending to sprawl along the ground. The stems are pale green, many branched, and leafless. The flowers are star shaped, white often with a red or pink stripe down the centre of the six petals, with six or seven protruding stamen.

Removal Method: Dig out or hand weed - January to December - prevent flowering and seed drop.

Wipe - June to September - prior to flowering. Consult land manager (glyphosate).



Kingsley Dixon

Tetragonia decumbens

Sea Spinach

Succulent

Description: A sprawling, semi-succulent shrub up to 300mm tall and 2m wide. Leaves are egg shaped, thick and fleshy, rounded tips and curved downward at the edges, 15-45mm long and 7-27mm wide. Stems are prostrate and ridged, warty. Flowers sit in the leaf axils, yellow and tubular with 4 lobes 2.5-4mm long and have 3 or 4 protruding stamen.

Removal Method: Hand weed - January to December - ensuring removal of all root and stem material.

Spray before flowering - December to March. Consult land manager (glyphosate).

Note: a plan for immediate revegetation or erosion control must be in place before removal of this weed occurs.



Muriel Bendel, Creative Commons

Leptospermum laevigatum

Coastal Tea Tree

Woody Weed

Description: Large, bushy shrub that can reach 5m in height and with a similar spread. Leaves are grey-green and are generally oval-shaped 15-30mm long by 5-8mm wide. The flowers are white, five petalled, circular (up to 20mm diameter) with numerous small stamens surrounding the central stigma. Flowers are followed by small, woody fruits containing many seeds.

Removal Method: January to December, hand weed seedlings and cut down mature trees.

If re-sprouting occurs, basal bark from base 500mm of the trunk. Consult land manager (Access[®] + diesel).



Sian Mawson,
Friends of Queens Park Bushland

Retama raetam

White broom

Woody Weed

Description: A perennial weeping shrub up to 3m tall. The branches are long and drooping, leafless for the majority of the year. Leaves are alternate, 5mm long and 1mm wide, grey-green, and drooping. Flowers are white with a 'pea' flower shape, clusters of 3 to 15 flowers on short stems, July to November. Fruit is an oval pod, up to 18mm long and 10mm wide, contains two seeds. Pod starts green before darkening to reddish-brown. Prolific seeder, seeds are oval, 6mm, and black.

Removal Method: Wear protective clothing and gloves: the flowers, fruit, and leaves are toxic.

Hand weed seedlings - April to November.

Consult land manager. April to November - for juvenile and adult plants, cut and paint (glyphosate) or basal bark (triclopyr + diesel).

Monitor site for new growth from existing seedbank as seeds can be viable for 20 years.



Frank Vincentz, Creative Commons

Definitions

- Anther:** Part of the stamen where pollen is produced.
- Awn:** A stiff bristle, especially one of those growing from the ear or flower of barley, rye, and many grasses.
- Axil:** The upper angle between a leaf stalk or branch and the stem or trunk from which it is growing.
- Bract:** A modified leaf or scale, typically small, with a flower or flower cluster in its axil.
- Bulbil:** A small bulb-like structure, in particular one in the axil of a leaf, which may fall to form a new plant.
- Calyx:** The sepals of a flower that encloses the petals and forms a protective layer around a budding flower.
- Cladode:** A flattened leaf like stem.
- Corm:** Bulbo-tuber that is a vertical, swollen underground plant stem.
- Culm:** A hollow stem of a grass or cereal plant, especially that bearing the flower.
- Drupe:** Fruit consisting of an outer skin, a usually pulpy and succulent middle layer and a hard and woody inner shell usually enclosing a single seed.
- Glume:** A two-part membrane that brackets the surrounding spikelet of a grass (the husk around a grain) or a single membrane surrounding the florets of a sedge.

Definitions

- Inflorescence:** The complete flower head of a plant including stems, stalks, bracts, and flowers.
- Leaflet:** One of the ultimate segments of a compound leaf.
- Ligule:** A narrow strap-shaped part of a plant, especially a membranous scale on the inner side of the leaf sheath at its junction with the blade in most grasses and sedges.
- Lobe:** Usually a rounded or pointed projecting part, usually one of two or more, each separated by a fissure or sinus.
- Mucro:** A stiff or sharp, short projection of the mid-vein at the end of a part or organ.
- Mucronate:** Abruptly tipped with a sharp point, accompanied or not by a small amount of leaf tissue.
- Palmate:** Describing a leaf that is divided into several leaflets, which arise from the same point.
- Panicle:** A loose branching cluster of flowers, as in oats.
- Pappus:** A tuft of hairs, bristles, or scales borne above the ovary and outside the petals, often persisting as a tuft of hairs on a fruit.
- Plume:** Like a feather, with fine hairs arising laterally from a central axis.
- Raceme:** A flower cluster with the separate flowers attached by short equal stalks at equal distances along a central stem. The flower at the base of the central stem that develops first.
- Rhizome:** A creeping stem, below ground, that takes root at nodes along its length to form new plants.

Definitions

- Rhombic:** A two dimensional shape, diamond shaped in outline with a broadest axis in the middle and with a length: breadth ratio between 3:2 and 2:1.
- Rosette:** A tuft of leaves or other organs resembling the arrangement of petals in a rose, ranging in form from a hemispherical tuft to flat whorl.
- Sepal:** Free segment of the calyx (the outermost floral whorl usually consisting of petals or a calyx tube and calyx lobe).
- Sheath:** A structure in living tissue that closely envelops another.
- Spikelet:** The basic unit of a grass flower, consisting of two glumes or outer bracts at the base and one or more florets above.
- Stamen:** One of the male organs of a flower, consisting typically of stalk (filament) and a pollen-bearing portion (anther).
- Stigma:** Receptive tip of the style (the narrowed elongated part of a carpel or group of fused carpels between the ovary and the stigma) that receives the pollen.
- Stolon:** A creeping stem or runner, above ground, that takes root at nodes along its length to form new plants.
- Trifoliolate:** Having three leaves.
- Umbel:** A flower cluster in which stalks of nearly equal length spring from a common centre and form a flat or curve surface, characteristic of the parsley family.

This guide is brought to you by



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