The California Natural Diversity Database

Review Process for Creating the

Special Animals List

State of California

Natural Resources Agency

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California Natural Diversity Database

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What are Special Animals?

"Special Animals" is a broad term used to refer to the animals tracked by the California Department of Fish and Wildlife's (CDFW) California Natural Diversity Database (CNDDB). Animals that are tracked are those included in the CNDDB. Various factors are considered when determining what is tracked in the CNDDB, such as listing status, rarity, distribution, declining populations, threats to habitat, or other imperilment. The CNDDB uses the term "element" to define what is tracked in the database; they are elements of natural diversity. Elements of natural diversity are often species, but may also include subspecies or populations [e.g., evolutionarily significant units (ESU) or distinct population segments (DPS)].

Once an animal is added to the Special Animal List as an element, CNDDB actively accepts and manages data for that element. CNDDB staff then evaluate the data and create occurrence assessments known as "element occurrences." Element occurrences summarize the text and spatial information known to CNDDB about an element in an area at a specific location and time. The process of evaluating data and including it in the CNDDB as element occurrences is referred to as "mapping" the data. The CNDDB distributes mapped element occurrences through the web application called BIOS or by download. The text portion of the occurrences can be accessed through the web-based query application called RareFind.

In summary, if an animal element is on the Special Animals List, it indicates that:

1. The element has some level of rarity or imperilment in California[1].
2. The CNDDB is actively accepting data for the element.

[1] Includes taxa listed under the state or federal Endangered Species Act, taxa included as a Species of Special Concern, and taxa which meet the criteria for listing as described in the California Environmental Quality Act Guidelines (Section 15380)

3. Element occurrences are mapped in the database for the element[2].

How are elements added to the Special Animals List?

As noted above, inclusion of elements in the CNDDB considers various factors, such as listing status, population status, vulnerability to threats, etc. As discussed below, some elements are included automatically while others require an assessment from CNDDB staff and/or other experts.

Elements added by default

By default, the CNDDB adds elements to the Special Animals List that are legally listed as Threatened or Endangered under the federal Endangered Species Act (ESA) or the California Endangered Species Act (CESA). Additionally, elements determined to be Species of Special Concern (SSC) by the California Department of Fish and Wildlife are also included. An SSC is a species, subspecies, or distinct population of an animal native to California that meets certain criteria for inclusion, such as declining trends, range reductions, small population size, etc.

Elements added by internal CNDDB review processes

Elements can be added to the Special Animals List through internal CNDDB review of their imperilment status. The CNDDB program assigns NatureServe[3] Conservation Status Ranks (see Appendix A) to elements on the Special Animals List, commonly known as state ranks or S ranks (e.g. S1, S2, SX, SNR, etc.). The CNDDB is also responsible for

[2] Mapping data is based on CDFW and/or CNDDB priorities and available resources.
[3] NatureServe is an international network of Natural Heritage Programs originally started by The Nature Conservancy around 1980 and implements a standard methodology for mapping, documenting, and ranking rare elements of natural diversity.

determining the NatureServe global rank, or G rank, for California endemic or near endemic species.

Conservation Status Ranks are determined by evaluating an element's status and vulnerability against standardized rarity, threat, and trend factors. These factors primarily include population size, area of occupancy, number of occurrences, and nature and degree of threats. A standardized ranking calculator was developed by NatureServe, parallel to the International Union for Conservation of Nature (IUCN)[4] Red List[5]. The calculator was designed to remove bias and produce repeatable results. The factors assessed in the rank calculator (rarity, threats, and trends) are scaled and weighted according to their impact on risk. Once the factors are scored, a rank is generated for review and adjustment (if appropriate) by a CNDDB biologist before a final Conservation Status Rank is assigned.

Information used to determine a Conservation Status Rank may come from species status reviews from federal or state agencies, published scientific literature, unpublished reports or data, or element occurrence information cataloged in the CNDDB or other datasets.

Animals ranked S1 (critically imperiled), S2 (imperiled) and S3 (vulnerable) are added to the Special Animals List. Elements ranked as S5 (secure) are not added to the Special Animals List. Elements ranked as S4 (apparently secure) are evaluated further by CNDDB staff based on an in-depth assessment of abundance, distribution, range, population trend, habitat associations, and risk factors. Elements ranked as S4 are included on the

[4] IUCN is an international organization consisting of governmental and non-governmental organizations that focuses on activities relating to nature conservation and sustainable use of natural resources.
[5] IUCN Red List is a global inventory of the conservation statuses of biological species. The regional ranks often come from NatureServe heritage programs.

Special Animals List if this assessment shows they may become more imperiled in the foreseeable future and tracking them may help inform future conservation actions.

Mechanism for other changes to the Special Animals list

An element is removed from the Special Animals List when it is no longer considered rare or imperiled. CNDDB uses various processes to help inform the decision as to whether an element should be removed from the list, including:

- Regular CNDDB program review
- Requests from CDFW or other taxa experts
- Actions under the ESA or CESA
- Updates to SSC lists
- Assessments from other conservation organizations

The elements on the Special Animals List are regularly reviewed and evaluated by CNDDB based on available data. Efforts are made to prioritize re-ranking of elements that have not been evaluated in several years, but also to address taxonomic updates, new discoveries, or changes in legal status. Through this review process, the element may be found to be more common, under lower risk of decline, or less vulnerable than previously understood, and removed from the Special Animals List. Conversely, the element may be found to be more at risk or vulnerable, confirming its placement on the Special Animals List.

Occasionally taxa experts will bring attention to elements that should be added or removed from the Special Animals List. In these cases, taxa experts will provide CNDDB with evidence that supports their claim. CNDDB staff will evaluate the element considering relevant new and existing information to determine if the ranking or re-ranking is warranted based on the standardized evaluation method.

As discussed previously, ESA or CESA listings result in automatic addition of listed elements to the Special Animals List. When an element is delisted according to the ESA

or CESA, that element is reassessed for inclusion on the Special Animals List as well. Likewise, when elements no longer qualify as an SSC, those elements are reassessed for inclusion on the Special Animals List. Lastly, the CNDDB also considers information from other conservation organizations or internal lists to add value to the element ranking process, and ultimately the decision to include elements on the Special Animals List. CDFW assesses Fully Protected species as designated by Fish and Game Code, or species recommended for inclusion by various CDFW working groups or science teams. CNDDB also considers external assessments from the Bureau of Land Management, California Department of Forestry and Fire Protection, Marine Mammal Commission, National Marine Fisheries Service, U.S. Fish and Wildlife Service, U.S. Forest Service, American Fisheries Society, North American Bird Conservation Initiative, and International Union for Conservation of Nature.

Appendix A: Definitions of Conservation Status Ranks

Global ranks (G ranks)

Global ranks reflect the status of a species throughout its worldwide range. Global ranks are assigned at the full species level. When assessing the status of a subspecies or variety, a trinomial rank (T rank) is also assigned indicating the status of the subspecies or variety throughout its worldwide range. Below are the main categories of global ranks:

- GX: Presumed Extinct – Not located despite intensive searches and virtually no likelihood of rediscovery.
- GH: Possibly Extinct – Known from only historical occurrences but still some hope of rediscovery. Examples of evidence include (1) that a species has not been documented in approximately 20-40 years despite some searching and/or some evidence of significant habitat loss or degradation; (2) that a species has been searched for unsuccessfully, but not thoroughly enough to presume that it is extinct throughout its range.
- G1: Critically Imperiled – At very high risk of extinction due to very restricted range, very few populations or occurrences, very steep declines, very severe threats, or other factors.
- G2: Imperiled – At high risk of extinction due to restricted range, few populations or occurrences, steep declines, severe threats, or other factors.
- G3: Vulnerable – At moderate risk of extinction due to a fairly restricted range, relatively few populations or occurrences, recent and widespread declines, threats, or other factors.

- G4: Apparently Secure – At fairly low risk of extinction due to an extensive range and/or many populations or occurrences, but with possible cause for some concern as a result of local recent declines, threats, or other factors.
- G5: Secure – At very low risk of extinction due to a very extensive range, abundant populations or occurrences, and little to no concern from declines or threats.
- GNR: Unranked – Global rank not yet assessed.

State ranks (S ranks)

State ranks reflect the status of a species, subspecies, or variety statewide. For the CNDDB, S ranks refer to the imperilment status only within California's state boundaries. Below are the main categories of state ranks:

- SX: Presumed Extirpated – Species is believed to be extirpated from the state. Not located despite intensive searches of historical sites and other appropriate habitat, and virtually no likelihood that it will be rediscovered
- SH: Possibly Extirpated – Known from only historical records but still some hope of rediscovery. There is evidence that the species may no longer be present in the state, but not enough to state this with certainty. Examples of such evidence include (1) that a species has not been documented in approximately 20-40 years despite some searching and/or some evidence of significant habitat loss or degradation; (2) that a species has been searched for unsuccessfully, but not thoroughly enough to presume that it is no longer present in the jurisdiction.
- S1: Critically Imperiled – At very high risk of extirpation in the state due to very restricted range, very few populations or occurrences, very steep declines, severe threats, or other factors.

- S2: Imperiled – At high risk of extirpation in the state due to restricted range, few populations or occurrences, steep declines, severe threats, or other factors.
- S3: Vulnerable – At moderate risk of extirpation in the state due to a fairly restricted range, relatively few populations or occurrences, recent and widespread declines, threats, or other factors.
- S4: Apparently Secure – At a fairly low risk of extirpation in the state due to an extensive range and/or many populations or occurrences, but with possible cause for some concern as a result of local recent declines, threats, or other factors.
- S5: Secure – At very low or no risk of extirpation in the state due to a very extensive range, abundant populations or occurrences, and little to no concern from declines or threats.
- SNR: Unranked – State rank not yet assessed.

Additional Ranking Notes

- Rank Qualifiers
    - Taxa which are subspecies receive a trinomial rank (T rank) in addition to the G rank. Whereas the G rank reflects the condition of the entire species, the T rank reflects the global status of just the subspecies. For example, the Point Reyes mountain beaver, *Aplodontia rufa* ssp. *phaea*, is ranked G5T2. The G rank refers to the whole species, i.e., *Aplodontia rufa*; the T rank refers only to the global condition of ssp. *phaea*.
    - C = Captive or Cultivated Only — taxon at present is presumed or possibly extinct or eliminated in the wild across their entire native range but is extant in cultivation, in captivity, as a naturalized population (or populations) outside their native range, or as a reintroduced population

not yet established. The “C” modifier is only used at a global level and not at a state level. Possible ranks are GXC or GHC.

- Q = Questionable taxonomy that may reduce conservation priority — Distinctiveness of this entity as a taxon at the current level is questionable; resolution of this uncertainty may result in change from a species to a subspecies or hybrid, or inclusion of this taxon in another taxon, with the resulting taxon having a lower-priority (numerically higher) conservation status rank. The “Q” modifier is only used at the global level, not at the state level.

- Uncertainty about the status of an element is expressed in two major ways:
  - By expressing the ranks as a range of values: e.g., S2S3 indicates the rank is somewhere between S2 and S3.
  - By adding a “?” to the rank: e.g., S2?; this represents more certainty than S2S3, but less certainty than S2.
- Other considerations used when ranking a species include the pattern of distribution of the element on the landscape, fragmentation of the population, and historical extent as compared to its modern range. It is important to take an overall view when ranking sensitive elements rather than simply counting element occurrences.

Appendix B: Decision-making flowchart for Special Animals List