



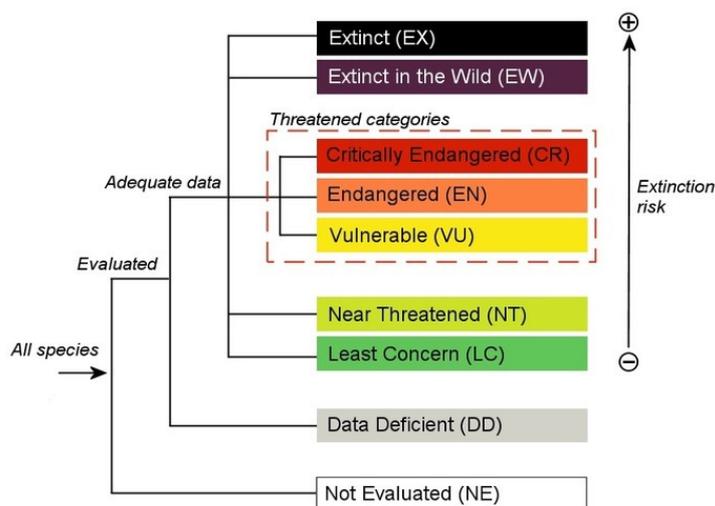
The IUCN Red List of Threatened Species™ (2000–2022; version 2022-2) (or the IUCN Red List) is the world’s most comprehensive information source on the global conservation status of plant, animal, and fungi species. It is based on an objective system for assessing the risk of extinction of a species should no conservation action be taken.

The world’s oldest and largest global environmental network, IUCN is a democratic membership union with more than 1,000 government and NGO member organizations, and almost 11,000 volunteer scientists and experts in some 160 countries.

IUCN, the International Union for Conservation of Nature, helps the world find pragmatic solutions to our most pressing environment and development challenges by supporting scientific research; managing field projects all over the world; and bringing governments, NGOs, the UN, international conventions, and companies together to develop policy, laws, and best practice.

The Red List Brochure and Criteria Summary, along with recent reports are available from the IUCN website resources.

Species are assigned to one of eight categories of threat based on whether they meet criteria linked to population trend, population size and structure and geographic range. Species listed as Critically Endangered, Endangered or Vulnerable are collectively described as ‘Threatened’.



The IUCN Red List is not just a register of names and associated threat categories. It is a rich compendium of information on the threats to the species, their ecological requirements, where they live, and information on conservation actions that can be used to reduce or prevent extinctions.

The IUCN Red List of Threatened Species™ is produced by the Red List Partnership, currently: Arizona State University, BirdLife International, Botanic Gardens Conservation International, Conservation International, Missouri Botanical Garden, International Union for Conservation of Nature (IUCN), NatureServe, ABQ BioPark, Royal Botanic Gardens Kew, Sapienza University of Rome, IUCN Species Survival Commission, Texas A&M University, Re:wild, and Zoological Society of London.

5W Foundation focusses of threatened species, namely Vulnerable, Endangered, and Critically Endangered classified species, and their ecosystems.



CATEGORIES

EXTINCT (EX)



A species is listed as Extinct when there is no reasonable doubt that the last individual has died. A species is presumed Extinct when exhaustive surveys, appropriate to the taxon's life cycle, in known and/or expected habitat, at appropriate times (diurnal, seasonal, annual), throughout its historic range have failed to record a single individual.

EXTINCT IN THE WILD (EW)



A species is listed as Extinct in The Wild when it is known only to survive in captivity or as artificially supported populations well outside their historical geographic range. A species is presumed Extinct in The Wild when exhaustive surveys, appropriate to the species' life cycle, in known and/or expected habitat, at appropriate times (diurnal, seasonal, annual), throughout its historic range have failed to record an individual.

CRITICALLY ENDANGERED (CR)



A species is listed as Critically Endangered when the best available evidence indicates that it meets any of the criteria A to E for Critically Endangered, and it is therefore considered to be facing an extremely high risk of extinction in the wild.

Criteria for CR Species

[Criteria A] Population Reduction Rate

- Measured over 10 years or 3 generations of the species, whichever is longer, based on, and specifying, 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 (AOO), extent of occurrence (EOO) and/or habitat quality
 - (d) actual or potential levels of exploitation
 - (e) effects of introduced taxa, hybridization, pathogens, pollutants, competitors, or parasites.
- A1. A species is classified as CR when the population has declined at least 90%, and the cause(s) of the decline is/are known, is/are clearly reversible and understood, and have ceased.
- A2. A species is also classified as CR when its population has declined at least 80% and the cause(s) of the decline is/are not known, where the reduction or its causes may not have ceased or may not be understood or may not be reversible.
- A3. A species is also classified as CR when a population size reduction of at least 80% is projected or suspected to be met within the next 10 years or 3 generations, whichever is the longer (up to a max 100 years)
- A4. A species is also classified as CR when an observed, estimated, inferred, projected, or suspected population size reduction of at least 80% over any 10 year or 3 generation period, whichever is longer (up to a max 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.

[Criteria B] Reduction Across a Geographic Range

- (B1 - extent of occurrence, or B2 - area of occupancy, or both)
- B1. A CR species' extent of occurrence is less than 100 km² (39 miles²).
- B2. A CR species' area of occupancy is estimated to be less than 10 km² (4 miles²).
- Criteria must include at least 2 of the following:
 - a) Severely fragmented or known to exist at only a single location.
 - b) Continuing decline, observed, 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.

[Criteria C] Population Size

- A species is CR when the population size is estimated to be fewer than 250 mature individuals.
- C1. In addition, either the decline is at least 25% within 3 years or 1 generation, whichever is longer, (up to a maximum of 100 years in the future), or
- C2. A continuing decline (observed, projected, or inferred) in numbers of mature individuals and at least 1 of the following (a-b):
 - a) A population structure exists where either: (i) no more than 50 mature individuals are estimated within any single subpopulation, or (ii) at least 90% of mature individuals are in a single subpopulation.
 - b) Extreme fluctuations in number of mature individuals.

[Criteria D] Population Restrictions

- A species is CR when the estimated population size is restricted to fewer than 50 mature individuals.
- When a species' population is this low, its area of occupancy is not considered.

[Criteria E] Probability of Extinction (Quantitative analysis)

- A species is CR when there is at least a 50% probability of going extinct in the wild within 3 generations or 10 years, whichever is longer (over a max of 100 years).

ENDANGERED (EN)



A species is listed as Endangered when the best available evidence indicates that it meets any of the criteria A to E for Endangered, and it is therefore considered to be facing a very high risk of extinction in the wild.

Criteria for EN Species

[Criteria A] Population Reduction Rate

- Measured over 10 years or 3 generations of the species, whichever is longer, based on, and specifying, 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 (AOO), extent of occurrence (EOO) and/or habitat quality
 - (d) actual or potential levels of exploitation
 - (e) effects of introduced taxa, hybridization, pathogens, pollutants, competitors, or parasites.
- A1. A species is classified as EN when its population has declined at least 70%, and the cause(s) of the decline is/are known, is/are clearly reversible and understood, and have ceased.



- A2. A species is also classified as EN when its population has declined at least 50% and the cause(s) of the decline is/are not known, where the reduction or its causes may not have ceased or may not be understood or may not be reversible.
- A3. A species is also classified as EN when its population reduction of at least 50%, is projected or suspected to be met within the next 10 years or 3 generations, whichever is the longer.
- A4. A species is also classified as EN when its observed, estimated, inferred, projected, or suspected population size reduction is at least 50% over any 10 year or 3 generation period, whichever is longer, where the time period must include both the past and the future, and where the reduction or its cause(s) may not have ceased or may not be understood or may not be reversible.

[Criteria B] Reduction Across a Geographic Range

- (B1 - extent of occurrence, or B2 - area of occupancy, or both)
- B1. A EN species' extent of occurrence is less than 5,000 km² (1,930 miles²).
- B2. A EN species' area of occupancy is estimated to be less than 500 km² (193 miles²).
- Criteria must include at least 2 of the following:
 - a) Severely fragmented or known to exist at no more than 5 locations.
 - b) Continuing decline, observed, 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.

[Criteria C] Population Size

- A species is EN when the population size is estimated to be fewer than 2,500 mature individuals.
- C1. In addition, either the decline is at least 20% within 5 years or 2 generations, whichever is longer, (up to a maximum of 100 years in the future), or
- C2. A continuing decline (observed, projected, or inferred) in numbers of mature individuals and at least 1 of the following (a-b):
 - a) A population structure exists where either: (i) no more than 250 mature individuals are estimated within any single subpopulation, or (ii) at least 95% of mature individuals are in a single subpopulation.
 - b) Extreme fluctuations in number of mature individuals.

[Criteria D] Population Restrictions

- A species is EN when the estimated population size is restricted to fewer than 250 mature individuals.

[Criteria E] Probability of Extinction (Quantitative analysis)

- A species is EN when there is at least a 20% probability of going extinct in the wild within 5 generations or 20 years, whichever is longer (over a max of 100 years).

VULNERABLE (VU)



A species is listed as Vulnerable when the best available evidence indicates that it meets any of the criteria A to E for Vulnerable status, and it is therefore considered to be facing a high risk of extinction in the wild.

Criteria for VU Species

[Criteria A] Population Reduction Rate

- Measured over 10 years or 3 generations of the species, whichever is longer, based on, and specifying, any of the following:
 - (a) direct observation [except A3]
 - (b) an index of abundance appropriate to the taxon



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- (c) a decline in area of occupancy (AOO), extent of occurrence (EOO) and/or habitat quality
 - (d) actual or potential levels of exploitation
 - (e) effects of introduced taxa, hybridization, pathogens, pollutants, competitors, or parasites.
- A1. A species is classified as VU when its population has declined at least 50%, and the cause(s) of the decline is/are known, is/are clearly reversible and understood, and have ceased.
 - A2. A species is also classified as VU when its population has declined at least 30% and the cause(s) of the decline is/are not known, where the reduction or its causes may not have ceased or may not be understood or may not be reversible.
 - A3. A species is also classified as VU when its population reduction of at least 30%, is projected or suspected to be met within the next 10 years or 3 generations, whichever is the longer.
 - A4. A species is also classified as VU when its observed, estimated, inferred, projected, or suspected population size reduction is at least 30% over any 10 year or 3 generation period, whichever is longer, where the time period must include both the past and the future, and where the reduction or its cause(s) may not have ceased or may not be understood or may not be reversible.
- [Criteria B] Reduction Across a Geographic Range
- (B1 - extent of occurrence, or B2 - area of occupancy, or both)
 - B1. A VU species' extent of occurrence is less than 20,000 km² (7,722 miles²).
 - B2. A VU species' area of occupancy is estimated to be less than 2,000 km² (772 miles²).
 - Criteria must include at least 2 of the following:
 - a) Severely fragmented or known to exist at no more than 10 locations.
 - b) Continuing decline, observed, 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.
- [Criteria C] Population Size
- A species is VU when the population size is estimated to be fewer than 10,000 mature individuals.
 - C1. In addition, either the decline is at least 10% within 10 years or 3 generations, whichever is longer, (up to a maximum of 100 years in the future), or
 - C2. A continuing decline (observed, projected, or inferred) in numbers of mature individuals and at least 1 of the following (a-b):
 - a) A population structure exists where either: (i) no more than 1,000 mature individuals are estimated within any single subpopulation, or (ii) all mature individuals are in a single subpopulation.
 - b) Extreme fluctuations in number of mature individuals.
- [Criteria D] Population Restrictions
- A species is VU when the estimated population size is very small or restricted in the form of either of the following:
 - D1. The population size is estimated to number fewer than 1,000 mature individuals, or
 - D2. The population has a very restricted occupancy area (typically less than 20 km²) or the population has a very restricted number of locations (typically 5 or fewer) such that it is prone to the effects of human activities or stochastic events within a very short time period in an uncertain future; thus, capable of becoming Critically Endangered or even Extinct in a very short time period.
- [Criteria E] Probability of Extinction (Quantitative analysis)
- A species is VU when there is at least a 10% probability of going extinct in the wild within 100 years.
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NEAR THREATENED (NT)

A species is listed as Near Threatened when it has been evaluated against the criteria but does not qualify for Critically Endangered, Endangered or Vulnerable at present, but is close to qualifying for or is likely to qualify for a threatened category in the near future.

LEAST CONCERN (LC)

A species is listed as Least Concern when it has been evaluated against the criteria and does not qualify for Critically Endangered, Endangered, Vulnerable or Near Threatened. Widespread and abundant species are included in this category. It is important to emphasize that "Least Concern" simply means that, in terms of extinction risk, these species are of lesser concern than species in other threat categories. It does not imply that these species are of no conservation concern.

DATA DEFICIENT (DD)

A species is Data Deficient when there is inadequate information to make a direct, or indirect, assessment of its risk of extinction based on its distribution and/or population status. A species in this category may be well studied, and its biology well known, but appropriate data on abundance and/or distribution are lacking. More information is required and acknowledges the possibility that future research will show that threatened classification is appropriate. This category does not reflect the extinction threat status of species.

NOT EVALUATED (NE)

A taxon is Not Evaluated when it has not yet been evaluated against the criteria. This category does not reflect the extinction threat status of species. It is a category used to include any of the approximately 2.12 million known and described species listed by the IUCN Red List but not yet assessed by the IUCN.