

Dominion Energy South Carolina, Inc.
Congaree River Easement
Georgia Aster and Smooth Coneflower Survey
Columbia, South Carolina



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1.0 Introduction

On behalf of Dominion Energy South Carolina, Inc. (DESC), Apex Companies, LLC (Apex) completed a detailed survey for Georgia aster (*Symphyotrichum georgianum*) and smooth coneflower (*Echinacea laevigata*) within an approximate 3.77-acre study area located in Columbia (Richland County), South Carolina (Figure 1). The study consists of a portion of an existing DESC utility easement.

Georgia aster and smooth coneflower are protected plant species pursuant to Section 7 of the Federal Endangered Species Act. Georgia aster is a federal candidate for the threatened and endangered species list, with a state rarity ranking of SNR indicating a “unranked” status in South Carolina. Smooth coneflower is listed as federally threatened and state endangered, with a state rarity ranking in South Carolina of S3 indicating an “vulnerable” status in South Carolina (SC DNR 2020).

Field investigations were completed by Apex botanist John H. Brooks, III, who is listed by the U.S. Fish and Wildlife Service (USFWS) as an approved plant surveyor. The report herein describes the study site, the target species, and the results of field surveys conducted by Apex in October 2020.


2.0 Study Area

The limits of the approximate 3.77-acre study area (as shown on mapping in Attachment 1) for the Georgia aster and smooth coneflower survey were provided by DESC prior to Apex’s field investigation. The study area is located south of Gervais Street and east of the Congaree River (Figure 1). The U.S. Geological Survey (USGS) 7.5-minute Quadrangle Map for Southwest Columbia, South Carolina (USGS 2020) shows the study area as mostly forested/grassed with moderate topography.

The Study Area is a right-of-way easement that regularly maintained by mowing and herbicide that consists of low lying and more robust herbaceous layers. Multiple invasive species were identified onsite (Attachment 2: Species List). The Study Area is bordered by the Congaree River, private property, and City Park to the north and west, developed properties to the east, and an unnamed and deeply incised perennial stream to the south. Soils onsite are sandy due to portions of the Site being within the Congaree River floodplain.

3.0 Target Species Descriptions

Georgia aster is described as a robust rhizomatous perennial herb in the aster family (*Asteraceae*)




and is known to occur from Alabama to North Carolina in the southeastern United States (USFWS 2015). The species is presumed to be present in 14 counties in South Carolina, including Richland County (USFWS 2014). Georgia aster has large flower heads, 5 cm across, with dark purple petals surrounding white to lavender disk flowers that produce tiny fruits, up to 4 mm long, with single seeds. (USFWS 2015). The fruit contains a single seed that are up to 4 mm long with small evenly distributed hair-like structures across the surface. Georgia aster is supported by rhizomatous roots and typically has erect stems (20 to 40 inches tall) that can be light to dark brown in color with thick, oblong, dark green leaves (Nesom 1995). Flowers bloom between early October and mid-November (USFWS 2014).

Smooth coneflower is a perennial herb in the aster family (*Asteraceae*) with known occurrences in Virginia, North Carolina, South Carolina, and Georgia. In South Carolina, the species has been observed in Aiken, Allendale, Anderson, Barnwell, Lancaster Oconee, Pickens, and Richland County. Smooth coneflower grows up to 3.3 feet tall from a vertical root stock. Individual plants can be identified by the presence of large smooth to rough leaves, approximately 8 inches in length and 3 inches in width, that taper into long leafstalks (USFWS 2020). Stems are smooth with few leaves. Basal leaves grow up to 7.8 inches in length and 2.9 inches in width while midstream leaves are smaller with shorter petioles (USFWS 1995). Smooth coneflower is a composite flower with narrow, drooping petals that are light pink to purple in color (USFWS 2020). Disk flowers have tubular purple corollas and are approximately 0.2 inches long (USFWS 1995). Smooth coneflower reproduces by seed and asexually by rhizomatous growth. Flowering occurs from late May to mid-July. Flowers develop into dry single-seeded fruits in late June to September (USFWS 2020).

4.0 Target Species Habitat Factors

Georgia aster primarily inhabit woodlands or piedmont prairies dominated by native plants with acidic soils ranging from sandy to heavy clay. The primary controlling factor is light availability and the Georgia aster's ability to compete declines when shaded by woody species (USFWS 2014). Georgia aster can persist in shade but rarely flower, typically reproducing asexually through underground stems (USFWS 2015). Georgia aster requires disturbance, such as grazing and fire, as habitat requirements (USFWS 2014). Most remaining populations are small and inhabit areas where land management mimics natural disturbance, such as along roads, railroads, and utility rights-of-way (USFWS 2003). Maintenance activities such as herbicides and repeated mowing can damage Georgia aster populations. The species may also be vulnerable to competition from invasive species including Japanese honeysuckle (*Lonicera japonica*) and Johnson grass (*Sorghum halepense*) (USFWS 2014).




Smooth coneflower typically inhabits open woods, glades, cedar barrens, roadsides, clear-cuts, dry limestone bluffs, and along powerlines and grows best with abundant sunlight and little competition in the herbaceous layer (USFWS 2020). Smooth coneflowers prefer bare, disturbed soil rich in magnesium and calcium and, in South Carolina, associated with diabase and marble. Smooth coneflowers occur in community types described as xeric hardpan forests and diabase glades. Xeric hardwood forests occur on upland flats with impermeable clay subsoils while diabase glades typically have solid rock near the surface with mixed herb, shrub, and woodland patches. Smooth coneflower requires periodic disturbance, such as grazing and fire, to reduce shade and competition. Half of known populations live along roadsides and one-third along utility right-of-way's (USFWS 1995).

Dominant trees and herbs in smooth coneflower habitat typically include (USFWS 1995):

"Blackjack oak [Quercus marilandica] and post oak [Q. stellata] or chinquapin oak [Q. muhlenbergii] are usually stunted and the canopy is open. Other trees and shrubs sometimes found on these sites include red cedar (Juniperus virginiana), redbud (Cercis canadensis), persimmon (Diospyros virginiana), sparkleberry (Vaccinium arboreum), squaw huckleberry (V. stamineum), blueberry (V. pallidum [=vacillans]), winged elm (Ulmus alata), fringe-tree (Chionanthus virginicus), haw (Viburnum rafinesquianum), and black haw (V. prunifolium). The more common herb species include oat grass (Danthonia spicata), little bluestem (Schizachyrium [=Andropogon] scoparium), curlyheads (Clematis ochroleuca), white-topped aster (Aster solidagineus), rattlesnake-weed (Hieracium venosum), hawkweed (Hieracium gronovii). St. Andrew's cross (Hypericum hypericoides), Aster dumosus, Lespedeza spp., sundrops (Oenothera fruticosa), blazing star (Liatris graminifolia), rattlesnake master (Eryngium yuccifolium), nodding onion (Allium cernuum), silky bindweed (Calyptegia sericata), and goldenrods (Solidago spp.)"

Unforested, smooth coneflower habitat that is frequently mowed typically include (USFWS 1995):

"Smooth sunflower (Helianthus laevigatus) and Schweinitz's sunflower (Helianthus schweinitzii, also federally listed as endangered). Although Schweinitz's sunflower and smooth coneflower occupy the same type of habitat, they are not known to occur together on any sites. Other associates include crested coralroot (Hexalectris spicata), smooth peavine (Lathyrus venosus), Earle's blazing star (Liatris squarrulosa), hoary puccoon (Lithospermum canescens), Carol ma birdfoot-trefoil (Lotus purshianus var. helleri), wild quinine (Parthenium integrifolium var. auriculatum), prairie dock (Silphium terebinthinaceum), a liverwort (Lophozia capitata), and serpentine aster (Aster depauperatus {a candidate for Federal listing}). Additional species found in diabase glades include portulaca (Portulaca smalii), fameflower (Talinum teretifolium), buttonweed (Diodea teres), bluets (Houstonia tenuifolia), agave (Manfreda [=Agave] virginica), milkweed (Asclepias verticillata), prickly pear (Opuntia compressa), (Crotonopsis elliptica), blue curls (Trichostema brachiatum), dropseed



(*Sporobolus clandestinus*), Indian currant (*Symphoricarpos orbiculatus*), fragrant sumac (*Rhus aromatica*), barberry (*Berberis canadensis*), (*Trachelospermum diffusum*), and (*Matelea decipiens*)."

5.0 Survey Methods

Apex completed survey fieldwork on October 23, 2020 to complete the survey within the USFWS-approved annual survey window for the target species. Survey windows are early October to mid-November for Georgia aster and July to end of October for smooth coneflower. Study limits were provided by DESC prior to Apex's field investigations to allow for preliminary research pertaining to landforms, cover types, and soil map unit data available through the Web Soil Survey published online by the Natural Resources Conservation Service (NRCS). Onsite surveys were conducted using pedestrian survey transects where transects allowed for overlapping observations with each pass. Navigation in the field was aided by real-time positioning using sub-meter Global Positioning System (GPS) mobile devices.

Vegetation community types observed were noted according to data such as cover type, community structure, slope aspect and grade, associate species, substrate conditions, and other relevant information needed to evaluate habitat suitability for the target species.


Habitat quality for Georgia aster was assessed when multiple favorable habitat attributes were observed, such as:

- Woodlands, piedmont prairies, or areas where land management mimics natural disturbance (e.g. natural fires), such as along roads, railroads, and utility rights-of-way
- Acidic soils
- Abundant light conditions with little herbaceous competition
- Absence of limiting factors (e.g., herbicide usage, invasive species, over management)

Habitat quality for smooth coneflower was assessed when multiple favorable habitat attributes were observed, such as:

- Open woods, glades, cedar barrens, roadsides, clear-cuts, dry limestone bluffs, and along powerlines
- Bare, disturbed soils rich in magnesium and calcium
- Abundant light conditions with little herbaceous competition
- Absence of limiting factors (e.g., herbicide usage; invasive species, and over management)

Habitats with all favorable attributes were considered high quality, while marginal quality habitat only had several favorable attributes (and no limiting factors). For the purpose of completing a



thorough survey to determine presence or absence of the target species, all habitats within the study area that had the potential to support colonization (whether high or marginal quality) were categorized as “appropriate habitat” even though only a couple of habitat qualities for each species was observed in the study area. Inappropriate habitat areas were identified in areas that lacked favorable habitat attributes or had limiting factors that preclude potential for colonization.

Once appropriate habitat zones were identified, Apex completed detailed presence/absence surveys using a “perimeter and transect” survey method to search for individual plants. This approach involved surveyor(s) walking the perimeter of the habitat zone to establish its areal extent, then traversing the habitat zone on transects spaced approximately 15-feet apart to ensure that the visual range of each adjacent transect overlapped. Vegetation encountered during field investigations was identified based on morphological characteristics found in U.S. Fish and Wildlife Service and South Carolina Department of Natural Resources publications. Plant species encountered during fieldwork (across multiple inappropriate and appropriate habitat types) were recorded regardless of the type of habitat observed during the field investigation; and, a cumulative plant list from the field work conducted by Apex is provided in Attachment 2.

6.0 Results

No individuals or populations of Georgia aster or smooth coneflower were identified by Apex during onsite surveys within the approximate 3.77-acre Congaree River study area in October 2020. Appropriate habitat was not identified for Georgia aster or smooth coneflower. The project area only met the open meadow habitat requirement for both species. The study area consisted of a regularly maintained and mowed areas bordered by woodland. The herbaceous layer across the study area was substantial with aerial coverages that exceeded 100 percent, combined with the abundance of invasive species and lack of other habitat requirements, provided habitat that was poor and not appropriate for either Georgia aster or smooth coneflower. The unnamed perennial stream, bisecting the study area on the south, was found to be severely eroded and incised with nearly vertical stream banks. Representative photographs of habitat conditions for each species are provided in Attachment 1.

7.0 Conclusions

During the field survey conducted by Apex on October 23, 2020, no appropriate habitat for Georgia aster or smooth coneflower was identified by Apex within the approximate 3.77-acre study area (Figure 1). Only the open meadow habitat requirement was met for both species. Due to the thick herbaceous cover, presence of invasive species, lack of other habitat requirements, and the lack of observations of Georgia aster or smooth coneflower populations, Apex believes



that the species are absent within the study area.

Pursuant to Section 7 of the Federal Endangered Species Act, it is Apex's professional opinion that the proposed activities within the approximate 3.77-acre study area surveyed for the proposed development will not jeopardize the continued existence of Georgia aster or smooth coneflower. According to current USFWS guidelines, the results of this survey are valid for a period of two years from the last day of the field investigation (October 23, 2022). At the appropriate time and at the discretion of the DESC, Apex recommends that the results of Apex's survey be provided to the USFWS and the analogous state natural resource agencies.

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Figure



0 50 100 200 300 400 Feet

 Study Area



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**Georgia Aster and Smooth Coneflower Survey
 Dominion Energy South Carolina, Inc.
 Columbia, SC**

Study Area: +/- 3.77 Acres

Figure 1



Attachments



Attachment 1

Representative Site Photographs

Photo 1

View of northern edge of Project Area facing south.



Photo 2

View of southern edge of Project Area facing south. Note Johnson grass in foreground that covers most of the area.



Photo 3

View of southern edge of Project Area facing north. Depicting the mostly low-lying grasses where the Johnson grass is not present, which is typical habitat for the area.



Photo 4

View from center of Project Area facing east.





Attachment 2

List of Plant Species Encountered

