



Conospermum hookeri

tasmanian smokebush

TASMANIAN THREATENED SPECIES LISTING STATEMENT

Photos: Naomi Lawrence

Scientific name: *Conospermum hookeri* (Meisn.) E.M.Benn., *Fl. Australia* 16: 485 (1995) (Meisn.)

Common name: tasmanian smokebush

Name history: previously known in Tasmania as *Conospermum taxifolium*.

Group: vascular plant, dicotyledon, family **Proteaceae**

Status: *Threatened Species Protection Act 1995*: **vulnerable**
Environment Protection and Biodiversity Conservation Act 1999:
Vulnerable

Distribution: Biogeographic origin: **endemic to Tasmania**
Tasmanian NRM regions: **North, South**
Tasmanian IBRA Bioregions (V6):
South East, Northern Midlands, Ben Lomond, Flinders

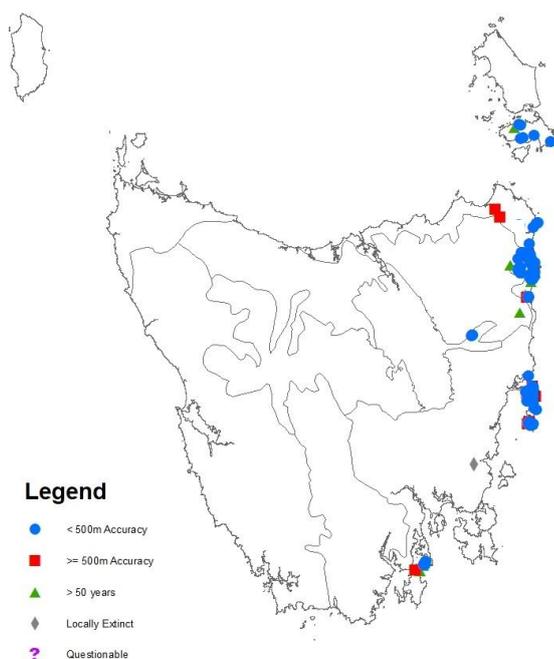


Figure 1. Distribution of *Conospermum hookeri* showing IBRA (V6) bioregions

Plate 1. *Conospermum hookeri* in flower.

SUMMARY: *Conospermum hookeri* (tasmanian smokebush) is a small shrub in the Proteaceae family. It is endemic to Tasmania, occurring along the East Coast from Bruny Island to Cape Barren Island in 10 locations, two presumed locally extinct and another of uncertain status. The number of subpopulations is estimated to be 40, with five presumed locally extinct or of uncertain status. Most subpopulations are small and localised in a widely scattered distribution, with only two approaching 1,000 mature individuals as a result of mass germination events, one in response to soil removal and gravel extraction and the other in response to fire. The total number of mature individuals is estimated to be between 4,600 and 6,000, occupying in the order of 30 ha. The species usually occurs in coastal heathland and heathy forest/woodland on granite or sandy, acid, low nutrient soils. It is at risk from habitat loss from subdivision and recreational infrastructure and works in reserves, degradation of habitat from recreational activities, roadside maintenance, introduction and spread of the root rot pathogen and weeds, rubbish dumping, and an increase in the frequency and intensity of fires and drought as a consequence of climate change, likely leading to an increased rate of local extinctions, particularly for smaller occurrences.

IDENTIFICATION AND ECOLOGY

Conospermum hookeri is a small shrub that typically flowers from September to November with fruit set by early to mid summer. Fertile seed drops to the ground where it can contribute to a dormant soil seed store. Germination of soil stored seed is likely to include fire-related cues such as heat and smoke derivatives as observed in other *Conospermum* species. Germination events, sometimes in mass, have been noted for *Conospermum hookeri* at a number of sites in response to fire or ground disturbance. However, little is known of seed longevity in the soil. Mature plants have also been observed to resprout after fire though their response to fire intensity is unknown.

Conospermum hookeri may be limited by low seed production rates. Other species of *Conospermum* are known to have low reproductive outputs. Approximately 50% of flowers of *Conospermum* species form fruit though only a small proportion of these produce viable seed (Morrison *et al.* 1994).

Conospermum hookeri makes a highly significant contribution to phylogenetic diversity in Tasmania, being the only representative of the genus in the State. It is one of 33 native Tasmanian taxa in the Proteaceae family (de Salas & Baker 2019).

Conospermum hookeri can be identified at all times of the year and is readily recognised by its upward-directed grey-green leaves on emergent branches. However, it is best surveyed for during the flowering season when plants can be easily observed from a distance



Plate 2. *Conospermum hookeri* flower detail.

Description

Conospermum hookeri is an erect, slender, pubescent shrub, usually 50 to 150 cm tall at maturity. It has grey-green, crowded, erect or slightly spreading leaves that are linear or narrow oblanceolate (broadest at the tip end). They are 1 to 3 cm long and pale with silky hairs pressed closely against the leaf surface. The creamy white flowers are clustered on stalks that are subtended by the upper leaves. They are composed of a sparsely hairy tube that splits about two-thirds along to form two lips. The upper lip is up to 2.5 mm long and 2 mm wide, with the tip curving backwards acutely. The lower lip is united for 1.5 mm before dividing into three lobes that are each up to 1.4 mm long and 0.8 mm wide. The bracts are

broadly triangular with a narrow point, and silky. They are about half as long as the flowers and persist to envelop the developing fruit, where the sharp tip of the bract curves backward. The fruits are single seeded cone-shaped nuts about 2 mm long and 2.25 mm wide. They are reddish-brown with a circumference of hairs.

[description based on Curtis (1967) and Bennett (1995)]

Confusing species

None in Tasmania. Bennett (1995) considered *Conospermum hookeri* to be endemic to Tasmania and the only species in the genus to occur in the State. However, collections from Cape Barren Island have affinities to *Conospermum taxifolium* (Neville Walsh, pers. comm. 2005), a species recorded from Victoria, New South Wales and Queensland. The identity of at least one collection from Freycinet is also in question. The two species can be distinguished by their leaves which are spatulate (broad at the tip end) and more or less incurved for *Conospermum hookeri*, and flat, occasionally spatulate, but not incurved for *Conospermum taxifolium* (Bennett 1995). All *Conospermum* material from Tasmania is considered here to be *Conospermum hookeri* in accordance with the Tasmanian vascular plant census (de Salas and Baker 2019).

DISTRIBUTION AND HABITAT

Conospermum hookeri is endemic to Tasmania and occurs along the East Coast from Bruny Island in the south to Cape Barren Island in the Furneaux Group in the north, with an outlying inland subpopulation near Avoca in the Fingal Valley.

The species usually occurs in coastal heathland and heathy forest/woodland on granite or sandy, acid, low nutrient soils. Associated eucalypts include the Tasmanian endemics, *Eucalyptus amygdalina* and *Eucalyptus tenuiramis*. The species has an altitudinal range from sea level to 460 m.

POPULATION PARAMETERS

Number of locations: 10 (2 extinct, 1 status uncertain)

Number of subpopulations: 40 (5 extinct or status uncertain)

Extent of occurrence: 12,500 km²

Linear range: 330 km

Area of occupancy: < 0.09 ha

Area of occupancy (as per IUCN criteria): 4 km²

No. of mature individuals: 4,600 to 6,000

Conospermum hookeri has a linear range of about 330 km and an extent of occurrence of 12,500 km². Occurrences are generally small and localised within a widely scattered distribution, sometimes with outliers radiating out from larger occurrences. This metapopulation structure is perhaps indicative of a once wider distribution with the species retreating to sites more conducive to above ground persistence and replenishment of the soil seed store over time and/or fragmentation with changes in land use.

To match the population parameters used in the criteria for the assessment of the conservation status, the data has been interpreted in terms of locations and subpopulations, the latter split into sites to accommodate the reporting of abundance estimates over time (Table 1). Sites are generally up to 1 to 1.2 km apart, with subpopulations generally at least 1 km apart. Ten locations are identified, two presumed locally extinct and another of uncertain status. The number of subpopulations is estimated to be 40, with five presumed locally extinct or of uncertain status. Together with one site presumed to have become extinct and another of unknown status in recent years, a continuing decline is indicated.

The recorded estimates of abundance for *Conospermum hookeri* often require interpretation as observers have not always differentiated between mature and immature individuals. This can be problematic when mass recruitment from seed occurs following disturbance, where the density is such that significantly fewer seedlings would be expected to survive to maturity.

An accurate count of 827 to 920 mature individuals was made in 2005 for the largest subpopulation known until recent years (near Avoca), with the high number of plants thought to be an artefact of severe disturbance with mass germination following soil removal and gravel extraction. The 2013 estimate of greater than 1,000 plants (maturity unspecified) at this site cannot confidently be used to demonstrate that this subpopulation exceeds the threshold of 1,000 mature individuals used in the assessment criteria.

More recently, a mass germination event occurred in the subpopulation behind the Freycinet Lodge and The Fisheries in the Freycinet National Park following prescribed burns in 2006 and 2008, with numbers approaching the 1,000 mature individual threshold. Surveys undertaken in 2016 and 2017 to determine the impact of proposed track works estimated between 1,000 and 2,000 plants, with about 50% mature, though the upper limits of estimates in 2012 and 2013 were 500 and 1,000 plants respectively, reducing confidence that the subpopulation exceeds the 1,000 mature individual threshold, particularly as a permit was issued in early 2019 to take between 150 and 250 plants of unspecified maturity for the track works.

The data presented in Table 1 indicates that the total population of *Conospermum hookeri* comprises between 4,600 and 6,000 individuals. Given considerable botanical and impact assessment activity throughout the range of the species, it is considered unlikely that new locations will be found, though given the patchy distribution, often in rugged habitat, it is conceivable that further subpopulations or sites will be found with further survey. However, it is considered unlikely that estimates of mature plant numbers will approach or exceed 10,000.

The recorded estimates of the area of occupancy of *Conospermum hookeri* are also open for interpretation as estimates may either be the sum of the area occupied by individual plants or the extent of the site containing plants. The latter may be an overestimate if plants are scattered over a wider area.

The data presented in Table 1 suggest an area of occupancy in the order of 30 ha. The species has been recorded in 58 grid cells of 2x2 km (giving an area of occupancy as defined by the IUCN conservation status assessment criteria of 232 km²).

RESERVATION STATUS

Reserved within the Mt William National Park, Freycinet National Park, Mt Pearson State Reserve, Bay of Fires Conservation Area, St Helens Conservation Area, Coles Bay Conservation Area, Humbug Point Nature Recreation Area, Cameron Regional Reserve, Doctors Peak Regional Reserve, and areas on two private land parcels protected by Conservation Covenants under the *Nature Conservation Act 2002* (Table 1).

CONSERVATION ASSESSMENT

Conospermum hookeri was originally listed as rare on schedules of the Tasmanian *Threatened Species Protection Act 1995* but was uplisted to vulnerable in 2001 meeting the following criterion:

- C. Total population estimated to number fewer than 10,000 mature individuals and;
2. a continuing decline, observed, projected, or inferred, in numbers of mature individuals and population structure in the form of:
 - (a) severely fragmented (i.e. no subpopulation estimated to contain more than 1,000 mature individuals.

A reassessment of the conservation status in 2019 also determined that the species meets Criterion B for vulnerable as:

- B. Area of occupancy estimated to be less than 50 hectares and:
1. severely fragmented or known to exist at no more than ten locations.
 2. continuing decline, inferred, observed or projected, in:
 - (c) area, extent and/or quality of habitat;
 - (d) number of locations or subpopulations.

The species was listed as Vulnerable on the Commonwealth *Environment Protection and Biodiversity Protection Act 1999* in 2007.

THREATS, LIMITING FACTORS & MANAGEMENT ISSUES

Few occurrences of *Conospermum hookeri* are free of the threats detailed below, irrespective of land tenure, and local extinctions additional to those detailed in Table 1 are anticipated. While mass germination events have occurred at some sites in response to disturbance, sometimes severe, the species will not always respond favourably to seemingly suitable disturbance events, which is perhaps an indication of a limited amount of seed stored in the soil.

One mass germination event occurred following soil removal and gravel extraction (i.e. near Avoca) and others following burns (e.g. behind the Freycinet Lodge to The Fisheries). However, a site at Parnella Heights that was illegally burnt and bulldozed only recovered to previous numbers of plants following rehabilitation orders and another site, albeit small, (Henderson Lagoon) did not recover following wildfire. Improvements to the consideration of impact avoidance measures and cumulative and indirect impacts in regulatory processes would benefit the species.

Development and associated disturbance:

Land clearance, through subdivision of private land along the East Coast of Tasmania, threatens several occurrences of *Conospermum hookeri*. Some properties supporting the species have been subject to often repeated subdivision proposals. One occurrence was illegally burnt and bulldozed in response to failed subdivision proposals and the property is likely to be subject to further development proposals following the end of rehabilitation conditions imposed under the *Environment Protection and Biodiversity Conservation Act 1999* in early 2020.

Many subpopulations are also subject to impacts of adjacent existing or proposed subdivision through fire protection measures, access and infrastructure requirements, off road vehicle use, wood hooking, garden escapes and rubbish dumping. These activities increase the risk of direct damage to plants and indirect impacts through the introduction and spread of disease and weeds and increased fire frequency.

Of note is damage to occurrences along Argonaut Road from the dumping of rubbish and garden waste and culvert replacement works, and along the Tasman Highway near Clio Hill from slashing, spraying and spread of *Erica lusitanica* (spanish heath).

Several sites of *Conospermum hookeri* have been subject to clearing under permit from dam and water management proposals. Part of an offset for the loss of threatened plants and habitat associated with works in the Coles Bay Conservation Area to improve the water supply for tourist accommodation proposals was to prepare and submit a nomination to list *Conospermum hookeri* on the *Environment Protection and Biodiversity Conservation Act 1999*, resulting in the listing of the species in 2007.

The Stieglitz occurrence was subject to a number of development proposals when the tenure was unallocated Crown land but was included in the St Helens Conservation Area in 2018. However, the area is still subject to impacts of adjacent housing and recreational activities.

The increase in tourism along the East Coast in recent years has been accompanied by increased proposals for track and other tourism infrastructure works on public land supporting *Conospermum hookeri*. Permits have been issued to destroy between 150 to 250 plants for a shared use bike and walking track, and an unspecified number of plants to upgrade the Wineglass Bay track in the Freycinet National Park. A mountain bike track through the Mount Pearson State Reserve and the Bay of Fires Conservation Area has been constructed recently despite likely impacts to *Conospermum hookeri*. Tourism infrastructure works long proposed for the Crown land informal reserve adjacent to the Coles Bay Conservation Area may not proceed, given that the area supports *Conospermum hookeri* and numerous other threatened species, and adjacent areas in the Conservation Area contain lesser values.

Small size of occurrences: Most sites of *Conospermum hookeri* contain fewer than 50 mature plants (Table 1) making them prone to stochastic risk and inadvertent losses.

Small occurrences may not be able to sustain even small losses from stressors such as disease, fire and drought.

The potential for the persistence of occurrences at a site may also be limited by low seed production rates as has been reported for other *Conospermum* species (Morrison *et al.* 1994), and it is likely that seed production rates are lower for smaller occurrences. This could perhaps be tested by comparison of fruit retention rates on plants in occurrences of different sizes as infertile fruits are retained on the shrubs (James Wood, pers. comm.).

Inappropriate fire regimes: Fire appears to be an important factor in maintaining subpopulations of *Conospermum hookeri*, as several sites have been recorded in regenerating post-fire heath and woodland. The species has been observed to resprout and/or recruit from seed after fire. However, regeneration following fire may not be assured as evidenced by the small subpopulation at Henderson Lagoon that was recorded in 2001 but became locally extinct following a fire in 2006 (Table 1).

Frequent fires are a potential threat. The period between fires must be long enough to enable viable seed production to replenish the soil seed store. This period may be relatively long for the species as seed production rates for many *Conospermum* species have been shown to be low (Morrison *et al.* 1994). The possibility exists that the potential for the production of fertile seed is reduced in small occurrences. This could perhaps be tested by comparing the retention of seed on plants between occurrences of different sizes given the low retention rates of fertile seed. Infertile seed tends to persist on the shrub (James Wood, pers. comm.).

The absence of fire may also be a threat should mortality rates exceed non-fire induced recruitment from seed, or the interval between fires exceeds the longevity of soil stored seed. Fire regimes that favour *Conospermum hookeri* are yet to be determined, but in the absence of further study, may be conservatively estimated to be between 10 to 30 years in heathy woodland/forest vegetation.

The number of plants in sites in subpopulations 21 and 22 that were assessed in 2019 appear to be in decline (Table 1), and as they have not been burnt in the last 40 years, a fuel reduction burn is being planned for autumn 2020. However, more frequent fires (wildfires and fuel reduction burns) and more intense wildfires are anticipated as a consequence of climate change, likely leading to an increased rate of local extinctions, particularly for smaller occurrences.

***Phytophthora cinnamomi* (root rot pathogen):** *Conospermum hookeri* and its typical habitat are susceptible to the introduced soil-borne pathogen *Phytophthora cinnamomi* (Schahinger *et al.* 2003) and symptoms of infection have been noted in a number of occurrences. While the mortality rate in occurrences due to *Phytophthora cinnamomi* appears to be low (Mark Wapstra pers. comm.), the pathogen contributes to cumulative impacts, and small occurrences may not be able to sustain even small losses. *Phytophthora cinnamomi* infection also contributes to the degradation of habitat.

The mountain bike track recently constructed through the Mount Pearson State Reserve and the Bay of Fires Conservation Area threatens an occurrence of *Conospermum hookeri* with the potential for introduction and spread of *Phytophthora cinnamomi*, as the Mount Pearson State Reserve is a designated *Phytophthora cinnamomi* Management Area (Schahinger *et al.* 2003). The small occurrence in the Bay of Fires Conservation Area also occurs within a designated *Phytophthora cinnamomi* Management Area (Schahinger *et al.* 2003). The large subpopulation in the Fingal Valley occurs in an area climatically less suited to *Phytophthora cinnamomi* expression because of low rainfall, and it is therefore regarded as one of the more secure subpopulations in Tasmania (Schahinger 2004). The southernmost occurrence on Bruny Island is currently free of symptoms of *Phytophthora cinnamomi* despite considerable tracks through the occurrence, with tracks normally a conduit for introduction and spread of the pathogen.

Climate change: *Conospermum hookeri* is at risk from an increase in the frequency and intensity of fires (both wildfires and strategic or asset protection fuel reduction burns) and drought, now evident across the range of the species as a consequence of climate change.

MANAGEMENT STRATEGIES

What has been done?

- Funding accessed by the St Helens Landcare and Coastcare group allowed the main occurrence behind Stieglitz to be fenced to reduce impacts from adjacent residential and recreational activities (known as the Smokebush Compound).
- The efforts of the North East Bioregional Network resulted in approximately 100 ha of unallocated Crown land containing the Smokebush Compound and other occurrences to be included in the St Helens Conservation Area.
- The Threatened Plants Tasmania group has helped with survey and monitoring of a number of occurrences.
- Seed has been collected from four occurrences of *Conospermum hookeri* (Doctors Peak, the Smokebush Compound, Avoca and behind Freycinet Lodge to the Fisheries) for long term conservation storage at the Tasmanian Seed Conservation Centre (based at the Royal Tasmanian Botanical Gardens, Hobart).

Management objectives

The main objective for the **recovery** of *Conospermum hookeri* is to prevent the loss and degradation of habitat at known sites, maintain or increase the number of mature individuals at known sites, and survey for new occurrences.

What is needed?

Agencies, groups or individuals may assist with some or all of the following recovery actions. Coordinated efforts may achieve the best and most efficient results.

- provide adequate information and extension to relevant Natural Resource Management committees, local Councils, Government agencies and the local community on the localities, significance and management of known occurrences, as well as identification and management of potential habitat;
- consider avoidance of impacts to the species for proposed developments taking cumulative losses and indirect impacts into consideration;
- undertake surveys at known sites (especially Cape Barren Island and Great Northern Plain) to update and improve estimates of abundance and area occupied;
- survey potential habitat for new occurrences;
- determine the relationship between production of fertile seed and occurrence size and age of plants to enable consideration of regeneration potential when planning fire management;
- improve the understanding of the impact of fire on the species;
- identify occurrences for priority fire management;
- identify and monitor key occurrences for recruitment, senescence and responses to disturbance;
- participate in long-term programs for the management of *Phytophthora cinnamomi* in key habitat;
- collect seed from the main occurrence on Bruny Island for long term conservation storage;
- clarify the status of *Conospermum taxifolium* in Tasmania.

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- Schahinger, R. (2004). The *Conospermum hookeri* site at Freeman's Pit, Avoca: 2004 Census. Internal report for Threatened Species Unit, DPIWE, Tasmania.
- Prepared** in 2006 under the provisions of the Tasmanian *Threatened Species Protection Act 1995*. Revised in 2008 and December 2019. Reapproved by the Secretary in September 2020.
- Cite as:** Threatened Species Section (2020) *Listing Statement for Conospermum hookeri (tasmanian smokebush)*. Department of Primary Industries, Parks, Water and Environment, Tasmania.
- View:** www.naturalvaluesatlas.tas.gov.au
www.dpipwe.tas.gov.au/threatenedspecieslists
www.threatenedspecieslink.tas.gov.au/
- Contact details:** Threatened Species Section, Department of Primary Industries, Parks, Water and Environment, GPO Box 44 Hobart Tasmania Australia 7001.
threatenedspecies.enquiries@dpiuwe.tas.gov.au
- Permit:** It is an offence to collect, disturb, damage or destroy this species unless under permit.

Table 1. Population summary for *Conospermum hookeri*

Location (year first seen)	Subpopulation	Tenure	No. of sites	NRM Region	1:25 000 mapsheet	Year of last (first) NVA record	Area occupied (ha)**	Number of mature plants*	
1. Cape Barren Island	1. Rews Hill	Aboriginal land	1	North	Anderson	2008 (1988)	0.008	4 rare	
	2. Mount Munro	Aboriginal land	1	North	Anderson	1891	presumed extinct		
	3. N of Nautilus Cove	Aboriginal land	1	North	Kerford	1985	unknown	several	
	4. Battery Bay	Aboriginal land	2	North	Barretts/ Kerford	2004	unknown	unknown	
	5. Jamiesons Point	Aboriginal land	1	North	Thirsty	2004	unknown	unknown	
2. Great Northern Plain	6. Near Gladstone	unknown	1	North	Gladstone	1971	status uncertain		
	7. Great Northern Plain	Cameron Regional Reserve	1	North	Musselroe	1993	status uncertain		
3. Mount William National Park (1983)	8. Eddystone Point	Mount William National Park	2	North	Eddystone	2012 (1995)	0.25	< 20	
	9. Ansons Bay	Mount William National Park	1	North	Ansons Bay	1999	0.0001	1	
4. Binalong Bay/St Helens (1876)	10. Gardens Lagoon	Bay of Fires Conservation Area	1	North	The Gardens	2002	0.0001	1	
	11. Doctors Peak	Doctors Peak Regional Reserve	3	North	Binalong	2013 (2007)	0.1-0.5 0.012	30 100	
	12. Halfway Hill	Crown land (forestry)	1	North	Blue Tier	2006	0.0032	2	
	13. W of Taylors Beach	Bay of Fires Conservation Area	1	North	Binalong	2008	0.08	100-200	
	14. W of Sloop Lagoon	Mount Pearson State Reserve	4	North	Binalong	2003	0.0875	20	
	15. W of Swimcart Lagoon	Mount Pearson State Reserve	1	North	Binalong	2016	unknown	>20	
			2	North	Binalong	2003	0.58	35	
			3	North	Binalong	2016-2019 (2009)	<1	at least 80	
	16. Doctors Creek	Mount Pearson State Reserve	1	North	Binalong	2009	0.0001	2	
	17. Grants Lagoon	private land with conservation covenant	1	North	Binalong	2018	0.0002	2	
		Bay of Fires Conservation Area	1	North	Binalong	2012	unknown	5	
	18. S of Grants Lagoon	private land	1	North	Binalong	2003	4	150-200	
		Mount Pearson State Reserve	1	North	Binalong	1995	unknown	unknown	
	19. Binalong Bay	Humbug Point Nature Recreation Area			North	Binalong	1998	0.0001	1
	20. E of Clio Hill	Crown land (unallocated)	1	North	Pyengana	2003	0.004	12	
		Crown land (forestry)	1	North	Pyengana	2014-2015	1	120-150	
	21. Argonaut Road	Crown land (forestry)	1	North	Pyengana	2005	0.06	~10	
			2	North	Pyengana	2019 2014 2010 (2006)	0.5	199 385 ~500	
	22. Trafalgar Track (W of St Helens)	informal reserve (forestry)	1	North	Pyengana	2019 2004 (2002)	0.01 1.0	4 90-180 46	
		Crown land (forestry)	1	North	Pyengana	2019 2014	1-2	89 507	

Listing Statement for *Conospermum hookeri* (tasmanian smokebush)

Location (year first seen)	Subpopulation	Tenure	No. of sites	NRM Region	1:25 000 mapsheet	Year of last (first) NVA record	Area occupied (ha)**	Number of mature plants*
	23. St Helens Point	St Helens Conservation Area (Moriarty Lagoon)	1	North	St Helens	2009	unknown	20
		St Helens Conservation Area (Stieglitz)	2	North	St Helens	2007 2006 2001 (1988)	0.3 < 0.01	~50 157 180 uncommon
		Crown land (Stieglitz)	1	North	St Helens	2013	0.0001	1
		private land ¹ (Chimneys Lagoon)	1	North	St Helens	2001	status uncertain	
		private land (Parnella Heights)	1	North	St Helens	2009 2003 (1988)	3.5	234 240
		private land (Parnella Heights)	1	North	St Helens	2008	0.02	21
		private land (near aerodrome)	1	North	St Helens	2013	0.0002	2
		Council land (aerodrome)	1	North	St Helens	2011	0.0625	17
		private land (Jocks Lagoon)	2	North	St Helens	2017 1998 (1990)	0.01	2 6
	24. N of Dianas Basin	private land (N of Little Basin)	1	North	St Helens	2017 (2005)	0.05	16
		private land (Little Basin)	1	North	St Helens	2017 (1998)	0.0002 0.06	2 7
		private land (N of Dianas Basin)	1		Beaumaris	2015 2008 (1880)	0.01	50 ~50
	5. Scamander	25. Henderson Lagoon	private land with conservation covenant (Winifred Curtis Reserve)	2	North	Falmouth	2001	0.03
now considered locally extinct								
6. St Marys	26. St Marys	unknown	1	North	St Marys	1938	status uncertain	
7. Avoca	27. Avoca	Crown land/ private land	2	North	St. Pauls Dome	2013 2005 (1994)	>1 0.4	>1000 827–920
8. Freycinet (1932)	28. Friendly Beaches Road	Freycinet National Park	1	South	Friendly	2013	0.0002	2
	29. Middleton Creek	Freycinet National Park	7	South	Friendly/ Coles Bay	2002 (1985)	3.7	>389
	30. Coles Bay	Coles Bay Conservation Area (Hepburn Point)	1	South	Coles Bay	2019 2012 2003-2005 (1998)	~1	~60-120 125 88
						2019 (2003-2005)		100 121
		private land (Saltwater Creek)	1	South	Coles Bay	2008	0.05	41
		Coles Bay Conservation Area (Saltwater Creek)	1	South	Coles Bay	2018	unknown	15
		Coles Bay Conservation Area (Saltwater Creek)	1	South	Coles Bay	2008	0.008	4
Crown land (informal reserve)	1	South	Coles Bay	2018 2014 2008 (2003)		3 7 7		

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Location (year first seen)	Subpopulation	Tenure	No. of sites	NRM Region	1:25 000 mapsheet	Year of last (first) NVA record	Area occupied (ha)**	Number of mature plants*
	31. Sleepy Bay	Freycinet National Park	1	South	Coles Bay	2003 1981 (1974)		frequent
	32. Freycinet Lodge to Fisheries Creek	Freycinet National Park	5-10	South	Coles Bay	2016-2017 2013 2012 (2010)	>10	~1000 100-500 500-1000
	33. Mount Mayson and lower slopes	Freycinet National Park	6	South	Coles Bay	2014 1999 (1981)	> 0.25	< 45
	34. Wineglass Bay	Freycinet National Park	1	South	Coles Bay	1989	0.1	20–100
	35. Mount Graham	Freycinet National Park		South	Graham	1985	unknown	unknown
	36. Gates Bluff	Freycinet National Park		South	Graham	1987	< 1	few
	37. Schouten Island	Freycinet National Park	10	South	Schouten	2005 (1978)	unknown	140+
9. Orford	38. Prosser River	unknown	1	South	Orford	1959	presumed extinct	
10. Bruny Island (1929)	39. W of Lagoon Hill	private land	1	South	Great Bay	2013 (2006)	2.2 1	400-500 300
	40. W of Bains Lagoons	private land	1	South	Great Bay	2013 (1985)	0.0016	7

*estimates may have included immature plants

**estimates may either be the sum of the area occupied by individual plants or the extent of the site containing plants
¹ soon to be subject to a conservation covenant following acquisition by the Tasmanian Land Conservancy's Revolving Fund and resale