

U.S. FISH AND WILDLIFE SERVICE SPECIES ASSESSMENT AND LISTING PRIORITY ASSIGNMENT FORM

Scientific Name:

Symphotrichum georgianum

Common Name:

Georgia aster

Lead region:

Region 4 (Southeast Region)

Information current as of:

04/19/2013

Status/Action

Funding provided for a proposed rule. Assessment not updated.

Species Assessment - determined species did not meet the definition of the endangered or threatened under the Act and, therefore, was not elevated to the Candidate status.

New Candidate

Continuing Candidate

Candidate Removal

Taxon is more abundant or widespread than previously believed or not subject to the degree of threats sufficient to warrant issuance of a proposed listing or continuance of candidate status

Taxon not subject to the degree of threats sufficient to warrant issuance of a proposed listing or continuance of candidate status due, in part or totally, to conservation efforts that remove or reduce the threats to the species

Range is no longer a U.S. territory

Insufficient information exists on biological vulnerability and threats to support listing

Taxon mistakenly included in past notice of review

Taxon does not meet the definition of "species"

Taxon believed to be extinct

Conservation efforts have removed or reduced threats

___ More abundant than believed, diminished threats, or threats eliminated.

Petition Information

___ Non-Petitioned

X Petitioned - Date petition received: 05/11/2004

90-Day Positive:05/11/2005

12 Month Positive:05/11/2005

Did the Petition request a reclassification? **No**

For Petitioned Candidate species:

Is the listing warranted(if yes, see summary threats below) **Yes**

To Date, has publication of the proposal to list been precluded by other higher priority listing?
Yes

Explanation of why precluded:

Higher priority listing actions, including court-approved settlements, court-ordered and statutory deadlines for petition findings and listing determinations, emergency listing determinations, and responses to litigation, continue to preclude the proposed and final listing rules for this species. We continue to monitor populations and will change its status or implement an emergency listing if necessary. The Progress on Revising the Lists section of the current CNOR (<http://endangered.fws.gov/>) provides information on listing actions taken during the last 12 months.

Historical States/Territories/Countries of Occurrence:

- **States/US Territories:** Alabama, Florida, Georgia, North Carolina, South Carolina
- **US Counties:**County information not available
- **Countries:**Country information not available

Current States/Counties/Territories/Countries of Occurrence:

- **States/US Territories:** Alabama, Florida, Georgia, North Carolina, South Carolina
- **US Counties:** Bibb, AL, Blount, AL, Clay, AL, Etowah, AL, Shelby, AL, St. Clair, AL, Talladega, AL, Tuscaloosa, AL, Leon, FL, Bartow, GA, Chattooga, GA, Clarke, GA, Clayton, GA, Cobb, GA, Dawson, GA, DeKalb, GA, Forsyth, GA, Fulton, GA, Gordon, GA, Gwinnett, GA, Habersham, GA, Hall, GA, Harris, GA, Houston, GA, Madison, GA, McDuffie, GA, Murray, GA, Muscogee, GA, Paulding, GA, Randolph, GA, Rockdale, GA, Stephens, GA, White, GA, Gaston, NC, Lincoln, NC, Mecklenburg, NC, Montgomery, NC, Randolph, NC, Rowan, NC, Stanly, NC, Union, NC, Abbeville, SC, Anderson, SC, Cherokee, SC, Chester, SC, Edgefield, SC, Fairfield, SC, Greenwood, SC, Lancaster, SC, Laurens, SC, McCormick, SC, Oconee, SC, Pickens, SC, Saluda, SC, Union, SC, York, SC
- **Countries:**Country information not available

Land Ownership:

As of 2013, 55 of the 146 known populations (38%) are afforded some level of protection in that they occur on lands owned and managed by federal, state, or local (county) governments (50 populations) or private conservation organizations (The Nature Conservancy, 1 population). Federal landowners include the U.S. Forest Service (30 populations), the National Park Service (5 populations), the U.S. Fish and Wildlife Service (2 populations), and the Department of Defense (1 population). State landowners include Alabama State Parks (1 population), Georgia State Parks (3 populations), Alabama Department of Conservation and Natural Resources (1 population), Clemson University in South Carolina (3 populations), University of North Carolina Charlotte Botanical Garden (1 population), the North Carolina Plant Protection Program (1 population), and the North Carolina Department of Transportation (1 population). Mecklenburg County, North Carolina Department of Parks and Recreation owns and manages 5 populations of the species. Acreage estimates are not available for the majority of known populations.

Lead Region Contact:

ARD-ECOL SVCS, Erin Rivenbark, 706 613-9493, erin_rivenbark@fws.gov

Lead Field Office Contact:

ASHEVILLE ESFO, Mara Alexander, 828-258-3939, mara_alexander@fws.gov

Biological Information

Species Description:

Symphotrichum georgianum (Georgia aster) has large heads, 5 centimeters (cm) (2 inches (in)) across (containing numerous flowers), with dark purple rays up to 2 cm (0.8 in) long, and thick, lanceolate to oblanceolate, scabrous, clasping leaves. Flowering occurs from early October to mid-November. Disc flowers are white fading to a light or dull lavender, tan or white as they mature, resulting in a difference between colors of early and mature disk corollas. The ribbed achenes are up to 4 millimeters (0.1 in) long, with evenly distributed spreading trichomes. *S. georgianum* can be distinguished from the similar *S. patens* by its dark purple rays (compared to the light lavender rays of *S. patens*), and white to lavender disc flowers (compared to the yellow disc flowers of *S. patens*).

Various species of butterflies and bumblebees have been observed pollinating the flowers, but these have not yet been identified to species (Matthews 1993, p. 21). The main mode of reproduction is vegetative. Plants are usually colonial, with 1 (sometimes 2) stems arising from each underground part.

Taxonomy:

Alexander initially described the species as *Aster georgianus* based on a specimen collected by Cuthbert in 1898 from Augusta (Richmond County), Georgia (Small 1933, p. 1381). The distribution was listed as the coastal plain and piedmont of Georgia and South Carolina. When Cronquist (1980) prepared the treatment of the Asteraceae for the Southeastern Flora, he included *A. georgianus* as a variety of *A. patens*. Jones (1983), in a Ph.D. dissertation on the Systematics of *Aster* Section *Patentes* (Vanderbilt University, TN), provided morphological, cytological, geographic distributional and ecological evidence that supported consideration of this taxon as a distinct species. Jones published the data documenting this taxonomic decision in 1983.

The genus *Aster* L. (*sensu lato*) contains some 250-300 species that occur in the northern Hemisphere of Eurasia and North America, with a few species occurring in South America (Nesom 1994). Recent evidence (derived from morphological and molecular characters as well as chromosome counts) supports earlier contentions that North American species are distinct from Eurasian and South American species, and that a major revision of the genus is needed (e.g., Nesom 1994; Noyes and Rieseberg, 1999; Brouillet et al. 2001;

Semple et al. 1996). According to these findings, the currently accepted nomenclature for this taxon is *Symphyotrichum georgianum* (Alexander) Nesom. The Service has reviewed the available taxonomic literature, and is not aware of any challenges to the validity of this species.

Habitat/Life History:

Georgia aster occupies dry oak-pine flatwoods and uplands. Soils vary from sand to heavy clay, with pH ranging from 4.4 to 6.8 at the sites sampled for a 1993 study on the species (Matthews 1993, p.20). The primary controlling factor appears to be the availability of light. The species is a good competitor with other early successional species, but tends to decline when shaded by woody species. Populations can persist for an undetermined length of time in the shade, but these rarely flower (Matthews 1993, p.20) and reproduce only by rhizomes.

Historical Range/Distribution:

Georgia aster is a relict species of post oak savanna/prairie communities that existed across much of the southeast prior to widespread fire suppression and extirpation of large native grazing animals. The species appears to have been extirpated from Florida (Leon County), one of the five states in which it originally occurred. Inspection of state Natural Heritage Program (NHP) databases and additional location data on file with the Service indicates a total of 146 populations of the species; of these 28 (19%) are either extirpated or historical (not observed in more than 20 years), or have not been found despite survey attempts.

In most cases the exact cause of extirpation of populations was not documented, but herbicides, highway construction, fire suppression, and residential and industrial development have all altered the historic landscape in which Georgia aster historically occurred.

Current Range Distribution:

Georgia aster is presumed extant in 8 counties in Alabama, 24 counties in Georgia, 9 counties in North Carolina, and 15 counties in South Carolina. Within these counties, the species has been documented at 283 site-specific locations that (due to the proximity of many sites) aggregate into 146 probable populations of the species. Of these 146 populations, 118 are presumed extant. However, in many cases, the locations reported to contain the species have not been observed in 10 or more years therefore additional survey effort is needed to accurately characterize the current distribution of the species, and such surveys may reveal considerable changes in the actual number of extant populations.

Population Estimates/Status:

Although monitoring is occurring at a few sites containing this species, data capable of characterizing range-wide changes in population size or status are not available. In most cases, available data consist of a single population estimate at a fixed point in time.

Roughly 25% of the 118 populations presumed extant have no available population size estimate, and can only be assessed as extant. Of the remaining populations for which at least one size estimate is available, only 11 (fewer than 10% of all extant populations) have been recorded as having more than 500 stems.

Comments from partners in the states of Alabama (Al Schotz, Alabama Natural Heritage Program, pers.

comm. 2010), Georgia (Tom Patrick Georgia Department of Natural Resources, pers. comm., 2010) and North Carolina (Gary Kauffman, USDA Forest Service, pers. comm. 2007) suggest that most populations are small (fewer than 50 stems) and confined to poor habitat conditions where they are vulnerable to repeated impacts from inappropriate vegetation management practices or development occurring within road or utility ROW. However, while extirpation of populations is capable of being tracked in NHP databases, lesser impacts (those not resulting in extirpation) are at best haphazardly reported and certainly not systematically evaluated. In the absence of formal monitoring, it is difficult to determine whether population declines are truly due to the reported source of impact, as opposed to differences in survey effort, counting methodology, or other undetected influences upon the population.

Additional comments from Georgia (Tom Patrick, pers. comm. 2010) emphasize that several small (less than 50 stems) populations can no longer be found, often due to lack of appropriate management (burning or mowing). Conversely, in recent years the Service received reports of several (perhaps 6-10) relatively large and previously unknown populations (500-1000 stems), several of these on sites with some potential to afford long-term protection to the species (Michael Elmore, The Nature Conservancy, pers. comm., 2009; Lenny Lampel, Mecklenburg County Parks and Recreation, pers. comm., 2009; Bert Pittman, SC DNR Heritage Trust, pers. comm., 2009; Jimmy Rickard, USFWS Athens Field Office, pers. comm., 2009).

Threats

A. The present or threatened destruction, modification, or curtailment of its habitat or range:

Although the supporting information is largely anecdotal, the destruction and loss of habitat due to development is considered to be a threat for the species in the states where it currently is found, and historically throughout its range (Misty (Franklin) Buchanan, North Carolina NHP, pers. comm. 2007 and Al Schotz, Alabama NHP, pers. comm. 2007). Disturbance (fire, native grazers, etc.) is a part of this species habitat requirements. The historic sources of this disturbance have been virtually eliminated from Georgia asters range, except where road, railroad and ROW maintenance are mimicking the missing natural disturbances. The habitat of many existing populations is subject to current or threatened destruction, modification, or curtailment due to planned residential subdivision development, highway expansion/improvement projects, and by woody succession due to fire suppression. In North Carolina, at least one site has been extirpated due a road improvement project and at least one site is currently threatened by a proposed road improvement project. The anticipated impacts at one population (Surratt Road, in Davidson County) were deemed sufficiently likely to occur that, in the winter of 2006-2007, biologists with the North Carolina Department of Transportation removed 90 mature clumps and an unspecified amount of seed from the road corridor, placing both adult plants and seed into adjacent areas of suitable, protected habitat (Frazer 2008, p. 4). Only 6 stems were found in the transplanted area in 2012 (Herman and Frazer 2012, p. 3). In both Georgia and South Carolina, populations have also been relocated in advance of road improvement activities.

B. Overutilization for commercial, recreational, scientific, or educational purposes:

This species is not currently known to be a significant component of the commercial trade and we are not aware of any utilization of the Georgia aster for recreational, scientific, or educational purposes. Consequently, overutilization is not known to be a problem for this species.

C. Disease or predation:

Within all sites visited in 2010 and 2011 for seed collection in North Carolina, researchers (Michael Kunz of the North Carolina Botanical Garden, Gary Kauffman of the U.S. Forest Service and Mara Alexander of the

U.S. Fish and Wildlife Service) found larvae feeding on seeds inside the heads. This was also apparent in other Asteraceae blooming in the fall during this collection period. Percent of infested heads varied by site and ranged from 10% to 40% of the Georgia aster seed heads present. Seeds in infested heads seemed to have low to no viability.

Within one site visited in 2011 for seed collection in North Carolina, that was away from the road side, there was evidence of deer browse and reduced seed set in 2011 (Michael Kunz, North Carolina Botanical Garden, pers.comm. 2012). North Carolina Department of Transportation found that much of one population they helped to conserve was heavily impacted by deer browse, prompting them to place deer fencing around transplants in a conservation area (Herman and Frazer 2012, p. 3). Many of Georgias populations are also impacted by deer browse (Mincy Moffit and Tom Patrick, Georgia Department of Natural Resources, pers. comm., 2013).

D. The inadequacy of existing regulatory mechanisms:

Approximately 72 of the 118 extant populations occur on private lands, and none of the states within the range of this species offer legislative protection for habitat. A few states protect state-listed species from taking by others without landowner permission, but these statutes do not protect it from damage or destruction by the landowner. Thirty-six extant populations occur on federal lands (USDA Forest Service National Forest lands, National Park Service lands, the Cahaba River National Wildlife Refuge, or land owned by the U.S. Army Corps of Engineers), but the species is not currently afforded explicit protection on these federal lands.

E. Other natural or manmade factors affecting its continued existence:

As described above, due to the elimination of historic sources of disturbance that helped maintain suitable habitat condition for the species, most of the known remaining populations of the Georgia aster are adjacent to roads, railroads, utility ROW and other openings where land management mimics natural disturbance regimes. However, at these locations the Georgia aster also is inherently vulnerable to accidental destruction from herbicide application, road shoulder grading, and other maintenance activities (Rob Evans, North Carolina Plant Conservation Program, pers. comm., 2007). More utility companies and railroads are shifting to herbicide spraying instead of mowing for longer-lasting control of vegetation growth. Repeated mowing of Georgia aster populations during the height of the growing season can reduce population vigor, and may eventually kill plants, but these effects take longer to manifest than direct application of herbicides during the growing season.

Several sites are impacted by the encroachment of invasive exotic plants. At this time, however, we do not know how many populations of the Georgia aster are impacted or the nature of the impacts of invasive plants.

Little is known of Georgia asters life history and population biology, but preliminary evidence indicates that it may be self-sterile (Matthews 1993). A genetic study completed in 2013 supports the hypothesis that Georgia aster is a perennial outcrossing species due to the majority of its genetic variation being partitioned within populations (87.5 %) with less (12.3 %) partitioned among populations within states. The genetic relationships among populations roughly reflected geographic proximity, with populations grouping into three groups: Alabama, Georgia, and the Carolinas. This genetic survey suggests no difference in genetic variation or seed fitness between large and small populations of Georgia aster (Gustafson 2013, p. 4-5). A seed viability analysis study done by the Atlanta Botanical Garden showed that across the range of the species, the percent filled seed ranged from 77 to 99 % with a trend for smaller populations to have higher percentages of filled seed. The range in germination percentage ranged from 20 to 90 % with seeds from North Carolina populations having significantly lower germination percentages than seeds from other states (Cruse-Sanders 2013, p. 1).

Conservation Measures Planned or Implemented :

The Service conducted a web-ex conference call among interested landowners and other conservation partners (state Natural Heritage Programs, The Nature Conservancy and botanical gardens) in February, 2010. The purpose of this call was to review and solicit additional information on the rangewide status of *S. georgianum*, and evaluate interest in the development of one or more Candidate Conservation Agreements (CCAs) for this species. During that call, the U.S. Forest Service, National Park Service and the Services Cahaba National Wildlife Refuge expressed support for the development of one or more CCAs addressing *S. georgianum*. Additional landowners (representing local county governments, private industry, and private conservation organizations) are already actively managing the species; these landowners expressed some interest in formalizing their existing commitment via signed management agreements. The Service is continuing to seek and build support for CCAs and other similar tools aimed at reducing threats and increasing appropriate management at existing sites. In March 2013, the U.S. Forest Service submitted a draft CCA to the Service for the management of Georgia aster in Sumter, Talladega, Uwharrie, and Chattahoochee-Oconee National Forests. In April 2013, all Georgia partners participated in a meeting to discuss how to begin the CCA process for the Georgia populations. Those participants hope to submit a final CCA into the Service by the end of calendar year 2013.

In order to answer questions that would help determine if Georgia aster is warranted for listing, in September 2010, the U.S. Forest Service and U.S. Fish and Wildlife Service allocated funds toward a rangewide assessment of seed viability and population genetic structure in Georgia aster. This project involved collaborators from the Atlanta Botanical Garden, the North Carolina Botanical Garden, the State Botanical Garden of Georgia, and The Citadel. The projects were completed in early 2013. They provided information on the levels of genetic diversity within populations while also examining correlations between population size and genetic diversity and seed production. Research results are discussed in Threats section E.

Summary of Threats :

Although the supporting information is largely anecdotal, the current and threatened destruction, modification, and curtailment of the habitat and range of the species (factor A) are a concern for the species in the states where it currently is found. Residential subdivision development, highway expansion/improvement projects, and woody succession due to fire suppression are all ongoing threats to habitat. The lack of regulatory mechanisms to protect the habitat of the species and to protect individuals or populations from being destroyed also is a concern (factor D). In addition, as described in factor E, current management (mowing and herbicide applications) of roadside and utility ROWs, where the majority of the known remaining populations occur can directly kill the plants and because of their localized nature, these actions also could result of extirpation of populations at some sites. We find that this species is warranted for listing throughout all its range, and, therefore, find that it is unnecessary to analyze whether it is threatened or endangered in a significant portion of its range.

For species that are being removed from candidate status:

_____ Is the removal based in whole or in part on one or more individual conservation efforts that you determined met the standards in the Policy for Evaluation of Conservation Efforts When Making Listing Decisions(PECE)?

Recommended Conservation Measures :

Protection and management of existing populations through landowner agreements; acquisition and management of populations already large enough to manage with prescribed fire or those populations located adjacent to additional habitat which could be managed to encourage expansion of the population away from ROW and into more stable habitat. Current survey of populations, assessment and identification of specific threats and impacts to current populations, and monitoring of the effects of management activities to species to help address threats are needed.

Priority Table

Magnitude	Immediacy	Taxonomy	Priority
High	Imminent	Monotypic genus	1
		Species	2
		Subspecies/Population	3
	Non-imminent	Monotypic genus	4
		Species	5
		Subspecies/Population	6
Moderate to Low	Imminent	Monotypic genus	7
		Species	8
		Subspecies/Population	9
	Non-Imminent	Monotype genus	10
		Species	11
		Subspecies/Population	12

Rationale for Change in Listing Priority Number:

Magnitude:

Most of the remaining populations of this species survive adjacent to roads, railroads, utility ROW and other openings where vegetation management practices frequently mimic natural disturbance regimes. At the same time, these same vegetation management practices can result in accidental impacts (to the species) from herbicide application, road shoulder grading, and other maintenance activities. Because roads and other ROWs tend to facilitate future development, plants occurring in these areas are likewise vulnerable to impacts from future development projects which may destroy their habitat altogether. Within the past 10 years, these threats have led to the relocation of all or significant portions of one North Carolina population as well as at least one population in Georgia and two populations in South Carolina. The Service expects that these threats are operating across the range of the species. The species is still relatively widely distributed, with occurrence in 8 counties in Alabama, 24 counties in Georgia, 9 counties in North Carolina, and 15 counties in South Carolina. Recent information indicates the species is more abundant than when we initially identified it as a candidate for listing, with possibly as many as 118 extant populations (146 total populations reported), in comparison to approximately 60 when it became a candidate in 1999. Taking into account its distribution and abundance, the magnitude of threats is moderate.

Imminence :

The threats faced by this species are current, ongoing, and operating throughout the species range. Therefore, these threats are assessed as imminent.

Yes No Have you promptly reviewed all of the information received regarding the species for the purpose of determination whether emergency listing is needed?

Emergency Listing Review

No Yes Is Emergency Listing Warranted?

Although the threats to this species are significant, it is not anticipated that they will eliminate the species in the immediate future.

Description of Monitoring:

The Service has attempted to obtain information on Georgia aster populations from state NHPs and others knowledgeable about the species or specific populations. However, due to lack of funding, there is no formal monitoring program in place for assessing the status of this species or trends in its populations. The Service is aware of monitoring efforts in Mecklenburg County, NC, on North Carolina Department of Transportation Right-of-Ways throughout its range in North Carolina, the Chattahoochee River National Recreation Area in Georgia and in the Sumter National Forest in South Carolina; however these monitoring efforts cannot be expected to represent trends across the species range.

Indicate which State(s) (within the range of the species) provided information or comments on the species or latest species assessment:

Alabama, Florida, Georgia, North Carolina, South Carolina

Indicate which State(s) did not provide any information or comment:

none

State Coordination:

Alabama (last update received March 2013), Georgia (last update received March 2013), Florida (last update received April 2013), North Carolina (last update received March 2013), and South Carolina (last update received March 2013).

Literature Cited:

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Small, J. K. 1933. Manual of the southeastern flora. The University of North Carolina Press, Chapel Hill, NC.

Approval/Concurrence:

Lead Regions must obtain written concurrence from all other Regions within the range of the species before recommending changes, including elevations or removals from candidate status and listing priority changes;

the Regional Director must approve all such recommendations. The Director must concur on all resubmitted 12-month petition findings, additions or removal of species from candidate status, and listing priority changes.

Approve:



07/15/2013

Date

Concur:



10/28/2013

Date

Did not concur:

Date

Director's Remarks: