

# 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>Caladenia graniticola</i> Hopper and A.P.Br.</b>
<b>Nomination for</b> (addition, deletion, change):	<b>Addition</b>
<b>Nominated conservation category and criteria:</b>	<b>Endangered: B1ab(iii,v)+2ab(iii,v); C2a(i); D</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:			
Scientific committee Meeting date:			
Scientific committee comments:			
Recommendation:			
Ministerial approval:		Date of Gazettal/ Legislative effect:	

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

Current conservation status				
Scientific name:	<i>Caladenia graniticola</i> Hopper & A.P.Br.			
Common name:	Pingaring Spider-orchid			
Family name:	Orchidaceae	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. Western Australia	1999 as <i>Caladenia hoffmanii</i> subsp. <i>graniticola</i> and 2005 as <i>C. graniticola</i> .	Critically Endangered	B2ab(ii,v); C2a(i)
	2. WA	5/4/2017	Endangered	B1ab(iii,v)+B2ab(iii,v); C2a(i); D
	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:	The species has been extensively searched for by competent persons for the past 17 years with few subpopulations/plants found and no new subpopulations found in recent years. Due to the predictability of its habitat (inland granites) there is a high likelihood of detection if plants are present.			
<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>	The AOO and number of locations are too great for CR under criterion B2, and size of the largest subpopulation exceeds threshold for criterion C2(a)(i) for CR. On the basis of limited numbers of plants and threats due to recreational activities, fire, altered water run-off due to the damming of granite outcrops, grazing from native and feral animals, poor recruitment, lack of suitable habitat (found on just 6 granite outcrops), drought and weed invasion, there is an ongoing threat of decline. Now meets criteria B1ab(iii,v)+B2ab(iii,v); C2a(i); D for Endangered. Was assessed by WA TSSC in 2017.	
<b>Nominated national conservation status: category and criteria</b>		
Presumed extinct (EX) <input type="checkbox"/> Critically endangered (CR) <input type="checkbox"/> Endangered (EN) <input checked="" 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(iii,v)+B2ab(iii,v); C2a(i); D</b>	
<b>Eligibility against the IUCN Red List criteria (A, B, C, D and E)</b>		
<i>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.</i>		
<b>A.</b>	Population size reduction (evidence of decline)	<ul style="list-style-type: none"> <li>The largest subpopulations (Subpopulation 1) 135 mature individuals in 2005 and (Subpopulation 5) 115 mature individuals 2008 contained just 30 and 13 mature individuals respectively in 2015. This may be due to environmental factors and it is possible that numbers of flowering plants will increase following more favourable rainfall. Subpopulations 2, 3, 4 and 6, although small, have remained relatively stable.</li> <li><b>Insufficient information 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>EOO 563 km<sup>2</sup> and AOO 20 km<sup>2</sup></li> <li>The species occurs at 3 locations. This is based on three of the main threatening processes (weeds, grazing and recreation) being site specific, while fire, which interacts with these processes, would operate independently at the three broad areas of occurrence.</li> <li>Some decline in habitat condition noted at all locations (shrub and tree death due to drought). Decline has been observed in the numbers of mature individuals at two subpopulations and fluctuations have been observed in the numbers of mature individuals at other subpopulations.</li> <li><b>Meets criteria B1ab(iii,v)+B2ab(iii,v) for Endangered</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>Currently known from 156 mature individuals.</li> <li>There has been a large decline in mature individuals in two subpopulations. Other subpopulations appear relatively stable with seasonal fluctuation in flowering plants.</li> <li>Largest subpopulation contains 51 mature individuals</li> <li><b>Meets criteria C2a(i) for Endangered</b></li> </ul>

<b>D.</b>	Very small or restricted population (population size)	<ul style="list-style-type: none"> <li>Currently known from 156 mature individuals. Known from 258 mature individuals in 2008.</li> <li><b>Meets criteria D for Endangered</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	563 km <sup>2</sup> (Minimum Convex Polygon) or 30.58 km <sup>2</sup> (α-hull value 2)	AOO 20km <sup>2</sup> (2 km x 2 km grid)
No. locations	3	Severely fragmented Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Unknown <input type="checkbox"/>
No. subpopulations	6	No. mature individuals 156
Percentage global population within Australia		100
Percentage population decline over 10 years or 3 generations		40%
<b>Threats (detail how the species is being impacted)</b>		
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>
Environmental factors resulting in poor recruitment. <ul style="list-style-type: none"> <li>Subpopulations are either stable or in decline with no natural recruitment documented.</li> </ul> Past, current and potentially future	Whole species	High, particularly given the species' small population size
Grazing. <ul style="list-style-type: none"> <li>Rabbits and/or kangaroos may eat leaves, buds and flowers of <i>Caladenia graniticola</i>. In 1999, 29% of flowers in Subpopulation 1 were grazed, severely impacting reproductive potential.</li> </ul> Past, current and potentially future	Whole species	High, particularly given the species' small population size
Altered water run-off due to the damming of granite outcrops. <ul style="list-style-type: none"> <li>Several granite outcrops on which this species grows have rock walls channelling water runoff into dams. These walls severely alter natural runoff resulting in a drying of the orchid's habitat.</li> </ul> Past, current and future	Subpopulations 1 and 2	High

<p>Weeds</p> <ul style="list-style-type: none"> <li>The species occupies habitat highly susceptible to weed invasion especially after disturbance by rabbits and kangaroos. Weed seeds in rabbit droppings and increased nutrient levels from droppings may also encourage weed invasion.</li> </ul> <p>Past, current and potentially future</p>	Whole species	High, particularly given the species' small population size
<p>Fire</p> <ul style="list-style-type: none"> <li>Fire has the potential to dramatically alter the open <i>Allocasuarina</i> habitat of the species.</li> <li>Small population size may increase the risk of chance (stochastic) events such as fire leading to the decline or destruction of the entire population.</li> </ul> <p>Potentially future</p>	Whole species	High
<p>Rabbit warren construction.</p> <ul style="list-style-type: none"> <li>Warren construction may directly impact <i>Caladenia graniticola</i> plants.</li> </ul> <p>Past, current and potentially future</p>	Whole species	Medium
<p>Recreational activities</p> <ul style="list-style-type: none"> <li>The habitat of several subpopulations is subject to recreational activities such as off road vehicles and trailbike riding potentially threatening the species.</li> </ul> <p>Past, current and potentially future</p>	Subpopulations 1, 2 and 5	Medium
<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"/>
<p>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).</p> <ul style="list-style-type: none"> <li>Included in Western Australian Wildlife Management Program No 25 – Declared Rare Flora in the Katanning District 2000 (as <i>Caladenia hoffmanii</i> ms) and Interim Recovery Plan No. 123 Pingaring Spider Orchid (<i>Caladenia hoffmanii</i> subsp. <i>graniticola</i>) 2003-2008.</li> </ul>		
<p>List current management or research actions, if any, that are being undertaken that benefit the conservation of the species.</p> <ul style="list-style-type: none"> <li>Land managers have been notified of the threatened nature of this species and its location.</li> <li>Regular surveys are being undertaken.</li> <li>Plots established in 1999 are monitored frequently at Subpopulation 1.</li> <li>Signs have been erected at subpopulation 1 to protect it from accidental destruction (adjacent golf course).</li> <li>The Southern Wheatbelt Threatened Flora Recovery Teams oversees the implementation of the Interim Recovery Plan for the species and includes details in its Annual Report to Parks and Wildlife.</li> </ul>		

- Seed was collected in 2002 as part of the Millennium Seed Bank Project.
- A double-sided A4 Poster produced in 2002 which includes a description of the plant, its habitat, threats, recovery actions and photos has been distributed to community members, Wildflower groups, local libraries and Regional Herbaria.

*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.*

- Liaise with land managers and aboriginal communities to ensure that subpopulations of *Caladenia graniticola* are not accidentally damaged or destroyed and its habitat is maintained in suitable condition for the conservation of the species. Aboriginal consultation will take place to determine if there are any issues or interests in areas that are habitat for the species.
- Protect plants from grazing.
- Undertake weed control.
- Conduct ongoing monitoring and observations of subpopulations and threats.
- Continue undertaking surveys for new subpopulations.
- Develop and implement a fire management strategy. *Caladenia graniticola* is thought to be killed by fire if it occurs while the plant is in active growth. It is important therefore that a fire regime with appropriate fire frequency, intensity and seasonality be applied to areas occupied by the species.
- Collect and store seeds along with samples of the orchid's symbiotic fungus to guard against the extinction of natural subpopulations. Collections of seed should aim to sample and preserve the maximum range of genetic diversity possible.
- Map habitat critical to the survival of the species to facilitate its protection and appropriate management.
- Promote awareness of the species with general public.
- Develop and implement a translocation proposal if natural subpopulations decline.

**Nomination prepared by:**

**Contact details:**

**Date submitted:**

17/10/2016

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

Summary of subpopulation information (detailed information to be provided in the relevant sections of the form)						
Subpopulations (include coordinates)	Land tenure	Survey information: Date of survey and No. mature individuals	Area of subpopulations	Site / habitat Condition	Threats (note if past, present or future)	Specific management actions
1. East of Pingaring	Water and Shire Reserve	1999: 100 2000: 40 2001: 30 2005: 135 2006: 43 2007: 38 2008: 30 2015: 30	Not recorded	Mostly good to moderate. Some parts of the rock degraded and weedy.	Grazing (past, present, future) Fire (future) Recreational activities (past, present, future) Weed invasion (past, present, future) Small population size and poor recruitment (past, present, future) Altered water run-off due to rock walls (past, present, future) Rabbit warren construction (past, present, future)	Collect and store further seed along with samples of the orchid's symbiotic fungus Develop and implement a translocation proposal if Subpopulation declines Develop and implement a fire management strategy Liaise with land manager to ensure the habitat of the Subpopulation is not accidentally damaged or destroyed and its habitat is maintained in suitable condition for the conservation of the species Map habitat critical to the survival of the species to facilitate its protection and appropriate management Undertake weed control Protect plants from grazing and warren construction
2. East of Kondinin	Water Reserve	1999: 51 2007: 51	Not recorded	Mostly good to moderate. Some parts of the rock degraded and weedy.	Grazing (past, present, future) Fire (future) Recreational activities (past, present, future) Weed invasion (past, present, future)	Collect and store further seed along with samples of the orchid's symbiotic fungus Develop and implement a translocation proposal if Subpopulation declines Develop and implement a fire management strategy Liaise with land manager to ensure the habitat of the Subpopulation is not

					<p>Small population size and poor recruitment (past, present, future)</p> <p>Altered water run-off due to rock walls (past, present, future)</p> <p>Rabbit warren construction (past, present, future)</p>	<p>accidently damaged or destroyed and its habitat is maintained in suitable condition for the conservation of the species</p> <p>Map habitat critical to the survival of the species to facilitate its protection and appropriate management</p> <p>Undertake weed control</p> <p>Protect plants from grazing and warren construction</p>
3. East of Pingaring	Nature reserve	<p>1986: 30</p> <p>1999: 30</p> <p>2001: 1</p> <p>2007: 1</p> <p>2008: 30</p>	Not recorded	Mostly good to moderate. Some parts of the rock degraded and weedy.	<p>Grazing (past, present, future)</p> <p>Fire (future)</p> <p>Weed invasion (past, present, future)</p> <p>Small population size and poor recruitment (past, present, future)</p> <p>Rabbit warren construction (past, present, future)</p>	<p>Collect and store further seed along with samples of the orchid's symbiotic fungus</p> <p>Develop and implement a translocation proposal if Subpopulation declines</p> <p>Develop and implement a fire management strategy</p> <p>Liaise with land manager to ensure the habitat of the Subpopulation is not accidently damaged or destroyed and its habitat is maintained in suitable condition for the conservation of the species</p> <p>Map habitat critical to the survival of the species to facilitate its protection and appropriate management</p> <p>Undertake weed control</p> <p>Protect plants from grazing and warren construction</p>



4. East of Pingaring	Nature reserve	1999: 30 2001: 2 2008: 28	Not recorded	Mostly good to moderate. Some parts of the rock degraded and weedy	Grazing (past, present, future) Fire (future) Recreational activities (past, present, future) Weed invasion (past, present, future) Small population size and poor recruitment (past, present, future) Rabbit warren construction (past, present, future)	Collect and store further seed along with samples of the orchid's symbiotic fungus Develop and implement a translocation proposal if Subpopulation declines Develop and implement a fire management strategy Liaise with land manager to ensure the habitat of the Subpopulation is not accidentally damaged or destroyed and its habitat is maintained in suitable condition for the conservation of the species Map habitat critical to the survival of the species to facilitate its protection and appropriate management Undertake weed control Protect plants from grazing and warren construction
5. East of Pingaring	Nature reserve	1999: 1 2001: 4 2007: 35 2008: 115 2013: 5 2015: 13	Not recorded	Mostly good to moderate.	Grazing (past, present, future) Fire (future) Recreational activities (past, present, future) Small population size and poor recruitment (past, present, future) Rabbit warren construction (past, present, future)	Collect and store further seed along with samples of the orchid's symbiotic fungus Develop and implement a translocation proposal if Subpopulation declines Develop and implement a fire management strategy Liaise with land manager to ensure the habitat of the Subpopulation is not accidentally damaged or destroyed and its habitat is maintained in suitable condition for the conservation of the species Map habitat critical to the survival of the species to facilitate its protection and appropriate management Protect plants from grazing and warren

						construction
6. East of Pingaring	Shire Reserve	1999: 4 2005: 22 2008: 4	Not recorded	Moderate. Some parts of the rock degraded and weedy	Grazing (past, present, future) Fire (future) Recreational activities (past, present, future) Weed invasion (past, present, future) Small population size and poor recruitment (past, present, future) Fire (future) Rabbit warren construction (past, present, future)	Collect and store further seed along with samples of the orchid's symbiotic fungus Develop and implement a translocation proposal if Subpopulation declines Develop and implement a fire management strategy Liaise with land manager to ensure the habitat of the Subpopulation is not accidentally damaged or destroyed and its habitat is maintained in suitable condition for the conservation of the species Map habitat critical to the survival of the species to facilitate its protection and appropriate management Undertake weed control Protect plants from grazing and warren construction

## Threatened species nomination

For nominations to the WA Threatened Species Scientific Committee (and the Minister for Environment) to amend threatened species listings under the WA *Wildlife Conservation Act 1950* or their IUCN Red List threat status.

### Cover Page (Office use only)

Species name (scientific and common name):	<i>Caladenia graniticola</i> Hopper & A.P.Br. (Pingaring Spider orchid)
Nomination for (addition, deletion, change):	Addition
Nominated conservation category and criteria:	Endangered: B1ab(iii,v)+B2ab(iii,v); C2a(i); D

TSSC assessment of eligibility against the criteria:		
A.	Population size reduction	•
B.	Geographic range	•
C.	Small population size and decline	•
D.	Very small or restricted population	•
E.	Quantitative analysis	•

Outcome:			
TSSC Meeting date:			
TSSC comments:			
Recommendation:			
Ministerial approval:		Government Gazette:	

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

Current conservation status				
Scientific name:	<i>Caladenia graniticola</i> Hopper & A.P.Br.			
Common name:	Pingaring Spider orchid			
Family name:	Orchidaceae	Fauna <input type="checkbox"/>	Flora <input checked="" type="checkbox"/>	
Nomination for:	Listing <input checked="" type="checkbox"/>	Change of status <input type="checkbox"/>	Delisting <input type="checkbox"/>	
Is the species currently on any conservation list, either in WA, Australia or Internationally?		Yes <input checked="" type="checkbox"/> If Yes; complete the following table	No <input type="checkbox"/> If No; go to the next question	
Jurisdiction	List or Act name	Date listed or assessed	Listing category i.e. critically endangered	Listing criteria i.e. B1ab(iii)+2ab(iii)
International	IUCN Red List			
National	EPBC Act			
State of WA	WC Act	1999 as <i>Caladenia hoffmanii</i> subsp. <i>graniticola</i> and 2005 as <i>C. graniticola</i> .	Critically Endangered	B2ab(ii,v); C2a(i)
	WA	2017 (proposed)	Endangered:	B1ab(iii,v)+B2ab(iii,v); C2a(i); D
	DPaW Priority list	1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/>		
Other States or Territories				
Nominated conservation status: category and criteria (including recommended categories for deleted species)				
Presumed extinct (EX) <input type="checkbox"/> Critically endangered (CR) <input type="checkbox"/> Endangered (EN) <input checked="" type="checkbox"/> Vulnerable (VU) <input type="checkbox"/>				
None <input type="checkbox"/> Priority 1 <input type="checkbox"/> Priority 2 <input type="checkbox"/> Priority 3 <input type="checkbox"/> Priority 4 <input type="checkbox"/> Other Specially Protected (Conservation Dependent) <input type="checkbox"/>				
What criteria support the conservation status category above? <i>Refer to Appendix A table 'Summary of the five criteria (A-E)' and the check version that can be completed to indicate all criteria options</i>			B1ab(iii,v)+B2ab(iii,v); C2a(i); D	
Eligibility against the criteria				
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	<ul style="list-style-type: none"> <li>The largest subpopulations (subpopulation 1) 135 mature individuals</li> </ul>		

	reduction	<p>in 2005 and (subpopulation 5) 115 mature individuals 2008 contained just 30 and 13 mature individuals respectively in 2015. This may be due to environmental factors and it is possible that numbers of flowering plants will increase following more favourable rainfall. Subpopulations 2, 3, 4 and 6, although small, have remained relatively stable.</p> <ul style="list-style-type: none"> <li>• <b>Insufficient information to assess.</b></li> </ul>
<b>B.</b>	Geographic range	<ul style="list-style-type: none"> <li>• EEO 563 km<sup>2</sup> and AOO 20km<sup>2</sup></li> <li>• 3 locations.</li> <li>• Some decline in habitat condition noted at all locations (shrub and tree death due to drought). Decline in number of individuals at two subpopulations and fluctuation at others.</li> <li>• <b>Meets criteria B1ab(iii,v)+B2ab(iii,v) for Endangered</b></li> </ul>
<b>C.</b>	Small population size and decline	<ul style="list-style-type: none"> <li>• Currently known from 156 mature individuals.</li> <li>• There has been a large decline in mature individuals in two subpopulations. Other subpopulations appear relatively stable with seasonal fluctuation in flowering plants.</li> <li>• Largest subpopulation contains 51 mature individuals</li> <li>• <b>Meets criteria C2a(i) for Endangered</b></li> </ul>
<b>D.</b>	Very small or restricted population	<ul style="list-style-type: none"> <li>• Currently known from 156 mature individuals. Known from 258 mature individuals in 2008.</li> <li>• <b>Meets criteria D for Endangered</b></li> </ul>
<b>E.</b>	Quantitative analysis	<ul style="list-style-type: none"> <li>• No information to assess.</li> </ul>

#### Reasons for change of status

Genuine change ☐ New knowledge ☒ Taxonomic change ☐ Previous mistake ☐ Other ☐

The AOO and number of locations are too great for CR under criterion B2, and size of largest subpopulation exceeds threshold for criterion C2(a)(i) for CR. On the basis of limited numbers of plants and threats due to recreational activities, fire, altered water run-off due to the damming of granite outcrops, grazing from native and feral animals, poor recruitment, lack of suitable habitat (found on just 6 granite outcrops), drought and weed invasion, there is an ongoing threat of decline. Now meets criteria B1ab(iii,v)+B2ab(iii,v); C2a(i); D for Endangered.

#### Summary of assessment information (detailed information to be provided in the relevant sections of the form)

EOO	563 km <sup>2</sup> (MCP) (or 30.58 km <sup>2</sup> (α-hull value 2))	AOO	20km <sup>2</sup> (2kmx2km grid)	Generation length	Unknown
No. locations	3	Severely fragmented		Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
No. subpopulations	6	No. mature individuals		156	
Percentage global population within WA			100%		
Percentage global population within Australia			100%		
Percentage population decline over 10 years or 3 generations			40%		

Summary of subpopulation information (detailed information to be provided in the relevant sections of the form)						
Subpopulation location (include coordinates)	Land tenure	Survey information: Date of survey and No. mature individuals	Area of subpopulation	Site / habitat Condition	Threats (note if past, present or future)	Specific management actions
1. East of Pingaring	Water and Shire Reserve	1999: 100 2000: 40 2001: 30 2005: 135 2006: 43 2007: 38 2008: 30 2015: 30	Not recorded	Mostly good to moderate. Some parts of the rock degraded and weedy.	Grazing (past, present, future)  Fire (future)  Recreational activities (past, present, future)  Weed invasion (past, present, future)  Small population size and poor recruitment (past, present, future)  Altered water run-off due to rock walls (past, present, future)  Fire (future)  Rabbit warren construction (past, present, future)	Collect and store further seed along with samples of the orchid's symbiotic fungus  Develop and implement a translocation proposal if Subpopulation declines  Develop and implement a fire management strategy  Liaise with land manager to ensure the habitat of the Subpopulation is not accidentally damaged or destroyed and its habitat is maintained in suitable condition for the conservation of the species  Map habitat critical to the survival of the species to facilitate its protection and appropriate management  Undertake weed control  Protect plants from grazing and warren construction
2. East of Kondinin	Water Reserve	1999: 51 2007: 51	Not recorded	Mostly good to moderate. Some parts of the rock degraded and weedy.	Grazing (past, present, future)  Fire (future)  Recreational activities	Collect and store further seed along with samples of the orchid's symbiotic fungus  Develop and implement a translocation proposal if

					<p>(past, present, future)</p> <p>Weed invasion (past, present, future)</p> <p>Small population size and poor recruitment (past, present, future)</p> <p>Altered water run-off due to rock walls (past, present, future)</p> <p>Fire (future)</p> <p>Rabbit warren construction (past, present, future)</p>	<p>Subpopulation declines</p> <p>Develop and implement a fire management strategy</p> <p>Liaise with land manager to ensure the habitat of the Subpopulation is not accidentally damaged or destroyed and its habitat is maintained in suitable condition for the conservation of the species</p> <p>Map habitat critical to the survival of the species to facilitate its protection and appropriate management</p> <p>Undertake weed control</p> <p>Protect plants from grazing and warren construction</p>
3. East of Pingaring	Nature reserve	<p>1986: 30</p> <p>1999: 30</p> <p>2001: 1</p> <p>2007: 1</p> <p>2008: 30</p>	Not recorded	Mostly good to moderate. Some parts of the rock degraded and weedy.	<p>Grazing (past, present, future)</p> <p>Fire (future)</p> <p>Weed invasion (past, present, future)</p> <p>Small population size and poor recruitment (past, present, future)</p> <p>Fire (future)</p> <p>Rabbit warren construction (past, present, future)</p>	<p>Collect and store further seed along with samples of the orchid's symbiotic fungus</p> <p>Develop and implement a translocation proposal if Subpopulation declines</p> <p>Develop and implement a fire management strategy</p> <p>Liaise with land manager to ensure the habitat of the Subpopulation is not accidentally damaged or destroyed and its habitat is maintained in suitable condition for the conservation of the species</p> <p>Map habitat critical to the</p>

						<p>survival of the species to facilitate its protection and appropriate management</p> <p>Undertake weed control</p> <p>Protect plants from grazing and warren construction</p>
4. East of Pingaring	Nature reserve	<p>1999: 30</p> <p>2001: 2</p> <p>2008: 28</p>	Not recorded	Mostly good to moderate. Some parts of the rock degraded and weedy	<p>Grazing (past, present, future)</p> <p>Fire (future)</p> <p>Recreational activities (past, present, future)</p> <p>Weed invasion (past, present, future)</p> <p>Small population size and poor recruitment (past, present, future)</p> <p>Fire (future)</p> <p>Rabbit warren construction (past, present, future)</p>	<p>Collect and store further seed along with samples of the orchid's symbiotic fungus</p> <p>Develop and implement a translocation proposal if Subpopulation declines</p> <p>Develop and implement a fire management strategy</p> <p>Liaise with land manager to ensure the habitat of the Subpopulation is not accidentally damaged or destroyed and its habitat is maintained in suitable condition for the conservation of the species</p> <p>Map habitat critical to the survival of the species to facilitate its protection and appropriate management</p> <p>Undertake weed control</p> <p>Protect plants from grazing and warren construction</p>
5. East of Pingaring	Nature reserve	<p>1999: 1</p> <p>2001: 4</p> <p>2007: 35</p>	Not recorded	Mostly good to moderate.	<p>Grazing (past, present, future)</p> <p>Fire (future)</p>	



		2008: 115 2013: 5 2015: 13			Recreational activities (past, present, future)  Small population size and poor recruitment (past, present, future)  Fire (future)  Rabbit warren construction (past, present, future)	
6. East of Pingaring	Shire Reserve	1999: 4 2005: 22 2008: 4	Not recorded	Moderate. Some parts of the rock degraded and weedy	Grazing (past, present, future)  Fire (future)  Recreational activities (past, present, future)  Weed invasion (past, present, future)  Small population size and poor recruitment (past, present, future)  Fire (future)  Rabbit warren construction (past, present, future)	Collect and store further seed along with samples of the orchid's symbiotic fungus  Develop and implement a translocation proposal if Subpopulation declines  Develop and implement a fire management strategy  Liaise with land manager to ensure the habitat of the Subpopulation is not accidentally damaged or destroyed and its habitat is maintained in suitable condition for the conservation of the species  Map habitat critical to the survival of the species to facilitate its protection and appropriate management  Undertake weed control  Protect plants from grazing and warren construction

## Nomination detail

Please refer to the Departments guidelines on nominating species for amendment of the Western Australian threatened species lists at [http://www.dpaw.wa.gov.au/images/documents/plants-animals/threatened-species/Listings/Threatened Species Nomination Guidelines 2014.pdf](http://www.dpaw.wa.gov.au/images/documents/plants-animals/threatened-species/Listings/Threatened_Species_Nomination_Guidelines_2014.pdf)

For technical information on terminology used in this form, and the intent of information requirements, as they relate to an assessment of this nomination against the IUCN Red List criteria, refer to the 2001 *IUCN Red List Categories and Criteria. Version 3.1*

[http://www.iucnredlist.org/documents/redlist\\_cats\\_crit\\_en.pdf](http://www.iucnredlist.org/documents/redlist_cats_crit_en.pdf)

and *Guidelines for Using the IUCN Red List Categories and Criteria Version 11* (February 2014)

<http://cmsdocs.s3.amazonaws.com/RedListGuidelines.pdf>

## Section 1: Taxonomy

<b>1.1 Current taxonomy</b>			
Species name and Author:		<i>Caladenia graniticola</i> Hopper and A.P.Br.	
Subspecies name(s) and Author:			
Is the species/subspecies conventionally accepted?		Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Is there any controversy about the taxonomy?		Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
If not conventionally accepted and/or if there is any controversy; provide details:			
Has the species/subspecies been formally named?		Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Has the species/subspecies been recently described?		Yes <input type="checkbox"/>	No <input type="checkbox"/>
If the species has not been formally named or described; is it in the process of being described? Is there an anticipated date for the publication of the description? Has a type specimen been deposited? And if so provide the registration number and where deposited.			
If there are any closely related taxa provide details and include key distinguishing features:		The species is distinguished from the related <i>Caladenia hoffmanii</i> by its larger flowers, larger basal labellum calli and larger column. It also has a later flowering period (late September-October versus August-September) and a more southerly distribution in different habitat (granite outcrops versus sandstone breakaways).	
<b>1.2 Taxonomic history</b>			
Are there recent synonyms for the species?		Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
If Yes; provide details of synonyms:	Named in 2001 as a subspecies of <i>Caladenia hoffmanii</i> from specimens collected at Pingaring in 1985 and elevated to species level in 2004.		
Have there been recent changes in the taxonomy or nomenclature?		Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
If Yes; provide details of changes:	Named in 2001 as a subspecies of <i>Caladenia hoffmanii</i> from specimens		

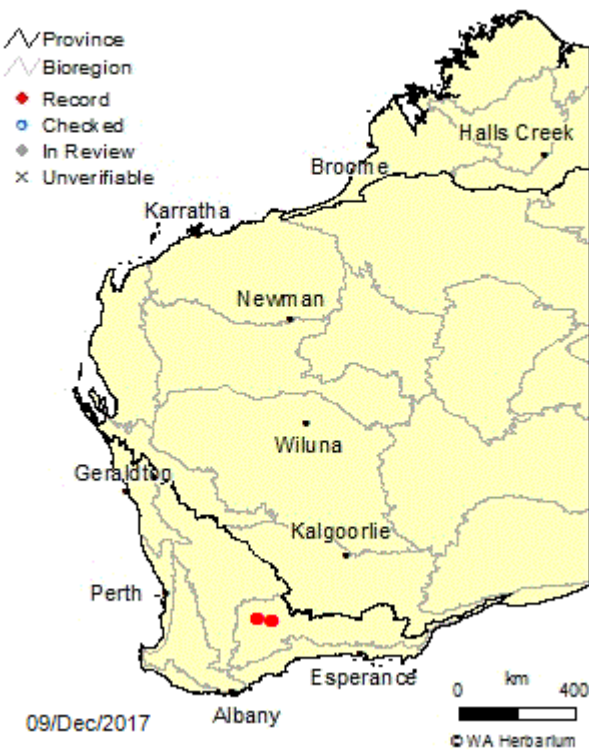
	collected at Pingaring in 1985 and elevated to species level in 2004.
<b>1.3 Hybridisation</b>	
Is there any known hybridism with other species in the wild?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Unknown <input type="checkbox"/>
If Yes; Where does this occur and how frequently?	

## Section 2: Species information

<b>2.1 Morphology / physical description</b>	
.	
Species description:	A rare, habitat restricted spider orchid 120 to 300 mm high with a single, erect, hairy leaf 80 to 150 mm long by 5 to 10 mm wide and up to two greenish-yellow, red and white flowers 40 to 50 mm across with short, spreading, narrowly-clubbed petals and lateral sepals and a greenish-yellow and white, red-tipped, narrowly-triangular, projecting labellum with long, narrow, fringe segments and four or more rows of red calli.
<b>2.2 Biology (provide details)</b>	
Thought to be pollinated by male thynnid wasps.	
<b>2.3 Ecology (provide details)</b>	
Grows under <i>Acacia</i> spp., <i>Thryptomene australis</i> and <i>Allocasuarina huegeliana</i> on granite outcrops.	

## Section 3: Geographic range

<b>3.1 Distribution</b>	
Insert map(s) of the species distribution, or provide as an attachment:	
What is the current distribution of the species within Western Australia?	Found over a range of about 50 kilometres between Karlgarin and Dragon Rocks (see map below from Western Australian Herbarium 1998–).

	<p><i>Caladenia graniticola</i></p> 	
What percentage of the species distribution is within WA?	100%	
What is the current distribution of the species within the other Australian States and Territories?	N/A.	
Does the species occur outside of Australia?		Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
If Yes, what percentage of the species distribution is within Australia, or what is the significance of the occurrence in Australia?		
What is the current international trend for the species?	N/A	
<b>3.2 Migration (fauna only)</b>		
Is the species migratory?		Yes <input type="checkbox"/> No <input type="checkbox"/>
Is the migration within WA or within Australia or international?		
<b>3.3 Extent of Occurrence (EOO) within Australia</b>		

What is the current EOO?	563 km <sup>2</sup> (MCP) or 30.58 km <sup>2</sup> ( $\alpha$ -hull value 2)		
How has this been calculated?	563 km <sup>2</sup> using minimum convex polygon		
What is the historical EOO?	Unknown		
What is the current EOO trend?	Decreasing <input type="checkbox"/> Increasing <input type="checkbox"/> Stable <input checked="" type="checkbox"/>		
<i>Provide details on the current trend – quantify if possible</i>	No known change in EOO for this species.		
If there has been a change in EOO when did this change occur?			
Was the change observed, estimated, inferred or projected?			
If the EOO is decreasing / declining, is it continuing?			Yes <input type="checkbox"/> No <input type="checkbox"/>
Is the continuing decline observed, estimated, inferred or projected?			
Is there extreme fluctuation in EOO?			Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
<i>If Yes, provide details:</i>			
<b>3.4 Area of Occupancy (AOO) within Australia</b>			
What is the current AOO?	20km <sup>2</sup>		
How has this been calculated?	2kmx2km grid method as per IUCN guidelines.		
What is the historical AOO?	Unknown		
What is the current AOO trend?	Decreasing <input type="checkbox"/> Increasing <input type="checkbox"/> Stable <input checked="" type="checkbox"/>		
<i>Provide details on the current trend – quantify if possible</i>	Subpopulation 1 which contained 135 mature individuals in 2005 and subpopulation 5 which contained 115 mature individuals 2008 contained just 30 and 13 mature individuals respectively in 2015 leading to a slight decrease in area of occupied habitat. This may be due to environmental factors and it is possible that numbers of flowering plants will increase following more favourable rainfall. Subpopulations 2, 3, 4 and 6, although small, have remained relatively stable. Decline in AOO may occur if subpopulations eventually go extinct, but not anticipated at present.		
If there has been a change in AOO when did this change occur?	The change in area of subpopulations has occurred in the last 7years.		
Was the change observed, estimated, inferred or	The changed was observed through targeted surveys for this species.		

projected? Give details.			
If the AOO is decreasing / declining, is it continuing?		Yes <input type="checkbox"/>	No <input type="checkbox"/> N/A <input checked="" type="checkbox"/>
Is the continuing decline observed, estimated, inferred or projected? Give details.			
Is there extreme fluctuation in AOO?		Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
If Yes, provide details:			
Does the species have a restricted AOO?		Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
If Yes, provide details:	Due to small subpopulation sizes and restricted distribution on inland granite outcrops this species is considered to have a restricted AOO.		
<b>3.5 Number of Locations</b>			
<p><b>'Locations'</b> are defined as a geographically or ecologically distinct area in which a single threatening event can rapidly affect all individuals of the taxon present. The size of the location depends on the area covered by the threatening event and may include part of one or many subpopulations. Where a taxon is affected by more than one threatening event, location should be defined by considering the most serious plausible threat. (IUCN 2001).</p>			
At how many locations does the species occur?	3		
Has there been a change in the number of locations?	Decrease <input type="checkbox"/>	Increase <input type="checkbox"/>	No change <input checked="" type="checkbox"/>
If there has been a change, when did this change occur?			
Was the change observed, estimated, inferred or projected? Give details.			
Is the number of locations is decreasing / declining, is it continuing?		Yes <input type="checkbox"/>	No <input type="checkbox"/> N/A <input checked="" type="checkbox"/>
Is the continuing decline observed, estimated, inferred or projected? Give details.			
Is there extreme fluctuation in the number of locations?		Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
If Yes, provide details:			
Does this species occur on any off-shore islands?		Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
If Yes, provide details:			
<b>3.6 Fragmentation</b>			
Is the distribution fragmented?		Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
<p>The phrase '<b>severely fragmented</b>' refers to the situation in which increased extinction risks to the taxon results from the fact that most of its individuals are found in small and relatively isolated subpopulations (in certain circumstances this may be inferred from habitat information). These small subpopulations may go</p>			

extinct, with a reduced probability of recolonization.	
Is the distribution severely fragmented?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
If Yes, provide details:	Subpopulations are restricted to 6 isolated inland granite outcrops, but restriction in habitat area is natural and occurrences are within larger vegetated areas (Crown reserves).
<b>3.7 Land tenure</b>	
Is the species known to occur on lands managed primarily for nature conservation? i.e. national parks, conservation parks, nature reserves and other lands with secure tenure being managed for conservation	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
If Yes; provide details:	Subpopulations 3, 4 and 5 are found in a Nature Reserve.
Is the species known to occur on lands that are under threat? i.e. mining tenement, zoned for development	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
If Yes; provide details:	
Provide details of other land tenures where the species occurs as this relates to the species conservation status	Subpopulation 1 occurs in a Water and Shire Reserve and Subpopulation 2 occurs in a Water Reserve.

## Section 4: Habitat

<b>4.1 Habitat</b> (provide details in response to the question below)	
Describe the habitat suitable for the species (biological and non-biological). Include descriptions of specific purpose habitat (e.g. foraging, breeding, roosting, seasonal migration, different life stages).	The species is geographically restricted and to date has been recorded from just six granite outcrops in the Dragon Rocks – Newdegate area. Plants grow under <i>Allocasuarina campestris</i> and <i>A. huegeliana</i> near to and on granite outcrops.
If the species occurs in a variety of habitats, is there a preferred habitat?	N/A
Does the species use refugia? (include what is it and when is it used)	N/A
Is the habitat restricted in extent or number of locations?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
If Yes, provide details:	The species is known from 3 locations between Dragon Rocks and Newdegate.
Is this species reliant on a threatened or priority species or ecological community?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
If Yes, provide details:	
Are there any other species (sympatric species) that may affect the conservation status of the nominated species?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
If Yes, provide details:	.

What is the area, extent, abundance of habitat?	Known from 6 inland granite outcrops.		
What is the quality of habitat?	The quality of habitat at each subpopulation ranges between good and moderately degraded.		
Is there a decline in habitat area, extent or quality?			Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
If there is a decline, is the decline continuing?			Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Provide details:	Habitat of some subpopulations is becoming increasingly weedy.		
What is the critical habitat or habitat important for the survival of the species?	It is considered that all known habitat for wild populations is habitat critical for the survival of the species.		

## Section 5: Population

**‘Population’** is used in a specific sense in the Red List Criteria that is different to its common biological usage. Population is here defined as the total number of mature individuals of the taxon. In the case of taxa obligately dependent on other taxa for all or part of their life cycles, biologically appropriate values for the host taxon should be used. (IUCN 2001)

**‘Subpopulations’** are defined as geographically or otherwise distinct groups in the population between which there is little demographic or genetic exchange (typically one successful migrant individual or gamete per year or less).

5.1 Subpopulations				
Subpopulation location (include coordinates)	Land tenure	Survey information: Date of survey and No. mature individuals	Area of subpopulation	Site / habitat Condition
Subpopulation 1 East of Pingaring	Water and Shire Reserve	1999: 100 2000: 40 2001: 30 2005: 135 2006: 43 2007: 38 2008: 30 2015: 30	Not recorded	Mostly good to moderate. Some parts of the rock degraded and weedy.
Subpopulation 2 East of Kondinin	Water Reserve	1999: 51 2007: 51	Not recorded	Mostly good to moderate. Some parts of the rock degraded and weedy.
Subpopulation 3	Nature	1986: 30	Not recorded	Mostly good to moderate. Some parts of the rock degraded and



East of Pingaring	reserve	1999: 30 2001: 1 2007: 1 2008: 30		weedy.
Subpopulation 4 East of Pingaring	Nature reserve	1999: 30 2001: 2 2008: 28	Not recorded	Mostly good to moderate. Some parts of the rock degraded and weedy
Subpopulation 5 East of Pingaring	Nature reserve	1999: 1 2001: 4 2007: 35 2008: 115 2013: 5 2015: 13	Not recorded	Mostly good to moderate.
Subpopulation 6 East of Pingaring	Shire Reserve	1999: 4 2005: 22 2008: 4	Not recorded	Moderate. Some parts of the rock degraded and weedy

## **5.2 Population size (Australian context)** *(include how numbers were determined/calculated)*

What is the total population size?	156
What is the number of subpopulations?	6
What percentage of the population is within WA?	100%
What percentage of the population is within Australia?	100%

## **5.3 Population dynamics (Australian context)** *(include how numbers were determined/calculated)*

What is the number of mature individuals?	156
What is the number of immature individuals?	Unknown
What is the number of senescing/past reproductive individuals?	Unknown
What is the maximum number of mature individuals per subpopulation?	51
What is the percentage of mature individuals in the largest subpopulation?	33%

What percentage of mature individuals is within WA?	100%
What percentage of global mature individuals is within Australia?	100%
What is the age of sexual maturity?	Unknown
What is the life expectancy?	Unknown
What is the generation length?	Unknown
What is the reproductive capacity? (i.e. litter size or number of seeds)	1000 + seeds per capsule but very low number germinate.
What is the reproductive success?	Very low.
<b>5.4 Population trend</b>	
What is the current population trend (mature individuals)?	Decreasing <input checked="" type="checkbox"/> Increasing <input type="checkbox"/> Stable <input type="checkbox"/>
What is the percentage of the population change and over what time period?	Population has declined over the past 10 years from 363 in 2005 to 155 in 2015, a 43% decline.
How has this been calculated?	
If the trend is decreasing; are the causes of the reduction understood?	Yes <input type="checkbox"/> No <input type="checkbox"/>
Have the causes of the reduction ceased?	Yes <input type="checkbox"/> No <input type="checkbox"/>
Are the causes of the reduction reversible?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Is the reduction continuing (continuing decline)?	Yes <input type="checkbox"/> No <input type="checkbox"/>
Has the change been observed, estimated, inferred or is it suspected (direct observation, index of abundance appropriate to the species)?	Change has been observed but may be due to environmental factors and it is possible that numbers of flowering plants will increase following more favourable rainfall.
When was the reduction or is it anticipated to occur?	Past <input checked="" type="checkbox"/> Present <input type="checkbox"/> Future <input type="checkbox"/>
What is the period of time for the reduction (in years and generations)?	Decline has occurred over the past 10 years.
Has there been a reduction in the number of subpopulations?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
<i>If Yes, provide details:</i>	
Are there extreme fluctuations in population size?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
<i>If Yes, provide details:</i>	
<b>5.5 Translocations and captive/enclosed subpopulations</b>	
Have there been translocations (introduction or re-introduction)?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Are there proposed translocations (introduction or re-introduction)?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>

Are there captive/enclosed/cultivated subpopulations?		Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Are there proposed captive/enclosed/cultivated subpopulations?		Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Are there self-sustaining translocated subpopulations?		Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
If Yes, provide details:		
Are there translocated subpopulations that are not self-sustaining?		Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
If Yes, provide details:		
Are there self-sustaining captive/enclosed subpopulations?		Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
If Yes, provide details:		
Are there captive/enclosed subpopulations that are not self-sustaining?		Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
If Yes, provide details:		
Other information on translocations and captive/enclosed subpopulations for the species (including failures):		
<b>5.6 Important subpopulations</b>		
<p><i>Identify any subpopulations that are important or necessary for the long-term survival of the species and provide details for why they are considered as such (i.e. key breeding, edge or range, maintenance of genetic diversity):</i></p> <p>All subpopulations of this species are considered significant for its long term survival.</p>		

## Section 6: Survey

<b>6.1 Survey methods</b> <i>(Provide details)</i>		
What survey methods are applicable to the species?	Foot inspection of granite outcrops within the region. Due to small subpopulation sizes, targeted direct counts of individuals can be undertaken.	
Are there preferred or recommended survey methods that yield better results for the species?	No.	
Are there special requirements, techniques, expertise or other considerations that are necessary when surveying for this species?	A general knowledge of the species and the habitat that it occurs in is required to ensure an accurate sampling method.	
Are there reasons why the species may not be detected during surveys?	If the species is surveyed when it is in flower when it is readily detected. However, good flowering appears dependant on winter rainfall and if a dry year flowering may be poor.	
Can the species be identified in the field?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>

<i>Provide details:</i>	Yes. The species has distinctive shortened petals and sepals and a red tipped narrowly triangular, projecting labellum with long fringe segments.		
Can the species be easily confused within similar species in the field?		Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
<i>Provide details:</i>	No. its nearest relative, <i>Caladenia hoffmanii</i> , occurs some 100s of kilometres to the north-west of the distribution of this species.		
List any published survey guidelines, guidance statements, protocols, standard operating procedures or other documents that are relevant to conducting surveys for this species. N/A			
<b>6.2 Survey effort</b>			
Has the species been well surveyed?		Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Have targeted surveys been conducted for the species?		Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
<i>Provide details of the successful and unsuccessful surveys undertaken for the species:</i>	Numerous surveys of inland granite outcrops have been undertaken over many years by Parks and Wildlife staff and members of the Western Australian Native Orchid Study and Conservation group with the species being located on just six rocks.		
<b>6.3 Research (Provide details)</b>			
Has the species been well researched?		Yes <input type="checkbox"/>	No <input type="checkbox"/> Partially <input checked="" type="checkbox"/>
What research has been or is being conducted?	Taxonomic research has been conducted with the species formally named in 2004.		
What are the knowledge gaps for the species?	Little is known about the biology and ecology of the species.		
Research recommendations:	Conduct research on life expediency, pollination, seed set, seed viability and recruitment requirements.		
<b>6.4 Monitoring (Provide details)</b>			
Is the species being monitored, either directly (targeted) or indirectly (general monitoring)?	Targeted monitoring for this species is aimed for every 2-5 years.		
What methods are used for monitoring?	Targeted plant counts, habitat mapping and explorative surveys.		
Monitoring recommendations:	Continue monitoring populations.		

## Section 7: Threats

### 7.1 Threats (detail how the species is being impacted, i.e. how severe, the extent, evidence of the impact)

Threat (describe how the threat impacts on the species. Include abiotic and biotic causes, human related e.g. exploitation, and biological characteristics of the species e.g. low genetic diversity)	Extent (give details of impact on whole species or specific subpopulations)	Impact (what is the level of threat to the conservation of the species)	Evidence	Time period (past, present, future)
Small population size.	Whole species.	High.	Small population size can increase the risk of chance (stochastic) events leading to the decline or destruction of an entire population.	Past, current and future.
Poor recruitment.	Whole species.	High.	Subpopulations are either stable or in decline with no natural recruitment documented.	Past, current and potentially future.
Grazing.	Whole species.	High.	Rabbits and/or kangaroos may eat leaves, buds and flowers of <i>Caladenia graniticola</i> . In 1999, 29% of flowers in subpopulation 1 were grazed, severely impacting reproductive potential.	Past, current and potentially future.
Altered water run-off due to the damming of granite outcrops.	Subpopulations 1 and 2.	High.	Several granite outcrops on which this species grows have rock walls channelling water runoff into dams. These walls severely alter natural runoff resulting in a drying of the orchid's habitat.	Past, current and future.
Weeds.	Whole species.	High.	The species occupies habitat highly susceptible to weed invasion especially after disturbance by rabbits and kangaroos. Weed seeds in rabbit droppings and increased nutrient levels from droppings may also encourage weed invasion.	Past, current and potentially future.

Fire.	Whole species.	Medium.	Fire has the potential to dramatically alter the open <i>Allocasuarina</i> habitat of the species.	Potentially future.
Rabbit warren construction.	Whole species.	Medium.	Warren construction may directly impact <i>Caladenia graniticola</i> plants.	Past, current and potentially future.
Recreational activities.	Subpopulations 1, 2 and 5.	Medium.	The habitat of several subpopulations is subject to recreational activities such as off road vehicles and trailbike riding potentially threatening the species.	Past, current and potentially future.

## Section 8: Management

8.1 Current management		
Is the species managed?	Yes, directly <input checked="" type="checkbox"/>	Yes, indirectly <input type="checkbox"/> No <input type="checkbox"/>
<i>If Yes; provide details of current or past management actions:</i>	<ul style="list-style-type: none"> <li>Land managers have been notified of the threatened nature of this species and its location.</li> <li>Regular surveys are being undertaken.</li> <li>Plots established in 1999 are monitored annually at subpopulation 1.</li> <li>Signs have been erected at subpopulation 1 to protect it from accidental destruction (adjacent golf course).</li> <li>The Southern Wheatbelt Threatened Flora Recovery Teams oversees the implementation of the Interim Recovery Plan for the species and includes details in its Annual Report to Parks and Wildlife.</li> <li>Seed was collected in 2002 as part of the Millennium Seed Bank Project.</li> <li>A double-sided A4 Poster produced in 2002 which includes a description of the plant, its habitat, threats, recovery actions and photos has been distributed to community members, Wildflower groups, local libraries and Regional Herbaria.</li> </ul>	
Does the species benefit from the management of another species or ecological community?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
<i>If Yes; provide details:</i>		
8.2 Recovery planning		
Is there an approved Recovery Plan (RP) or Interim Recovery Plan (IRP) for the species?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
<p><i>List all relevant recovery plans or interim recovery plans (including draft, in-preparation, out-of-date, national and other State/Territory plans, and plans for other species or ecological communities that may benefit or be relevant to the nominated species)</i></p> <p>Interim Recovery Plan No. 123 Pingaring Spider Orchid (<i>Caladenia hoffmanii</i> subsp. <i>graniticola</i>) Interim Recovery Plan 2003-2008.</p>		
<p><i>List other documents that may be relevant to the management of the species or the lands on which it occurs (i.e. area management plans, conservation advices, referral guidelines)</i></p>		
8.3 Management recommendations		
<ul style="list-style-type: none"> <li>Liaise with land managers and Aboriginal communities to ensure that subpopulations of <i>Caladenia graniticola</i> are not accidentally damaged or destroyed and its habitat is maintained in suitable condition for the conservation of the species. Aboriginal consultation will take place to determine if there are any issues or interests in areas that are habitat for the species.</li> <li>Protect plants from grazing.</li> <li>Undertake weed control.</li> <li>Conduct ongoing monitoring and observations of subpopulations and threats.</li> <li>Continue undertaking surveys for new populations.</li> <li>Develop and implement a fire management strategy. <i>Caladenia graniticola</i> is thought to be killed by fire if it occurs while the plant is in active growth. It is important therefore that a fire regime with appropriate fire frequency, intensity and seasonality be applied to areas occupied by the species.</li> <li>Collect and store seeds along with samples of the orchid's symbiotic fungus to guard against the extinction of</li> </ul>		

natural populations. Collections of seed should aim to sample and preserve the maximum range of genetic diversity possible.

- Map habitat critical to the survival of the species to facilitate its protection and appropriate management.
- Promote awareness of the species with general public.
- Develop and implement a translocation proposal if natural subpopulations decline.

## Section 9: Nominator details

<b>Nominator name(s):</b>	
<b>Contact details:</b>	
<b>Date submitted:</b>	11 January 2017
<i>If the nomination has been refereed or reviewed by experts, please provide their names and contact details:</i>	

## Section 10: References

<b>9.1 References</b>
Western Australian Herbarium (1998–) <i>FloraBase – The Western Australian Flora</i> . Department of Environment and Conservation. <a href="http://florabase.calm.wa.gov.au/">http://florabase.calm.wa.gov.au/</a> .



# SUMMARY OF THE FIVE CRITERIA (A-E) USED TO EVALUATE IF A TAXON BELONGS IN AN IUCN RED LIST THREATENED CATEGORY (CRITICALLY ENDANGERED, ENDANGERED OR VULNERABLE).<sup>1</sup>

A. Population size reduction. Population reduction (measured over the longer of 10 years or 3 generations) based on any of A1 to A4			
	Critically Endangered	Endangered	Vulnerable
A1	≥ 90%	≥ 70%	≥ 50%
A2, A3 & A4	≥ 80%	≥ 50%	≥ 30%
<p>A1 Population reduction observed, estimated, inferred, or suspected in the past where the causes of the reduction are clearly reversible AND understood AND have ceased.</p> <p>A2 Population reduction observed, estimated, inferred, or suspected in the past where the causes of reduction may not have ceased OR may not be understood OR may not be reversible.</p> <p>A3 Population reduction projected, inferred or suspected to be met in the future (up to a maximum of 100 years) [(a) cannot be used for A3].</p> <p>A4 An observed, estimated, inferred, projected or suspected population reduction where the time period must include both the past and the future (up to a max. of 100 years in future), and where the causes of reduction may not have ceased OR may not be understood OR may not be reversible.</p> <p><i>based on any of the following:</i></p> <p>(a) direct observation [except A3]</p> <p>(b) an index of abundance appropriate to the taxon</p> <p>(c) a decline in area of occupancy (AOO), extent of occurrence (EOO) and/or habitat quality</p> <p>(d) actual or potential levels of exploitation</p> <p>(e) effects of introduced taxa, hybridization, pathogens, pollutants, competitors or parasites.</p>			
B. Geographic range in the form of either B1 (extent of occurrence) AND/OR B2 (area of occupancy)			
	Critically Endangered	Endangered	Vulnerable
B1. Extent of occurrence (EOO)	< 100 km <sup>2</sup>	< 5,000 km <sup>2</sup>	< 20,000 km <sup>2</sup>
B2. Area of occupancy (AOO)	< 10 km <sup>2</sup>	< 500 km <sup>2</sup>	< 2,000 km <sup>2</sup>
AND at least 2 of the following 3 conditions:			
(a) Severely fragmented OR Number of locations	= 1	≤ 5	≤ 10
(b) Continuing decline observed, estimated, inferred or projected in any of: (i) extent of occurrence; (ii) area of occupancy; (iii) area, extent and/or quality of habitat; (iv) number of locations or subpopulations; (v) number of mature individuals			
(c) Extreme fluctuations in any of: (i) extent of occurrence; (ii) area of occupancy; (iii) number of locations or subpopulations; (iv) number of mature individuals			
C. Small population size and decline			
	Critically Endangered	Endangered	Vulnerable
Number of mature individuals	< 250	< 2,500	< 10,000
AND at least one of C1 or C2			
C1. An observed, estimated or projected continuing decline of at least (up to a max. of 100 years in future):	25% in 3 years or 1 generation (whichever is longer)	20% in 5 years or 2 generations (whichever is longer)	10% in 10 years or 3 generations (whichever is longer)
C2. An observed, estimated, projected or inferred continuing decline AND at least 1 of the following 3 conditions:			
(a) (i) Number of mature individuals in each subpopulation	≤ 50	≤ 250	≤ 1,000
(ii) % of mature individuals in one subpopulation =	90–100%	95–100%	100%
(b) Extreme fluctuations in the number of mature individuals			
D. Very small or restricted population			
	Critically Endangered	Endangered	Vulnerable
D. Number of mature individuals	< 50	< 250	D1. < 1,000
D2. Only applies to the VU category Restricted area of occupancy or number of locations with a plausible future threat that could drive the taxon to CR or EX in a very short time.	-	-	D2. typically: AOO < 20 km <sup>2</sup> or number of locations ≤ 5
E. Quantitative Analysis			
	Critically Endangered	Endangered	Vulnerable
Indicating the probability of extinction in the wild to be:	≥ 50% in 10 years or 3 generations, whichever is longer (100 years max.)	≥ 20% in 20 years or 5 generations, whichever is longer (100 years max.)	≥ 10% in 100 years

<sup>1</sup> Use of this summary sheet requires full understanding of the *IUCN Red List Categories and Criteria* and *Guidelines for Using the IUCN Red List Categories and Criteria*. Please refer to both documents for explanations of terms and concepts used here.

**FORM VERSION OF IUCN RED LIST SUMMARY OF THE FIVE CRITERIA (A-E) to assist with determining eligible criteria****Check boxes in one or more of the following fields to support your nomination; refer to summary table above for explanations****A. Population size reduction (measured over the longer of 10 years or 3 generations) based on any of A1 to A4**

A1 <input type="checkbox"/>	<i>and one of the following</i>	$\geq 90\%$ <input type="checkbox"/>	$\geq 70\%$ <input type="checkbox"/>	$\geq 50\%$ <input type="checkbox"/>		
	<i>and any of the following</i>	(a) <input type="checkbox"/>	(b) <input type="checkbox"/>	(c) <input type="checkbox"/>	(d) <input type="checkbox"/>	(e) <input type="checkbox"/>
A2 <input type="checkbox"/>	<i>and one of the following</i>	$\geq 80\%$ <input type="checkbox"/>	$\geq 50\%$ <input type="checkbox"/>	$\geq 30\%$ <input type="checkbox"/>		
	<i>and any of the following</i>	(a) <input type="checkbox"/>	(b) <input type="checkbox"/>	(c) <input type="checkbox"/>	(d) <input type="checkbox"/>	(e) <input type="checkbox"/>
A3 <input type="checkbox"/>	<i>and one of the following</i>	$\geq 80\%$ <input type="checkbox"/>	$\geq 50\%$ <input type="checkbox"/>	$\geq 30\%$ <input type="checkbox"/>		
	<i>and any of the following</i>	(b) <input type="checkbox"/>	(c) <input type="checkbox"/>	(d) <input type="checkbox"/>	(e) <input type="checkbox"/>	
A4 <input type="checkbox"/>	<i>and one of the following</i>	$\geq 80\%$ <input type="checkbox"/>	$\geq 50\%$ <input type="checkbox"/>	$\geq 30\%$ <input type="checkbox"/>		
	<i>and any of the following</i>	(a) <input type="checkbox"/>	(b) <input type="checkbox"/>	(c) <input type="checkbox"/>	(d) <input type="checkbox"/>	(e) <input type="checkbox"/>

**B. Geographic range in the form of either B1 (extent of occurrence) and/or B2 (area of occupancy)**

B1 <input checked="" type="checkbox"/>	<i>and one of the following</i>	$< 100 \text{ km}^2$ <input type="checkbox"/>	$< 5,000 \text{ km}^2$ <input type="checkbox"/>	$< 20,000 \text{ km}^2$ <input type="checkbox"/>		
		(a) <input checked="" type="checkbox"/>	<i>and one of the following</i>	1 <input type="checkbox"/>	$\leq 5$ <input checked="" type="checkbox"/>	$\leq 10$ <input type="checkbox"/>
	<i>and at least two of the following three conditions [(a), (b), (c)]</i>	(b) <input checked="" type="checkbox"/>	<i>and any of the following</i>	(i) <input type="checkbox"/>	(ii) <input type="checkbox"/>	(iii) <input checked="" type="checkbox"/>
		(c) <input type="checkbox"/>	<i>and any of the following</i>	(i) <input type="checkbox"/>	(ii) <input type="checkbox"/>	(iii) <input type="checkbox"/>
B2 <input checked="" type="checkbox"/>	<i>and one of the following</i>	$< 10 \text{ km}^2$ <input type="checkbox"/>	$< 500 \text{ km}^2$ <input type="checkbox"/>	$< 2,000 \text{ km}^2$ <input type="checkbox"/>		
		(a) <input checked="" type="checkbox"/>	<i>and one of the following</i>	1 <input type="checkbox"/>	$\leq 5$ <input checked="" type="checkbox"/>	$\leq 10$ <input type="checkbox"/>
	<i>and at least two of the following three conditions [(a), (b), (c)]</i>	(b) <input checked="" type="checkbox"/>	<i>and any of the following</i>	(i) <input type="checkbox"/>	(ii) <input type="checkbox"/>	(iii) <input checked="" type="checkbox"/>
		(c) <input type="checkbox"/>	<i>and any of the following</i>	(i) <input type="checkbox"/>	(ii) <input type="checkbox"/>	(iii) <input type="checkbox"/>

**C. Small population size and decline**

C1 <input type="checkbox"/>	<i>and one of the following</i>	$< 250$ <input type="checkbox"/>	$< 2,500$ <input type="checkbox"/>	$< 10,000$ <input type="checkbox"/>		
	<i>and one of the following</i>	25 % <input type="checkbox"/>	20 % <input type="checkbox"/>	10 % <input type="checkbox"/>		
C2 <input type="checkbox"/>	<i>and one of the following</i>	$< 250$ <input type="checkbox"/>	$< 2,500$ <input type="checkbox"/>	$< 10,000$ <input type="checkbox"/>		
	<i>and at least two of the following three conditions [(a)(i), (a)(ii), (b)] plus applicable size and/or percentage</i>	(a)(i) <input type="checkbox"/>	$\leq 50$ <input type="checkbox"/>	$\leq 250$ <input type="checkbox"/>	$< 1,000$ <input type="checkbox"/>	
		(a)(ii) <input type="checkbox"/>	90 - 100 % <input type="checkbox"/>	95 - 100 % <input type="checkbox"/>	100 % <input type="checkbox"/>	
		(b) <input type="checkbox"/>				

**D. Very small or restricted population**

D <input checked="" type="checkbox"/>	<i>and one of the following</i>	$< 50$ <input type="checkbox"/>	$< 250$ <input checked="" type="checkbox"/>	D1 ( $< 1,000$ ) <input type="checkbox"/>
D2 <input type="checkbox"/>	<i>and one of the following</i>	$< 20 \text{ km}^2$ <input type="checkbox"/>	$\leq 5$ <input type="checkbox"/>	

**E. Quantitative analysis**

E <input type="checkbox"/>	<i>and one of the following</i>	$\geq 50$ <input type="checkbox"/>	$\geq 20\%$ <input type="checkbox"/>	$\geq 10\%$ <input type="checkbox"/>
----------------------------	---------------------------------	------------------------------------	--------------------------------------	--------------------------------------

The following table is to assist with determining eligibility under criteria B, C & D

<b>What is the total number of mature individuals?</b>						
Global	< 50 <input type="checkbox"/>	< 250 <input type="checkbox"/>	< 1,000 <input type="checkbox"/>	< 2,500 <input type="checkbox"/>	< 10,000 <input type="checkbox"/>	Unknown <input type="checkbox"/>
National	< 50 <input type="checkbox"/>	< 250 <input type="checkbox"/>	< 1,000 <input type="checkbox"/>	< 2,500 <input type="checkbox"/>	< 10,000 <input type="checkbox"/>	Unknown <input type="checkbox"/>
WA	< 50 <input type="checkbox"/>	< 250 <input type="checkbox"/>	< 1,000 <input type="checkbox"/>	< 2,500 <input type="checkbox"/>	< 10,000 <input type="checkbox"/>	Unknown <input type="checkbox"/>
How has this number been determined or calculated? suspected						
<b>Reliability of total number of individuals (other than for 'unknown' above)</b>						
Global	Known <input type="checkbox"/>	Estimated <input type="checkbox"/>	Modelled <input type="checkbox"/>	Expert opinion <input type="checkbox"/>		
National	Known <input type="checkbox"/>	Estimated <input type="checkbox"/>	Modelled <input type="checkbox"/>	Expert opinion <input type="checkbox"/>		
WA	Known <input type="checkbox"/>	Estimated <input type="checkbox"/>	Modelled <input type="checkbox"/>	Expert opinion <input type="checkbox"/>		
If from expert opinion, provide name of expert: Authors and reviewers						
<b>How many subpopulations/locations?</b>						
Global	1 <input type="checkbox"/>	≤ 5 <input type="checkbox"/>	≤ 10 <input type="checkbox"/>	Unknown <input type="checkbox"/>		
National	1 <input type="checkbox"/>	≤ 5 <input type="checkbox"/>	≤ 10 <input type="checkbox"/>	Unknown <input type="checkbox"/>		
WA	1 <input type="checkbox"/>	≤ 5 <input type="checkbox"/>	≤ 10 <input type="checkbox"/>	Unknown <input type="checkbox"/>		
How has this number been determined or calculated?						
<b>Reliability of number of populations/locations (other than for unknown above)</b>						
Global	Known <input type="checkbox"/>	Estimated <input type="checkbox"/>	Modelled <input type="checkbox"/>	Expert opinion <input type="checkbox"/>		
National	Known <input type="checkbox"/>	Estimated <input type="checkbox"/>	Modelled <input type="checkbox"/>	Expert opinion <input type="checkbox"/>		
WA	Known <input type="checkbox"/>	Estimated <input type="checkbox"/>	Modelled <input type="checkbox"/>	Expert opinion <input type="checkbox"/>		
If from expert opinion, provide name of expert:						
<b>What is the total number and percentage of mature individuals in each subpopulation/location?</b> (include all known subpopulations/ locations; add subpop./ location name or reference below and add additional rows as required)						
Subpop./ location 1	1 <input type="checkbox"/>	≤ 5 <input type="checkbox"/>	≤ 10 <input type="checkbox"/>	Unknown <input type="checkbox"/>		
	90 - 100 % <input type="checkbox"/>	95 – 100 % <input type="checkbox"/>	100 % <input type="checkbox"/>	Unknown <input type="checkbox"/>		
Subpop./ location 2	1 <input type="checkbox"/>	≤ 5 <input type="checkbox"/>	≤ 10 <input type="checkbox"/>	Unknown <input type="checkbox"/>		
	90 - 100 % <input type="checkbox"/>	95 – 100 % <input type="checkbox"/>	100 % <input type="checkbox"/>	Unknown <input type="checkbox"/>		
How has this number been determined or calculated?						
<b>Reliability of the total number of mature individuals in each subpopulation/location? (other than for unknown above)</b>						
	Known <input type="checkbox"/>	Estimated <input type="checkbox"/>	Modelled <input type="checkbox"/>	Expert opinion <input type="checkbox"/>		
If from expert opinion, provide name of expert:						