



Consultation Document on Listing Eligibility and Conservation Actions

Calochilus cupreus (copper beard-orchid)

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

- 1) the eligibility of *Calochilus cupreus* (copper beard-orchid) 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 8. To assist with the Committee's assessment, the Committee has identified a series of specific questions on which it seeks your guidance at page 10.

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 15 January 2016.

Contents of this information package	Page
General background information about listing threatened species	2
Information about this consultation process	2
Draft information about the copper beard-orchid and its eligibility for listing	3
Conservation actions for the species	8
References cited	13
Collective list of questions – your views	10

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.

Calochilus cupreus

copper beard-orchid

Taxonomy

Conventionally accepted as *Calochilus cupreus* R.S. Rogers

Species/Sub-species Information

Description

Calochilus cupreus (copper beard-orchid) (orchidaceae family) is a herbaceous, perennial orchid. The species has a thick-textured, narrow and channelled leaf up to 20 cm long. Flower stems are slender to 40 cm in height and dull green to purple with a bloom of large sterile bracts. Flowers are green with red stripes. Dorsal sepals are thin-textured, openly hooding the column. Petals are wide around the column with heavy red streaking, lateral sepals are broadly triangular, widely opening beside the labellum with prominent fertile bracts green at base rapidly becoming purple or sometimes pink. The labellum has a coppery tint and purple shiny smooth plate at the base, mid part with purple hairs, outer hairs becoming green, tipped purple. The column is prominent with a pale tip and conspicuous dark eye markings on column wings (Bates, 2011).

Distribution

The copper beard-orchid is endemic to the Willunga Basin within the southern Mount Lofty Ranges subregion in South Australia (as per the Interim Biogeographic Regionalisation for Australia or IBRA regions). The distribution of the copper beard-orchid occurs entirely within the Greater Adelaide metropolitan area. The species' current known distribution is now restricted to a small area within Aldinga Scrub Conservation Park, approximately 40 kilometres south of Adelaide.

According to the Adelaide Herbarium database (ADHERB) (State Herbarium of South Australia, 2014) there are five historic verified specimen records of the copper beard-orchid from three locations. These records are: one record from McLaren Vale (1883); three records from McLaren Vale (1917/18); and one record from Aldinga Scrub (1969). Historically, the species' extent of occurrence was likely to be less than 100 square kilometres (Bates pers. com., 2014).

Relevant Biology/Ecology

Life cycle

Age at sexual maturity is uncertain but is thought to occur within 3–5 years (Quarmby pers. com., 2014). Generation length is estimated to be approximately 15 years and longevity based on the evidence of related taxa is thought to be 20–30 years (Quarmby pers. com., 2014). Natural mortality rates are unknown as the species has only been actively monitored since 2008. Monitoring data and observations suggest that individuals can remain dormant as tubers for extended periods without emerging or flowering (Bates pers. com., 2014; Quarmby pers. com., 2014).

Reproduction and dispersal

Reproductive maturity (germination until flowering) is thought to be 3–5 years, depending on climatic and environmental conditions (Quarmby pers. com., 2014). Flowering has been observed from September to November, with many flowers opening together (Bates, 2011). Observations suggest that individuals tend not to emerge and flower in consecutive years, with obligate dormancy of tubers typically occurring for several growing seasons before re-emerging and flowering again (Quarmby pers. com., 2014).

Calochilus species are thought to be principally self-pollinating, although Scollid wasps

(*Campsomeris* spp.) have been observed pollinating *Calochilus* species through pseudocopulation (Bower and Branwhite, 1993). Seed movement is thought to occur via wind (aeolian) dispersal (Bates, 2011; Bates and Weber, 1990).

Habitat

The Aldinga Scrub subpopulation occurs in pink gum (*Eucalyptus fasciculosa*) and drooping sheoak (*Allocasuarina verticillata*) woodland on the deep sand of low hind dunes and adjoining undulating sand plains approximately 1 km inland from the coast. The understorey varies from open to moderately dense areas of shrubs, sedges, tussocks, herbs and grasses. The condition of the ground layer and presence of biological crusts or microphytic complexes, including fungi and mosses may be an important habitat requirement for the species. Most of the habitat considered suitable for the copper beard-orchid has been cleared for agriculture or degraded by livestock grazing (Bates pers. com., 2014).

Little has been documented on the ecological interactions of *Calochilus* species, but based on related taxa, the interactions are likely to include symbiotic relationships with fungal endophytes and provision of food resources for insects and other fauna. Orchids are regarded as important indicators of the health of bushland remnants (Newman, 2009). Orchids have intrinsic value as bio-indicators, provide early warning ('pit canaries') of changes in ecosystem health, and serve as research 'tools' for devising effective conservation strategies (Swarts and Dixon, 2009).

Threats

Past threats to the copper beard-orchid were the removal of suitable habitat through native vegetation clearance for agriculture and habitat degradation by livestock grazing. The last remaining area of occupied suitable habitat occurs in Aldinga Scrub Conservation Park. This reserve is small and entirely surrounded by residential and agricultural land (Wollaston, 1989).

The greatest threat to the species is considered to be weed invasion and site disturbance from recreational activities (Willson and Bignall, 2008). The species is threatened by degradation of habitat through invasion by environmental weeds (DENR, 2009) including perennial Veld grass (*Ehrharta calycina*), bridal creeper (*Asparagus asparagoides*), soursob (*Oxalis pes-caprae*), and European olive (*Olea europaea*). Perennial Veld grass has become increasingly dominant throughout Aldinga Scrub Conservation Park (Kraehenbuehl, 1989) and is the most significant weed problem in the reserve (DEP, 1992). Trampling from foot traffic, illegal horse riding, and occasional vehicle use in the park occur in the Aldinga Scrub Conservation Park (DEP, 1992).

Other threats identified for the copper beard-orchid include inappropriate fire regimes (Willson and Bignall, 2008; DENR, 2009), illegal collection and grazing by rabbits (*Oryctolagus cuniculus*) (Willson and Bignall, 2008).

Potential threats include, pesticide and fertiliser spray drift from agricultural land and erosion (DEP, 1992). The species occurs within 2 km of confirmed or suspected *Phytophthora* infestations (Willson and Bignall, 2008).

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:

It is estimated that over 90% of the species' suitable habitat has been cleared within the species' former distribution in the past 100 years. The copper beard-orchid was described as locally common near McLaren Vale in 1918 (Bates, 2011). However, despite active searching, the species has not been relocated at this location and the McLaren Vale populations are now considered extinct due to clearing of habitat for vineyards (DENR, 2009; Bates, 2007). Therefore, at least two populations at McLaren Vale have been lost within the last 90 years. Hence the species' total population trend is decreasing. This decline is primarily as a result of native vegetation clearance for agriculture which has now ceased as the species is only known to occur in a nature reserve. However, there is insufficient data to indicate if clearing occurred within any appropriate three generation period (estimated to be 45 years) and whether the population size reduction was substantial, severe or very severe. Population trends within the nature reserve are unknown.

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 km ²	< 5,000 km ²	< 20,000 km ²
B2. Area of occupancy (AOO)	< 10 km ²	< 500 km ²	< 2,000 km ²
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:

The species is only known to occur within Aldinga Scrub Conservation Park where it is highly localised to a few small patches in an area less than 50 square metres (Quarmby pers. com., 2014). Based on 2 x 2 km grid cells, the scale recommended for assessing geographic distribution by IUCN, the species' extent or occurrence and area of occupancy has been estimated to be 4 km², and is therefore very restricted.

The species appears to have a distribution that is precarious for survival for the following reasons:

a) the distribution of the species is considered to be one location as it is in an ecologically distinct area in which a single threat event can rapidly affect all the individuals (habitat degradation from weeds and disturbance) (IUCN, 2014).

b) The remaining location of this species is at Aldinga Scrub, a small isolated reserve of 265 hectares that is under increasing pressure from weed invasion, including extensive invasion by perennial Veld grass and other weeds as well as human disturbance pressures. A continued decline in the quality of habitat has been observed due to ongoing threats from weeds and site disturbance. A decline in the number of mature individuals, the area of occupancy, and extent of occurrence may also be inferred or projected from these threats and potentially other threats such as illegal collection.

The data presented above appear 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:			
(i) Number of mature individuals in each subpopulation	≤ 50	≤ 250	≤ 1,000
(a) (ii) % of mature individuals in one subpopulation =	90 – 100%	95 – 100%	100%
(b) Extreme fluctuations in the number of mature individuals			

The total number of mature individuals for this species is estimated to be between 90–100 individuals (Quarmby pers. com., 2014). Only 34 plants emerged and flowered in 2012 and 2013 (Quarmby pers. com., 2014).

The species is only known to occur within Aldinga Scrub Conservation Park where it is highly localised to a few small patches in an area less than 50 square metres (Quarmby pers. com., 2014). As described in criterion 2, the area is under increasing pressure from weed invasion and site disturbance/recreational impacts resulting in continual decline.

The one remaining restricted location of the species within 50 m² is considered to be a single population containing all of the known individual of the species. This remaining population is considered to contain <250 individuals but over the 2012 and 2013 period only 34 mature plants were found. All plants identified during these surveys were considered sexually mature individuals (Quarmby pers. com., 2014). Consequently, the species' geographic distribution is precarious for its survival.

The data presented above appear 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 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 number of mature individuals for this species is estimated to be between 90–100 individuals (Quarmby pers. com., 2014) and therefore is considered to be very low. Only 34 plants emerged and flowered in 2012 and 2013 (Quarmby pers. com., 2014).

The data presented above appear 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, so 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.

Conservation and Management Actions

Invasive species

- Identify and remove weeds such as perennial Veld grass, bridal creeper, soursob and European olive in the local area that could become a threat to the copper beard-orchid. Hand removal should be used in preference to chemical spraying where possible (DEP, 1992).
- Restore degraded habitat using bush regeneration techniques.
- Control invasive pests such as rabbits using appropriate methods.

Habitat loss disturbance and modifications

- Where possible, protect the species by ensuring walking trails are away from the species' habitat (DEP, 1992).
- Undertake appropriate seed and mycorrhizal fungi collection and storage to ensure the persistence of the species if there is further habitat loss or disturbance.
- Establish a representative ex-situ insurance population in the Adelaide Botanic Garden.

Fire

- Implement an appropriate fire management regime for protecting the species' habitat, ensuring there are no fires during the above ground phase of the species life cycle. The species re-sprouts after fire and fire stimulates the orchid to flower. Consequently, it is optimal to have prescribed burns when the species is below ground in summer.
- Provide maps of known occurrences to local and state Rural Fire Services and seek inclusion of mitigation measures in bush fire risk management plan/s, risk register and/or operation maps.

Disease

- implement suitable hygiene protocols to control the spread of pathogens to protect the species from outbreaks of *Phytophthora cinnamomi*, by controlling the movement of vehicles, horses and human traffic into the species' habitat.

Stakeholder Management

- Provide signage in the Aldinga Scrub Conservation Park to encourage the public to keep to established paths; to keep horses out of the park; and to avoid collecting or damaging plant specimens.
- Raise awareness of the problems associated with illegal collection of specimens.
- Prepare and display leaflets for park visitors, SA Department of Environment and Heritage staff and adjoining Councils, landholders and the community to raise awareness of the need to conserve this species.
- Ensure land owners and managers are aware of the vulnerability of the species to herbicide or pesticide spray drift and fertiliser runoff.
- Consult with the Kaurna Nation Indigenous representatives on the significance of this species to Aboriginal people.

Survey and Monitoring priorities

- More precisely assess population size, distribution, ecological requirements and the relative impacts of threatening processes.
- Undertake survey work in suitable habitat and potential habitat to locate any additional populations.
- Design and implement a monitoring program or, if appropriate, support and enhance an existing program.
- Monitor the progress of recovery, including the effectiveness of management actions and the need to adapt them if necessary.

Information and research priorities

- Implement an annual census to monitor emergence and reproductive success for the species.
- Investigate options for enhancing the existing population or establishing additional populations.
- Identify optimal fire regimes for regeneration (vegetative regrowth and/or seed germination), and the species' response to other prevailing fire regimes.
- Undertake seed germination and mycorrhizal trials to determine the requirements for the successful establishment of insurance populations and translocations.

Collective list of questions – your views

1. Can you provide any additional or alternative references, information or estimates on longevity, average life span and generation length?
2. Do you have any additional information on the previous or historic distribution of the species that would contribute knowledge to an assessment of the population change over the past 45 years?
3. Do you accept the estimate provided for the total population size of the species? If not, please provide justification for your response.
4. Are you able to provide an estimate of the total population size in the early 1970s (*at or soon after the start of the three generation period*)? Please provide justification for your response.

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

Number of mature individuals is estimated to be in the range of:				
<input type="checkbox"/> 1–50	<input type="checkbox"/> 51–250	<input type="checkbox"/> 251–1000	<input type="checkbox"/> 1000–2500	<input type="checkbox"/> 2500–10 000
Level of your confidence in this estimate:				
<input type="checkbox"/> 0–30% - low level of certainty/ a bit of a guess/ not much information to go on				
<input type="checkbox"/> 31–50% - more than a guess, some level of supporting evidence				
<input type="checkbox"/> 51–95% - reasonably certain, information suggests this range				
<input type="checkbox"/> 95–100% -high level of certainty, information indicates quantity within this range				
<input type="checkbox"/> 99–100% - very high level of certainty, data are accurate within this range				

5. Are you able to comment on the extent of decline in the species' total population size over the last approximately 45 years (i.e. 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:				
<input type="checkbox"/> 1–30%	<input type="checkbox"/> 31–50%	<input type="checkbox"/> 51–80%	<input type="checkbox"/> 81–100%	<input type="checkbox"/> 90–100%
Level of your confidence in this estimated decline:				
<input type="checkbox"/> 0–30% - low level of certainty/ a bit of a guess/ not much information to go on				
<input type="checkbox"/> 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

6. Do you agree with the estimates provided for the species' current extent of occurrence and/or area of occupancy? Please provide justification for your response.

Can you provide estimates (or if you disagree with the estimates provided, alternative estimates) of the extent of occurrence and/or area of occupancy.

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

Extent of occurrence is estimated to be in the range of:

- ☐ <100 km² ☐ 100 – 5 000 km² ☐ 5 001 – 20 000 km² ☐ >20 000 km²

Level of your confidence in this estimated extent of occurrence

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

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

Area of occupancy is estimated to be in the range of:

- ☐ <10 km² ☐ 11 – 500 km² ☐ 501 – 2000 km² ☐ >2000 km²

Level of your confidence in this estimated extent of occurrence:

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

7. Can you provide additional data or information relevant to this assessment?
8. Have you been involved in developing this nomination? If so in what capacity?
9. Do you agree that the threats listed are correct and that their effect on the species is significant?
10. To what degree are the identified threats likely to impact on the species in the future? Can you provide any information about the impacts of the threats considered to be 'potential threats'?
11. What planning, management and recovery actions are currently in place supporting protection and recovery of the species? To what extent have they been effective?
12. Can you recommend any additional or alternative specific threat abatement or conservation actions that would aid the protection and recovery of the species?
13. What individuals or organisations are currently, or potentially could be, involved in the management and recovery of the species?

References cited in the advice

- Bates RJ (2007). South Australian Native Orchids. Electronic version, August 2007. Native Orchid Society of South Australia. Adelaide.
- Bates RJ (2011). South Australia's Native Orchids. Native Orchid Society of South Australia. Adelaide.
- Bates RJ and Webber JZ (1990). Orchids of South Australia. South Australian Government Printer. Adelaide.
- Bower CC and Branwhite P (1993). Observations on the pollination of *Calochilus campestris*. Orchadian. 11: 2.
- Department for Environment and Natural Resources (2009). Copper beard-orchid (*Calochilus cupreus*). Threatened Species Profile. Department for Environment and Natural Resources. Adelaide.
- Department for Environment and Planning (1992). Aldinga Scrub Conservation Park Management Plan. Department for Environment and Planning. Adelaide.
- Kraehenbuehl DN (1989). Introduced Plants. In The Aldinga Scrub Conservation Park: A report on its history and natural values. Wollaston EM (Ed.). The Nature Conservation Society of South Australia Inc. Adelaide.
- IUCN (2014). Guidelines for using the IUCN Red List Categories and Criteria. Version 11. Prepared by the Standards and Petitions Subcommittee. IUCN. Gland.
- Newman BJ (2009). Orchids as indicators of ecosystem health in urban bushland fragments. PhD Thesis. Murdoch University.
- State Herbarium of South Australia (2014). Adelaide Herbarium database (ADHERB). Records extracted March 2014.
- Swarts ND and Dixon K (2009). Terrestrial orchid conservation in the age of extinction. Annals of Botany. 104: 543–556.
- Willson A and Bignall J (2008). Draft Regional Recovery Plan for Threatened Species and Ecological Communities of Adelaide and the Mount Lofty Ranges, South Australia. Department for Environment and Heritage, South Australia.
- Wollaston EM (Ed.) (1989). The Aldinga Scrub Conservation Park: A report on its history and natural values. The Nature Conservation Society of South Australia Inc. Adelaide.

Other sources cited in the advice

- Bates RJ (2014). Submission to nominator. Orchidologist, Native Orchid Society of South Australia.
- Quarmby J (2014). Submission to nominator. Threatened Flora Ecologist, South Australian Department of Environment, Water and Natural Resources.