

## Abridged Threatened Species Nomination Form

For nominations/assessments under the Common Assessment Method (CAM) where supporting information is available, but not in a format suitable for demonstrating compliance with the CAM, and assessment against the IUCN Red List threat status.

### Cover Page *(Office use only for Assessment)*

<b>Species name</b> (scientific and common name):	<b><i>Leucopogon</i> sp. Ongerup (A.S. George 16682)</b>
<b>Nomination for</b> (addition, deletion, change):	<b>Addition</b>
<b>Nominated conservation category and criteria:</b>	<b>VU: D1</b>

Scientific committee assessment of eligibility against the criteria:		
This assessment is consistent with the standards set out in Schedule 1, item 2.7 (h) and 2.8 of the Common Assessment Method Memorandum of Understanding.		Yes <input type="checkbox"/> No <input type="checkbox"/>
<b>A.</b>	Population size reduction	•
<b>B.</b>	Geographic range	•
<b>C.</b>	Small population size and decline	•
<b>D.</b>	Very small or restricted population	•
<b>E.</b>	Quantitative analysis	•

Outcome:			
<i>Scientific committee Meeting date:</i>			
<i>Scientific committee comments:</i>			
<i>Recommendation:</i>			
<i>Ministerial approval:</i>		<i>Date of Gazettal/ Legislative effect:</i>	

# Nomination/Proposal summary *(to be completed by nominator)*

<b>Current conservation status</b>				
<b>Scientific name:</b>	Leucopogon sp. Ongerup (A.S. George 16682)			
<b>Common name:</b>	None			
<b>Family name:</b>	Ericaceae	Fauna <input type="checkbox"/>		Flora <input checked="" type="checkbox"/>
<b>Nomination for:</b>	Listing <input checked="" type="checkbox"/>		Change of status/criteria <input checked="" type="checkbox"/>	Delisting <input type="checkbox"/>
1. Is the species currently on any conservation list, either in a State or Territory, Australia or Internationally? 2. Is it present in an Australian jurisdiction, but not listed?		Provide details of the occurrence and listing status for each jurisdiction in the following table		
<b>Jurisdiction</b>	<b>State / Territory in which the species occurs</b>	<b>Date listed or assessed (or N/A)</b>	<b>Listing category i.e. critically endangered or 'none'</b>	<b>Listing criteria i.e. B1ab(iii)+2ab(iii)</b>
International (IUCN Red List)				
National (EPBC Act)				
State / Territory	1. WA	2014	Endangered	D
	2. WA	2016	Vulnerable	D1
	3.			
<b>Consistent with Schedule 1, item 2.7 (h) and 2.8 of the Common Assessment Method Memorandum of Understanding, it is confirmed that:</b>				
<ul style="list-style-type: none"> <li>this assessment meets the standard of evidence required by the Common Assessment Method to document the eligibility of the species under the IUCN criteria;</li> </ul>			Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
<b>Comments:</b>				
<ul style="list-style-type: none"> <li>surveys of the species were adequate to inform the assessment;</li> </ul>			Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
<b>Comments:</b>	As at the 2014 assessment, the species had been subject to opportunistic and targeted surveys by community, conservation and taxonomic persons. The region where it is found has been extensively cleared and hence limited remnant vegetation available for further subpopulations to be discovered. Further survey in 2015 showed change in population size from 252 to 300 plants.			
<ul style="list-style-type: none"> <li>the conclusion of the assessment remains current and that any further information that may have become available since the assessment was completed supports or is consistent with the conclusion of the assessment.</li> </ul>			Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
<b>Comments:</b>	Assessment is consistent and criteria stays the same however, category changed from Endangered to Vulnerable due to an increase in plant numbers due to more accurate field survey in 2015.			

Nominated national conservation status: category and criteria		
Presumed extinct (EX) <input type="checkbox"/> Critically endangered (CR) <input type="checkbox"/> Endangered (EN) <input type="checkbox"/> Vulnerable (VU) <input checked="" type="checkbox"/>		
None (least concern) <input type="checkbox"/> Data Deficient <input type="checkbox"/> Conservation Dependent <input type="checkbox"/>		
What are the IUCN Red List criteria that support the recommended conservation status category?	D1	
Eligibility against the IUCN Red List criteria (A, B, C, D and E)		
Provide justification for the nominated conservation status; is the species eligible or ineligible for listing against the five criteria. For <b>delisting</b> , provide details for why the species no longer meets the requirements of the current conservation status.		
A.	Population size reduction (evidence of decline)	<ul style="list-style-type: none"> <li>Monitoring has shown a slight increase in observed mature individual numbers at one of the known locations, however this is more likely a result of more extensive survey rather than an increase in plant numbers.</li> </ul>
B.	Geographic range (EOO and AOO, number of locations and evidence of decline)	<ul style="list-style-type: none"> <li>Known from 2 locations approximately 110 km apart (EOO = 110 km<sup>2</sup>). Using the 2x2km<sup>2</sup> grid system, the area of occupancy is 12 km<sup>2</sup>.</li> <li>Locations severely fragmented as each site is an isolated area of remnant vegetation due to extensive clearing of habitat in this region.</li> <li>Insufficient information available to reliably show if continuing decline occurring.</li> </ul>
C.	Small population size and decline (population size, distribution and evidence of decline)	<ul style="list-style-type: none"> <li>Known from 300 mature individuals – 32 at the Duggan site and 268 at the Ongerup site. Small population size renders the species vulnerable to stochastic events such as fire and drought.</li> <li>At the Ongerup site, population size declined slightly initially from over 250 mature individuals when surveyed in 2005, to 220 mature individuals in 2013. Extensive survey in 2015 counted 268 mature individuals. Population counts previous to 2015 were estimated through extrapolation and therefore not as accurate as the 2015 survey. It is not possible therefore to determine long term population trends.</li> <li>Decline in condition of habitat not known and continuing decline in population not demonstrated.</li> <li>268 (89%) plants in Ongerup location.</li> </ul>
D.	Very small or restricted population (population size)	<ul style="list-style-type: none"> <li>300 mature individuals</li> <li><b>Meets VU:D1</b></li> </ul>
E.	Quantitative analysis (statistical probability of extinction)	<ul style="list-style-type: none"> <li>No data</li> </ul>

Summary of assessment information					
EOO	110 km <sup>2</sup>	AOO	12 km <sup>2</sup>	Generation length	-
No. locations	2	Severely fragmented	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/>		
No. subpopulations	2	No. mature individuals	300		
Percentage global population within Australia			100		
Percentage population decline over 10 years or 3 generations			unknown		
Threats <i>(detail how the species is being impacted)</i>					
Threat <i>(describe the threat and how it impacts on the species. Specify if the threat is past, current or potential)</i>		Extent <i>(give details of impact on whole species or specific subpopulations)</i>		Impact <i>(what is the level of threat to the conservation of the species)</i>	
Refer to table at end.					
Grazing by rabbits was noted in 2015 survey as a potential threat. Not listed as threat in nomination.		Ongerup site		Potential threat. Diggings and warrens present, however no grazing on plants observed.	
Management and Recovery					
Is there a Recovery Plan (RP) or Conservation Management Plan operational for the species?				Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
<p><i>List all relevant recovery or management plans (including draft, in-preparation, out-of-date, national and State/Territory recovery plans, recovery plans for other species or ecological communities, or other management plans that may benefit or be relevant to the nominated species).</i></p> <ul style="list-style-type: none"> <li>Department of Parks and Wildlife (in prep) <i>Leucopogon</i> sp. Ongerup Draft Interim Recovery Plan 2016–2021. Interim Recovery Plan No. #. Department of Parks and Wildlife, Western Australia.</li> </ul>					
<p><i>List current management or research actions, if any, that are being undertaken that benefit the conservation of the species.</i></p> <ul style="list-style-type: none"> <li>Implementation of hygiene measures to protect susceptible habitat from disease introduction;</li> <li>Liaise with road managers to minimise disturbance to remnant vegetation when maintaining road;</li> <li>Liaise with private land owner to protect the remnant vegetation on which the species occurs, including through the placement of a National Trust covenant on the property;</li> <li>Installation of markers on road reserves to protect habitat when maintaining road;</li> <li>Monitor the populations for evidence of rabbit or weed impacts, or changes in plant or site health;</li> <li>Protect the sites from fire unless required for ecological reasons, and implement early intervention in any wildfires which may threaten the site;</li> <li>Survey for additional populations.</li> </ul>					
<p><i>List further recommended management or research actions, if any, that would benefit the conservation of the species. Please ensure that this section addresses all identified threats.</i></p> <p>Management</p> <ul style="list-style-type: none"> <li>Liaise with land managers to consider track access/use issues;</li> <li>Control rabbits if evidence of a rabbit population or herbivory noted;</li> <li>Control infestations of weeds that might impact the species;</li> </ul>					

- Erect barriers if access issues continue to threaten the Duggan location;
- Collect seed for storage and *ex situ* propagation;
- Establish new populations on secure tenure through implementation of translocations.

#### Research

- Determine species' fire response;
- Determine population trends;
- Determine the species' susceptibility to *Phytophthora cinnamomi*.

**Nomination prepared by:**

**Contact details:**

**Date submitted:**

4/7/2016

*If the nomination has been refereed or reviewed by experts, please provide their names and contact details:*

Summary of subpopulation information <i>(detailed information to be provided in the relevant sections of the form)</i>						
Location <i>(include coordinates)</i>	Land tenure	Survey information: Date of survey and No. mature individuals	AOO	Site / habitat Condition	Threats <i>(note if past, present or future)</i>	Specific management actions
Toompup South Road (Ongerup) and adjacent private property Lot 1340	Shire road reserve and private property	2005: 250 2013: 220 2015: 268	3.5 ha	Generally healthy, rabbit warrens present.	Past <ul style="list-style-type: none"> <li>Road maintenance</li> </ul> Current <ul style="list-style-type: none"> <li>Road maintenance</li> </ul> Future <ul style="list-style-type: none"> <li>Disease</li> <li>Fire</li> <li>Weeds</li> <li>Rabbits</li> <li>Small population size</li> <li>Climate change</li> </ul>	As above
Dumblebung-Lake Grace Road and adjacent UCL	Main Roads road reserve and UCL	2013: 32	2 ha	Habitat condition is good, with only some weed encroachment.	Past <ul style="list-style-type: none"> <li>Road and track maintenance</li> <li>Gravel/sand extraction</li> </ul> Current <ul style="list-style-type: none"> <li>Road and track maintenance</li> </ul> Future <ul style="list-style-type: none"> <li>Fire</li> <li>Small population size</li> <li>Climate change</li> </ul>	As above



Department of  
**Environment and Conservation**

*Our environment, our future*



**Form to nominate a Western Australian species for listing as threatened, change of category or delisting 2012 (Updated 2016).**

**NOTICE:** Incomplete forms may result in delays in assessment, or rejection of the nomination. To fill out this form you must refer to the Guidelines and contact the relevant Officer in the DEC Species and Communities Branch. DEC staff can advise you on how to fill out the form and may be able to supply additional, unpublished information.

Answer all relevant sections, filling in the white boxes and indicating when there is no information available. **Note**, this application form applies to both flora and fauna species, and hence some questions or options may not be applicable to the nominated species – for these questions, type “N/A”.

To mark boxes with a **cross**, double click the box and select not checked or checked.

**SECTION 1. NOMINATION**

**1.1. Nomination for:**

Flora ☒ Fauna ☐ Threatened / DRF ☐ Change of category ☒ Delisting ☐

**1.2. Scientific Name**

This name will be used to identify the species on all official documentation. Use the approved name used by the Western Australian Museum or Herbarium, if possible.

*Leucopogon* sp Ongerup (A.S. George 16682)

**1.3. Common Name**

If the species has a generally accepted common name, please show it here.

none

**1.4. Current Conservation Status. If none, type 'None'.**

	IUCN Red List Category e.g. Vulnerable	IUCN Red List Criteria e.g. B1ab(iv);D(1)
International IUCN Red List	None	None
National EPBC Act 1999	None	None
State of Western Australia	[EN, 2014]	[D]
State of WA Priority	1 <input checked="" type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/>	

**1.5. Nominated Conservation Status.**

	IUCN Red List Category e.g. Vulnerable	IUCN Red List Criteria e.g. B1ab(iv);D(1)
State of Western Australia	Vulnerable (see below)	VU D1
State of WA Priority	1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/>	

Is the species listed as 'Threatened' in any other Australian State or Territory? If Yes, list these States and/or Territories and the status for each.

No ☒ Yes

<p><b>1.6. Reasons for the Nomination.</b>  <b>Briefly summarise the reasons for the nomination in dot points. Please include details relevant to the IUCN Categories and Criteria where appropriate.</b></p>
<ul style="list-style-type: none"> <li>• Species is only known from two small and disjunct populations with an estimated 252 [300, 2016] plants and total area of occupancy of 23.5 ha or 0.24 km<sup>2</sup> [12km<sup>2</sup>, 2016].</li> <li>• Small population size renders the species vulnerable to stochastic events such as fire and drought.</li> <li>• Road verge populations are vulnerable to threatening processes (clearing, weeds, disease)</li> <li>• No populations occur on the Conservation Estate.</li> <li>• Only 252 [300, 2016] plants.</li> </ul>
<p><b>SECTION 2. SPECIES CONSERVATION ESTATE</b></p>
<p><b>2.1. Taxonomy.</b>  <b>Describe the taxonomic history, using references, and describe the key distinguishing features that can be used to separate this taxon from closely related taxa. Include details of the type specimen, changes in taxonomy, scientific names and common names used for the species.</b></p>
<p><i>Leucopogon</i> sp. Ongerup was first recognised as a distinct taxon by M. Hislop in the late 1990's and the phrase name was added to the Census of Western Australian plants in June 2000.</p> <p>It is not a <i>Leucopogon</i> in the strict sense but belongs to a large group of species (40-50% of the total number of WA taxa currently in the genus) that will in the near future be transferred to other genera (Quinn <i>et al.</i> 2003; Puente- Lelièvre <i>et al.</i> unpublished). This taxonomic uncertainty at the higher level is the major reason why a formal name has not already been published for this species.</p> <p>Among these <i>Leucopogon</i> segregates, it belongs to a small group of seven species for which the name <i>Stomarrhena</i> DC. is available. A decision will shortly be made whether to reinstate that name at the generic level or at the infrageneric rank under <i>Styphelia</i>.</p> <p><i>Leucopogon</i> sp. Ongerup is easily distinguished within the group. The only two taxa that could conceivably be confused with it are <i>L. sp.</i> Bonnie Hill and <i>Astroloma</i> sp. sessile leaf. The former occurs a long way to the east in the eastern half of the Mallee IBRA bioregion. It differs most obviously from <i>L. sp.</i> Ongerup in having deep, narrow and hairy grooves on the abaxial leaf surfaces, much longer and narrowly attenuate sepals and hairy rather than glabrous abaxial corolla lobes. Relative to <i>L. sp.</i> Ongerup, <i>A. sp.</i> sessile leaf has significantly larger leaves and floral parts (e.g. sepals 6.5-9.2 mm long cf. 4.2-5.3, and corolla tube 6.2-7.8 mm long cf. 3.4-4.2 in <i>L. sp.</i> Ongerup) and a fruit which is wider than long rather than longer than wide. <i>Astroloma</i> sp. sessile leaf occurs in a small area of the eastern Darling Range.</p>
<p><b>Is this species conventionally accepted? If no, explain why. For example, is there any controversy about the taxonomy? For undescribed species, detail the location of voucher specimens (these should be numbered and held in a recognised institution and be available for reference purposes).</b></p>
<p>No <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No controversy exists about the taxonomy of this species.</p>
<p><b>Describe any known hybridisation with other species in the wild, indicating where this occurs and how frequently.</b></p>
<p>No known hybridisation</p>



<p><b>2.2. Description</b>  Describe the physical appearance, habit, behaviour/dispersion and life history. Include anatomy or habit (e.g. size and/or weight, sex and age variation, social structure) and dispersion (e.g. solitary, clumped or flocks etc), and life history (eg short lived, long lived, geophytic, etc).</p> <p>An erect compact shrub, c. 60 cm high by 60 cm wide from a fire-sensitive rootstock. In common with most members of <i>Leucopogon sens. lat.</i> the corolla is white and the lobes are prominently bearded on their inner surfaces. The fruit is a somewhat fleshy drupe.</p> <p>Its longevity is unknown but in common with most non-lignotuberous epacrids it is likely not to be particularly long-lived. Something in the order of c. 20 years is estimated to be the upper limit (pers. observation, M. Hislop).</p> <p>The fleshy fruit of many epacrids (even those with relatively small fruit as here) are attractive to emus. Ants are also known to distribute the fruit of those species with smaller fruit.</p>
<p><b>2.3. Distribution</b>  Describe the distribution of the species <u>in Australia</u> and, if possible, provide a map.</p> <p>The species occurs in two disjunct populations approximately 100 km apart</p> <ul style="list-style-type: none"> <li>i) Toompup South Rd 16 km south of Ongerup</li> <li>ii) Dumbleyung Lake Grace Road, 6.5 km east of Bladendale Rd (near Kukerin turnoff), locality of Duggan</li> </ul>
<p><b>2.4. Habitat</b>  Describe the non-biological habitat (e.g. aspect, topography, substrate, climate) and biological habitat (e.g. forest type, associated species, sympatric species). If the species occurs in various habitats (e.g. for different activities such as breeding, feeding, roosting, dispersing, basking etc) then describe each habitat.</p> <p><b>Non-biological habitat</b></p> <p>Population 1: pale-brown sand clay loam and sandy loam soils with laterite gravel and quartz fragments on a laterite ridge, overlying granite</p> <p>Population 2: dry, pale yellow to white sand and sandy loam soil overlying laterite, some gravel on soil surface. Simple slope gentle.</p> <p><b>Biological habitat</b></p> <p><b>Population 1:</b> Mallee &lt; 8m (<i>Eucalyptus ecostata</i>, <i>E. uncinatus</i>, <i>E. pleurocarpa</i>) over open tall shrub &gt; 2m (<i>Lambertia inermis</i>) over medium shrub 1.0-1.5 m (<i>Banksia cirsioides</i>, <i>Hakea trifurcata</i>, <i>Taxandria spathulata</i>, <i>Leptospermum</i> sp., <i>Gastrolobium spinosum</i>, <i>Petrophile squamata</i>, <i>Isopogon buxifolius</i>, <i>Hakea marginata</i>, <i>Banksia sphaerocarpa</i>, <i>Daviesia incrassata</i>, <i>Xanthorrhoea platyphylla</i>, <i>Acacia myrtifolia</i>) over low shrub &lt; 1.0 m (<i>Beaufortia micrantha</i>, <i>Calothamnus sanguineus</i>, <i>Leucopogon gibbosus</i>, <i>L. denticulatus</i>) over low sedge (<i>Mesomelaena stygia</i>, <i>Gahnia ancistrophylla</i>) and grass (<i>Neurachne alopecuroidea</i>).</p> <p><b>Population 2:</b> <i>Eremaea pauciflora</i> and <i>Leptospermum erubescens</i> heathland (&lt; 2 m), sparse heathland of <i>Leucopogon</i>, <i>Adenanthos</i>, <i>Melaleuca</i>, <i>Hibbertia</i> and <i>Isopogon</i> spp., with <i>Banksia baueri</i>, <i>Banksia nivea</i> subsp. <i>nivea</i> and <i>Banksia sphaerocarpa</i>.</p> <p><b>Does the (fauna) species use refuge habitat e.g. in times of fire, drought or flood? Describe this habitat.</b></p> <p>N/A</p> <p><b>Is the species part of, or does it rely on, a listed threatened ecological community? Is it associated with any other listed threatened species?</b></p>

<p>The southern population occurs with two Threatened species – <i>Hibbertia priceana</i> (EN) and <i>Banksia pseudoplumosa</i> (EN), and in close proximity (&lt;1 km) to <i>Thelymitra psammophila</i> (VU), <i>Myoporum cordifolium</i> (VU), <i>Tetratheca pilata</i> (P1), <i>Spyridium oligocephalum</i> (P3) and <i>Grevillea tetragonoloba</i> (P4).</p> <p>The northern population is not associated with any other threatened species but grows in close proximity (&lt; 1 km) to <i>Gastrolobium densifolium</i> (P4). However it does co-occur with another epacrid of taxonomic interest. This is a true <i>Leucopogon</i> with affinities to <i>L. cucullatus</i>. The population represents a significant outlier for that species and the morphology is sufficiently aberrant for it to be considered of conservation significance in the absence, at this stage, of a formal taxonomic assessment.</p>
<p><b>2.5. Reproduction</b>  <b>Provide an overview of the breeding system.</b>  <b>For <u>fauna</u>:</b> Provide an overview of the breeding system and breeding success, including: when does it breed; what conditions are needed for breeding; are there any breeding behaviours that may make it vulnerable to a threatening process?  <b>For <u>flora</u>:</b> When does the species flower and set fruit? Is the seed produced viable? What conditions are needed for this? What is the pollinating mechanism? If the species is capable of vegetative reproduction, a description of how this occurs, the conditions needed and when. Does the species require a disturbance regime (e.g. fire, ground disturbance) in order to reproduce?</p>
<p>Flowers July –August.</p> <p>Seed was collected in 2005 (20% germination) and 2007.</p> <p>The species is almost certainly a re-seeder that is killed by fire, but regeneration post fire or disturbance has not been observed. However, one plant on Toompup South road occurred in a drain within the road maintenance zone.</p> <p>In common with most other members of <i>Leucopogon sens. lat.</i> the floral configuration suggests that in regard to pollination it is a generalist, with probably many different kinds of insects able to effect pollination.</p> <p>At Duggan, the majority of plants occur close to the edge of the road and on and around the edges of a disused gravel extraction area. Plants occur very sparsely in the surrounding vegetation.</p>
<p><b>2.6. Population dynamics</b>  <b>Provide details on ages of sexual maturity, extent of breeding success, life expectancy and natural mortality. Describe population structure (presence of juveniles/seedlings, mature and senescing individuals).</b></p>
<p>Plants in the southern population appear even aged with no seedlings or juveniles observed. Plant longevity is unknown – the habitat appears to be long unburnt.</p> <p>Plants in the northern population appear mostly even aged, with one juvenile observed in the drain along Dumbleyung – Lake Grace Road.</p>
<p><b>Questions 2.7 and 2.8 apply to <u>fauna</u> nominations only</b></p>
<p><b>2.7. Feeding</b>  <b>Summarise food items or sources and timing/availability.</b></p>
<p><b>Briefly describe feeding behaviours, including those that may make the species vulnerable to threatening processes.</b></p>

<b>2.8. Movements</b> Describe any relevant daily or seasonal pattern of movement for the species, including relevant arrival/departure dates if migratory. Provide details of home range/territories.																	
<b>SECTION 3. INTERNATIONAL CONTEXT</b>																	
For species that are distributed both in <u>Australia</u> and in <u>other countries</u> .																	
<b>3.1. Distribution</b> Describe the global distribution.																	
.																	
Provide an overview of the global population size, trends, threats and security of the species outside of Australia.																	
Explain the relationship between the Australian population and the global population. What percentage of the global population occurs in Australia?																	
<b>SECTION 4. CONSERVATION STATUS AND MANAGEMENT</b>																	
<b>4.1. Population</b> What is the total population size in terms of number of mature individuals? Has there been any known reduction in the size of the population, or is this likely in the future? – provide details. Are there other useful measures of population size and what are they? Or if these are unavailable, provide an estimate of abundance (e.g. scarce, locally abundant etc).																	
The total population size for Western Australia is 252 [300] mature plants.																	
Provide locations of: captive/propagated occurrences or <i>ex situ</i> collections; recent re-introductions to the wild; and sites for proposed re-introductions. Have these sites been identified in recovery plans?																	
Seed collections (Population 1 Toompup South Rd): 2175 seed are in storage at the TFSC (collected 2005), germination rate was 20%.  An additional 456 fruit were collected in 2007.																	
How many locations do you consider the species occurs in and why? Where a species is affected by more than one threatening event, location should be defined by considering the most serious plausible threat.																	
Two locations  1) Toompup South Rd south east of Ongerup  2) ‘Duggan’, approx 100 km to the north- north east of population 1.																	
For <u>flora</u> , and where applicable, for <u>fauna</u> , detail the location, land tenure, estimated number of individuals, area of occupancy, and condition of site for each known date, location or occurrence.																	
<table border="1"> <thead> <tr> <th>Date of survey</th> <th>Location</th> <th>Land status</th> <th>Number of individuals at location</th> <th>Area of occupancy at location (ha)</th> <th>Condition of site</th> </tr> </thead> <tbody> <tr> <td>Aug 2013</td> <td>Toompup South Rd</td> <td>Shire Rd Reserve</td> <td>220 [268, 2015]</td> <td>3.5</td> <td>Generally healthy, rabbit warrens present,</td> </tr> </tbody> </table>						Date of survey	Location	Land status	Number of individuals at location	Area of occupancy at location (ha)	Condition of site	Aug 2013	Toompup South Rd	Shire Rd Reserve	220 [268, 2015]	3.5	Generally healthy, rabbit warrens present,
Date of survey	Location	Land status	Number of individuals at location	Area of occupancy at location (ha)	Condition of site												
Aug 2013	Toompup South Rd	Shire Rd Reserve	220 [268, 2015]	3.5	Generally healthy, rabbit warrens present,												

Aug 2013	'Duggan'	UCL	32	2.0	Near main road and railway, numerous access tracks and some areas of past gravel extraction, but habitat condition is very good with only some weed encroachment.
<b>Has the number of individuals been counted, or is this an estimate? Provide details of the method of determining the number of individuals.</b>					
<p>56 plants were GPSed at population 1, total population size was extrapolated to be approximately 4 times the observed number = 220, therefore this represents an estimate rather than actual count. [Accurate count in 2015 of 268 plants.]</p> <p>32 plants were observed at Population 2 over an area of 20 000 m<sup>2</sup>. Only 50 000 m<sup>2</sup> was surveyed in total. It is possible that more plants occur in the surrounding heath. However, plant frequency is occasional and suitable habitat at this location may only total 100 000 m<sup>2</sup>.</p>					
<b>Has there been any known reduction in the number of locations, or is this likely in the future? – provide details.</b>					
No known reduction in the number of locations. Both Populations are vulnerable to stochastic events due to small size, area of occupancy and tenure. More systematic monitoring of plants is required to determine population trends.					
<b>What is the extent of occurrence (in km<sup>2</sup>) for the species; explain how it was calculated and datasets used. If an accurate estimate is unavailable, provide a range of values or a minimum or maximum area estimate. Include estimates of past, current and possible future extent of occurrence.</b>					
50 km <sup>2</sup> based on minimum convex polygon (100km x 0.5 km). The actual area of occupancy is <1km <sup>2</sup> . This was calculated by determining the approximate area within which the plants occur (length x width). Using the 2kmx2km IUCN method, the AOO is 8km <sup>2</sup> .					
<b>If available, include data that indicates the percentage decline over 10 years or 3 generations (whichever is longer) that has occurred or is predicted to occur.</b>					
<p>In a 2005 survey of population 1 it was estimated that 250 plants were present. The 2013 survey estimated 220 plants (estimate extrapolated from GPSed transect), this may represent an actual decline or the 2013 survey may have been a more accurate estimate.</p> <p>[Accurate count in 2015 of 268 plants, so no decline observed.]</p>					
<b>Is the distribution of the species severely fragmented? Why?</b>					
Yes – the area between the two known populations (WA Wheatbelt) has undergone substantial clearing for agriculture.					

**Identify important occurrences necessary for the long-term survival and recovery of the species? This may include: key breeding populations, those near the edge of the range of the species or those needed to maintain genetic diversity.**

Both populations are critical for the long term survival of the species and may represent separate evolutionary significant units.

#### **4.2. Survey effort**

**Describe the methods to conduct surveys. For example, (e.g. season, time of day, weather conditions); length, intensity and pattern of search effort (including where species not encountered); any limitations and expert requirements.**

Surveys were conducted during its flowering period in winter. Habitat on private property remnants and road reserves near population 1 that contain the co-occurring Threatened flora (*Hibbertia priceana* and *Banksia pseudoplumosa*) have been well surveyed over several years as well as other potential habitat in the area. Corackerup Nature Reserve to east has been surveyed as well as the Bush Heritage Properties Monjebup and Yarroweyah Falls.

The Tarin Rocks area was surveyed by Herbarium staff in the 2000s.

**Provide details on the distinctiveness and detectability of the species, or the distinctiveness of its habitat, that would assist survey success.**

Among the members of *Leucopogon sens. lat.* the species is distinctive when in flower and there are no 'look-a-like' species within the two areas of its occurrence.

The habitat at population 1 is also distinctive – a proteaceous rich mallee heath on lateritic soils over granite. The species does not occur on shallower soils on granite with increased *Allocasuarina* cover – a habitat type that is more common in the area. The laterite ridge is an unusual feature in this locality.

**Has the species been reasonably well surveyed?**

Yes – population 1 has been known for several years and was first surveyed in 2002 with some three plants sighted. Since 2003, winter survey has been conducted in the area for *Hibbertia priceana* which also flowers July/ August, *Leucopogon* sp Ongerup would have been noted in these surveys if present. More targeted surveys were undertaken Aug 2013 in suitable habitat on private property east and west of population 1 with no additional plants located. Local botanist Sue Osborne (Ongerup Wildflower Society) has also been aware of the species for several years and has not located the species on her property (which contains *Hibbertia priceana* & *Banksia pseudoplumosa*) or other reserves and remnants in the area.

The Proteaceae-rich mallee heath on lateritic soils over granite habitat is not common near population 1. Open mallee/ *Allocasuarina huegeliana* over heath habitat on shallower soils on granite is much more widespread.

The species has been an opportunistic search target for epacrid specialist M. Hislop for at least 14 years during many visits to reserves in the central and southern wheatbelt.

<b>4.3. Threats</b> <b>Identify past, current and future threats indicating whether they are actual or potential. For each threat describe:</b> <b>a). how and where they impact this species</b> <b>b). what the effect of the threat(s) has been so far (indicate whether it is known or suspected</b> <b>c). present supporting information/research</b> <b>d). does it only affect certain populations?</b> <b>e). what is its expected effect in the future (is there supporting research/information; is the threat only suspected; does it only affect certain populations?).</b>				
<p>i) <i>Phytophthora cinnamomi</i> – not currently present at population 1, susceptibility unknown, as a member of the Ericaceae the species is potentially susceptible. Species to be tested by inoculation this summer if possible (i.e. if sufficient seed is available and if seed germinates).</p> <p>ii) Road maintenance activities (Gnowangerup Shire are aware of the multiple Threatened Flora present, markers are in place, map provided to Shire). Markers are in place at Duggan also.</p> <p>iii) Small population size and area of occupancy renders populations vulnerable to stochastic events (e.g. drought, fire).</p> <p>iv) Fire will render road verge populations vulnerable to weed invasion</p> <p>v) Suspected gravel/sand extraction in the past but not currently affecting population 2.</p> <p>vi) Grazing by rabbits was noted in 2015 survey as a potential threat at Ongerup site.</p>				
<b>If possible, provide information threats for each current occurrence/location:</b>				
<b>Location</b>	<b>Past threats</b>	<b>Current threats</b>	<b>Potential threats</b>	<b>Management requirements (see section 4.4)</b>
1. Toompup South Rd	Road maintenance	Road maintenance	Disease, fire, weeds, rabbits	Assess susceptibility to <i>P. cinnamomi</i> , monitor and control rabbits
2. 'Duggan'	Road maintenance Gravel/sand extraction	Road maintenance	Inappropriate fire regimes	Liaison with Shire and Rail to raise awareness and consider access/use issues
<b>Identify and explain why additional biological characteristics particular to the species are threatening to its survival (e.g. low genetic diversity). Identify and explain any models addressing the survival of the species.</b>				
Genetic diversity unknown but small population size may have resulted in loss of diversity.				
<b>4.4. Management</b> <b>Identify key management documentation for the species e.g. recovery plans, conservation plans, threat abatement plans etc.</b>				
None				

<b>Does this species benefit from the management of another species or community? Explain.</b>	
<i>Hibbertia priceana</i> & <i>Banksia pseudoplumosa</i> co-occur, rare flora markers are present for these species, the adjacent Landowner is aware of the values of his remnant vegetation for Threatened species (4) and Priority flora (4).	
<b>How well is the species represented in conservation reserves or covenanted land? Which of these are actively managed for this species? Provide details.</b>	
<ul style="list-style-type: none"> <li>No populations occur in Conservation Reserves or covenanted and that are actively managed for the species.</li> </ul>	
<b>Are there any management or research recommendations that will assist in the conservation of the species? Provide details.</b>	
<p>Management requirements include:</p> <ul style="list-style-type: none"> <li>Practice appropriate hygiene measures to protect susceptible habitat from disease introduction;</li> <li>Maintain liaison with road managers to minimise disturbance to remnant vegetation when maintaining road;</li> <li>Maintain liaison with private land owners to ensure appropriate management of the site;</li> <li>Monitor the populations for evidence of rabbit or weed impacts, or changes in plant or site health;</li> <li>Protect the sites from fire unless required for ecological reasons, and implement early intervention in any wildfires which may threaten the site;</li> <li>Survey any newly identified areas of suitable habitat;</li> <li>Liaise with land managers to consider track access/use issues;</li> <li>Control rabbits if evidence of a rabbit population or herbivory noted;</li> <li>Control infestations of weeds that might impact the species;</li> <li>Erect barriers if access issues continue to threaten the Duggan location;</li> <li>Collect and store seed;</li> <li>Establish new populations in more secure locations, if a suitable location can be found;</li> <li>Determine fire response;</li> <li>Assess susceptibility to <i>P. cinnamomi</i>;</li> <li>Undertake systematic monitoring of populations to determine population trends.</li> </ul>	
<b>4.5. Other</b>	
<b>Is there any additional information that is relevant to consideration of the conservation status of this species?</b>	
<b>SECTION 5. NOMINATOR</b>	
<b>Nominator(s) name(s)</b>	
<b>Organisation(s)</b>	
<b>Address(s)</b>	
<b>Telephone number(s)</b>	
<b>Email(s)</b>	
<b>Date</b>	1/10/13
<b>If the nomination has been refereed or reviewed by experts, provide their names and contact details.</b>	

## SECTION 6. REFERENCES

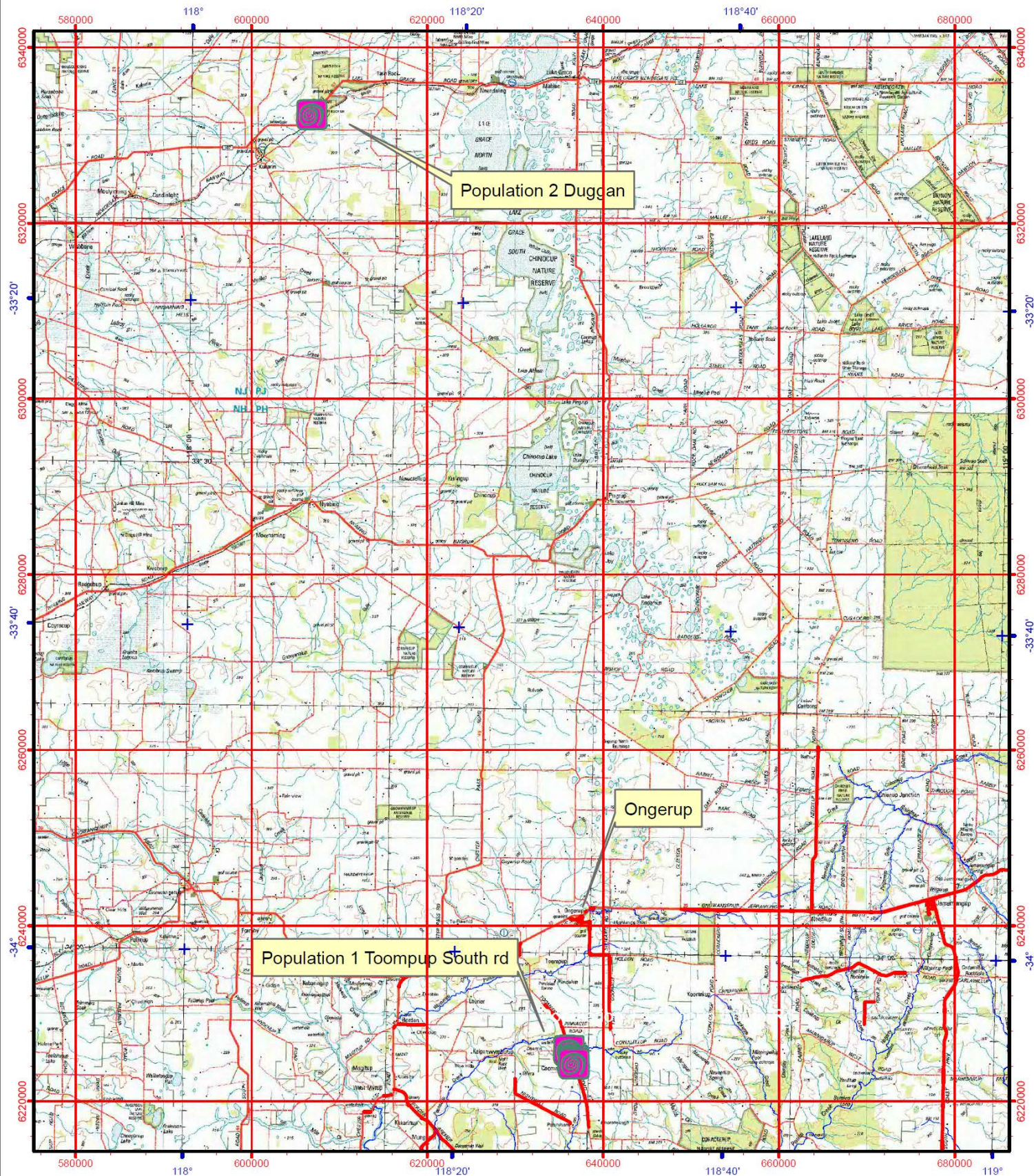
**What references or sources did you use to prepare your nomination? Include written material, electronic sources and verbal information. Include full references, address of web pages and the names and contact details of authorities with whom you had verbal communications.**

Quinn, C.J., Crayn, D.M., Heslewood, M.M., Brown, E.A. & Gadek, P.A. (2003). A molecular estimate of the phylogeny of Styphelieae (Ericaceae). *Australian Systematic Botany* 16: 581–594.

Puente-Lelièvre, C., Hislop, M., Harrington, M.G., Brown, E.A., Kuzmina, M. & Crayn, D.M. (submitted). Making sense in Styphelieae: Multigene phylogeny of the *Styphelia-Astroloma* clade (Styphelieae, Epacridoideae, Ericaceae). *Molecular Phylogenetics and Evolution*.



# Leucopogon sp Ongerup

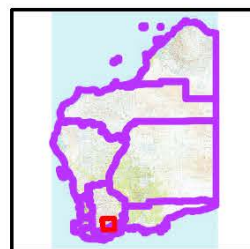


Graticule shown at 20 minutes intervals  
Grid shown at 20000 metre intervals



1:568,880  
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Kilometres

Projection: Universal Transverse Mercator  
MGA Zone 50. Datum: GDA94



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