

Section 3.2.1 Vegetation

Table 3.2-11 summarizes the findings of effects for rare plants.

Table 3.2-11. Summary Of Determination Of Effect For Each Rare Plant Species Potentially Affected By Any Of The Eight Alternatives.

E=Endangered; S=Sensitive; LR=Locally Rare; # =May impact

Scientific Name	Forest Status	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 8	Alt 9	Alt 10
<i>Gymnoderma lineare</i>	E	No Effect	No Effect	No Effect	Not likely to adversely affect				
<i>Acrobolbus ciliatus</i>	S	#	#	#	#	#	#	#	#
<i>Cephalozia macrostachya</i> ssp. <i>australis</i>	S	No impacts	No impacts	No impacts	May impact *	No impacts	May impact *	May impact *	May impact *
<i>Hydrothyria venosa</i>	S	No impacts	No impacts	No impacts	#	No impacts	#	#	#
<i>Lejeunea blomquistii</i>	S	#	#	#	May impact *				
<i>Lophocolea appalachiana</i>	S	No impacts	No impacts	No impacts	May impact *				
<i>Lysimachia fraseri</i>	S	#	#	#	#	#	#	#	#
<i>Marsupella emarginata</i> var. <i>latiloba</i>	S	No impacts	No impacts	No impacts	#	No impacts	#	#	#
<i>Plagiochila austinii</i>	S	No impacts	No impacts	No impacts	#	No impacts	#	#	#
<i>Plagiochila caduciloba</i>	S	#	#	#	#	#	#	#	#
<i>Plagiochila sharpii</i>	S	#	#	#	#	#	#	#	#
<i>Plagiochila sullivantii</i> var. <i>sullivantii</i>	S	#	#	#	May impact *	#	May impact *	May impact *	May impact *
<i>Plagiomnium carolinianum</i>	S	No impacts	No impacts	No impacts	May impact *	No impacts	May impact *	May impact *	May impact *
<i>Radula sullivantii</i>	S	#	#	#	#	#	#	#	#
<i>Bryoxiphium norvegicum</i>	LR	#	#	#	May impact *	#	May impact *	May impact *	May impact *
<i>Calystegia catesbiana</i> var. <i>sericata</i>	LR	#	#	#	#	#	#	#	#
<i>Carex manhartii</i>	LR	#	No impacts	No impacts	#	#	#	#	#
<i>Chiloscyphus muricatus</i>	LR	#	#	#	May impact *	#	May impact *	May impact *	May impact *
<i>Ephebe solida</i>	LR	No impacts	No impacts	No impacts	#	#	#	#	#
<i>Homalia trichomanoides</i>	LR	#	#	#	May impact *	No impacts	May impact *	May impact *	May impact *
<i>Juncus gymnocarpus</i>	LR	#	#	#	#	#	#	#	#
<i>Listera smallii</i>	LR	No impacts	No impacts	No impacts	May impact *				
<i>Lygodium palmatum</i>	LR	#	No impacts	No impacts	#	#	#	#	#
<i>Pohlia lescuriana</i>	LR	#	#	#	#	No impacts	#	#	#
<i>Stellaria alsine</i>	LR	#	#	#	#	#	#	#	#
<i>Stewartia ovata</i>	LR	#	#	#	#	#	#	#	#
<i>Trichomanes boschianum</i>	LR	#	#	#	#	#	#	#	#
<i>Trichomanes petersii</i>	LR	#	#	#	#	#	#	#	#

May impact individuals of the individual species but not likely to cause a viability concern on the individual forest unit.

Determinations for endangered and sensitive species are found in the BA and the BE.

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SUMMARY OF FINDINGS

The terrestrial wildlife analysis evaluated potential effects from the eight alternatives on MIS, PETS and locally rare wildlife species in the upper Chattooga corridor. Potential effects on wildlife include human-related disturbances, loss of habitat remoteness, and trampling of vegetation and sensitive habitat. Alternative 2 would provide the greatest conservation of habitat and species since it has the greatest restrictions on visitor numbers and use. Current management appears to be providing for conservation of rare wildlife species known to occur in the corridor, as there has been no documentation which links "declines" of rare species to the current management of the upper Chattooga River. There are relative differences among the boating alternatives; however, in general, those that have the greatest restrictions on the number of boatable days (Alternative 4) and avoid extensive use of the upper reaches of the corridor where most of the rare species are located (Alternative 5) would likely result in fewer impacts on wildlife. Cumulative effects may lead to impacts on wildlife individuals, but none of the alternatives are expected to cause the loss of any existing species. Regardless of alternative, there is the potential for the spread of NNIS plants, animals, insects and diseases into the Chattooga River corridor. As the number of forest visitors increases, there is the potential for the increased spread of NNIS.

AFFECTED ENVIRONMENT

See sections 3.1.1 and 3.2.1 for a description of the physical and biological environment.

Proposed, Endangered, Threatened, Sensitive and Locally Rare Terrestrial Wildlife

The Chattooga River watershed has a geology and climate which is unique in the Southern Appalachians; therefore, it provides suitable habitats for several wildlife species which are listed as "state rare" or altogether "globally rare." Some of the most important and unique habitat components for rare wildlife species within the watershed include: exposed rock outcrops; deep, narrow gorges and associated vertical rock walls; steep, exposed, rocky forested slopes; and sheltered riparian corridors. These unique geologic features and habitats, combined with an average annual rainfall which can exceed 100 inches in some areas, provide a full spectrum of important and unique wildlife habitats. These distinctive features are mostly associated with the upper portion of the watershed and for this reason, approximately 70 percent of all rare species known or with potential to occur in the Chattooga River watershed are restricted to the "upper portion of the watershed" (defined at footnote #1 at Table 3.2-12).

Fifteen rare species are known to occur in the Chattooga River watershed (see Table 3.2-12). Two of them, the Eastern Small Footed Bat and Green Salamander, have also been documented within the upper Chattooga River corridor. An additional 19 species that are not documented but have the potential to occur within the Chattooga River watershed, the Chattooga wild and scenic river corridor, or both (see Table 3.2-13).

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Table 3.2-12. CONF, NNF And SNF Rare Wildlife Species Known To Occur Within The Chattooga River Watershed.

Type	Scientific Name	Common Name	Element Occurrence Location ¹	Number of Separate Element Occurrences	Forest	Rank ²
Amphibian	<i>Aneides aenus</i>	Green Salamander	Upper and Lower Watershed	28 (27 Upper, 1 Lower)	NNF CONF	LR
Amphibian	<i>Plethodon teyahalee</i>	Southern Appalachian Salamander	Upper Watershed	10	NNF CONF	S
Bird	<i>Aegolius acadicus pop. 1</i>	Northern Saw-whet Owl	Upper Watershed	1	NNF	LR
Bird	<i>Falco peregrinus</i>	Peregrine Falcon	Upper Watershed	1	NNF	S
Bird	<i>Contopus cooperi</i>	Olive-sided Flycatcher	Upper Watershed	1	NNF	LR
Butterfly	<i>Erora laeta</i>	Early Hairstreak	Upper Watershed	1	NNF	LR
Mammal	<i>Myotis leibii</i>	Eastern Small-footed Bat	Upper Watershed	5	NNF SNF CONF	S
Mammal	<i>Corynorhinus rafinesquii</i>	Rafinesque's Big-eared Bat	Upper Watershed	1	NNF	S
Mammal	<i>Neotoma floridana haematoreia</i>	Southern Appalachian Woodrat	Upper and Lower Watershed	2	CONF	LR
Mammal	<i>Sorex palustris Punctulatus</i>	Southern Water Shrew	Upper Watershed	2	NNF	S
Mammal	<i>Sorex dispar</i>	Long-tailed Shrew	Upper Watershed	1	CONF	LR
Mammal	<i>Tamiasciurus hudsonicus</i>	Red Squirrel	Lower Watershed	3	CONF	LR
Reptile	<i>Eumeces anthracinus</i>	Coal Skink	Upper Watershed	2	NNF	LR
Reptile	<i>Clemmys muhlenbergii</i>	Bog Turtle	Upper Watershed	2	NNF CONF	T SA (NNF) S (CONF)
Reptile	<i>Pituophis m. melanoleucus</i>	Northern Pine Snake	Lower Watershed	1	CONF	LR

1 = Upper watershed includes all tributaries of the North Fork of the Chattooga above the West Fork – North Fork confluence as well as all the tributaries of the West Fork of the Chattooga. Lower watershed includes all tributaries which drain into the North Fork of the Chattooga below the West Fork – North Fork confluence.

2 = LR = Locally Rare; S = Sensitive; TSA = Threatened – Similarity of Appearance.

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Table 3.2-13. CONF, NNF And SNF Rare Wildlife Species With Potential To Occur Within The Chattooga River Watershed.

Type	Scientific Name	Common Name	Potential Location ¹	Forest	Rank ²
Butterfly	<i>Speyeria Diana</i>	Diana Fritillary	Upper and Lower Watershed	CONF NNF SNF	S
Moth	<i>Euchlaena milnei</i>	Milne's Euchlaena	Upper Watershed	NNF	S
Spider	<i>Nesticus silvanus</i>	a nesticid spider	Upper Watershed	NNF	S
Amphibian	<i>Ambystoma talpoideum</i>	Mole Salamander	Upper Watershed	NNF	LR
Bird	<i>Dendroica cerulea</i>	Cerulean Warbler	Upper and Lower Watershed	NNF CONF	LR
Bird	<i>Empidonax minimus</i>	Least Flycatcher	Upper and Lower Watershed	CONF	LR
Bird	<i>Empidonax traillii</i>	Willow Flycatcher	Upper and Lower Watershed	CONF	LR
Bird	<i>Shyrapicus varius Appalachiensis</i>	Appalachian Yellow-bellied Sapsucker	Upper Watershed	NNF	LR
Bird	<i>Sitta canadensis</i>	Red-breasted Nuthatch	Upper and Lower Watershed	CONF	LR
Butterfly	<i>Autochton cellus</i>	Golden-banded Skipper	Upper Watershed	NNF	LR
Butterfly	<i>Celastrina niger</i>	Dusky Azure	Upper Watershed	NNF	LR
Spider	<i>Nesticus species nova</i> 2	A nesticid spider	Upper Watershed	NNF	LR
Terrestrial Gastropod	<i>Glyphyalinia junaluskana</i>	Dark Glyph	Upper Watershed	NNF	LR
Terrestrial Gastropod	<i>Glyphyalinia pentadelphina</i>	Pink Glyph	Upper Watershed	NNF	LR
Terrestrial Gastropod	<i>Haplotrema kendeighi</i>	Blue-footed Lancetooth	Upper Watershed	NNF	LR
Terrestrial Gastropod	<i>Patera clarki</i>	Dwarf Proud Globe	Upper Watershed	NNF	LR
Terrestrial Gastropod	<i>Paravitrea lamellidens</i>	Lamellate Supercoil	Upper Watershed	NNF	LR
Terrestrial Gastropod	<i>Paravitrea umbilicarus</i>	Open Supercoil	Upper Watershed	NNF	LR
Terrestrial Gastropod	<i>Zonitoides patuloides</i>	Appalachian Gloss	Upper Watershed	NNF	LR

1 = Upper watershed includes all tributaries of the North Fork of the Chattooga above the West Fork – North Fork confluence as well as all the tributaries of the West Fork of the Chattooga. Lower watershed includes all tributaries which drain into the North Fork of the Chattooga below the West Fork – North Fork confluence.

2 = LR = Locally Rare; S = Sensitive; TSA = Threatened – Similarity of Appearance.

PETS and Locally Rare Wildlife Species

All rare species lists and information were compiled by: (1) consulting 14 years of U.S. Forest Service plant and animal inventory records; (2) consulting Georgia, North Carolina and South Carolina natural heritage program (NHP) element occurrence (EO) records; (3) consultation with other federal, state and non-government organization (NGO) biologists; (4) reviewing U.S. Fish and Wildlife Service (USFWS) lists for potential species in Jackson, Macon, Oconee and Rabun counties; and (6) the references at the end of this document.

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Initially, all rare wildlife species which are listed on the CONF, NNF and the SNF were considered in this analysis. This list did not include some Piedmont species and Ridge and Valley species which are included on the CONF list and SNF list but do not occur in the Southern Blue Ridge Subsection. This initial list included 104 PETS and locally rare wildlife species (see Appendix E). From this list, 77 species were dropped from further consideration due to the following criteria: unsuitable habitat for the species occurring in the analysis area; the analysis area being outside the known or suspected range of the species; or the species being considered extirpated. Twenty-seven PETS and locally rare wildlife species were identified as having potential to occur in the analysis area, i.e., suitable habitat or as being known to occur in the analysis area (see Table 3.2-14).

Table 3.2-14. CONF, NNF And SNF Threatened, Endangered, Sensitive And Locally Rare Wildlife Species Which Are Known To Occur Or Having Potential To Occur In The Analysis Area.

Type	Scientific Name Common Name	Habitat/Range	Forest	Listing
Amphibian	<i>Plethodon teyahalee</i> Southern Appalachian Salamander	Moist forests in southwestern mountains at all elevations	CONF NNF SNF	S
Butterfly	<i>Speyeria diana</i> Diana Fritillary	Rich woods and adjacent edges and openings; host plants violets (<i>Viola</i>), Pine Forests	CONF NNF SNF	S
Mammal	<i>Myotis leibii</i> Eastern Small-footed Bat	Roosts in hollow trees, rock outcrops, bridges (warmer months), in caves and mines (winter)	CONF NNF SNF	S
Mammal	<i>Corynorhinus rafinesquii</i> Rafinesque's Big-eared Bat	Roosts in old buildings, hollow trees, caves, mines, and beneath bridges, usually near water	CONF NNF SNF	S
Moth	<i>Euchlaena milnei</i> Milne's Euchlaena	Hardwood forest and riparian areas in mountains	NNF	S
Spider	<i>Nesticus silvanus</i> a nesticid spider	Habitat not indicated (apparently endemic to southern mountains of NC)	NNF	S
Amphibian	<i>Ambystoma talpoideum</i> Mole Salamander	Breeds in fish-free semipermanent woodland ponds; forages in adjacent woods	NNF	LR
Amphibian	<i>Aneides aeneus</i> Green Salamander	Damp, shaded crevices of cliffs or rock outcrops in deciduous forests (southern forests)	CONF NNF	LR
Bird	<i>Dendroica cerulea</i> Cerulean Warbler	Mature hardwood forests; steep slopes and coves in mountains (breeding season only)	NNF CONF	LR
Bird	<i>Empidonax minimus</i> Least Flycatcher	Open hardwood forests, groves, streamside trees (breeding season only)	CONF	LR
Bird	<i>Empidonax traillii</i> Willow Flycatcher	Wet thickets, streamside, riparian areas (breeding season only)	CONF	LR
Bird	<i>Shyrpicus varius appalachiensis</i> Appalachian Yellow-bellied Sapsucker	Mature, open hardwoods with scattered dead trees (breeding season only)	NNF	LR
Bird	<i>Sitta canadensis</i> Red-breasted Nuthatch	Mixed conifer and hardwood forest and woodland (breeding season only)	CONF	LR
Butterfly	<i>Autochton cellus</i> Golden-banded Skipper	Moist woods near streams; host plant-hog peanut (<i>Amphicarpa bracteata</i>)	NNF	LR

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Type	Scientific Name Common Name	Habitat/Range	Forest	Listing
Butterfly	<i>Celastrina niger</i> Dusky Azure	Rich, moist deciduous forests; host plant-goat's beard (<i>Arunucus dioicus</i>)	NNF	LR
Mammal	<i>Neotoma floridana haematoreia</i> Eastern Woodrat – Southern Appalachian Pop.	Rocky places in deciduous or mixed forests	CONF	LR
Mammal	<i>Tamiasciurus hudsonicus</i> Red Squirrel	Mixed conifer and hardwood forest and riparian areas	CONF	LR
Reptile	<i>Eumeces anthracinus</i> Coal Skink	Rocky slopes, wooded hillsides and roadbanks	CONF	LR
Reptile	<i>Pituophis m. melanoleucus</i> Northern Pine Snake	Dry and/or sandy pine/oak uplands	CONF	LR
Spider	<i>Nesticus species nova 2</i> A nesticid spider	Rocky talus fields along the Chattooga River and rock crevices of Whiteside Mountain	NNF	LR
Terrestrial Gastropod	<i>Glyphyalinia junaluskana</i> Dark Glyph	Moist leaf litter in deciduous woods on mountainsides	NNF	LR
Terrestrial Gastropod	<i>Glyphyalinia pentadelphia</i> Pink Glyph	Pockets of moist leaves in upland woods	NNF	LR
Terrestrial Gastropod	<i>Haplotrema kendeighi</i> Blue-footed Lancetooth	Mountainsides in leaf litter, usually above 2000 feet elevation	NNF	LR
Terrestrial Gastropod	<i>Patera clarki</i> Dwarf Proud Globe	Under leaf litter on wooded mountainsides	NNF	LR
Terrestrial Gastropod	<i>Paravitrea lamellidens</i> Lamellate Supercoil	Pockets of deep, moist leaf litter on wooded hillsides or in ravines	NNF	LR
Terrestrial Gastropod	<i>Paravitrea umbilicarum</i> Open Supercoil	Pockets of deep, moist leaf litter on wooded hillsides or in ravines	NNF	LR
Terrestrial Gastropod	<i>Zonitoides patuloides</i> Appalachian Gloss	Pockets of deep, moist leaves on mountainsides and in ravines	NNF	LR

Since these alternatives primarily relate to human user disturbances, an additional 18 species were dropped from this list because it was determined that the alternatives analyzed in this proposal would have no direct, indirect or cumulative effect on these species. The 18 dropped species represented six major classes of animals: birds, butterflies, mammals, moths, reptiles and spiders. The birds and mammals were dropped from the list because they are very mobile and easily adjust to human-related disturbances. Wildlife can move to other suitable nearby habitat while the disturbance occurs, then return after the disturbance has passed. The mere presence of humans within their habitats is not thought to be particularly disturbing to these species. The butterflies and moths were dropped from the list because they are readily able to flee from disturbances and their host plants and habitats are rather common and would not be affected by these alternatives. The reptiles and spiders were dropped from the list because they occur in rock outcrops, rocky talus slopes, and other areas within the corridor which are not likely to be affected by one or more of the proposed alternatives.

The major animal classes which are analyzed in detail are those species which meet one or more of the following criteria: little is known about the species or its habitat; the species is generally slow-moving and unable to avoid human-related disturbances; and/or the species habitat is sensitive and easily disturbed from human-related disturbances. The species that meet one or more of these criteria are within the amphibian group and the terrestrial gastropod group (see

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Table 3.2-14). All rare wildlife species included in Table 3.2-15 are assumed present within the analysis area because either documented occurrence records of the species within the analysis area exist or suitable habitat occurs in the analysis area and site specific surveys were not conducted which could rule out the possibility of occurrence. Table 3.2-16 provides additional information on the sensitive and rare species analyzed for each alternative.

Table 3.2-15. CONF, NNF And SNF Threatened, Endangered, Sensitive And Locally Rare Wildlife Species Assumed To Occur In The Analysis Area And Could Be Potentially Impacted By One Or More Of The Alternatives.

Type	Common Name	Scientific Name	Forest	Listing
Amphibian	Southern Appalachian Salamander	<i>Plethodon teyahalee</i>	CONF NNF SNF	S
Amphibian	Green Salamander	<i>Ancides aeneus</i>	CONF NNF	LR
Terrestrial Gastropod	Dark Glyph	<i>Glyphyalinia junaluskana</i>	NNF	LR
Terrestrial Gastropod	Pink Glyph	<i>Glyphyalinia pentadelphia</i>	NNF	LR
Terrestrial Gastropod	Blue-footed Lancetooth	<i>Haplotrema kendeighi</i>	NNF	LR
Terrestrial Gastropod	Dwarf Proud Globe	<i>Patera clarki</i>	NNF	LR
Terrestrial Gastropod	Lamellate Supercoil	<i>Paravitrea lamellidens</i>	NNF	LR
Terrestrial Gastropod	Open Supercoil	<i>Paravitrea umbilicarus</i>	NNF	LR
Terrestrial Gastropod	Appalachian Gloss	<i>Zonitoides patuloides</i>	NNF	LR

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Table 3.2-16. Information On Sensitive And Rare Wildlife Species Analyzed In Detail For All Alternatives.

Name	Species Ranking		Forest List (Occurrences)	Range and Habitat
	Global	State		
Southern Appalachian Salamander	G3	S2 (GA) S3? (NC) SNR (SC)	NNF (8) CONF (2) SNF	Blue ridge physiographic province of southwestern NC and adjacent TN, GA, and SC. Moist forests at all elevations; includes birch-beech-hemlock forests. Also burrows in soil, fallen logs, debris.
Green Salamander	G3G4	S2 (GA) S2 (NC) S1 (SC) S1	NNF (2)	Southeastern PA to northern AL. Damp crevices in shaded rock outcrops and ledges. Also occurs beneath loose bark and in cracks in standing or fallen trees and sometimes in or under logs on the ground.
Dark Glyph	G2	S2 (NC) S2 (TN) SNR (GA)	NNF (2)	Blue Ridge Mountains in GA, NC, and TN. Inhabits moist pockets of leaves in cove hardwood forests and upland woods.
Pink Glyph	G2	S2 (NC) S2 (TN) SNR (GA)	NNF (4)	Southern Blue Ridge Mountains in GA, NC, and TN. Inhabits moist pockets of leaves in upland woods.
Blue-footed Lanceltooth	G2	S1S2(NC) S3 (TN)	NNF (0)	Southern Blue Ridge Mountains in NC and TN. Inhabits leaf litter on mountainsides usually above 2000 feet.
Dwarf Proud Globe	G3		NNF (1)	Southern Blue Ridge Mountains in NC. Inhabits leaf litter in cove hardwood forests.
Lamellate Supercoil	G2	G2 (NC) S2(TN) SNR (ME)	NNF (13)	Southern Blue Ridge Mountains in NC and TN. Inhabits leaf litter and under rocks in cove hardwood forests.
Open Supercoil	G2	SNR (AL) SNR (GA) S2 (NC) S3 (TN)	NNF (2)	Portions of AL, GA, NC, and TN. Inhabits cove hardwood forests with rock slopes.
Appalachian Gloss	G3	SNR (GA) S2 (NC) SNR (SC) S2S3 (TN)	NNF (0)	Portions of AL, GA, NC, and TN. Inhabits cove hardwood forests.

Management Indicator Species

The CONF, NNF and SNF have a total of 20 MIS (see Table 3.2-17). Only those MIS which are indicators of the following important habitat components which might be directly or indirectly affected by one or more of the alternatives will be analyzed further in this analysis: large contiguous forest interior, hardmast forest, pine/pine-oak forest, mid-late successional riparian forests and mid-late successional mesic forests. Some species will not be analyzed further in this analysis because their important habitat components do not occur in amounts or arrangements suitable for supporting a viable population of the species and/or simply because their important habitat components will not be affected by one or more of the proposed alternatives.

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Table 3.2-17. CONF, NNF, And SNF MIS List And Project-Level Analysis Information.

COMMON NAME	IMPORTANT HABITAT COMPONENT	FOREST	PROJECT LEVEL ANALYSIS / REASON ¹
Black Bear	Hardmast Forest, Early Successional Forest, Large Contiguous Forest Interior with Low Disturbance	CONF NNF SNF	Yes / 1
White-tailed Deer	Hardmast Forest, Early Successional Forest	CONF NNF	Yes / 1
Ovenbird	Large Contiguous Deciduous Forest Interior	CONF NNF	Yes / 1
Pine Warbler	Pine / Pine – Oak Forest	CONF NNF SNF	Yes / 1
Acadian Flycatcher	Mid – Late Successional Riparian Forests	CONF NNF SNF	Yes / 1
Hooded Warbler	Mid – Late Successional Mesic Forests	CONF SNF	Yes / 1
Scarlet Tanager	Hardmast Forest	CONF SNF	Yes / 1
Eastern Wild Turkey	General Forest Habitat	SNF	Yes / 1
Pileated Woodpecker	Standing Dead Trees (Snags)	CONF NNF SNF	No / 2
Eastern Towhee	Early Successional Forest	NNF	No / 2
Ruffed Grouse	Early Successional Forest	NNF	No / 2
Brown-headed Nuthatch	Pine Woodlands	SNF	No / 2
Prairie Warbler	Early Successional Forest	CONF SNF	No / 2
Swainson's Warbler	Early Successional Riparian Forest	CONF SNF	No / 3
Field Sparrow	Woodland, Savanna and Grassland Habitat	CONF SNF	No / 2
American Woodcock	Early Successional Riparian Forest	SNF	No / 2
Bobwhite Quail	Early Successional Forest, Woodland, Savanna and Grassland Habitat	SNF	No / 2
Red-cockaded Woodpecker	Longleaf Pine Woodland / Savanna	CONF	No / 3
Wood Thrush	Forest Interior	CONF	No / 3
Chestnut-sided Warbler	High Elevation Early Successional Forest	CONF	No / 2

1 = Species has important habitat components in the project area which may be affected by one or more of the proposed alternatives; 2 = Species does not have important habitat components in the project area which may be affected by one or more of the proposed alternatives; 3 = Species was selected as an MIS for habitats which occur on the CONF in middle GA.

ENVIRONMENTAL CONSEQUENCES

The following effects discussion applies to all of the rare species mentioned above (analyzed in detail). In respect to analyzing the effects of each alternative on rare wildlife species, Alternative 1 will be used as the baseline or existing condition to establish a means of comparison and analysis between all alternatives. Only those aspects of each alternative which may have an effect on rare wildlife (group size/user density, boating management, trail management and

camping management) will be analyzed in this proposal. For the purpose of this analysis, the effects of each alternative on rare wildlife species will be qualitatively analyzed and compared, since these alternatives, for the most part, do not have quantitative figures associated with them, such as miles and location of portage trails, etc. It is assumed that specific management actions, such as trail construction, which may result from the selected alternative, will be further analyzed at the project level. Conversely, it is also assumed that some user-created actions and potential rare wildlife effects may result from some of the alternatives without the ability or foresight to conduct site specific analysis. An example of this type of scenario would include portaging by existing users or boaters around newly established obstacles, such as log jams, since it would be impossible to determine when and where these might occur and thus when and where the immediate need will arise.

For the purposes of this analysis, the upper Chattooga wild and scenic river corridor will be the analysis boundary used to analyze the potential direct and indirect effects each alternative may have on rare species because any potential wildlife effects associated with the alternatives would likely occur in this area. Currently, there are two known occurrences of rare wildlife species within the upper corridor.

The cumulative effects analysis area will be based on individual rare species biology and the known or suspected range of the species. Therefore, the size of the cumulative effects analysis area will vary based on a species by species basis.

Effects of the Alternatives on Wildlife Management Indicator Species

1) Black Bear

Remoteness and lack of human disturbance are the most important elements of the black bear's habitat which might be affected by the proposed alternatives. Currently, this habitat element is adequately protected under Alternative 1, although the growing number of visitors may diminish this effectiveness in the future. While black bears are occasionally disturbed by the occasional existing user, generally this area and the surrounding watershed provide optimal "remoteness" for this species, especially when compared to other areas across the three national forests. None of the alternatives are expected to directly affect the population trend of the black bear (through direct mortality). Alternative 2 could potentially enhance habitat remoteness for this species. Alternatives that allow the most visitors to access the corridor, particularly the remote upstream reaches, would likely diminish the habitat remoteness element. However, it is not likely increased human traffic would affect the overall population trends for this species (stable to slightly increasing, *Chattahoochee-Oconee and Sumter Monitoring and Evaluation Reports, 2008*) across the three national forests.

2) White-tailed Deer

The key habitat element which limits deer population growth on the Southern Appalachian national forests is early successional habitat, not habitat remoteness. Deer appear to do well in urban environments whenever suitable habitat is available. Therefore, all alternatives in this proposal will maintain the white-tailed deer population's stable trend across the forests.

3) Ovenbird

The ovenbird is used as an MIS on the NNF and CONF to help indicate the effects of management on species associated with mature interior forest habitats. This species requires large, contiguous, mature forests for successful breeding. Since the alternatives in this analysis will not increase or decrease the desired habitat attributes for this species, the stable to slightly increasing population trend for this species will not be affected by any alternative.

4) Pine Warbler

This species uses a variety of upland pine and pine-hardwood forest types throughout its range and will nest in deciduous forest with scattered individual or small groves of pines (La Sorte et al. 2007). Since the alternatives in this analysis will not increase or decrease the desired habitat attributes for this species, the stable to slightly increasing population trend for this species will not be affected by any alternative.

5) Acadian Flycatcher

Breeding habitat for this species is mature mesic deciduous forests, often near streams (La Sorte et al. 2007). Since the alternatives in this analysis will not increase or decrease the desired habitat attributes for this species, the stable to increasing population trend for this species will not be affected by any alternative.

6) Hooded Warbler

This species favors moist deciduous forests with a fairly dense understory. Nesting locations are restricted to large forest patches. It typically inhabits mature forests where large trees fall to create canopy gaps (La Sorte et al. 2007). Since the alternatives in this analysis will not increase or decrease the desired habitat attributes for this species, the stable to slightly increasing population trend for this species will not be affected by any alternative.

7) Scarlet Tanager

This species prefers large blocks of mature forest, especially where oaks are common, but also may occur in young successional woodlands (La Sorte, et al. 2007). Since the alternatives in this analysis will not increase or decrease the desired habitat attributes for this species, the stable to increasing population trend for this species will not be affected by any alternative.

8) Eastern Wild Turkey

In the south, wild turkey uses upland forests of oaks, hickories and pines as well as bottomland forest habitats, which include beech, gum, bald cypress, tupelo and water ash (La Sorte, et al. 2007). Since the alternatives in this analysis will not increase or decrease the desired habitat attributes for this species, the stable population trend for this species will not be affected by any alternative.

Effects of the Alternatives on Proposed, Endangered, Threatened, Sensitive and Locally Rare Terrestrial Wildlife

There is the potential for introducing new outbreaks or new NNIS from recreation visitors to the wildlife along the Chattooga River in all alternatives. NNIS can impact wildlife indirectly or by altering habitats, but some NNIS, such as West Nile Virus, can cause direct mortality to wildlife.

The risk of spread of NNIS would increase as the number of forest visitors increases. The potential for spread of NNIS occurs regardless of alternative. While some of the alternatives invite more use, it is anticipated that the chances of NNIS introduction and spread will increase or decrease in proportion to the amount of users in the corridor.

Alternative 1 – Direct, Indirect and Cumulative Effects

Currently, rare wildlife species are being adequately protected under Alternative 1 due to the limitation on group size within the wilderness areas. Under this alternative, it can be assumed that trail management in the upper corridor will remain static or the current trail system may increase in the future, as may campsite creation. Although new trails and campsite construction/relocation, if not carefully planned, could affect rare species, this is not assumed to be the case since any new actions must adhere to project-level NEPA analysis. Overall, the proliferation of user created trails and campsites could affect rare species in the future, but the exact effect is unknown, since the proliferation of user created trails is sporadic and unpredictable.

Alternative 2 – Direct, Indirect and Cumulative Effects

This alternative best conserves rare wildlife species. Because of its restrictive nature, Alternative 2 will inevitably reduce human-related disturbances and impacts in the upper corridor, thus protecting species and their habitat. There will be no direct, indirect, or cumulative effects to sensitive or rare species from this alternative.

Alternative 3 – Direct, Indirect and Cumulative Effects

Alternative 3 will, over time, reduce human-related disturbances and impacts in the upper corridor, thus conserving sensitive and rare species and their habitat. Overall conservation of sensitive and rare species is more than Alternative 1 and less than Alternative 2. There will be no direct, indirect, or cumulative effects to sensitive and rare species from this alternative.

Alternative 4 – Direct, Indirect and Cumulative Effects

In this analysis, the most important aspects of the boating alternatives which may have impacts on sensitive and (continue making this correction throughout!) rare wildlife include: 1) the section of upper corridor which is proposed for boating; 2) total length of upper corridor which is proposed for boating; and 3) the anticipated level of use.

Potential direct and indirect effects to sensitive and locally rare species include trampling and disturbance from increased user densities. Impacts to habitat for sensitive and locally rare species include creation of portage trails and new access trails and increased trampling and disturbance to plants. Based on the uncertainty (in amount, time and location) associated with some of the effects resulting from this alternative, such as portage trails, it is unreasonable to assume this alternative will have no effect on rare species. It is therefore assumed that some individuals may be directly or indirectly affected by this alternative. However, because rare species, by definition, are rare and are not encountered often, it is unlikely the effects of this alternative would occur at a frequency which would impact the population viability of this species – if present (in the case

of the terrestrial gastropods). Therefore, although individuals may be directly or indirectly impacted under this alternative, it is not likely that this alternative, when combined with other past, present and future management actions on both public and private land, would have a cumulative effect on the population viability of rare species.

Alternative 5 – Direct, Indirect and Cumulative Effects

This alternative best conserves rare species from among those alternatives that add boating since the majority of the North Carolina section of the upper Chattooga would be excluded. This exclusion reduces impacts for approximately 70 percent of all rare wildlife species included in this detailed analysis. As with previous alternatives, although some individuals may be directly or indirectly impacted, it is not likely that this alternative, when combined with other past, present and future management actions on both public and private land, would have a cumulative effect on the population viability of rare species.

Alternative 8 – Direct, Indirect and Cumulative Effects

Potential direct and indirect effects to rare species from this alternative would be similar to alternatives 4, 5, 9 and 10 but is more likely to have greater impacts since boating is allowed year-round, at all flow levels and throughout the corridor. As with other alternatives, although some individuals may be directly or indirectly impacted, it is not likely that this alternative, when combined with other past, present and future management actions on both public and private land, would have a cumulative effect on the population viability of rare species.

Alternative 9 – Direct, Indirect and Cumulative Effects

Although this alternative has a seasonal restriction on boating, it does allow for more user access into the most sensitive rare wildlife habitat in the upper part of Chattooga Cliffs reach (just below private lands). Therefore, this alternative is considered to have more potential impacts on rare species than alternatives 4 or 5 but less than alternatives 8 or 10. As with other alternatives, although some individuals may be directly or indirectly impacted, it is not likely that this alternative, when combined with other past, present and future management actions on both public and private land, would have a cumulative effect on the population viability of rare species.

Alternative 10 – Direct, Indirect and Cumulative Effects

Impacts on rare species are expected to be slightly greater for this alternative than Alternative 9 since more of the river would be open to boating; however, Alternative 10 would have fewer effects than Alternative 8 due to seasonal and flow restrictions. As with other alternatives, although some individuals may be directly or indirectly impacted, it is not likely that this alternative, when combined with other past, present and future management actions on both public and private land, would have a cumulative effect on the population viability of rare species.

Migratory Birds

The Chattooga River corridor provides optimal mature forest habitat for a variety of migratory birds which inhabit the Appalachian mountain eco-region during a portion of their life cycle. Table 3.2-18 lists the migratory birds which have potential to occur within the river corridor, as well as any potential effects which might be associated with the various alternatives.

Table 3.2-18. Migratory Birds With Potential To Occur Within The Chattooga River Analysis Area

Species	Habitat	Potential Effect (Y/N)
Swainson's warbler	Mature forest/Early Succession Riparian	Y
Black-throated blue warbler	Mature forest	Y
Louisiana water thrush	Mature forest	Y
Acadian flycatcher	Mature forest	Y
Worm-eating warbler	Mature forest	Y
Wood thrush	Mature forest	Y
Kentucky warbler	Mature forest	Y
Yellow-throated vireo	Mature forest	Y
Black burnian warbler	Mature forest	Y

ENVIRONMENTAL CONSEQUENCES

In general, the least amount of human disturbance possible is the best scenario for the above mentioned migratory birds. Obviously, the fewer the people allowed within the Chattooga corridor, the less the likelihood of disruption to the natural life-cycle or patterns of these species, such as foraging, reproducing and nesting. However, it should be noted that none of the alternatives present a threat to the structure or linkage of habitats for these species. The addition of boating and related increased human use within the analysis area may disturb some migratory birds, but it is highly unlikely that the boating activity would cause any species to abandon the river corridor or cause a decline in individual species population trends. More likely, migratory birds which inhabit the corridor, especially very near the river itself, would likely be flushed to other areas of the corridor which have less human disturbance. Overall, if boating was allowed within the upper corridor, some individual birds may be displaced, but it is unlikely the addition of boating would affect the viability of the populations as a whole.

The following analysis compares the effects of each alternative on migratory bird species. Currently, these species are being adequately protected within the corridor.

Table 3.2-19 qualitatively compares recreational impacts (group size, boating, trail and camping management) to impacts on migratory birds.

Section 3.2.2 Terrestrial Wildlife

Table 3.2-19. Qualitative Comparison Of Potential Recreational Effects Of Alternatives On Identified Migratory Birds

Alternative Number	Group Size Management	Boating Management	Trail Management	Camping Management	Overall Protection To Species
2	Yes – Throughout corridor	No Boating	Same or <u>Less</u> Trails	Less Camping	1 = greatest
3	Yes – Throughout corridor	No Boating	Same or <u>Less</u> Trails	Same or Less Camping	2
1	Yes – In Wilderness	No Boating	Same or <u>More</u> Trails	More New Camps Due to Relocation	3
5	Yes – Throughout corridor	Boating; (highest rare wildlife protection restriction)	Same or <u>Less</u> Trails	Same or Less Camping	4
9	Yes – Throughout corridor	Boating; (high restriction)	Same or <u>Less</u> Trails	Same or Less Camping	5
4	Yes – Throughout corridor	Boating; (moderate restriction)	Same or <u>Less</u> Trails	Same or Less Camping	6
10	Yes – Throughout corridor	Boating; (low restriction)	Same or <u>Less</u> Trails	Same or Less Camping	7
8	Yes – Throughout corridor	Boating; (lowest rare wildlife protection restriction)	Same or <u>Less</u> Trails	Same or Less Camping	8 = least

Alternative 1 – Direct, Indirect and Cumulative Effects

Generally, this alternative protects these species from human-related disturbances and habitat damage by limiting group size within the wilderness areas. Large groups, especially when camping, are more likely to have a “larger” footprint on sensitive habitats and wildlife species in any given area.

Under this alternative, it can be assumed that trails and campsites in the river corridor above Highway 28 may increase slightly in the future. Currently, there are 127 campsites within the upper corridor, 26 of which are within 20 feet of the river. It is assumed several campsites would be decommissioned and new campsites would be constructed in more suitable locations. Although new trails and campsite construction/relocation, if not carefully planned, could affect these species, this is not expected to be the case since any new actions would require project level NEPA analysis including effects of project proposals on wildlife, including migratory birds.

Past, present, and foreseeable projects (Table 3.1-9) are aimed at improving ORVs in the corridor by reducing erosion and sediment from roads and recreational facilities, improving native vegetation and keeping forests healthy. These activities would disturb migratory birds in the short term but would not cumulatively cause migratory birds to abandon the river corridor or cause a decline in individual species population trends.

Alternative 2 - Direct, Indirect and Cumulative Effects

This alternative is generally the most user restrictive of all alternatives and provides the most protection to these species. These restrictions would inevitably reduce human related

disturbances and impacts in the upper corridor, thus protecting these species and their habitat. Cumulative effects are the same as in Alternative 1.

Alternative 3 - Direct, Indirect and Cumulative Effects

This alternative is generally more restrictive (and protective) than Alternative 1, but slightly less restrictive than Alternative 2. This alternative would inevitably reduce human related disturbances and impacts in the upper corridor, thus protecting these species and their habitat. Cumulative effects are the same as in Alternative 1.

Alternative 4 - Direct, Indirect and Cumulative Effects

This alternative is similar to alternatives 2, 3, 5 and 9 with respect to the management of group size, trails and camping. It differs from other boating alternatives in that it allows boating between December 1 and March 1 from the confluence of Norton Mill Creek in North Carolina to ¼ mile above Burrells Ford Bridge, and from ¼ mile below Burrells Ford Bridge to Lick Log Creek. This alternative is considered less protective than Alternative 9 because it does allow boating through the rock gorge portion of the upper corridor.

Potential direct and indirect effects to these species from this alternative include increased user densities and associated disturbance within the upper corridor, trampling of vegetation and sensitive habitat through creation of portage trails, and new access trails and increased vegetation disturbance through creation of new “play” (swimming, resting, lunch) sites. Based on the uncertainty (in amount, time and location) associated with some of the effects resulting from this alternative, such as portage trails, it is unreasonable to assume this alternative would have no effect on these species. It is therefore assumed that some individuals of these species may be directly or indirectly affected by this alternative. Although individuals of these species may be directly or indirectly impacted under this alternative, it is not likely that the alternative would have a cumulative effect on the population viability of these species when combined with other past, present and future management actions on both public and private land.

Alternative 5 - Direct, Indirect and Cumulative Effects

This alternative is similar to alternatives 2 and 3 with respect to the management of group size, trails and camping. It is less restrictive than the above mentioned alternatives in that it allows boating on a portion of the upper Chattooga River, approximately from Bull Pen Road Bridge to Lick Log. Boating would be a new use in the upper Chattooga corridor, and would therefore likely increase the number of users and the associated habitat disturbance in that area.

In this analysis, the most important aspects of the boating alternatives, which may have impacts on wildlife, include those sections of the river proposed for boating and their total length. Other aspects of the boating alternatives, such as season (in relation to potential impacts) and minimum flow are more unpredictable and more likely to change over time. For instance, the number of boatable days (based on flow) would likely vary from year to year, and may actually increase as a result of less evapotranspiration and more water runoff due to the loss of hemlocks. In addition, heavy concentrations of boaters during the seasonal boating period (specifically, December 1 –

March 1) could result in wildlife habitat damage comparable to that resulting from all-season boating particularly if the season coincides with large quantities of recent hemlock fall increasing the need for portage trails.

However, of all the boating alternatives, Alternative 5 is the most protective of migratory bird species. It excludes the majority of the North Carolina section of the upper Chattooga from boating, thereby protecting the most pristine wildlife habitats within the corridor. This alternative also includes season and flow restrictions which further limit boating opportunities and thus provide more protection to migratory bird species and associated habitat. Nevertheless, any additional recreational use, such as boating, in the upper corridor would likely result in more user-created resource impacts, due simply to increased user densities in the area.

Potential direct and indirect effects to these species from this alternative include increased user densities and associated disturbance within the upper corridor, trampling of vegetation and sensitive habitat through creation of portage trails, and new access trails and increased vegetation disturbance through creation of new “play” (swimming, resting, lunch) sites. Based on the uncertainty (in amount, time and location) associated with some of the effects resulting from this alternative, such as portage trails, it is unreasonable to assume this alternative would have no effect on these species. It is therefore assumed that some individuals of these species may be directly or indirectly affected by this alternative. Although individuals of these species may be directly or indirectly impacted under this alternative, it is not likely that the alternative would have a cumulative effect on the population viability of these species when combined with other past, present and future management actions on both public and private land.

Alternative 8– Direct, Indirect and Cumulative Effects

This alternative is more restrictive than all alternatives in terms of maximum group size. However it is similar to alternatives 2-5, 9 and 10 with respect to trail and camping management. Alternative 8 is the least restrictive where boating management is concerned allowing for boating the entire stretch of the upper Chattooga without seasonal or flow restrictions. To control user encounters the alternative includes an adaptive management framework that could require a user permitting system if proposed user encounters are exceeded. However, user limitations would only be put into affect three to five years after the implementation of this alternative. Under this timeline most of the user created impacts, such as portage trails, access trails and dispersed campsites would have likely already occurred. Thus, this alternative most likely would be the least protective of the species and their habitat.

Potential direct and indirect effects to these species from this alternative include increased user densities and associated disturbance within the upper corridor, trampling of vegetation and sensitive habitat through creation of portage trails, and new access trails and increased vegetation disturbance through creation of new “play” (swimming, resting, lunch) sites. Based on the uncertainty (in amount, time and location) associated with some of the effects resulting from this alternative, such as portage trails, it is unreasonable to assume this alternative would have no effect on these species. It is therefore assumed that some individuals of these species may be directly or indirectly affected by this alternative. Although individuals of these species may be directly or indirectly impacted under this alternative, it is not likely that the alternative would

have a cumulative effect on the population viability of these species when combined with other past, present and future management actions on both public and private land.

Alternative 9– Direct, Indirect and Cumulative Effects

This alternative is similar to alternatives 2, 3 and 5 with respect to the management of group size, trails and camping. Alternative 9 allows boating from November 1 to March 31 (with flow restrictions from below private land in NC to East Fork Trail above Burrells Ford). Although this alternative has a seasonal restriction and excludes the Rock Gorge section of the upper Chattooga from boating, this alternative does allow for more boating access into the most sensitive and rare wildlife habitat in the upper corridor above Bull Pen Road. Therefore, this alternative is considered less restrictive than Alternative 5, but more restrictive than Alternative 10 since it does exclude and protect a portion of the upper corridor (Rock Gorge) from additional user access and associated impacts.

Potential direct and indirect effects to these species from this alternative include increased user densities and associated disturbance within the upper corridor, trampling of vegetation and sensitive habitat through creation of portage trails, and new access trails and increased vegetation disturbance through creation of new “play” (swimming, resting, lunch) sites. Based on the uncertainty (in amount, time and location) associated with some of the effects resulting from this alternative, such as portage trails, it is unreasonable to assume this alternative would have no effect on these species. It is therefore assumed that some individuals of these species may be directly or indirectly affected by this alternative. Although individuals of these species may be directly or indirectly impacted under this alternative, it is not likely that the alternative would have a cumulative effect on the population viability of these species when combined with other past, present and future management actions on both public and private land.

Alternative 10– Direct, Indirect and Cumulative Effects

This alternative is similar to alternatives 2-5 and 9 with respect to the management of group size, trails and camping. This alternative allows boating from November 1 to March 1 (with flow restrictions along the entire upper stretch of the Chattooga River from below private land to Hwy 28 bridge). This alternative is less restrictive than the above mentioned alternatives in that it would allow boating along the entire upper corridor.

Potential direct and indirect effects to these species from this alternative include increased user densities and associated disturbance within the upper corridor, trampling of vegetation and sensitive habitat through creation of portage trails, and new access trails and increased vegetation disturbance through creation of new “play” (swimming, resting, lunch) sites. Based on the uncertainty (in amount, time and location) associated with some of the effects resulting from this alternative, such as portage trails, it is unreasonable to assume this alternative would have no effect on these species. It is therefore assumed that some individuals of these species may be directly or indirectly affected by this alternative. Although individuals of these species may be directly or indirectly impacted under this alternative, it is not likely that the alternative would have a cumulative effect on the population viability of these species when combined with other past, present and future management actions on both public and private land.

3.2.3 Aquatic Species and Habitats

SUMMARY OF FINDINGS

This analysis addresses potential effects of the alternatives on sensitive aquatic species, locally rare aquatic species and MIS and communities in the Chattooga River watershed. Potential impacts on aquatic species in this analysis are mainly associated with sedimentation from trails and campsites and with the potential loss of LWD. Currently, campsites, roads and trails are contributing sediment to the river and its tributaries; and some unauthorized removal of LWD is taking place. All of the alternatives address LWD retainment and the designation of campsites and trails to minimize aquatic resource impacts.

No federally listed or proposed aquatic species exist within the analysis area. For all alternatives there would be no adverse direct, indirect or cumulative impacts to forest listed sensitive aquatic species or locally rare aquatic species and no risk to aquatic population viability across the forests for MIS and Communities.

Regardless of alternative, there is the potential for the spread of aquatic NNIS plants, animals, insects and diseases into the Chattooga River. As the number of forest visitors increases, there is the potential for the increased spread of NNIS.

AFFECTED ENVIRONMENT

This analysis encompasses the Chattooga River watershed from a point on the main stem of the Chattooga River headwaters below private property (Whiteside Cove area) downstream to Tugaloo Lake, including tributaries to the river. Direct and indirect effects will be addressed from the private property boundary downstream to the Highway 28 bridge. Cumulative effects will be addressed for the entire Chattooga watershed above Tugaloo Lake.

Aquatic Federally Threatened, Endangered and Proposed Aquatic Species and Region 8 Forest Sensitive Aquatic Species (PETS)

No federally listed aquatic species exist in the Chattooga River or its tributaries. Five Region 8 forest sensitive aquatic species may occur in the watershed (see Table 3.2-20). Of these five species, there are state natural heritage program element occurrence (EO) records for *Cambarus chaugaensis* and *Alasmidonta varicosa* in the Chattooga River. Also, English (1990) sampled *Beloneuria georgiana* in the Chattooga River and two tributaries.

Section 3.2.3 Aquatic Species and Habitat

Table 3.2-20. PETS Aquatic Species For The SNF, CONF And NNF.

Species	Species Ranking				Forest List	Habitat
	Global	State	AFS	Forest		
Chauga crayfish <i>Cambarus chaugaensis</i>	G2	GA-S1 NC-S2 SC-S2S3	T	Sensitive	CONF NNF SNF	Fast-moving, rocky tributaries of the upper Savannah River.
Brook floater <i>Alasmidonta varicosa</i>	G3	GA-S2 NC-S1 SC-SNR	T	Sensitive	CONF SNF	High gradient streams and moderate gradient rivers among rocks and gravel substrates in sandy shoals, riffles and moderate rapids.
Georgia beloneurian stonefly <i>Beloneuria georgiana</i>	G2	GA-S2 NC-S1S3		Sensitive	CONF	High elevation waterfalls, spray cliffs and spring brooks.
Mountain river cruiser <i>Macromia margarita</i>	G3	GA-S1 NC-S2S3 SC-SNR		Sensitive	NNF	Mountain, sometime Piedmont streams and rivers with high water quality, forested watersheds and silt deposits among rocks.
Edmund's snaketail <i>Ophiogomphus incurvatus</i>	G2G2	GA-S1 NC-S1?		Sensitive	CONF	Clear streams with sand or gravel riffles.

The American Fisheries Society (AFS) has assigned status ranks to crayfish species (Taylor et al. 2007) and freshwater mussel species (Williams et al. 1992). AFS status rank include CS (currently stable), V (vulnerable), SC (Special Concern), T (threatened) and E (endangered). The T status rank indicates that the species is likely to become endangered throughout all or a significant portion of its range.

The 2004 Final Environmental Impact Statement for the Sumter National Forest LRMP addresses Aquatic Viability by watershed. The Chattooga River watershed was represented by two forest sensitive species, *Cambarus chaugaensis* and *Alasmidonta varicosa*. The aquatic viability outcome for these species is that they are potentially at risk in the watershed; however, the Forest Service may influence conditions in the watershed to keep the species well distributed. Therefore, likelihood of maintaining viability is moderate. Sediment was determined to be a risk factor for aquatic species viability in the Chattooga River watershed.

Alderman (2004) noted that the population of *Alasmidonta varicosa* in the Chattooga River was the best in the Southeast and, therefore, special conservation should be emphasized for this population.

Forest locally rare Aquatic Species

The CONF and the NNF both maintain a locally rare species list. Those species that may occur in the watershed are listed in Table 3.2-21. For these species, there are EO records of *Cryptobranchus alleganiensis*, *Micrasema burksi* and *Notropis lutipinnis* in the watershed. Also, *Notropis lutipinnis*, *Etheostoma inscriptum*, *Notropis leuciodus* and *Micropterus coosae* have been sampled in the Chattooga River by the Forest Service, SCDNR and Georgia Department of Natural Resources (GADNR). *Stylurus scudderii* was sampled from the Chattooga River between 2001 and 2003 (Smock et al. 2004). *Micrasema burksi* was sampled from the Chattooga River and one tributary by English (1990).