

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)*

Species name (scientific and common name):	<i>Stylidium semaphorum</i>
Nomination for (addition, deletion, change):	Addition
Nominated conservation category and criteria:	CR: B1ab(v)+B2ab(v); C2a(i,ii); D

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"/>
A.	Population size reduction	•
B.	Geographic range	•
C.	Small population size and decline	•
D.	Very small or restricted population	•
E.	Quantitative analysis	•

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

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

Current conservation status				
Scientific name:	<i>Stylidium semaphorum</i>			
Common name:	None			
Family name:	Stylidiaceae	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	2006	Critically Endangered	B1ab(v)+B2ab(v); C2a(i,ii); D
	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"> this assessment meets the standard of evidence required by the Common Assessment Method to document the eligibility of the species under the IUCN criteria; 			Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Comments:				
<ul style="list-style-type: none"> surveys of the species were adequate to inform the assessment; 			Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Comments:	Further survey occurred in 2005, 2008 and 2012. The total number of mature individuals increased to 118 in 2008 but then declined to 28 in 2012. It is expected that the species will continue to decline without ongoing management if years of low rainfall follow.			
<ul style="list-style-type: none"> 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. 			Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Comments:	Assessment is consistent, and criteria remains constant.			
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"/>	
What are the IUCN Red List criteria that support the recommended conservation status category?		B1ab(v)+B2ab(v); C2a(i,ii); D			
Eligibility against the IUCN Red List criteria (A, B, C, D and E)					
<i>Provide justification for the nominated conservation status; is the species eligible or ineligible for listing against the five criteria. For delisting, provide details for why the species no longer meets the requirements of the current conservation status.</i>					
A.	Population size reduction (evidence of decline)	<ul style="list-style-type: none"> The total known number of mature individuals increased from one mature individual in 2002 to 118 in 2008. However the number of individuals then declined to 28 in 2012. This reduction may be longer term fluctuation and hence a percentage decline not able to be calculated. Unable to assess 			
B.	Geographic range (EOO and AOO, number of locations and evidence of decline)	<ul style="list-style-type: none"> (B1) Using Minimum Convex Polygon (MCP) the EOO is approximately 0.04 km² which was calculated by drawing a polygon around the plants. (B2) Area of Occupancy is estimated 4 km² using the 2km x 2km grid method. (a) Only known from a single location north of Bindoon. (b) Continuing decline observed and projected: (v) The subpopulation showed a significant decline in the number of mature individuals from 118 in 2008 to 28 in 2012. This may be a response to drought as it often does not flower when rainfall is low. Further decline is possible if the species suffers successive years of drought. A continuing decline in the number of mature individuals is expected without ongoing management. Meets criteria for Critically Endangered B1ab(v)+B2ab(v) 			
C.	Small population size and decline (population size, distribution and evidence of decline)	<ul style="list-style-type: none"> (C2) Known from 28 mature individuals in total. (a) Plant numbers declined from 118 in 2008 to 28 in 2012. (i,ii) <50 individuals occur in a single subpopulation (100%). Meets criteria for Critically Endangered C2a(i,ii) 			
D.	Very small or restricted population (population size)	<ul style="list-style-type: none"> (D) There are 28 mature individuals in total. Meets Critically Endangered D 			
E.	Quantitative analysis (statistical probability of extinction)	<ul style="list-style-type: none"> No information to assess. 			
Summary of assessment information					
EOO	0.036 km ² (MCP), calculated to 4 km ² so	AOO	4 km ² (2 km x 2 km grid), mapped area	Generation length	-

	as not less than the estimated AOO.		of subpopulation is 0.036 km ² .		
No. locations	1	Severely fragmented	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Unknown <input type="checkbox"/>		
No. subpopulations	1	No. mature individuals	28		
Percentage global population within Australia			100		
Percentage population decline over 10 years or 3 generations			Unknown		
Threats (detail how the species is being impacted)					
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>	
Small population size <ul style="list-style-type: none">The species is only known from a single subpopulation, placing it under serious threat from a single threatening process. Past, current and future		Whole population		Catastrophic	
Grazing (rabbits) <ul style="list-style-type: none">Grazing impacts on the establishment of seedlings and thereby limiting natural recruitment.Disturbance to plants and roots from rabbit diggings. Current and future		Whole population		Severe	
Poor recruitment <ul style="list-style-type: none">The species may require a disturbance to recruit, but if disturbance is too frequent or is followed by a drought, the population may be impacted. Current, future		Whole population		High	
Altered fire regimes <ul style="list-style-type: none">The species appears to require fire to stimulate germination. However frequent fire would deplete the soil seed store. Fire is likely to facilitate weed invasion and should be followed up with appropriate weed control. Past, current and future		Whole population		Severe	
Drought <ul style="list-style-type: none">Equivalent to a major disturbance.May delay surveys for additional subpopulations given that plants are unlikely to flower and be more difficult to detect.Expected to be exacerbated by climate change. Past, current, future		Whole population		Severe	

<p>Weeds</p> <ul style="list-style-type: none"> Weeds suppress early plant growth by competing for soil moisture, nutrients and light. They also increase the fire hazard. At present they are considered a minor threat. <p>Past, present and future</p>	Whole population	Severe
Management and Recovery		
Is there a Recovery Plan (RP) or Conservation Management Plan operational for the species?		Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
<p><i>List all relevant recovery or management plans (including draft, in-preparation, out-of-date, national and State/Territory recovery plans, recovery plans for other species or ecological communities, or other management plans that may benefit or be relevant to the nominated species).</i></p> <ul style="list-style-type: none"> Department of Environment and Conservation (2011) <i>Stylidium semaphorum</i> Interim Recovery Plan 2011–2016. Interim Recovery Plan No. 307. Department of Environment and Conservation, Western Australia. 		
<p><i>List current management or research actions, if any, that are being undertaken that benefit the conservation of the species.</i></p> <ul style="list-style-type: none"> Monitoring and surveys have been carried out to determine plant numbers and impact of threats; Protecting the sites from fire unless required for ecological reasons, and implemented early intervention in any wildfires which may threaten the site; Surveying for additional subpopulations; Collecting seed for storage at Parks and Wildlife’s Threatened Flora Seed Centre. 		
<p><i>List further recommended management or research actions, if any, that would benefit the conservation of the species. Please ensure that this section addresses all identified threats.</i></p> <p>Management</p> <ul style="list-style-type: none"> Monitoring the populations for evidence of rabbit or weed impacts, or changes in plant or site health; Undertake trial burn at the subpopulation to attempt to stimulate recruitment; Investigate potential for fencing or caging at subpopulation to protect from grazing; Control rabbits through scatter baiting; Develop and implement a fire management strategy, including associated weed control measures and the need for and method of the construction and maintenance of firebreak; Develop a translocation proposal and select a disease free translocation site; Map habitat critical to the survival of the species to facilitate its protection and appropriate management; Promote awareness of the species with general public. <p>Research</p> <ul style="list-style-type: none"> Research biology and ecology of the species, with a focus on pollination effectiveness, seed viability, conditions required for natural germination, response to threats and disturbances and reproductive biology. 		
Nomination prepared by:		
Contact details:		
Date submitted:	15/9/2016	
<p><i>If the nomination has been refereed or reviewed by experts, please provide their names and contact details:</i></p>		

***Stylidium semaphorum* location showing remnant vegetation and conservation estate**



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
Subpopulation 1: Udumung Nature Reserve (965), Great Northern Highway, Wannamal	Nature reserve	2001: 1 2003: 2 2004: 0 2005: 55 2008: 118 2012: 28 (2 dead)	3.6 ha	Habitat excellent. Plants threatened by drought and grazing.	Small population size (future) Grazing (rabbits) (present, future) Weeds (future) Inappropriate fire regimes (future) Poor recruitment (present, future) Drought (past, present, future) Climate change (future)	Develop a fire management plan Undertake rabbit control Collect seed and test viability, conduct regeneration trials Establish new populations through translocation Control weeds



**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.

1. TAXON: <i>Stylidium semaphorum</i>	Author Lowrie & Kenneally	Hybrid <input type="checkbox"/>
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2. CURRENT LIST/SCHEDULE: Declared Rare:	Threatened (extant) <input checked="" type="checkbox"/>	or	Priority <input type="checkbox"/>
Presumed Extinct <input type="checkbox"/>	Priority <input type="checkbox"/>		None <input type="checkbox"/>

3. PROPOSED LIST/SCHEDULE:	
Threatened [EPBC Act as CR: B1ab(v)+B2ab(v); C2a(i,ii); D]	Presumed Extinct <input type="checkbox"/>
Priority <input type="checkbox"/>	None <input type="checkbox"/>

4. PROPOSED IUCN THREAT CATEGORY (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"/>
IUCN ranking CR: B1ab(v)+B2ab(v); C2a(i,ii); D							

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

6. TAXONOMIC HISTORY/AFFINITY:
<i>Stylidium semaphorum</i> was named by Lowrie & Kenneally (1997: <i>Nuytsia</i> , 362). It belongs to a small and unusual group of trigger plants characterised by elongated stems densely covered by small, overlapping leaves. It was named from material collected at Udumung Nature Reserve, south of New Norcia. No additional populations are known.
Location and collection number of voucher specimens:
PERTH 2856352 - R. Erickson s.n.
PERTH 4431227 - A. Lowrie 1355
PERTH 4431197 - A. Lowrie 804
PERTH 4431219 - A. Lowrie 333
PERTH 4431200 - A. Lowrie 298
PERTH 7307934 - FH 2661
PERTH 8022070 - JAW 1547

7. RECENT SURVEY EFFORT (refer to the CALM guidelines for survey requirements):

- Since discovering this species, Allen Lowrie has surveyed in the vicinity but has not found any additional populations (Kevin Kenneally pers. comm.).
- Fred Hort visited the Udumung population with Allen Lowrie a couple of years ago and they found only 2 plants. Fred has since done a substantial amount of collection/survey work in the vicinity of New Norcia and Bindoon but has not come across any new populations.
- I visited Udumung Nature Reserve in October 2004 and failed to find any plants. My survey was timed to coincide with peak flowering and so it is highly unlikely that I overlooked a population of any great size.
- Further surveys were conducted in 2005, 2008 and 2012 by DPaW staff and the Horts.

8. THREATS:

The main threats are associated with lack of recruitment, rabbits, altered fire regimes and drought:

- May require fire to stimulate germination, also killed by drought;
- Seedling mortality and recruitment impacted by grazing;
- Drought a potential threat. May delay surveys for new subpopulations as plants are unlikely to flower making detection difficult;
- Weeds are a minor threat at present.

9. RESEARCH KNOWLEDGE/NEEDS:

- *Stylidium semaphorum* belongs to an unusual group of five trigger plants characterised by elongated stems densely covered by small, overlapping leaves. It is distinctive from its allies on account of the following combination of features: upper pair of corolla lobes well spread; throat appendages present, hypanthium glandular, and calyx lobes prominently mucronate and brown. Unlike its morphological allies, *S. semaphorum* grows in *Dryandra* scrub associated with wandoo woodland.
- No data is available on this species breeding biology or regeneration requirements.

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

- Located within a conservation reserve but population numbers relatively low.
- *Stylidium semaphorum* appears to be very rare and further survey work is recommended. In view of its spindly habit form, this species is readily overlooked when not in flower. Surveys must be performed during peak flowering time (early to mid October).
- May require fire for successful regeneration.
- Weed invasion and/or fires in successive years pose a threat to this species survival. It is not known whether this species is susceptible to disease.
- Seed banking is required.

11. DISTRIBUTION BY CALM REGION:

Kimberley []	Pilbara []	Midwest []	Goldfields []
Wheatbelt []	Swan [X]	Central Forest []	Southern Forest []
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
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A. Conservation Reserves (National Parks, Nature Reserves, State Forests)

Known only from Udumung Nature Reserve on Great Northern Highway, S of New Norcia
Population of 2 plants is located c. 1.2 km S of Hay Flat road growing "in dense *Dryandra sessilis* thickets on the northern margins of a closed gravel and road base material dump" (Lowrie & Kenneally 1997).

2012 population count: 28

B. Other Crown Lands**C. Private/Leasehold Lands****D. Unconfirmed Locations****13. TRENDS IN POPULATION SIZE & RANGE:****A. Previous**

- First collected by Rica Erickson in 1966 (as *Stylidium* sp.). No indication of population size given.
- Known "from a small population" when described by Lowrie & Kenneally in 1997.
- Fred Hort visited this population with Allen Lowrie in 2003 and only saw 2 plants.
- I visited Udumung Nature Reserve in October 2004 and failed to find any plants. The scrub is quite thick in places; however, I would not have overlooked a large number of plants.
- A full survey by the Horts in 2005 located 55 mature individuals.
- Further survey by Parks and Wildlife staff in 2008 located 118 mature individuals.

Current

- Subpopulation 1 2001: 1
 2003: 2
 2004: 0
 2005: 55
 2008: 118
 2012: 28

14. SUMMARY STATUS ASSESSMENT:

Stylidium semaphorum is known from only one population of very few plants (28 in 2012) within Udumung Nature Reserve. This species is recommended for DRF at the level of endangered in view of its restricted distribution and low population numbers. Further surveys are required in order to establish whether this species warrants recognition as Critically Endangered.

Threats include poor recruitment, grazing, fire and drought.

15. PROPOSED BY:

DATE: 21/Jan/2005

Updated 15/9/2016 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**

or Email address:

johnri@calm.wa.gov.au

or Fax Address:

(08) 9334 0278 (Phone enquiries: 9334

0422)

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

IUCN RED LIST CATEGORIES AND CRITERIA VERSION 3.1

	CRITICALLY ENDANGERED	ENDANGERED	VULNERABLE
<p>(A) REDUCTION IN POPULATION SIZE BASED ON ANY OF</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>	<p>≥90%</p> <p>≥80%</p> <p>≥80%</p> <p>≥80%</p>	<p>≥70%</p> <p>≥50%</p> <p>≥50%</p> <p>≥50%</p>	<p>≥50%</p> <p>≥30%</p> <p>≥30%</p> <p>≥30%</p>
<p>(B) GEOGRAPHIC RANGE IN THE FORM OF EITHER B1 OR B2</p> <p>1) Extent of occurrence <1 km² and estimates indicating at least 2 of a-c</p> <p>2) Area of occupancy <1 km² and estimates indicating at least 2 of a-c</p> <p>(a) Severely fragmented or known to exist at no more than 1 location</p> <p>(b) Continuing decline observed, inferred or projected, in ANY 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) number of mature individuals.</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) number of locations or sub-populations, (iv) number of mature individuals.</p>	<p><100 km²</p> <p><10 km²</p> <p>one</p>	<p><5 000 km²</p> <p>500 km²</p> <p>five</p>	<p><20 000 km²</p> <p><2 000 km²</p> <p>ten</p>
<p>(C) POPULATION ESTIMATED TO NUMBER 2 MATURE INDIVIDUALS AND EITHER</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) OR</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) OR</p> <p>(ii) at least 90% of mature individuals in one subpopulation</p> <p>(b) Extreme fluctuations in number of mature individuals</p>	<p><250</p> <p>25%</p> <p>50</p>	<p><2 500</p> <p>20%</p> <p>250</p>	<p><10 000</p> <p>10%</p> <p>1 000</p>
<p>(D) (CR and EN) POPULATION SIZE ESTIMATED TO BE LESS THAN 50 MATURE INDIVIDUALS</p> <p>(D) (VU ONLY) POPULATION VERY SMALL OR RESTRICTED IN THE FORM OF EITHER</p> <p>1) population estimated to number less than _____ mature individuals. OR</p> <p>2) population with a very restricted area of occupancy (typically less than 20 km²) 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>	<p>50</p> <p>not applicable</p> <p>not applicable</p>	<p>250</p> <p>not applicable</p> <p>not applicable</p>	<p>not applicable</p> <p>1000 applies</p>
<p>(E) QUANTITATIVE ANALYSIS SHOWING PROBABILITY OF EXTINCTION IN THE WILD IS AT LEAST _____</p>	<p>50% within ten years or three generations, whichever is the longer (up to a maximum of 100 years)</p>	<p>20% within 20 years or five generations, whichever is the longer (up to a maximum of 100 years)</p>	<p>10% within 100 years</p>