

# Action statement No.261

Flora and Fauna Guarantee Act 1988

White Star-bush *Asterolasia asteriscophora* subsp. *albiflora*



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# White Star-bush *Asterolasia asteriscophora* subsp. *albiflora*

### Description

The White Star-bush (*Asterolasia asteriscophora* subsp. *albiflora* mole), also known as the Emerald Star-bush, is a slender upright shrub growing to 1.5 metres tall with dark green obovate to almost circular leaves, reaching 30 x 10 mm in size. The upper surface of the leaves have a few stellate hairs, while the lower surface is densely covered with rusty coloured stellate hairs. The flowers are usually white (occasionally pale lemon), star-shaped with 5 petals and 10 showy protruding stamens, often alternating long and short. The sepals are reduced to scales at the base of petals. The flowers are borne in umbels of 3 to 5, on stalks (pedicels) 6 to 15 mm long which are supported on a common stalk (peduncle), which is up to 5 mm long. White Star-bush typically flowers from early October to late November (Walsh & Entwisle 1999, Mole *et al.* 2002).

### Distribution

The White Star-bush is restricted to the Dandenong Ranges, Victoria where it grows in small clusters in undisturbed vegetation on private and public land, including road reserves. It grows predominantly in the Emerald area where the two largest populations occur at the Emerald Quarry Reserve and Lawsons Road Reserve (DSE 2007). A medium sized population occurs at the Selby Conservation Reserve and on adjoining private land (the Belgrave South/Belgrave/Selby junction) (J. Hick, pers. comm. 2013). Other populations occur elsewhere in Belgrave South, Selby, Menzies Creek and The Patch.



White Star-bush (John Hick)

### Habitat

White Star-bush forms part of the diverse shrub layer usually found within Shrubby Foothill Forest (Ecological Vegetation Class (EVC) 45) and is occasionally associated with Damp Forest (EVC 29) ecosystems located within the Highlands - Southern Fall Bioregion.

Shrubby Foothill Forest occurs on ridges and southern and eastern slopes in moderately fertile, well drained soils (mostly loam and clay loam), with an average annual rainfall of 700-1100 mm (DSE 2004). Damp Forest occurs on well-developed soils, on a variety of aspects and extending from sea level to montane elevations (DSE 2004).

### Life History and Ecology

There is little published information on the biology and ecology of the White Star-bush. Yugovic (2007) noted that recruitment of White Star-bush seedlings occurred following trial burns at Emerald Quarry Reserve. Plants are usually found in undisturbed areas, however J. Hick (pers. comm. 2011) has observed seedlings growing along track edges and excavated batters at the Emerald Quarry Reserve and roadsides at The Patch and Selby indicating that recruitment may be stimulated by mechanical soil disturbance. It is assumed that a minimum fire-free interval of five years is needed to allow the soil seed-bank to be replenished between fires (N. Walsh, pers. comm. 2011).



Distribution in Victoria (DELWP, 2015)

## Conservation status

### National conservation status

White Star-bush is not listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

### Victorian conservation status

White Star-bush is listed as threatened under the *Flora and Fauna Guarantee Act 1988* (FFG Act).

White Star-bush is considered endangered in Victoria according to the Department of Environment, Land, Water and Planning (DELWP)'s *Advisory List of Rare or Threatened Plants in Victoria – 2014* (DEPI 2014).

## Threats

The greatest threat to individual populations is the destruction of plants by landholders controlling fuel loads to manage the threat of fire. This threat is compounded because the majority of known populations occur in populated and semi-rural areas (R. Jones, pers. comm. 2014).

Other major threats include the removal and degradation of habitat. Habitat loss occurs following clearing of vegetation and inappropriate fire regimes. Degradation of habitat results from competition with weed species (in particular creeping or climbing species), competition with native species, roadside slashing, trampling and illegal dumping of rubbish. Accidental removal of plants, due to mis-identification, by uninformed landholders also results in the loss of individual plants or small populations.

Standard threat	Source of threat	Explanation
Competition	Invasion by environmental weeds	<p>White Star-bush is impacted by different weed species at various locations. The following serious weeds have been recorded in the reserves - Blackberry (<i>Rubus fruticosus</i> spp. <i>agg.</i>), English Ivy (<i>Hedera helix</i>), Japanese Honeysuckle (<i>Lonicera japonica</i>), Periwinkle (<i>Vinca major</i>), Spear Thistle (<i>Cirsium vulgare</i>), Paspalum (<i>Paspalum dilatum</i>) and Phalaris (<i>Phalaris aquatica</i>) (N. Walsh, pers. comm. 2011).</p> <p>Native species have also been observed competing with White Star-bush at the Emerald Quarry Reserve site. For example, in the unburnt areas bracken (<i>Pteridium esculentum</i>) is abundant and in the burnt areas dense regeneration of <i>Pultenaea</i> spp. and Dusty Miller (<i>Spyridium parvifolium</i>) has occurred.</p> <p>Also at the Lawsons Rd site, in particular, the invasive Paddys River Box (<i>Eucalyptus macarthurii</i>) is present which has caused considerable closing of the canopy, and while not documented, by implication, alteration of understorey conditions (T. Entwisle pers. comm. 2014).</p>
Inappropriate fire regimes	Fire – frequency	The optimal fire regimes (frequency and intensity) to promote seed production and germination of White Star-bush are not known. A minimal fire-free period of five years has been suggested (N. Walsh, pers. comm. 2011). An inappropriate fuel reduction program may adversely affect survival of the species. Also the condition and structure of the habitat may be altered by frequent fuel reduction burns.
Habitat damage or loss	Vegetation clearance	Habitat loss occurs when vegetation is cleared, primarily for development or primary production.



Habitat damage or loss	Land use changes - residential/commercial development	Development proposals on private land may impact on known individuals and populations.
	Trampling	White Star-bush populations at some sites may be subject to trampling resulting in damage to mature plants and possible destruction of seedlings. Soil compaction may also occur, resulting in reduced germination and regeneration.
Human disturbance	Dumping - rubbish	Rubbish dumping is an ongoing problem at the reserves where White Star-bush occurs.
	Vegetation clearance	Accidental or deliberate destruction of plants by landholders results in the loss of undocumented populations.
	Vegetation control activities (including spraying, slashing and mowing)	Slashing of native vegetation on both public and private land (to manage fuel loads) may be detrimental to White Star-bush because it prevents plants from flowering and producing seed, which affects recruitment. Roadside spraying of herbicides may also impact on undocumented populations of White Star-bush.

## Important locations

Catchment	Location name	Land manager	Bioregion
PORT PHILLIP AND WESTERNPORT	Bellbird Crescent, Emerald	Cardinia Shire	Highlands - Southern Fall
	Emerald Quarry Reserve	Cardinia Shire	Highlands - Southern Fall
	Lawsons Road Reserve	DELWP	Highlands - Southern Fall
	Macclesfield Road, Avonsleigh	Private Land	Highlands - Southern Fall
	Maisey Road, Emerald	Private Land	Highlands - Southern Fall
	Selby Conservation Reserve and adjoining private land (Belgrave South/Belgrave/Selby border)	Private Land, Yarra Ranges Shire, Parks Victoria	Highlands - Southern Fall

## Past management actions

Action	Result explanation
Negotiate voluntary acquisition or exchange of land	Negotiations have occurred to transfer Lawsons Rd Reserve from freehold land to DELWP. The reserve will be managed by a Committee of Management for Conservation.
Manage environmental weeds	The roadside (top of the banks) at Emerald Quarry Reserve is slashed regularly for weeds and fire protection.
Apply ecological burning	The CFA completed a burn of half of Lawsons Rd Reserve in April 2011. Cardinia Shire Council completed a burn in Emerald Quarry Reserve in April, 2005.
Prevent habitat loss	An extension of the Emerald Quarry Reserve has been accepted by Cardinia Shire Council and the Council intends to place a covenant on the title (R. Jones pers. comm. 2014).
Erect/maintain signs to restrict or discourage access	Cardinia Shire has commenced a roadside signage program.
Liaise with stakeholder groups	A stakeholder meeting in 2010 between the then Department of Sustainability and Environment (now DELWP) and representatives from the Shire of Yarra Ranges, Cardinia Shire, Parks Victoria and Friends Groups was held to discuss important issues, including optimal management actions for reserves and prevention of accidental damage from roadside maintenance (J. Hick pers. comm. 2015).
Develop, provide input to or implement park, reserve or land management plan	In 2005, Biosis Research prepared a Biodiversity Management Plan for the Lawsons Road Reserve, as part of the Emerald Secondary College extension area. The Emerald Quarry Reserve was assessed in October 2006 by Biosis Research.  DELWP and Cardinia Shire have reviewed fire management protocols for Emerald Quarry Reserve and Lawsons Rd Reserve.
Undertake detailed population monitoring and collect demographic information	Biosis Research recorded over 200 individuals in the Lawsons Road Reserve in 2005. Biosis Research found 1951 mature plants in the Emerald Quarry Reserve in 2006.
Assess threats	Key threats to White Star-bush have been determined at Emerald Quarry Reserve and Lawsons Rd Reserve.
Maintain <i>ex situ</i> plant collections	The Royal Botanic Gardens have established White Star-bush plants in cultivation. Nurseries (Southern Dandenongs Community nursery and Friends of the Helmeted Honeyeater nursery) and private enthusiasts have well established plants in cultivation and cuttings are used from these plants for revegetation works in the Emerald area (J. Hick pers. comm. 2013).
Store reproductive material	The Victorian Conservation Seedbank has four small unvouchered seed collections (totalling more than 600 seeds), for long term storage (J. Jeanes pers. comm. 2015).

Collect reproductive material	Seed was collected from White Star-bush populations in 2007 and 2008 and sent to the Victorian Conservation Seedbank at the Royal Botanic Gardens Melbourne (RBGM). Germination trials carried out at the RBGM, have had no success in germinating White Star-bush (M. Hirst pers. comm. 2013). Germination of seed in nurseries and by private individuals has also been unsuccessful, so currently all revegetation work is by vegetative means (J. Hick pers. comm. 2013).
Undertake periodic surveillance monitoring of populations	<p>The area of occupancy of some populations of White Star-bush was mapped in 2010 by the Department of Environment and Primary Industries (now DELWP) during the flowering season.</p> <p>Cardinia Shire Council in conjunction with the Emerald Star Bush Community Partnership (ESBCP) have been monitoring populations and have identified 42 sites where White Star-bush is known to exist. These are made up of private and public properties including roadsides. This information has been periodically forwarded to DELWP.</p>
Develop, publish and distribute educational, technical or publicity material and/or displays.	ESBCP has promoted awareness and encouraged conservation programs, through the development of a land management education sheet and the establishment of a website. They are liaising with community to improve awareness of the species and to encourage conservation land management. Cardinia Shire has developed a species identification sheet

## Conservation objectives

### Long term objective

To ensure that the White Star-bush can survive, flourish and retain its potential for evolutionary development in the wild.

### Objectives of this Action Statement

- To increase the number of populations or individuals
- To maintain or improve condition of habitat
- To secure populations or habitat from potentially incompatible land use or catastrophic loss
- To increase knowledge of biology, ecology or management requirements
- To maintain or increase community awareness and support

### Intended management actions

The actions in this action statement have been developed taking into consideration relevant social and economic matters, as required under the FFG Act.

These actions are designed to support the conservation, management or control of flora and fauna and the management of potentially threatening processes, which will assist in mitigating any impact of climate change on White Star-bush, and will have no impact on greenhouse gas emissions.

The intended management actions listed below are further elaborated in DELWP's Actions for Biodiversity Conservation (ABC) system. Detailed information about the actions and locations, including priorities, is held in this system and will be provided annually to land managers and other authorities.

Standard objective	Objective explanation	
<b>To increase the number of populations or individuals</b>	<p>Seed to be collected at least biennially according to Seed Collection protocols and stored at the Royal Botanic Gardens Melbourne in the Victorian Conservation Seedbank.</p> <p>Established plants to be grown in cultivation to support the reintroduction or reinforcement of existing populations.</p> <p>Protocol for translocation of cuttings and seedlings of White Star-bush to be prepared and implemented.</p>	
Standard action	Details	Responsible agents
Collect reproductive material	Collect seed from most populations at least biennially (September to December). Method of seed collection to follow 'Seed Collection Protocols' of the Victorian Conservation Seedbank (i.e. up to 10% of seed from up to 50% of plants within a population). Seed to be stored in the Victorian Conservation Seedbank.	RBGM, DELWP
Maintain <i>ex situ</i> plant collections	Maintain established plants and bring new stock into cultivation for revegetation. Provenance information should be retained for all cultivated plants. Produce cuttings from these plants for revegetation works.	RBGM, DELWP
Prepare a plan for reintroduction/reinforcement/translocation	Develop a protocol for translocation of cuttings and seedlings.	DELWP

Standard objective	Objective explanation	
<b>To secure populations or habitat from potentially incompatible land use or catastrophic loss</b>	<p>All known populations on public land to be protected in secure reserves. All potential roadside habitats to be signposted to discourage disturbance and accidental damage. Liaison to occur between all stakeholders to determine optimal management actions in reserves and on public land.</p>	
Standard action	Details	Responsible agents
Amend Crown land reservation	Finalise the transfer of Lawsons Road Reserve from freehold land to DELWP. Determine the appropriate reservation and management responsibility.	DELWP
Develop, provide input to or implement park, reserve or land management plan	An integrated management approach to be implemented by all stakeholders to ensure populations of White Star-bush are suitably managed and secured.	DELWP, Cardinia Shire, Yarra Ranges Shire
Erect/maintain signs to restrict or discourage access	Significant roadside signage to be erected to discourage disturbance in areas of potential habitat for White Star-bush.	Cardinia Shire, Yarra Ranges Shire



Liaise with Melbourne Water	Conduct targeted White Star-bush survey within Cardinia Reservoir and where required develop conservation plan to ensure protection	DELWP, Melbourne Water
Liaise with government agencies	Liaise with land managers to determine optimal management actions for the reserves and ensure there is no accidental damage from roadside maintenance or fire management actions	DELWP
Review conservation status	Review conservation status and nominate White Star-bush for listing under the EPBC Act.	DELWP

Standard objective		Objective explanation
<b>To maintain or improve condition of habitat</b>		To achieve a significant increase in the habitat condition of known populations. Optimal fire frequency and intensity to be determined. Abundance of weeds to be reduced.
Standard action	Details	Responsible agents
Manage environmental weeds	Undertake weed control at known sites and potential roadsides and reserves, as viable soil-stored seed may be present and, in suitable conditions, be able to expand naturally if the habitat is not compromised by weeds. The presence of <i>Eucalyptus macarthurii</i> in the overstorey (T. Entwisle pers. comm. 2014) and creeping and climbing weed species are of particular concern at Lawsons Road Reserve. CFA and DELWP to manage weed infestations and restrict access following ecological burns so that regeneration of White Star-bush is optimised	DELWP, Cardinia Shire, CFA
Maintain vegetation structure	Carefully manage potentially competitive native species, in particular, Bracken, <i>Pultenaea</i> spp. and Dusty Miller ( <i>Spyridium parvifolium</i> ) following ecological burns, to maximise growth and flowering of White Star-bush.	DELWP, Cardinia Shire
Apply ecological burning	Undertake integrated fuel reduction and ecological burning according to DELWP Fire Management Prescriptions, which will ensure that burns are suitable for regeneration of the species and maintain the diversity and structure of the habitat. Avoid adverse effects on species from fuel reduction and fire prevention activities.	Country Fire Authority (CFA), DELWP

Standard objective		Objective explanation
<b>To increase knowledge of biology, ecology or management requirements</b>		Monitoring protocols to be developed and implemented. Optimal fire regimes to be determined to maximise regeneration of White Star-bush. Knowledge of requirements for seed germination to be increased.

Standard action	Details	Responsible agents
Develop detailed population monitoring protocols	Complete population monitoring protocols	DELWP
Assess threats	Assess threats to White Star-bush at all locations (completed at Emerald Quarry Reserve and Lawsons Road Reserve).	DELWP, Cardinia Shire, Yarra Ranges Shire
Identify disturbance regimes to maintain habitat or promote regeneration and recruitment	Establish a post-burn monitoring program to determine optimal fire regimes (frequency and intensity) to promote seed production and germination and provide additional information about the response of White Star-bush to fire over time. This information will help to determine the overall effect of the fuel reduction program	DELWP, Cardinia Shire, Yarra Ranges Shire
Undertake detailed population monitoring and collect demographic information	Monitor populations in Spring (flowering time) to determine population size, demographics and condition.	DELWP, Cardinia Shire, Yarra Ranges Shire
Undertake research to identify key biological functions	Investigate germination cues for White Star-bush, as germination trials carried out at the Victorian Conservation Seedbank, have had no success in germinating White Star-bush (M. Hirst pers. comm. 2013).	RBG, DELWP

Standard objective	Objective explanation
<b>To maintain or increase community awareness and support</b>	Increased community awareness and support for private landowners

  

Standard action	Details	Responsible agents
Liaise with stakeholder groups	Liaise with the CFA to ensure management directions on private land achieve multiple land management outcomes that include maintaining a diversity of habitat.	DELWP, Cardinia Shire, Yarra Ranges Council and CFA
Liaise with private landowners	Liaise with private landowners to raise awareness and promote protection on private properties.	DELWP
Promote awareness of item through communication with local community	Provide landholders with White Star-bush on their properties with education sheet and access to the website developed by ESBCP.  ESBCP to continue providing information to the local community by attending local markets and promoting the importance of White Star-bush in the area.	DELWP, Cardinia Shire, Yarra Ranges Council, ESBCP

## Personal Communications

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