

# THREATENED SPECIES SCIENTIFIC COMMITTEE

Established under the *Environment Protection and Biodiversity Conservation Act 1999*

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The Minister approved this conservation advice and included this species in the Critically Endangered category, effective from 11/05/2018.

## Conservation Advice

### *Andersonia annelsii*

#### **Summary of assessment**

##### **Conservation status**

*Andersonia annelsii* has been found to be eligible for listing in the Critically Endangered category as outlined in the attached assessment.

##### **Reason for conservation assessment by the Threatened Species Scientific Committee**

This advice follows assessment of information provided by Western Australia as part of the Common Assessment Method process, to systematically review species that are inconsistently listed under the EPBC Act and relevant state/territory legislation or lists.

More information on the Common Assessment Method is available at:

<http://www.environment.gov.au/biodiversity/threatened/cam>

The information in this assessment has been compiled by the relevant state/territory government. In adopting this assessment under the EPBC Act, this document forms the Approved Conservation Advice for this species as required under s266B of the EPBC Act.

##### **Public consultation**

Notice of the proposed amendment and a consultation document was made available for public comment for 32 business days between 16 August 2017 and 29 September 2017. Any comments received that were relevant to the survival of the species were considered by the Committee as part of the assessment process.

##### **Recovery plan**

A recovery plan for this species under the EPBC Act is not recommended, because the Approved Conservation Advice provides sufficient direction to implement priority actions and mitigate against key threats. The relevant state/territory may decide to develop a plan under its equivalent legislation.

##### **Recommendations**

- (i) The Committee recommends that the list referred to in section 178 of the EPBC Act be amended by **including** in the list in the Critically Endangered category:  
*Andersonia annelsii*
- (ii) The Committee recommends that there not be a recovery plan for this species.

Threatened Species Scientific Committee

20 November 2017

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

Current conservation status				
Scientific name:	<i>Andersonia annelsii</i>			
Common name:	None			
Family name:	Ericaceae	Fauna <input type="checkbox"/>	Flora <input checked="" type="checkbox"/>	
Nomination for:	Listing <input checked="" type="checkbox"/>	Change of status/criteria <input 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		
Jurisdiction	State / Territory in which the species occurs	Date listed or assessed (or N/A)	Listing category i.e. critically endangered or 'none'	Listing criteria i.e. B1ab(iii)+2ab(iii)
International (IUCN Red List)				
National (EPBC Act)				
State / Territory	1. WA	2005	Critically Endangered	B1ab(v)+B2ab(v)
	2.			
	3.			
Consistent with Schedule 1, item 2.7 (h) and 2.8 of the Common Assessment Method Memorandum of Understanding, it is confirmed that:				
<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"/>
Comments:				
<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"/>
Comments:	Further surveys were undertaken in 2006 and 2012. The number of mature individuals increased from >300 mature individuals since nominated in 2005 to 11,500 in 2006. However, a large decline of individuals occurred from 2006 to 2012, coinciding with a <i>Phytophthora</i> infestation as well as heavy grazing/mortality of seedlings.			
<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"/>
Comments:	Assessment is consistent and criteria remains current.			
Nominated national conservation status: category and criteria				
Presumed extinct (EX) <input type="checkbox"/>	Critically endangered (CR) <input checked="" type="checkbox"/>	Endangered (EN) <input type="checkbox"/>	Vulnerable (VU) <input type="checkbox"/>	

None (least concern) <input type="checkbox"/>		Data Deficient <input type="checkbox"/>		Conservation Dependent <input type="checkbox"/>	
<b>What are the IUCN Red List criteria that support the recommended conservation status category?</b>		<b>B1ab(v)+B2ab(v)</b>			
<b>Eligibility against the IUCN Red List criteria (A, B, C, D and E)</b>					
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.					
<b>A.</b>	Population size reduction (evidence of decline)	<ul style="list-style-type: none"> <li>The number of mature individuals appears to have increased from &lt;1,000 in 1994 to 11,500 in 2006, and then reduce to 2,500 in 2012. Therefore it is difficult to calculate a definite percentage population reduction as the nett effect has been an increase.</li> <li><b>Unable to assess</b></li> </ul>			
<b>B.</b>	Geographic range (EOO and AOO, number of locations and evidence of decline)	<ul style="list-style-type: none"> <li>(B1) Using Minimum Convex Polygon (MCP) the EOO is 0.004 km<sup>2</sup> which was calculated by drawing a polygon around the plants. This is recalculated to 4 km<sup>2</sup> so as to be not less than the AOO.</li> <li>(B2) Area of Occupancy is estimated 4 km<sup>2</sup> using the 2km x 2km grid method. The actual area of occupied habitat is 0.004 km<sup>2</sup>.</li> <li>Known from one location within the Perup area. A large decline of individuals occurred from 2006 to 2012, coinciding with a <i>Phytophthora</i> infestation as well as heavy grazing/mortality of seedlings.</li> <li><b>Meets criteria for Critically Endangered B1ab(v)+2ab(v)</b></li> </ul>			
<b>C.</b>	Small population size and decline (population size, distribution and evidence of decline)	<ul style="list-style-type: none"> <li>Known from 2,500 mature individuals.</li> <li>(C2) Ongoing threats and inferred continuing decline in number of mature individuals from <i>Phytophthora cinnamomi</i>, fire, grazing and a drying climate.</li> <li>(ii) 100% of known mature individuals known from a single subpopulation.</li> <li><b>Meets Endangered C2(ii)</b></li> </ul>			
<b>D.</b>	Very small or restricted population (population size)	<ul style="list-style-type: none"> <li>Known from 2,500 mature individuals.</li> <li><b>Does not meet criteria</b></li> </ul>			
<b>E.</b>	Quantitative analysis (statistical probability of extinction)	<ul style="list-style-type: none"> <li>No information to assess.</li> </ul>			
<b>Summary of assessment information</b>					
EOO	0.004 km <sup>2</sup> (MCP) (calculated to 4 km <sup>2</sup> based on AOO)	AOO	4 km <sup>2</sup> (2 km x 2 km grid), actual occupied habitat 0.004 km <sup>2</sup>	Generation length	-
No. locations	1	Severely fragmented	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Unknown <input type="checkbox"/>		

No. subpopulations	1	No. mature individuals	2,500
Percentage global population within Australia		100	
Percentage population decline over 10 years or 3 generations		Unknown	
<b>Threats</b> (detail how the species is being impacted)			
<b>Threat</b> (describe the threat and how it impacts on the species. Specify if the threat is past, current or potential)	<b>Extent</b> (give details of impact on whole species or specific subpopulations)	<b>Impact</b> (what is the level of threat to the conservation of the species)	
Phytophthora dieback <ul style="list-style-type: none"><li>Phytophthora cinnamomi may kill plants and degrade associated habitat. The species has not been tested for susceptibility to dieback disease, however, a large decline of individuals occurring in coincidence with Phytophthora infestation has been recorded.</li></ul> Past, current and future	Whole population	Catastrophic	
Grazing (kangaroos, rabbits?) <ul style="list-style-type: none"><li>Heavy grazing/mortality of seedlings has been recorded which has the capacity to limit population stability through recruitment.</li></ul> Past, current and future	Whole population	Severe	
Altered fire regimes <ul style="list-style-type: none"><li>It is not known what the fire response is, however, if fire frequency is increased the soil seed bank could be depleted before juvenile plants have reached maturity.</li></ul> Past, current and future	Whole population	Severe	
Vehicle traffic <ul style="list-style-type: none"><li>Plants occur along the edges of a track and are threatened by vehicles or during road maintenance activities which may potential also introduce disease. An alternative access track has recently been created.</li></ul> Past	Whole population	Severe	
Drought <ul style="list-style-type: none"><li>This is a threat to the species if it occurs over a number of years.</li></ul> Future	Whole population	Severe	
<b>Management and Recovery</b>			
Is there a Recovery Plan (RP) or Conservation Management Plan operational for the species?		Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
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).			

- Department of Environment and Conservation (2012) *Andersonia annelsii* Interim Recovery Plan 2012–2017. Interim Recovery Plan No. 320. Department of Environment and Conservation, Western Australia.

*List current management or research actions, if any, that are being undertaken that benefit the conservation of the species.*

- Monitoring and surveys have been carried out to determine plant numbers and impact of threats;
- Creation of an alternative access track allowing the track passing through the subpopulation to be closed and rehabilitated;
- Seed has been collected and stored at Parks and Wildlife Threatened Flora Seed Centre;
- Gates and signage have been erected at two road intersections to exclude vehicle access to the site containing the subpopulation;
- A new subpopulation is being established through translocation into disease free area.

*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.*

**Management**

- Monitor the subpopulation for evidence of grazing impacts, or changes in plant or site health;
- Control herbivores and/or install fencing/ caging if evidence of a rabbit population or herbivory noted;
- Develop and implement a fire management strategy, including the need for, and method of, the construction and maintenance of firebreak;
- Investigate the practicality of install fencing/caging at subpopulation to reduce grazing and allow recruitment within a larger area of habitat;
- Undertake surveys in areas of potentially suitable habitat;
- Continue to follow dieback hygiene measures;
- Apply phosphite to assist in managing *Phytophthora* impacts.

**Research**

- Research biology and ecology of the species, with a focus on pollination effectiveness, seed viability, conditions required for natural germination, response to threats (particularly dieback disease) and disturbances and reproductive biology.

<b>Nomination prepared by:</b>	
<b>Contact details:</b>	
<b>Date submitted:</b>	12/9/2016
<i>If the nomination has been refereed or reviewed by experts, please provide their names and contact details:</i>	

Summary of subpopulation information (detailed information to be provided in the relevant sections of the form)						
Location (include coordinates)	Land tenure	Survey information: Date of survey and No. mature individuals	AOO	Site / habitat Condition	Threats (note if past, present or future)	Specific management actions
Perup	Nature reserve	1994: <1,000 2000: <500 2004: 300 2006: 11,500 2012: 2,500	<0.4 ha	Habitat infested with <i>Phytophthora</i> . Heavy grazing/mortality of seedlings.	Phytophthora dieback (past, present, future) Grazing (herbivores) (past, present, future) Fire (past, present, future) Vehicle traffic (past) Climate change (future)	Apply phosphite Develop a fire management plan Reroute access track and rehabilitate existing track Collect seed Implement disease hygiene measures Monitor grazing and implement grazing control if required Continue to implement translocations



**FLORA NOMINATION FORM  
TO BE CONSIDERED AT THE 2005 TSSC MEETING  
(Updated 2016)**

Proposed addition, deletion or other change to the schedule of Declared Rare Flora pursuant to the *Wildlife Conservation Act 1950* and/or amendments to CALM's Priority Flora List.

See CALM Policy Statement No. 9 for criteria and definitions. Please complete all sections. Attach additional information, if space is insufficient.

<b>1. TAXON:</b> <i>Andersonia annelsii</i>	<b>Author</b> Lemson (2007)	<b>Hybrid</b> <input type="checkbox"/>
		Refer to special guidelines

<b>2. CURRENT LIST/SCHEDULE:</b>	Declared Rare: <input type="checkbox"/>	Threatened (extant) [WA: CR] <input type="checkbox"/>	or	Presumed Extinct <input type="checkbox"/>	
	Priority <input type="checkbox"/>	None <input type="checkbox"/>			

<b>3. PROPOSED LIST/SCHEDULE:</b>	Threatened [EPBC Act as CR: B1ab(v)+2ab(v)] <input type="checkbox"/>		Presumed Extinct <input type="checkbox"/>		
	Priority <input type="checkbox"/>		None <input type="checkbox"/>		

<b>4. PROPOSED IUCN THREAT CATEGORY</b> (see page 4):	Extinct (EX) <input type="checkbox"/>	Extinct in the Wild (EW) <input type="checkbox"/>			
Critically Endangered (CR) <input checked="" type="checkbox"/>	Endangered (EN) <input type="checkbox"/>	Vulnerable (VU) <input type="checkbox"/>	Lower Risk (LR) <input type="checkbox"/>		
CR: B1ab(v)+B2ab(v) (2016)					

<b>5. SUMMARY REASON FOR CHANGE:</b>					
Addition:	Believed to be rare, but needs further survey <input type="checkbox"/>	Populations not adequately reserved <input type="checkbox"/>	Confirmed to be rare <input checked="" type="checkbox"/>	Subject to threatening processes <input checked="" type="checkbox"/>	
Deletion:	More common than previously thought <input type="checkbox"/>	Taxonomic uncertainty <input type="checkbox"/>	Does not comply with guidelines for hybrids <input type="checkbox"/>	Populations adequately reserved <input type="checkbox"/>	
Change:	Name Change <input type="checkbox"/>	Now presumed extinct <input type="checkbox"/>	Presumed extinct to extant <input type="checkbox"/>		
Date found	/	/			
Other	<input type="checkbox"/>				

<b>6. TAXONOMIC HISTORY/AFFINITY:</b>	
	Recognised by Greg Keighery as a distinct taxon in 1990.
	Description - a wiry, woody shrub to 25cm. Field – a non descript shrub often below associated vegetation, however very obvious in exposed granitic areas.
	Location and collection number of voucher specimen: PERTH 01735829 A.R. Annels (October, 1982)
	Taxonomy published by Lemson, K.L. (2007) New species of <i>Andersonia</i> (Ericaceae) of conservation concern. <i>Nuytsia</i> 17: 195–214.

<b>7. RECENT SURVEY EFFORT</b> (refer to the CALM (DPaW) guidelines for survey requirements):	
	1994 and 1995 – several site visits by Annels, Hearn, Lemson and Wilson. Immediate adjacent granite outcrops surveyed with no additional populations located. (10 man days)
	Also Macfarlane, Hearn and Annels surveyed many similar sites across the region as part of extensive Rare Flora survey work with no additional populations located. <i>Andersonia</i> was a target genus during this time. (200+ man days)
	Area burnt 1995, post burn assessment showed population totally removed by fire.
	1996 resurveyed, seedlings not identifiable.
	2000 Wilson and Hearn, resurvey < 500 mature plants, many in decline; granites and similar sites targeted for the species, south and west of the population; surveyed intensively; no additional populations located (6 man days)

2001 and 2002 Wilson and Whitred, survey of additional similar sites east and north of population, no additional populations located (8 man days). Population showing further major decline in numbers and health.

2003 significant drought deaths of this and other species at the site; further surveys of similar sites in the Perup area; no additional populations located (6 man days)

2004 significant germination adjacent to the granite, large numbers of seedlings observed (?dormancy of soil seedbank broken by extreme heat during summer???)

Further surveys across the Perup area by district staff targeting this and other species. No additional populations located. (50+ man days).

2012 survey dGPS of plants by Parks and Wildlife staff.

### 8. THREATS:

The main threats are associated with restricted area and susceptibility to fire, *Phytophthora*, drought:

- Killed outright by fire, regenerating from seed, also killed by drought.
- Susceptible to *Phytophthora* – the population has been reduced dramatically through *Phytophthora*.
- Seedling mortality and recruitment impacted by heavy grazing (recorded 2012).
- Plants occur along the edges of a track and are threatened by vehicles or during road maintenance activities which may potential also introduce disease. An alternative access track has recently been created.
- Drought a potential threat especial where the plant grows on shallow soils associated with granite outcrops.

### 9. RESEARCH KNOWLEDGE/NEEDS:

- Response to soil disturbance, change in soil moisture and weed invasion unknown. Needs to resolve question of responses to disturbances etc. and determine the longevity of the soil seed bank, especially as it is killed outright by fire and regenerates solely by seed.
- Assess for time to first flowering after regeneration.

### 10. MANAGEMENT NEEDS & IMPLICATIONS (including susceptibility to disease, and presence of other threats):

- Monitor population, specifically for impact from *Phytophthora*, grazing and drought.
- Investigate need for controlling herbivores and/or install fencing/ caging if evidence of herbivory noted.
- Mark and protect site from vehicular traffic and machine operations.
- Collect and store seed (seed lodged with Threatened Flora Seed Centre, December 2004).
- Establish new populations in disease free sites through translocation.
- Protect from uncontrolled fire and ensure applied fire is ecologically appropriate.

### 11. DISTRIBUTION BY CALM REGION:

Kimberley [ ]	Pilbara [ ]	Midwest [ ]	Goldfields [ ]	Wheatbelt [ ]
Swan [ ]	Central Forest [ ]	Warren [ X ]		South Coast [ ]

### 12. KNOWN POPULATIONS AND RANGE (attach WAHERB and/or population database printout):

CALM Region	Location	Land Status	Population size/area	Date of most Recent Survey	Condition of Population
A. Conservation Reserves (National Parks, Nature Reserves, State Forests)					
Warren	East of Manjimup	Perup	2,500 (<0.4ha) 11,500 (2006) >300 mature plants large No (>300) of seedlings	18/10/04 (20mx15m) with	
Population severely reduced in number and area due to <i>Phytophthora</i> , grazing (2012), fire and drought.					
B. Other Crown Lands					

C. Private/Leasehold Lands

D. Unconfirmed Locations

**13. TRENDS IN POPULATION SIZE & RANGE:**

A. Previous

<1000 mature individuals (October 1994) ca 200m<sup>2</sup>

<500 mature individuals (October 2000)

>300 mature individuals & >300 seedlings (October 2004) ca 200m<sup>2</sup>

11500 (2006)

B. Current

2,500 mature individuals in 2012 (<0.4 ha)

**14. SUMMARY STATUS ASSESSMENT:**

*Andersonia annelsii* is known from a single population consisting of >300 mature plants and >300 seedlings (2,500 in 2012). Large fluctuations in plant numbers within population observed.

Surveys between 1994-2004 have failed to locate further populations.

Threats include *Phytophthora*, grazing (2012), fire, drought, small population size and restricted area.

**15. PROPOSED BY:**

**DATE:** 7 /1/2005

Updated 12/9/2016 by Species and Communities Branch, Department of Parks and Wildlife

**PLEASE FORWARD COMPLETED FORM TO:**

**DEPARTMENT OF CONSERVATION AND LAND  
MANAGEMENT  
ADMINISTRATIVE OFFICER (FLORA)  
CALM WILDLIFE BRANCH  
LOCKED BAG 104  
BENTLEY DELIVERY CENTRE WA 6983  
johnri@calm.wa.gov.au  
(08) 9334 0278 (Phone enquiries: 9334 0422)**

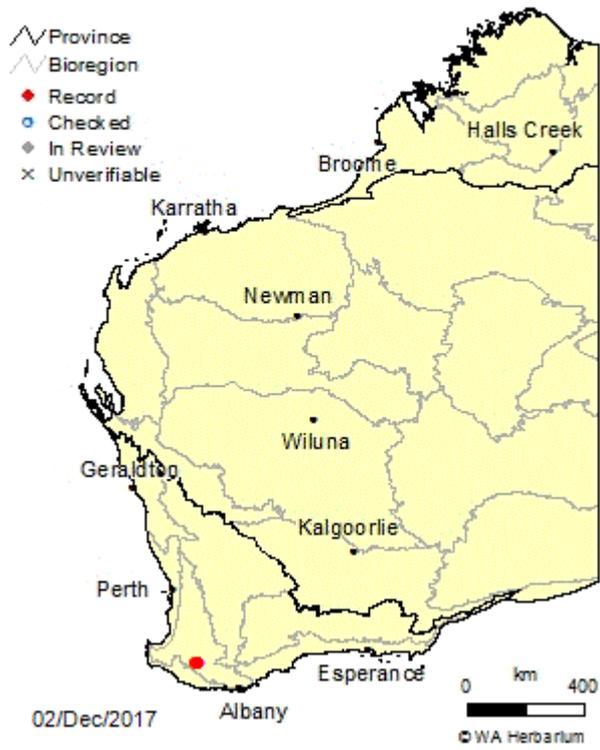
or **Email address:**

or **Fax Address:**

**\*\*PLEASE ENSURE THAT YOU COMPLETE THE ATTACHED RANKING FORM (Nomination may not be accepted unless this is completed and returned)\*\***

Map of location of *Andersonia annelsii* (from Western Australian Herbarium (1998–)).

*Andersonia annelsii*



## IUCN RED LIST CATEGORIES AND CRITERIA VERSION 3.1

	CRITICALLY ENDANGERED	ENDANGERED	VULNERABLE
<p><b>(A) REDUCTION IN POPULATION SIZE BASED ON ANY OF</b></p> <p>1) An observed, estimated, inferred or suspected population reduction of _____, over the last 10 years or 3 generations, whichever is the longer, where the causes are clearly reversible AND understood AND ceased, based on a, b, c, d or e</p> <p>2) An observed, estimated, inferred or suspected population reduction of at least _____ over the last 10 years or 3 generations, whichever is the longer, where the reduction or its causes may not have ceased OR may not be understood OR may not be reversible based on a, b, c, d or e</p> <p>3) A population size reduction of _____, projected or suspected to be met within the next 10 years or 3 generations, whichever is the longer (up to a maximum of 100 years) based on (and specifying) any of (b) to (e) under A1</p> <p>4) An observed, estimated, inferred or suspected population reduction of _____ over any 10 year or 3 generation period, whichever is the longer (up to a maximum of 100 years in the future) where the time period must include both the past and the future, and where the reduction or its causes may not have ceased OR be understood OR may not be reversible, based on a, b, c, d or e</p> <p>a) direct observation, b) an index of abundance appropriate for the taxon, c) a decline in area of occupancy, extent of occurrence and/or quality of habitat, d) actual or potential levels of exploitation, e) the effects of introduced taxa, hybridisation, pathogens, pollutants, competitors or parasites.</p>	≥90%	≥70%	≥50%
	≥80%	≥50%	≥30%
	≥80%	≥50%	≥30%
	≥80%	≥50%	≥30%
<p><b>(B) GEOGRAPHIC RANGE IN THE FORM OF EITHER B1 OR B2</b></p> <p>1) Extent of occurrence &lt;200m<sup>2</sup> and estimates indicating at least 2 of a-c</p> <p>2) Area of occupancy 200m<sup>2</sup> and estimates indicating at least 2 of a-c</p> <p>(a) Severely fragmented or known to exist at no more than 1 locations</p> <p>(b) Continuing decline, observed, inferred or projected, in <b>ANY</b> of the following:</p> <p>(i) extent of occurrence, (ii) area of occupancy, (iii) area, extent and/or quality of habitat, (iv) number of locations or subpopulations, (v) <b>number of mature individuals</b>.</p> <p>(c) Extreme fluctuations in any of the following:</p> <p>(i) extent of occurrence, (ii) area of occupancy, (iii) area, extent and/or quality of habitat, (iii) <b>number of locations or sub-populations, (iv) number of mature individuals.</b></p>	<100 km <sup>2</sup> <10 km <sup>2</sup>	<5 000 km <sup>2</sup> 500 km <sup>2</sup>	<20 000 km <sup>2</sup> <2 000 km <sup>2</sup> ten
	<b>one</b>	five	ten
<p><b>(C) POPULATION ESTIMATED TO NUMBER _____ MATURE INDIVIDUALS AND EITHER</b></p> <p>1) An estimated continuing decline of at least _____ within three years or one generation whichever is the longer (up to a maximum of 100 years in the future) <b>OR</b></p> <p>2) A continuing decline, observed, projected, or inferred, in numbers of mature individuals AND at least one of a-b</p> <p>(a) population structure in the form of one of</p> <p>(i) no subpopulation estimated to contain more than _____ mature individuals) <b>OR</b></p> <p>(ii) at least 90% of mature individuals in one subpopulation</p> <p>(b) Extreme fluctuations in number of mature individuals</p>	<250	<2 500	<10 000
	25%	20%	10%
	50	250	1 000
<p><b>(D) (CR and EN) POPULATION SIZE ESTIMATED TO BE LESS THAN _____ MATURE INDIVIDUALS</b></p> <p><b>(D) (VU ONLY) POPULATION VERY SMALL OR RESTRICTED IN THE FORM OF EITHER</b></p> <p>1) population estimated to number less than _____ mature individuals. <b>OR</b></p> <p>2) population with a very restricted area of occupancy (typically less than 20 km<sup>2</sup>) OR number of locations (typically five or fewer) such that it is prone to the effects of human activities or stochastic events within a very short period of time in an uncertain future, and is thus capable of becoming Critically Endangered or even Extinct in a very short time period.</p>	50	250	not applicable
	not applicable	not applicable	1000 applies
	not applicable	not applicable	1000 applies
<p><b>(E) QUANTITATIVE ANALYSIS SHOWING PROBABILITY OF EXTINCTION IN THE WILD IS AT LEAST _____</b></p>	50% within ten years or three generations, whichever is the longer (up to a maximum of 100 years)	20% within 20 years or five generations, whichever is the longer (up to a maximum of 100 years)	10% within 100 years