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Roadside Environmental Weeds List

Threats posed by weeds to native vegetation

Weed invasion can affect native vegetation in a number of ways. Weeds displace many native plant species by competing for available water, nutrients and sunlight, and can ultimately alter the whole ecosystem. Native animals are affected by the loss of native plants as food or habitat. Weeds can dramatically affect the fire regime of infested vegetation, increasing fire frequency and intensity. This promotes further weed establishment. In particular, invasive grasses add to dry fuel loads at hot, dry times of year.

Bushland in good condition is reasonably resistant to weed invasion, but bushland that has been disturbed or invaded by particularly aggressive weeds becomes more vulnerable to invasion by other weeds, continuing the decline in condition. Weedy roadsides are less aesthetically pleasing, and have no 'sense of place' or tourism benefits, and so have less value from a social as well as an environmental perspective.

Weeds typically produce large numbers of seeds, and some species can also reproduce in other ways, such as runners or bulbils. Seeds can be spread by wind, water, people, vehicles, machinery, birds and other animals. Many weeds establish quickly at disturbed sites, and some rail and roadside maintenance activities can provide near-ideal conditions. This is why it is important to consider how maintenance is done, and to minimise the vegetated area unnecessarily disturbed and the potential for weed establishment following these operations.

Once established, weeds require ongoing efforts to eradicate. The challenge of finding resources for that ongoing effort on a landscape scale is significant, and attempting to eradicate all weeds in a landscape is impractical. It is necessary to prioritise the weeds with potential to cause the most damage. For weeds already established in an area, control is usually a more realistic goal than eradication, even if only prioritised weeds are targeted. For weeds not yet established in an area, vigilance and quick action can halt the early establishment of prioritised weeds and stop them becoming entrenched, saving significant effort and money.



*Healthy native vegetation is not just more attractive—it also suppresses weed invasion.
Photo – Roadside Conservation Committee*

Roadside Environmental Weeds List

Road and rail reserves are usually narrow linear strips of vegetation, often with a history of disturbance, including more frequent fire. They are thus prone to weed infestation that can lead to a loss of biodiversity and aesthetic value. For these reasons the Roadside Conservation Committee has collaborated with key weed experts to develop a *Roadside Environmental Weeds List* – a list of weeds that threaten roadside vegetation in Western Australia. It highlights weeds that pose a strong threat to rail and roadside vegetation, and encourages management of them. The list does not attempt to record every weedy species present on WA's road and rail reserves – just those with the potential to have the greatest impact.

The list is endorsed by WA's Minister for Environment in recognition of the significance of the issue of environmental weeds in transport corridors. This list has no basis in legislation, and presence of a species on the list does not trigger any requirement for land managers to control these weeds on their land, or have implications for the commercial use of the species. The list highlights species which, if allowed to establish on road or railsides, will significantly lower the conservation value of the verge concerned and may invade into other nearby native vegetation or agricultural land. The list is thus useful to prioritise and guide best practice management of weeds on road and rail reserves.

Many of the weeds listed are widespread, well-established weeds and eradication is unlikely. In determining control priorities, the likelihood of re-infestation should be considered. For example, wild radish, turnip and capeweed seeds are so abundant in many areas that it is unlikely much improvement will be evident for control effort. Improving the health and density of the native vegetation in tandem with control of existing weed plants may be the best long term strategy to reduce these types of weeds in vegetated areas.

It is therefore efficient as well as environmentally desirable for road and rail managers to prioritise control of these weeds in areas of high conservation value, such as Flora Roads, high conservation value roads identified through RCC Roadside Conservation Value mapping, and roads adjacent to national parks and nature reserves. This is particularly important after fire, when re-establishing weeds are easiest managed, but likely to become entrenched if left uncontrolled.

Relationship to other weed listings

Many of the weeds on this list also appear in other weed listings which have a range of purposes.

Declared Plants

Some high priority weeds are formally 'declared' under the *Biosecurity and Agriculture Management Act 2007*. Declared Plants on the *Roadside Environmental Weeds List* include Paterson's curse, one-leaf cape tulip and arum lily, and are marked DP. Declared Plants must be controlled by the manager of the land on which they occur in accordance with their listing category. Contact the Department of Agriculture and Food Western Australia for more information (www.agric.wa.gov.au).

Pest Plants

Pest Plants are subject to regulation by local governments. Pest Plants must be controlled by the manager of the land on which they occur if a notice is served by the local government. For example, caltrop has been declared a Pest Plant by many local governments. They are marked PP.

WONS

Weeds of National Significance (WONS) are weeds which have been identified by Australian governments because of their invasiveness, impacts on primary production and the environment, their potential for spread and socioeconomic impacts. These include bridal creeper (also a Declared Plant), African boxthorn and flaxleaf broom, and are marked WONS.



Flaxleaf broom is a WONS species that forms dense infestations, outcompeting other plants and providing habitat for feral animals. It is readily spread by machinery, slashing and soil movement during roadwork. Soil disturbance usually results in mass germination of soil-stored seed. In established infestations, seed numbers can reach several thousand per square metre.
Photo – R Randall

National Environment Alert List

The Australian Government has also produced a National Environment Alert List and a list of Priority Sleeper Weeds. These are useful for prioritising management action as they highlight weeds which may not be widespread currently, but have potential to rapidly become so and cause significant harm to agriculture and/or the environment. None of the Sleeper Weeds are currently known in WA. Two species on the Alert List also occur on this Environmental Roadside Weeds List, and they are marked ALERT.

Recognised Biosecurity Groups (RBGs) have been formed in pastoral areas of Western Australia (those areas north and east of the clearing line). It is anticipated that RBGs will take on the management of widespread, well-established weeds in their region. This *Roadside Environmental Weeds List* may influence their prioritisation processes.

Several species on the *Roadside Environmental Weeds List* have legitimate commercial or pasture value when grown in controlled circumstances, but cause great harm in a roadside vegetation context (for example, canola, tagasaste, olives and buffel grass). Management is required to limit their spread from production areas.

Please note that common names are provided for convenience but their application can vary. One species may have several common names, and the same common name may be applied to different species by different people. The species included in this list can be definitively identified by their scientific name.

Roadside Environmental Weeds List

Updated and endorsed by the Minister for Environment, August 2012

Trees and large shrubs

<i>Acacia baileyana</i>	Cootamundra wattle
<i>Acacia iteaphylla</i>	Flinders Range wattle
<i>Acacia longifolia</i>	Sydney golden wattle
<i>Acacia podalyriifolia</i>	Queensland silver wattle, Mount Morgan wattle
<i>Acacia pycnantha</i>	Golden wattle
<i>Chamaecytisus palmensis</i>	Tagasaste
<i>Genista linifolia</i> WONS	Flaxleaf broom
<i>Genista monspessulana</i> WONS	Montpellier broom
<i>Gomphocarpus fruticosus</i> DP	Narrowleaf cottonbush
<i>Lavandula stoechas</i>	Lavender
<i>Leptospermum laevigatum</i>	Victorian tea-tree, coast tea-tree
<i>Lycium ferocissimum</i> WONS	African boxthorn
<i>Olea europaea</i>	Olive
<i>Parkinsonia aculeate</i> DP, WONS	Parkinsonia
<i>Pinus radiata/pinaster</i>	Pines
<i>Psoralea pinnata</i>	Taylorina
<i>Retama raetam</i> ALERT	White weeping broom
<i>Rhamnus alaternus</i>	Buckthorn
<i>Ricinus communis</i>	Castor oil plant

Small shrubs and herbs

<i>Acetosa vesicaria</i>	Ruby dock
<i>Aerva javanica</i>	Kapok bush
<i>Arctotheca calendula</i>	Capeweed
<i>Brassica napus</i>	Canola
<i>Brassica tournefortii</i>	Wild turnip, Mediterranean turnip
<i>Carpobrotus edulis</i>	Pigface
<i>Dittrichia graveolens</i>	Stinkwort
<i>Echium plantagineum</i> DP	Paterson's curse
<i>Euphorbia terracina</i>	Geraldton carnation weed
<i>Fumaria capreolata</i>	Whiteflower fumitory



Weeds were able to invade the vegetation on left road verge after it was disturbed by fire. The unburnt right verge remains robust. Photo – K Payne



Although seen as 'native' by many, wattles from the eastern states are very destructive in WA's bush. Photo – T Tame



Paterson's curse and capeweed are both annuals that produce prolific seed and are problematic for agriculture as well as the environment. Photo – K Payne

<i>Gazania linearis</i>	Gazania
<i>Lupinus cosentinii</i>	Blue lupin
<i>Oenothera stricta</i>	Common evening primrose
<i>Raphanus raphanistrum</i>	Wild radish
<i>Tribulus terrestris</i> PP	Caltrop

Grasses

<i>Arundo donax</i>	Giant reed, false bamboo
<i>Avena</i> spp.	Oats
<i>Cenchrus ciliaris</i>	Buffel grass
<i>Ehrharta calycina</i>	Perennial veldt grass
<i>Ehrharta longiflora</i>	Annual veldt grass
<i>Eragrostis curvula</i>	African lovegrass
<i>Hyparrhenia hirta</i>	Tambookie grass
<i>Melinis repens</i>	Natal redtop
<i>Pennisetum clandestinum</i>	Kikuyu
<i>Pennisetum setaceum</i>	Fountain grass
<i>Pennisetum villosum</i>	Feathertop grass
<i>Themeda quadrivalvis</i>	Grader grass

Creepers

<i>Asparagus aethiopicus</i> WONS	Ground asparagus, basket asparagus
<i>A. asparagoides</i> DP, WONS	Bridal creeper
<i>A. declinatus</i> WONS	Bridal veil
<i>A. plumosus</i> WONS	Feathered asparagus fern, climbing asparagus
<i>A. scandens</i> WONS	Asparagus fern, climbing asparagus fern

Weeds with corms, bulbs or tubers

<i>Babiana angustifolia</i>	Baboon flower
<i>Ferraria crispa</i>	Black flag
<i>Freesia alba</i> x <i>leichtlinii</i>	Freesia
<i>Gladiolus caryophyllaceus</i>	Wild gladiolus
<i>Lachenalia</i> spp.	Soldiers
(<i>Lachenalia reflexa</i> ALERT	Yellow soldier)
<i>Moraea flaccida</i> DP	One-leaf cape tulip
<i>Watsonia</i> spp.	Watsonia
<i>Zantedeschia aethiopica</i> DP	Arum lily

ALERT: National Environmental Alert List

DP: Declared Plant

PP: Pest Plant

WONS: Weed of National Significance



Giant reed forms very dense stands. Apart from crowding out natives, they pose a significant fire risk. Photo – K Payne



Arum lily forms very dense stands in wetter areas and is toxic to stock. Its underground tuber helps it to survive most fires. Photo – L Braun



Bridal creeper has bright berries which are spread by birds. It crowds out native plants both above and below ground wherever it establishes. Photo – K Payne

General maintenance principles that will reduce the impact of weeds

Healthy native vegetation suppresses weeds. More soil disturbance = more weeds.

The following points provide some guidance for operating within native vegetation in road or rail reserves.

- **Limit soil disturbance and clearing wherever possible.** For example, if sightlines can be maintained by pruning vegetation rather than clearing it, it will help to limit weed establishment at that site. Limit clearing for drainage to a minimum – overclearing may also contribute to soil erosion, requiring more frequent maintenance of the formation.
- In areas of **high conservation value vegetation**, the required maintenance zone **should be marked off** with wire or flagging before works commence. This will ensure that machinery operators know the on-ground 'footprint' of the formation, and only the minimum required width is cleared.
- **Drainage works should not deposit soil into native vegetation**, and graded material (soil, rock and plant matter) should not be pushed into roadside vegetation. This material attracts rabbits as well as weed growth, and smothers the vegetation that is there. It may also bury native seed and rootstock too deep to grow.
- **Any debris** from vegetation that has been pruned or slashed **should not be left piled on top of vegetation or burnt**, but mulched and scattered over the area, or a nearby bare area, so that any native seed is retained locally. Keeping existing vegetation healthy helps to suppress weeds. Larger storm-thrown debris such as branches or tree trunks can be left where they have fallen to provide valuable habitat for wildlife, provided it is safe to do so and does not compromise future management of the road.
- **Many weeds are easily spread by machinery.** Operate 'clean to dirty' where possible – work in weed-free sites before working in weedy areas. When operating in areas affected by weeds, equipment should be cleaned with a stiff broom on site to remove plant matter and dirt before moving to other sites. This will avoid spreading seed to new areas, and will also minimise the spread of plant diseases such as Phytophthora dieback.
- **Stockpiles and turning points** should be minimised and located in areas which do not support native vegetation.
- **Machinery should remain on cleared areas at all times.** Avoid having machinery pass through the bush, or being parked within vegetation.

Effective weed control must be tailored to the biology of the targeted weed/s. Doing the right thing at the wrong time may be ineffective or make the problem worse. This VergeNote lists some sources of information on WA weeds and their management. Whatever technique is applied, if weed control can be coordinated across property boundaries (for example, road manager and private property) it will be more effective than if control is done in isolation, when there will be more chance of neighbouring weed seed re-invading the treated area.



Many native animals, including this mardo (or yellow-footed antechinus) use the hollows in fallen timber for shelter from weather and predators. Photo – K Page



This bush has great conservation value, with no weeds and a good variety of plants. The flagging clearly marks the footprint of works so that disturbance is limited to that needed to do the job. Photo – N Rowe

More information on weeds and their management

Information about specific control options for many of these species is available. The RCC website (www.dpaw.wa.gov.au/rcc) features a number of useful links. The following published material is also very useful:

- *Bushland Weeds – a practical guide to their management* – K Brown and K Brooks (2002) Environmental Weeds Action Network.

This publication includes case studies and specific, practical control information, including information on best timing of weed control to ensure it is as effective as possible. A digital copy of the book can be downloaded from the Environmental Weeds Action Network website: www.environmentalweedsactionnetwork.org.au/projects.html

- *Southern Weeds and their control* (2nd ed) – J Moore and J Wheeler (2008) Department of Agriculture and Food Western Australia

This is a ring-bound, laminated paper book suitable for outdoor use, available from Department of Agriculture and Food Western Australia. It includes descriptive and control information for many species that occur in the south of the State.

- *Western Weeds – A guide to the weeds of Western Australia* (2nd ed) – B.M.J. Hussey, G.J. Keighery, J. Dodd, S.G. Lloyd and R.D. Cousens (2007) The Weeds Society of Western Australia

This book provides extensive information on Western Australian weed species, with many pictures to aid identification, but does not provide information on their control. It is available from Department of Agriculture and Food Western Australia.



When native vegetation is cleared, weeds are likely to thrive, to the detriment of native plants and animals. Photo – T Wilkes-Jones

For more information and advice

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Information current at July 2014. This information is available in alternative formats on request.

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