

CANDIDATE ASSESSMENT AND LISTING PRIORITY ASSIGNMENT FORM

SCIENTIFIC NAME: Aster georgianus Alexander

COMMON NAME: Georgia aster

LEAD REGION: 4

INFORMATION CURRENT AS OF: March 2003

STATUS/ACTION (Check all that apply):

New candidate

Continuing candidate

Non-petitioned

Petitioned - Date petition received: ____

90-day positive - FR date: ____

12-month warranted but precluded - FR date: ____

Is the petition requesting a reclassification of a listed species?

Listing priority change

Former LP: ____

New LP: ____

Latest date species first became a Candidate: _____

Candidate removal: Former LP: ____ (Check only one reason)

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

F - Range is no longer a U.S. territory.

M - Taxon mistakenly included in past notice of review.

N - Taxon may not meet the Act's definition of *A*species.@

X - Taxon believed to be extinct.

ANIMAL/PLANT GROUP AND FAMILY: Plant - Asteraceae

HISTORICAL STATES/TERRITORIES/COUNTRIES OF OCCURRENCE: Alabama, Florida, Georgia, North Carolina, South Carolina

CURRENT STATES/COUNTIES/TERRITORIES/COUNTRIES OF OCCURRENCE:

Alabama, Georgia, North Carolina, South Carolina

LEAD REGION CONTACT (Name, phone number): Rick Gooch, 404/679-7124

LEAD FIELD OFFICE CONTACT (Office, name, phone number): Asheville, North Carolina Field Office, Allen Ratzlaff, 828/258-3939, extension 229

SUPPORT FIELD OFFICE(S): Athens, Georgia Field Office; Charleston, South Carolina Field Office; Daphne, Alabama Field Office

BIOLOGICAL INFORMATION (Describe habitat, historic vs. current range, historic vs. current population estimates (# populations, #individuals/population), etc.):

Georgia aster is a relict species of post oak savanna/prairie communities that existed in the southeast prior to widespread fire suppression and extirpation of large native grazing animals. Most remaining populations survive adjacent to roads, utility rights-of-way and other openings where current land management mimics natural disturbance regimes. Most populations are small, and since the species' main mode of reproduction is vegetative, each isolated population probably represents just a few genotypes. Many populations are threatened by woody succession due to fire suppression, development, highway expansion/improvement, and herbicide application.

The currently accepted nomenclature for this taxon is Aster georgianus Alexander (Small 1933). Alexander described Aster georgianus based on a specimen collected by Cuthbert in 1898 from Augusta (Richmond County), Georgia. 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 Aster 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.

Georgia aster has large heads [5 centimeters (cm) (2 inches (in)) across], 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 with purplish tips on the corollas, anthers purple and pollen whitish. As the flowers age, the corollas turn a darker purple, so there is 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. Various species of butterflies and bumblebees have been observed pollinating the flowers, but these have not yet been identified to species (Matthews 1993). Plants are usually colonial, with 1 (sometimes 2) stems arising from each underground part. The stems and leaves are scabrous. The habitat consists of dry oak-pine flatwoods and uplands in the piedmont of North Carolina, South Carolina, Georgia, and Alabama. Aster georgianus can be distinguished from the similar Aster patens by its dark purple flowers (compared to the light lavender flowers of A. patens). Aster grandiflorus is another similar species, but it can be distinguished by its yellow disk flowers (compared to the white disk flowers of Aster georgianus).

Georgia aster occupies a variety of dry, upland habitats. 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 some undetermined length of time in the shade, but these rarely flower (Matthews 1993), and reproduce only by rhizomatous expansion. Soils vary from sand to heavy clay, with pH ranging from 4.4 to 6.8 at the sites sampled thus far (Matthews 1993).

Historically, 97 populations of Georgia aster were known to exist; 34 of these have apparently been destroyed. The species appears to have been eliminated from one of the five states in which it originally occurred. In most cases the exact cause of extirpation was not documented,

but herbicides, highway construction, fire suppression, and residential and industrial development have all altered the historic landscape in which Georgia aster once flourished.

THREATS (Describe threats in terms of the five factors in section 4 of the ESA providing specific, substantive information. If this is a removal of a species from candidate status or a change in listing priority, explain reasons for change):

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

Most remaining populations of this species survive adjacent to roads, railroads, utility rights-of-way and other openings where land management mimics natural disturbance regimes, but where they are inherently vulnerable to accidental destruction from herbicide application, road shoulder grading, and other maintenance activities. Many populations are now threatened also by development (several are within planned residential subdivisions), highway expansion/improvement, and by woody succession due to fire suppression. Two of the remaining populations are located adjacent to active quarries, which could eliminate the plants in the process of expansion. Most of the remaining populations are small, with 60 percent of them being no larger than 10 square meters (116 square feet) in size. Georgia aster has apparently been eliminated from 4 counties in Alabama, 1 county in Florida, 11 counties in Georgia, 1 county in North Carolina, and 5 counties in South Carolina; it remains in 31 counties in 4 states (NC, SC, AL, & GA).

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

Possibly in part because of its rarity, this species is not known to be a significant component of the commercial trade. However, it is an exceptionally attractive aster, with a low growth habit that could make it desirable to collectors and horticulturists. In addition, one of the surviving populations occurs within a heavily-used commercial recreation area, where it is threatened by trampling.

C. Disease or predation.

Disease and predation are not known to be a problem for this species. However, very little detailed information is available on its life history and interactions with potential predators and pathogens. The cause of the demise of most of the 34 extirpated populations is undocumented, so it is possible that disease and/or predation are an extant, but undocumented, problem. Obviously, with fewer and smaller populations remaining, disease or predation could represent a more serious threat to this species= survival now than they would have historically.

D. The inadequacy of existing regulatory mechanisms.

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, but do not protect it from the landowner. Only 5 populations of Georgia aster are known to occur on public lands (4 on National Forests; 1 on U.S. Army Corps of Engineers= lands), but they are currently offered no protection on these sites. Also, a primary threat to this species= continued existence is fire suppression; at least one of the states within the species= range has proposed legislation to ban prescribed

burns, which could seriously hinder efforts to protect this species and ensure its long-term survival.

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

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 aster's range, except where road, railroad and right-of-way maintenance are mimicking the missing natural disturbances. However, 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 is not nearly as destructive as herbicide application. Wildfires, once a part of the landscape, have virtually been eliminated, and prescribed burns are becoming harder to implement (see Section D above). Ninety-two percent of the surviving populations occur on private lands, where there is no protection of any kind. Two are on the edge of active quarries, and one is located within a heavily-visited commercial recreation facility where it is potentially threatened by trampling. Several other sites are threatened by the encroachment of invasive exotic plants, particularly kudzu, which is choking out virtually all the native vegetation. Extended drought may be a problem for this species, with one population reportedly at least top-killed before it could produce seed; it is unknown what long-term effects drought has on this species. Little is known of Georgia aster's life history and population biology, but preliminary evidence indicates that it may be self-sterile (Matthews 1993). With 41 percent of the surviving populations having less than 50 stems, and since the plant is rhizomatous, these small populations may represent single clones that are incapable of sexual reproduction; their long-term survival may be compromised by genetic depression.

FOR RECYCLED PETITIONS:

- a. Is listing still warranted? ___
- b. To date, has publication of a proposal to list been precluded by other higher priority listing actions? ___
- c. Is a proposal to list the species as threatened or endangered in preparation? ___
- d. If the answer to c. above is no, provide an explanation of why the action is still precluded.

LAND OWNERSHIP (Estimate proportion Federal/state/local government/private, identify non-private owners):

Six percent of the surviving sites are owned by the U.S. Forest Service (Uwharrie National Forest), one percent is owned by the U.S. Army Corps of Engineers, and the remaining ninety-three percent are on private lands.

PRELISTING (Describe status of conservation agreements or other conservation activities):

The Service is identifying and approaching private landowners in an attempt to gain their cooperation in our efforts to protect the species. We have initiated discussions with the U.S. Forest Service about managing and protecting their 4 populations, and gained their tentative commitment to conduct prescribed burns on at least 2 of these sites.

REFERENCES (Identify primary sources of information (e.g., status reports, petitions, journal publications, unpublished data from species experts) using formal citation format):

- Cronquist, A. 1977. Notes on the Asteraceae of the southeastern United States. *Brittonia* 29:217-225.
- Cronquist, A. 1980. Vascular flora of the southeastern United States, Vol. 1, Asteraceae. Chapel Hill, NC.
- Jones, R. L. 1983. A systematic study of Aster section Patentes (Asteraceae). *Sida* 10:41-81.
- Jones, R. L. 1992. Additional studies of Aster georgianus, A. patens, and A. phlogifolius (Asteraceae). *Sida* 15(2):305-315.
- Kartesz, J.T. 1994. A synonymized checklist of vascular flora of the U.S., Canada, and Greenland. 2nd edition. 2 vols. Timber Press, Portland, OR.
- Matthews, J.F. 1993, and 1997 revisions. Status survey of Aster georgianus Alexander. Prepared under work order NCPCP-92-18, U.S. Fish and Wildlife Service, Asheville, NC, and North Carolina Department of Agriculture Plant Conservation Program.
- Reveal, J. L. and C. S. Keener. 1981. Virgulus Raf. (1837), an earlier name for Lasallea Greene (1903)(Asteraceae). *Taxon* 30:648-651.
- Semple, J. C. and L. Brouillet. 1980. A synopsis of North American asters: the subgenera, sections and subsection of Aster and Lasallea. *Amer. J. Bot.* 67:1010-1026.
- Semple, J. C. 1980. Chromosome numbers and satellite chromosome morphology in Aster and Lasallea. *Amer. J. Bot.* 67:1027-1039.

LISTING PRIORITY (place * after number)

THREAT

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	Monotypic genus	10
		Species	11
		Subspecies/population	12

Rationale for listing priority number:

Magnitude: At least 34 populations have been lost. Most remaining populations of this species survive adjacent to roads, railroads, utility rights-of-way and other openings where land management mimics natural disturbance regimes, but where they are inherently vulnerable to accidental destruction from herbicide application, road shoulder grading, and other maintenance activities. Many populations are now threatened also by development (several are within planned residential subdivisions), highway expansion/improvement, and by woody succession due to fire suppression. Two of the remaining populations are located adjacent to active quarries, which could eliminate the plants in the process of expansion. One population has been lost to competition with kudzu (Pueraria lobata).

Imminence: The threats faced by this species are significant, however, it is not anticipated that they will eliminate the species in the immediate future (next 1-3 years).

APPROVAL/CONCURRENCE: Lead Regions must obtain written concurrence from all other Regions within the range of the species before recommending changes to the candidate list, including listing priority changes; the Regional Director must approve all such recommendations. The Director must concur on all additions of species to the candidate list, removal of candidates, and listing priority changes.

Approve: Linda Kelsey March 14, 2003
Acting Regional Director, Fish and Wildlife Service Date

Concur: _____ Date _____
Director, Fish and Wildlife Service

Do not concur: _____ Date _____
Director, Fish and Wildlife Service

Director's Remarks:

-

-

Date of annual review: March 2003

Conducted by: Allen Ratzlaff - Asheville, North Carolina FO

Comments:

-

-

-