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

Scientific Name:

Solidago plumosa

Common Name:

Yadkin River Goldenrod

Lead region:

Region 4 (Southeast Region)

Information current as of:

06/27/2011

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

_X_ 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: 04/20/2010

90-Day Positive:09/27/2011

12 Month Positive:10/26/2011

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:

We find that the immediate issuance of a proposed rule and timely promulgation of a final rule for this species has been, for the preceding 12 months, and continues to be, precluded by higher priority listing actions (including candidate species with lower LPNs). During the past 12 months, the majority our entire national listing budget has been consumed by work on various listing actions to comply with court orders and court-approved settlement agreements; meeting statutory deadlines for petition findings or listing determinations; emergency listing evaluations and determinations; and essential litigation-related administrative and program management tasks. We will continue to monitor the status of this species as new information becomes available. This review will determine if a change in status is warranted, including the need to make prompt use of emergency listing procedures. For information on listing actions taken over the past 12 months, see the discussion of Progress on Revising the Lists, in the current CNOR which can be viewed on our Internet website (http://endangered.fws.gov/).

Historical States/Territories/Countries of Occurrence:

- **States/US Territories**: North Carolina
- **US Counties**: Montgomery, NC, Stanly, NC
- **Countries**:Country information not available

Current States/Counties/Territories/Countries of Occurrence:

- **States/US Territories**: North Carolina
- **US Counties**: Montgomery, NC, Stanly, NC
- **Countries**:Country information not available

Land Ownership:

All of the known occurrences of this species are owned by private corporations which operate subject to conditions of licenses from the Federal Energy Regulatory Commission (FERC). Pursuant to 18 C.F.R. §

4.41(h)(2), FERC is required to include in the project boundary “those lands necessary for operation and maintenance of the project and for other project purposes, such as recreation, shoreline control, or protection of environmental resources.” These tailwater reaches are integral to the operation and maintenance of the hydroelectric projects. Accordingly, the sites immediately downstream of Narrows Dam lie within the federally controlled project boundary of the Yadkin River Hydroelectric Project (FERC Project No. 2197), which is owned and operated by Alcoa Power Generating, Inc. The sites downstream of Falls Dam lie within the project boundary of the Yadkin River Hydroelectric Project (FERC Project No. 2197), and the backwaters of the Yadkin-Pee Dee River Hydroelectric Project (FERC Project No. 2206), which is owned and operated by Progress Energy. The majority of the population (over 95%) occurs entirely within the boundaries of the Yadkin Hydroelectric Project.

Lead Region Contact:

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Lead Field Office Contact:

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Biological Information

Species Description:

In 1898, Small published a species description for *Solidago plumosa* and distinguished it from *Solidago purshii*, a northern goldenrod species (Small 1898, p. 476). The description follows:

"Perennial, bright green, glabrous or nearly so below the inflorescence, included to be glutinous, especially above. Stems erect, often tufted, 4-10 dm high, ridged, purple, strict; leaves alternate; blades spatulate to narrowly linear, 2-30 cm long obtuse, acute to acuminate, thickish, entire or remotely and shallowly toothed, narrowed into slightly margined petioles or the upper ones nearly sessile with smaller ones sometimes clustered in their axils: heads numerous in narrow terminal panicles, 5-8 mm long, often densely disposed: involucres campulate at maturity: bracts crowded; rays 3-5, yellow, 5-6 mm long: achenes 3-3.5 mm long, glabrous."

This description and recognition of *Solidago plumosa* as a separate species is still accepted today by botanists and natural resource professionals that evaluate species distinctions and distributions. Although one researcher collected leaf samples to investigate levels of genetic variation in the species using amplified fragment-length polymorphisms (AFLPs) in 2005, to date this study has not been completed (Dr. Greg Copenhaver, University of North Carolina, pers comm, 2007, Bates, pers comm 2011). Therefore, to date, no genetic studies have been compleated to evaluate the genetic makeup of this species or its genetic similarities to other closely related genera.

Taxonomy:

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Habitat/Life History:

Solidago plumosa occurs only along the shorelines of the Yadkin River in rock crevices of periodically flooded bedrock outcrops of mafic rock (Bates 2005, p. 1,2; Weakley 2010, p. 885). Although this species' requirements for seed germination and seedling establishment are not known, seedling establishment is thought to be generally limited by a lack of suitable habitat. However, a few plants have been observed growing from concrete pilings below Narrows Dam, which suggests that the availability of a specific substrate type is not likely to be a limiting factor in plant establishment. Rather, because the species appears to persist in areas in relatively close proximity to the water with little to no competing vegetation, botanists have long suspected that the species may benefit from periodic scouring which would prevent the establishment of other species without simultaneously eliminating previously established *Solidago plumosa* plants (the age of which is unknown). However, the species does not occur in frequently flooded habitats, and therefore appears intolerant of prolonged or frequent inundation.

The plant community with which *Solidago plumosa* is associated has been described by some authors as glade-like, or "river scour prairies." A few other plant species that occur in the vicinity of Yadkin River goldenrod include *Pinus virginiana*, *Ulmus alata*, *Liquidambar styraciflua*, *Vaccinium arboreum*, *Amorpha schwerinii*, *Amorpha fruticosa*, *Hypericum prolificum*; associated herbs include *Schizachyrium scoparium*, *Hypericum gentianoides*, *Baptisia alba*, *Aster patens*, and *Sporobolus clandestinus* (The Carolina Vegetation Survey, http://cvs.bio.unc.edu/).

Historical Range/Distribution:

Solidago plumosa is endemic to the Yadkin River in North Carolina. John Kunkell Small originally described the plant from the Narrows Canyon and Falls area of the Yadkin River in 1894 (Small 1896, 1898). Subsequent to Small's original discovery of the plant, two hydroelectric dams were constructed on the Yadkin River in the only known habitat for the species: the Narrows Dam (located in the Narrows canyon area) was built in 1917, and the Falls Dam (located immediately downstream, presumably at the "falls of the Yadkin" referred to by Small) was built in 1919. The Narrows and Falls Dams and associated reservoirs are operated by the Yadkin Division of Alcoa Power Generating Inc. (APGI) as part of the four-development Yadkin Hydroelectric Project (Federal Energy Regulatory Commission, FERC Project No. 2197). Another hydroelectric project, the Yadkin-Pee Dee River Hydroelectric Project, consisting of the Tillery and Blewett Falls hydroelectric power plants (FERC Project No. 2206), is located immediately downstream of Falls Dam. These two power plants and associated reservoirs are owned and operated by Progress Energy.

Current Range Distribution:

For several decades following the construction of Narrows and Falls Reservoirs, there was no mention of *Solidago plumosa* in the available botanical literature (Radford et al. 1964, p. N/A; Radford et al. 1968, p. N/A). This absence appears to have resulted from the presumed extinction of the species following the extreme alteration of its only known habitat by the construction and operation of the aforementioned hydroelectric dams. However, the species was independently rediscovered in 1994 by two botanists working with the North Carolina Natural Heritage Program during their surveys of the area first examined by John Small in 1894. The areas found to support the species in 1994 remain the only locations where this species is known to exist. Therefore, the entire known range of this species is confined to two general locations (below

Narrows and Falls Dams, respectively) along the Yadkin River which are roughly 2.5 river miles apart. All areas supporting the species are located within the boundaries of the Yadkin and Yadkin-Pee Dee River Hydroelectric Projects.

Solidago plumosa occurs along the shorelines of the Yadkin River in the crevices of periodically flooded bedrock outcrops and boulders downstream of Narrows and Falls Dams – areas that appear to most closely approximate pre-impoundment conditions. Although there are no estimates of population size and spatial extent prior to the construction of these impoundments, inspection of pre-impoundment photographs and detailed pre-impoundment topographic maps of the area suggest an abundance of suitable habitat existed in areas that are now submerged by reservoirs or beneath the dams that form them. Thus it is logical to conclude that the amount of suitable habitat currently available to the species is significantly less than what was present at the turn of the last century, and that the global population has therefore been substantially reduced in size and spatial extent.

Population Estimates/Status:

Due in part to the recent rediscovery of this species, there is virtually no information about its dispersal patterns or the partitioning of genetic diversity among extant aggregations of plants. This combined with the relatively limited degree of spatial separation between all occupied sites (which are confined to a 2.5 mile stretch of a single riparian corridor) suggests that the two general locations in which this species occurs (downstream of Narrows and Falls Dams, respectively) comprise but a single population. Within these two locations, the vast majority of plants (greater than 95%) occur downstream of Narrows Dam, in the tailwaters of Narrows Reservoir and the upper reaches of Falls Reservoir. Plants in this location are distributed among eight relatively discrete sites spanning approximately 0.6 river miles. A complete census of these eight sites was conducted in 2004, revealing a total of 3,181 rosettes aggregated into 702 spatially distinct clumps (Bates, 2005, p. 7-8). Five of these sites occur on the left-descending bank of the Yadkin River (in Montgomery County), two occur on islands within the river channel (also within Montgomery County) and one occurs on the right-descending bank (in Stanly County).

The remaining plants (less than 5% of the total population) are located in two discrete sites downstream of Falls Dam. The first of these sites is located immediately downstream of Falls Dam in the tailwaters of Falls Reservoir. One flowering clump and an undetermined number of rosettes were identified at this location during 2004 surveys (rosettes could not be counted because they were on rock outcrops in the middle of the channel, and flows were sufficiently high to preclude access on foot). The second site occurs on a shoreline rock outcrop within the upper reaches of Tillery Reservoir (formed by the next downstream hydroelectric project, Norwood Dam). This site is owned by Progress Energy and leased to Morrow Mountain State Park. Fewer than ten rosettes were observed at this location on October 10, 1998. Because of the small number of plants and absence of flowering stems, this cluster of plants may not represent a viable, self-sustaining population. Although plants have been observed at this location since 1998, the number of plants and precise year of their observation was not available at the time of this status assessment (Moni Bates, pers comm, 2007).

Since the species was rediscovered in 1994, additional surveys within the Yadkin-Pee Dee watershed have been conducted in 1997, 1999, 2000 and 2004 (Moni Bates, NCPCP, pers comm 2004 and Bates, 2005, p. 1). These surveys have included portions of the Yadkin River up and downstream of the existing population, as well as a segment of the Uwharrie River immediately upstream of its confluence with the Yadkin (where these rivers join to form the Pee-Dee River). With the exception of the single small occurrence located immediately downstream of Falls Dam (described above), these surveys have not revealed any additional populations of the species within the Yadkin-Pee Dee River watershed.

Table 1. Status of *Solidago plumosa* clumps in eight subpopulations at Yadkin River, North Carolina near Narrows Dam and Falls Dam (summarized from Bates 2005, p. 10).

Subpopulation	Adult Clumps	Juvenile Clumps	Proportion Adult Flowering Clumps
1	1	0	100% (1)
2	3	0	67% (2)
3	280	22	8% (21)
4	131	9	11% (14)
5	201	3	19% (38)
6	50	2	22% (11)
7	705	22	20% (144)
8	770	24	15% (113)
Total	2,141	82	16% (344/2141)

Threats

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

The entire current and historical distribution of *Solidago plumosa* is confined to a short (2.5 mile) segment of the Yadkin River in which hydrologic regimes are controlled by the operation of two hydroelectric projects (the Yadkin and the Yadkin-Pee Dee Hydroelectric Projects). Within this area, *Solidago plumosa* occurs in the crevices of infrequently flooded bedrock outcrops and boulders downstream of Narrows and Falls Dams.

Any detrimental effects to *Solidago plumosa* resulting from the construction of these reservoirs occurred decades ago when these projects were built (during the years of 1917 to 1928), and the Service is not aware of any plans to construct additional reservoirs within the current range of this species. However the Service is concerned that the operation of existing reservoirs threatens the continued existence of *Solidago plumosa* by the alteration of natural flow regimes which may discourage the establishment of competitive vegetation through intermittent scouring events.

Over 95% of all verified extant occurrences of the species occur within the boundaries of the Yadkin Hydroelectric Project (FERC Project 2197). The FERC licenses for this project, currently held by APGI, expired in 2008. APGI filed a new license application with FERC in April 2006. As part of the FERC relicensing process, APGI has conducted studies of resources of concern to relevant agencies and stakeholders. These studies included a characterization of current and simulated historical (unregulated) hydrologic conditions at select locations currently occupied by *Solidago plumosa* (APGI 2006, p. 7).

During this study, APGI (with the assistance of Moni Bates, formerly with the North Carolina Plant Conservation Program) selected 14 sites as representative of the conditions experienced by this species throughout the 2.5 mile stretch of river spanned by its single global population (APGI 2006, p. 6). The study determined that these 14 sites would be inundated by flows ranging from 16,000 cubic feet per second (cfs) to 280,000 cfs. Comparisons of existing and run-of-river flow conditions indicate that the average number of annual flows exceeding 16,000 cfs has been reduced by as much as 50% (relative to run-of-the-river conditions), and the total number of flows (exceeding this same volume) has been reduced by as much as 40%. The study demonstrates that these 14 locations currently occupied by the species are not subject to frequent inundation (or scouring) under current reservoir operating conditions, but simultaneously suggests that infrequent, high velocity flood events are capable of reaching areas of occupied habitat, and that the frequency of these high velocity flows has been reduced by the construction and operation of the reservoir. The Service remains concerned that reductions in these infrequent, high velocity events may be facilitating

the establishment of other plant species at lower elevations (closer to the reservoir) which could in turn compete with Solidago plumosa. Some of these species are invasive exotic plants whose rates of reproduction and spread far exceed that of Solidago plumosa.

All habitats currently occupied by *Solidago plumosa* are threatened by the spread of non-native invasive plant species. *Albizia julibrissin* (Mimosa) is a non-native under story tree that also grows in rock crevices at the Narrows/Badin Dam site. Like many invasive plant species, mimosa can grow in a variety of soils, produce large seed crops, and resprout when damaged – making it a strong competitor to native vegetation, including *Solidago plumosa*. Dense stands of mimosa severely reduce the sunlight and nutrients available for other plants, and may compete for suitable sites for seed germination and seedling establishment. Mimosa can become a particularly serious problem along riparian areas, where it becomes established along shores and where its seeds are easily transported in water. Hybrid bush honeysuckle (*Lonicera* x *bella*), privet (*Ligustrum sinense*) and Japanese honeysuckle (*Lonicera japonica*) also occur nearby in dense understory colonies and could pose similar threats to *Solidago plumosa* in the future.

The habitat occupied by *Solidago plumosa* is also threatened by disturbance and trampling on the part of anglers and boaters that are attracted to the seasonal fisheries within tailwater areas of Narrows and Falls Dams. The habitat currently available to this species is limited, and yet the very areas that *Solidago plumosa* inhabits tend to attract anglers who moor and walk on the rocks extended along the shore and within the channel, disturbing and potentially uprooting established vegetation while also contributing to soil compaction and/or soil detachment.

In September 2008, the Service was notified by the North Carolina Department of Environment and Natural Resources (NC DENR) and Alcoa Power Generating, Inc. (APGI) that *Solidago plumosa* had been located on a rocky peninsula immediately below Narrows Dam powerhouse, in an area not previously known to contain the species. Lead and PCB contamination had been identified in the soils and scattered debris (dating back several decades, to the period in which the powerhouse was constructed) immediately adjacent to areas occupied by this species. The proposed remediation efforts initially threatened to impact Solidago plumosa, however the Service worked with the responsible parties to ensure that plants were completely avoided during this remediation effort (Marshall Olson, pers comm, 2009; Tim Gessner, pers comm, 2009).

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

Not known to be a threat at this time.

C. Disease or predation:

Not known to be a threat at this time.

D. The inadequacy of existing regulatory mechanisms:

Solidago plumosa is listed as endangered in North Carolina (the only state in which the species occurs) under the North Carolina Plant Protection and Conservation Act (North Carolina General Statute, Chapter 106, Agriculture, Article 19B, Plant Protection and Conservation Act, §§ 202.12-202.22). However, this statute offers limited protection to listed plants, in that it primarily serves to regulate the collection, shipment and sale of listed plant species. Further, state prohibitions against removal without written permission of the landowner have proven difficult to enforce. This statute does not require active protection or management of listed species by any landowner (whether private, state or federal).

As previously stated, the Yadkin River and Yadkin-Pee Dee River Hydroelectric Projects (within which *Solidago plumosa* occurs) are owned by private corporations which operate subject to licenses from FERC. As a federal agency, FERC has obligations to evaluate and disclose the effects of its actions (including its

issuance of hydropower licenses) pursuant to the National Environmental Policy Act (40 C.F.R. §§1501-1508). However, the intent of this statute is to facilitate disclosure of environmental impacts associated with federal agency decisions and as such does not preclude such agencies from acting in a manner that may be detrimental to any given environmental resource, nor does it require such agencies to work pro-actively toward the conservation of such resources.

Pursuant to 18 C.F.R. (see generally 18 C.F.R. §§1-399, and specifically 18 C.F.R. §4 and §9), FERC does require license applicants to "consult with the relevant Federal, State, and interstate resource agencies" in order to identify "significant" resources present within the FERC-defined project boundary. However, there is no regulatory mandate for FERC to modify the licenses it issues for the protection of those resources which may lack legal protection via other relevant statutes. In the case of *Solidago plumosa*, there are no existing regulatory mechanisms which would prevent FERC, or its licensees, from adversely impacting the species through continued disruption of natural hydrologic regimes along the Yadkin River.

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

No additional threats beyond those already mentioned.

Conservation Measures Planned or Implemented :

The Service, The North Carolina Plant Conservation Program (NCPCP), the North Carolina Zoological Park (NC Zoo), APGI and Progress Energy began discussions to protect this species in June 2000. These discussions centered around four objectives: (1) augmenting the population of this species near the base of Falls Dam in the headwaters of Tillery Reservoir, (2) monitoring the existing population of the species, (3) managing invasive species within the habitat occupied by *Solidago plumosa*, and (4) enhancing the understanding of habitat requirements and life history characteristics of *Solidago plumosa*.

The Department of Interior (Department) participated during the FERC relicensing processes for the Projects (APGI and Progress Energy) since 2002, and in the development of appropriate studies for the Projects and in a general settlement negotiations process developed by APGI and Progress Energy. Through the general settlement negotiation process, the Department and other natural resource agencies from North and South Carolina have identified important natural resource areas of concern and recommended appropriate studies to evaluate the proposed continuing operations and impacts of the Projects.

The FERC licenses to operate the Yadkin River and Yadkin-Pee Dee River Hydroelectric Projects expired in 2008. The FERC issued its final Environmental Impact Statement (EIS) for the relicensing of the 2 hydroelectric projects in the Yadkin-Pee Dee River Basin on April 18, 2008. The EIS considered the May, 2007 recommendations of the Department of Interior for protection, mitigation and enhancement measures which the Department deemed necessary to compensate for ongoing impacts to natural resources resulting from the continued operation of the Yadkin and Yadkin Pee Dee Projects (Department of the Interior May 2007a and May 2007b). With respect to *S. plumosa*, these recommendations specifically included provisions to monitor status and trends and the species' population, control encroaching vegetation within occupied and potentially suitable habitat, to assess the effects of continued Project operations upon the species, and to create additional areas of suitable habitat for the species. These recommendations were reviewed by the FERC. In its EIS, FERC proposed a license article that would require the licensees to develop and file a rare, threatened, and endangered (RTE) species management plan to address issues regarding the project-related impacts on Yadkin River goldenrod (*Solidago plumosa*). However, subsequent challenges to the water quality certificates for these projects have delayed license issuance. The Department will continue to work with that agency to ensure that any license it issues satisfactorily addresses our concerns with respect to *S. plumosa*.

The Service funded a study in 2004 to survey additional areas of potentially suitable habitat in the

Yadkin-Pee Dee watershed, and to develop monitoring protocol to better assess the status and trends of the species (Bates 2005, p. 3). Five days of surveys were conducted throughout the watershed, with emphasis upon rock outcrops and tailwater regions below hydroelectric dams (because these areas most closely approximate pre-impoundment conditions). These surveys spanned over twenty river miles and included areas up and downstream of habitat known to be occupied by the species at that time. Details of specific areas searched are on file with the Asheville Field Office and the NC PCP. No new populations were discovered beyond those already known during the course of these surveys, however a few additional clumps were identified just a few meters upstream of the downstream-most subpopulation, which occurs in the tailwaters of Falls Dam.

This study also included a census of eight subpopulations located downstream of Narrows Dam, and recommendations on future monitoring efforts at these sites. The results of these counts were summarized above (refer to section titled "Historic vs. Current Population Estimates/Status"). Although the study included recommendations for future monitoring efforts, the subpopulations have not been resurveyed since 2004.

As noted above, APGI also conducted an assessment of existing and simulated historical (unregulated) flow conditions at areas of occupied habitat for this species in conjunction with the FERC relicensing proceedings (APGI 2006, p. 3). This study furthered our knowledge of the effects of hydrologic regime upon the species, and is expected to assist in the development of specific management recommendations for the species (pursuant to the Department's recommendations to the FERC filed in May, 2007).

In 2011, at the request of the USFWS, APGI and USFWS staff surveyed the Yadkin River goldenrod population below Narrows Dam and again began discussing conservation measures and the need to renew the Agreement effort. During November 2011, APGI treated areas to remove and control invasive exotic vegetation.

A draft Candidate Conservation Agreement was submitted in February 2012, and is currently under review. This agreement is intended to address threats to the species, control invasive exotic vegetation encroachment, implement propagation and population expansion, and develop a regular monitoring and reporting protocol.

Summary of Threats :

Alteration of historical (pre-impoundment) flow regimes; alteration of habitat and potential loss of individuals through lead and PCB remediation work was completed in 2009 with no adverse impacts to the species; additional alteration of habitat and competition with non-native invasive plant species; some potential threats from recreational use of the river corridor. 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 :

• Control/eradication of invasive exotic vegetation in occupied and potentially suitable habitat
• Control and eventual elimination of recreational user impacts (through closures and/or education and outreach efforts)
• Augmentation of existing populations using seed and/or seedlings.

• Continued coordination with APGI and PE will be necessary to avoid impact to the species from planned and emergency maintenance actions at the hydroelectric projects.

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:

The global distribution of *Solidago plumosa* consists of a single population that occurs in two locations along a single 2.5 mile stretch of the Yadkin River. As a result of this confined spatial distribution, the entire population is expected to be affected by the threats previously identified to the species (reservoir operation and resulting alteration of hydrologic regime, introduction and spread of invasive exotic species, recreational user impacts). The effects of these threats are difficult to assess due to a lack of data on the species. There are no estimates of population size prior to the reservoir construction, therefore we will likely never know the extent to which the population may have been reduced in size as a result of the construction of multiple reservoirs throughout its only known occupied habitat. These effects have already occurred. However, ongoing operation of these reservoirs appears to be affecting the species through continued hydrologic alteration, which may limit the availability of suitable habitat, facilitate the introduction and spread of invasive exotics, and enhance the potential for recreational user impacts. Available monitoring data are still too limited for a meaningful assessment of the relative and collective impact of these threats upon the species. With the possible exception of ongoing hydrologic alterations, threats to the species may be manageable if threat abatement strategies (invasive exotic eradication efforts and efforts to deter trampling) are successfully and immediately implemented. The Service currently estimates that these threats will be addressed within the next five years in conjunction with a species-specific management plan to be produced and implemented by the FERC licensees, pursuant to an imminent consultation between the FERC and the Service. In light of all of these considerations, the magnitude of threats to the species is estimated to be “moderate to low.”

Imminence :

Any detrimental effects to *Solidago plumosa* resulting from the construction of these reservoirs occurred decades ago when these projects were built (during the years of 1917 to 1928), and the Service is not aware of any plans to construct additional reservoirs within the current range of this species. However the Service is concerned that the operation of existing reservoirs threatens the continued existence of *Solidago plumosa* by the alteration of natural flow regimes which may have historically discouraged the establishment of competitive vegetation through intermittent scouring events. Non-native invasive plant species are already established within the sites occupied by *Solidago plumosa*, and pose an immediate threat to the species in that these shrub and sub-canopy species overtop this shade-intolerant species, and compete with it for safe-sites for seed germination and seedling establishment. The Service is concerned that the establishment and spread of these non-native invasive plants is being facilitated by the manner in which the Yadkin River and Yadkin-Pee Dee River Hydroelectric Projects are currently operated. In light of these considerations, the combined threats are rated as imminent.

__Yes__ 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__ Is Emergency Listing Warranted?

Emergency listing is not warranted at this time. Although threats are significant, the Service anticipates that they will be satisfactorily addressed through consultations with FERC and its licensees during the relicensing of the Yadkin River and Yadkin-Pee Dee River Hydropower Projects. Potential impacts to the species were identified in the fall of 2008 in conjunction with lead and PCB remediation efforts at Narrows Powerhouse, however the Service worked with the responsible parties to ensure that plants were completely avoided during this remediation effort (Marshall Olson, pers comm, 2009; Tim Gessner, pers comm, 2009).

Description of Monitoring:

Plants were monitored with funding from the Service in 2004 and 2005. Funds for monitoring have not been available since that time. The Service and its partners (including APGI) are working to develop a monitoring program and will likely implement these efforts through the anticipated relicensing of the Yadkin and Yadkin-Pee Dee Hydroelectric Projects. Monitoring currently occurs by APGI staff and Service, annually during the flowering season.

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

North Carolina

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

none

State Coordination:

This species is a plant and therefore is not included as a species of conservation concern in the North Carolina Wildlife Resource Commission’s State Wildlife Action Plan.

Literature Cited:

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2006.

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Department of the Interior. May, 2007a. Section 10(J) Recommendations, Terms and Conditions, and reservation of Section 18 Authority for the Yadkin Hydroelectric Project (FERC No. P-2197-073). Memorandum filed with the Secretary of the FERC on May, 11, 2007.

Department of the Interior, May, 2007b. Section 10(J) Recommendations, Terms and Conditions, and reservation of Section 18 Authority for the Yadkin-Pee Dee Hydroelectric Project (FERC No. P-2206-030). Memorandum filed with the Secretary of the FERC on May, 9, 2007.

FERC. 2008. Final Environmental Impact Statement For The Yadkin And Yadkin-Pee Dee River Projects, Docket Nos. P-2197-073 and 2206-030. Federal Energy Regulatory Commission, Office of Energy Projects, Washington, DC, 423pp.

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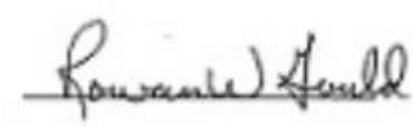
Approval/Concurrence:

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:  06/12/2012
Date

Concur:  11/06/2012
Date

Did not concur: _____ _____
Date

Director's Remarks: