

## Appendix A.1: Criteria for Selecting Species of Greatest Conservation Need of Plants & Fungi

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State Wildlife Action Plans are focused on the conservation of species and habitats in an effort to prevent them from becoming more rare and costly to protect or restore. As such, each state is required to identify the Species of Greatest Conservation Need (SGCN) and their habitats within the state that require conservation efforts to ensure their future.

SGCN are typically native species that through a combination of low and/or declining populations or vulnerability to threats, particularly anthropogenic threats, are considered to be at risk of becoming extinct, extirpated, endangered, or threatened, and would benefit from conservation attention. SGCN in New Jersey span taxonomic groups including birds, marine and terrestrial mammals, reptiles, amphibians, fish, several invertebrate groups, plants, and fungi. To provide a transparent and clearly defined mechanism for identifying SGCN, New Jersey Fish and Wildlife (NJFW) leverages the efforts of agencies and organizations who classify species' relative risk of imperilment using the SWAP Lexicon (Terwilliger 2022).

For plants and fungi, the New Jersey Natural Heritage Program (NJNHP) formed botanical (plants) and mycological (fungi) Technical Advisory Groups of experts to guide the selection process to create a list of SGCN for the 2025 SWAP. Table 1 provides an overview of the resources used in the selection process for Plants & Fungi SGCN. The tables that follow provide more details on how these references and data sources were used to 1) determine SGCN status for plants and fungi at global, national, regional, and state scales in Table 2, 2) use additional information from adjacent states used to determine SGCN for plants and fungi in Table 3 and identify data deficient species in Table 4.

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APPENDIX A.1 - Table 1. Overview of species status assessments used for each taxonomic group of plants and fungi.

|                        |                                                                                                                                                                                    | PLANTS: Vascular Plants |             |                |            |            | PLANTS: Nonvascular Plants |           |            | FUNGI                        |                            |
|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|-------------|----------------|------------|------------|----------------------------|-----------|------------|------------------------------|----------------------------|
|                        | Status Assessment (Table containing details)                                                                                                                                       | Angiosperms             | Gymnosperms | Ferns & Allies | Clubmosses | Horsetails | Mosses                     | Hornworts | Liverworts | Non-lichenized Fungi (Fungi) | Lichenized Fungi (Lichens) |
| Global                 | NatureServe G-ranks (Table 2)                                                                                                                                                      | x                       | x           | x              | x          | x          | x                          | x         | x          | x                            | x                          |
|                        | The IUCN Red List of Threatened Species                                                                                                                                            | x                       | x           | x              | x          | x          | x                          | x         | x          | x                            | x                          |
| National & Continental | USFWS Federal Listing Status (Table 2)                                                                                                                                             | x                       | x           | x              | x          | x          | x                          |           |            |                              | x                          |
|                        | NatureServe N-ranks (Table 2)                                                                                                                                                      | x                       | x           | x              | x          | x          | x                          | x         | x          | x                            | x                          |
| Regional               | North Atlantic LLC RSGCN (Table 2)                                                                                                                                                 | x                       | x           | x              | x          | x          |                            |           |            |                              |                            |
|                        | Adjacent State Listing Status (Table 3)                                                                                                                                            | x                       | x           | x              | x          | x          | x                          |           |            |                              |                            |
|                        | Adjacent State S-ranks (Table 3)                                                                                                                                                   | x                       | x           | x              | x          | x          | x                          |           |            |                              |                            |
| State                  | New Jersey Endangered Plant Listing Status (Table 2)                                                                                                                               | x                       | x           | x              | x          | x          | x                          |           |            |                              |                            |
|                        | State biologists rely on field experience and status and trend information from the literature in their review of the above information (Described below in "Fatal Flaw Analysis") | x                       | x           | x              | x          | x          | x                          | x         | x          | x                            | x                          |

## All Taxonomic Groups

APPENDIX A.1 - Table 2. References and data sources reviewed to determine SGCN status for plants and fungi at global, national, regional, and state scales.

| Source                               | Criteria                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Justification and Additional Information                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|--------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Global                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| NatureServe G-Ranks                  | NatureServe Global (G) Conservation Status Ranks: NatureServe assigns Global (G), National (N) and Subnational=State (S) species' ranks by "researching and recording information on a set of conservation status factors" (Faber-Langendoen et al. 2012). The protocol for assigning a Global Conservation Status Rank is based on scoring an element against ten conservation status factors, which are grouped into three categories based on the characteristic of the factor: rarity (six factors), trends (two factors), and threats (two factors). |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|                                      | Global Conservation Status G1, Critically Imperiled                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | G1 Critically Imperiled is the highest global rank contributing to NJ's SGCN list. These include species "at very high risk of extinction or elimination due to very restricted range, very few populations or occurrences, very steep declines, very severe threats, or other factors."                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|                                      | Global Conservation Status G2, Imperiled                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | G2 Imperiled includes species "at high risk of extinction or elimination due to restricted range, few populations or occurrences, steep declines, severe threats, or other factors."                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|                                      | Global Conservation Status G3, Vulnerable                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | G3 Vulnerable includes species "at moderate risk of extinction or elimination due to a fairly restricted range, relatively few populations or occurrences, recent and widespread declines, threats, or other factors."                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| IUCN Red List of Threatened Species  | Critically Endangered                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | The IUCN Red List is a "system for classifying species at high risk of global extinction." The process for qualifying species is extensive (IUCN Standards and Petitions Committee 2022). Extinct means that there is no reasonable doubt that the last individual has died. Extinct in the Wild means that the taxon is extinct in its natural habitat (see Introduced taxa above). The following three categories, Critically Endangered, Endangered, and Vulnerable, are assigned to taxa on the basis of quantitative criteria that are designed to reflect varying degrees of threat of extinction; taxa in any of these three categories are collectively referred to as 'threatened'. The category Near Threatened is applied to taxa that do not qualify as threatened now, but may be close to qualifying as threatened, and to taxa that do not currently meet the criteria for a threatened category but are likely to do so if ongoing conservation actions abate or cease. |
|                                      | Endangered                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|                                      | Vulnerable                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|                                      | Near Threatened                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| National and Continental             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| US Fish and Wildlife Service (USFWS) | Endangered (E)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | An Endangered plant species is in danger of extinction throughout all or a significant portion of its range. USFWS implements a rulemaking/regulatory procedure to assess a species' population status including those meeting the definition of Endangered or Threatened and soliciting biological information regarding Candidate species that will contribute to their status review. Endangered and Threatened species have been included as they have been found to be "in danger of extinction throughout all or a significant portion of its range" or "likely to become endangered within the foreseeable future throughout all or a significant portion of its range", respectively (Ecological Services 2023). USFWS Listed Species: <a href="https://ecos.fws.gov/ecp/species-reports">https://ecos.fws.gov/ecp/species-reports</a>                                                                                                                                          |
|                                      | Threatened (T)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | A Threatened plant species is likely to become endangered within the foreseeable future throughout all or a significant portion of its range.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                                      | Candidate Species (CS)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | A Candidate plant species is one for which the U.S. Fish and Wildlife Service (FWS) has sufficient information on their biological status and threats to propose them as endangered or threatened under the Endangered Species Act (ESA), but for which development of a proposed listing regulation is precluded by other higher priority listing activities." (Ecological Services 2017) Additional information regarding candidate species can be found at the following websites: USFWS jurisdiction: <a href="https://ecos.fws.gov/ecp/report/candidate-species">https://ecos.fws.gov/ecp/report/candidate-species</a>                                                                                                                                                                                                                                                                                                                                                             |

*Appendix A.1: Criteria for Selecting Species of Greatest Conservation Need of PLANTS & FUNGI*

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|--------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| NatureServe N-Ranks                                    | NatureServe National (N) Conservation Status Ranks: NatureServe assigns Global (G), National (N) and Subnational=State (S) species' ranks by "researching and recording information on a set of conservation status factors" (Faber-Langendoen et al. 2012). The protocol for assigning a National Conservation Status Rank is based on scoring an element against ten conservation status factors, which are grouped into three categories based on the characteristic of the factor*: rarity (six factors), trends (two factors), and threats (two factors).                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|                                                        | National Conservation Status Rank (N1), Critically Imperiled                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | N1 Critically Imperiled is the highest national rank contributing to NJ's SGCN list. Similar to G1 but ranked at a national geographic scale, these species are at very high risk of extinction or elimination due to very restricted range, very few populations or occurrences, very steep declines, very severe threats, or other factors.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|                                                        | National Conservation Status Rank (N2), Imperiled                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | N2 Imperiled, species are at high risk of extinction or elimination due to restricted range, few populations or occurrences, steep declines, severe threats, or other factors.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|                                                        | National Conservation Status Rank (N3), Vulnerable                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | N3 Vulnerable, is the lowest regional (i.e., national/subnational) rank contributing to NJ's SGCN list. Similar to G3 but more localized, these include species that are at moderate risk of extirpation in the jurisdiction due to a fairly restricted range, relatively few populations or occurrences, recent and widespread declines, threats, or other factors.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Regional</b>                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Regional Species of Greatest Conservation Need (RSGCN) | Regional Species of Greatest Conservation Need (RSGCN) are native species for which a geographic region has a stewardship responsibility due to high conservation concern and/or populations that are concentrated in the region and that have been identified as SGCN by at least one state. RSGCN are selected by considering current standard status assessments and by building consensus among taxonomic experts' region wide (Terwilliger Consulting Inc. & Northeast Fish and Wildlife Diversity Technical Committee 2022). The only RSGCN assessment that specifically includes portions of New Jersey is the North Atlantic LLC RSGCN, while the New England Flora Conservanda and the Southeastern RSGCN lists include some of the rare plants that occur in New Jersey but do not represent RSGCN per se. A Northeast Plant RSGCN is needed. |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|                                                        | R1 -Regionally Critically Imperiled), R2 - (Regionally Imperiled), or R3 - (Regionally Vulnerable)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | The North Atlantic Landscape Conservation Cooperative (NALCC) Regional Species of Greatest Conservation Need (RSGCN) was created in the publication "Prioritization and Conservation Status of Rare Plants in the North Atlantic" (NatureServe, 2017). The North Atlantic LLC area includes ecoregions from Virginia to Maritime Canadian Provinces. In New Jersey this includes rare plants documented in the Coastal Plain and Piedmont Ecoregions only. The primary outcome is a prioritized list of rare, highly threatened, declining, or sensitive plant species identified for conservation action based largely on NatureServe Global Ranks and state heritage program element occurrence data using NatureServe's Ranking Methodology that incorporates data on distribution, abundance, threats, and trends for each taxon. There are 7 regional ranking categories, RX, RH, R1, R2, R3, R4, R5 that follow NatureServe Conservation Status Assessment Global Ranking. Of the 3135 evaluated taxa, 431 had the Regional R-ranks of R1 (Regionally Critically Imperiled), R2 (Regionally Imperiled), or R3 (Regionally Vulnerable) presenting the highest conservation priorities for the NALCC.<br><a href="https://www.natureserve.org/sites/default/files/natureserve_rare_plant_prioritization_north_atlantic_lcc_final_report_-_revised_dec_2017.pdf">https://www.natureserve.org/sites/default/files/natureserve_rare_plant_prioritization_north_atlantic_lcc_final_report_-_revised_dec_2017.pdf</a> |
|                                                        | Regional Conservation Priority Divisions: 1 -Globally Rare; 2--Regionally Rare Taxa; 3--Locally Rare Taxa; 4--Historic Taxa; and Indeterminate.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Flora Conservanda: New England 2012 is a list of 590 priority plant species in need of conservation developed by the New England Plant Conservation Program (NEPCoP) that included 6 New England Natural Heritage Program botanists and other experts. Determination for listing is based on the Global Rank of the species and the number of Element Occurrences (EO) regionally. The list includes five divisions of rarity and priority: Division 1--Globally Rare Taxa (61 taxa); Division 2--Regionally Rare Taxa (325 taxa); Division 3--Locally Rare Taxa (57 taxa); Division 4--Historic Taxa (94 taxa); and Division Indeterminate (IND.; 52 taxa). <a href="https://bioone.org/journals/rhodora/volume-115/issue-964/13-20/Flora-Conservanda--New-England-2012-The-New-England-Plant/10.3119/13-20.short">https://bioone.org/journals/rhodora/volume-115/issue-964/13-20/Flora-Conservanda--New-England-2012-The-New-England-Plant/10.3119/13-20.short</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

*Appendix A.1: Criteria for Selecting Species of Greatest Conservation Need of PLANTS & FUNGI*

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|--------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                            | Levels of Conservation Concern:<br>Very High, High, Moderate, Low,<br>Manual Review Needed                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Southeastern Plants RSGCN (Radcliffe et al, 2023) published the first RSGCN for plants. It is a list of 1824 rare plant taxa developed by a team of expert botanists from NatureServe and network heritage programs with Biotics data, Terwilliger Consulting, Inc. (TCI), Flora of the Southeastern United States (FSUS, Weakley et al.), and the Southeast Association of Fish & Wildlife Agencies (SEAFWA). The Level of Conservation Concern ranks are based on NatureServe's Global Ranks and subnational (state) criteria e.g., Very High = G1, GH, GX, or G2 taxa. <a href="https://www.se-pca.org/southeastern-plants-rsgcn/">https://www.se-pca.org/southeastern-plants-rsgcn/</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>State</b>                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| NatureServe State S-ranks are assigned by the New Jersey Natural Heritage Program Botanist | NatureServe State (S) Conservation Status Ranks: The New Jersey Natural Heritage Program has adapted the NatureServe Conservation Ranking approach to determine the relative endangerment or stability of plant species in the state (Faber-Langendoen et al, 2012). The January 2024 List of Endangered Plant Species and Plant Species of Concern report was compiled by Natural Heritage Program Botanist David B. Snyder based on information in the Department's Biotics Database. This list is the result of many years of collaborative effort by individuals, organizations and institutions interested in the preservation of New Jersey's rare native flora. The List of Endangered Plant Species and Plant Species of Concern can be downloaded at <a href="https://www.nj.gov/dep/parksandforests/natural/docs/njplantlist.pdf">https://www.nj.gov/dep/parksandforests/natural/docs/njplantlist.pdf</a> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|                                                                                            | State Endangered Plant Species                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | In 1989, the Endangered Plant Species List Act was enacted (Endangered Plant Species List Act, N.J.S.A. 13:1B-15.151 et seq.). The New Jersey Legislature declared that "plant species have medicinal, genetic, ecological, educational, and aesthetic value to the citizens of New Jersey" and directed the Division of Parks and Forestry to create the State's first official list of plant species endangered in New Jersey. Endangered plants were defined in the act as native species whose survival in the state or nation is in jeopardy, including plant species listed, proposed or under review by the federal government as endangered or threatened in the United States, any additional species known or believed to be rare throughout its worldwide range, and any species having five or fewer extant populations within the state. In 1991 the Endangered Plant Species List was first adopted through rulemaking. Since then, the list has been periodically updated based on information in the Department's Natural Heritage Biotics Database. The list of State Endangered Plant Species and Plant Species of Concern contains the native New Jersey plant species currently listed as endangered in the state, along with information about the other plants tracked by the Natural Heritage Program. The 2013 State Endangered Plant Species List includes 356 species; an update to the list is in progress and adoption is anticipated in 2025. |
|                                                                                            | S1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | S1 Critically Imperiled in New Jersey — At very high risk of extirpation in the jurisdiction due to very restricted range, very few populations or occurrences, very steep declines, severe threats, or other factors.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|                                                                                            | S2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | S2 Imperiled in New Jersey — At high risk of extirpation in the jurisdiction due to restricted range, few populations or occurrences, steep declines, severe threats, or other factors.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|                                                                                            | S3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | S3 Vulnerable in New Jersey — At moderate risk of extirpation in the jurisdiction due to a fairly restricted range, relatively few populations or occurrences, recent and widespread declines, threats, or other factors.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

\* To read more about NatureServe's Conservation Status Assessments, Methodology for Assigning Ranks, please visit their website:

<https://www.natureserve.org/conservation-status-assessment>

\*\* IUCN Red List parameters for qualifying species are extensive. For more information, please visit their website:

<https://www.iucnredlist.org/resources/categories-and-criteria>

## Plants & Fungi

**APPENDIX A.1 - TABLE 3: Additional information from adjacent states\* used to determine SGCN status for plants and fungi.**

| Assessment                               | Criteria                                                                                                                             | Outcome         | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|-----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Adjacent state S-ranks                   | S1, S2, or S3 in any of 5 adjacent states (DE, MD, PA, NY, and CT)                                                                   | Include as SGCN | Includes species ranked as S1 (critically imperiled), S2 (imperiled), or S3 (vulnerable) in states surrounding NJ. These state ranks are determined by each state using methods developed by NatureServe* and are based on the best available information and consider a variety of factors such as species abundance, distribution, population trends and threats. NatureServe state rank procedures often have different criteria, evidence requirements, purposes, and taxonomic coverage than state lists of endangered and threatened species. |
| Adjacent state listing protection status | Listed Endangered, Threatened, Special Concern, Rare, Vulnerable, or Extirpated in any of 5 adjacent states (DE, MD, PA, NY, and CT) | Include as SGCN | The listing process in each surrounding state varies, but in each state a committee of experts is assembled to evaluate the extinction risk of each species. Status of species in surrounding states is being used to complement limited data on species status in New Jersey.                                                                                                                                                                                                                                                                      |

**\*Adjacent State rare plant websites:**

|              |                                                                      |                                                                                                                                                                                                                                                               |
|--------------|----------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Connecticut  | Endangered, Threatened, and Special Concern Plants of Connecticut    | <a href="https://portal.ct.gov/deep/endangered-species/endangered-species-listings/endangered-threatened--special-concern-plants">https://portal.ct.gov/deep/endangered-species/endangered-species-listings/endangered-threatened--special-concern-plants</a> |
| Delaware     | Rare and Uncommon Plants of Delaware                                 | <a href="https://documents.dnrec.delaware.gov/fw/conservation/Rare-and-Uncommon-Plants-of-Delaware.pdf">https://documents.dnrec.delaware.gov/fw/conservation/Rare-and-Uncommon-Plants-of-Delaware.pdf</a>                                                     |
| Maryland     | Rare, Threatened, and Endangered Plants of Maryland                  | <a href="https://dnr.maryland.gov/wildlife/pages/plants_wildlife/rte/rteplants.aspx">https://dnr.maryland.gov/wildlife/pages/plants_wildlife/rte/rteplants.aspx</a>                                                                                           |
| New York     | New York Rare Plant Status Lists December 2023                       | <a href="https://www.nynhp.org/documents/5/rare-plant-status-lists-2023.pdf">https://www.nynhp.org/documents/5/rare-plant-status-lists-2023.pdf</a>                                                                                                           |
| New York     | New York Rare Moss Status List October 2008                          | <a href="https://www.nynhp.org/documents/7/rare_mosses_2008.pdf">https://www.nynhp.org/documents/7/rare_mosses_2008.pdf</a>                                                                                                                                   |
| New York     | New York State Protected Plants                                      | <a href="https://dec.ny.gov/nature/animals-fish-plants/plants/state-protected-plants">https://dec.ny.gov/nature/animals-fish-plants/plants/state-protected-plants</a>                                                                                         |
| Pennsylvania | Pennsylvania's Rare, Threatened, and Endangered Plants               | <a href="https://www.dcnr.pa.gov/Conservation/WildPlants/RareThreatenedAndEndangeredPlants/Pages/default.aspx">https://www.dcnr.pa.gov/Conservation/WildPlants/RareThreatenedAndEndangeredPlants/Pages/default.aspx</a>                                       |
| Pennsylvania | Pennsylvania's Rare, Threatened, and Endangered Species and Features | <a href="https://www.naturalheritage.state.pa.us/SpeciesFeatures.aspx">https://www.naturalheritage.state.pa.us/SpeciesFeatures.aspx</a>                                                                                                                       |

## Data Deficient Species

APPENDIX A.1 - Table 4. Criteria that dictate if plants and fungi species need further investigation. They are considered 'Assessment Priority SGCN' based on the NJ Natural Heritage Program assessment as being Data Deficient (DD) SGCN taxa. Note that the SWAP Lexicon (Terwilliger 2022) calls these taxa State Assessment Priority Species (SAPS).

| Species suite                       | Source                      | Rank                                | Justification                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-------------------------------------|-----------------------------|-------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| PLANTS:<br>NONVASCULAR<br>and FUNGI | NJ Natural Heritage Program | State Status of Data Deficient SGCN | The New Jersey Natural Heritage Program has adapted and implements the Delphi Status Review (or Delphi Technique) to determine the relative endangerment or stability of a species in the state. A systematic method for reaching consensus among experts, the Delphi process is an iterative process characterized by anonymity among the participating experts and controlled feedback via the principal investigator. Herbaria records and publications are used in addition to botanical or mycological expertise. The results of this assessment are used to determine the state rarity or to determine that while rarity is indicated based on known distribution data, a rank is Unknown at this time. More data is needed to determine the rarity status. Therefore, the taxa are considered a data deficient (DD) SGCN. This applies to Vascular and Nonvascular Plants as well as Fungi. |

## Data Sources used in 2024 for Plants and Fungi SGCN

The following resources were used by the NJ Natural Heritage Program Botanical and Mycological Technical Advisory Groups to inform the decisions on which plant and fungi species and habitats to include in the SWAP as SGCN, including:

- The New Jersey Natural Heritage Program [List of Endangered Plant Species and Plant Species of Concern](#), dated January 2024, is based in current information in the Biotics database and the professional assessment by David Snyder before he retired on February 1, 2024. The number of rare plants in the state is now 863, representing 40.6% of the native flora (2,121 taxa). However, available data on the biology, threats and conservation actions for each species is limited. We therefore selected a subset of highest priority 100 vascular plant species with information on threats and management recommendation to include as SGCN in the 2025 SWAP. Additional plants and fungi may be added as SGCN in future revisions of the SWAP.

- [Rare Plant Profiles](#) excellent summaries on biology, ecology, threats, management recommendations for select rare plants.
- [Climate Change Vulnerability Assessments](#) (CCVI) is a report on the climate vulnerability of 70 State Endangered Plants in four rare habitats in New Jersey.
- [Integrated Management Guidelines for Four Habitats and Associated State Endangered Plants and Wildlife Species of Greatest Conservation Need in the Skylands and Pinelands Landscape Conservation Zones of the New Jersey State Wildlife Action Plan](#) (2013) is a report that focuses on the 70 CCVI State Endangered Plant species and 30 rare animal Species of Greatest Conservation Need (SGCN) in four rare habitats within two SWAP Landscape Regions, identifying threats and stresses, and providing information for guided conservation and integrated management of SGCN.
- [USFWS Recovery Plans](#) for Federally Listed New Jersey Plant Species (*Aeschynomene virginica*, *Amaranthus pumilus*, *Helonias bullata*, *Isotria medeoloides*, *Rhynchospora knieskernii*, *Schwalbea americana*). These 6 listed species are top priority for SGCN consideration.
- [Environmental Trends Report: Endangered Plants](#) (2021)
- [New Jersey Native Regional Plant List 2022](#)
- Herbarium Records
  - [The Chrysler Herbarium and Mycological Collection](#) at Rutgers University in New Brunswick, New Jersey
  - New York Botanical Garden [William & Lynda Steere Herbarium](#) and [C.V. Starr Virtual Herbarium](#)
  - [Mid-Atlantic Herbaria Consortium](#)
  - [Consortium of Northeast Herbaria](#)
- [Fungal Diversity Survey](#) and database

## Selection Process

A dataset capturing all the data sources above was systematically filtered to identify species meeting one or more criteria to be considered SGCN.

## Fatal Flaw Analysis

Of the 2,121 native vascular plants in New Jersey, 863 (40.7%) are considered rare by the New Jersey Natural Heritage Program and are included in the 2024 [List of Endangered Plant Species and Plant Species of Concern](#). The botanical Technical Advisory Group (TAG) members were provided with this full list of rare species and asked to select the highest priority 100 species to include in the 2025 SWAP. Global, National, State rarity ranking of the species were considered, as were federal Threatened and Endangered protection status, and State Endangered Plant status. The mycological experts in



the TAG considered a much larger dataset of thousands of fungal species, using herbarium records, state distribution data and other resources to select 5 species as SGCN and 23 species in the Data Deficient SGCN category. The Technical Advisory Group team members contributed time and expertise to the Fatal Flaw Analysis and were satisfied with the final selection of SGCN species for the SWAP. Clearly more than the subset of 100 highest priority plant and 28 fungal species of SGCN selected are worthy of assessment and inclusion in the SWAP, however, due to limited staff resources the decision was made to use a small subset for the first SWAP to include plants in New Jersey and to contribute additional species in future updates.

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