

**Schweinitz's Sunflower  
(*Helianthus schweinitzii*)**

**5-Year Status Review:  
Summary and Evaluation**



Photo credit: Rebekah Reid/USFWS

**U.S. Fish and Wildlife Service  
Southeast Region  
Asheville Ecological Services Field Office  
Asheville, North Carolina**

**December 2024**

**5-YEAR STATUS REVIEW**  
**Schweinitz's Sunflower (*Helianthus schweinitzii*)**

**GENERAL INFORMATION**

**Current Classification:** Endangered

**Lead Field Office:** Asheville Ecological Services Field Office

**Review Author(s):** Michelle Henson, Asheville Ecological Services Field Office, U.S. Fish and Wildlife Service, 828-258-3939

**Reviewers:**

**Lead Regional Office:** Southeast Region, Carrie Straight, (404) 679-7226

**Cooperating Field Office(s):** South Carolina Ecological Services Field Office, Charleston, South Carolina, Melissa Chaplin, Raleigh Ecological Services Field Office, Raleigh, North Carolina, Dale Suiter

**Date of original listing:** June 6, 1991 (56 FR 21807; May 7, 1991)

**Methodology used to complete the review:** In accordance with section 4(c)(2) of the Endangered Species Act of 1973, as amended (Act), the purpose of a status review is to assess each threatened species or endangered species to determine whether its status has changed and if it should be classified differently or removed from the Lists of Threatened and Endangered Wildlife and Plants ([50 CFR 424.11](#)). The U.S. Fish and Wildlife Service (Service) evaluated the best available information about the biology, habitat, and threats of Schweinitz's sunflower (*Helianthus schweinitzii*) to inform this status review.

We announced initiation of this review in the Federal Register on June 6, 2024 (89 FR 48437) with a 60-day comment period and received no comments. The primary sources of information used in this analysis were information from agency reports, unpublished survey data and reports, peer-reviewed scientific publications, and personal communication with recognized experts. This review was completed by the U.S. Fish and Wildlife Service's Asheville Ecological Services Field Office, Asheville, North Carolina. All literature and documents used for this review are on file at the Field Office.. Occurrence data for this status review was provided by North Carolina Natural Heritage Program and South Carolina Heritage Trust Program offices. All recommendations resulting from this review are the result of thoroughly reviewing the best available information on Schweinitz's sunflower.

**FR Notice citation announcing the species is under active review:** June 6, 2024 (89 FR 48437)

**Species' Recovery Priority Number at start of 5-year review ([48 FR 43098](#)):**

2C, corresponding to high magnitude of threat, high recovery potential, taxonomic status of species, and a potential for conflict with economic development.

## **Review History**

Previous 5-year reviews recommending no change in status were signed on August 24, 2010, and December 17, 2019 (Service 2010, Service 2019).

## **REVIEW ANALYSIS**

### **Listed Entity**

#### **Taxonomy and nomenclature**

We are not aware of any changes to the taxonomy of this entity, and it is still considered valid by the Service.

#### **Distinct Population Segment (DPS) ([61 FR 4722](#))**

The Act defines species as including any subspecies of fish or wildlife or plants, and any distinct population segment of any species of vertebrate wildlife. This definition limits listing of a DPS to only vertebrate species. Because the species under review is not a vertebrate, the DPS policy does not apply.

### **Recovery Criteria**

#### **Recovery Plan or Outline**

Recovery Plan for Schweinitz's Sunflower (*Helianthus schweinitzii*), U.S. Fish and Wildlife Service, 1994.

**Date Issued:** April 22, 1994

Recovery plans are not regulatory documents and are intended to provide guidance to the Service, States, and other partners on methods of minimizing threats to listed species and on criteria that may be used to determine when recovery is achieved. If the recovery criteria defined in the plan are still valid, meeting recovery criteria can indicate that the species no longer requires protections under the Act. However, when recommending whether a listed species should be delisted, the Service must apply the factors in section 4(a) of the Act ([84 FR 45020](#)).

#### **Criteria for reclassification from endangered to threatened**

*When 10 geographically distinct self-sustaining populations are protected in at least four counties in North Carolina and one county in South Carolina*

The condition of each population has been assessed using data from the North Carolina Natural Heritage Program (NCNHP) and South Carolina Heritage Trust Program (SCHTP) (jointly referred to as the States and singularly as North Carolina and South Carolina, respectively). In the absence of population definitions, we use North Carolina element occurrences (EOs or occurrences) and sub-element occurrences (subEOs and suboccurrences) as proxies for populations and subpopulations in North Carolina (NC). In South Carolina (SC), we adhere to the original population definitions established by Houk (2003). Element occurrence (EO) ranks are assigned to each Schweinitz's sunflower population by the States and serve as an overall

assessment of the estimated viability (probability of persistence) and ecological integrity of a species occurrence within a given habitat (NatureServe 2020). Occurrence ranks estimate the likelihood that a species occurrence will persist over time if current conditions remain unchanged (NatureServe 2020). Those ranks reflect the overall quality of an occurrence as it currently exists and incorporate factors such as population size, occupied area, abiotic and biotic conditions, and landscape context.

**Self-sustaining.** Likely self-sustaining populations - Populations with an A-rank (excellent viability) or B-rank (good viability) exhibit favorable or optimal characteristics for the foreseeable future (i.e. at least 20-30 years) in terms of population size, quality, and quantity of the occupied habitat for species recovery. These occurrences possess attributes, such as size, condition, and landscape context, that make them relatively invulnerable to extirpation or population decline. Active land management is required for species persistence in the future (see the next criteria).

Species data from the states were evaluated for population presence, protection status, and rank. There are 31 geographically distinct populations (27 in NC and four in SC) of Schweinitz's sunflower under some form of protective ownership. These protected populations occur in: Mecklenburg, Montgomery, Gaston, Union, Randolph, Stanly, Stokes, Richmond, Surry, Cabarrus, and Davidson counties in NC (11 counties) and York County in SC. Based on recent data, the number of populations has changed from the 2019 5-year review, with populations and subpopulations either being added or removed from Appendix A.

Of the 31 populations, 10 represent a rank with good to excellent viability (ranks A, B, or AB). Seven populations in NC have an A-rank and three have a B-rank, while one population in SC has an AB-rank. These protected populations are distributed across seven counties in NC and one county in SC.

Out of the 31 populations, 17 are entirely protected, including all sub-populations. Of these 17, 6 populations, representing 4 counties, have a rank of A or B. These six populations are assumed to meet this recovery criterion as long as management is continued to maintain appropriate habitat. This criterion has not been met.

*Managers have been designated for each population and management plans have been developed and implemented*

Currently, the 31 geographically distinct populations are owned by or are under conservation easements with natural resource agencies or conservation organizations that provide some level of management (Appendix A). However, management roles and responsibilities have not been formally assigned to specific individuals or managers for each population or subpopulation. Additionally, while management activities have occurred at most of these sites, formal management plans for each site are either lacking or have not yet been confirmed with the Service. This criterion has not been met.

*Populations have been maintained for five years, and at least seven of these populations must be in natural habitats in permanent conservation ownership and management*

All 31 of the populations with the potential to provide protective ownership/management are expected to be monitored regularly, although the frequency and type of monitoring varies by site. Management activities have been implemented at the majority of the 31 populations. Status trends for these populations indicate that 14 populations are increasing, 5 are decreasing, and 12 have an unknown status at the time of this review (Table 1). For sites with an unknown status, trends cannot be assessed due to either a lack of recent data or inconsistencies in the data measurements (e.g., stems, clumps, plants) for comparison across occurrences. Of the six populations ranked A or B, three show increasing status trends, two are decreasing, and one remains unknown. This criterion has not been met.

Table 1. Summary of population trends in NC and SC.

Status Trend	NC Populations	SC Populations
Increasing	14	0
Decreasing	4	1
Unknown	9	3
<b>Total</b>	27	4

Criteria for delisting the species

*When at least 15 geographically distinct, self-sustaining populations are protected in at least four counties in North Carolina and one county in South Carolina, management plans have been implemented, populations (as measured by number of adult plants) have been stable or increasing for 10 years, and permanent conservation ownership and management of at least 10 populations are assured by legally binding instruments.*

These criteria have not been met.

**Biology and Habitat Summary**

**Abundance, trends, and demographics**

Schweinitz’s sunflower is a perennial sunflower species endemic to the piedmont region of North Carolina and South Carolina. First described by Torrey and Gray in 1842, it was historically widespread through the southeastern Piedmont and recognized as an indicator species of prairie remnants. The species typically inhabits open areas or forest edges, growing in partial to full sunlight near upland woodlands and longleaf pine forests.

When the species was federally listed in 1991, 13 extant populations were identified (eight in NC, five in SC) (Service 1991). Although the listing rule did not specify the number of plants, supporting data indicated these populations contained 2,805 stems (Service 2010).

Table 2. Summary of extant populations and occurrences in parentheses, by state, year, and estimated number of plants.

Year	North Carolina	South Carolina	Total	Estimated Number of Plants
1991 (Listing)	8	5	13	2,805

2010 (5-Year Review)	78	8	86	>40,000
2018 (5-Year Review)	81 (217)	9 (79)	90	>50,000
2024 (Current Review)	85 (242)	9 (76)	94	>56,000

Currently, there are 242 occurrence records (EOs and subEOs) in North Carolina that aggregate into 85 extant populations. The North Carolina records also include 17 occurrences with 41 suboccurrences that are classified as extirpated, historical, or failed-to-find. In South Carolina, there are 76 occurrences that aggregate into the 9 populations in the state’s database (SCHTP 2023), with 5 occurrences listed as extirpated. Therefore, there are 94 total extant populations for the known range of Schweinitz’s sunflower (Figure 1) that collectively contain 56,000 stems (NCNHP 2023, SCHTP 2023). A summary of extant populations by state and year can be found above (Table 2). Populations and numbers of stems have increased over time, which have been the result of survey effort, introduced populations, and continued habitat management.

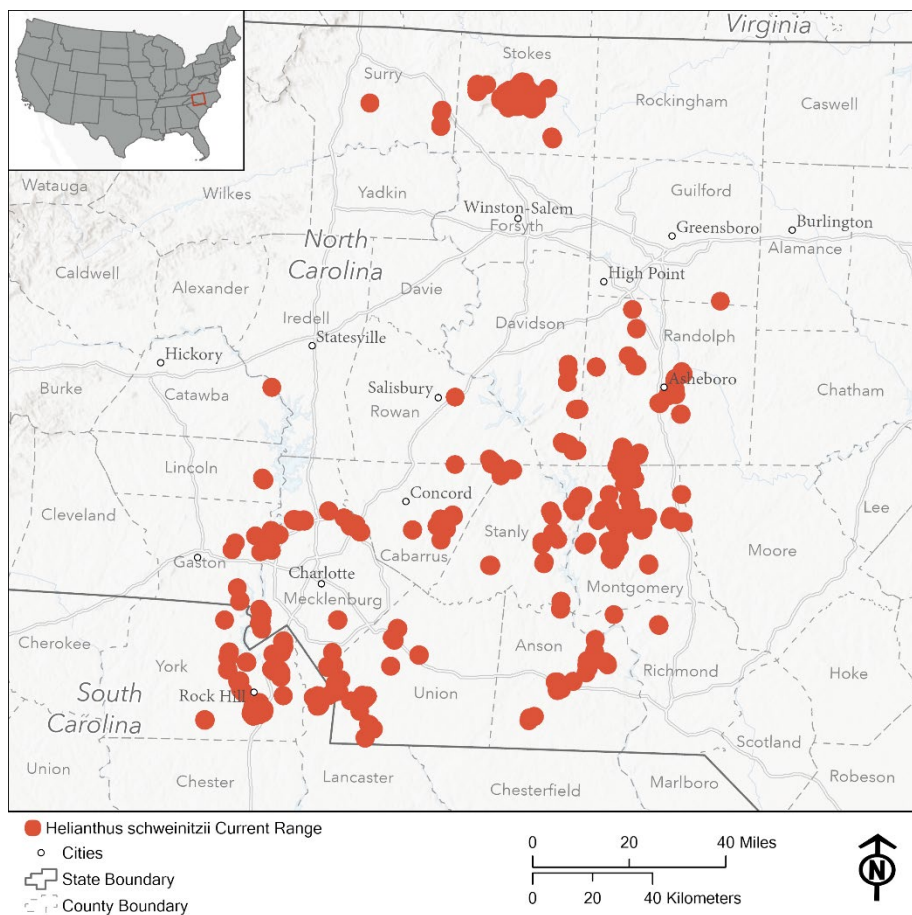


Figure 1. Current range map of Schweinitz’s sunflower. Each red dot represents a known element occurrence (EO) for the species across its range in North Carolina and South Carolina.

Trends for the protected populations and subpopulations are discussed below and shown in Appendix A. There are 27 populations that classify as 12 stand-alone occurrences and 38

suboccurrences in NC, and four populations in SC. In total, the Service has identified 54 occurrences under protection in NC and SC.

Of the 54 total occurrences (populations and subpopulations) under protection, 32% are increasing, 24% are decreasing, and 44% have an unknown status due to insufficient data (Table 3).

Table 3. Summary of status trends from 2019 to 2023 for protected occurrences of Schweinitz’s sunflower in NC and SC.

Status Trend	Number of EOs	Percentage <sup>1</sup>
Increasing	17	32%
Decreasing	13	24%
Unknown	24	44%
Total	54	100%

<sup>1</sup>Percentages are approximate due to rounding.

Details of excellent and good viability populations that occur on protected and managed lands are discussed above in the Recovery Plan Section.

### **Spatial Distribution**

Spatial distribution has increased through time from listing to current day from 6 counties in 1991, 15 counties in 2010, 17 counties in 2019, to 18 counties in 2024 (Service 1991, 2010, and 2019). The 1991 final listing rule referenced 13 extant populations distributed across 5 NC counties (Cabarrus, Mecklenburg, Rowan, Stanly, and Union) and 1 SC county (York). The 2010 5-year review identified 13 NC counties (the original 5 plus Anson, Davidson, Gaston, Montgomery, Randolph, Richmond, Stokes, and Surry) and 2 counties in SC (Lancaster and York). The 2019 5-year review added two counties in NC (Catawba and Guilford) for a total of 15 NC counties. One new population, constituting a new county record, was identified in Lincoln County, NC in 2021. The current species range includes 16 counties in NC and 2 counties in SC for a total of 18 counties in the range.

### **Habitat or Ecosystem Conditions**

Current known populations of Schweinitz’s sunflower are found on roadsides, under powerline right of ways, near railroad tracks, open woodlands and edges, clearings, and other sunny to semi-sunny sites. Among 54 occurrences (in 31 populations), 24 EOs (45%) are completely within a powerline right-of-way (ROW) or along a roadside, 12 EOs (22%) are within a portion of powerline ROWs or roadsides, and 18 EOs (33%) are located outside of the ROW.

### **Threats (Five-Factor Analysis) Summary**

The status of a species is determined from an assessment of factors specified in Section 4 (a)(1) of the Act. A summary of this assessment is detailed below.

**Factor A: the present or threatened destruction, modification, or curtailment of its habitat or range**

As discussed in the final listing rule and past 5-year reviews, the following threats persist throughout the species' range: loss of historic levels of natural disturbance from fire (both lightning-based and Native American ignited) and grazing by large, native herbivores (such as bison and elk), and impacts from residential and industrial development, mining, encroachment by invasive species, highway construction and improvement, utility right-of-way maintenance, herbicide use, and herbivory (deer, small mammals) (Service 1991, 2010, and 2019).

Of the 54 protected occurrences, 67% are located within rights-of-way or along roadsides, making them vulnerable to threats such as road spill events, erosion, incorrect mowing regimes, paving expansion, and non-targeted herbicidal use. Additionally, maintenance activities in rights-of-ways, such as bush hogging and rotary cutting, can create a dense layer of wood chips that may suppress Schweinitz's sunflower populations (Frazer, pers. comm. 2024). The majority of the protected occurrences located outside of rights-of-ways face threats from herbivory, residential and industrial development, competition from groundcover plants, woody encroachment, patchy prescribed burns, and/or lack of a consistent fire regime.

**Factor B: overutilization for commercial, recreational, scientific, or educational purposes**

We have no information to suggest that this is a significant factor currently affecting the species.

**Factor C: disease or predation**

As noted in the 2019 5-year review, there are some indications that deer browse may be significantly affecting the survival of transplanted individuals and some native, resident populations. However, the severity and geographic scope of this threat needs further investigation. This threat may now constitute a significant threat to the species if left unaddressed (Service 2019 and references therein).

**Factor D: the inadequacy of existing regulatory mechanisms**

The overwhelming majority of statutory or regulatory mechanisms capable of affording protection to Schweinitz's sunflower stem from the species' Federal status under the Endangered Species Act of 1973, as amended.

There are also regulations and policies that protect plants on U.S. Forest Service property. Based on regulation 36 CFR 261.9 removing or damaging any plant that is classified as a threatened, endangered, sensitive, rare, or unique species on U.S. Forest Service land is prohibited. Additionally, Forest Service Manual 2673 establishes policy that prohibits the removal and collection of any threatened or endangered plants on lands under Federal jurisdiction except when authorized by permits. Although these regulations and policies should protect Schweinitz's sunflower on Forest Service property, lack of resources prevents monitoring of compliance and enforcement.

The North Carolina Plant Protection Act and South Carolina State Code (§50-11-2200) provide some protections for the sunflower that are details in the 2019 5-year review (Service 2019). The

NC statute protects the species from unpermitted collection and commercial trade. However, it does not protect the species or its habitat from destruction in conjunction with development projects or otherwise legal activities. The SC code protects the species on state lands.

**Factor E: other natural or manmade factors affecting its continued existence.**

While we are unaware of any direct evidence of the impacts of climate change on Schweinitz's sunflower, it is reasonable to expect that global change can negatively affect the species. Elevated atmospheric CO<sub>2</sub> levels, increased temperatures, and shifts in precipitation regimes influence plant species distribution, plant growth and development, phenology, ecophysiology, and species interactions (Parmesan 2006, Jump & Peñuelas 2005, Parmesan & Hanley 2015). Future models predict increased temperatures, increase intensity of droughts, increased numbers of hurricanes making landfall, and increases in extreme precipitation events in NC and SC (Frankson et al. 2022 and Runkle et al. 2022, respectively). Currently, the adaptive capacity for the sunflower is unknown. As anthropogenic climate change introduces increasingly unpredictable and extreme weather events, these factors are likely to pose a significant threat for the species.

**Synthesis**

Schweinitz's sunflower is an herbaceous perennial endemic to a narrow range of the Carolina Piedmont. The species can grow up to 2 m in height and produces a large rhizome (fleshy tuberous root) with small, yellow flowers that are 6-15 mm in diameter. Once common throughout the central Piedmont region of North Carolina and South Carolina, Schweinitz's sunflower was classified as an indicator species of prairie remnants before its federal listing in 1991. Currently, there are 94 extant populations, which show an increase in the total number of stems (50,000 to 56,000) and one new county occurrence (18 counties total). However, only 17 of these populations in NC are fully protected, including all sub-populations. Of these, six populations are currently ranked as having good to excellent viability and represent four counties. Although there has been an increase in abundance, several populations are still experiencing declines. Furthermore, inconsistent and infrequent monitoring increases uncertainty associated with the species' status and trends. Threats such as habitat destruction, fire suppression, utility right-of-way maintenance (e.g. mowing, herbicide use), urbanization/suburbanization, invasive species, and herbivory are still present and are likely contributing factors to the decrease in abundance and survival of the species throughout its range. Populations that are stable or increasing can be attributed to active land management strategies to maintain suitable habitat conditions and should continue to receive consistent management and monitoring. Given the ongoing threats and the current condition of the species, Schweinitz's sunflower continues to meet the definition of an endangered species.

**RECOMMENDED FUTURE ACTIVITIES**

**Recovery Activities**

The 2010 and 2019 5-year reviews include a list of recommendations to improve recovery of the species. These highlight some recovery activities listed below.

- Continue to work with appropriate owners/managers to implement monitoring capable of producing reliable trend data at each site. However, site-specific protocols could be implemented such that counts or estimates provided at a given site are directly comparable from one monitoring period to the next.
- For potential reintroduction or restoration sites, characterize existing vegetation using standardized community classification methods (e.g., NatureServe’s community classification systems, Schafale (2024) Classification of the Natural Communities of North Carolina). Use this information to inform restoration objectives and direct future site protection efforts toward the highest quality habitats.
- Continue coordination of controlled propagation, rescue and relocation, and public demonstration gardens for species’ recovery. Consider prioritization of sites supporting native populations in conjunction with remnants of native plant communities prioritized for protection.
- Work with species experts to consider:
  - Defining populations.
  - Prioritizing populations for recovery.
  - Determining traits of a “self-sustaining” population.
  - Developing a standardized, monitoring protocol.
  - Assisting in management and monitoring.
- Support research to enhance conservation efforts and address current knowledge gaps:
  - Investigate the geographical extent of *Smicronyx pinguis* (weevil) and its threat level to Schweinitz’s sunflower.
  - Examine whether Schweinitz’s sunflower is hybridizing with other *Helianthus* species.
  - Assess the performance of the species outside of its current climatic niches across projected novel environments and its threat level.
  - Expand knowledge on the species’ life history, biology, and ecology.
- Encourage the Departments of Transportation and utility companies to maintain rights-of-ways in a manner that is beneficial to Schweinitz’s sunflower.

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## RESULTS / SIGNATURES

### U.S. Fish and Wildlife Service Status Review of Schweinitz's Sunflower

#### **Status Recommendation:**

On the basis of this review, we recommend the following status for this species. A 5-year review presents a recommendation of the species status. Any change to the status requires a separate rulemaking process that includes public review and comment, as defined in the Act.

Downlist to Threatened

Delist:

*The species is extinct*

*The species does not meet the definition of an endangered or threatened species*

*The species is recovered.*

*New information indicates the species does not meet the definition of an endangered or threatened species.*

*The listed entity does not meet the statutory definition of a species.*

No change needed

#### **FIELD OFFICE APPROVAL:**

**Field Supervisor, Asheville Ecological Services Field Office, Fish and Wildlife Service**

**Approve**

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## APPENDIX A. SUPPORTING DOCUMENTATION

Protected populations of Schweinitz's sunflower with the potential to contribute to recovery of the species. Populations are colored in gray (shaded) followed by subpopulations (unshaded).

Site	County (NC)	EO #	Rank	Ownership/Responsible Party	Management Plan	Management Initiated	Native or Introduced <sup>3</sup>	Estimate from 2019 5-YR Review	Latest Estimate (Year)	Trend <sup>4</sup>	ROW/Road Side	
<b>Ferrelltown<sup>1,2</sup></b>		<b>16.000</b>	<b>CD</b>								<b>Increasing</b>	
Ferrelltown Nature Preserve and Vicinity	Mecklenburg	16.000	CD	Mecklenburg County Parks and Rec	Y	Y	N	57 stems	218 stems (2023)	Increasing	Y	
<b>Uwharrie National Forest<sup>1,2</sup></b>		<b>44.000</b>	<b>C</b>								<b>Increasing</b>	
Buck Mountain	Montgomery	44.000	C	U.S. Forest Service	Y	Y	N	250 stems	1270 stems (2023)	Increasing	Y	
<b>Mountain Island Lake Dam Rare Plant Site<sup>2</sup></b>		<b>89.000</b>	<b>C</b>								<b>Increasing</b>	
Mountain Island Lake Dam Rare Plant Site	Gaston/Mecklenburg	89.032	C	Duke Energy	Y*	Y*	N	228 stems	139 stems (2023)	Decreasing	Y	
Shuffletown Powerline Rare Plant Site	Mecklenburg	89.051	C?	Mecklenburg County Parks and Rec	Y	Y	N + I	185 stems	352 stems (2023)	Increasing	Y	
<b>Latta Plantation Natural Area<sup>2</sup></b>		<b>92.000</b>	<b>A</b>								<b>Increasing</b>	
McCoy Road Sunflower Site	Mecklenburg	92.017	C	Mecklenburg County Parks and Rec	Y	Y	N	1173 stems	1159 stems (2023)	Decreasing	Y + N	
Latta Plantation Natural Area	Mecklenburg	92.139	A	Mecklenburg County Parks and Rec	Y	Y	I	1619 stems	2372 stems (2023)	Increasing	Y + N	
<b>Redlair Preserve<sup>1,2</sup></b>		<b>95.000</b>	<b>A</b>								<b>Increasing</b>	
Redlair Preserve	Gaston	95.000	A	NC Plant Conservation Program	Y	Y	N	2255 stems	3095 stems (2022)	Increasing	N	
<b>Mallard Creek Road Sunflower Site</b>		<b>104.000</b>	<b>C</b>								<b>Unknown</b>	
Mallard Creek Road Sunflower Site	Mecklenburg	104.236	D	NC Dept. of Transportation	Y	Y	I	30 stems	30 stems (2018)	Unknown	Y + N	
<b>Machine Branch Mafic Area</b>		<b>110.000</b>	<b>C</b>								<b>Unknown</b>	
Machine Branch Mafic Area	Montgomery	110.024	C	U.S. Forest Service	Y	Y	N	25 stems	214 stems (2017)	Unknown	Y	
Badin Mafic Macrosite	Montgomery	110.025	D	U.S. Forest Service	Y	Y	N	5 stems	5 stems (2009)	Unknown	Y	
Badin Mafic Macrosite FR 576 at FR 6688	Montgomery	110.192	D	U.S. Forest Service	Y	Y	N	6 stems	16 stems (2017)	Unknown	Y	
Badin Mafic Macrosite, FSR 6688	Montgomery	110.195	D	U.S. Forest Service	Y	Y	N	200 stems	1 stems (2017)	Unknown	N	
<b>Clarks Grove Longleaf Pine Forest</b>		<b>111.000</b>	<b>C</b>								<b>Decreasing</b>	
Roberdo Bog and Longleaf Pine Forest	Montgomery	111.036	D	U.S. Forest Service	Y	Y	N	75 stems	34 stems (2021)	Decreasing	Y + N	
Clarks Grove Longleaf Pine Forest	Montgomery	111.061	C	U.S. Forest Service	Y	Y	N	400 stems	200 stems (2021)	Decreasing	Y + N	
Clarks Grove Longleaf Pine Forest	Montgomery	111.067	D	U.S. Forest Service	Y	Y	N	29 stems	45 stems (2015)	Unknown	Y	
Roberdo Bog and Longleaf Pine Forest	Montgomery	111.069	D	U.S. Forest Service	Y	Y	N	200 stems	9 stems (2023)	Decreasing	N	
Railroad Mixed Pine Forest	Montgomery	111.122	D	Three Rivers Land Trust	Y	Y	I	100 stems	10 plants (2019)	Unknown	N	

Site	County (NC)	EO #	Rank	Ownership/Responsible Party	Management Plan	Management Initiated	Native or Introduced <sup>3</sup>	Estimate from 2019 5-YR Review	Latest Estimate (Year)	Trend <sup>4</sup>	ROW/Road Side
Rocky Creek Macrosite, near Roberdo	Montgomery	111.206	C	U.S. Forest Service	Y	Y	N	no estimate	138 stems (2015)	Unknown	Y
Roberdo Bog and Longleaf Pine Forest	Montgomery	111.207	E	U.S. Forest Service	Y	Y	N	no estimate	no estimate	Unknown	Y
Railroad Mixed Pine Forest	Montgomery	111.246	D	U.S. Forest Service	Y	Y	N + I	19 stems	no estimate	Unknown	Y + N
<b>Mineral Springs Barren</b>		<b>112.000</b>	<b>C</b>							<b>Increasing</b>	
Mineral Springs Barren	Union	112.013	C	Catawba Lands, NC Plant Conservation Program	Y	Y	N + I	1716 stems	5003 stems (2002)	Increasing	Y + N
<b>McDowell Nature Preserve</b>		<b>138.000</b>	<b>A</b>							<b>Increasing</b>	
Winget Road Rare Plant Site	Mecklenburg	138.030	C	Mecklenburg County Parks and Rec	Y	Y	N	33 stems	328 stems (2023)	Increasing	Y
McDowell Nature Preserve	Mecklenburg	138.140	A	Mecklenburg County Parks and Rec	Y	Y	I	1383 stems	2500 stems (2023)	Increasing	N
<b>Troy and Densons Creek</b>		<b>141.000</b>	<b>C?</b>							<b>Increasing</b>	
Troy: Glenn Road - NE corner of SR-1325/railroad intersection	Montgomery	141.202	C	NC Plant Conservation Program	Y	Y	N	7 stems	409 stems (2022)	Increasing	Y
West/SW of SR-1325	Montgomery	141.203	C	NC Plant Conservation Program	Y	Y	N	228 stems	99 stems (2022)	Decreasing	Y + N
Denson Creek Slopes	Montgomery	141.228	D	NC Plant Conservation Program	Y	Y	I	51 stems	144 stems (2022)	Increasing	Y
<b>Barnes Creek and Ridge Macrosite<sup>1,2</sup></b>		<b>145.000</b>	<b>D</b>							<b>Unknown</b>	
Barnes Creek and Ridge Macrosite, near Morris Mtn	Montgomery	145.000	D	U.S. Forest Service	Y	Y	N	41 stems	41 stems (2006)	Unknown	Y
<b>SR 1146 near Dutchmans Creek<sup>1,2</sup></b>		<b>146.000</b>	<b>D</b>							<b>Unknown</b>	
SR 1146 near Dutchmans Creek	Montgomery	146.000	D	U.S. Forest Service	Y	Y	N	146 stems	97 stems (2017)	Unknown	Y
<b>Harvest Field Sunflower Site</b>		<b>148.000</b>	<b>A</b>							<b>Decreasing</b>	
Harvest Field Sunflower Site	Randolph	148.056	C	NC Plant Conservation Program	Y	Y	I	2333 stems	1184 stems (2023)	Decreasing	Y
Long Mountain/Kings Mountain	Montgomery/ Randolph	148.071	D	U.S. Forest Service, Three Rivers Land Trust	Y	Y	N	0 stems	41 stems (2023)	Increasing	Y
Walkers Creek Rare Plant Site	Randolph	148.129	D	U.S. Forest Service	Y	Y	N	79 stems	0 stems (2018)	Decreasing	Y
Wysner Mountain	Montgomery	148.198	A	Private	Y*	Y*	I	4150 stems	4150 stems (2017)	Unknown	N
Long Mountain/Kings Mountain	Randolph	148.219	D	Private	Y*	Y*	N	71 stems	71 stems (2008)	Unknown	N
<b>Uwharrie NF, Wood Run Camp<sup>2</sup></b>		<b>178.000</b>	<b>D</b>							<b>Unknown</b>	
Uwharrie NF, Wood Run Camp (northeast)	Montgomery	178.118	D	U.S. Forest Service	Y	Y	N	7 stems	7 stems (2006)	Unknown	N
<b>NC Zoological Park Recovery Site<sup>1,2</sup></b>		<b>179.000</b>	<b>B</b>							<b>Decreasing</b>	
NC Zoological Park Recovery Site	Randolph	179.000	B	NC Zoological Park	Y*	Y*	I	320 stems	117 stems (2019)	Decreasing	N

Site	County (NC)	EO #	Rank	Ownership/Responsible Party	Management Plan	Management Initiated	Native or Introduced <sup>3</sup>	Estimate from 2019 5-YR Review	Latest Estimate (Year)	Trend <sup>4</sup>	ROW/Road Side
<b>Sauratown Mountain Macrosite and Hanging Rock SP</b>		<b>191.000</b>	<b>A</b>							<b>Unknown</b>	
Hanging Rock Reintroduction Site	Stokes	191.190	A	Hanging Rock State Park	Y*	Y*	I	1049 stems	15 stems (2015)	Unknown	Y + N
<b>Carraway Mountain Sunflower Site<sup>2</sup></b>		<b>201.000</b>	<b>A</b>							<b>Decreasing</b>	
Carraway Mountain Sunflower Site	Randolph	201.029	C	NC Dept. of Transportation	Y*	Y*	N	221 stems	150 stems (2021)	Decreasing	Y
Carraway Mountain Sunflower Site	Randolph	201.200	C	Piedmont Land Conservancy	Y*	Y*	I	574 stems	140 stems (2021)	Decreasing	Y + N
Carraway Mountain/Mountain View Church Road	Randolph	201.223	C	NC Dept. of Transportation	Y*	Y*	N + I	603 stems	100 stems (2021)	Decreasing	N
<b>Cane Creek Park<sup>1,2</sup></b>		<b>217.000</b>	<b>A</b>							<b>Unknown</b>	
Cane Creek Park	Union	217.000	A	Catawba Lands	Y*	Y*	I	15327 stems	15327 stems (2011)	Unknown	N
<b>Surratt Road/NC-109/SR-2549</b>		<b>222.000</b>	<b>B</b>							<b>Increasing</b>	
Surratt Road Sunflower Population	Davidson	222.124	C	NC Dept. of Transportation	Y*	Y*	N	404 stems	404 stems (2017)	Unknown	Y
Surratt Road NCDOT Conservation Site	Davidson	222.221	B	NC Dept. of Transportation	Y*	Y*	I	120 stems	125 stems (2020)	Increasing	N
<b>Mountain Creek Corridor<sup>1,2</sup></b>		<b>229.000</b>	<b>D</b>							<b>Unknown</b>	
Mountain Creek Corridor	Richmond	229.000	D	Private	Y	Y	I	82 stems	82 stems (2018)	Unknown	Y + N
<b>Flat Branch Hardpan<sup>1,2</sup></b>		<b>247.000</b>	<b>B</b>							<b>Increasing</b>	
Flat Branch Hardpan	Mecklenburg	247.000	B	Mecklenburg County Parks and Rec	Y	Y	I	102 stems	508 stems (2023)	Increasing	Y
<b>Ritchies Hardpan Forest<sup>1,2</sup></b>		<b>259.000</b>	<b>BC</b>							<b>Increasing</b>	
Ritchies Hardpan Forest	Gaston	259.000	BC	Three Rivers Land Trust, NC Land and Water	N	N	N	n/a	698 stems (2023)	Increasing	N
<b>Pilot Mountain State Park Pilot Creek Restoration Area</b>		<b>263.000</b>	<b>C</b>							<b>Increasing</b>	
Pilot Mountain State Park Pilot Creek Restoration Area	Surry	263.262	D	Pilot Mountain State Park, NC Land and Water	Y	Y	N	5 stems	30 stems (2020)	Increasing	N
<b>Buffalo Creek Preserve<sup>1,2</sup></b>		<b>268.000</b>	<b>C</b>							<b>Increasing</b>	
Buffalo Creek Preserve	Cabarrus	268.000	C	Catawba Lands, NC Land and Water, Three Rivers Land Trust	Y	Y	Y	n/a	215 stems (2023)	Increasing	N
<b>Redlair Preserve<sup>1,2</sup></b>		<b>272.000</b>	<b>D</b>							<b>Unknown</b>	
Redlair Preserve	Gaston	272.000	D	NC Plant Conservation Program	Y	Y	I	n/a	no estimate	Unknown	Y
<b>Uwharrie Mountain Forest, Buck Mountain<sup>2</sup></b>		<b>275.000</b>	<b>C</b>							<b>Increasing</b>	
Uwharrie Mountain Forest: Buck Mountain	Montgomery	275.044	C	U.S. Forest Service	Y	Y	N	400 stems	1270 stems (2023)	Increasing	Y
Rocky Creek Longleaf Pine Forest and Bogs	Montgomery	275.274	B	U.S. Forest Service	Y	Y	I	n/a	120 stems (2021)	Unknown	N

Site	County (NC)	EO #	Rank	Ownership/Responsible Party	Management Plan	Management Initiated	Native or Introduced <sup>3</sup>	Estimate from 2019 5-YR Review	Latest Estimate (Year)	Trend <sup>4</sup>	ROW/Road Side
<b>Rock Hill South</b>											
Blackjacks Heritage Preserve	York	14, 17, 18, New1996	AB, BD, AC, n/a	SC Dept. of Natural Resources	Y	Y	N + I	876	694 (2023)	Decreasing	Y + N
<b>Fort Mill South</b>											
Banks Road/Duke Transmission	York	33	BD	Nation Ford	Y*	Y*	N + I	10,048	no estimate	Unknown	Y
<b>Fort Mill North</b>											
Anne Spring Close Greenway - Site II	York	New1997	n/a	Anne Spring Close Greenway	Y*	Y*	I	51	no estimate	Unknown	N
<b>Brattonsville</b>											
Brattonsville	York	47	n/a	Nation Ford	Y*	Y*	I	1218	no estimate	Unknown	N

<sup>1</sup> Stand-alone population that consists of only one occurrence with no subEOs.

<sup>2</sup> Population entirely protected (EO and subEO).

<sup>3</sup> "N" = native (no introduction or augmentation of plant material known to have occurred); "I" = introduced (plant material: seeds, rootstock, or both brought into the site). Combinations are possible and denoted appropriately.

<sup>4</sup> Latest size estimates were compared to 2019 5-year review size estimates. Size estimates were calculated based on the total number of stems per population for each EO and subEO. "Unknown" size estimates could not be inferred due to a lack of recent data.

<sup>5</sup> ROW/Road was determined based on EO reports.

\* Information based on the 2019 5-year review.