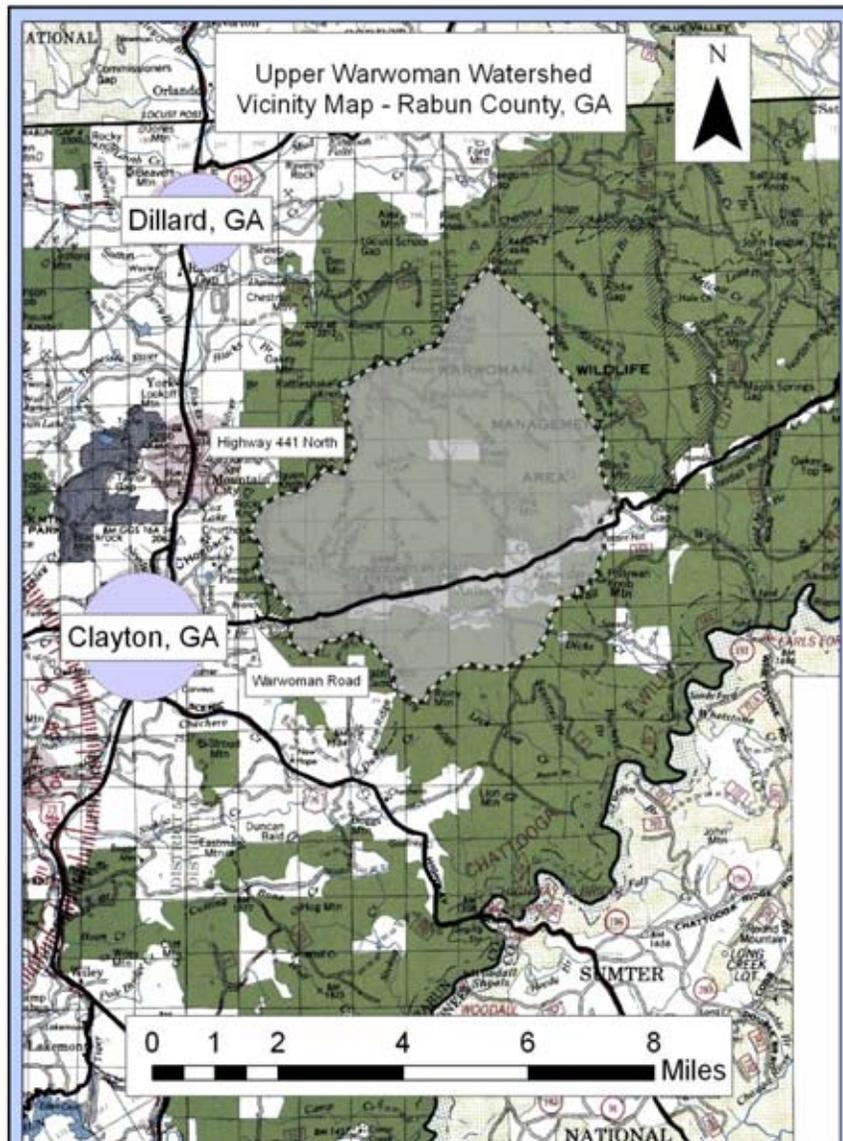


Upper Warwoman

Watershed Assessment - FY 2011



USDA Forest Service – Chattahoochee-Oconee National Forest
Chattooga River Ranger District – Rabun County, Georgia.

Existing Condition:

Identification of 5th level Hydrologic Unit (HU) –

The Upper Warwoman Watershed is a 6th order watershed which is approximately 14,685 acres in size (13,212 acres FS owned / 1,473 acres private). This sixth order watershed resides within the larger 5th order watershed that has been named **North, East and West Forks Chattooga River** (HUC # 0306010201). This 5th level watershed is approximately 178,704 acres and includes land in Georgia, South Carolina and North Carolina. Land ownership in this 5th level watershed is comprised of approximately 70% Forest Service land and 30% Private land. Additional information about this 5th level HUC can be found starting at page 4-26 of the Forest Plan.

Priority of 6th level HU –

The Upper Warwoman Watershed is the top priority for a Watershed Assessment on the Chattooga River Ranger District for the following reasons:

- Several 303d listed streams (sediment impaired streams) occur within the watershed.
- Approximately 90% of land within the Upper Warwoman Watershed is owned by the USDA Forest Service.
- This watershed is within the cooperatively managed Warwoman Wildlife Management Area (Warwoman WMA), thus there may be opportunities to meet mutual goals and objectives of the Forest Service and the Georgia DNR.
- This watershed is one of the few watersheds on the Chattooga River Ranger District that provides unique opportunities to restore the rare Table Mountain Pine community, as well as potential opportunities to restore the American Chestnut community.
- This watershed has a spatially-explicit peer-reviewed Potential Natural Community model (generated in 1995 through the Chattooga River Demonstration Project and updated in 2009 by the Southern Blue Ridge Fire Learning Network) that can be used to identify and prioritize Forest Plan opportunities such as restoring natural communities, reducing White Pine Encroachment and improving wildlife habitat.

Management Direction for Upper Warwoman Watershed –

The Upper Warwoman watershed is comprised of four (4) separate Forest Plan management prescriptions. These management prescriptions include: 4.I – Natural Areas, Few Open Roads; 8.A.1 – Mix of Successional Forest Habitats; 9.A.3 – Watershed Restoration Areas; and 9.H – Management, Maintenance and Restoration of Plant Associations to Their Ecological Potential.

Information regarding the goals, objectives and standards associated with each of these management prescriptions can be found in Chapter 3 of the Forest Plan. General “emphasis” for each of these management prescriptions is summarized in the Forest Plan as follows:

- **4.I – Natural Areas, Few Open Roads**

Provide recreation opportunities in isolated areas where users can obtain a degree of solitude and the environment can be maintained in a near-natural state. These areas are managed at overall low management intensity.

- **8.A.1 – Mix of Successional Forest Habitats**

In these areas, the emphasis will be to provide habitats associated with mid- to late-successional forest habitats. Management activities are designed to: (1) retain a forested canopy across at least 50 percent of the prescription area, (2) maintain or enhance hard and soft mast production, (3) increase vegetation diversity (structural and spatial), and (4) limit motorized access across the prescription area.

- **9.A.3 - Watershed Restoration Areas**

Management emphasis would be on improving conditions where past land uses have degraded water quality or soil productivity. The long-term goal of these watersheds is to showcase restored and resilient watersheds where proper multiple use management practices are applied. When this goal is achieved, these watersheds are allocated to a different management prescription.

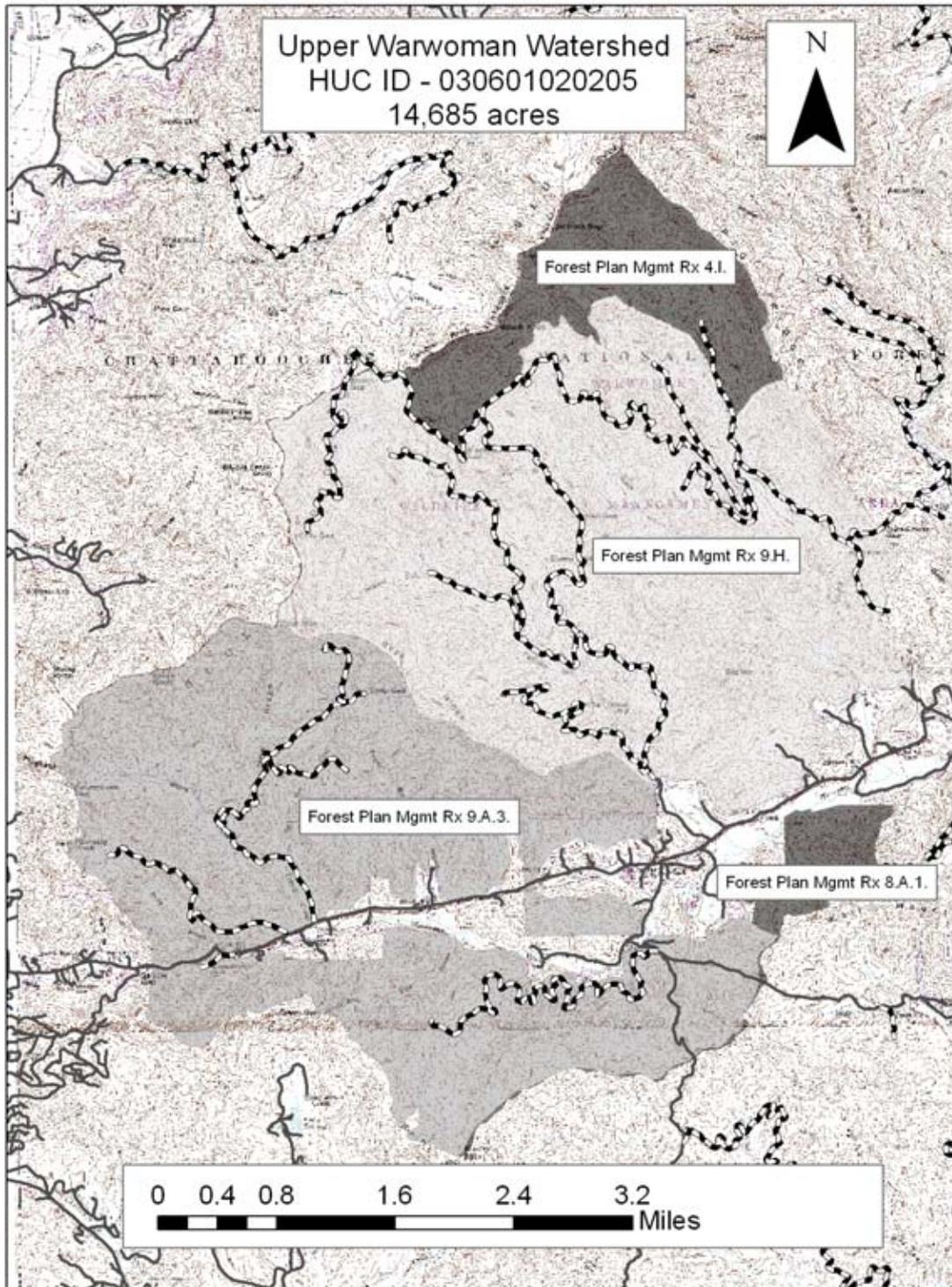
- **9.H – Management, Maintenance and Restoration of Plant Associations to their Ecological Potential**

The purpose of this prescription is the restoration of historical plant associations and their ecological dynamics to ecologically appropriate locations. Focus is on: (1) communities in decline, (2) communities converted from historic composition by land uses, (3) communities on ecologically appropriate sites but unable to maintain themselves, and (4) communities infrequent on National Forest but not regionally rare. Suitable-to-optimal habitats to support populations of the plant and animal species associated with these communities will also be maintained.

The below Table summarizes each management prescription found within the Upper Warwoman watershed, as well as the size of these prescriptions within the overall watershed.

| Management Prescription Number | Management Prescription Name | Management Prescription Size (within watershed) | Percent of Management Prescription within Watershed |
|---------------------------------------|---|--|--|
| 4.I | Natural Areas, Few Open Roads | 1182 acres | 9% |
| 8.A.1 | Mix of Successional Forest Habitats | 321 acres | 2% |
| 9.A.3 | Watershed Restoration Areas | 5562 acres | 42% |
| 9.H | Management, Maintenance and Restoration of Plant Associations to their Ecological Potential | 6147 acres | 47% |
| Total | | 13,212 acres (NF land only) | 100% |

The following map displays the spatial distribution of the Forest Plan Management Prescriptions within the Upper Warwoman watershed.



Ecological Units Description for the Upper Warwoman watershed –

Through cooperative work with the Southern Blue Ridge Fire Learning Network, an Ecological Classification System (ECS) was developed to characterize ecological communities within the Southern Blue Ridge Ecoregion of the Chattooga River Ranger District (this includes the Upper Warwoman Watershed). The ECS characterizes communities based on their physical and biological characteristics, such as, but not limited to, geology, climate, soils, aspect, elevation and dominant vegetation type. Further information on the National Ecological System hierarchy can be found at the following location: <http://www.dnr.state.mn.us/ecs/index.html>

In terms of the ECS, the Upper Warwoman watershed is within the Southern Blue Ridge Mountains Subsection, and contains two major Landtype Associations (LTA's) – the Rabun Bald LTA (approx. 12,153 acres / 83% of watershed) and the Tallulah Foothills LTA (approx 2,532 acres /17% of watershed).

- *Distinguishing features of the Rabun Bald LTA:*

Rabun Bald (4696 feet) is most prominent physical feature in this LTA, whereas, this LTA is basically a single major mountain ridge with long, descending side ridges especially on the southeast. The slope gradient within this LTA varies widely, ranging from a low of about 10-percent on the crest of major ridges, up to about 80-percent in cove heads just underneath the crests. The majority of the LTA is within the 30 – 50 percent slope range. Elevation ranges from 2000' at lowest point to 4696' at the summit of Rabun Bald. The total relief is therefore 2696' but relief decreases from north to south. The average relief is approximately 2000 feet. Existing vegetation within this LTA includes oak, cove hardwood, white pine, and yellow pines including several areas of Table Mountain pine, a species generally considered an Appalachian endemic and on the southern fringe of its natural range in Georgia. This LTA also has northern hardwood species such as yellow birch, sugar maple, and fire cherry but they are in mixture with other species rather than being a true northern hardwood cover type. Tornadoes, damaging thunderstorm winds, ice glaze storms, snow storms, lightning-caused tree mortality, and lightning and human-ignition wildfire are each climatic processes which occur in this LTA. Because of the high rainfall, debris avalanching can be expected infrequently. With fire exclusion, white pine has become established in the understory of upland hardwood stands and Table Mountain pine (and other yellow pines) are no longer naturally regenerating.

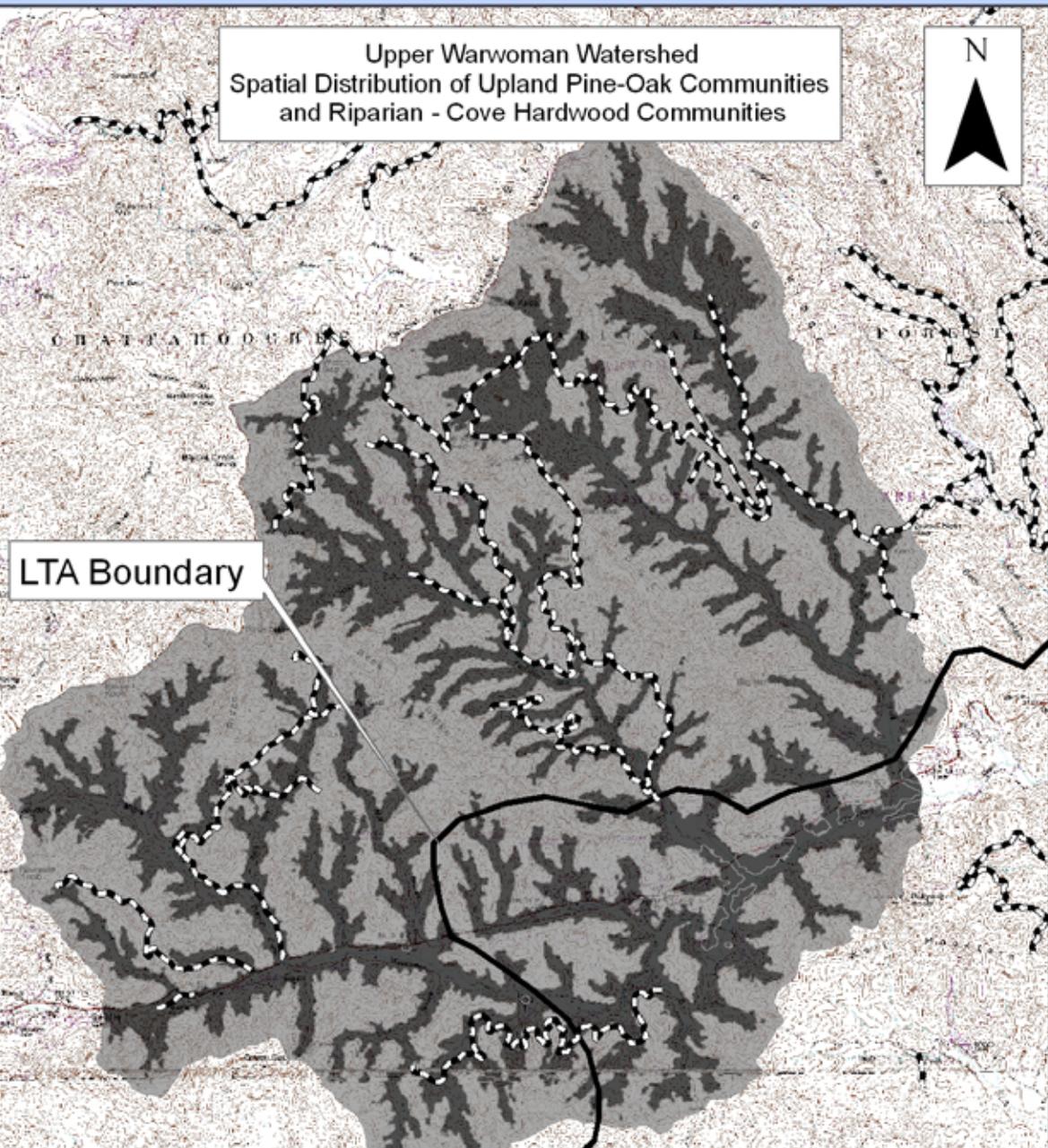
- *Distinguishing features of the Tallulah Foothills LTA:*

This LTA is considered transitional from the Southern Appalachian Piedmont Section to the Blue Ridge Mountains Section, and is distinguished by rolling topography and broad valley bottoms. Slope gradients within the LTA are estimated to range from a low of 5 percent to a high of about 40 percent, with an average in the 20 – 35 percent range. Elevations in this LTA range from 1800' at the lowest point to 2600' at the highest point, with a total average relief of approximately 500 feet. Existing vegetation within this LTA is dominated by pine and oak, which reflects the transition from the Piedmont to Blue Ridge sections. Tornadoes and Southern Pine Beetle are two natural disturbance agents in this LTA, along with lightning-caused tree mortality, and lightning and human-ignition wildfires.

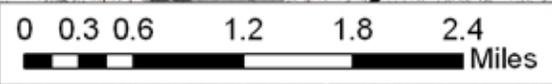
Within these LTA's, smaller ECS units, most similar to Landtype Phases (LtP), have also been delineated within the Upper Warwoman Watershed. These units are used to classify the natural vegetation types which could occur on a particular piece of land, and are similar in size to a "stand." These units are most helpful in planning the restoration of appropriate natural vegetation types, such as reducing encroaching white pine within hardwood forest types. The following Table and the below map displays the various LtP's within the Upper Warwoman watershed.

| Landtype Name | Size | Percent of Watershed |
|------------------------------|-----------------|-----------------------------|
| High Elevation Red Oak | 22.4 acres | 0.2% |
| Acidic Cove | 5,527.7 acres | 37.6% |
| Rich Cove | 66.4 acres | 0.5% |
| Mesic Oak - Hickory | 749.4 acres | 5.1% |
| Pine – Oak - Heath | 330.1 acres | 2.3% |
| Dry / Mesic Oak - Hickory | 4,479.8 acres | 30.5% |
| Mixed Oak - Heath | 709.1 acres | 4.8% |
| Shortleaf Pine - Oak | 2691.0 acres | 18.3% |
| Alluvial Forest | 109.0 acres | 0.7% |
| Shortleaf Pine – Oak - Heath | < 1.0 acres | 0 |
| Heath Bald | < 1.0 acres | 0 |
| Grassy Bald | 0 | 0 |
| Spruce – Fir Forest | 0 | 0 |
| Northern Hardwood Cove | 0 | 0 |
| Northern Hardwood Slope | 0 | 0 |
| Total | 14,684.9 | 100 |

Upper Warwoman Watershed
Spatial Distribution of Upland Pine-Oak Communities
and Riparian - Cove Hardwood Communities



LTA Boundary



Legend

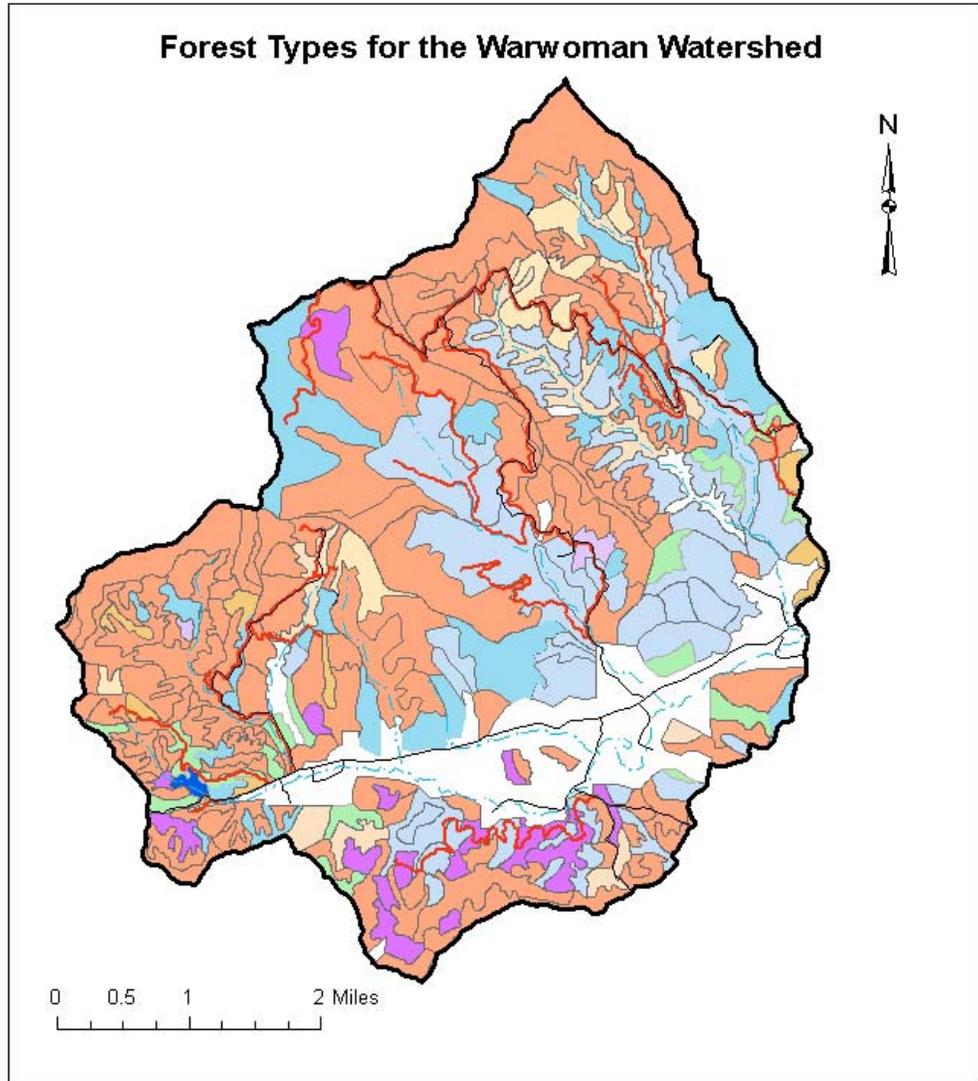
| | |
|---|---|
|  | Riparian and Cove Natural Communities |
|  | Upland Pine and Oak Natural Communities |

Major Forest Communities for the Upper Warwoman watershed –

In determining the existing conditions on the ground for the Warwoman Watershed, the Forest Management shop relied on available Forest Service databases including, Continuous Inventory of Stand Conditions (CISC), and the Scenery Management System (SMS) inventory information in their digitized versions overlaid using Geographic Information System (GIS). 2005 Aerial photographs, stand exams, field notes, past timber sale information were all integrated into the assessment.

On the following pages you will find maps and tables of the major forest types found in the Warwoman Watershed, displaying the management objectives in the area, and a table outlining the acres currently meeting the management objectives.

Map 1. The Major Forest types represented within the Warwoman Watershed Boundary.



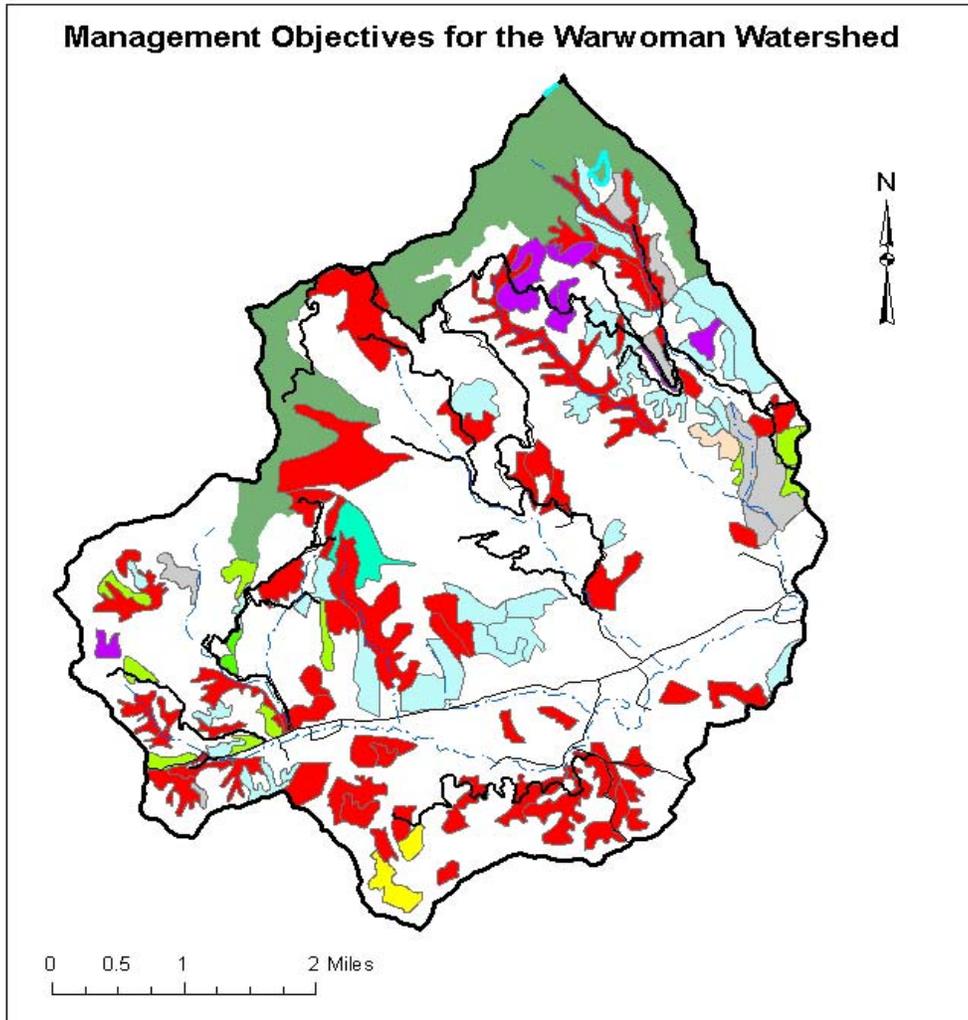
Legend

- | | |
|---|---|
| Wawoman Streams | Oak & Oak-Pine Mixes |
| Rabun Co. Roads | Pitch Pine- Pitch Pine-Oak |
| Forest Service Roads | Virginia Pine and Virginian Pine-Oak |
| Wawoman Watershed | Shortleaf Pine and Shortleaf Pine-Oak |
| Cove Hardwood-White Pine-Hemlock and White Pine-Cove Hardwood | Hemlock and Hemlock-Hardwood and White Pine-Hemlock |
| Northern White Oak & Northern Red Oak-Yellow Pine | White Pine and White Pine-Upland Hardwood |
| White_Oak | Table Mountain Pine & Table Mountain Pine-Hardwood |
| Yellow Poplar & YP-WD-RO | |

Table 1. The Major Forest types represented within the Warwoman Watershed Boundary.

| Total Acres By Forest Type in the Warwoman Watershed | |
|--|-------|
| Forest Type | Acres |
| TMP & TMP-HDWD | 349 |
| White Pine & White Pine- Upland HDWD | 2359 |
| Hemlock & Hemlock- HDWD & White Pine-Hemlock | 22 |
| Shortleaf & Shortleaf Pine - Oak | 613 |
| Virginia Pine & Virginia Pine-Oak | 389 |
| Pitch Pine & Pitch Pine-Oak | 1659 |
| Oak & Oak-Pine | 7998 |
| Yellow Poplar (YP) & YP-White Oak-Red Oak | 699 |
| White Oak | 54 |
| Northern Red Oak (NRO) & Northern Red Oak- Yellow Pine | 121 |
| Cove HDWD- White Pine & White Pine-Hemlock- White Pine- Cove HDWD | 604 |

Map 2. The Management Objectives identified in the Warwoman Watershed Boundary.



Legend

- | | |
|---|---|
| --- Warwoman_Streams | Obj_7-1-Canopy Gap Creation |
| — Rabun Co. Roads | Obj_8-1-Reduce Midstory in Shortleaf |
| — Forest Service Roads | Obj_8-2-A_Thinning in PITCH PINE |
| ▭ Warwoman Watershed | Obj_8-2-B-Reduce Midstory in PITCH PINE |
| Obj_3-1_Restore Shortleaf Pine | Obj_9f-03-Restore or maintain Table Mountain Pine |
| Obj_3-6-Restore Oak and Oak-Pine | Obj_9f-04-Maintain existing Table Mountain Pine |
| Obj_3-7-Reduce density in Oak and Oak-Pine Stands | Obj_40-1-Precommercial thinning in Shortleaf Stands |
| Obj_3-8_High Elevation Early Successional | |

Table 2. The Management Objective Acres identified in the Warwoman Watershed Boundary

| Acres By Management Objective the Warwoman Watershed | |
|--|------|
| Objective 3.1 - Restore Shortleaf Pine | 53 |
| Objective 3.6 - Restore Oak and Oak-Pine | 481 |
| Objective 3.7 - Reduce Density in Oak and Oak-Pine Stands | 2547 |
| Objective 3.8 - High Elevation Early Successional Habitats | 2837 |
| Objective 7.1 - Canopy Gap Creation | 424 |
| Objective 8.1 - Reduce Midstory in Shortleaf | 449 |
| Objective 8.2a - Thinning in Pitch Pine Stands | 398 |
| Objective 8.2b - Reduce Midstory in Pitch Pine Stands | 1785 |
| Objective 9f_03 - Maintain or Restore Table Mountain Pine | 143 |
| Objective 9f_04 - Maintain Existing Table Mountain Pine | 388 |
| Objective 40.1 - Pre-commercial thinning in Shortleaf Stands | 10 |

In using the current Forest Plan as a guide to move the existing conditions toward the desired future conditions, the following table demonstrates the total acres identified in the plan for each of the objectives that are currently meeting the 2004 Forest Plan.

Table 3.

| Acres Meeting Management Objective in the Warwoman Watershed | |
|--|---|
| Objective 3.1 - Restore Shortleaf Pine | 0 |
| Objective 3.6 - Restore Oak and Oak-Pine | 0 |
| Objective 3.7 - Reduce Density in Oak and Oak-Pine Stands | 0 |
| Objective 3.8 - High Elevation Early Successional Habitats | 0 |
| Objective 7.1 - Canopy Gap Creation | 0 |
| Objective 8.1 - Reduce Midstory in Shortleaf | 0 |
| Objective 8.2a - Thinning in Pitch Pine Stands | 0 |
| Objective 8.2b - Reduce Midstory in Pitch Pine Stands | 0 |
| Objective 9f_03 - Maintain or Restore Table Mountain Pine | 0 |
| Objective 9f_04 - Maintain Existing Table Mountain Pine | 0 |
| Objective 40.1 - Pre-commercial Thinning in Shortleaf Stands | 0 |

Major Forest Communities Desired Future Conditions/Opportunities –

- Use the appropriate tools, such as pre-commercial and commercial thinning, prescribed burning and other restoration opportunities to maintain Pitch Pine (133 acres annually), Shortleaf Pine (51 acres annually), Table Mountain Pine (100 acres annually) and oak / oak-pine (105 acres annually) forests (Forest Plan Goals 3, 7, 8, 9.F and 40.1).
- Remove off-site White Pine in areas more suited for other more desirable forest communities, such as oak-pine or pine oak communities.
- Explore opportunities to restore Chestnut trees in areas that are currently dominated by off-site White Pine.
- Explore opportunities to utilize “sky-line” or “high-line” timber removal techniques in areas historically thought to be too environmentally sensitive, steep or contentious for traditional timber removal operations.
- Regenerate 2-4 areas, converting them from nearly pure white pine to white pine – oak or yellow pine – oak forest types. Locations include Buck Branch, Sandy Ford, Tuckaluge Creek Road and Dan Gap areas.
- Conduct stand exams across the watershed to get a more accurate inventory on existing forest types throughout the watershed. Look for new technologies to rapidly assess current forest type conditions.

Rare Communities within the Upper Warwoman Watershed –

“Rare communities are assemblages of plants and animals that occupy a small portion of the landscape, but contribute significantly to plant and animal diversity”. All known rare community sites are allocated to the 9.F forest plan prescription, and as new rare communities are found, they will be added to this prescription as well (Forest Plan 2004). Rare communities covered by the “9.F” prescription divided into the following community types: Wetland Communities; Forest Communities; Cliffs / Rock Outcrops and Other communities (Glades, Barrens, Woodlands, Balds, Canebrakes and Caves and Mines).

Currently, the Forest Plan does not identify any rare communities (9.F) within the Upper Warwoman Watershed. However, there are some communities present within this watershed that may warrant inclusion into the 9.F - rare community prescription. The following is a brief description of potential rare communities within the Upper Warwoman Watershed that may warrant inclusion into the “9.F” prescription:

- Wetland Communities – A large *Beaver Pond Complex* occurs at the intersection of Finney Creek and Warwoman Road. Some portions of this pond were recently destroyed by the Rabun County Road Department, but suitable habitat still exists, and is likely to improve over the next several years.
- Forest Communities – *Table Mountain Pine Forests and Woodlands* occur along several of the “ridgelines” within the Upper Warwoman Watershed. The district, in cooperation with the Southern Research Station, has managed several of these sites using prescribed fire over the last decade. *Basic Mesic Forests* have the potential to occur within the watershed, but none have been delineated at this point.
- Cliffs / Rock Outcrops – *Rock Outcrops* or *Rocky Summits* are found within the Upper Warwoman Watershed, particularly along the high ridge which serves as the Eastern Continental (Blue Ridge) Divide.
- Other Communities – An old railroad tunnel, known locally as the Black Diamond Tunnel, occurs on private land within the Upper Warwoman Watershed. This tunnel is annually monitored for bat use, and typically holds over 3,000 bats during the winter months, including the rare Rafinesque’s Big-eared Bat (Regional Forester Sensitive Species).

Rare Community Desired Future Conditions / Opportunities -

“Rare communities exhibit the composition, structure and function necessary to support vigorous populations of species characteristic of the community, including relevant Federally-listed Threatened and Endangered Species, and species at risk of losing viability (Forest Plan 2004).

- The large *Beaver Pond Complex* which occurs at the intersection of Finney Creek and Warwoman Road should be assessed and considered for Forest Plan 9.F designation.
- The district needs to coordinate with Tom Waldrop (Southern Research Station) to determine when the next prescribed burning rotation is needed to maintain the rare Table Mountain Pine Forests and Woodlands in the northern portion of the watershed (these areas are within the

Duck's Nest Gap, Wilson Knob and Big Ridge Rx Burn Units, which are illustrated in the Fire section of this document).

- The district should strongly consider acquiring the Black Diamond Tunnel which occurs on private land directly adjacent to the National Forest boundary. This tunnel hosts one of the largest concentrations of hibernating bats in all of North Georgia, and is especially important in light of the massive bat die-offs associated with White-nose Syndrome.
- As funding/opportunities become available, additional rare plant and animal surveys should be conducted within the Watershed to document any previously unknown locations of rare plants, rare animals or rare communities. As new locations are found, they should be documented, geo-referenced, and if applicable, designated as Forest Plan Management Prescription 9.F.

Successional Stage Habitats within the Upper Warwoman Watershed –

Currently, the vast majority of the Upper Warwoman Watershed is dominated by mid- to late successional forest habitats. The only early successional habitat known to occur within this watershed would be within existing wildlife openings or within the existing prescribed burn (Rx Burn) units. There are approximately 37 openings within the watershed, for a total of 47 acres (approximately 1.3 acres / opening). There are 4 existing prescribed burn units within the watershed, for a total of approximately 3,968 acres (approximately 992 acres / burn unit). All the wildlife openings within the watershed could be counted toward early succession, but only a portion of each Rx burn unit may qualify as “early succession”, depending on the mosaic of fire intensity within each burn unit, i.e, high intensity Rx burns would likely produce early successional habitat, whereas, low intensity burns would not. Since the existing burn units were burned “hot” in order to restore Table Mountain Pine communities, among other forest management goals, it would be safe to assume that at least 25% of these units now contain quality early successional habitat. Therefore, a conservative estimate of early successional habitat within the Upper Warwoman Watershed would total approximately 1,039 acres or 8% of the watershed. This figure includes approximately 47 acres of wildlife openings and 992 acres within existing Rx burn units (25% of total Rx burn unit acres). It should be noted that the 8% estimate is still likely high, and additional surveys and/or data technology (such as LIDAR) would be needed to get a closer estimate of existing early successional habitat within this watershed.

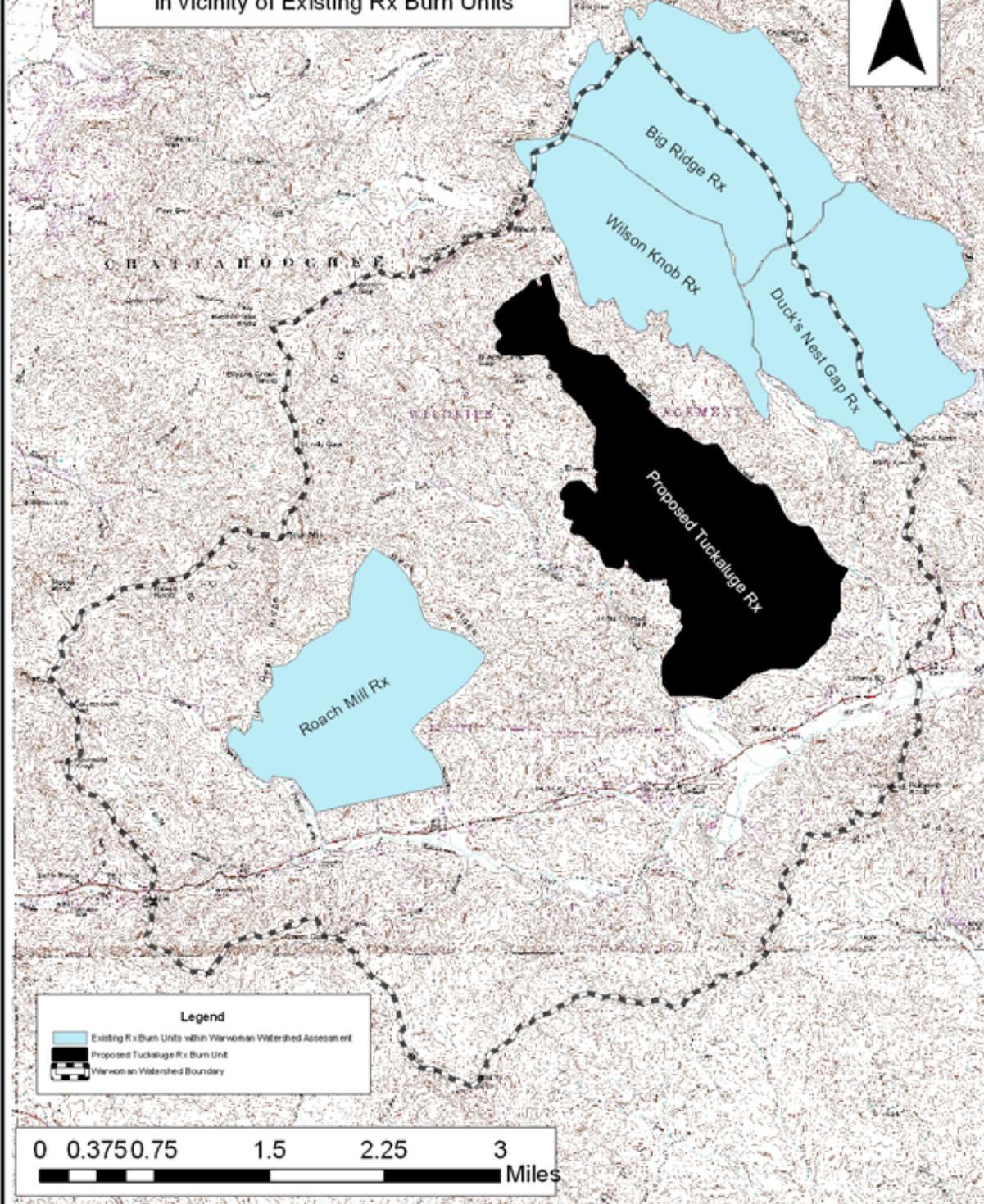
Successional Stage Habitat Desired Future Conditions / Opportunities –

- Continue burning the existing Roach Mill Rx Burn Unit on a 3-5 year rotation (last burn rotation was spring 2008).
- Continue burning the existing Duck's Nest Gap, Wilson Knob and Big Ridge Rx Burn Units as frequently as possible to maintain the existing early successional habitats, as well as the Table Mountain Pine communities (coordinate these burns with the Southern Research Station, since research is on-going).
- The district should consider setting up a “new” prescribed burn unit in the vicinity of Tuckaluge Creek. A burn unit in this vicinity would provide a habitat corridor, or linkage, between the Table Mountain Pine burns to the northeast and the Roach Mill burns to the southwest. A burn

unit in this vicinity would also better distribute early successional habitats throughout the Upper Warwoman Watershed, as well as the Warwoman Wildlife Management area. The below maps illustrate the “linkage” this burn unit would provide, as well as a rough sketch of the potential location of a new burn unit (and boundaries) on Tuckaluge Creek. As currently mapped, the “new” Tuckaluge Rx Burn unit is approximately 1,420 acres (65% or 926 acres is Pine-Oak Upland habitat and 35% or 494 acres is Riparian-Cove habitat).

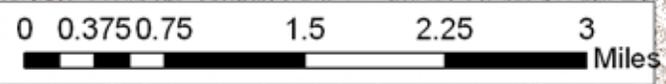
- Consider using LIDAR data to better quantify exactly how much early successional habitat has been created within the existing burn units, and within each Management Prescription that occurs in this watershed. If the current amount of early successional habitat is below allowable levels in the Forest Plan, look for veg management opportunities, such as prescribed burning or white pine eradication, to maximize allowable levels of early successional habitat within each Management Prescription. Management Prescriptions 4.I and 9.A.3 allow for up to 4% early successional habitat; whereas, Management Prescriptions 8.A.1 and 9.H allow for up to 10% early successional habitat.

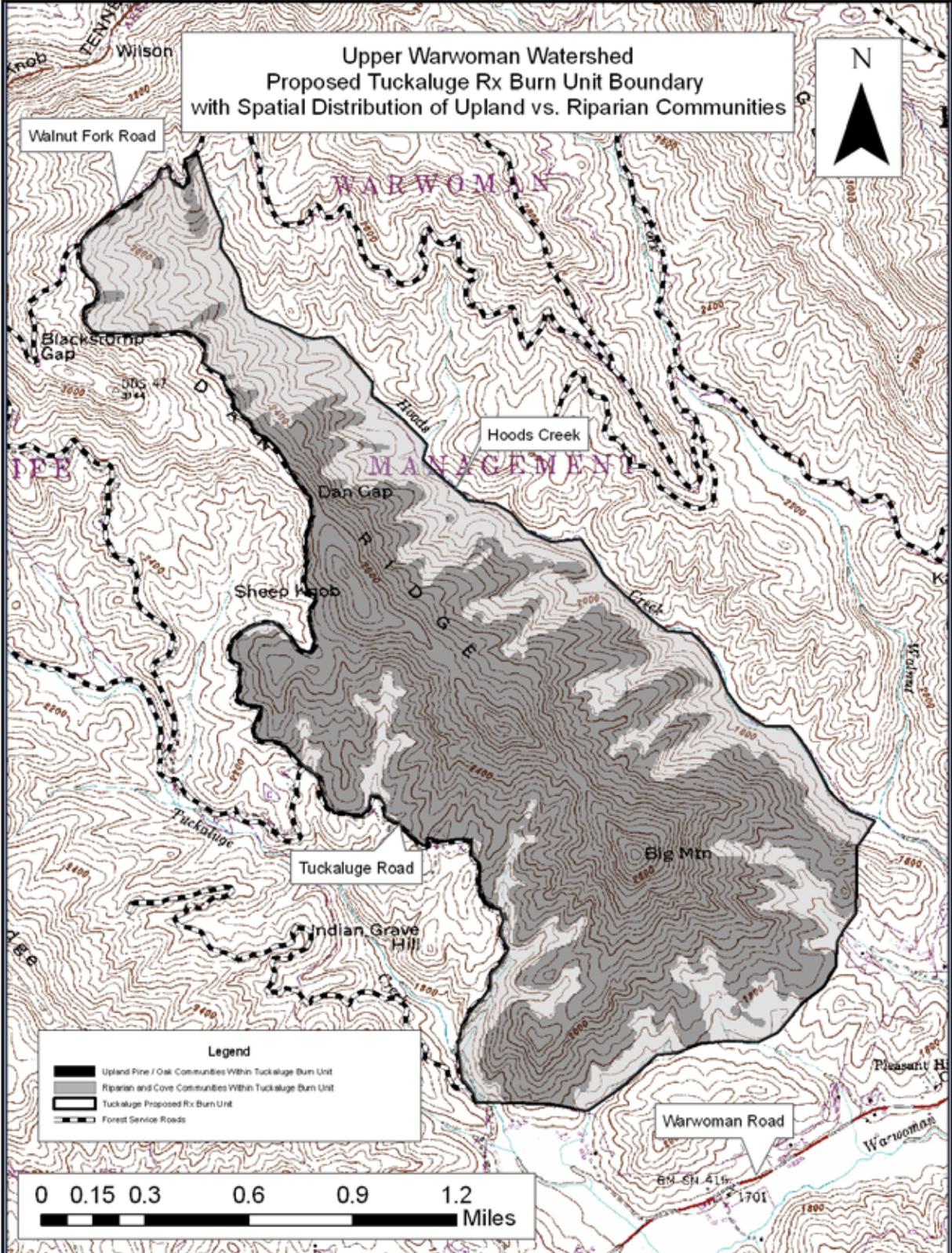
Upper Warwoman Watershed
Proposed Tuckaluge Rx Burn Unit Boundary
in vicinity of Existing Rx Burn Units



Legend

- Existing Rx Burn Units within Warwoman Watershed Assessment
- Proposed Tuckaluge Rx Burn Unit
- Warwoman Watershed Boundary

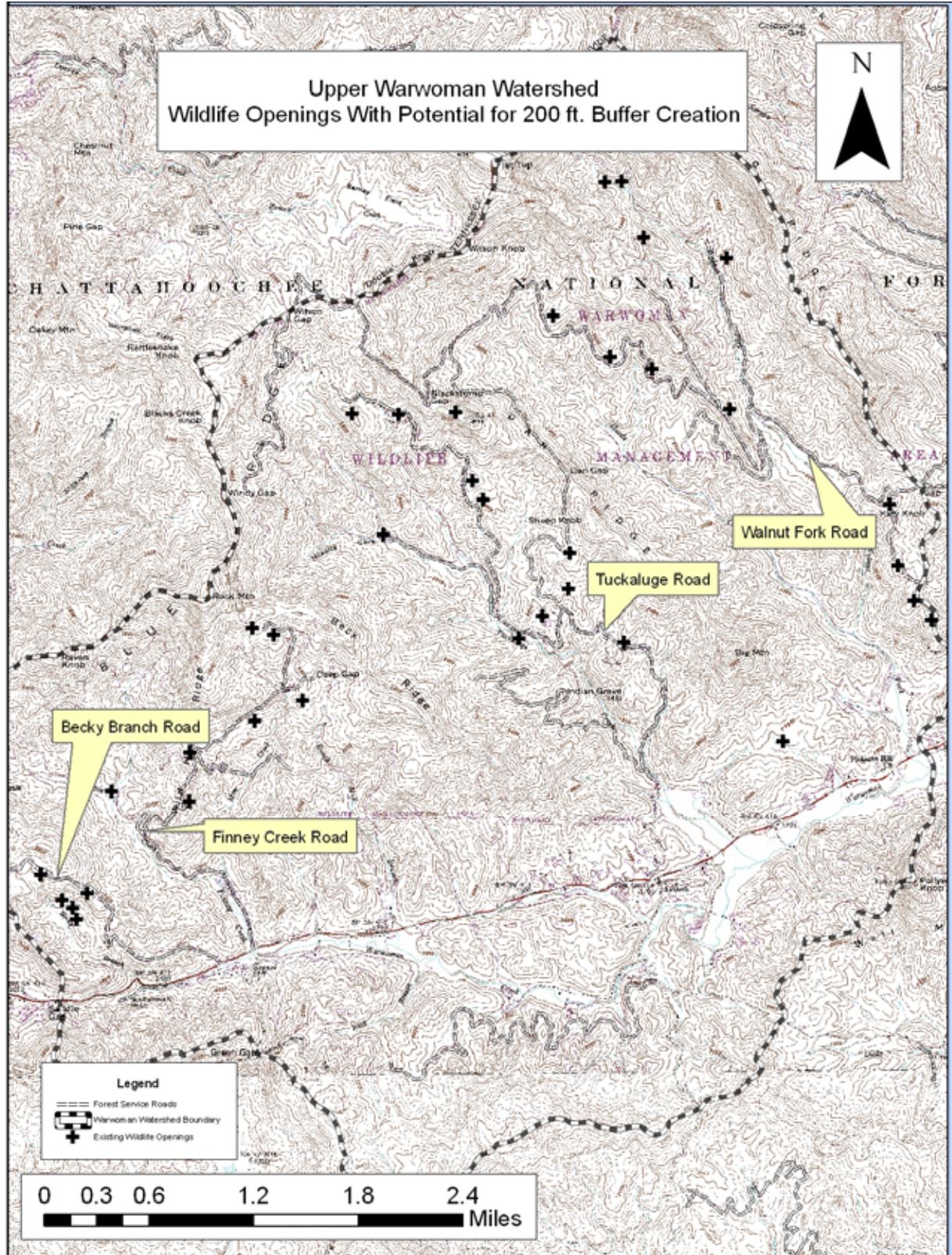




Successional Stage Habitat Desired Future Conditions / Opportunities (continued)-

- The district should consider creating a 200' early successional habitat buffer around each of the existing wildlife openings which occur within the Upper Warwoman Watershed. This work would be similar to the successful work done on the Georgia Mountain Orchard project, and would substantially increase the wildlife "benefit" provided by our existing wildlife openings. Currently there are a total of 37 openings (47 acres) in the Warwoman Watershed. See below map for locations of existing wildlife openings which could be enhanced by a 200' buffer.

Upper Warwoman Watershed
Wildlife Openings With Potential for 200 ft. Buffer Creation



Becky Branch Road

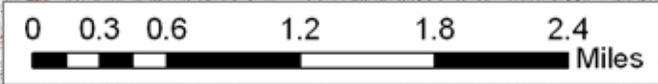
Finney Creek Road

Tuckaluge Road

Walnut Fork Road

Legend

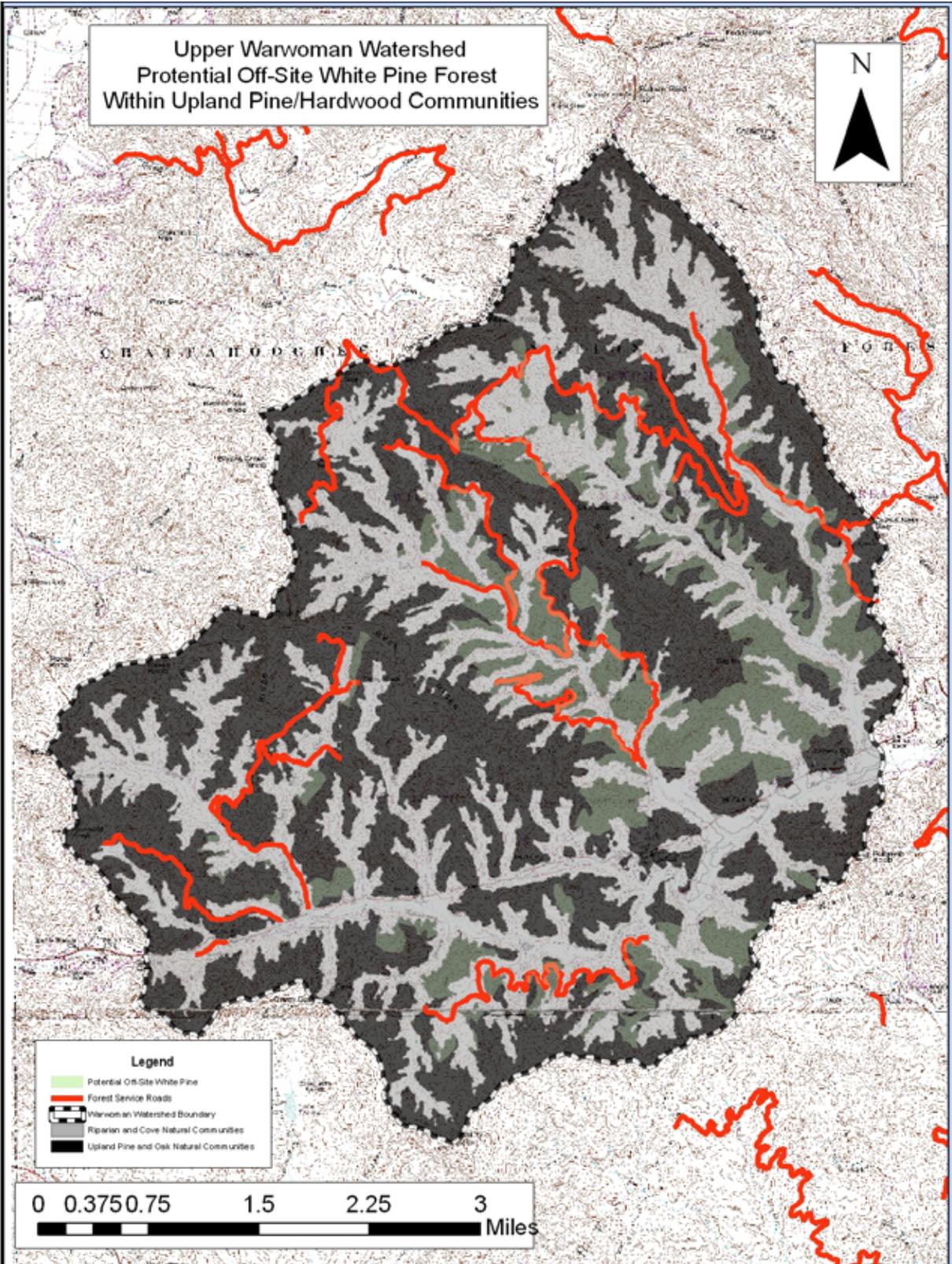
- Forest Service Roads
- Warwoman Watershed Boundary
- Existing Wildlife Openings



Successional Stage Habitat Desired Future Conditions / Opportunities (continued)-

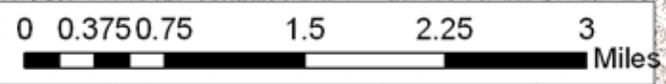
- The district should consider looking for areas to reduce encroaching White Pine and to restore Yellow Pine – Oak Forests and Woodlands within the Upper Warwoman Watershed. According to the ECS, approximately 1,765 acres of potential yellow pine – oak “uplands” have been invaded by encroaching white pine, with approximately 385 acres being within the potential Tuckaluge Creek Rx burn unit. See below maps for potential opportunities related to reducing White Pine encroachment.

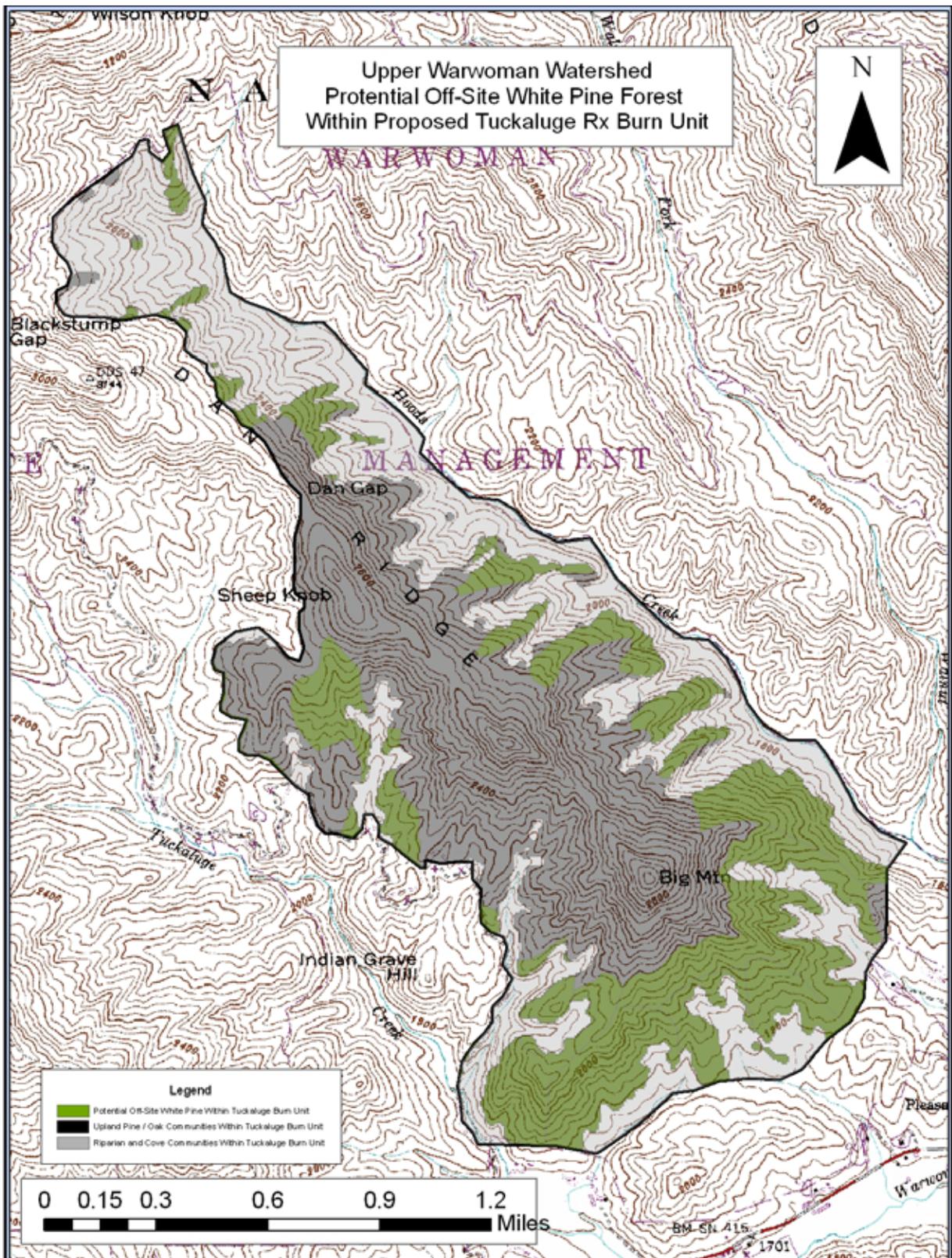
Upper Warwoman Watershed
Potential Off-Site White Pine Forest
Within Upland Pine/Hardwood Communities



Legend

- Potential Off-Site White Pine
- Forest Service Roads
- Warwoman Watershed Boundary
- Riparian and Cove Natural Communities
- Upland Pine and Oak Natural Communities





Rare Species within the Upper Warwoman Watershed -

Rare species are typically defined as PETS (Proposed, Endangered, Threatened and Sensitive) species or Locally Rare species. There are no documented occurrences of Federally-listed Proposed, Endangered or Threatened species in the Upper Warwoman watershed. However, there are 8 documented occurrences of Sensitive and Locally Rare species within the watershed. The following table highlights the rare species which have been documented within the Upper Warwoman Watershed:

| Life Form | Scientific Name | Common Name | Rank |
|------------------|--|---------------------------------|--------------|
| Amphibian | <i>Aneides aenus</i> | Green Salamander | Locally Rare |
| Amphibian | <i>Plethodon teyahalee</i> | Southern Appalachian Salamander | Sensitive |
| Insect | <i>Speyeria diana</i> | Diana Fritillary | Sensitive |
| Mammal | <i>Corynorhinus rafinesquii</i> | Rafinesque's Big-eared Bat | Sensitive |
| Mammal | <i>Myotis leibii</i> | Eastern Small-footed Bat | Sensitive |
| Mammal | <i>Tamiasciurus hudsonicus</i> | Red Squirrel | Locally Rare |
| Plant | <i>Calystegia 2satesbeiana spp. sericata</i> | Blue Ridge Bindweed | Locally Rare |
| Plant | <i>Carex scabrata</i> | Rough Sedge | Locally Rare |
| Plant | <i>Juncus gymnocarpus</i> | Naked-fruit Rush | Locally Rare |

Rare Species Desired Future Conditions / Opportunities-

- Visit known locations of above mentioned PETS within this watershed to assess the current condition of these occurrences. Document these surveys as appropriate.
- As funding/opportunities become available, additional rare plant and animal surveys should be conducted within the Watershed to document any previously unknown locations of rare plants, rare animals or rare communities. As new locations are found, they should be documented, geo-referenced, and if applicable, designated as Forest Plan Management Prescription 9.F. Surveys should focus on the rock outcrops found along the Bartram Trail corridor, as well as within any previously un-surveyed cove/riparian sites (identified on the ECS map).

Management Indicator Species within the Upper Warwoman Watershed –

Management Indicator Species (MIS) are selected and monitored because their population trends are thought to potentially be a result of the effects land management activities are having on important habitat components for those species. The Chattahoochee-Oconee National Forests has a total of 15 MIS. The below Table identifies all of the MIS on the Chattahoochee-Oconee National Forest, and highlights (in bold) those species which are known to occur within the Upper Warwoman Watershed.

| TYPE | COMMON NAME | IMPORTANT HABITAT COMPONENT | Within Upper Warwoman Watershed (Y or N) |
|---------------|----------------------------|--|--|
| Mammal | Black Bear | Hardmast Forest, Early Successional Forest, Large Contiguous Forest Interior with Low Disturbance | Y |
| Mammal | White-tailed Deer | Hardmast Forest, Early Successional Forest | Y |
| Plant | Smooth Coneflower | Pine / Pine – Oak Woodlands and Savannas | N |
| Bird | Pileated Woodpecker | Standing Dead Trees (Snags) | Y |
| Bird | Ovenbird | Large Contiguous Deciduous Forest Interior | Y |
| Bird | Pine Warbler | Pine / Pine – Oak Forest | Y |
| Bird | Acadian Flycatcher | Mid – Late Successional Riparian Forests | Y |
| Bird | Hooded Warbler | Mid – Late Successional Mesic Forests | Y |
| Bird | Scarlet Tanager | Hardmast Forest | Y |
| Bird | Prairie Warbler | Southern Pine Forest w/ Early Successional Habitat Component | Y |
| Bird | Swainson’s Warbler | Early Successional Riparian Forest | N (Oconee MIS only) |
| Bird | Field Sparrow | Grassland Habitat | Y |
| Bird | Red-cockaded Woodpecker | Longleaf Pine Woodland / Savanna | N (Oconee MIS only) |
| Bird | Wood Thrush | Forest Interior | Y (Oconee MIS only) |
| Bird | Chestnut-sided Warbler | High Elevation Early Successional Forest | N |

Management Indicator Species Desired Future Conditions / Opportunities-

- Continue to work with the DNR to monitor harvest trends for Black Bear and White-tailed Deer within the Watershed (since the watershed is also within the cooperative WMA).
- Work with DNR to develop vegetation management projects that will enhance habitat for the declining white-tailed deer population, as well as other MIS species which require early-successional habitat.

- Work with DNR to eradicate feral hog populations within the watershed which are currently destroying MIS and other wildlife species populations.
- Install at least one Breeding Bird Point within the Watershed (preferably within one of the Table Mountain Pine burn units) to start monitoring population trends for MIS bird species.

Fisheries within the Upper Warwoman Watershed –

All of the streams in the Upper Warwoman watershed are considered “cold water” fisheries, and are designated as “trout streams” according to Georgia BMPs. Typical fish assemblages in these streams include, but are not limited to, the following species:

- brown trout
- brook trout
- rainbow trout
- warpaint shiner
- stoneroller
- sculpin
- yellowfin shiner
- striped jump-rock shiner
- northern hogsucker
- creek chub

The Forest Service, in cooperation with the Georgia DNR and Trout Unlimited, has been working over the last several years to restore or enhance native brook trout populations within these streams. Current stream surveys show healthy brook trout populations in Martin Creek, Finney Creek, Tuckaluge Creek and Walnut Fork. The majority of the other streams within this watershed are dominated by non-native rainbow trout or non-native brown trout.

In addition to brook trout restoration, efforts have also been underway to improve “aquatic organism passage” in this watershed. A new “open-arch” culvert was installed on Walnut Fork in 2009 to aid in this initiative.

Fisheries Desired Future Conditions / Opportunities-

- Continue to monitor existing Brook Trout populations on Martin Creek, Finney Creek, Tuckaluge Creek and Walnut Fork. Take appropriate management actions as need to preserve these populations.
- Explore opportunities within the watershed to remove non-native trout and to restore Brook Trout populations where they once occurred.
- When replacing culverts within the watershed, look for opportunities to replace existing culverts with “open-arch” culverts which will facilitate aquatic organism passage.

Non-native Invasive Species within the Upper Warwoman Watershed –

Non-native Invasive Species (NNIS) are known to occur within the Upper Warwoman Watershed. The below Table highlights the name and location of NNIS known to occur within the watershed. Some of the more common NNIS, such as Japanese stilt grass, tall fescue and Chinese Lespedeza can be expected to occur (to some extent) along every forest road, disturbed site and wildlife opening which occurs in this watershed. Less common NNIS, such as Kudzu, Autumn Olive, Privet and Oriental Bittersweet tend to occur as isolated patches, but are usually very extensive where they occur. Recent NNIS surveys (2010 stimulus contract surveys) have shown that NNIS infestations are much less common and extensive along roadsides which have been treated with prescribed fire.

| Common Name | Scientific Name | Location |
|----------------------|------------------------------|---|
| Kudzu | <i>Pueraria montana</i> | Roadsides / Disturbed Areas. There is one known location just west of Warwoman Dell, along Warwoman Road. |
| Japanese stilt grass | <i>Microstegium vimineum</i> | Roadsides / Riparian Areas / Disturbed Areas |
| Tall Fescue | <i>Lolium arundinaceum</i> | Roadsides / Disturbed Areas / Wildlife Openings |
| Chinese Lespedeza | <i>Lespedeza cuneata</i> | Roadsides / Disturbed Areas / Wildlife Openings |
| Autumn Olive | <i>Elaeagnus umbellata</i> | Roadsides / Disturbed Areas / Wildlife Openings |
| Privet | <i>Ligustrum spp.</i> | Roadsides / Disturbed Areas / Riparian Areas |
| Oriental Bittersweet | <i>Celastrus orbiculatus</i> | Roadsides / Disturbed Areas. One site has been reported near (across the road) the Warwoman WMA check station. This report has not been verified. |

Non-native Invasive Species Desired Future Conditions / Opportunities-

- Continue to document NNIS as they are discovered. Document occurrences based on Forest/Regional protocol.
- Prioritize future treatment locations based on the district’s programmatic NNIS EA, i.e., vicinity to Wilderness, etc. Also, prioritize future treatment based on the NNIS itself, and the risk of that NNIS spreading and affecting nearby resources, i.e., some NNIS spread faster than others.

- Verify the reported occurrence of Oriental Bittersweet, *Celastrus orbiculatus*, near the Warwoman WMA check station. If this report is accurate, this should be a high priority for treatment.
- Survey all roads within the watershed for NNIS Japanese Spirea, *Spiraea japonica*. This species was recently documented adjacent to this watershed, and should be eradicated before invading new areas.
- Continue to work with DNR to trap and eradicate NNIS Feral Pig populations within the watershed.

Forest Health Conditions Within the Upper Warwoman Creek Watershed:

| Insect | Current Status | Comments |
|-------------------------|-----------------------|---|
| Southern Pine Beetle | Not present | Due to the existing amounts of Southern Yellow Pine forest types, stocking densities and soil types found within the watershed, the current risk of SPB is Moderate. See SPB Risk Assessment map. |
| Gypsy Moth | Not present | Although the host species is prevalent, the closest current infestation of the Gypsy Moth is in the southwestern Virginia area. The current risk of Gypsy Moth is Low. |
| Emerald Ash Borer | Not present | Although the host species is prevalent, the closest the Emerald Ash Borer has only been found to this watershed is in the Knoxville, TN area. The current risk of Emerald Ash Borer is Low. |
| Hemlock Woolly Adelgid | Present | The host species is prevalent within the watershed and the Hemlock Woolly Adelgid is established within the watershed. The current risk of Hemlock Woolly Adelgid is High. |
| Sirex Woodwasp | Not Present | Although the host species is prevalent, the closest the Sirex Woodwasp has only been found to this watershed is in the Pittsburgh, PA area. The current risk of Sirex Woodwasp is Low. |
| Asian Longhorned Beetle | Not Present | Although the host species is prevalent, the closest the Asian Longhorned Beetle has only been found to this watershed is in the Long Island, NY area. The current risk of Asian Longhorned Beetle is Low. |
| | | |
| Disease | Current Status | Comments |
| Fusiform Rust | Present | The host species is prevalent within the watershed and Fusiform Rust is established on Southern Yellow Pine plantations within the watershed. The current risk of Fusiform Rust is Moderate. |

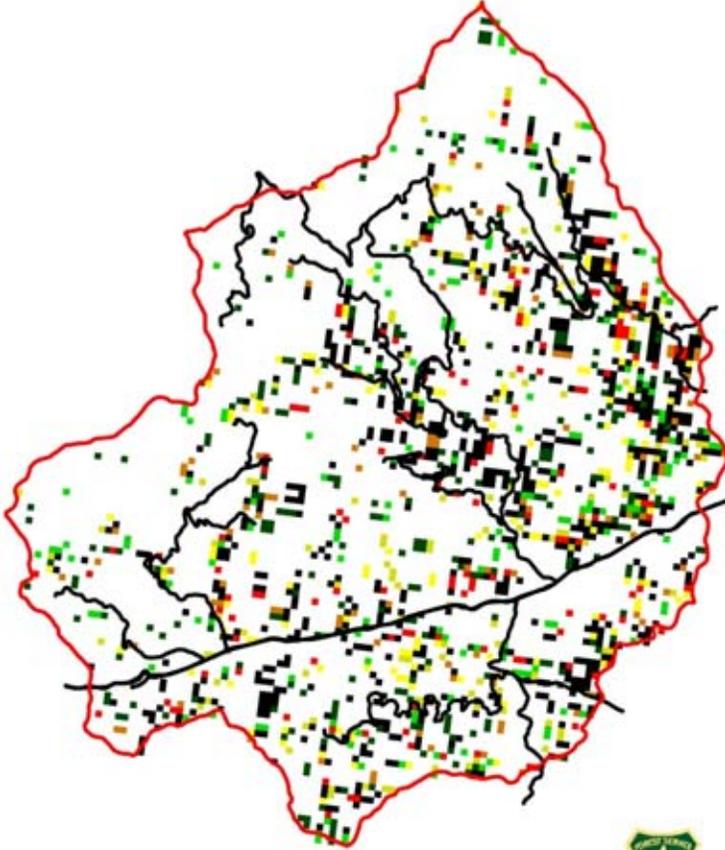
| | | |
|---------------------|-------------|---|
| Dogwood Anthracnose | Present | The host species is prevalent within the watershed and Dogwood Anthracnose is established within the watershed. The current risk of Dogwood Anthracnose is Moderate. |
| Beech Bark Disease | Not Present | Although the host species is prevalent within the watershed, the closest the Beech Bark Disease has been found to this watershed is in Macon County, NC area. The current risk of Beech Bark Disease is Moderate. |
| Butternut Canker | Present | The host species is not prevalent within the watershed and Butternut Canker is established within the watershed. The current risk of Butternut Canker is Moderate. |

Southern Pine Beetle Risk Assessment Within the Upper Warwoman Creek Watershed

 Upper Warwoman Creek Watershed Boundary
 Roads

SPB HAZARD RATING

-  Little or None
-  Low
-  Moderate
-  Moderate/High
-  High
-  Very high
-  Urban
-  Water



1:75,000



Pat Hopton
03/15/11

Forest Health Desired Future Conditions / Opportunities-

Insect

Current conditions within the watershed indicate a Low Risk for infestation by Gypsy Moth, Emerald Ash Borer, Sirex Woodwasp, and Asian Longhorned Beetle. Opportunities exist to visually monitor the general forest area for indications of infestations by any of these insects. The Chattahoochee-Oconee Land and Resource Management Plan (LRMP) provides goals and objectives for meeting this opportunity, specifically Goal 40 (LRMP, page 2-39).

In addition to visually monitoring for new infestations of Gypsy Moth, pheromone baited traps are annually placed in dispersed and developed recreation sites across the Southern Region in support of [Forest Health Protection](#). Recreation sites are monitored because gypsy moth larvae are commonly transported by forest visitors frequenting recreation sites from infested areas to non-infested areas. The only area within the watershed that receives gypsy moth monitoring traps is Warwoman Dell. To date, no gypsy moths have been found within the Upper Warwoman Creek watershed however the management action of placing the monitoring traps will continue in order to mitigate the risk of this insect.

Current conditions for Southern Pine Beetle and Hemlock Woolly Adelgid indicate a Moderate and High Risk, respectively, for infestation. The following opportunities exist to mitigate the risk for these two insects:

Southern Pine Beetle

There are 26 stands of shortleaf, Virginia, pitch, and Table Mountain pine for a total of 823 acres within the watershed. These stands are shown as being at risk for Southern Pine Beetle on the SPB Risk Assessment Map due to their species, age, condition, and soil type. There are opportunities to reduce the risk to Southern Pine Beetle within these stands by reducing pine stem density, increasing the hardwood stem density, and/or regenerating older or otherwise at-risk pine stands. The Chattahoochee-Oconee Land and Resource Management Plan (LRMP) provides goals and objectives for meeting this opportunity, specifically Obj 40.1 (LRMP, page 2-39).

Opportunity Stands to Reduce the Risk to SPB

| Comp | Stand | Species | Acres | AgeYear |
|------|-------|----------------|-------|---------|
| 16 | 19 | Table Mtn pine | 26 | 1910 |

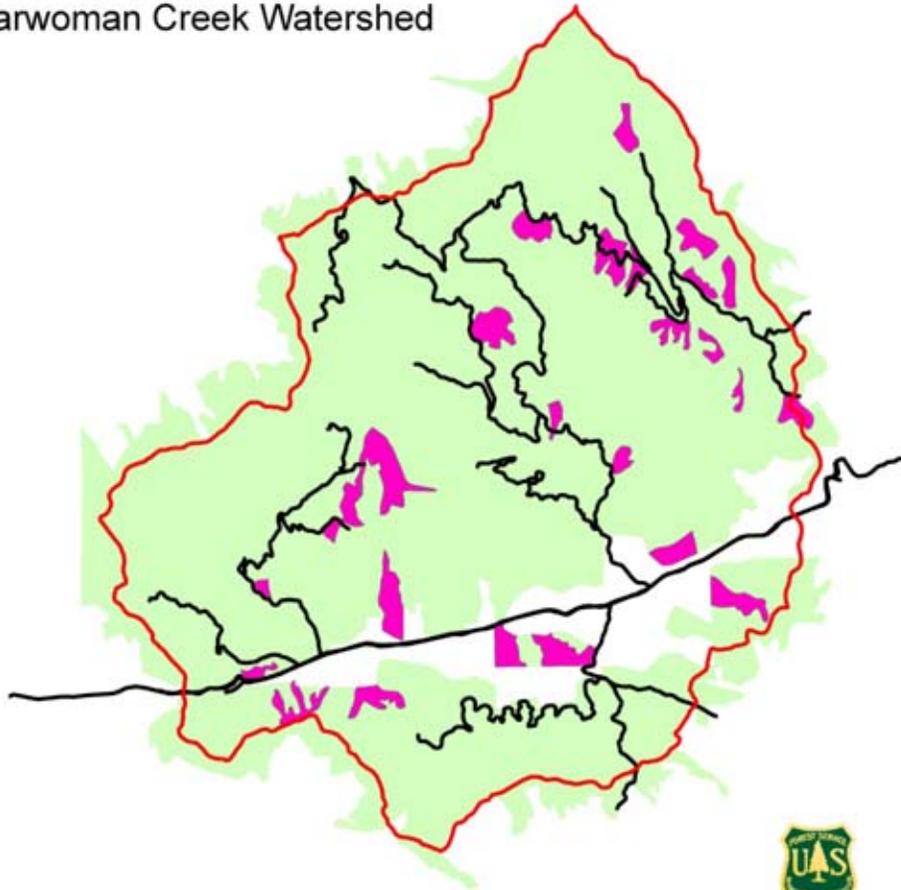
| | | | | |
|----|----|----------------|----|------|
| 34 | 04 | Shortleaf pine | 31 | 1903 |
| 34 | 13 | Pitch pine | 16 | 1896 |
| 34 | 15 | Pitch pine | 34 | 1878 |
| 34 | 17 | Pitch pine | 23 | 1883 |
| 35 | 10 | Pitch pine | 27 | 1989 |
| 35 | 12 | Pitch pine | 14 | 1991 |
| 35 | 14 | Shortleaf pine | 10 | 1991 |
| 36 | 03 | Pitch pine | 21 | 1880 |
| 36 | 05 | Pitch pine | 48 | 1910 |
| 36 | 10 | Table Mtn pine | 35 | 1991 |
| 37 | 07 | Pitch pine | 54 | 1989 |
| 41 | 01 | Pitch pine | 10 | 1973 |
| 42 | 06 | Pitch pine | 37 | 1989 |
| 43 | 14 | Pitch pine | 58 | 1905 |
| 43 | 15 | Table Mtn pine | 93 | 1900 |
| 44 | 06 | Pitch pine | 17 | 1895 |
| 44 | 07 | Virginia pine | 14 | 1881 |
| 45 | 01 | Shortleaf pine | 35 | 1974 |
| 46 | 18 | Shortleaf pine | 45 | 1978 |
| 52 | 01 | Virginia pine | 38 | 1972 |
| 52 | 04 | Virginia pine | 52 | 1972 |
| 52 | 43 | Shortleaf pine | 37 | 1978 |
| 53 | 02 | Pitch pine | 29 | 1885 |
| 53 | 12 | Pitch pine | 07 | 1910 |
| 53 | 13 | Pitch pine | 14 | 1992 |

Opportunity Stands to Reduce the Risk to Southern Pine Beetle Within the Upper Warwoman Creek Watershed

-  Opportunity Stands to Reduce SPB Risk
-  Roads
-  Forest Service Land
-  Upper Warwoman Creek Watershed Boundary



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Pat Hopton
05/11/11

Hemlock Woolly Adelgid

There are 12 stands of white pine/cove hardwood, white pine, and white pine/hemlock for a total of 326 acres within the watershed that are not within a current Hemlock Conservation Area. These stands are at risk for Hemlock Woolly Adelgid due to having a component of Eastern Hemlock in the forest type.

There are opportunities to reduce the risk to Hemlock Woolly Adelgid within these stands by treating with pesticides and/or releasing predator beetles. The Chattahoochee-Oconee Land and Resource Management Plan (LRMP) provides goals and objectives for meeting this opportunity, specifically Goal 40 (LRMP, page 2-39).

Opportunity Stands to Reduce the Risk to HWA

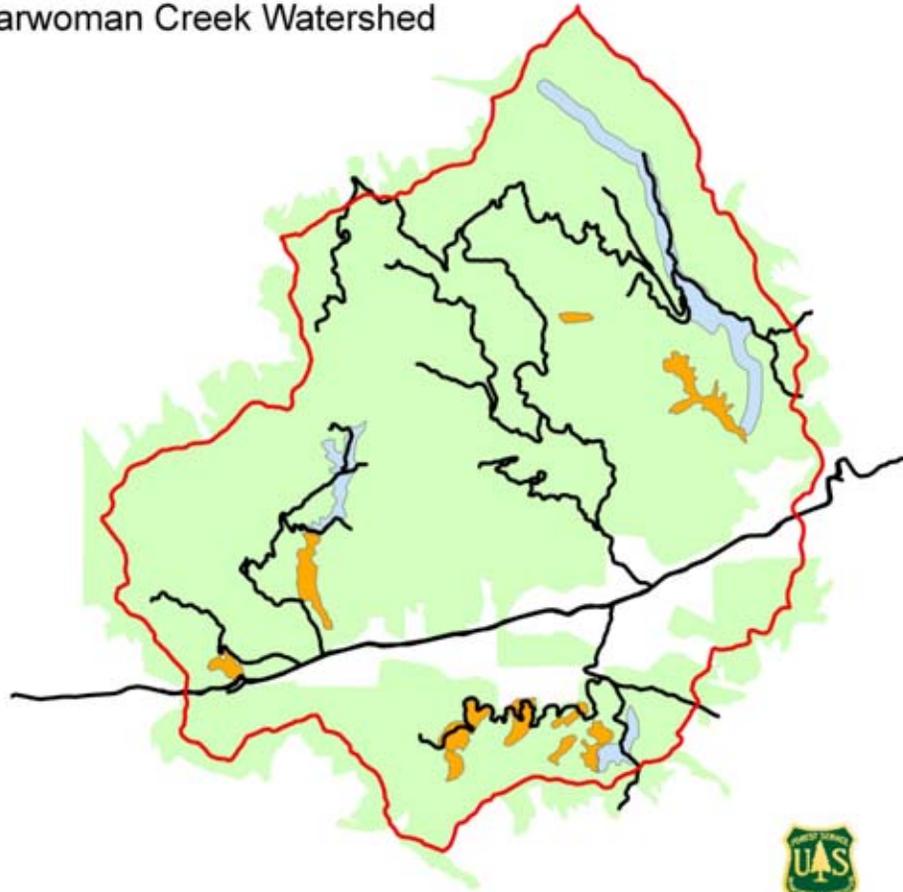
| Comp | Stand | Forest Type | Acres |
|-------------|--------------|--------------------------|--------------|
| 35 | 16 | White pine/Cove hardwood | 74 |
| 36 | 24 | White pine/Cove hardwood | 12 |
| 42 | 11 | White pine/Cove hardwood | 57 |
| 52 | 11 | White pine | 16 |
| 52 | 14 | White pine | 15 |
| 52 | 16 | White pine | 12 |
| 52 | 17 | White pine | 14 |
| 52 | 20 | White pine | 38 |
| 52 | 25 | White pine | 29 |
| 52 | 33 | White pine | 16 |
| 52 | 47 | White pine | 22 |
| 53 | 25 | White pine/Hemlock | 22 |

Opportunity Stands to Reduce the Risk to Hemlock Woolly Adelgid Within the Upper Warwoman Creek Watershed

- Roads
- Opportunity Stands to Reduce HWA Risk
- Current Hemlock Conservation Areas
- Forest Service Land
- Upper Warwoman Creek Watershed Boundary



1:75,000



Pat Hopton
05/11/11

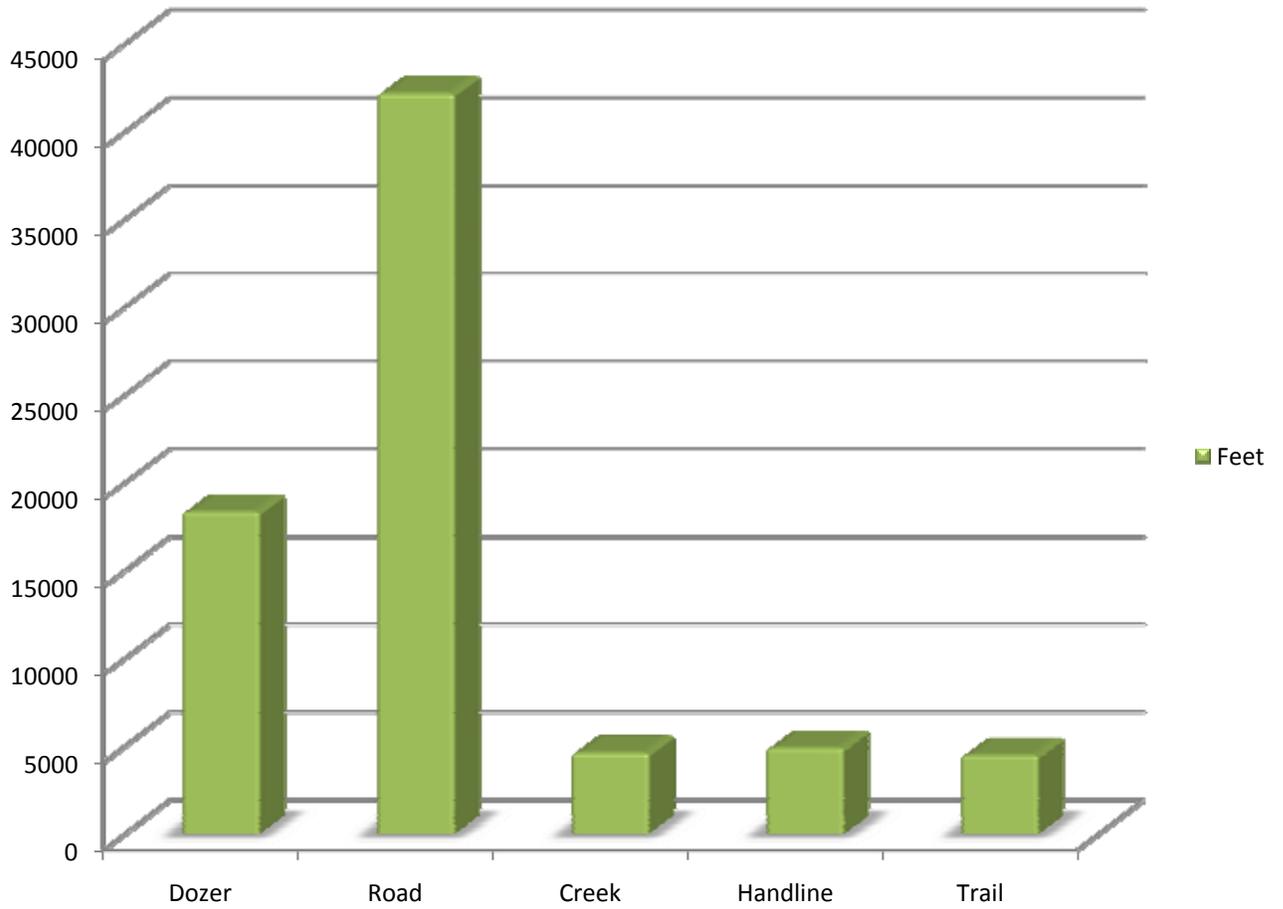
Disease

Current conditions within the watershed indicate a Moderate Risk for infestation by Fusiform Rust, Dogwood Anthracnose, Beech Bark Disease, and Butternut Canker. Opportunities exist to visually monitor the general forest area for indications of infestations by any of these diseases. No other management actions are applicable to mitigate the risk to these diseases. The Chattahoochee-Oconee Land and Resource Management Plan (LRMP) provides goals and objectives for meeting this opportunity, specifically Goal 40 (LRMP, page 2-39).

Fire Management Within the Upper Warwoman Creek Watershed:

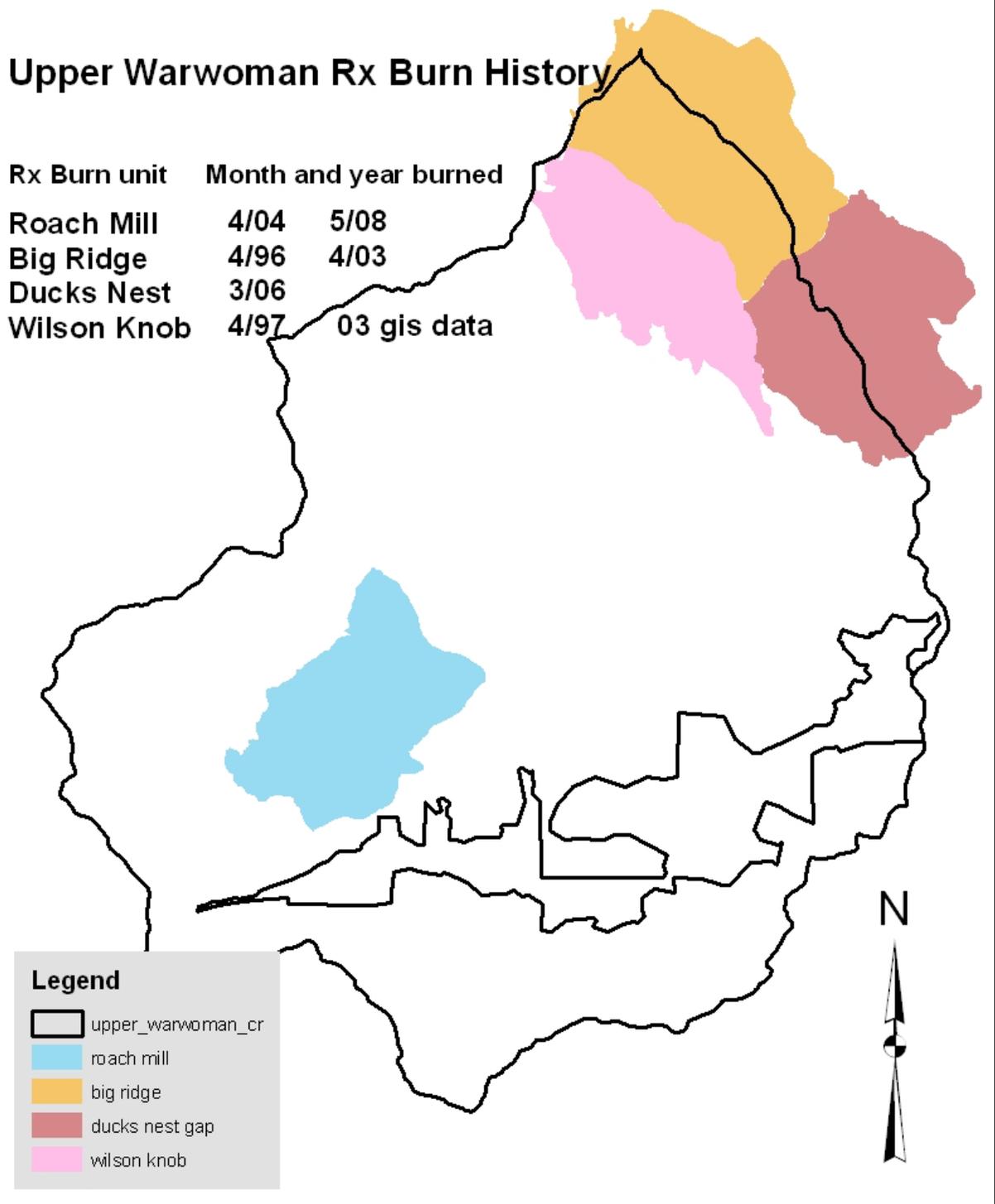
The current Fire Regime Condition Class for the Upper Warwomen Watershed area is fuel model 9 with a total fuel loading of <3 inch. dead and live 3.5 tons/acre, dead fuel load 0-3/4 inch. 2.9 tons/acre, live fuel load foliage 0.0 tons/acre, fuel bed depth of .2 feet (Aids in determining fuel models for estimating fire behavior. Hal E. Anderson 1982). Approximately 17% of the Upper Warwomen Watershed is FRCC 2 the remainder is FRCC 3. Only 3,968 acres of the assessment area has ever been prescribed burned. See attached map. Below is a graph of the type and amount of firelines used for controlled burning within the watershed.

Fire Lines Within Watershed Assessment Area



Upper Warwoman Rx Burn History

| Rx Burn unit | Month and year burned | |
|--------------|-----------------------|-------------|
| Roach Mill | 4/04 | 5/08 |
| Big Ridge | 4/96 | 4/03 |
| Ducks Nest | 3/06 | |
| Wilson Knob | 4/97 | 03 gis data |



This area is mostly residential homes that surround it. Most of the homes have defensible space from wildfire however some do not. Attached is a map of the Wildland Urban Interface.

| | |
|------------------------------|----------------------------|
| 23= Low density interface | 43= Low density no veg. |
| 24= Med density interface | 44= Medium density no veg. |
| 25= High density interface | 45= High density no veg. |
| 33= Low density intermix | 51= Uninhabited veg. |
| 35= High density intermix | 52= Very low density veg. |
| 41= Uninhabited no veg. | 90= Water |
| 42= Very low density no veg. | |
| | |

Data Transformation Notes: The following transformation classified WUI codes into a scale of four categories (3 being the highest valued WUI codes; 0 being the lowest valued WUI codes)

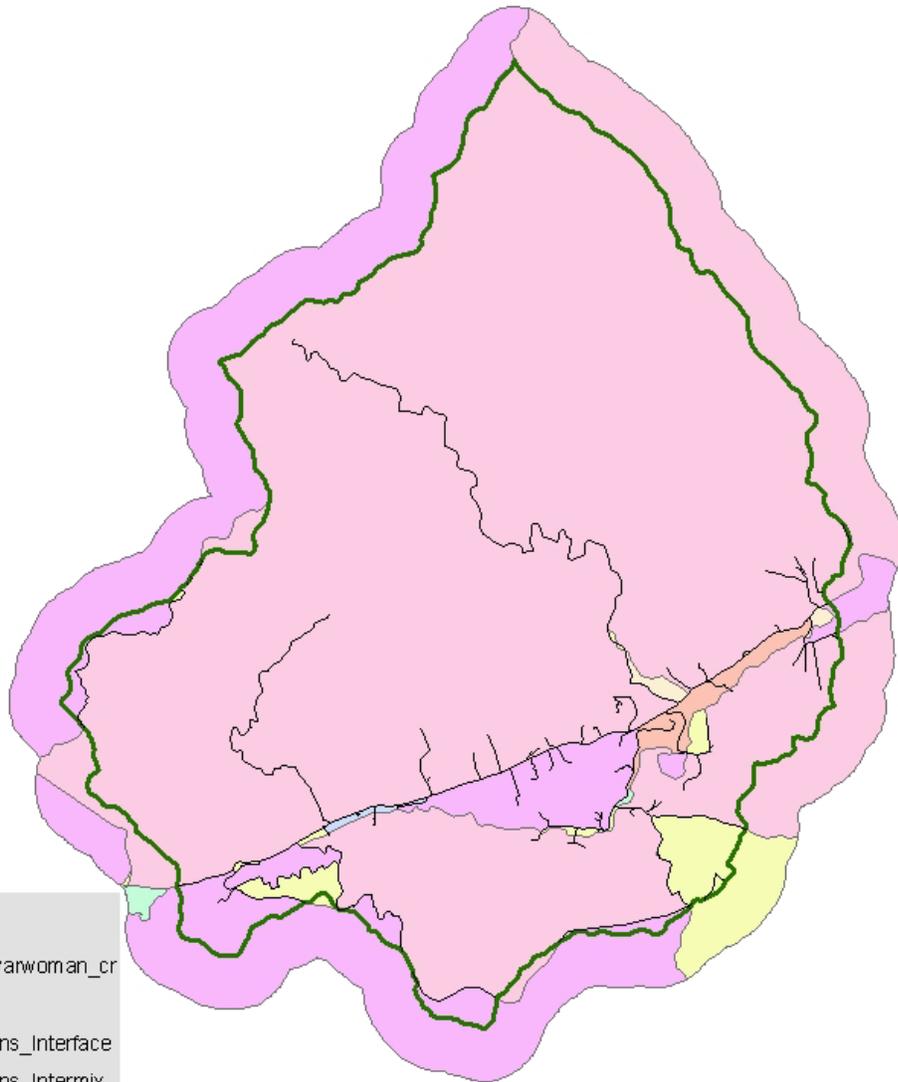
25, 35.....3 (highest value)

24, 34.....2

23, 33, 51, 52.....1

45, 43, 44, 41, 42, 90.....0 (lowest value)

Upper Warwoman Watershed Assessment Wildland Urban Interface Map 2,000' Buffer



Legend

-  upper_warwoman_cr
- WUIFAC00**
-  Low_Dens_Interface
-  Low_Dens_Intermix
-  Med_Dens_Interface
-  Med_Dens_Intermix
-  Uninhabited_NoVeg
-  Uninhabited_Veg
-  Wildland_Intermix

0 0.5 1 2 3 4 Miles

Description

| |
|--|
| Low density interface: Areas with housing density ≥ 6.177635 (housing units/km ²) and < 49.42108 (housing units/km ²), Vegetation $\leq 50\%$, within 2.414 km of an area with $\geq 75\%$ Vegetation. |
| Medium density interface: Areas with housing density ≥ 49.42108 and < 741.3162 , Vegetation $\leq 50\%$, within 2.414 km of an area with $\geq 75\%$ Vegetation. |
| High density interface: Areas with housing density ≥ 741.3162 , Vegetation $\leq 50\%$, within 2.414 km of an area with $\geq 75\%$ Vegetation. |
| Low density intermix: Areas with housing density ≥ 6.177635 and < 49.42108 , Vegetation $> 50\%$. |
| Medium density intermix: Areas with housing density ≥ 49.42108 and < 741.3162 , Vegetation $> 50\%$. |
| High density intermix: Areas with housing density ≥ 741.3162 , Vegetation $> 50\%$. |
| Very low density with vegetation: Areas with Housing density > 0 and < 6.177635 , Vegetation $> 50\%$. |
| Uninhabited with vegetation: Areas with housing density = 0, Vegetation $\geq 50\%$. |
| Uninhabited and no vegetation: Areas with housing density = 0, Vegetation $\leq 50\%$. |
| Very low density with no vegetation: Areas with housing density > 0 and < 6.177635 , Vegetation $\leq 50\%$. |

Currently approximately 3,968 acres in the assessment area are covered under NEPA for prescribed burning.

Fire Management Desired Future Conditions / Opportunities-

- Continue burning existing burn units on a 3-5 year rotation to maintain existing Table Mountain Pine communities, as well as upland pine/oak or oak/pine communities. These burns will also maintain critical early-successional habitat within the watershed, as well as moving these areas toward FRCC1.
- Establish a new prescribed burn unit in the vicinity of Tuckaluge Creek, using Tuckaluge Road and Hood’s Creek as “natural” control lines.
- Explore opportunities/needs to mechanically treat hazardous fuels along the boundaries of private lands in the Warwoman valley Wildland Urban Interface area.

Recreation Within the Upper Warwoman Creek Watershed (Bartram Trail):

| | |
|--------------------------------------|---|
| Desired Condition (from Forest Plan) | <p>9.H</p> <ul style="list-style-type: none"> • Provide a variety of motorized and non-motorized recreation opportunities. • Trail and access emphasis will depend on the condition of the area. • Some of the areas will provide opportunities for interpretation and |
|--------------------------------------|---|

| | |
|--|--|
| | <p>conservation education.</p> <p>9.A.3</p> <ul style="list-style-type: none"> • Recreation use emphasis is on dispersed activities such as hunting, fishing, or hiking but localized and limited development facilitates those uses. |
| Related Objectives to Move Toward Goal | <p>Objective 31.1 Recognize and respond to emerging recreation trends and uses within the Forest Recreation niche by periodic assessments.</p> <p>Goal 34 Trails do not adversely affect soil and water resources</p> <p>Objective 34.1 prioritize for immediate action those that are found to be adversely affecting soil and water resources.</p> |
| Existing Condition from Inventory | A portion (.5 mile) of the Bartram Trail is located on a fairly entrenched portion of Walnut Fork Road. This is a safety issue for hikers and adversely affects their recreation experience. |
| Opportunity | Eliminate potential for safety incidents and possibility of poor visitor experiences. |
| Possible Management Practices | <ul style="list-style-type: none"> • Close this area of the Bartram Trail • Relocate this portion of the trail so that it no longer follows Walnut Fork Road |
| Remarks | A volunteer group has laid out a potential route following Mike Ritter's trail design guidelines. They are fully prepared to construct this reroute. The Forest Service would need to provide NEPA work. |

Recreation Within the Upper Warwoman Creek Watershed (Walnut Fork Fisherman's Access):

| | |
|--|---|
| Desired Condition (from Forest Plan) | <p>9.H</p> <ul style="list-style-type: none"> • Provide a variety of motorized and non-motorized recreation opportunities. • Trail and access emphasis will depend on the condition of the area. • Some of the areas will provide opportunities for interpretation and conservation education. <p>9.A.3</p> <ul style="list-style-type: none"> • Recreation use emphasis is on dispersed activities such as hunting, fishing, or hiking but localized and limited development facilitates those uses. |
| Related Objectives to Move Toward Goal | <p>Objective 31.1 Recognize and respond to emerging recreation trends and uses within the Forest Recreation niche by periodic assessments.</p> <p>Goal 34 Trails do not adversely affect soil and water resources</p> <p>Objective 34.1 prioritize for immediate action those that are found to be adversely affecting soil and water resources.</p> |
| Existing Condition from Inventory | Fisherman are trespassing private land to access lower portions of Walnut Fork Creek. |

| | |
|-------------------------------|---|
| Opportunity | Create a “public” access to this fishing area |
| Possible Management Practices | <ul style="list-style-type: none"> • Create a fisherman’s access trail to the area from public roadway • Encourage fisherman to use upper Walnut Fork dispersed area to reduce and/or eliminate use of the lower section. |
| Remarks | This section of Walnut Fork is a prime fishing area and is very popular among anglers. Discouraging use will most likely warrant adversity. |

Recreation Within the Upper Warwoman Creek Watershed (Martin’s Creek Waterfall Access):

| | |
|--|---|
| Desired Condition (from Forest Plan) | <p>9.H</p> <ul style="list-style-type: none"> • Provide a variety of motorized and non-motorized recreation opportunities. • Trail and access emphasis will depend on the condition of the area. • Some of the areas will provide opportunities for interpretation and conservation education. <p>9.A.3</p> <ul style="list-style-type: none"> • Recreation use emphasis is on dispersed activities such as hunting, fishing, or hiking but localized and limited development facilitates those uses. |
| Related Objectives to Move Toward Goal | <p>Objective 31.1 Recognize and respond to emerging recreation trends and uses within the Forest Recreation niche by periodic assessments.</p> <p>Goal 34 Trails do not adversely affect soil and water resources</p> <p>Objective 34.1 prioritize for immediate action those that are found to be adversely affecting soil and water resources.</p> |
| Existing Condition from Inventory | The area is one that is bombarded with use leading to the Martin’s Creek Waterfall. User created trails follow the fall line and can potentially cause damage to soil and water resources. |
| Opportunity | Reduce potential for adverse affects on soil and water resources by allowing better visitor access. |
| Possible Management Practices | <ul style="list-style-type: none"> • Remove information about the falls from visitor’s guide. • Maintain user created trail. • Design a trail that Is in compliance with Forest Service trail design standards • Supply interpretive messages at the falls. |
| Remarks | Martin’s Creek falls is quite spectacular and is listed in the district’s waterfall guide that is distributed to visitors. Better access to this area could very well increase use of neighboring recreation areas such as Warwoman Dell Picnic Area. |

Recreation Within the Upper Warwoman Creek Watershed (Vista Creation):

| | |
|--------------------------------------|---|
| Desired Condition (from Forest Plan) | <p>9.H</p> <ul style="list-style-type: none"> • Provide a variety of motorized and non-motorized recreation opportunities. |
|--------------------------------------|---|

| | |
|--|--|
| | <ul style="list-style-type: none"> Trail and access emphasis will depend on the condition of the area. Some of the areas will provide opportunities for interpretation and conservation education. <p>9.A.3</p> <ul style="list-style-type: none"> Recreation use emphasis is on dispersed activities such as hunting, fishing, or hiking but localized and limited development facilitates those uses. |
| Related Objectives to Move Toward Goal | <p>Objective 31.1 Recognize and respond to emerging recreation trends and uses within the Forest Recreation niche by periodic assessments.</p> <p>Goal 34 Trails do not adversely affect soil and water resources</p> <p>Objective 34.1 prioritize for immediate action those that are found to be adversely affecting soil and water resources.</p> |
| Existing Condition from Inventory | Driving through the Tuckaluge, Dan Gap, and Walnut Fork loop is much like driving in a “green tunnel”. |
| Opportunity | Create a visually appealing atmosphere for those driving for pleasure to target those who want an easy 4-wheel drive experience. |
| Possible Management Practices | <ul style="list-style-type: none"> No Action. Advertise the road as part of a scenic Warwoman package that would include waterfalls, historic Warwoman Dell and the Tuckaluge, Dan Gap, Walnut Fork scenic drive loop for high clearance vehicles. This would involve clearing specific portions of the roadway in an attempt to frame scenic views. |
| Remarks | Such areas will require flagging and coordination with Timber shop. The Forest Service would need to provide NEPA work. |

Lands and Special Uses Information within the Upper Warwoman Watershed:

The majority of the Upper Warwoman watershed is comprised of National Forest System (NFS) lands of the Chattahoochee-Oconee National Forests that are administered by the Chattooga River Ranger District (refer to the Lands map for the watershed). The only private lands within this watershed are located generally within the Warwoman Creek valley on the north and south sides of Warwoman Road (County Road #219), which transects the lower one-third of the watershed from west to east. All of the property boundaries (landlines) within this watershed have been recently maintained (2010 and 2011).

The private lands within the watershed primarily consist of residential uses, with small residential tracts accessed along Warwoman Road at regular intervals. Many of these residences have small garden plots and small pastures for various livestock including cattle, horses, and goats. There is also a private equestrian campground. Private land uses, including the close proximity of the garden plots, livestock impacts, and private driveways and roads, have previously been noted as causing adverse effects to Warwoman Creek and tributaries from sediment loading. Garden plots are typically located in the floodplain along the streams and in many cases are plowed as close to the stream banks as possible. Pastures are also located along the streams, and in many locations livestock are allowed to roam freely in the streams and cross at random locations. Some pastures show evidence of overgrazing which also leads to bare soil conditions and erosion.

No significant recent changes to the private lands within this watershed have been noted, and no probable future changes are expected to occur that might impact the NFS lands within the watershed. Much of the private lands along Warwoman Road have been owned and managed by the same families for many years, and therefore the current residential and agricultural uses are not expected to change.

Per the current Land Ownership Adjustment Plan (LOAP), there is one private tract within the watershed that is proposed for acquisition by exchange or purchase (identified as #A-24 on the Lands map). There are two NFS tracts within the watershed that are considered available for divestment by land exchange (identified as #D-14 and #D-15 on the Lands map). There are no recently acquired lands within the watershed in need of inventory.

The watershed contains a variety of special uses in the form of permits for access and water, outfitter/guide permits, and occasional recreation event permits. There are currently two access permits, which involve landowners crossing NFS lands to access private lands. There are currently twelve water use permits, which typically involve landowners installing a reservoir and waterline system to acquire water from streams or springs on NFS land.

The current outfitter/guide permits consist of seven that are permitted to use all, or specific sections of, the Bartram Trail for backpacking, hiking and camping. The Bartram Trail coincides with much of the western and southern boundaries of the watershed. Two other outfitter/guides are permitted for fly fishing along Hoods Creek, Tuckaluge Creek, and Walnut Fork, all of which are totally within the watershed.

**LANDS AND SPECIAL USES
WARWOMAN WATERSHED ASSESSMENT**

Chattooga River Ranger District
Chattahoochee-Oconee National Forests
Rabun County, GA

Scale: 1 inch = 1 mile



LEGEND

Land Ownership Adjustment Plan
#A-24 Tracts to Acquire
#D-14 Tracts to Divest

Special Use Permits
(A) Access
(W) Water

BEB 3/24/2011



Although the Forest Service uses the most current GIS data available, data and product accuracy may vary.



Lands and Special Uses Desired Future Conditions / Opportunities-

Desired Future Condition

LANDS - Per the Forest Plan, the primary goal of lands management within the Upper Warwoman watershed, as with the rest of the Chattahoochee-Oconee National Forests, is to consolidate National Forest System (NFS) lands where possible to improve management (Plan, p. 2-68). This is typically accomplished by maintaining a proactive lands program, whereby key tracts of private lands and NFS lands are identified for exchange and/or purchase that would meet management needs with an overall goal of consolidation (Goal 81, p. 2-68).

SPECIAL USES – Per the Forest Plan, the primary goals applicable to special uses within the Upper Warwoman watershed are to manage these uses consistent with protection of natural resources values, public health and safety, and cost effectiveness (Goal 55, p. 2-49), and to minimize the NFS land area affected by special use permits and their conflicts with other National Forest values (Goal 56, p. 2-49). Administration of the existing special use permits in the watershed (refer to Lands map) is an ongoing process.

Opportunities

LANDS - Per the Current Conditions assessment for this watershed, opportunities for land exchange and/or purchases are very limited. The majority of this watershed is already comprised of NFS lands, with most of the private lands concentrated along the Warwoman Road corridor. The majority of these private lands are used for residential purposes, therefore there are minimal opportunities for acquiring private lands that adjoin NFS lands that are not already in residential use or developed.

Per the Current Conditions assessment for this watershed, there is only one private tract within the watershed that is proposed for acquisition by exchange or purchase (identified as #A-24 on the Lands map per the District's Land Ownership Adjustment Plan). Acquisition of this tract would eliminate approximately 0.4 mile of landline and 4 property corners.

There are only two NFS tracts within the watershed that are considered available for divestment by land exchange (identified as #D-14 and #D-15 on the Lands map). Both of these tracts are impacted by the influence of adjacent private lands and not conducive to NFS lands management. Divestment of these tracts would eliminate approximately 3.1 miles of landline and 25 property corners.

Per recent (2010 and 2011) landline maintenance along the Warwoman Road corridor, trespass situations on NFS lands within the watershed are present and will be resolved. Trespass situations in the future will be resolved as they are discovered.

SPECIAL USES – The opportunities for additional special use permits in this watershed in the future are limited due to the land ownership and access patterns already in place. Specifically regarding water uses, the Forest policy (Standard FW-184, p. 2-50) is to not issue any additional water use permits, and to phase out existing water uses when the opportunity arises (such as when a permit holder sells the private

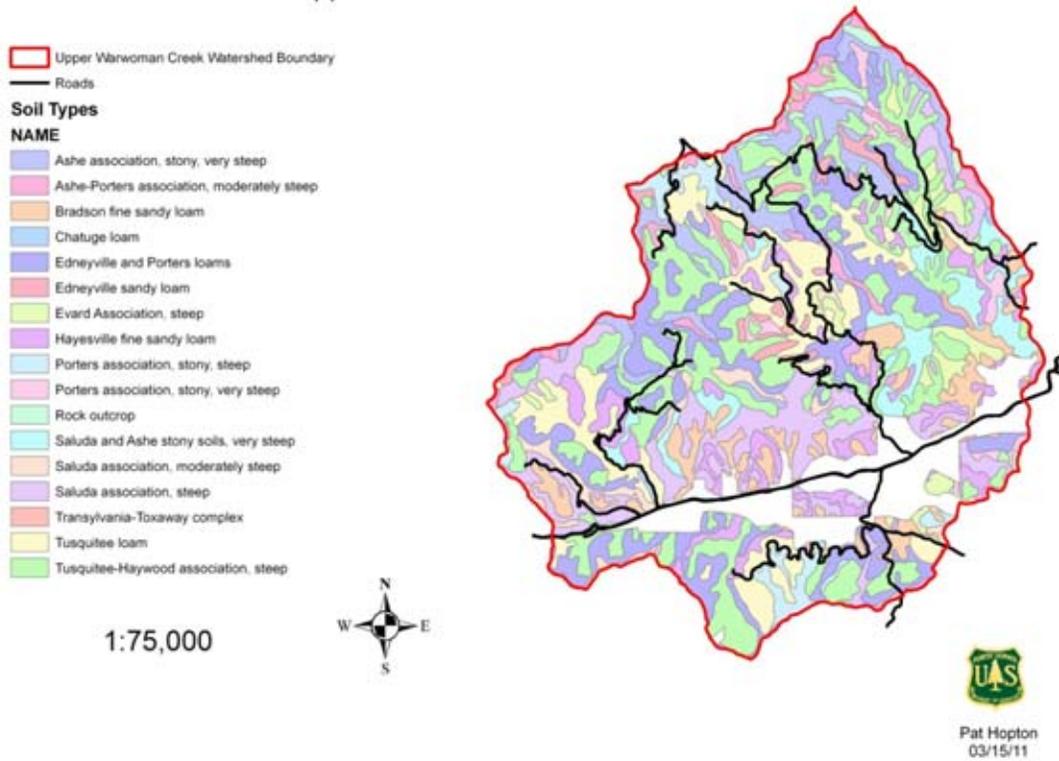
land benefitting from the use). Other proposals for new permits, such as for access, recreation events, and noncommercial group uses, would be screened and processed per the existing special uses process.

Per the Current Conditions assessment for this watershed, there are currently two access permits and twelve water use permits in the watershed, all of which are concentrated along the private/NFS boundaries along the Warwoman Road corridor. There are also seven existing outfitter/guide permits that use trails and NFS lands within the watershed. These existing permits will be administered as required, including regular inspections and monitoring of use.

Soil Types on National Forest Lands Within the Upper Warwoman Creek Watershed -

| Soil Type Name | Number of Polygons | Acres |
|--|---------------------------|---------------|
| Ashe-Porters association, moderately steep | 24 | 529 |
| Ashe Association, stony, very steep | 20 | 1552 |
| Bradson fine sandy loam | 54 | 1301 |
| Chatuge loam | 2 | 15 |
| Edneyville and Porters loam | 30 | 2594 |
| Edneyville sandy loam | 23 | 379 |
| Evard association, steep | 16 | 523 |
| Hayesville fine sandy loam | 40 | 1481 |
| Porters association, stony, steep | 13 | 560 |
| Porters association, stony, very steep | 9 | 254 |
| Rock outcrop | 9 | 106 |
| Saluda and Ashe stony soils, very steep | 9 | 681 |
| Saluda association, moderately steep | 12 | 433 |
| Transylvania-Toxaway complex | 5 | 37 |
| Tusquitee loam | 16 | 1637 |
| Tusquitee-Hayward association, steep | 53 | 3077 |
| Totals | 360 | 16,904 |

Soil Types on National Forest Lands Within the Upper Warwoman Creek Watershed



Soils Desired Future Conditions / Opportunities -

There are 17 different soil types on National Forest lands within the Upper Warwoman Creek watershed.

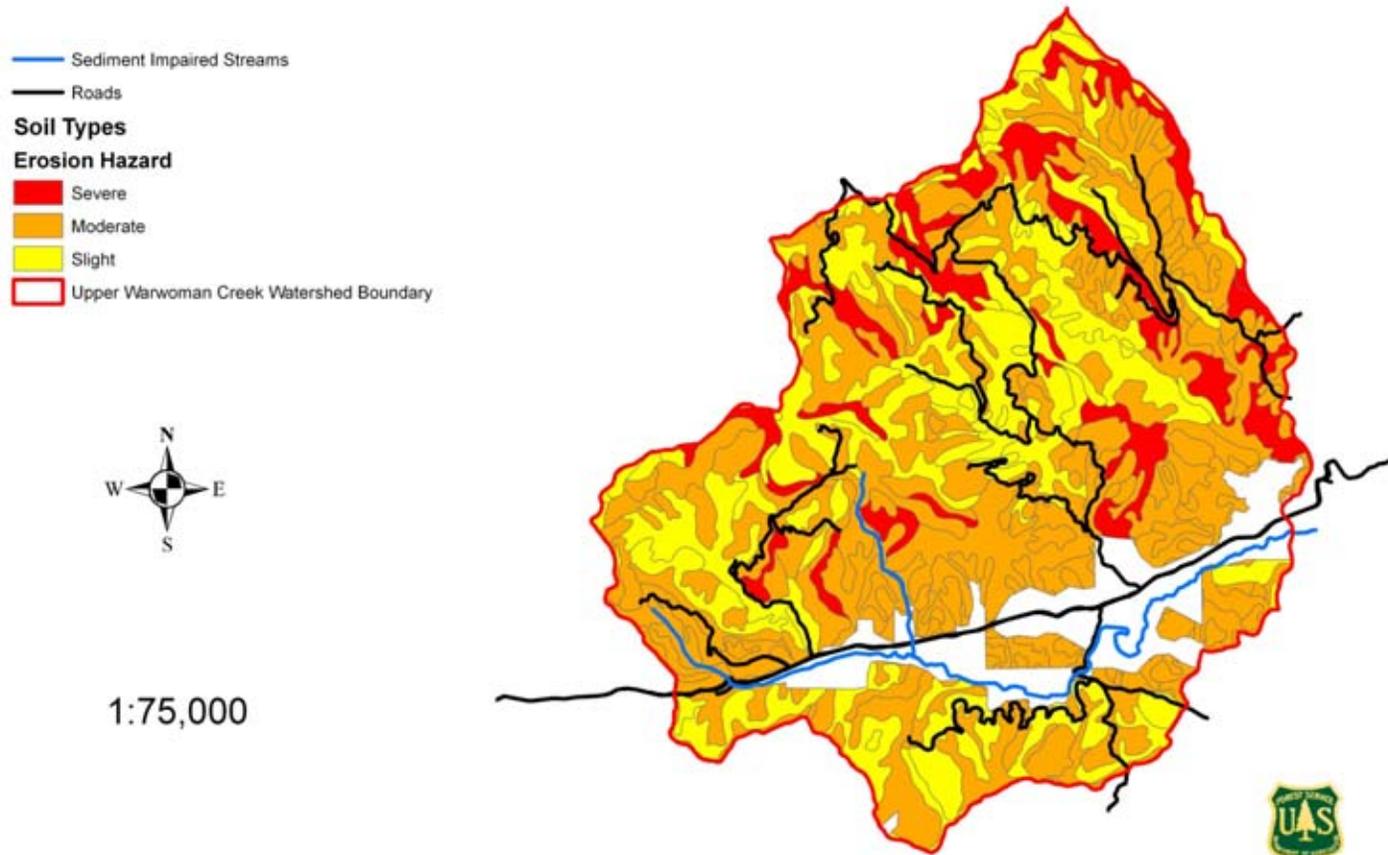
Of these, 7 soil types (ACE, Ch, EdE, EdE, Rx, Tr, and TUE) have a SLIGHT soil erosion hazard rating for a total of 4,184 acres. There are 8 soil types (BrE, EVF, HaE, PCF, PCG, SAF, SAE, and TVF) that have a MODERATE soil erosion hazard rating for a total of 7,464 acres. There are 2 soil types (ADG and SBG) that have a SEVERE soil erosion hazard rating for a total of 1,570 acres.

| Soil Type | Erosion Hazard | Acres |
|--|----------------|-------|
| Ashe-Porters association, moderately steep ACE | Slight | 357 |
| Ashe Association, stony, very steep ADG | Severe | 906 |
| Bradson fine sandy loam BrE | Moderate | 825 |

| | | | |
|---|-----|----------|------|
| Chatuge loam | Ch | Slight | 15 |
| Edneyville and Porters loam | EdE | Slight | 1963 |
| Edneyville sandy loam | EdE | Slight | 282 |
| Evard association, steep | EVF | Moderate | 406 |
| Hayesville fine sandy loam | HaE | Moderate | 877 |
| Porters association, stony, steep | PCF | Moderate | 418 |
| Porters association, stony, very steep | PCG | Moderate | 231 |
| Rock outcrop | Rx | Slight | 83 |
| Saluda and Ashe stony soils, very steep | SBG | Severe | 664 |
| Saluda association, steep | SAF | Moderate | 1443 |
| Saluda association, moderately steep | SAE | Moderate | 320 |
| Transylvania-Toxaway complex | Tr | Slight | 37 |
| Tusquitee loam | TuE | Slight | 1447 |
| Tusquitee-Hayward association, steep | TVF | Moderate | 2944 |

There are two sediment-impaired (Georgia EPD) streams with the Upper Warwoman Creek watershed. These streams are Warwoman Creek (Finney Creek to Sarah's Creek) and Roach Mill Creek (Headwaters to Warwoman Creek).

Erosion Hazard of Soil Types Within the Upper Warwoman Creek Watershed



Pat Hopton
05/11/11

There are opportunities to identify and mitigate existing locations of soil concern. There are also opportunities when planning new management activities to prescribe them in such a way as to minimize soil loss and the impacts to the sediment-impaired streams. These opportunities include:

Prompt revegetation of exposed soils that result from planned management activities should be prescribed.

Guidelines in [Georgia Best Management Practices for Forestry](#) should be followed during any soil-disturbing activity.

Planned management activities that may result in soil disturbance should avoid areas of SEVERE erosion hazard rating and areas in proximity to the sediment-impaired streams if possible.

Existing roads, trails, firelines, etc that are within MODERATE or SEVERE erosion hazard rating areas or in proximity to the sediment-impaired streams and are identified as having soil loss should be mitigated. Use engineering controls, such as relocation, revegetation, modification of current design, or closure to mitigate the effects.

Avoid high-intensity prescribe fire, or any fire which removes more than 50% of the duff layer of the forest floor, in areas of steep slopes (>45%), MODERATE or SEVERE erosion hazard rating areas, or in areas in proximity to the sediment-impaired streams.

The Chattahoochee-Oconee Land and Resource Management Plan (LRMP) provides goals and objectives for meeting these opportunities, specifically Goal 24 (LRMP, page 2-20).

Current Condition of Roads Within the Upper Warwoman Creek Watershed -

- Miles of Road in Watershed 47.23
- Miles of Forest Service Road 29.64
- Miles of ML-1 Roads 0
- Miles of ML-2 Roads 13.76
- Miles of ML -3 Roads 15.88

ML-2 Roads

- #152B Wild Hog Ridge 1.10 miles
- #152C Rock Mtn. Crk. 0.75 miles
- #153A Tuckaluge Spur 2.12 miles
- #153B Milksick Cove 0.85 miles
- #155A Upper Walnut Fork 0.83 miles
- #155B Hood Creek 1.09 miles
- #155D Katy Place 0.75 miles
- #155F Windy Gap 1.13 miles

- #155G Beck Mtn. 0.67 miles
- #159 Pollywah Knob 2.97 miles
- #406 Becky Br. 1.50 miles

ML-3 Roads

- #152 Finney Creek 2.00 miles
- #153 Tuckaluge 3.40 miles
- #155 Walnut Fork 7.98 miles
- #155E Dan Gap 2.50 Miles

- Only 1 road has had a condition survey completed, #155 Walnut Fork Road which is a ML-3 road.
- Some of the other roads along with Walnut Fork were given an unofficial condition survey to get an idea of what was there. This was approximately 50% of the roads by mileage. There are a total of 98 culverts on these roads, of which 46 did not meet BMP's. (46%)
- Of these culverts that need replacing, most are 18" culverts that are located in springs and other small live streams and would require at least a 24" culvert installed.
- The following roads were checked out; #152 Finney Creek, #153 Tuckaluge, #155 Walnut Fork, #155E Dan Gap, #406 Becky Br.
- The roads that were surveyed were roads that are open for the longest period during the year and would be considered the main roads in the area. The other roads are shorter roads in length, some are open only during hunts and some are not open at all. There are probably not as many culverts on these roads per mile since some run the ridges and for wildlife opening maintenance but the sampling of the culverts would suggest that 46% of the culverts would need replacing.
- Most of the roads are holding up well under the traffic. The worst ones being #406 Becky Br. And #153 Tuckaluge due primarily to steep grades.

Roads Desired Future Conditions / Opportunities -

- All roads need a condition survey completed as budget allows. (Roads are picked randomly by the WO to have condition surveys done.)
- During the condition survey, culverts should be identified that do not meet BMP's and need replacing.
- Replace all culverts that do not meet Bumps' as budget allows.
- #406 Becky Br. Road- reshapes drainage dips and steep hill or possibly relocate around steep hill.
- #153 Tuckaluge- possibly pave the 0.50 mile section of road that is steep and parallels the creek or check on possibility of relocating around this section.
- Maintain all roads to standard as budget allows for gravel.

Appendix A – List of Preparers

| <u>Preparer</u> | <u>Responsible Section</u> |
|------------------------|--|
| Blaine Boydston | Lands / Special Uses |
| Mike Brod | I.D of 5 th level HUC; Priority of 6 th level HUC; Management Direction for Watershed; Ecological Unit Description; Rare Communities; Rare Species; Management Indicator Species; Successional Stage Habitats; Fisheries and Non- native Invasive Species |
| Mitchell Hardy | Roads |
| Pat Hopton | Forest Health / Soils |
| Janice Miller | Recreation |
| Dwight Snow | Fire Management |
| John Westbrook | Forest Communities / Veg. Management Objectives within Watershed |