

Bursaria spinosa Sweet Bursaria

TAXONOMY

Division	Angiosperm (flowering plant)
Subclass	Dicotyledonae (dicotyledon)
Family	PITTOSPORACEAE

Previous Taxonomic Names Named *Bursaria spinosa* since 1797 (ANH et al 2006)

Taxonomic Identification Number 13780 (ANH et al 2005)

Taxonomic Status

Long-lived woody perennial.
Cayzer et al (1999) completed a revision into the genus.

Common Names

- Sweet Bursaria, Blackthorn, Native Blackthorn, Tasmanian Christmas Bush (ANBG n.d.), Native Box, Kurwan (GAV n.d.)

MORPHOLOGY

Dwarf, mostly spiny shrub to small tree, sometimes larger tree, 1-10 m. Branches can have slender spines, especially in juvenile plants, or be nearly spineless. Creamy white, aromatic flowers in large terminal clusters in larger plants with papery "purse-like" capsules that enclose seed (Entwistle & Walsh 1999).

B. spinosa shows considerable variation across Victoria, especially in habit and leaf size. Variation is attributed more to environmental factors such as rainfall, soils and age rather than genetics. Young plants, and those from drier sites tend to be spinescent and small leaved, while mature plants from well-watered areas such as the coast, river valleys and fertile plains tend to be large-leaved, virtually spineless and are often treelike (Walsh & Entwistle 1999).

B. spinosa can also display significant variation in morphology, particularly leaf morphology, at different stages of development. This means that, at any given time, an individual plant or stand can have several leaf forms. This trait has led to over-classification of this species in the past (Cayzer et al 1999).

SUBSPECIES

There are two subspecies of *B. spinosa* (Cayzer et al 1999).

- B. spinosa* ssp. *spinosa*** - Erect shrub or tree usually and at full maturity 5-10m tall. Appressed hairs on new shoots and underside of leaf, but not usually persisting with age or in later developmental stages. Adult leaves 23-43mm long, 5-9mm wide, generally longer and narrower than ssp. *lasiophylla*. Petals 4-6mm long (Cayzer et al 1999).
- B. spinosa* ssp. *lasiophylla*** - Generally a more multi-stemmed shrub less than 5m high. Dense appressed hairs persisting on shoots, and underside of leaf through most developmental stages. Adult leaves 20-35mm long, 7-12mm wide, generally smaller and wider than ssp. *spinosa*. Flowers are also smaller with petals only to 4mm long. Does not occur naturally in the Corangamite region (Cayzer et al 1999).

HYBRIDS

None known in Victoria.



SIMILAR SPECIES

Can sometimes be confused with Tree Violet.

GEOGRAPHIC RANGE

Was once widespread throughout Victoria, parts of SA, Qld, Tasmania, NSW and ACT in all but the most arid and alpine areas (Cayzer et al 1999).

- ***B. spinosa* ssp. *spinosa*** - Widespread across southern Victoria including the Corangamite region. Also SA, NSW, ACT, Qld & Tasmania (Walsh & Entwistle 1999).
- ***B. spinosa* ssp. *lasiophylla*** - Found around Ararat and Maryborough. Also SA & NSW (Walsh & Entwistle 1999).

BIOREGIONS

Central Victorian Uplands
Warrnambool Plain

Otway Plain
Victorian Volcanic Plain

Otway Ranges

PLANT COMMUNITIES

In Corangamite, *B. spinosa* is associated with a broad suite of ecosystems including grasslands, riparian and grassy woodlands, coastal heaths and scrubs, wet forests and dry forests.

FRAGMENTATION

Fragmentation is recent, occurring since European settlement.

RELEVANT HISTORY & RESEARCH

Aesculin, a chemical found in the leaves of *B. spinosa* absorbs ultra-violet light. This was recognised by early settlers and also resulted in the commercial exploitation of the plant for sunscreen in the 1940's (Smith 1993).

B. spinosa is critical to the survival of several butterflies. The Eltham Copper Butterfly (*Paralucia pyrodiscus lucida*), a vulnerable species under the Flora and Fauna Guarantee Act (1988) is dependent on *B. spinosa* as habitat and is linked through its life cycle to the plant. The butterfly was once widespread but is now known from less than 20 sites, none of which occur in the region. An action statement (no. 39) is available for this species. The Dull Copper (*Paralucia pyrodiscus pyrodiscus*) and the Bright Copper Butterfly (*Paralucia aurifer*) are also found from Queensland, NSW, ACT, Victoria and South Australia and are similarly dependent on *B. spinosa*.

POPULATION DENSITY

Bursaria is 'vigorously rhizomatous' making it difficult to identify individual plants in the field (Cayzer et al 1999). Analysis by Cayzer et al (1999) assumed that most stands (groups of shoots occurring within a 5 metres distance) were likely to be a single genetic individual, although within any particular case this can never be known for certain without mass excavation or genetic testing.

Scattered small stands are widespread across the region but population density is unknown.

BREEDING SYSTEMS

FLOWERING

Flowers early-mid summer, but occasionally flowers throughout the year. Flowers creamy white, very aromatic, usually hermaphroditic with anthers releasing pollen before the stigma of the same flower becomes receptive; or unisexual (Cayzer et al 1999).

In the Ballarat region *B. spinosa* generally flowers in December to February, but also spasmodically from October-May (Gowers 1990).

POLLEN

B. spinosa is nectar producing (Cayzer et al 1999) and produces moderate yields of yellow pollen (Clemson 1984).

POLLINATION

Plants hermaphroditic (MacFarlane et al, 2000).

POLLINATORS

Attracts large numbers of insect pollinators (Cayzer et al 1999) and is considered to be a valuable habitat for insects, particularly butterflies (Bonney 2003).

SEED

SEED DESCRIPTION

Seeds, oval to round in shape, flattened, up to 5 mm in diameter and brown in colour. One to three seeds are usually held in each of the two capsule chambers (Cayzer et al 1999). Seed held in papery brown capsules when split when seed is ripe (Ralph 1994; Bonney 2003).

Seed estimations are variable:

435-580 seeds per gram (GAV n.d.).

Approximately 190 viable seeds per gram (Ralph 2003).

204-282 germinants per gram (GAV n.d.)

- ***B. spinosa* ssp. *spinosa*** - 80 germinants/gram at 15°C (Gunn 2001).

Jhurree et al (1998) found an average of only 3.3% seed viability, mostly due to lack of embryo viability, but the same study refers to Read (by pers. comm.) who had obtained 41% germination in another batch of *B. spinosa*. There are a range of environmental and genetic factors which may explain poor seed viability.

SEED CROP

Collect seed when mature as indicated by capsules turning from pale green to brown, generally from Feb-April, although may be later in cooler climates. Tends to set good seed crops in most years. Wear gloves and avoid collection on windy days (Ralph 1994; Bonney 2003).

SEED DISPERSAL

Wind (Bonney 2003).

EXTRACTION & STORAGE

Dry capsules then clean with sieves to separate seed.

PROPAGATION

Sow fresh seed in autumn-early winter (Ralph 1994; DPI 2002; Bonney 2003) when daily temperatures are about 10°C and night temperatures about 5°C (Bonney 2003). Seed can be grown at other times of the year by placing in a very cool and shady spot (Bonney 2003).

Seed has been found to only germinate between temperatures of 15-22°C. Germination is not affected by conditions of light or darkness so seed can be buried, or left on the soil surface (Jhurree et al 1998).

Seedlings prone to damping off so full sun is recommended (Ralph 1994; Jhurree et al 1998; Bonney 2003) and are relatively slow growing (Bonney 2003).

To successfully propagate this species from cuttings, juvenile plant material such as coppice shoots needs to be used. Hormone or auxin applications are not necessary (DPI 2002).

TREATMENT OPTIONS

Seed should be stratified prior to sowing, recommended time frames are 3-4 weeks (Ralph 1994; Bonney 2003) or 6 weeks (Jhurree et al 1998).

Seed does not respond to scarification and there does not appear to be any seed coat induced dormancy in this species (Jhurree et al 1998).

Treatment with a fungicide can significantly reduce the loss of seedlings to damping off (Ralph 1994).

GERMINATION TIME

Seed usually germinates well in 4-6 weeks, although results can occasionally be erratic (Ralph 2003). However germination may take several months (Earl et al 2001).

Will germinate in winter, around the shortest day of the year (GAV n.d.).

FIELD ESTABLISHMENT

Tube stock recommended (Bonney 2003; Ralph 2003).

Variable results have been achieved using direct seeding, but because sufficient seed is often unavailable (Ralph 2003), seedlings have a very slow growth rate of seedlings and the vulnerability to weed competition it is not recommended (GAV n.d.).

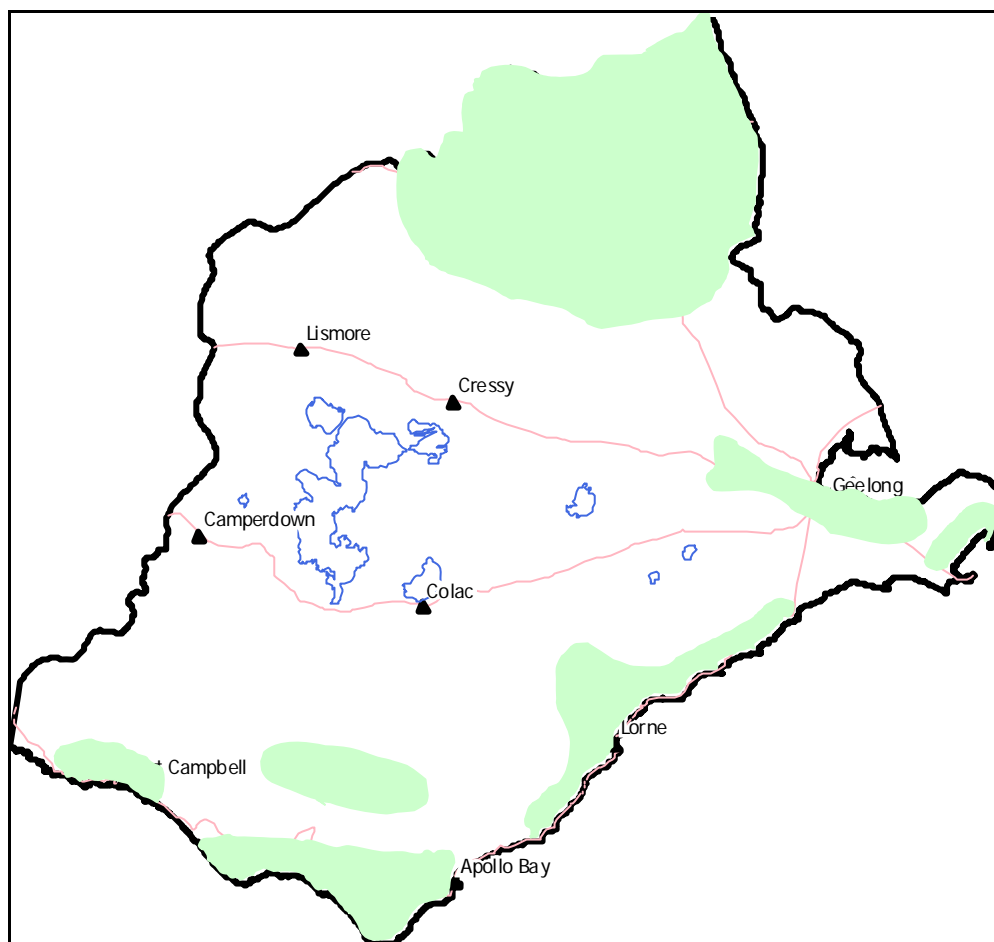
Because of the large variance in this species it is recommended to sow seed back into its original provenance (Bonney 2003).

Natural regeneration is from seed during winter if competition is low and protection from stock and vermin is provided (GAV n.d.).

SEED COLLECTION RANGE - *Bursaria spinosa* ssp. *spinosa*


Intermediate - within which, collection can be extended to formally contiguous remnants

Once widespread, *Bursaria* stands are now fairly small. Identifying an individual plant in the field is difficult as stems in close proximity may be genetically the same plant through rhizomatous growth. Seed should be sourced and mixed from a wide sample of sites to increase the genetics for revegetation. Collect from a large number of well spaced parent plants where possible. *Bursaria* is a highly variable species and it is suspected that differences in form are more likely to be due to environmental and age factors rather than genetics. However this has not been assessed fully. For this reason it is perhaps important to take a slightly cautious approach to confining collection to within a given bioregion and sourcing seed from a similar soil type that matches a revegetation project site until further research clarifies this.



MAP: *Bursaria spinosa* ssp. *spinosa* distribution

DATA SOURCE: DSE Flora Information System May 2005, accessed May 2006

 *Bursaria spinosa* ssp. *spinosa* broad distribution areas

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ACKNOWLEDGEMENTS

Information compiled for this note series was a result of extensive literature reviews and plant record searches completed by Lucy Nuttal, with assistance from Michelle Butler, Christine Gartlan and Anne Ovington.

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2006