

BIODIVERSITY CONSERVATION ACT 2016

MINISTERIAL GUIDELINE NUMBER 2

**THREATENED AND EXTINCT SPECIES LISTING SPECIFICATIONS AND
CRITERIA**

1. LEGISLATIVE BASIS FOR THESE GUIDELINES

- 1.1. The *Biodiversity Conservation Act 2016* (the Act) provides for the Minister for Environment (the Minister) to list species as threatened species in the categories of critically endangered, endangered or vulnerable (section 19 of the Act); and to list species as extinct species in the categories of extinct or extinct in the wild (section 23 of the Act).
- 1.2. The Act provides that the Minister may issue *Ministerial Guidelines* establishing criteria for, and setting out other matters relevant to, the listing of threatened species (section 260(1)(b)) and extinct species (section 260(1)(b)).
- 1.3. This *Ministerial Guideline* (Number 2) provides:
- the **specifications** for the species that may be considered for listing; and,
 - the detailed **criteria** to be used for listing species in the categories - critically endangered (section 20 of the Act), endangered (section 21 of the Act), vulnerable (section 22 of the Act), extinct (section 24 of the Act) and extinct in the wild (section 25 of the Act).
- 1.4. This *Ministerial Guideline* (Number 2) should be read in conjunction with *Ministerial Guideline* (Number 1) which provides the procedure for any person to make a nomination for assessment and for the Minister to assess such a nomination. It also provides for the establishment of the Threatened Species Scientific Committee (TSSC) and that their role is to consider nominations and make a recommendation to the Minister for listing.
- 1.5. The TSSC will apply the specifications and criteria as set out in this *Ministerial Guideline* (Number 2) in making recommendations to the Minister on species to be listed and the categories to which they should be allocated.

2. SPECIFICATIONS FOR SPECIES THAT MAY BE CONSIDERED FOR LISTING

2.1. To be considered for listing, a species must be a native species as described in section 8(2) of the Act, and the species must be consistent with the definition in section 5 of the Act.

2.1.1. When describing a species that is to be included in the Threatened Species List, it must be identified with reference to the listing category and the criterion/criteria it satisfies for that listing as follows:

Unique name [category code criteria; criteria], e.g. *Genus species* [CR B2ab(iii); D].

2.1.2. The unique name will normally be the name that the species is accepted in either the Australian Plant Census or the Australian Faunal Directory. This may be a genus and species name, and may include a subspecies or variety name. Where a species is not formally named, the name will be that under which specimens of the species are curated in the WA Herbarium, WA Museum, or another recognised national institution.

2.2. Taxonomic levels that will be included in the meaning of 'species' for the purposes of this *Ministerial Guideline* (Number 2) are species and subspecies (and additionally for flora, varieties). Species do not have to be formally named but must be formally recognised by either the WA Herbarium or WA Museum.

2.3. Before a species of plant or animal can be assessed for listing, it must be established that the species can be uniquely identified and that there have been adequate surveys to establish its range and population status.

2.4. Only species that are known to occur, or have occurred, in Western Australia will be considered for listing as threatened species or extinct species under the Act.

3. CRITERIA FOR LISTING A SPECIES AS A THREATENED SPECIES OR AN EXTINCT SPECIES

3.1. The Act provides for listing threatened species and extinct species in the categories of:

3.1.1. critically endangered (section 20), that is, facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with criteria set out in the ministerial guidelines, or

3.1.2. endangered (section 21) facing a very high risk of extinction in the wild in the near future, as determined in accordance with criteria set out in the ministerial guidelines, or

3.1.3. vulnerable (section 22) facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with criteria set out in the ministerial guidelines, or

3.1.4. extinct (section 24) there is no reasonable doubt that the last member of the species has died, or

- 3.1.5. extinct in the wild (section 25) if it known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; and it has not been recorded in its known habitat or expected habitat, at appropriate seasons, anywhere in its past range, despite surveys over a time frame appropriate to its life cycle and form.
- 3.2. The risks referred to in paragraph 3.1 should be determined by applying the criteria set out at Appendix 1.
- 3.3. Appendix 1 adopts the criteria in the internationally recognised *International Union for Conservation of Nature's Red List of Threatened Species* (IUCN RL) published in the *IUCN Red List Categories and Criteria, Version 3.1* (IUCN 2001 and later editions).
- 3.3.1. The IUCN RL is a global standard for criteria that can be used to assess the status of species, and is applicable at local, national, regional and global levels.
- 3.3.2. Adoption of this standardised system allows for objective, transparent and repeatable assessments of the risk that a species will become extinct. These assessments are scientifically comparable, allowing assessors from different parts of the world and at different geographical scales to systematically compare their results.
- 3.3.3. The IUCN RL categories describe the risk of extinction by assessing: reduction in population size (A), geographic range (B), small population size and decline (C), very small or restricted population (D) or quantitative analysis (E).

4. INFORMATION REGARDING AMENDMENT AND REVIEW

- 4.1. This *Ministerial Guideline* (Number 2) may be amended in accordance with section 262 and Regulation 161 of the Biodiversity Conservation Regulations 2018.
- 4.2. This *Ministerial Guideline* (Number 2) may be amended if the IUCN RL is reviewed by the IUCN and as a result, a change or changes are made. The TSSC will provide a report to the Minister on whether the changes should be adopted in this Guideline.
- 4.3. A species may be reviewed against these criteria:
- 4.3.1. When the species falls due for review (*Ministerial Guideline* (Number 1)), or
- 4.3.2. If new information becomes available that is likely to affect the assessed listing category, or
- 4.3.3. If the Minister requests that the species be reviewed, or
- 4.3.4. If a change is made to this *Ministerial Guideline* (Number 2) a species listed under a criterion affected by the change will be assessed when the species falls due for review.

APPENDIX 1

CRITERIA FOR ASSESSING SPECIES FOR LISTING IN THE CATEGORIES OF CRITICALLY ENDANGERED, ENDANGERED, VULNERABLE, EXTINCT, AND EXTINCT IN THE WILD

The following criteria are adapted from the *IUCN Red List Categories and Criteria*, published in the following reference *IUCN Red List Categories and Criteria, Version 3.1* (IUCN 2001 and later editions).

This document can be downloaded from: <http://www.iucnredlist.org/technical-documents/red-list-documents>.

When using these criteria, the TSSC will also consult the following document *Guidelines for Using the IUCN Red List Categories and Criteria* that can be downloaded from: <http://www.iucnredlist.org/technical-documents/red-list-documents>.

Note: The IUCN uses the term 'taxon'. For the purposes of this Guideline, this term has been replaced with the term 'species' as defined in the *Biodiversity Conservation Act 2016*.

CRITICALLY ENDANGERED (CR)

A native species is eligible for listing in the category of critically endangered at a particular time if, at that time, it is facing an extremely high risk of extinction in the wild in the immediate future when the best available evidence indicates that it meets any of the criteria A to E.

Criterion A:

A. Reduction in population size based on any of the following:

- A1.** An observed, estimated, inferred or suspected population size reduction of $\geq 90\%$ over the last 10 years or three generations, whichever is the longer, where the causes of the reduction are clearly reversible **AND** understood **AND** [have] ceased, based on (and specifying) any of the following:
- (a) direct observation
 - (b) an index of abundance appropriate to the species
 - (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.
- A2.** An observed, estimated, inferred or suspected population size reduction of $\geq 80\%$ over the last 10 years or three generations, whichever is the longer, where the reduction or its causes may not have ceased **OR** may not be understood **OR** may not be reversible, based on (and specifying) **any of (a) to (e)** under A1.

- A3.** A population size reduction of $\geq 80\%$, projected, [inferred] or suspected to be met within the next 10 years or three generations, whichever is the longer (up to a maximum of 100 years), based on (and specifying) **any of (b) to (e)** under A1.
- A4.** An observed, estimated, inferred, projected or suspected population size reduction of $\geq 80\%$ over any 10 year or three generation period, whichever is longer (up to a maximum of 100 years in the future), where the time period must include both the past and the future, and where the reduction or its causes may not have ceased **OR** may not be understood **OR** may not be reversible, based on (and specifying) **any of (a) to (e)** under A1.

Criterion B:

B. Geographic range in the form of either B1 (extent of occurrence) OR B2 (area of occupancy) OR both:

- B1.** Extent of occurrence estimated to be less than **100 km²**, and estimates indicating at least two of a-c:
- a)** Severely fragmented **OR** known to exist at only a single location.
 - b)** Continuing decline, observed, [estimated,] inferred or projected, in any of the following:
 - (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 the following:
 - (i)** extent of occurrence
 - (ii)** area of occupancy
 - (iii)** number of locations or subpopulations
 - (iv)** number of mature individuals.
- B2.** Area of occupancy estimated to be less than **10 km²**, and estimate indicating at least two of a-c:
- a)** Severely fragmented **OR** known to exist at only a single location.
 - b)** Continuing decline, observed, [estimated,] inferred or projected, in any of the following:
 - (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 the following:
 - (i) extent of occurrence
 - (ii) area of occupancy
 - (iii) number of locations or subpopulations
 - (iv) number of mature individuals.

Criterion C:

C. Population size estimated to number fewer than 250 mature individuals and either:

- C1.** An [observed,] estimated [or projected] continuing decline of at least **25%** within three years or one generation, whichever is longer, (up to a maximum of 100 years in the future) **OR**
- C2.** A continuing decline, observed, [estimated,] projected, or inferred, in numbers of mature individuals **AND** at least one of the following (a-b):
 - a)** Population structure in the form of one of the following:
 - (i) no subpopulation estimated to contain more than **50** mature individuals, **OR**
 - (ii) at least **90%** of mature individuals in one subpopulation.
 - b)** Extreme fluctuations in [the] number of mature individuals.

Criterion D.

D. Population size estimated to number fewer than 50 mature individuals.

Criterion E:

E. Quantitative analysis showing the probability of extinction in the wild is at least 50% within 10 years or three generations, whichever is the longer (up to a maximum of 100 years).

ENDANGERED (EN)

A native species is eligible for listing in the category of endangered at a particular time if, at that time, it is considered to be facing a very high risk extinction in the wild in the near future when the best available evidence indicates that it meets any of the criteria A to E.

Criterion A:

A. Reduction in population size based on any of the following:

- A1.** An observed, estimated, inferred or suspected population size reduction of $\geq 70\%$ over the last 10 years or three generations, whichever is the longer, where the causes of the reduction are clearly reversible **AND** understood **AND** [have] ceased, based on (and specifying) any of the following:
- a) direct observation
 - b) an index of abundance appropriate to the species
 - 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.
- A2.** An observed, estimated, inferred or suspected population size reduction of $\geq 50\%$ over the last 10 years or three generations, whichever is the longer, where the reduction or its causes may not have ceased **OR** may not be understood **OR** may not be reversible, based on (and specifying) **any of (a) to (e)** under A1.
- A3.** A population size reduction of $\geq 50\%$, projected, [inferred] or suspected to be met within the next 10 years or three generations, whichever is the longer (up to a maximum of 100 years), based on (and specifying) **any of (b) to (e)** under A1.
- A4.** An observed, estimated, inferred, projected or suspected population size reduction of $\geq 50\%$ over any 10 year or three generation period, whichever is longer (up to a maximum of 100 years in the future), where the time period must include both the past and the future, and where the reduction or its causes may not have ceased **OR** may not be understood **OR** may not be reversible, based on (and specifying) **any of (a) to (e)** under A1.

Criterion B:

B. Geographic range in the form of either B1 (extent of occurrence) **OR** B2 (area of occupancy) **OR** both:

- B1.** Extent of occurrence estimated to be less than **5,000 km²**, and estimates indicating at least two of a-c:
- a) Severely fragmented **OR** known to exist at no more than five locations.

- b)** Continuing decline, observed, [estimated,] inferred or projected, in any of the following:
 - (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 the following:
 - (i)** extent of occurrence
 - (ii)** area of occupancy
 - (iii)** number of locations or subpopulations
 - (iv)** number of mature individuals.

B2. Area of occupancy estimated to be less than **500 km²**, and estimates indicating at least two of a-c:

- a)** Severely fragmented **OR** known to exist at no more than five locations.
- b)** Continuing decline, observed, [estimated,] inferred or projected, in any of the following:
 - (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 the following:
 - (i)** extent of occurrence
 - (ii)** area of occupancy
 - (iii)** number of locations or subpopulations
 - (iv)** number of mature individuals.

Criterion C:

C. Population size estimated to number fewer than 2,500 mature individuals and either:

- C1.** An [observed,] estimated [or projected] continuing decline of at least **20%** within five years or two generations, whichever is longer, (up to a maximum of 100 years in the future) **OR**

C2. A continuing decline, observed, [estimated,] projected, or inferred, in numbers of mature individuals **AND** at least one of the following (a-b):

a) Population structure in the form of one of the following:

(i) no subpopulation estimated to contain more than **250** mature individuals,
OR

(ii) at least **95%** of mature individuals in one subpopulation.

b) Extreme fluctuations in [the] number of mature individuals.

Criterion D:

D. Population size estimated to number fewer than 250 mature individuals.

Criterion E:

E. Quantitative analysis showing the probability of extinction in the wild is at least 20% within 20 years or five generations, whichever is the longer (up to a maximum of 100 years).

VULNERABLE (VU)

A native species is eligible for listing in the category of vulnerable species at a particular time if, at that time it is facing a high risk of extinction in the wild in the medium-term future when the best available evidence indicates that it meets any of the **Criteria A to E**.

Criterion A:

A. Reduction in population size based on any of the following:

- A1.** An observed, estimated, inferred or suspected population size reduction of $\geq 50\%$ over the last 10 years or three generations, whichever is the longer, where the causes of the reduction are clearly reversible **AND** understood **AND** [have] ceased, based on (and specifying) any of the following:
- a) direct observation
 - b) an index of abundance appropriate to the species
 - 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.
- A2.** An observed, estimated, inferred or suspected population size reduction of $\geq 30\%$ over the last 10 years or three generations, whichever is the longer, where the reduction or its causes may not have ceased **OR** may not be understood **OR** may not be reversible, based on (and specifying) **any of (a) to (e)** under A1.
- A3.** A population size reduction of $\geq 30\%$ projected, [inferred] or suspected to be met within the next 10 years or three generations, whichever is the longer (up to a maximum of 100 years), based on (and specifying) **any of (b) to (e)** under A1.
- A4.** An observed, estimated, inferred, projected or suspected population size reduction of $\geq 30\%$ over any 10 year or three generation period, whichever is longer (up to a maximum of 100 years in the future), where the time period must include both the past and the future, and where the reduction or its causes may not have ceased **OR** may not be understood **OR** may not be reversible, based on (and specifying) **any of (a) to (e)** under A1.

Criterion B:

B. Geographic range in the form of either B1 (extent of occurrence) **OR** B2 (area of occupancy) **OR** both:

- B1.** Extent of occurrence estimated to be less than **20,000 km²**, and estimates indicating at least two of a-c:
- a) Severely fragmented **OR** known to exist at no more than 10 locations.

- b) Continuing decline, observed, [estimated,] inferred or projected, in any of the following:
 - (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 the following:
 - (i) extent of occurrence
 - (ii) area of occupancy
 - (iii) number of locations or subpopulations
 - (iv) number of mature individuals.

B2. Area of occupancy estimated to be less than **2,000 km²**, and estimates indicating at least two of a-c:

- a) Severely fragmented **OR** known to exist at no more than 10 locations.
- b) Continuing decline, observed, [estimated,] inferred or projected, in any of the following:
 - (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 the following:
 - (i) extent of occurrence
 - (ii) area of occupancy
 - (iii) number of locations or subpopulations
 - (iv) number of mature individuals.

Criterion C:

C. Population size estimated to number fewer than 10,000 mature individuals and either:

- C1.** An [observed,] estimated [or projected] continuing decline of at least **10%** within 10 years or three generations, whichever is longer, (up to a maximum of 100 years in the future) **OR**

- C2.** A continuing decline, observed, [estimated,] projected, or inferred, in numbers of mature individuals **AND** at least one of the following (a-b):
- a)** Population structure in the form of one of the following:
 - (i)** no subpopulation estimated to contain more than **1,000** mature individuals,
OR
 - (ii)** all mature individuals in one subpopulation.
 - b)** Extreme fluctuations in [the] number of mature individuals.

Criterion D:

D. Population very small or restricted in the form of either of the following:

- D1. Population size estimated to number fewer than 1,000 mature individuals.
- D2. Population with a very restricted area of occupancy (typically less than 20 km²) or number of locations (typically five or fewer) [with a plausible future threat that could drive the species to] critically endangered or even extinct in a very short time period.

Criterion E:

- E. Quantitative analysis showing the probability of extinction in the wild is at least 10% within 100 years.**

EXTINCT SPECIES (EX)

Extinct species (EX)

Criterion (EX). A species is extinct when:

EX. There is no reasonable doubt that the last individual has died. A species is presumed extinct when exhaustive surveys in known and/or expected habitat, at appropriate times (diurnal, seasonal, annual), throughout its historic range have failed to record an individual. Surveys should be over a time frame appropriate to the species' life cycle and life form.

Extinct in the wild species (EW)

Criterion (EW). A species is extinct in the wild when:

EW. It is known only to survive in cultivation, in captivity or as a naturalised population (or populations) well outside the past range. A species is presumed extinct in the wild when exhaustive surveys in known and/or expected habitat, at appropriate times (diurnal, seasonal, annual), throughout its historic range have failed to record an individual. Surveys should be over a time frame appropriate to the species' life cycle and life form.