Australian Government

Department of the Environment and Energy

Consultation Document on
Listing Eligibility and Conservation Actions

Oberonia attenuata (Mossman fairy orchid)

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

1) the eligibility of *Oberonia attenuata* (Mossman fairy orchid) for inclusion on the EPBC Act threatened species list in the 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 and Energy.

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

or by mail to:

> The Director
> Species Information and Policy Section
> Biodiversity Conservation Division
> Department of the Environment and Energy
> PO Box 787
> Canberra ACT 2601

Responses are required to be submitted by 20 July 2018

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 and Energy.

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.

The Commonwealth, state and territory governments have agreed to collaborate on national threatened species assessments using a common assessment method. Your response may be provided to state and territory government agencies and scientific committees as part of this collaboration. Information about the common assessment method is available on the department's website at: http://www.environment.gov.au/biodiversity/threatened/cam

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.

Privacy notice

The Department will collect, use, store and disclose the personal information you provide in a manner consistent with the Department's obligations under the *Privacy Act 1988* (Cth) and the Department's Privacy Policy.

Any personal information that you provide within, or in addition to, your comments in the threatened species assessment process may be used by the Department for the purposes of its functions relating to threatened species assessments, including contacting you if we have any questions about your comments in the future.

Further, the Commonwealth, State and Territory governments have agreed to share threatened species assessment documentation (including comments) to ensure that all States and Territories have access to the same documentation when making a decision on the status of a potentially threatened species. This is also known as the 'common assessment method'. As a result, any personal information that you have provided in connection with your comments may be shared between Commonwealth, State or Territory government entities to assist with their assessment processes.

The Department's Privacy Policy contains details about how respondents may access and make corrections to personal information that the Department holds about the respondent, how respondents may make a complaint about a breach of an Australian Privacy Principle, and how the Department will deal with that complaint. A copy of the Department's Privacy Policy is available at: http://environment.gov.au/privacy-policy

Your details

Name:

Organisation (if applicable):

Phone:

Email:

Oberonia attenuata

Mossman fairy orchid

Taxonomy

Conventionally accepted as *Oberonia attenuata* Dockrill (CHAH 2018a).

Species Information

Description

The Mossman fairy orchid, family Orchidaceae, is an epiphytic or lithophytic herb forming small loosely hanging clumps. Plants have 4 to 7 leaves which are scattered along the stem. It is unique among Australian *Oberonia* species in having long (up to 160 mm) and narrow (4-8 mm) pendulous leaves (Field & Zich 2012). Inflorescences are also pendulous, with the raceme bearing many minute, cream-orange flowers in whorls that change to red-brown flowers with age (CHAH 2018b).

Distribution

The Mossman fairy orchid is endemic to Queensland where it is known from one population within Mossman River Gorge in Daintree River National Park. This area is in the Wet Tropics IBRA bioregion (CHAH 2018b). It has a highly restricted known distribution.

Relevant Biology/Ecology

The Mossman fairy orchid occurs in riparian complex mesophyll vine forest. It has been found hanging as a tufted sub-canopy epiphyte growing on rheophytic *Xanthostemon chrysanthus* (CHAH 2018b).

Sexual maturity appears to be quite rapid for the species as plants that are only a couple of years old are fertile and setting seed (Field 2017 pers comm).

Threats

Threats to the Mossman fairy orchid include invasive species, illegal collection and site disturbance, see Table 1.

Table 1 – Threats impacting the Mossman fairy orchid in approximate order of severity of risk, based on available evidence

Threat factor	Threat type and status	Evidence base
Invasive species		
Invasive weeds	Potential current	Invasive weeds (e.g. *Miconia* spp.) potentially affect the species (AG 2016), however, there is no referenced study to assess the impact.
Gathering terrestrial plants		
Illegal collection	Potential current	Illegal collection potentially affects the species (AG 2016), however, there is no referenced study to assess the impact.
Human intrusions & disturbance		
Site disturbance	Potential current	Site disturbance potentially affects the species (AG 2016), however, there is no referenced study to assess the impact.

Climate change & severe weather		
Habitat shifting & alteration	Potential current	Habitat shifting as a result of climate change potentially affects the species, however, there is no referenced study to assess the impact.
Storms & flooding	Potential current	Severe tropical storms potentially affect the species, however, there is no referenced study to assess the impact.

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%**

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.

based on any of the followin

(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

Evidence:

There is insufficient data to assess the eligibility of the Mossman fairy orchid against this criterion. No long term monitoring of the species has been undertaken: the species was rediscovered in 2015 (CHAH 2018b). There is no evidence of declines or increase in abundance since when the species was rediscovered (Field 2017 pers comm).

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:

In Australia, the single known population of the Mossman fairy orchid has an extent of occurrence of less than 4 km^2 and an area of occupancy of 4 km^2. These figures are based on inferring the extent of occurrence of the single known location. The area of occupancy was calculated using the 2x2 km grid cell method (DoEE 2017). The Mossman fairy orchid is very rare: it was considered extinct in Australia until being rediscovered in 2015 and it is known from one part of an island that is 150 m long and 50 m wide (Field 2017 pers comm).

The species distribution is not severely fragmented. It is known from one population in extensive remnant habitat.

The species is known to occur at one location in Australia (CHAH 2018b).

Although the Mossman fairy orchid is threatened by invasive weeds, illegal collection and site disturbance (AG 2016), the evidence of how these threats may be impacting the species is very limited. Thus, it is difficult to demonstrate that the species is at risk of continuing decline.

There is no evidence of extreme fluctuations of distribution or abundance of the species.

The data presented above appear to be insufficient to demonstrate that the species is not 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 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:

In Australia, the Mossman fairy orchid is known from a single population of about 200 plants. This is based on direct observations of the population, however, given the clumping habit of the species, it is difficult to ascertain true numbers (Field 2017 pers comm). It is estimated that only

100 trees have Mossman fairy orchid epiphytes on them (Field 2017 pers comm). Recruitment has been observed (Field 2017 pers comm).

There is currently insufficient evidence on whether the species is undergoing observed, estimated, projected or inferred continuing decline.

There are less than 250 individuals in the single population and 100% of mature individuals occur in the single population.

There is no evidence of extreme fluctuations of abundance of the species.

The data presented above appear to be insufficient to demonstrate that the species is not 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 4. Number of mature individuals			
	Critically Endangered Extremely low	**Endangered** Very Low	**Vulnerable** Low
Number of mature individuals	**< 50**	**< 250**	**< 1,000**

Evidence:

Evidence presented in criterion 3 indicates that the species has a very low number of mature individuals.

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:

There is insufficient data to assess the eligibility of Mossman fairy orchid against this criterion.

The Committee is not aware of a population viability analysis having been undertaken. 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 made. The purpose of this consultation document is to elicit additional information to help inform this decision.

Primary Conservation Actions

No loss or destruction of individuals in the known population. Survey for the species in likely habitat for further populations.

Conservation and Management Priorities

Breeding, propagation and other ex situ recovery action

- o Establish an off-site conservation collection.
- o Secure tissue culture at appropriate locations with long term tenure.

Invasive species

- o Control *Miconia* spp. infestations.

Stakeholder engagement

- o Provide management resources (e.g. information on identification, threats and management) to landholders with likely habitat, especially private landholders.
- o Ensure land managers are aware of the species' threatened status and provide protection measures against key and potential threats.
- o Ensure that information (especially location details) and access is managed securely to minimise the risk of illegal collecting.

Survey and Monitoring priorities

- Design and implement a monitoring program or, if appropriate, support and enhance existing programs. Key data that should be captured during monitoring includes the impact of threats on the species and the health of individual trees where the orchid is located.

- Develop habitat suitability models to determine the ecological/environmental indices responsible for the distribution of the Mossman fairy orchid, and how it may change due to the impending threats. Modelling will require a reasonable high number of presence records, plus the environmental variables located at this site and other sites chosen at random (Guisan & Zimmermann 2000).

- Using habitat suitability modelling as guidance, undertake surveys in suitable habitat and potential habitat to locate any additional occurrences. Historic sites should be resurveyed. Surveys should be undertaken on private and public land. Sightings of the species should be reported to the Queensland Government WildNet Team via email on WildNet@science.dsitia.qld.gov.au

Information and Research priorities

- Investigate options for establishing additional populations

- Assess the species' ecological requirements relevant to the persistence of the species. Research is required to determine the:

  - Demographics of the species – abundance, life-span, reproductive age, size-class distribution, mortality and recruitment, etc.

  - Feasibility of salvage and translocation of the species, including techniques to maximise translocation success.

- Research the effects of public access and site disturbance.

References cited in the advice

AG (Australian Government) (2016). *Improving the trajectories of 30 plants by 2020*. Available on the Internet at: http://environment.gov.au/biodiversity/threatened/publications/threatened-species-strategy-action-plan-2015-16-30-plants-by-2020

Field AR & Zich FA (2012). Types of enigmatic north-Queensland Orchids from the Dockrill herbarium. *Austrobaileya* 8(4): 696-698.

Guisan A & Zimmermann NE (2000). Predictive habitat distribution models in ecology. *Ecological Modelling* 135: 147-186.

Other sources cited in the advice

CHAH (Council of Heads of Australasian Herbaria) (2018a). *Australian Plant Name Index*. Available on the Internet at: https://biodiversity.org.au/nsl/services/apni

CHAH (2018b). *Australian Virtual Herbarium*. Available on the Internet at: http://avh.chah.org.au/

DoEE (Department of the Environment and Energy) (2017). Area of Occupancy and Extent of Occurrence for *Oberonia attenuata*. Unpublished report.

Field AR (2017). Personal communication by telephone, August 2017. James Cook University.

Collective list of questions – your views

SECTION A   GENERAL

1. Is the information used to assess the nationally threatened status of the species robust? Have all the underlying assumptions been made explicit? Please provide justification for your response.

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

3. Have you been involved in previous state, territory or national assessments of this species/subspecies? If so, in what capacity?

4. Is there any further information on the impacts of Miconia on the species?

5. Would you agree that this species is at high risk of illegal collection?

PART 1 – INFORMATION TO ASSIST LISTING ASSESSMENT

SECTION B   DO YOU HAVE ADDITIONAL INFORMATION ON THE ECOLOGY OR BIOLOGY OF THE SPECIES? (If no, skip to section C)

Biological information

6. Can you provide any additional or alternative references, information or estimates on longevity, average life span and generation length?

7. Do you have any additional information in the ecology or biology of the species not in the current advice/plan?

SECTION C   ARE YOU AWARE OF THE STATUS OF THE TOTAL NATIONAL POPULATION OF THE SPECIES? (If no, skip to section D)

Population size

8. Has the survey effort for this species been adequate to determine its national adult population size? If not, please provide justification for your response.

9. Do you consider the way the population size has been derived to be appropriate? Are there any assumptions and unquantified biases in the estimates? Did the estimates measure relative or absolute abundance? Do you accept the estimate of the total population size of the species? If not, please provide justification for your response.

10. If not, can you provide a further estimate of the current population size of mature adults of the species (national extent)? Please provide supporting justification or other information.

    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 subspecies 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:

    ☐ 1–50 ☐ 51–250 ☐ 251–1000 ☐ >1000 ☐ >10 000

    Level of your confidence in this estimate:

☐ 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, information suggests this range

☐ 95–100% - high level of certainty, information indicates quantity within this range

☐ 99–100% - very high level of certainty, data are accurate within this range

SECTION D ARE YOU AWARE OF TRENDS IN THE OVERALL POPULATION OF THE SPECIES? (If no, skip to section E)

11. Does the current and predicted rate of decline used in the assessment seem reasonable? Do you consider that the way this estimate has been derived is appropriate? If not, please provide justification of your response.

Evidence of total population size change

12. Are you able to provide an estimate of the total population size during the early 1990s *(at or soon after the start of the most recent 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 subspecies 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:

    ☐ 1–50 ☐ 51–250 ☐ 251–1000 ☐ >1000 ☐ >10 000

    Level of your confidence in this estimate:

    ☐ 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, information suggests this range

    ☐ 95–100% - high level of certainty, information indicates quantity within this range

    ☐ 99–100% - very high level of certainty, data are accurate within this range

13. Are you able to comment on the extent of decline in the species/subspecies' total population size over the last approximately 10 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:

    ☐ 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

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

SECTION E   ARE YOU AWARE OF INFORMATION ON THE TOTAL RANGE OF THE SPECIES? (If no, skip to section F)

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

15. Does the assessment consider the entire geographic extent and national extent of the species/subspecies? If not, please provide justification for your response.

16. Has the survey effort for this species/subspecies been adequate to determine its national distribution? If not, please provide justification for your response.

17. Is the distribution described in the assessment accurate? If not, please provide justification for your response and provide alternate information.

18. Do you agree that the way the current extent of occurrence and/or area of occupancy have been estimated is appropriate? Please provide justification for your response.

19. 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.

    Current extent of occurrence is estimated to be in the range of:

    ☐ <100 km^2 ☐ 100 – 5 000 km^2 ☐ 5 001 – 20 000 km^2 ☐ >20 000 km^2

    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.

Current 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

SECTION F   ARE YOU AWARE OF TRENDS IN THE TOTAL RANGE OF THE SPECIES? (If no, skip to section G)

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

20. Do you consider that the way the historic distribution has been estimated is appropriate? Please provide justification for your response.

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

    If, because of uncertainty, you are unable to provide an estimate of past 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 past extent of occurrence, and also choose the level of confidence you have in this estimated range.

    Past 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 past 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 past area of occupancy, and also choose the level of confidence you have in this estimated range:

Past 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

PART 2 – INFORMATION FOR CONSERVATION ADVICE ON THREATS AND CONSERVATION ACTIONS

SECTION G   DO YOU HAVE INFORMATION ON THREATS TO THE SURVIVAL OF THE SPECIES? (If no, skip to section H)

22. Do you consider that all major threats have been identified and described adequately?

23. To what degree are the identified threats likely to impact on the species/subspecies in the future?

24. Are the threats impacting on different populations equally, or do the threats vary across different populations?

25. Can you provide additional or alternative information on past, current or potential threats that may adversely affect the species/subspecies at any stage of its life cycle?

26. Can you provide supporting data/justification or other information for your responses to these questions about threats?

SECTION H   DO YOU HAVE INFORMATION ON CURRENT OR FUTURE MANAGEMENT FOR THE RECOVERY OF THE SPECIES? (If no, skip to section I)

27. What planning, management and recovery actions are currently in place supporting protection and recovery of the species/subspecies? To what extent have they been effective?

28. Can you recommend any additional or alternative specific threat abatement or conservation actions that would aid the protection and recovery of the species/subspecies?

29. Would you recommend translocation (outside of the species' historic range) as a viable option as a conservation actions for this species/subspecies?

SECTION I   DO YOU HAVE INFORMATION ON STAKEHOLDERS IN THE RECOVERY OF THE SPECIES?

30. Are you aware of other knowledge (e.g. traditional ecological knowledge) or individuals/groups with knowledge that may help better understand population trends/fluctuations, or critical areas of habitat?

31. Are you aware of any cultural or social importance or use that the species has?

32. What individuals or organisations are currently, or potentially could be, involved in management and recovery of the species/subspecies?

33. How aware of this species are land managers where the species is found?

34. What level of awareness is there with individuals or organisations around the issues affecting the species/subspecies?

     a. Where there is awareness, what are these interests of these individuals/organisations?

     b. Are there populations or areas of habitat that are particularly important to the community?

PART 3 – ANY OTHER INFORMATION

35. Do you have comments on any other matters relevant to the assessment of this species?