



Consultation Document on Listing Eligibility and Conservation Actions

***Olearea arckaringensis* (Arckaringa daisy)**

You are invited to provide your views and supporting reasons related to:

- 1) the eligibility of *Olearea arckaringensis* (Arckaringa daisy) for inclusion on the EPBC Act threatened species list in the Critically Endangered category; and
- 2) the necessary conservation actions for the above species.

Evidence provided by experts, stakeholders and the general public are welcome. Responses can be provided by any interested person.

Anyone may nominate a native species, ecological community or threatening process for listing under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) or for a transfer of an item already on the list to a new listing category. The Threatened Species Scientific Committee (the Committee) undertakes the assessment of species to determine eligibility for inclusion in the list of threatened species and provides its recommendation to the Australian Government Minister for the Environment.

Draft information for your consideration of the eligibility of this species for listing as critically endangered starts at page 3 and information associated with potential conservation actions for this species starts at page 6. To assist with the Committee's assessment, the Committee has identified a series of specific questions on which it seeks your guidance at page 8.

Responses are to be provided in writing either by email to:
species.consultation@environment.gov.au

or by mail to:

The Director
Terrestrial Species Conservation Section
Wildlife, Heritage and Marine Division
Department of the Environment
PO Box 787
Canberra ACT 2601

Responses are required to be submitted by 27 May 2016.

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General background information about listing threatened species

The Australian Government helps protect species at risk of extinction by listing them as threatened under Part 13 of the EPBC Act. Once listed under the EPBC Act, the species becomes a Matter of National Environmental Significance (MNES) and must be protected from significant impacts through the assessment and approval provisions of the EPBC Act. More information about threatened species is available on the department's website at:

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

Public nominations to list threatened species under the EPBC Act are received annually by the department. In order to determine if a species is eligible for listing as threatened under the EPBC Act, the Threatened Species Scientific Committee (the Committee) undertakes a rigorous scientific assessment of its status to determine if the species is eligible for listing against a set of criteria. These criteria are available on the Department's website at:

<http://www.environment.gov.au/biodiversity/threatened/pubs/guidelines-species.pdf>.

As part of the assessment process, the Committee consults with the public and stakeholders to obtain specific details about the species, as well as advice on what conservation actions might be appropriate. Information provided through the consultation process is considered by the Committee in its assessment. The Committee provides its advice on the assessment (together with comments received) to the Minister regarding the eligibility of the species for listing under a particular category and what conservation actions might be appropriate. The Minister decides to add, or not to add, the species to the list of threatened species under the EPBC Act. More detailed information about the listing process is at:

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

To promote the recovery of listed threatened species and ecological communities, conservation advices and where required, recovery plans are made or adopted in accordance with Part 13 of the EPBC Act. Conservation advices provide guidance at the time of listing on known threats and priority recovery actions that can be undertaken at a local and regional level. Recovery plans describe key threats and identify specific recovery actions that can be undertaken to enable recovery activities to occur within a planned and logical national framework. Information about recovery plans is available on the department's website at:

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

Information about this consultation process

Responses to this consultation can be provided electronically or in hard copy to the contact addresses provided on Page 1. All responses received will be provided in full to the Committee and then to the Australian Government Minister for the Environment.

In providing comments, please provide references to published data where possible. Should the Committee use the information you provide in formulating its advice, the information will be attributed to you and referenced as a 'personal communication' unless you provide references or otherwise attribute this information (please specify if your organisation requires that this information is attributed to your organisation instead of yourself). The final advice by the Committee will be published on the department's website following the listing decision by the Minister.

Information provided through consultation may be subject to freedom of information legislation and court processes. It is also important to note that under the EPBC Act, the deliberations and recommendations of the Committee are confidential until the Minister has made a final decision on the nomination, unless otherwise determined by the Minister.

Olearia arckaringensis

Arckaringa daisy

Taxonomy

Conventionally accepted as *Olearia arckaringensis* P.J. Lang (Arckaringa daisy).

Species Information

Description

The Arckaringa daisy is from the Asteraceae family and is a small, compact, rounded and long lived perennial shrub which grows to 30 cm high from a woody base. Leaves are greyish-white to light greenish-grey with woolly hairs. Flowers are bisexual and are usually lavender in colour or occasionally white (Lang, 2008).

Distribution

The Arckaringa daisy is endemic to the Arckaringa Hills in northern South Australia (Lang, 2008). It occurs within the boundaries of the Arckaringa Hills state heritage area which is significant as an example of Badlands or Breakaway topography which has a number of rare plant species (DENR, 2016).

Relevant Biology/Ecology

The Arckaringa daisy is an arid zone species that occurs in 'low, very open woodland' of *Acacia papyrocarpa* (western myall) and/or *Eucalyptus socialis* (red mallee) with sparse *Acacia tetragonophylla* (dead finish) shrubs. It is typically found on gypseous substrates and has the ability to regrow from its woody basal parts, which is useful in the arid zone (Lang, 2008).

Threats

Table 1 – Threats

Threat factor	Threat type	Threat status	Evidence base
Cattle grazing and trampling	known	current	The species occurs on a pastoral lease which operates as a cattle station. This species occurs on gypseous soils, which are very fragile and prone to erosion following disturbance (DEH, 2009).
Sheep grazing and trampling	known	past	The species occurs on a pastoral lease which operated as a sheep station in the early 20 th century. This species occurs on gypseous soils, which are very fragile and prone to erosion following disturbance (DEH, 2009).
Illegal collection by wildflower enthusiasts and horticulturalists	potential	current	No evidence of this currently occurring but considered a potential threat to this species given the species occurs in public areas.
Mining	potential	current	There is currently no evidence of the species being directly affected by mining or exploration activities. However, there are both coal and shale oil licences that occur across the whole of the Arckaringa Basin which includes the Arckaringa Hills where this species is found.

Assessment of available information in relation to the EPBC Act Criteria and Regulations

Criterion 1. Population size reduction (reduction in total numbers)			
Population reduction (measured over the longer of 10 years or 3 generations) based on any of A1 to A4			
	Critically Endangered Very severe reduction	Endangered Severe reduction	Vulnerable Substantial reduction
A1	≥ 90%	≥ 70%	≥ 50%
A2, A3, A4	≥ 80%	≥ 50%	≥ 30%
<div> <div> A1 Population reduction observed, estimated, inferred or suspected in the past and the causes of the reduction are clearly reversible AND understood AND ceased. A2 Population reduction observed, estimated, inferred or suspected in the past where the causes of the reduction may not have ceased OR may not be understood OR may not be reversible. A3 Population reduction, projected or suspected to be met in the future (up to a maximum of 100 years) [(a) cannot be used for A3] 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. </div> <div> based on any of the following </div> <div> (a) direct observation [except A3] (b) an index of abundance appropriate to 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, hybridization, pathogens, pollutants, competitors or parasites </div> </div>			

Evidence:

The total population size for this species is estimated to be less than 200 plants (Lang, 2008). There are currently no data available to indicate if there has been an increase in population size or a very severe, severe or substantial reduction in the population size of the species over any relevant time frame.

The data presented above appears to be insufficient to demonstrate if the species is eligible for listing under this criterion. However, the purpose of this consultation document is to elicit additional information to better understand the species' status. This conclusion should therefore be considered to be tentative at this stage, as it may be changed as a result of responses to this consultation process.

Criterion 2. Geographic distribution as indicators for either extent of occurrence AND/OR area of occupancy			
	Critically Endangered Very restricted	Endangered Restricted	Vulnerable Limited
B1. Extent of occurrence (EOO)	< 100 km²	< 5,000 km²	< 20,000 km²
B2. Area of occupancy (AOO)	< 10 km²	< 500 km²	< 2,000 km²
AND at least 2 of the following 3 conditions indicating distribution is precarious for survival:			
(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			

Evidence:

Based on 2 x 2 km grid cells, the scale recommended for assessing geographic distribution by the IUCN (IUCN, 2014), the species' area of occupancy has been estimated to be 4 km², and the extent of occurrence is estimated to be 4 km², which is very restricted (Department of the Environment, 2015). The species is only known from one location. Given this species occurs on private land, at a single location and that it is subject to a variety of threats as described in Table 1 above, it can be inferred that there will be a further decline in the extent of occurrence, area of occupancy and number of mature individuals.

The data presented above appears to demonstrate that the species is **eligible for listing as Critically Endangered** under this criterion. However, the purpose of this consultation document is to elicit additional information to better understand the species' status. This conclusion should therefore be considered to be tentative at this stage, as it may be changed as a result of responses to this consultation process.

Criterion 3. Population size and decline				
		Critically Endangered Very low	Endangered Low	Vulnerable Limited
Estimated number of mature individuals		< 250	< 2,500	< 10,000
AND either (C1) or (C2) is true				
C1	An observed, estimated or projected continuing decline of at least (up to a max. of 100 years in future)	Very high rate 25% in 3 years or 1 generation (whichever is longer)	High rate 20% in 5 years or 2 generation (whichever is longer)	Substantial rate 10% in 10 years or 3 generations (whichever is longer)
C2	An observed, estimated, projected or inferred continuing decline AND its geographic distribution is precarious for its survival based on 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			

Evidence:

The total population size for this species is estimated to be less than 200 plants, which is very low (Lang, 2008). Given this species occurs on private land and is subject to a variety of threats as described in Table 1 above, it can be inferred that there will be a further decline in the population size and the number of mature individuals in the only known population of less than 250 plants.

The data presented above appears to demonstrate that the species is **eligible for listing as Endangered** under this criterion. However, the purpose of this consultation document is to elicit additional information to better understand the species' status. This conclusion should therefore be considered to be tentative at this stage, as it may be changed as a result of responses to this consultation process.

Criterion 4. Number of mature individuals			
	Critically Endangered Extremely low	Endangered Very Low	Vulnerable Low
Number of mature individuals	< 50	< 250	< 1,000

Evidence:

The total population size for this species is estimated to be less than 200 plants, which is very low (Lang, 2008).

The data presented above appears to demonstrate that the species is **eligible for listing as Endangered** under this criterion. However, the purpose of this consultation document is to elicit additional information to better understand the species' status. This conclusion should therefore be considered to be tentative at this stage, as it may be changed as a result of responses to this consultation process.

Criterion 5. Quantitative Analysis			
	Critically Endangered Immediate future	Endangered Near future	Vulnerable Medium-term future
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

Evidence:

Population viability analysis appears not to have been undertaken for this species, therefore there are insufficient data to demonstrate if the species is eligible for listing under this criterion. However, the purpose of this consultation document is to elicit additional information to better understand the species' status. This conclusion should therefore be considered to be tentative at this stage, as it may be changed as a result of responses to this consultation process.

Conservation Actions

Recovery Plan

A decision about whether there should be a recovery plan for this species has not yet been determined. The purpose of this consultation document is to elicit additional information to help inform this decision.

Primary Conservation Actions

1. Prevent habitat clearing and disturbance.
2. Maintain and enhance existing and potential habitat.
3. Enable recovery of additional sites and/or populations.
4. Effectively administer the recovery effort.

Conservation and Management Priorities

Habitat loss disturbance and modifications

- Prevent habitat disturbance. Manage total grazing pressure and control access routes by installing and locking gates to suitably constrain cattle from access to known sites on private land and other land tenure.

- Ensure land managers are aware of the species' occurrence and provide protection measures against key and potential threats.

Impacts of domestic species

- Where livestock grazing occurs in the area, ensure land owners/managers use an appropriate management regime and stocking density that does not detrimentally affect this species to allow regeneration from seedlings/outside the growing season. This species is thought to be unpalatable to livestock but trampling is still considered an issue.

Propagation and other ex-situ recovery action

- Ensure a suitable seed collection is maintained - Continue to collect seed to store at the SA Seed Conservation Centre as a reliable form of insurance against the loss of genetic diversity should the species' habitat be destroyed.
- Propagate the species at the Botanic Gardens of South Australia for release into the wild at new introduction sites in suitable habitat.

Survey and Monitoring priorities

- More precisely assess population size, distribution, ecological requirements and the relative impacts of threatening processes.
- Undertake survey work where the species is known to occur as well as suitable habitat and potential habitat to locate any additional occurrences to more precisely assess population size and distribution.
- Design and implement a monitoring program or, if appropriate, support and enhance existing programs.
- Monitor the progress of recovery, including the effectiveness of management actions and the need to adapt them if necessary.

Information and Research priorities

- Investigate options for establishing additional populations, particularly in conservation reserves.
- Identify optimal fire regimes for regeneration (vegetative regrowth and/or seed germination), and response to other prevailing fire regimes.
- Assess the species' ecological requirements relevant to the persistence of the species.
- Undertake seed germination and/or vegetative propagation trials to determine the requirements for successful establishment.
- Fully establish which threats are affecting this species and prioritise these threats as appropriate.

Collective list of questions – your views

Biological information

1. Can you provide any information or estimates for this species on its longevity, average life span and generation length?

Population size

2. Has the survey effort for this species been adequate to determine its national adult population size? If not, please provide justification for your response. Do you accept the estimate of the total population size for the species? If not, please provide justification for your response.

Evidence of total population size change

3. Are you able to comment on the extent of decline in the species' total population size over the last approximately three generations? Please provide justification for your response.

If, because of uncertainty, you are unable to provide an estimate of decline, you may wish to provide an estimated range. If so, please choose one of the ranges suggested in the table below of ranges of decline, and also choose the level of confidence you have in this estimated range.

Decline estimated to be in the range of:

- ☐ 1–30% ☐ 31–50% ☐ 51–80% ☐ 81–100% ☐ 90–100%

Level of your confidence in this estimated decline:

- ☐ 0–30% - low level of certainty/ a bit of a guess/ not much information to go on
- ☐ 31–50% - more than a guess, some level of supporting evidence
- ☐ 51–95% - reasonably certain, suggests this range of decline
- ☐ 95–100% -high level of certainty, information indicates a decline within this range
- ☐ 99–100% - very high level of certainty, data are accurate within this range

4. Please provide (if known) any additional evidence which shows the population is stable, increasing or declining.

Current Distribution/range/extent of occurrence, area of occupancy

5. Has the survey effort for this species been adequate to determine its national distribution? If not, please provide justification for your response.
6. Is the distribution as described valid? If not, please provide justification for your response and provide alternate information.

General

7. Can you provide additional data or information relevant to this assessment?

Threats

8. Do you agree that the threats listed are correct and that their effect on the species is significant?
9. Can you provide additional or alternative information on threats, past, current or potential that may adversely affect this species at any stage of its life cycle?

Management

10. What planning, management and recovery actions are currently in place to support the protection and recovery of this species? To what extent have they been effective?
11. Can you recommend any additional or alternative specific threat abatement or conservation actions that would aid the protection and recovery of this species?
12. What individuals or organisations are currently, or potentially could be, involved in the management and recovery of this species?

References cited in the advice

DEH (Department of Environment and Heritage) (2009). South Australian Arid Lands Biodiversity Strategy - Stony Plains Conservation Priorities. South Australian Arid Lands NRM Board. Department for Environment and Heritage.

Department of the Environment (2015). AOO and EOO of *Arckaringa daisy* (*Olearia arckaringensis*). Department of the Environment. Canberra.

IUCN (2014). Guidelines for using the IUCN Red List Categories and Criteria. Version 11. Prepared by the Standards and Petitions Subcommittee. IUCN. Gland.

Lang PJ (2008). *Olearea arckaringensis* (Asteraceae: Astereae), a new endangered daisy-bush from northern South Australia. *Journal of the Adelaide Botanic Gardens* 22: 57–61.

Other sources cited in the advice

DEWNR (Department of Environment, Water and Natural Resources) (2016). Arckaringa Hills state heritage area fact sheet. Available on the Internet at:
http://www.environment.sa.gov.au/our-places/Heritage/Visiting_heritage_places/State_heritage_areas/Arckaringa_Hills