Australian Government

Department of Agriculture, Water and the Environment

# Nomination to Remove a Threatened Species from the List

**For removing a native species from any category in the list of threatened species under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)**

The purpose of this form is to provide a nomination to the Threatened Species Scientific Committee (the Committee) for reassessment of a listed species/subspecies to determine if that species should be removed from the list of threatened species under the EPBC Act.

For a species to be found eligible to be removed from the threatened species list evidence must be provided to demonstrate that the species no longer meets any of the five criteria for listing and is therefore not considered threatened. Evidence must also be provided to demonstrate that the removal of conservation management programs for the species as a result of it being removed from the list of threatened species would not result in the species becoming eligible for listing in the foreseeable future.

If there is insufficient information to enable details to be provided because of a lack of scientific data or analysis please include any information that is available or provide a statement next to the relevant question identifying that the data or analysis is not available. Please provide references in your nomination to support information provided.

The Committee recognises that completing a nomination form is demanding as a result of the information required by the Committee to undertake an assessment to determine the eligibility for listing. Nominators are encouraged to seek expert advice where appropriate to assist in the completion of the nomination form.

*Note – Further detail to help you complete this form is provided at Attachment A.*
*If using this form in Microsoft Word, you can jump to this information by Ctrl+clicking the hyperlinks (in blue text).*

## Important notes for completing this form

- **Please complete the form as comprehensively as possible by providing a response in each box with an orange border**. It is important for nominations to provide the Committee with the most comprehensive information available on which to assess a species' eligibility for listing against the EPBC Act criteria.
- Reference all information sources, both in the text and in a reference list at the end of the form.
- The opinions of appropriate scientific experts may be cited as personal communications, with their approval, in support of your nomination. Please provide the name of the experts, their qualifications and contact details in the reference list at the end of the form.
- If the species is considered to be affected by climate change, please refer to the guidance for assessing climate change as a threat to native species at Part G of the Committee's *Guidelines for assessing the conservation status of native species* (Attachment B, Part G).
- Identify any confidential material and explain the sensitivity. The information in the nomination (but excluding any information specifically identified by you to remain confidential) will be made available to the public and experts for comment. However, your details as nominator will not be released, and will remain confidential.
- The Commonwealth, state and territory governments have agreed to collaborate on national threatened species assessments using a common assessment method. Your nomination, including your details as nominator, may be provided to state and territory government agencies as part of this collaboration.
- Figures, tables and maps can be included at the end of the form or prepared as separate electronic or hardcopy documents (referred to as appendices or attachments in your nomination).
- Cross-reference relevant areas of the nomination form where needed.

## Details of the nominated Species or Subspecies

### NAME OF NOMINATED SPECIES (OR SUBSPECIES)

Scientific name:
Common name(s):

### CURRENT LISTING CATEGORY

What category is the species currently listed in under the EPBC Act?

☐ Extinct ☐ Extinct in the wild ☐ Critically Endangered
☐ Endangered ☐ Vulnerable ☐ Conservation dependent

### REASON FOR THE NOMINATION TO REMOVE FROM THE LIST

What is the reason for the nomination?

☐ Genuine change of status ☐ New Knowledge ☐ Mistake ☐ Other
Taxonomic change – ☐ 'split' ☐ newly described ☐ 'lumped' ☐ no longer valid

### TAXONOMY

Provide any relevant detail on the species' taxonomy (e.g. authors of taxon or naming authority, year and reference; synonyms; Family and Order)

### INITIAL LISTING

Describe the reasons for the species' initial listing and if available the criteria under which it was formerly considered eligible.

### CHANGES IN SITUATION

How have circumstances changed since the species was listed that now makes it eligible for removal from the list?

## Threats

### IDENTIFICATION OF KNOWN THREATS AND IMPACT OF THE THREATS

Identify in the tables below any **KNOWN** threats to the species, under the provided headings indicate if the threat is **past, current or future** and whether the threats are **actual or potential.**
**NB – CLIMATE CHANGE AS A THREAT.** If climate change is an **important** threat to the nominated species it is important that you provide **referenced** information on **exactly how** climate change might significantly increase the nominated species' vulnerability to extinction. For guidance refer to the Guidelines for assessing climate change as a threat to native species (Attachment B; Part G).

| Past threats | Impact of threat |
|---|---|
| | |
| | |

| Current threats | Impact of threat |
|---|---|
| | |
| | |

| Actual future threats | Impact of threat |
|---|---|
| | |
| | |

| Potential future threats | Impact of threat |
|---|---|
| | |
| | |

**CRITERION 1**

| **Population size reduction (reduction in total numbers)**<br>Population reduction (measured over the longer of 10 years or 3 generations) based on any of A1 to A4 | **Critically Endangered**<br>**Very severe reduction** | **Endangered**<br>**Severe reduction** | **Vulnerable**<br>**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

Please identify whether the species meets A1, A2, A3 or A4. Include an explanation, supported by data and information, on how the species meets the criterion (A1 – A4). You must provide a response. If there is no evidence to demonstrate a population size reduction this must be stated

**CRITERION 2:**

| **Geographic distribution is precarious for either extent of occurrence AND/OR area of occupancy** | **Critically Endangered**<br>**Very restricted** | **Endangered**<br>**Restricted** | **Vulnerable**<br>**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: | | | |
| (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; (number of mature individuals | | | |

Please refer to the 'Guidelines for Using the IUCN Red List Categories and Criteria' https://nc.iucnredlist.org/redlist/content/attachment_files/RedListGuidelines.pdf for interpreting the criterion particularly in relation to calculating area of occupancy and extent of occurrence.

Please identify whether the species meets B1 or B2. Include an explanation, supported by data and information, on how the species meets 2 of (a) (b) or (c).

You must provide a response. If there is no evidence to demonstrate that the geographic distribution is precarious for either extent of occurrence AND/OR area of occupancy this must be stated.

**CRITERION 3**

| Small 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 | | | |

Please identify the estimated total number of mature individuals and either an answer to C1 or C2. Include an explanation, supported by data and information, on how the species meets the criteria. Note: If the estimated total number of mature individuals is unknown but presumed to be likely to be >10 000 you are not required to provide evidence in support of C1 or C2 just state that the number is likely to be >10 000.

You must provide a response. If there is no evidence to demonstrate small population size and decline this must be stated.

**CRITERION 4:**

| Very small population | | | |
|---|---|---|---|
| | **Critically Endangered Extremely low** | **Endangered Very Low** | **Vulnerable Low** |
| Number of mature individuals | **< 50** | **< 250** | **< 1,000** |

Please identify the estimated total number of mature individuals and evidence on how the figure derived

You must provide a response. If there is no evidence to demonstrate very small population size and decline this must be stated.

**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** |

Please identify the probability of extinction and evidence as to have the analysis was undertaken.

You must provide a response. If there has been no quantitative analysis undertaken must be stated.

## Conservation Management Actions

### CONSERVATION MANAGEMENT ACTIONS

Provide details of current conservation management actions for the species. Include details of recovery plans, threat abatement actions, state government programs, work being undertaken by conservation groups, protected areas for the species, rebuilding or restocking programs etc.

### REDUCTION OR CESSATION OF CONSERVATION MANAGEMENT ACTIONS

If the management actions referred to in Question 14 were to be reduced or cease as a result of the species being removed from the list, would this result in the decline of the species at such a rate that it would again become eligible for listing in the foreseeable future? Please ensure that you provide evidence and appropriate references to support your response.

### SURVEYS

Provide information on survey effort to date, and any ongoing/proposed monitoring programs.

## Species Information

### DISTRIBUTION

Provide a succinct overview of the species' known or estimated current and past distribution, including international/national distribution. Provide a map if available.

Is the species protected within the reserve system (e.g. national parks, Indigenous Protected Areas, or other conservation estates, private land covenants, etc.)? If so, which populations? Which reserves are actively managed for this species? Give details.

### BIOLOGY/ECOLOGY

Provide a summary of biological and ecological information.

### INDIGENOUS CULTURAL SIGNIFICANCE

Is the species known to have cultural significance for Indigenous groups within Australia? If so, to which groups? Provide information on the nature of this significance if publicly available.

### ADDITIONAL COMMENTS/INFORMATION

Please include any additional comments or information on the species such as survey or monitoring information, maps that would assist with the consideration of the nomination.

## Reviewers and Referencing

### REVIEWER(S)

Has this nomination been peer-reviewed? Have relevant experts been consulted on this nomination? If so, please include their names, current professional positions and contact details.

### REFERENCE LIST

Please list key references/documentation you have referred to in your nomination.

## Nominator's Details

Note: Your details are subject to the provisions of the *Privacy Act 1988* and will not be divulged to third parties, except for state and territory governments which have agreed to collaborate with the Commonwealth on national threatened species assessments using a common assessment method.. If there are multiple nominators please include details below for all nominators.

**TITLE** (e.g. Mr/Mrs/Dr/Professor/etc.)

**FULL NAME**

**ORGANISATION OR COMPANY NAME (IF APPLICABLE)**

**CONTACT DETAILS**

Email:
Phone:
Postal address:

**DECLARATION**

I declare that, to the best of my knowledge, the information in this nomination and its attachments is true and correct.

Signed:

** If submitting by email, please attach an electronic signature*

Date:

## Lodging your nomination

**How to lodge your nomination**

Completed nominations may be lodged either:

1. by email in word format to: epbc.nominations@environment.gov.au, **or**
2. by mail to: The Director
   Species Listing, Information and Policy Section
   Department of Agriculture, Water and the Environment
   GPO Box 858
   Canberra ACT 2601

* **If submitting by mail, you must include an electronic copy on a memory stick.**

## Where did you find out about nominating species?

The Committee would appreciate your feedback regarding how you found out about the nomination process. Your feedback will ensure that future calls for nominations can be advertised appropriately.

Please tick

☐ Department website ☐ Web search ☐ *The Australian* newspaper ☐ word of mouth

☐ Journal/society/organisation web site or email? If so which one .....

☐ Other.....

## Attachment A: Further information on completing this form <back to top>

### NAME OF NOMINATED SPECIES/SUBSPECIES <back>

You may nominate a native species or subspecies for listing under the EPBC Act. If the taxon you wish to nominate is not a species or subspecies (e.g. a family, race, variation or hybrid) please contact the Director of the Species Information and Policy Section, on (02) 6274 2535 for further guidance.

For the purposes of this form, subspecies are hereafter referred to as 'species'.

You may wish to search the current list of threatened species in the department's Species Profile and Threats Database, found here: www.environment.gov.au/cgi-bin/sprat/public/sprat.pl

You can also find a full list of fauna and flora that are listed as threatened under the EPBC Act, here:
www.environment.gov.au/cgi-bin/sprat/public/publicthreatenedlist.pl?wanted=fauna
www.environment.gov.au/cgi-bin/sprat/public/publicthreatenedlist.pl?wanted=flora

You will find a list of unsuccessful nominations that have been assessed here:
www.awe.gov.au/environment/biodiversity/threatened/unsuccessful-species.html

### CURRENT LISTING CATEGORY <back >

Please specify the EPBC Act listing category in which the species is listed:

- Extinct
- Extinct in the Wild
- Critically Endangered
- Endangered
- Vulnerable
- Conservation Dependent.

For more information about these categories, see Attachment B

You can search for the current status of threatened species in the department's Species Profile and Threats Database, here:
www.environment.gov.au/cgi-bin/sprat/public/sprat.pl

### 3. REASONS FOR THE NOMINATION TO REMOVE FROM THE LIST <back

Please specify the reason for the delisting nomination.

- *Genuine (recent).* The change in category is the result of a genuine status change that has taken place since the previous assessment. For example, the change is due to a decrease in the rate of decline, or an increase in population or range size or habitat.
- *Knowledge.* The change in category is the result of better knowledge, e.g. owing to new or newly synthesized information about the status of the taxon (e.g. better estimates for population size, range size or rate of decline).
- *Taxonomy.* The new category is different from the previous owing to a taxonomic change adopted during the period since the previous assessment. Such changes include:
    - *newly split* (the taxon is newly elevated to species level)
    - *newly described* (the taxon is newly described as a species)
    - *newly lumped* (the taxon is recognized following lumping of two previously recognized taxa)
    - *no longer valid/recognized* (either the taxon is no longer valid e.g. because it is now considered to be a hybrid or variant, form or subspecies of another species)
- *Mistake*. The previous category was applied in error.
- *Other.* The change in category is the result of other reasons not easily covered by the above, and/or requires further explanation.

### TAXONOMY <back >

If relevant to the nomination please provide details and references of recent taxonomic changes.

- What is the currently accepted scientific name for the species. Note any other scientific names that have been used recently. Note the species authority and the taxonomic group to which the species belongs (Family name is sufficient for plants; both Order and Family name are required for invertebrates).
- Please provide details and references for the recent taxonomic changes that have resulted in this nomination.

**INITIAL LISTING<back >**

Information on the reasons for the initial listing may be available in the original listing and or conservation advice for the species. You can also find a full list of fauna and flora that are listed as threatened under the EPBC Act and advices associated with them here:

- http://www.environment.gov.au/cgi-bin/sprat/public/publicthreatenedlist.pl?wanted=fauna
- http://www.environment.gov.au/cgi-bin/sprat/public/publicthreatenedlist.pl?wanted=flora

If there is insufficient information to provide details as to the reasons for the original listing please state this.

**THREATS <back >**

For each threat, describe:

a. whether the threats are actual or potential ;
b. how and where it impacts on this species;
c. what its effect has been so far (indicate whether it is known or suspected; present supporting information/research; does it only affect certain populations);
d. what is its expected effect in the future (is there supporting research/information; is the threat only suspected; does it only affect certain populations);
e. what is the relative importance or magnitude of the threat to the species.

If subject to natural catastrophic events, i.e. events with a low predictability that are likely to severely affect the species, identify the type of event, explain its likely impact and indicate the likelihood of it occurring (e.g. a drought/cyclone in the area every 100 years).
Identify and explain any additional biological characteristics particular to the species that are threatening to its survival (e.g. low genetic diversity).

**SURVEYS <back >**

- Provide an overview of the survey effort for this species to date, and the likelihood of the species' current known distribution and/or population size being its actual distribution and/or population size. Where available, include references that document survey results and methodology. Provide latitude, longitude, map datum, location name, land tenure, number of individuals and date of survey where available. Include any other relevant comments regarding the species' location.

**DISTRIBUTION <back >**

- If the species occurs only within the Australian jurisdiction:
  - Describe the species' current distribution within Australia (including its external territories if relevant).
  - Provide a map, if available, indicating latitude, longitude, map datum and location names.
- If the species also occurs outside of the Australian jurisdiction:
  - Include information on the species' geographic distribution within and outside Australia.
  - What percentage of the global population occurs in Australia, and what is its significance?
  - Is the Australian population distinct, geographically isolated, or does part or all of the population migrate into/out of Australia's jurisdiction?
  - Explain the relationship between the Australian population and the global population.
  - Do global threats affect the Australian population?
- Give locations of other populations, e.g. captive/propagated populations, populations recently re-introduced to the wild, and sites for proposed population re-introductions. Note if these sites have been identified in recovery plans. Provide latitude, longitude, map datum and location name, where available, in an attached table.
  - For fauna species only – give details of the species' home ranges/territories. Describe any relevant daily and seasonal pattern of movement for the species, or other irregular patterns of movement, including relevant arrival/departure dates if migratory.
- Does the species occur within an EPBC Act listed ecological community? You will find a list of EPBC Act listed ecological communities here:
  http://www.environment.gov.au/cgi-bin/sprat/public/publiclookupcommunities.pl

**BIOLOGY/ECOLOGY <back >**

- **Life Cycle**: Provide detail on the age at sexual maturity, average life expectancy, natural mortality rates, and generation length
  - "*Generation length*" is defined as the average age of parents of the current cohort (i.e. newborn individuals in the population). Generation length therefore reflects the turnover rate of breeding individuals in a population. Generation length is greater than the age at first breeding and less than the age of the oldest breeding individual, except in species that breed only once. Where generation length varies under threat, the more

natural, i.e. pre-disturbance, generation length should be used. It is often calculated as =(longevity + age at maturity)/2. Provide details of the methods used to calculate the generation length.

- **Reproduction**: Provide detail on the reproductive requirements of this species.
  - Flora: When does the species flower and set fruit? What conditions are needed for this? What is the pollinating and seed dispersal mechanisms? If the species is capable of vegetative reproduction, include a description of how this occurs, the conditions needed and when. Does the species require a disturbance regime (e.g. fire, cleared ground) in order to reproduce?
  - Fauna: provide an overview of the species' breeding system and breeding success, including: when it breeds; what conditions are needed for breeding; whether there are any breeding behaviours that may make it vulnerable to a threatening process?
- **Habitat**
  - Provide information on aspect, topography, substrate, climate, forest type, associated species, sympatric species and anything else that is relevant to the species' habitat.
  - Explain how habitats are used (e.g. breeding, feeding, roosting, dispersing, basking, etc.)
  - Does the species use refuge habitat (e.g. in times of fire, drought or flood)? Describe this habitat.
- **For fauna:**
  - **Feeding :** Summarise the species' feeding behaviours, diet, and the timing/seasonality associated with these. Include any behaviour that may make the species vulnerable to a threatening process.
  - **Movement:** provide information on daily and seasonal movement patterns.

## 35. DECLARATION <back >

In signing this nomination form, you agree to grant the Commonwealth of Australia (as represented by the Department of Agriculture, Water and the Environment) a perpetual, non-exclusive, worldwide, royalty-free licence to use, reproduce, publish, communicate and distribute information described in the nomination form (i.e. information you have provided that is not referenced to other sources), but excluding any information specifically requested by you to remain confidential, in the Department's websites and publications and to promote those web sites and publications in any medium.

As nominator your details are automatically subject to the provisions of the *Privacy Act* 1988 and will not be divulged to third parties. The Commonwealth, state and territory governments have agreed to collaborate on national threatened species assessments using a common assessment method. Your nomination, including your details as nominator, may be provided to state and territory government agencies as part of this collaboration.

If you subsequently agree to be cited as the author of specific, cited information, you will be acknowledged in all publications and websites in which that information appears, in a manner consistent with the *Style Manual for Authors, Editors and Printers* (latest edition).

# Guidelines for assessing the conservation status of native species according to the *Environment Protection and Biodiversity Conservation Act 1999* and *Environment Protection and Biodiversity Conservation Regulations 2000*

| Part | Content |
|---|---|
| Part A: | Criteria for listing species in the critically endangered, endangered or vulnerable categories under the *Environment Protection and Biodiversity Conservation Act 1999* and *Environment Protection and Biodiversity Conservation Regulations 2000* |
| Part B: | Guidance thresholds that may be used by the Committee to judge the subjective terms provided by the criteria for listing in the critically endangered, endangered and vulnerable categories |
| Part C: | Eligibility for listing species in the extinct, extinct in the wild, or conservation dependent categories under the *Environment Protection and Biodiversity Conservation Act 1999* |
| Part D | Calculating Area of Occupancy (AOO) and Extent of Occurrence (EOO) |
| Part E: | Data Deficient species |
| Part F: | Thresholds for assessing commercially harvested marine fish |
| Part G | Guidelines for assessing climate change as a threat to native species |

## Part A: Criteria for listing species in the critically endangered, endangered or vulnerable categories under the *Environment Protection and Biodiversity Conservation Act 1999* and *Environment Protection and Biodiversity Conservation Regulations 2000*

For section 179 of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), a native species is eligible for listing in the critically endangered, endangered or vulnerable category, if it meets any of the criteria for the category identified in Part 7.01 of the *Environment Protection and Biodiversity Conservation* Regulations 2000 (EPBC Regulations).

| **Criteria for listing threatened species** (Part 7.01 of the EPBC Regulations) | | | |
|---|---|---|---|
| Criterion | **Critically Endangered** | **Endangered** | **Vulnerable** |
| 1. It has undergone, is suspected to have undergone or is likely to undergo in the immediate future: | a very severe reduction in numbers | a severe reduction in numbers | a substantial reduction in numbers |
| 2. Its geographic distribution is precarious for the survival of the species and is: | very restricted | restricted | limited |
| 3. The estimated total number of mature individuals is: | very low | low | limited |
| and either of (a) or (b) is true: | | | |
| (a) evidence suggests that the number will continue to decline at: | a very high rate | a high rate | a substantial rate |
| (b) the number is likely to continue to decline and its geographic distribution is | precarious for its survival | precarious for its survival | precarious for its survival |
| 4. The estimated total number of mature individuals is: | extremely low | very low | low |
| 5. The probability of its extinction in the wild is at least | 50% in the immediate future | 20% in the near future | 10% in the medium-term future |

These criteria define situations in which a relatively large risk of extinction in the wild, some time in the future, is deemed to exist for a species (for the purposes of section 179 of the EPBC Act). It is not necessary to identify a quantitative risk of extinction, but it is important to ensure that judgements about the criteria (for example, whether a reduction in numbers represents a severe decline).

Due to the subjective nature of the criteria provided in the EPBC Regulations, the Threatened Species Scientific Committee (the Committee) have adopted guidance thresholds (Part B) based on the "IUCN Red List Categories and Criteria Version 3.1, 2001", that may be used by the Committee to judge the subjective terms for listing in the EPBC Regulations. It should be noted that the Committee has an obligation to have regard to these guidance thresholds and generally applies them but there can be exceptions.

## Part B: Guidance thresholds that may be used by the Committee to judge the subjective terms provided by the criteria for listing

When assessing a species' eligibility against the listing criteria for inclusion in the critically endangered, endangered or vulnerable categories, the Committee exercises its judgement to give practical meaning to the subjective terms of the criteria. The Committee does this by considering the information provided to it via the nomination form in the context of the species' biology and relevant ecological factors, and having regard to the degree of complexity and uncertainty associated with that context and the information provided.

To provide guidance for the Committee to interpret the subjective terms provided by the criteria for assessment of eligibility for inclusion listing in the categories of vulnerable, endangered and critically endangered in the list of threatened species, the Committee has adopted Indicative Thresholds. The Committee is informed, but not bound by, Indicative Thresholds which have been adapted from the IUCN Red List Categories and Criteria Version 3.1, 2001 to conform to the EPBC Regulations. The IUCN Red List Categories and Criteria are an internationally accepted system developed for classifying the extinction risk for a wide range of species.

When interpreting the Indicative Thresholds for particular species, the Committee judges their appropriateness to characteristics of the species in question. This consideration of biological attributes is placed in the context of matters such as the relative population size so as to judge whether, for the species in question, a decline is substantial, severe or very severe, for the purposes of the criteria for listing.

For guidance on the use of the Indicative Thresholds, the Committee refers to the IUCN guidelines that explain how to apply the criteria to determine if a taxon is eligible for inclusion in a category and provide explanations and definitions of the terms used in the criteria.

### Threatened Species Scientific Committee's Guidance Thresholds

to judge the subjective terms provided by the criteria for assessment of eligibility for inclusion listing in the categories of vulnerable, endangered, and critically endangered in the list of threatened species

**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<br>Very severe reduction | Endangered<br>Severe reduction | Vulnerable<br>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 following*

(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

| 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 | | | |

| 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 generations (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** |
| (a) (ii) % of mature individuals in one subpopulation = | **90 – 100%** | **95 – 100%** | **100%** |
| (b) Extreme fluctuations in the number of mature individuals | | | |

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

Note: The IUCN Red List Criterion D allows for species to be listed as vulnerable under D2[1]. Criterion 4 under the EPBC Act Regulations does not include the provision for a species assessment for listing in the vulnerable category similar to D2.

| 5. Quantitative Analysis | | | |
|---|---|---|---|
| | **Critically Endangered Immediate future** | **Endangered Near future** | **Vulnerable Medium-term future** |
| Indicating the probability of extinction in the 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** |

[1] IUCN Criterion D2: *Only applies to the VU category*. Restricted are of occupancy or number of locations with a plausible future threat that could drive the taxon to CR or EX in a very short time.

## Part C: Eligibility for listing species in the extinct, extinct in the wild, or conservation dependent categories under the *Environment Protection and Biodiversity Conservation Act 1999*

For section 179 of the EPBC Act (which provides general eligibility for inclusion in a category of the list of threatened species), a native species is eligible for inclusion in the extinct, extinct in the wild or conservation dependant category, if it meets the criteria for listing in that category as defined in the EPBC Act.

### Extinct (section 179(1))

A native species is eligible to be included in the ***extinct*** category at a particular time if, at that time, there is no reasonable doubt that the last member of the species has died.

The EPBC Act uses the same eligibility criteria for listing in the extinct category as the IUCN Red List and the Committee refer to the guidelines for applying the category in the Guidelines for Using the IUCN Red List Categories and Criteria.

The Committee uses an evidentiary approach and considers each taxon on a case-by-case basis to assess its eligibility for inclusion in the extinct category. Taxa that are listed as extinct under are not considered Matters of National Environmental Significance under the EPBC Act and are afforded no protection under the EPBC Act. If an extinct species is rediscovered in nature and considered to be extant, it is offered no protection under the EPBC Act until it is transferred from the extinct category, this process could have implications for the protection of the taxon. The Committee needs to be confident that there is no reasonable possibility that the taxon may still be extant in recommending listing as extinct.

### Extinct in the wild (section 179(2))

A native species is eligible to be included in the ***extinct in the wild*** category at a particular time if, at that time:

(a) it is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; or

(b) it has not been recorded in its known and/or expected habitat, at appropriate seasons, anywhere in its past range, despite exhaustive surveys over a time frame appropriate to its life cycle and form.

The Committee uses an evidentiary approach and considers each taxon on a case-by-case basis to assess its eligibility for inclusion in the extinct in the wild category. The Committee refer to the guidelines for applying the category in the Guidelines for Using the IUCN Red List Categories and Criteria.

### Conservation dependent (section 197(6))

A native species is eligible to be included in the ***conservation dependent*** category at a particular time if, at that time:

(a) the species is the focus of a specific conservation program the cessation of which would result in the species becoming vulnerable, endangered or critically endangered; **or**

(b) the following subparagraphs are satisfied:

  (i) the species is a species of fish;

  (ii) the species is the focus of a plan of management that provides for management actions necessary to stop the decline of, and support the recovery of, the species so that its chances of long term survival in nature are maximised;

  (iii) the plan of management is in force under a law of the Commonwealth or of a State or Territory;

  (iv) cessation of the plan of management would adversely affect the conservation status of the species.

## Part D: Calculating Area of Occupancy (AOO) and Extent of Occurrence (EOO)

### Extent of occurrence

Extent of occurrence is defined as the area contained within the shortest continuous imaginary boundary which can be drawn to encompass all the known, inferred or projected sites of present occurrence of a taxon, excluding cases of vagrancy (see Figure 1). This measure may exclude discontinuities or disjunctions within the overall distributions of taxa (e.g. large areas of obviously unsuitable habitat, see 'area of occupancy' below). However, such exclusions are not recommended for reasons detailed by IUCN (2016, section 4.9). Extent of occurrence can often be measured by a minimum convex polygon (the smallest polygon in which no internal angle exceeds 180 degrees and which contains all the sites of occurrence).

### Area of occupancy

Area of occupancy is defined as the area within its 'extent of occurrence' (see above) which is occupied by a taxon, excluding cases of vagrancy. The measure reflects the fact that a taxon will not usually occur throughout the area of its extent of occurrence, which may contain unsuitable or unoccupied habitats. In some cases (e.g. irreplaceable colonial nesting sites, crucial feeding sites for migratory taxa) the area of occupancy is the smallest area essential at any stage to the survival of existing populations of a taxon. The size of the area of occupancy will be a function of the scale at which it is measured, and should be at a scale appropriate to relevant biological aspects of the taxon, the nature of threats and the available data. To avoid inconsistencies and bias in assessments caused by estimating area of occupancy at different scales, IUCN (2016) recommends standardization of estimates by applying a 2 x 2 km grid to occurrence data. IUCN (2016) give guidance on how standardization should be done, although conversion between different scales is difficult because different types of taxa have different scale-area relationships.

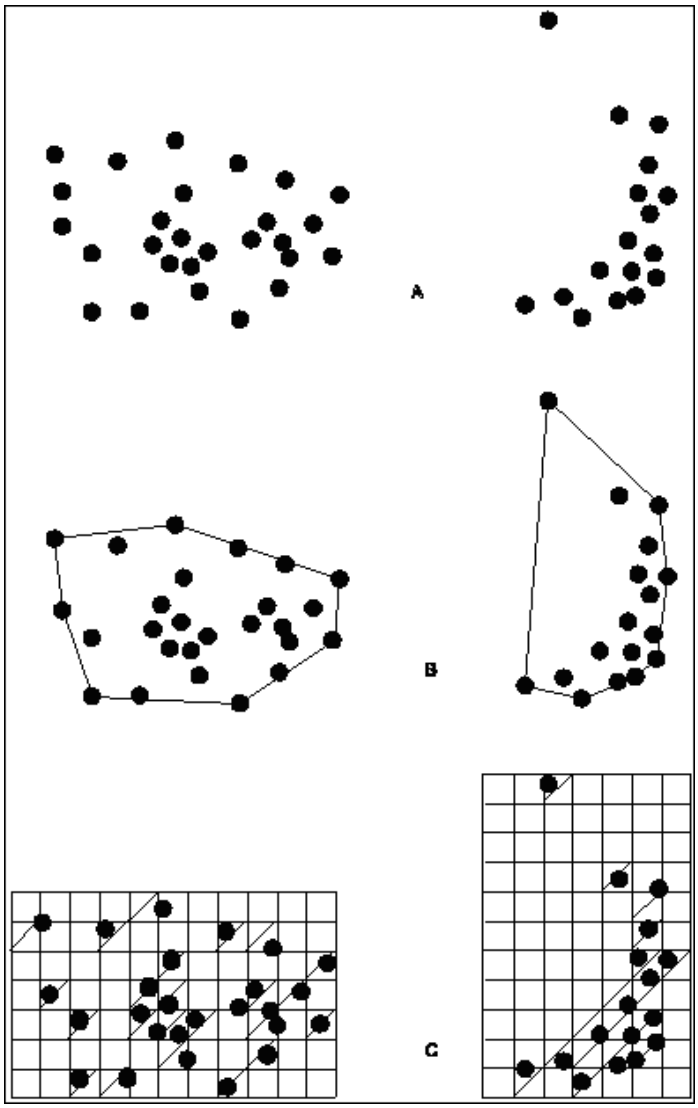


***Figure 1.*** *Two examples of the distinction between extent of occurrence and area of occupancy. (A) is the spatial distribution of known, inferred or projected sites of present occurrence. (B) shows one possible boundary to the extent of occurrence, which is the measured area within this boundary. (C) shows one measure of area of occupancy which can be achieved by the sum of the occupied 2 x 2 km grid squares*

## Part E: Data Deficient species

Section 178 of the EPBC Act identifies the categories under which species assessed can be and found eligible for listing. Unlike the categories for listing under the International Union for Conservation of Nature (IUCN) Red List, the EPBC Act does not provide for formal listing in a data deficient category. Species assessed by the Threatened Species Scientific Committee where insufficient data (evidence) are available to allow the taxon to be placed in a category against the criteria for listing are found ineligible and a recommendation is made to the Minister to not include the species in any category under the EPBC Act. For reasons of transparency and to inform future research, the Threatened Species Scientific Committee publishes the names of those species found to be data deficient. As data deficient is not a listing category under the EPBC Act, this has no statutory implications and the species is not considered to be listed under the EPBC Act.

Acknowledging that the species is data deficient does not imply that the taxon is not threatened.

Examples of species that could be assessed and found to be data efficient included wide-ranging species where information is only available on impacts and populations across part of their range. In some such cases, the available information cannot easily be extrapolated across the entire range and therefore it is hard to determine whether a decline in one part of the range represents trends across the whole range. Without information across the national extent of the species justification for listing against the criteria is therefore difficult to determine.

As noted above a taxon cannot be assigned to a data deficient category under the EPBC Act. Under IUCN Red List, a taxon can be assigned data deficient where a taxon 'is known, but there is no direct or indirect information about its current status or possible threats'. 'If the data is so uncertain that both least concern and critically endangered are plausible categories, the taxon can be assigned as data deficient'.

## Part F: Thresholds for assessing commercially harvested marine fish

When considering thresholds for assessing commercially harvested marine fish, the Committee refers to the Commonwealth Government Harvest Strategy Policy. This policy defines declines of up to 60% (from pre-fishing biomass levels) as acceptable for commercially harvested fish species where depletion is a managed outcome. Variations in the extent of acceptable decline depend on the biology of the individual species. The Committee is informed, but not bound, by a series of limit and target biological reference trigger points (commonly referred to as $B_{lim}$ and $Bt_{arg}$) provided in the policy for management intervention for species that decline below 60% of their pre-fishing biomass. These interventions include listing assessments.

## Part G: Guidance for assessing climate change as a threat to native species

Anthropogenic climate change is occurring at an unprecedented rate and is likely to place greater climate stresses on species than has occurred for many thousands of years. Many species are affected by climate change and respond in a range of ways. Species will respond to these stresses in a range of ways: they may remain in areas where they are able to tolerate or adapt to conditions; move to more suitable habitats where possible; or die out. Despite the widespread effects of climate change, without detail specific to the species under consideration and without some ability to quantify its likely effects, it is difficult to incorporate the threat into the assessment of the species.

Refer to the Guidelines for Using the IUCN Red List Categories and Criteria (version 15, 2022) for explanation of key factors for determining whether the threat posed by climate change has had, is having, or will be important to the nominated species' across the entirety of the national extent of the species range and will increase the species' vulnerability to extinction in the immediate to medium term future (i.e. 10 to 50 years).When considering if climate change is a threat to a species, some key factors to consider when determining eligibility against the criteria include time horizons for the impact, number of locations and the impact of climate change and using bioclimatic models.

A species' vulnerability to climate change will depend on a combination of biological traits, generation length, microhabitat use and behaviour, as well as its degree of exposure to climate change.

**If** climate change is an **important** threat to the nominated species provide **referenced** information on exactly **how** climate change might significantly increase the nominated species' vulnerability to extinction.

Please cite the climate change references that you use to argue for significant climate change impact across the national extent of the nominated species over the immediate to medium term timeframe (i.e. 10 to 50 yrs). The impact of the relevant timeframe should be linked to the generation length of the species.

**References:**


Hobday AJ, Okey TA, Poloczanska ES, Kunz TJ, and Ricardson AJ (eds) (2006) Impacts of climate change on Australian marine life. Report to the Australian Greenhouse Office, Canberra, Australia Downloadable from https://www.cmar.csiro.au/e-print/internal/hobdayaj_x2006d.pdf

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Steffen W, Burbidge A, Hughes L, Kitching R, Lindenmayer D, Musgrave W, Stafford Smith M & Werner P (2009) Australia's Biodiversity and Climate Change. CSIRO Publishing.

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