

## **Executive Summary**

The 2012 Planning Rule that identified three phases for national forest planning: assessment, plan development, and monitoring and evaluation. This Assessment Report is prepared to fulfill the requirements of the assessment phase for revising the Nantahala and Pisgah National Forest Land Management Plan. The 1987 Plan referred to throughout this report is the land management plan that has been in effect since 1987 and that has been periodically updated through amendments. This revision process will result in replacing the 1987 Plan with a Revised Plan.

Within the volume of information amassed for the Assessment Report are findings that have the most relevance to the design and development of a revised Land Management Plan for the Nantahala and Pisgah National Forests. Some of the conditions and trends of forest resources are more subject to the impacts of forest management while others, while interesting or noteworthy, are less likely to be affected by management of the national forests. Some findings may be especially interesting because they are unexpected or go against common perceptions or “conventional wisdom.” Others may be of note because they provide a more comprehensive picture of the complexities of national forest management as set out through law, regulations, and policy.

The Nantahala and Pisgah Plan Revision Interdisciplinary Team and members of the Forest Leadership Team have compiled the following as a summary of what they consider the most important take-away messages from the information amassed for the Assessment Report. The Executive Summary is organized around the 15 assessment items set out in the 2012 Planning Rule, beginning with a few findings that cross the boundaries of the individual assessment items.

### **Assessment-Wide**

1. Very high public use, complex and highly diverse ecosystems, and a land base spread over 18 counties and intermingled with private property interact to form a challenging environment for managing the Nantahala and Pisgah NFs.
2. While only 27% of the forest land in the 18-county plan area is National Forest System (NFS) land, that 27% provides the greatest amount of forested and other natural environments open to the public, including gamelands open for hunting and fishing, and remote wilderness opportunities. Nantahala and Pisgah NFs contain a proportionally greater amount of high-elevation forests and southern Appalachian balds, rare plant and animal communities, and headwater streams than the area as a whole.
3. A downward trend in personnel and funding since 2003 is impacting the ability to expand opportunities for infrastructure or resource management. Instead, reducing the infrastructure (roads, trails, buildings and recreation sites) and implementing fewer, more

integrated resource management projects is a likely future scenario. Partnerships with others interested in management of the national forests are increasingly important in successfully moving forward with projects.

### **Land status and ownership, use, and access patterns**

1. Over 17,000 acres have been added to Nantahala and Pisgah NFs in the past 20 years, making the total acres approximately 1,044,393.
2. Currently, 58% of the Nantahala and Pisgah NF boundary lines are marked. Unmarked boundaries are a factor contributing to frequent title claims, trespass and encroachment issues.
3. Management Area boundaries from the 1987 Plan are based largely on accessibility, visibility, terrain, historic use, and special features; they did not necessarily coincide with resource management needs.
4. While there are many large blocks of contiguous NFS land contained within the boundaries of Nantahala and Pisgah NFs, there are also many isolated parcels with limited or no access for either management or public use. Many parcels are interspersed with privately owned land, and there are many private inholdings within the NFS boundaries sometimes creating challenges for both the private landowners and the U.S. Forest Service in securing the appropriate form of legal access for both parties.

### **Terrestrial ecosystems, aquatic ecosystems, and watersheds**

1. Eleven ecozones and 20 rare plant and animal habitats are identified for the two national forests. Compared with the surrounding lands, NFS lands have a greater proportion of the high elevation ecozones and a greater proportion of all rare habitats except for floodplain pools.
2. Of the 20 rare plant and animal habitats present on the Nantahala and Pisgah NFs, the two national forests provide the most significant representation in western North Carolina for upland pools, Carolina hemlock bluffs, high elevation rock outcrops, and grassy balds.
3. Of the nine federally listed plants with recent or current occurrences on the Nantahala and Pisgah NFs, one - small-whorled pogonia - is believed to be extirpated, and another - Roan Mountain bluet - is in decline. The remaining seven species are generally stable or fluctuate in population sizes depending on disturbance events such as fire.
4. The most threatened rare habitats are Southern Appalachian bogs; intrusion from black alder and silky dogwood are the primary threats.
5. Restoration opportunities abound but the degree of complexity varies widely across management areas and ecozones.

- Historical land-use greatly impacted the current vegetation composition and structure found on the Nantahala and Pisgah NFs. For example, northern hardwoods occupy some land historically occupied by red spruce.
  - In many ecozones, current understory tree species don't resemble the overstory and neither represents "historical" forests. For example, a mesic oak overstory may have a red maple understory; whereas we would expect to find oak regeneration in the understory.
  - In many cases forests within the 11 ecozones have greater canopy cover and shrub density than forests prior to 20th century logging and fire suppression. The pine-oak heath ecozone is one notable example.
6. Young forest is underrepresented within the majority of ecozones on both NFS and other lands. Over the last fifteen years on the national forests the amount of mature and old forest has increased, while the amount of very young forest – also known as early successional habitat and calculated based on 0-10 year old regenerated stands - has decreased from 3.0% to 0.6% of the national forests, from 31,026 acres to 6,244 acres.
  7. On non-NFS lands in the 18-county area, the amount of 0-10 year old forest is approximately 2.8% or 106,405 acres out of 3,750,408 total non-NFS acres.
  8. The approximate amount of forest over 100 years in age on NFS lands in the 18-county area is 166,000 acres, or 16% of the Nantahala and Pisgah NFs. On non-NFS land in the 18-county area there is approximately 252,500 acres of forest over 100 years of age, or 6.7% of non-NFS land.
  9. Within the past five to seven years, prescribed burning has increased across many of the fire adapted ecozones however is not occurring on a large enough scale across the two forests to achieve overall desired composition and structure goals.
  10. Some wildlife species that depend on young forest and other open areas for all or part of their life history have experienced population declines over the last 20 years. Some migratory song birds and game species fall into this category. Some other species that depend on older forest conditions have remained stable or increased, such as a different suite of migratory songbirds and some amphibians. Natural population variability, especially in birds, is high.
  11. Highlights among the wildlife assessment information include:
    - Several proposed species of conservation concern (salamanders) are associated with cove forests.
    - Several bat species associated with oak and mixed oak forests are susceptible to white-nose syndrome, and are declining. These species have been proposed as species of conservation concern. Some are being considered for federal listing as threatened or endangered.
    - Populations of some bird species associated with northern hardwood forests are stable to slightly increasing, while some bird species associated with openings in these forests are decreasing.

- Populations of Carolina northern flying squirrel - federally listed as Endangered - have remained relatively stable, while the known range of the spruce fir moss spider – also Endangered - has increased over the last several years.
  - Populations of some bird species associated with spruce fir forests are experiencing significant decreases.
12. Wildlife species inventory during the last 20 years highlights several nongame species groups of interest, including birds, bats, salamanders, and reptiles, as contributors to ecosystem diversity and stability.
  13. The movement of elk onto the Nantahala and Pisgah NFs over the last several years requires attention due to their dynamic role in the ecosystem and the potential social and economic implications (such as sightseeing opportunities).
  14. Approximately 3,850 acres of permanent grass/forb habitat is established across the Nantahala and Pisgah NFs; 0.4% of the NFS land. One quarter of this habitat is maintained each year, in cooperation with the NC Wildlife Resources Commission.
  15. While coldwater streams are the most prevalent aquatic ecosystems on the Nantahala and Pisgah NFs, the greatest diversity of aquatic organisms is found in cool- and warmwater streams.
    - Aquatic community health is generally slightly better on the Nantahala and Pisgah NFs than on surrounding lands.
    - Across the 18-county planning area, aquatic health has remained stable or increased in the last several years.
  16. Across its native range, brook trout distribution has decreased significantly from its historic distribution due to a number of threats. However, recent restoration efforts have been successful in increasing the amount of coldwater habitat occupied by brook trout on the two national forests.
    - The range of brook trout on the Nantahala and Pisgah NFs has remained stable during the last planning period. Documented range loss has been balanced (increased) by restoration efforts over the last 5 to 7 years.
    - The presence of rainbow and brown trout is the largest contributing factor to brook trout range loss on the Nantahala and Pisgah NFs.
  17. Brook trout populations have remained relatively stable over the last 20 years. Natural population variability, especially in trout, is high. Large scale stochastic events such as droughts and floods are the primary factors influencing local trout population dynamics.

## **Ecosystem Health Stressors and Disturbance**

1. There are a variety of diseases, pests, and plants currently impacting or potentially threatening forests' resources, including several that are non-native invasives; risks of invasion vary by ecozone.

- Among the stressors currently impacting the two national forests include hemlock woolly adelgids, chestnut blight, white nose syndrome, Japanese stiltgrass, Oriental bittersweet, and oak decline.
  - Two potential threats include gypsy moth and sudden oak death.
2. Southern pine beetle is a native pest that stresses pine forests through periodic population surges.
  3. Feral swine have caused significant damage to plant and animal habitat on some parts of the Nantahala and Pisgah NFs.
  4. Impacts from a changing climate may stress ecosystems through increasing storm events, longer periods of drought with associated increases in fire frequency and severity alternating with overly wet periods, and facilitating the spread of non-native invasive species.

### **Species at Risk**

1. Twelve plants are federally listed as endangered or threatened, including one lichen and 11 herbaceous species. Bogs, balds, rock outcrops, and high elevation communities are some of the most important habitats for rare plant species. Habitat for at least two of these species is improved by periodic fire.
2. Ten federally-endangered or threatened wildlife species are known to occur on or immediately adjacent to the Nantahala and Pisgah NFs. These include four small mammals, two terrestrial invertebrates, three freshwater mussels, and one fish.
3. The list of potential species of conservation concern currently contains approximately 67 animal species and 280 plant species. Cove ecozones, high elevation ecozones, and cool and warmwater streams are home to many of the SCC animals. Cove forests and bogs are among the most important habitats for SCC plants.

### **Air, soil, and water and geologic resources**

1. Linville Gorge Wilderness, Shining Rock Wilderness, and Joyce Kilmer-Slickrock Wilderness are federally mandated Class I areas and are given special protection from new emissions of air pollution in the 1977 Clean Air Act. In regard to air quality for the three Class I areas, air quality has improved over time with decreasing sulfate fine particulates (these are the primary cause of the hazy conditions), decreasing ozone exposures, and decreasing wet deposition of both sulfates and nitrates. However, the current and historic acid deposition remains a concern.
2. The National Ambient Air Quality Standards (NAAQS) are used to identify non-attainment areas and air quality maintenance areas. No such areas currently exist within the Nantahala or Pisgah NFs. Air quality near the Nantahala and Pisgah NFs is currently meeting the NAAQS for ozone and fine particulates. This means that current sources of

pollution are not causing air quality to exceed the thresholds to protect human health and welfare. However, occasionally emissions from prescribed fires have released fine particulate matter resulting in emissions that temporarily exceeded these thresholds.

3. Across the 18-county plan area, data from the National Emissions Inventory show that concentrations of sulfur dioxides, particulate matter, and nitrogen oxides decreased between 2002 and 2008. Emissions are expected to continue to decline.
4. While ozone and acid deposition has declined over time, the impact of past acid deposition lingers in soil, reducing the availability of certain essential nutrients such as calcium, and may impair plant growth.
5. In general across the planning area, physical attributes occur that may put watersheds at risk of not functioning at a potential natural condition. According to the Forest Service's watershed condition framework, almost all watersheds in the plan area are rated as "functioning at risk." For the Nantahala and Pisgah NFs, indicators of risk for proper function include: the lack of large woody debris in streams, the absence of native brook trout from their historic range, historic mercury deposition from power plants, and shortfalls in maintenance of culverts at stream crossing points. Trends are improving in most watersheds, but the risk is high that a catalyst of change, such as a large storm event, could result in impaired conditions.
6. A review of the soil data and interpretations from the Natural Resources Conservation Service Web Soil Survey shows that a majority of the planning area has soils sensitive to erosion should the surface organic layer be removed.
7. Monitoring indicates very little long-term soil disturbance from vegetation management activities. If soil disturbance is minimized, timber harvesting and other vegetative management practices seem to have little effect on slope stability. However roads and trails are soil disturbance factors.
8. From the information collected and analyzed over the last five years it is evident that the Nantahala and Pisgah NFs are implementing Best Management Practices during timber sales that are effective in protecting riparian areas, streams and water quality, and the trend is improving.
9. Geologic hazards on the Forest include landslides, floods, acid-producing rocks, waterfall hazards, ultramafic rock with asbestos minerals, radon, and abandoned mines. These can present challenges and hazards to forest management and risks to public safety.
10. Hurricanes Frances and Ivan (2004) produced hundreds of landslides on Nantahala and Pisgah NFs, damaged roads and trails, impacted streams and riparian areas, and required millions of dollars for storm recovery. The landslides included natural landslides and land management-related landslides. Road fill slope failure was identified as a cause for many slides.

## **Carbon Stocks**

1. Estimated above-ground carbon accumulation has grown steadily over several decades. The trend has not changed with changes in timber harvest volumes. Current below ground and soil carbon amounts are established but trends have not been estimated over time.
2. Harvested timber and biomass converted into solid wood products, biofuels, or other fossil fuel substitutes may add to the stocks of sequestered carbon which help to mitigate climate change.
3. Most opportunities for increased sequestration of greenhouse gases on forests and grasslands are on private lands.
4. Management practices, such as thinning, revegetation and prescribed fire, designed to maintain or restore forests may reduce total carbon stocks over the short- or mid-term. However, in the long-term not taking action to improve ecological health could result in lower carbon stocks and increased carbon emissions as the result of forest decline, severe wildfire, and losses from storms, insects, and disease.

## **Social, Cultural and Economic Conditions**

1. The top sectors of the economy in the 18-county area as far employment numbers are: 1) government (including school systems), 2) health care, 3) retail, 4) manufacturing, and 5) accommodation and food service.
2. As a whole, the population of the 18-county planning area is somewhat older, less racially diverse, has a lower per capita income than the nation as a whole.
3. The percentage of homes that are second homes is higher in the 18-county area than in the state or nation as a whole, which in part reflects the area's history as a popular location for retirees.
4. The cultural matrix of the planning area has origins in Cherokee, Scots-Irish, and African traditions. Religion, music, crafts, and gathering forest products are a part of the cultural fabric.
5. Social, cultural, and economic factors have changed dramatically since the 1960s. Larger population centers have grown and weathered economic downturns better than the more rural communities. New residents bring changes in values, lifestyles, and opinions regarding conservation of natural resources. For example, from 2000 to 2010 the U.S. Census Bureau reports an increase in the Hispanic/Latino population from 2.7% to 4.9% of the population.
6. The results indicate that annually there are approximately 1,890 full and part-time jobs and \$63.5 million in labor income attributable to annual Nantahala and Pisgah National Forest activities. This is 0.41 percent of the employment and 0.38 percent of the labor

income of the 18-county analysis area economy. The products, uses and services of the two forests have their largest effect in three sectors: the Accommodation and Food Services, Government, and Retail sectors.

7. The estimated annual contribution (jobs and labor income) of Forest Service (FS) activities on the Nantahala and Pisgah National Forests by FS program, rather than by sector of the economy. The largest contribution in terms of both employment (1,086 part and full-time jobs) and labor income (\$26.4 million/year) is non-local recreational visitation which includes both the impacts of visitors expenditures in the area as well as all directly and indirectly affected employees spending their income in the local economy. FS expenditures (both labor and non-labor) account for 371 jobs and \$22.1 million in labor income. Non-local Wildlife related recreation accounts for 225 jobs and \$5.8 million in labor income. The timber program contributes 152 jobs and \$6.9 million in labor income. Secure Rural School Act payments received by the counties, account for another 56 jobs and \$2.3 million in labor income.
8. Money spent by tourists is a type of export that brings outside dollars to the area and therefore is usually the type of recreation accounted for in economic impact or contribution analysis. In addition, expenditures by local residents also create economic activity. Recreation spending by local residents is associated with another 526 jobs and \$13.6 million in labor income each year. Wildlife-related recreation by local people including hunting, fishing, and wildlife watching contributes another 116 jobs and \$3.2 million in labor income each year.

### **Benefits People Obtain from the Plan Area**

1. People participating in the plan revision process most often identified the following as key personal benefits from the national forests: health and well-being, recreation, hunting, fishing, hiking, camping, access, food and family togetherness.
2. Key benefits to the planning area as a whole that were identified included: tourism, water, habitat for plant and animals, clean air, the economy, jobs, timber products, biological diversity, and natural resources.

### **Multiple Uses**

1. Many wild forest plants are traditionally collected by tribal members and others. These include plants and mushrooms used for food, medicinal purposes, and craft purpose.
2. Other traditionally collected materials include firewood, locust posts, florals and horticultural products including Galax, mountain laurel and rhododendron, cones, seeds and saplings.

3. Hunting and fishing are popular sports in the mountains of western North Carolina. Deer, turkey, ruffed grouse, and black bear are among the commonly hunted species.
4. Observing nature is a popular use of the forests. Bird watching, observing fall colors and spring wildflowers are popular attractors.
5. There are 1,191 special use permits currently in place on the Nantahala and Pisgah NFs. Road easements and outfitter guide permits are the most numerous of the special use permits.
6. Potential increase in demand for festivals, trail-riding events, and other special uses could affect other users' ability to recreate in the affected areas.

### **Vegetation Management**

1. The amount of timber sold from the Nantahala and Pisgah NFs varies quite a bit from year to year but is generally well below the Allowable Sale Quantity established in the 1987 Plan as amended in 1994. Over the last 20 years offered timber volume has ranged from a high of 52,062 ccf (hundred cubic feet) in 1994 to a low of 3,322 ccf in 2001. In 2013 the sale volume was 14,667 ccf.
2. Important influences on the variation in offered timber volume have included:
  - Implementation of Amendment 5 in 1994 which reduced the Allowable Sale Quantity and moved away from clearcutting as a regeneration method.
  - United States Court of Appeals, Eleventh Circuit – Sierra Club v. Martin decision (1997), which resulted in extensive analysis of Management Indicator Species population trends
  - Discovery of the endangered Indiana bat on the Nantahala NF in 2000
  - Court decision in mid-2000's which resulted in new analysis protocols for sensitive species determinations
  - Timber program budget and workforce declines.
3. The two-aged harvest system has been the dominant regeneration technique used on the Nantahala and Pisgah NFs since the mid-1990's; group selection, and the shelterwood harvest system have also been used. Intermediate treatments such as thinning have been used more frequently than anticipated in the 1987 Plan
4. There are few activities implemented to enhance desirable non-timber forest products such as American ginseng, black cohosh, Galax or ramps. Plant theft is believed to be adversely affecting wild populations of ginseng.
5. The acres treated to ensure successful natural regeneration have increased over the last 6 years while trends in artificial regeneration (planting) have decreased over the same time. In the mountains natural regeneration is by far the most desirable and dependable form of regeneration. Successful natural regeneration (sprouts from cut stumps, or saplings already in growing on the site) can be enhanced by reducing competition from non-desirable sprout species and other unwanted vegetation. Planting is sometimes used to

supplement diversity in a stand, such as enhancing mast producing species or restoring a yellow pine component.

6. Treatments designed to improve the composition and density of young forests shows an increasing trend. These treatments occur after regeneration and establishment is complete, in the seedling, sapling, or pole stage of the stand. Crown touching release (chemical or mechanical) is our primary treatment but this can also be accomplished by prescribed fire in some situations.

## **Recreation Settings, Opportunities, Access, and Scenic Character**

1. The Nantahala and Pisgah NFs are the most visited national forests in the Eastern US.
2. Forty-seven percent of visitors are from within 25 miles of the forest while more than 20 percent travel over 200 miles to visit the forests.
3. Sightseeing is one of the most popular outdoor recreation activities.
4. Viewing and photographing wildlife is one of the fastest growing outdoor recreation activities.
5. Visual Quality Objectives are being met using the system in place at the time of the 1987 plan. That system does not adequately accommodate integrated resource management across the broader landscape.
6. Safety related to waterfalls and flood events is an increasing concern. Safety concerns regarding human-black bear encounters are also receiving more attention; for example, bears in developed sites have led to some temporary picnic area closures.
7. Storm events are increasingly impacting recreation activities such as camping and trail use near or next to streams, rivers, and waterfalls. For example, access routes into some campgrounds and other developed sites travel through fords and flash flood-prone areas that might be impassable during high water events. In addition, several developed recreation sites have been determined vulnerable to flash flooding and have been posted with "Flash Flood Hazard" and other warning and awareness signs, as appropriate.
8. Increasing heavy recreation use in some recreation areas, including special events, has resulted in issues such as:
  - Resource damage including trampling of vegetation
  - User conflicts in some areas (e.g., hunters and trail users; trail users of different types; event attendees and non-event users)
  - Increased traffic and parking demands
  - Increased demand for restrooms
  - Increased trash
  - Need for additional and/or different types of facilities
  - Overuse of some Wildernesses and backcountry areas managed for solitude

- Human/animal conflicts, including domestic animals (dogs) and wild animals like bears.
9. Less than half of the existing developed site infrastructure is currently predicted to be sustainable over the long-term. The infrastructure is aging; some existing facilities are 40+ years old and are in poor condition. Decreasing budget allocations and decline in recreation user fees in many locations are resulting in reduced facility maintenance and fewer improvements in popular and heavily used sites. An aging U.S. population and changing demographics may result in the demand for more highly developed and/or improved facilities and access to the Nantahala and Pisgah NFs.
  10. Based on user surveys, trends and observations, the current supply of recreation facilities may not reflect how visitors are using the forest. In general people are asking for more of their preferred opportunity, or in the case of developed sites and facilities, the desire is for a greater degree of development. For example:
    - Increases in whitewater releases on Cheoah and the bypass portion of the Nantahala River have increased boating use as well as the demand for additional access and facilities
    - Developed camping appears to be declining, while current users of those facilities are requesting more amenities like electrical hookups, showers, etc.
    - More highly developed trailheads and trail amenities may be in demand at sites where birding, nature photography, viewing scenery and other growing recreation activities are taking place
  11. Approximately 36% of the Nantahala and Pisgah NFs established trail system meets maintenance standards. The trail system contains the following:
    - Hiking only: 1,113 miles
    - Hiking and Equestrian: 122 miles
    - Hiking and Biking: 178 miles
    - Hiking, Equestrian, and Biking: 147
    - Motorized trails : 57miles
  12. Trail user conflicts are being reported among the hikers, equestrians and mountain bikers. Different types of experiences may be sought by these different groups. Visitor safety is also a concern.

## **Renewable and Non-Renewable Energy and Mineral Resources**

1. The Nantahala and Pisgah NFs have a variety of potential mineral resources including minerals needed to produce products that mitigate or promote adaptation to climate change. For example, olivine is used in die casting of metal components (aluminum, steel, etc.) that can be used in renewable energy and air pollution control infrastructures. Future applications for olivine may include use in carbon capture and sequestration.

2. Currently, there is one inactive hardrock mineral federal lease, one active federal mineral material permit, and one active private mineral rights operation.
3. The State is in process of assessing oil and gas potential in western North Carolina. In 2008, the Bureau of Land Management completed a 10-year forecast and did not predict any oil or gas wells, or surface disturbance.
4. Most of the subsurface is in government ownership. Private mineral rights may exist on up to 10% of the subsurface, but the complexities of state law make it difficult to determine without legal opinion.
5. 1987 Plan direction for recreational gem and mineral collecting and gold panning is unclear, leading to confusion among forest managers, laws enforcement, and the public.

## **The Transportation System**

1. Approximately 2,246 miles of roads provide access to Nantahala and Pisgah NFs. Of these, 752 are open for public motor vehicles part or all year and 1,494 miles are not open to public motor vehicles, but are available for non-motorized access to the forest (walking, etc.) and are available for purposes such as forest management and fire control.
2. Approximately 12.5 miles of system roads were constructed from 2001 through 2011, while 20.7 miles of road were decommissioned in that time period.
3. Road maintenance funds received annually are not sufficient to maintain the entire road system to standard, a. Maintenance is paid for from several sources: timber sale receipts, the annual Forest Service budget from Congress, and several auxiliary sources including emergency funds after disasters such as the 2004 hurricanes. Roads in need of maintenance can be a source of sediment that can pollute streams. The road system has a backlog of maintenance needs, primarily in the form of gravel replacement and culvert maintenance, repair and replacement. This backlog could be diminished by reducing mileage, reducing the level of maintenance, or sharing maintenance with cooperators, local governments or users.

## **Areas of Tribal Importance**

1. American Indian Tribes associated with and interested in the management of the plan area include the Eastern Band of Cherokee Indians, the Cherokee Nation, the Keetoowah Band of Cherokee, the Catawba Indian Nation, the Muskogee Creek Nation, the Kialegee Town Creek, and the Shawnee Tribe.
2. Collecting edible, medicinal, traditional and craft plant species is very important to Tribes. Authorization for these activities is unclear in the 1987 Plan. Forest management seldom includes activities that promote traditional and cultural edible, medicinal, or craft species (river cane, white oak).

3. Traditional Ecological Knowledge regarding plant species and historic land use such as prescribed fire is an important source of information for consideration in resource management.
4. Not all areas of traditional and cultural importance to Tribes, Sacred Sites, Gathering Areas and Traditional Cultural Properties, have been identified. Consultation has increased for projects in the last two years. Continued consultation is needed to inquire about these areas or qualities they possess.
5. Tribal involvement and collaboration is important when proposing activities such as herbicide use in traditional areas.

## **Cultural and Historic Resources**

1. Approximately 8% of Nantahala and Pisgah NFs have been surveyed for archeological sites. Not all areas of high site probability have been inventoried. For those acres surveyed, the site density is 1 site for every 23.7 acres. The site density is somewhat higher on the Nantahala NF than on the Pisgah NF; overall site density is somewhat lower than some other parts of the state (for example Uwharrie National Forest).
2. Archeological sites, once identified, are not always evaluated for significance and this can result in proposed projects and activities needing to be re-designed, put on hold or eliminated.
3. Some priority sites are deteriorating. Some archeological damage occurs naturally though archeological site vandalism and looting is increasing. Unauthorized off-highway vehicle use is also adversely impacting archeological sites.
4. Archeological projects to document past environmental conditions and changes are very limited. Such projects can increase the understanding of climate and ecosystem history.
5. Designated National Historic Trails, including the Trail of Tears and Overmountain Victory Trail, do not have completed inventories, management plans or site specific direction for protection and preservation.
6. Public and recreational interpretation including signs and maps do not include Cherokee or Catawba language or Tribal history where applicable. American Indian language contains important information regarding forests and cultural history in this region.
7. Opportunities for public archeology/volunteer projects have been very limited in recent years. There is high interest among the public for participating in Passport In Time and Windows on the Past projects.

## Designated Areas

1. The Nantahala and Pisgah NFs have six Wilderness Areas. Non-native invasive species and overuse are impacting wilderness characteristics in some areas. Heavy recreation use in Shining Rock, Linville Gorge, and the Memorial Forest area of Joyce Kilmer has resulted in challenges for managing for wilderness characteristics (solitude, untrammelled, etc.). Challenges include resource damage such as damaging and trampling of vegetation; increased trash; expansion of existing campsites; and creation of new campsites.
2. Of the five Congressionally designated Wilderness Study Areas, three of them were recommended for Wilderness designation in the 1987 Plan. These include Harper Creek, Lost Cove, and Craggy Mountain. The other two WSAs were not recommended in the 1987 Plan but are managed to maintain their wilderness characteristics.
3. Mountain bikers' unauthorized use of hiking trails within Harper Creek and Lost Cove Wilderness Study Areas highlights the conflict between the demand for more mountain biking opportunities in some parts of the national forests and the management of and desire for wilderness values and experiences.
4. There are 40 special interest areas (Management Area 13) identified in the 1987 Plan and identified for registration by the NC Natural Heritage Program. Special Interest Areas have not been reevaluated for unique attributes since the 1987 Plan.
5. Suitability studies have not been initiated on eight of the nine rivers that were determined eligible in the 1987 Plan. A suitability study for Wilson Creek preceded Congressionally designated as a Wild and Scenic River in 2000.
6. The 2001 Inventoried Roadless Areas are not identified in the 1987 Plan, nor are they accounted for within the existing Management Area designations. Approximately 87% of inventoried roadless area acreage overlaps with areas that are within Management Areas that currently do not permit timber production.
7. There are several National Recreation Trails such as the Art Loeb, Bartram, and Roan Mountain Gardens Trails, two sections of a National Historic Trail (Overmountain Victory Trail), and one National Scenic Trail (Appalachian Trail) located on the Nantahala and Pisgah NFs. These trails serve as national as well as world-wide attractions bring visitors to the 18 county area. Each of these are recognized for their unique attributes and managed to maintain those qualities.