

Bridal Creeper

Department of Primary Industries

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*This Landcare Note describes the weed bridal creeper, *Asparagus asparagoides*, and outlines options for its control.*

Common names

Bridal creeper, bridal veil creeper, smilax

Botanical name

Asparagus asparagoides (L.) W. Wight

formerly known as *Myrsiphyllum asparagoides* (L.) Willd.

Family Asparagaceae (often included in Liliaceae)

Status

Bridal creeper is an extremely damaging and persistent environmental weed and can be a problem in orchards and neglected gardens. Declared a restricted weed for all Catchments and Land Protection Regions, October 2005 under the Catchment & Land Protection Act 1994. This status prohibits sale and transport

Origin and distribution

Bridal creeper is native to South Africa and has been present in Australia since at least 1871. It was first recorded as naturalised in Victoria in 1886 and by the 1960s was well established, mainly in coastal areas including Port Phillip Bay. It is now found through most of the State, predominantly on sandy, well-drained soils. Bridal creeper has invaded grassland, heathland, dry and damp sclerophyll forests, mallee shrubland, coastal vegetation including secondary dunes, rock outcrop vegetation, warm temperate rainforest, the banks of watercourses, roadsides, citrus groves and orchards.

Life cycle and description

Bridal creeper is a highly invasive perennial climber or scrambler, to 3 metres high, with long, wiry stems and rhizomatous roots producing clusters of fleshy tubers.

Seeds germinate in autumn or early winter. Above ground growth of seedlings is slow until the root system becomes established. The first tuberous roots are formed about 9 weeks after emergence. Above ground growth ceases in hot, dry conditions and the vegetative parts generally die off in early summer, with the leaves being shed from the top of the stem downwards. Seedlings survive the summer if at least one tuberous root has been formed. A substantial

proportion of shoots can survive over summer if there is copious rainfall, and these die off in autumn. Growth of the rhizome resumes in mid summer when new stems are initiated and surface shoots appear in autumn (late February or March onwards, rarely earlier) not always in response to rain. These plants flower the following August or September. Most of the growth above and below ground occurs in winter and spring. New tubers are produced from mid autumn to spring.



Figure 1. Foliage and stems of bridal creeper.



Figure 2. Flowers of bridal creeper.

Stems - to 3 m long but often less than 1 m, slender, wiry, twining, slightly woody at the base when mature, much

branched, with the direction of the stem changing slightly at each branch. Larger plants produce many stems and there may be over 90 stems per square metre. Commonly the stems of older plants in shaded positions grow to 30 cm or more before foliage is produced.

Cladodes - (the leaf-like modified stems) are glossy light green, 1 to 7 cm long (commonly 1 to 4.5 cm) and 4 to 30 mm wide (commonly 5 to 16 mm), stalkless, broad at the base, narrowing to a pointed tip, arranged alternately along the stem. There is one cladode per axil. About 7 veins parallel to the cladode margins are easily visible. The true leaves are small, bract-like scales at the base of the cladodes.

Flowers - 8 to 9 mm in diameter, 5 to 6 mm long, sweetly scented, borne singly or in pairs on stalks growing from the cladode axils; 6 similar white to pale green petals and sepals, 6 orange stamens. The sepals and petals overlap at the base, forming a short floral tube. The stamens are slightly shorter than the petals and sepals, and the ovary is 2 mm long.

Fruit - a round berry, 6 to 10 mm in diameter, green when immature, turning orange and then red, becoming sticky. Produced in late spring and ripening in summer. Ripe fruit may be retained on the plant for several months, if not removed by birds, while dried, withered fruit can be retained for over 12 months.

Seeds - 2 to 4 mm in diameter, black, shiny, spherical or egg-shaped, 1 to 9 per fruit.

Roots - dark, cylindrical branching rhizomes bearing numerous pale, fleshy tubers which become entwined together forming a dense mass about 5 to 10 cm deep in the soil. Over 85% of the plant's biomass is underground. The tubers conceal the rhizome and each tuber has a short pale root. The stems arise from the rhizomes, not the tubers. Rhizomes can advance several cm per year.

Similar species

Three other species of Asparagaceae are recorded as naturalised in Victoria: *Asparagus officinalis* L., *Asparagus scandens* Thunb. and *Protasparagus plumosus* (Baker) Oberm.

A. officinalis is the edible crop asparagus, generally established close to water bodies near areas where it has been cultivated. It has annual aerial stems, 3 thread-like cladodes per axil, separate male and female flowers, red berries and fibrous roots.

A. scandens, asparagus fern, is an escaped garden ornamental, established in the eastern suburbs of Melbourne, on the Mornington Peninsula and at Phillip Island and Wilsons Promontory. It has 3 linear cladodes of unequal sizes in each axil and a single seed per fruit.

P. plumosus, climbing asparagus fern or ferny asparagus, is naturalised in the eastern suburbs of Melbourne. It has perennial stems with side branches spreading horizontally, many small, linear cladodes per axil giving a feathery appearance and black berries.

A fourth species, *Asparagus declinatus* L., bridal veil, was collected near Horsham in 1992 but the population was

later destroyed. It has tuberous roots, annual aerial stems, a pale bluish berry and three equally sized cladodes per axil. Other species in the family are naturalised elsewhere in Australia and may establish in Victoria in the future.



Figure 3. Root mass of bridal creeper showing the fleshy tubers attached to the dark rhizome and the origin of the stems on the rhizome. The rhizome has been exposed by removal of tubers along one side.



Figure 4. Bridal creeper root masses showing the bunched arrangement of tubers and wiry new stems growing from the rhizomes.

Properties

Bridal creeper is a strong competitor for space, light and nutrients and probably adversely affects the soil litter environment. It twines upwards and sideways around existing plants and eventually forms a canopy which smothers other vegetation and restricts access. It produces four times more above-ground biomass and 200 to 500 times more fruit when able to climb. The masses of underground rhizomes and tubers can extend to form a dense, 5 to 10 cm thick mat which destroys understorey plants. Major losses of understorey species can be expected in areas affected by bridal creeper. It thrives in shaded conditions but is found to a lesser extent in open areas. Bridal creeper is a problem in orchards and citrus groves along the Murray River where it weakens trees and disrupts harvesting operations.

The seeds germinate readily at temperatures between 10 and 20°C, usually much earlier than most native species, which are therefore at risk of replacement. Buried seeds germinate much more readily than seeds on the surface which tend to germinate only when covered by leaf litter. Very little ungerminated seed remains viable in the soil

after one year and none after two years, but a significant proportion of seed on the ground surface remains viable for over 2 years.

Bridal creeper was cultivated for its foliage, used in floral arrangements, notably bridal bouquets.



Figure 5. *Cladodes and flowers of bridal creeper.*

Dispersal

Unlike many environmental weeds, bridal creeper does not require disturbance or enhanced nutrient levels to become established. Bridal creeper has been grown as a garden ornamental in Victoria and many current infestations may have originated from dumped garden refuse, or seed dispersed by birds. The seeds either pass through the digestive tract of birds unharmed or stick to the beak, and may be deposited long distances from the source. A wide variety of fruit eating birds such as silvereyes, starlings, honeyeaters and blackbirds are implicated in dispersal. Seed may be spread in mud adhering to animals, clothing and machinery. Vehicles, particularly road making equipment, can also spread seeds and roots. New plants grow from broken pieces of the rhizomatous root system, which may be carried in flood waters. New plants cannot regenerate from isolated tubers. Stems are able to take root when in contact with the soil.

Management

Long term management programs (5 to 10 years) must be initiated in order to effectively control bridal creeper. In planning these programs integrated management strategies will achieve the best results. Early treatment of new infestations should be a priority. These should be removed manually as soon as they appear. For larger infestations in natural vegetation the use of fire followed by herbicide treatments and revegetation may be the most effective strategy.

Limiting dispersal

Bridal creeper should not be planted in gardens. Stems should be cut before fruit set, to prevent ingestion of seeds by birds.

Manual control

Isolated plants or small infestations can be dug out in spring or autumn when the ground is soft. The whole of the tuberous root system must be removed, otherwise regeneration will occur. Roots must be destroyed by burning or killed by immersion in boiling water.

Slashing or cutting the stems is best undertaken before flowering. Removal of the stems alone will restrict growth of the plants and subsequent seeding, however new stems will quickly be produced. It is not known how often, and over how long a period the stems need to be cut before the underground tubers are exhausted, but repeated intensive efforts over a very long time would be required to achieve eradication in this way.

Fire

The root system of bridal creeper enables it to survive wildfires. After infested areas are burned, bridal creeper emerges rapidly, before most other plants. Controlled burning thus provides an opportunity for the use of non-residual herbicides with minimal effect on the natural vegetation.

Chemical information

Registrations of products can change from time to time, and it is therefore important for chemical users to ensure they refer to current information about chemical use patterns and legislative obligations. An Agricultural Chemical User Permit (ACUP) is required for use of 'restricted use' chemicals in Victoria, and there are restrictions on certain chemical uses in Agricultural Chemical Control Areas.

Since 24 July 2007, records of chemical use MUST be made and kept for all agricultural chemical use, not only for 'restricted use' chemicals as was required previously. Chemical users must make within 48 hours of use, and keep for a period of 2 years, records of use specified in the Agriculture Note AG1212; "Keeping Chemical Use Records (Give me one good reason!)"

For further information on chemical use patterns and/or legislative obligations in relation to chemical use in Victoria call the DPI Customer Service Centre on 136186, or visit the Chemical Standards Branch website: www.dpi.vic.gov.au/chemicalstandards

Revegetation

Sowing of native grass seed or seed of other indigenous species to provide dense ground cover may help to prevent reinfestation. Weeping grass (*Microlaena stipoides*) and wallaby grasses (*Danthonia* species) may be suitable for this purpose. Indigenous *Clematis* species can be used as replacement plants in gardens.

Biological control

Three natural enemies of bridal creeper from South Africa have been approved for release in Australia. They are (i) the leafhopper *Zygina* sp., (ii) the rust fungus *Puccinia myrsiphylla*, and (iii) the leaf beetle *Crioceris* sp. Approval to release these biological control agents followed extensive testing by CSIRO that demonstrated the agents are specific to bridal creeper.

In Victoria, the Department of Primary Industries has conducted widespread releases of the leaf hopper and rust fungus across the State. The leafhopper and rust fungus have established at most release sites and are dispersing naturally. The first release in Victoria of the leaf beetle

occurred at Coolart in March, 2005, and it has been subsequently released at a limited number of locations in the State.

The CSIRO maintains a web-site that includes all biological control releases in Victoria (www.ento.csiro.au/weeds/bridalcreeper/). An inter-active map on the web-site allows members of the general public to locate release sites in their local area. This web-site and others (ie. www.weeds.org.au/WoNS/bridalcreeper/, and www.weeds.crc.org.au) also provide detailed information on collecting and redistributing biological control agents as part of an integrated weed management plan. Further information on the leafhopper is also available on the *Landcare Note* LC0168, *Biological control of bridal creeper with the bridal creeper leafhopper*.



Figure 6. Bridal creeper infestation.

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Further advice

- Contact your local landcare or friends group for further assistance and advice.
- Call the DPI/DSE Customer Service Centre on 136 186.
- Contact your local DPI Pest Management Officer for advice on local programs.
- Visit the DPI website at: <http://www.dpi.vic.gov.au> and the Weeds Australia website at: <http://www.weeds.org.au>

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