Forestwide Objectives – Initial Set

Nantahala and Pisgah National Forests Plan Revision

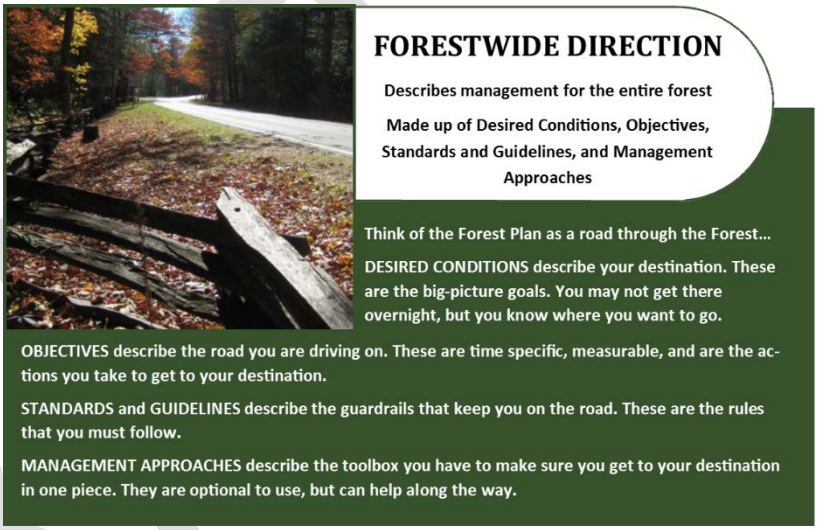
June 30, 2016

This developing plan content is under construction and is being shared as a snapshot of thinking. Additional changes based on Forest Service, Tribal, and public input are expected.

Background

The forest plan provides a general framework for managing the forest over the next 10-15 years. The plan includes desired conditions that describe what we want the forest to be like in the future and objectives that describe the actions we will take to achieve the desired conditions.

This document contains an initial set of forest plan objectives. (The desired conditions can be found within the documents on the Forest Plan Under Construction webpage.) Like all parts of our forest plan, we are accepting feedback on this initial set of objectives and we expect to make changes based on that feedback.



These objectives relate to the three forest plan themes of providing clean and abundant water, enhancing and restoring resiliency, and connecting people to the land. They respond to the needs for restoring forests, protecting and enhancing watershed conditions, conserving wildlife habitats, and contributing to social values and economic goods and services.

What are objectives? Objectives are concise, time-specific statements of actions with measurable results. Objectives are not considered targets, but they will be the forest priorities for the 10 to 15 years following plan approval. They represent proposed activities intended to be accomplished during the life of the plan. Not every action the Nantahala and Pisgah National Forests may take is included as an objective, since objectives are intended to identify priorities and not every activity. Objectives are not meant to be a limit on planned activities and may be exceeded. The Planning Rule that guides the Forest Service planning process requires objectives to be based on "reasonably foreseeable budgets."

These objectives apply to the entire Nantahala and Pisgah landscape and should be taken holistically rather than individually. Some objectives are such a priority for the forest that they are addressed in multiple plan objectives.

Objectives are closely related to the plan monitoring strategy (to be developed), where the plan will evaluate "Did we accomplish the objective?" and "Did that accomplishment create the outcomes we desired, trending toward desired conditions?"

How were these objectives determined? In early 2016, forest leadership and the interdisciplinary team of specialists working on the forest plan revision team developed a list of actions intended to implement the plan. The list considered the Forest Plan Assessment findings and the Need for Change, as well as recent trends, past experiences, anticipated staffing levels, and anticipated budgets. The list was refined based on a set of criteria (see Appendix A). Each objective included here was found to relate to one of the three forest plan themes, contribute to sustainability, and be technically and fiscally feasible to implement with a high degree of broad support. We assume, and will analyze in the Environmental Impact Statement, that meeting these objectives will result in measurable positive results toward the desired conditions. Objectives were also considered for this list if they were found to contribute to a long-term commitment, enhance management effectiveness and efficiency, or provide opportunity to partner or coordinate with others. Details on the criteria used to develop objectives are contained in Appendix A.

Can objectives be changed? The objectives included here are identified as the initial set because we anticipate that objectives may be refined before drafting the Environmental Impact Statement. Based on input and discussion resulting from this initial set of objectives, we will decide how objectives may vary by forest plan alternative.

After a plan is signed, changes in environmental conditions, budgets or other factors may result in a need to re-evaluate plan objectives. If, after the plan is signed, an objective is no longer appropriate or relevant for achieving desired conditions, then the objective can be removed or replaced through a plan amendment or revision.

Can the Forest Service do more than the objectives identify? Absolutely. We recognize that current and projected accomplishments are constrained by FS anticipated budget and staffing. Where we can increase program efficiency or funding through innovative tools and partnerships we may be able to achieve more or move more quickly toward desired conditions.

In the pages that follow, the objectives are identified as numbered statements. The information below each objective in italics explains the "background and rationale." This section provides additional context to help understand the design and intent of the objective. Upon release of the draft plan, the objectives will be associated with the desired conditions that they are designed to implement, while the background and rationale will appear in an appendix.

Objectives by theme

Enhancing and restoring resiliency

The Nantahala and Pisgah NFs support a diversity of forest communities from southern pine to northern hardwood forests. When compared to the southern Appalachian Region, the forests 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. Under this theme, the plan focuses on improving the ability of forests to remain healthy and resilient, despite stresses and disturbances. Objectives under this theme address maintaining and improving the diversity of forest structure (age classes or seral stages) and composition (species); managing using silvicultural and fire tools; managing for wildlife habitat and rare species and communities; and controlling noxious weed and invasive plants.

For purposes of clear communication, most objectives in this section have been rounded to the nearest 100 acres.

Ecological system objectives

Over the Life of the Plan

1. Over 10 years, provide at least 5,200 acres (0.5% of the forest) in **permanent open grassy and brushy habitat**, (including balds, old fields, and existing wildlife and linear openings) across the planning unit to meet structural diversity needs for wild turkey, bobwhite quail, migratory birds, and other species.
    A. Maintain all current permanently open grassy and brushy areas **greater than 5 acres in size** in patches that are at least that size or greater (i.e. no net loss in opening size).
    B. Maintain or increase the amount of **smaller permanent openings** (i.e. those less than or equal to 5 acres in size) over the life of the plan.

Background and Rationale:

- *Permanent open grassy and brushy habitats provide critical nesting and foraging habitat for a variety of wildlife species, including ruffed grouse, wild turkey, white-tailed deer, bobwhite quail, elk, bats, and many insects and migratory songbirds.*
- *The forest currently contains about 2800 acres off wildlife openings and balds (natural and anthropogenic), that contribute to meeting this objective.*
- *These openings will be managed to maintain edges in brushy or transitional conditions, and retain small brushy and woody inclusions, as appropriate. Openings less than 5 acres will be managed to succeed past grassy and brushy phases and create new grassy or brushy openings where conditions are appropriate.*
- *Related draft plan components are contained in the following sections: Terrestrial Ecozones (including wildlife)*

2. Over 10 years, contribute <u>at least</u> 6,500 to 12,000 acres of forest to existing **early seral/young forest conditions** across all ecozones and elevations, including those created through natural disturbance and forest management activities, to improve forest structure, related health and resiliency, and habitat diversity for disturbance-dependent wildlife such as golden-winged warbler, ruffed grouse, and white-tailed deer.

    A. Provide approximately 70% of these acres at **elevations above 2,500 feet** for species such as golden-winged warbler and ruffed grouse.

    B. Similarly, provide approximately 50% of these acres in forest types suitable for ruffed grouse and American woodcock, including rich cove, northern hardwood, and oak-dominated ecozones.

Background and rationale:

- *Early seral/young forest conditions offer critical reproductive, nesting and foraging habitat, and cover for a variety of wildlife species, including ruffed grouse, wild turkey, white-tailed deer, elk, bats, black bear, and many insects and migratory songbirds. At elevations above 2500' these conditions are particularly important to golden-winged warblers and ruffed grouse.*
- *Long-term (multiple planning cycles) desired conditions are to have 60,600 to 92,300 acres of forest in early seral/young forest conditions across all ecozones and elevations. This objective targets achieving 10-13% of that desired condition in this first decade. We estimate that the forests currently contain about 20,000 acres in early seral condition.*
- *Based on the Nantahala and Pisgah National Forests Natural Range of Variation (NRV) model and wildlife habitat restoration opportunities, approximately 3,000 to 4,000 acres of regeneration and intermediate thinning activities may be needed annually to achieve early seral/young forest desired conditions at a larger scale and faster pace than current capacity allows. We recognize that current and projected accomplishments are constrained by FS anticipated budget and staffing. Where we can increase program efficiency or funding through innovative tools and partnerships we may be able to achieve more or move more quickly toward desired conditions.*
- *Tools used to create new young forest will vary by ecozone and management area, but may include mechanical treatment, prescribed fire, or other techniques, based on ecological departure from the Natural Range of Variation (NRV), other ecological needs and priorities, or social/economic constraints. It is important that a range of management tools remain available and that they are applied when and where they can be most effective.*
- *The long-term desired condition for early seral/young forest conditions is summarized as follows (recognizing that multiple planning cycles may be needed to approach this landscape composition and structural condition):*

Ecozone	Desired Early Seral (Young Forest) Condition (as estimated by NP NRV 2015)
Spruce-Fir	2,300 – 2,800 acres (14-17% of the ecozone)
Northern Hardwood	2,700 – 3,800 acres (5-7% of the ecozone)
High Elevation Red Oak	5,400 – 7,000 acres (14-18% of the ecozone)
Acidic Cove	9,600 – 12,000 acres (4-5% of the ecozone)
Rich Cove	7,600 – 9,500 acres (4-5% of the ecozone)
Mesic Oak	7,400 – 11,200 acres (4-6% of the ecozone)
Dry-Mesic Oak	5,300 – 7,700 acres (5-7% of the ecozone)
Dry Oak	5,400 – 13,100 acres (9-22% of the ecozone)
Pine-Oak/Heath	11,100 – 19,200 acres (11-19% of the ecozone)
Shortleaf Pine	3,699 – 5,800 acres (8-13% of the ecozone)
Floodplain Forest	150 – 200 acres (6-8% of the ecozone)

- *This objective is related to Objectives 5 and 7 (i.e. acres of management are not additive).*
- *Related draft plan components are contained in the following sections: Terrestrial Ecozones (including wildlife)*

3. Over 10 years, provide at least 43,600 to 56,300 acres of forest in **old growth conditions** across all ecozones and elevations to improve forest structure, related health and resiliency, and habitat diversity for old growth-associated plant and animal communities.

Background and rationale:

- *Old growth conditions are identified as the latest seral stage in the ecozones descriptions, (following late seral). These conditions offer critical reproductive, nesting, and foraging habitat, as well as cover for a variety of wildlife species, including black bear, many salamanders and migratory birds.*
- *Long-term (multiple planning cycles) desired conditions are to have 435,800 to 562,600 acres of forest in old growth conditions across all ecozones and elevations. This objective targets achieving 10% of that objective in this first decade.*
- *Old growth conditions within existing designated medium and large patch old growth areas within spruce-fir, mesic oak, and dry oak ecozones currently exceed 10% of this objective. During the next 20 years, old growth acres within designated patches in northern hardwood, high elevation red oak, acidic cove, and rich cove ecozones will exceed 10%. However, within pine-oak/heath, dry-mesic oak, shortleaf pine, and floodplain forest ecozones, stands with old growth conditions will need to be selected to achieve the 10% objective during the planning cycle.*
- *The long-term desired condition for old growth forest conditions is summarized as follows (recognizing that multiple planning cycles may be needed approach this landscape composition and structural condition):*

Ecozone	Desired Old Growth Forest Condition (as estimated by NP NRV 2015)
Spruce-Fir	8,000 – 10,100 acres (48-61% of the ecozone)
Northern Hardwood	27,500 – 34,500 acres (51-64% of the ecozone)
High Elevation Red Oak	9,300 – 13,900 acres (24-36% of the ecozone)
Acidic Cove	113,200 – 134,900 acres (47-56% of the ecozone)
Rich Cove	88,900 – 105,900 acres (47-56% of the ecozone)
Mesic Oak	87,500 – 109,800 acres (47-59% of the ecozone)
Dry-Mesic Oak	53,000 – 64,700 acres (50-61% of the ecozone)
Dry Oak	26,900 – 43,600 acres (45-73% of the ecozone)
Pine-Oak/Heath	13,200 – 29,400 acres (13-29% of the ecozone)
Shortleaf Pine	7,600 – 14,700 acres (17-33% of the ecozone)
Floodplain Forest	800 – 1,100 acres (31-43% of the ecozone)

- *This objective is related to Objectives 5 and 7 (i.e. acres of management are not additive).*
- *Related draft plan components are contained in the following sections: Terrestrial Ecozones (including wildlife)*

4. Over 10 years, provide 18,100 to 33,800 acres of forest in **open forest (including woodland) conditions** across all ecozones and elevations, including those created through both natural disturbance and forest management activities to improve forest structure, related health and resiliency, and habitat diversity for wildlife species such as migratory birds, bats, white-tailed deer, and elk.

   Background and rationale:
   - *Open forest and woodland conditions offer critical reproductive, nesting, and foraging habitat, as well as migration opportunities for a variety of wildlife species such as migratory birds, bats, white-tailed deer, and elk.*
   - *Long-term (multiple planning cycles) desired conditions are to have 361,600 to 482,300 acres of forest in open forest, including woodland, conditions across all ecozones and elevations. This objective targets achieving 5-7% of that objective in this first decade. We estimate that the forests currently contain about 210,000 acres of open forest conditions.*
   - *Based on the Nantahala and Pisgah National Forests Natural Range of Variation (NRV) model and wildlife habitat restoration opportunities, approximately 3,000 to 4,000 acres of regeneration and intermediate thinning activities may be needed annually to achieve open forest desired conditions at a larger scale and faster pace than current capacity allows. We recognize that current and projected accomplishments are constrained by FS anticipated budget and staffing. Where we can increase program efficiency or funding through innovative tools and partnerships we may be able to achieve more or move more quickly toward desired conditions.*

- *Tools used to create new open forest conditions will vary by ecozone and management area, but may include mechanical treatment, prescribed fire, or other techniques, based on ecological departure from the Natural Range of Variation (NRV), other ecological needs and priorities, or social/economic constraints. It is important that a range of management tools remain available, and that they are applied when and where they can be most effective. We expect that commercial timber harvest will contribute 1,500 to 4,000 acres of this objective, with most open conditions resulting from noncommercial treatments, prescribed burning, and natural disturbance.*
- *The long-term desired condition for open forest conditions is summarized as follows (recognizing that multiple planning cycles may be needed approach this landscape composition and structural condition):*

Ecozone	Desired Open Forest Condition (as estimated by NP NRV 2015)
Spruce-Fir	5,500 – 7,500 acres (33-45% of the ecozone)
Northern Hardwood	10,800 – 14,600 acres (20-27% of the ecozone)
High Elevation Red Oak	20,900 – 27,400 acres (54-71% of the ecozone)
Acidic Cove	17,000 – 24,600 acres (9-13% of the ecozone)
Rich Cove	21,700 – 31,300 acres (9-13% of the ecozone)
Mesic Oak	76,300 – 100,500 acres (41-54% of the ecozone)
Dry-Mesic Oak	56,200 – 70,000 acres (53-66% of the ecozone)
Dry Oak	40,000 – 59,700 acres (67-100% of the ecozone)
Pine-Oak/Heath	77,000 – 101,300 acres (76-100% of the ecozone)
Shortleaf Pine	35,600 – 44,500 acres (80 -100% of the ecozone)
Floodplain Forest	800 – 1,000 acres (29 - 39% of the ecozone)

- *This objective is related to Objects 5 and 7 (i.e. acres of management are not additive).*
- *Related draft plan components are contained in the following sections: Terrestrial Ecozones (including wildlife)*

Annually

5. Annually, employ **a variety of silvicultural systems** to manage vegetation to meet ecological resilience, restoration, habitat management and other related desired conditions:
   A. Increase average annual **regeneration** activities (using both even aged management and uneven aged management techniques) from 650 acres to at least 1,200 acres annually.
   B. Increase average annual **intermediate thinnings** to improve structural diversity, manage high density communities, improve species composition, and capture density related mortality from 150 acres to at least 400 acres annually.

C. This increase in harvest activities in addition to other non-harvest regeneration/ restoration will require an average annual increase (from 800 to 1,825 acres) in reforestation activities such as **planting and site preparation**.
D. Increase the average annual **stand improvement** activities from 3,800 to 6,000 acres to improve species composition and structure of young forests as well as the midstory and understory of mature forest communities.

Background and Rationale:

- *To increase the pace and scale of restoration and desired habitat conditions increases in vegetation management including commercial and non-commercial activities on all lands will need to occur. Based on the Nantahala and Pisgah National Forests Natural Range of Variation (NRV) model and wildlife habitat restoration opportunities, approximately 3,000 to 4,000 acres of regeneration and intermediate thinning activities may be needed annually to achieve early seral/young forest and open forest desired conditions at a larger scale and faster pace than current capacity allows.*
- *We recognize that current and projected accomplishments are constrained by FS anticipated budget and staffing. Where we can increase program efficiency or funding through innovative tools and partnerships we may be able to achieve more or move more quickly toward desired conditions. Regeneration activities: 650 acres of regeneration plus 150 acres of thinning (800 total acres) represents our recent 14 year average accomplishment. An increase in the average of regeneration harvests to 1,200 acres annually over the first decade represents an 85% increase in activity from recent levels. In other words, it represents a 40% increase above the average regeneration of the seven best years from this fourteen year period.*
- *Intermediate thinnings: Increasing the annual average of intermediate thinnings to 400 acres over the first decade represents a 167% increase in activity from recent levels. In other words, it represents a 119% increase above the average thinning of the seven best years from this fourteen year period.*
- *Planting and site preparation: It is assumed that all regeneration, other restoration such as spruce under-planting, and prescribed burning will require some reforestation activity.*
- *Stand improvement activities: Stand improvement activities are based on the last 6 year average plus a 60% increase. To cover the broader definition of stand improvement, the increased need in treatments includes work in harvested areas, non-commercial work, and work in burned area ecozone restoration. This objective does not address the work needed to enhance understory species or treat nonnative invasive species (see Objective 8).*
- *These numbers should not be confused with timber calculations such as the Sustained Yield Limit, the Projected Wood Sale Quantity, Projected Timber Sale*

Quantity, or the Quantity of Timber Sold. Those calculations will be completed as part of the Environmental Impact Statement process using vegetation modeling.

- *This objective works in conjunction with Objective 6 and acres may be related (i.e. not distinct).*
- *Related draft plan components are contained in the following sections: Vegetation Management (including wildlife)*

6. Treat 1550 acres annually with emphasis on **maintaining high quality restored ecozones** as well as **restoring departed ecozones**, focusing on shortleaf pine-oak, dry-mesic oak, mesic oak, spruce-fir and pine-oak heath. Annually, average 400 acres of enhanced conditions in shortleaf pine-oak, 500 acres in dry-mesic oak, 500 acres in mesic oak, 50 acres in spruce-fir, and100 acres in pine-oak/heath.

   Background and rationale:

   - *Restoration and maintenance of restored ecozones is integral to providing integrity and resilience across the Nantahala and Pisgah NFs. Age class and structural diversity is fundamental within each ecozone to sustain a functional resilient landscape.*
   - *Restoration treatments can include commercial and noncommercial harvests, gap creation, prescribed burns, and herbicides. Restoration may often include multiple treatments to achieve success. Habitats may require multiple planning cycles to be fully restored.*
   - *Conifer species with low landscape abundance provide key ecological characteristics to the forest communities they occupy. They also provide important contributions to the community diversity at landscape scales, and in some cases support habitat for threatened and endangered species.*
   - *Changes in land use over the last century, as well as anticipated changes to the climate, will make restoration of spruce fir and pine-oak/heath ecozones important to the functional resiliency of these communities and the adjacent landscape.*
   - *Oak species provide key functions and structural components to oak communities. They support plant communities across a diverse moisture and elevation range, provide benefit to many wildlife species, and support rare plant and animal species.*
   - *The acreage proposed represents less than 0.5 % of the ecozones except for shortleaf-pine which is closer to 1%.*
   - *Suggested monitoring metric: acres of vegetation management, acres of prescribed burning*
   - *This objective is related to Objectives 5 and 7 (i.e. acres of management are not additive).*
   - *Related draft plan components are contained in the following sections: Terrestrial Ecozones (including wildlife)*

7. **Prescribe burn and implement fuel reduction activities** across 6,500-10,000 acres annually to address fuel loading, meet ecological resilience, restoration, habitat management, and other related desired conditions. To the extent possible, manage wildfires to achieve ecological objectives without compromising safety or community protection.

    Background and rationale:

    - *Prescribed burning and fuels reduction activities are crucial to community protection because these activities reduce fuels and manipulate fuel structures to decrease fire intensity and provide conditions where firefighters are able to more effectively engage wildfire.*
    - *Burning is integral to lowering fuel loading, maintaining structural diversity and supporting a diverse flora and fauna within pine-oak/heath, shortleaf pine-oak, dry oak, dry-mesic oak, mesic oak, and high elevation red oak forest.*
    - *During the restoration phase more frequent burns per single site will be necessary.*
    - *Maintenance burns will help to maintain fire fuels at natural levels that do not put the urban interface at risk, and restored plant communities with higher species diversity and lower shrub densities.*
    - *6500 acres represents the last five year average for prescribed burning.*
    - *The objective represents a 50% increase in output and would be possible on select years with favorable burning windows.*
    - *This objective works in conjunction with Objectives 1 through 4 and 6. Some activities may be counted toward multiple objectives (i.e. are not distinct).*
    - *Related draft plan components are contained in the following sections: Fire (including wildlife)*

8. Manage **non-native invasive plant species** by the following actions:

A. **Treat** non-native invasive plant species on 750-1,500 acres in multiple ecozones annually.

B. **Inventory** for the presence of non-native invasive plant species on 1,000-2,000 acres annually.

Background and rationale:

- *Non-native invasive plant species are a significant threat to rare species and maintaining forest resilience. Assessing threats and evaluating the success of prior treatments provides critical adaptive management feedback to ensure control is effective and responsive.*
- *Non-native invasive plant species can be treated on the forest by an integrated response that uses manual (pulling), mechanical (cutting), chemical (herbicide) or burning (prescribed fire) techniques.*
- *Treatment levels are based on current costs (ranging from $100 to $1,000 per acre per infestation) and the level of current and anticipated funding. It is expected that the higher acreage limit for treating infestations will be needed with*

the increase in early seral/young forest conditions and woodland conditions since a portion of the targeted sites have existing non-native invasive plant infestations.

- *An annual inventory for non-native invasive plants is critical to detect new outbreaks when they are small and manageable, to assess previously treated areas, and to prioritize treatment needs.*
- *Suggested metric for monitoring: acres of NNIS treated and acres of inventory.*
- *Related draft plan components are contained in the following sections: Forest Health and Invasive Species*

9. Roan Mountain Management Area: Annually maintain or restore 50 to 75 acres of grassy or heath balds on the eastern and western **bald areas across Roan Mountain**.

Background and rationale:

- *Grassy balds and alder balds are critically rare habitats on Roan Mountain which area threatened by woody plant and blackberry encroachment.*
- *Fifty acres represents the average restoration and maintenance capacity during the past five years with internal funding and active partner participation.*
- *Vegetation control may vary by treatment type, but will include adaptive management feedback to ensure the treatments are effective and provide habitat resilience.*
- *Suggested monitoring metric = acres enhanced each year.*
- *There will be a separate section of the plan containing direction for the Roan Mountain Management Area; however these plan components have not been developed yet for the revised plan.*

Species-specific objectives

Over the Life of the Plan

10. Restore or maintain at least 250 acres of habitat within the North Carolina Wildlife Resources Commission's **elk priority management area**, with an emphasis on grassy openings and understory, and travel corridors.

Background and rationale:

- *This objective focuses on proactive management versus reactive management to an expanding herd.*
- *This opportunity may only be provided one time during the forest plan period, so 250 acres was selected as a reasonable amount for one project.*

11. Maintain or improve ecological conditions for **federally-listed species and species of conservation concern** within the planning unit.

    Background and rationale:

    - *This objective necessary to meet law, regulation, and policy to ensure persistence of federally-listed species and species of conservation concern on the planning unit.*
    - *The Forests actively participate in species' conservation efforts initiated by partner agencies such as the US Fish and Wildlife Service and North Carolina Wildlife Resources Commission.*
    - *Suggested monitoring metric = up-to-date species lists with occurrence and assessment accomplishments identified.*
    - *Related draft plan components are contained in the following sections: Threatened and Endangered Species and Species of Conservation Concern (including wildlife)*

12. Emphasize restoration of **rare habitats** over the life of the plan:
    A. Reduce **woody plant encroachment**, either through prescribed burns or mechanical treatments, across 11 to 23 sites supporting rare habitats dependent on woodland or more open structural conditions.
    B. Manage **non-native invasive plants** across 15 to 20 sites.
    C. **Reduce woody plants** by at least 50% across 6 to 12 Southern Appalachian bogs.
    D. Maintain or restore all known 35 to 40 Carolina Hemlock Bluff sites on the Forests ensuring that Carolina **hemlocks** are reproducing and that hemlock wooly adelgid populations are minimal and not impacting the habitat.

    Background and rationale:

    - *Rare habitats are distributed across the Nantahala and Pisgah NFs within multiple management areas. These habitats harbor multiple Threatened and Endangered species and Species of Conservation Concern and some are threatened by non-native invasive plants or pests, woody plant encroachment, fire suppression, and recreational trampling.*
    - *Twenty-three sites with fire-adapted rare habitats are known across the Nantahala and Pisgah NFs. Eleven of these sites are within or adjacent to existing prescribed burn units.*
    - *Shrubs and tree encroachment within southern Appalachian bogs reduces or eliminates common and rare plant and animal species adapted to this habitat. Twelve bog sites presently have moderate woody plant encroachment.*
    - *Non-native invasive plant species invade mesic and xeric rare habitats threatening the persistence of rare plant species dependent on these habitats. Twenty sites are known to have varying infestations of non-native plant species.*

- *The Pisgah NF represents the greatest concentration of Carolina hemlock bluffs across its entire range and the best chance to preserve this unique habitat before it is eliminated or significantly reduced in size.*
- *Related draft plan components are contained in the following sections: Rare Habitats (including wildlife)*

13. Review and update at least every XX years, **Proposed, Endangered and Threatened species and Species of Conservation Concern lists** to incorporate new status and occurrence information.

Background and rationale:

- *This initial objective has an unspecified timeframe that will be filled in. The Washington Office will provide additional guidance to the National Forests in the near future regarding the implementation of the Species of Conservation Concern (SCC) framework during and after a plan revision pursuant to the 2012 Planning Rule. We anticipate that this national guidance will seek for forests to periodically incorporate new status and occurrence information into the consideration of SCC although the exact details and timing of the frequency of updates needed is still to be decided.*
- *A SCC is one "that is known to occur in the plan area and for which the Regional Forester has determined that the best available scientific information indicates substantial concern about the species' capability to persist over the long-term in the plan area." 36 CFR 219.9 (c).*
- *The Regional Forester has approved a draft list of SCC for the Nantahala and Pisgah NFs. This list is available on the forest plan revision website.*
- *Related draft plan components are contained in the following sections: Threatened and Endangered Species and Species of Conservation Concern (including wildlife)*

Providing Clean and Abundant Water

Water is a life-sustaining resource for the Nantahala and Pisgah NFs and the natural and social communities that depend on it. Beyond the ecological communities, forest waters also support municipal water supplies in 8 southeastern states, from Kentucky through Louisiana and Georgia. Many cities in western North Carolina get over 50% of their water from the Nantahala and Pisgah NFs. Under this plan revision theme, plan components focus on how management will sustain surface water and ground water flow, maintain fish and wildlife habitat, control erosion, and stabilize streambanks. Objectives under this theme manage for a healthy forest through road maintenance, stream restoration, habitat management and mitigating effects from acid rain.

Over the life of the Plan

14. Re-evaluate and update the **Transportation System Analysis Plan** (TAP) within 3 years of plan approval. Projects shall be informed by the TAP and where practicable may result in altering Road Maintenance Objectives, decommissioning unneeded roads, adding roads to support management objectives, or transferring maintenance responsibilities to other entities.

Background and rationale

- *The goal of the Forest Service transportation system is to provide safe and efficient access to National Forest System lands in a fiscally and environmentally sound manner by maintaining a safe, and environmentally sound road network that is responsive to public needs and affordable to manage. The transportation system should reflect the expected level of use and public desires, while having minimal impacts on resources.*
- *The Nantahala and Pisgah NFs recently each completed a forest TAP to identify the road system necessary to support the management objectives described in the 1994 (as amended) Forest Plan. The TAP identified roads that are "likely needed," "likely unneeded" and possible adjustments to road maintenance levels to optimize the road system and minimize costs. The longterm goal of the TAP process is to have a road system that minimizes adverse environmental impacts by assuring roads are in only locations where they are necessary to meet access needs, and can be maintained within budget constraints. Achieving this longterm goal will happen over a phased in approach that will require more than one planning period.*
- *While the current road system cannot be maintained by FS dollars alone, the TAP considers methods to reduce maintenance costs for the system including the methods outlined in the objective above.*
- *The TAPs for the Pisgah (2013) and Nantahala (2015) were based on the 1994 (as amended) plan and the road system needed to implement it,*
- *The TAP will need to be revised to reflect the revised Forest Plan's desired conditions, objectives, and other plan components to reflect the extent of*

infrastructure that is needed to achieve the desired conditions and objectives of the plan.

- *The revision and updating of the TAP will provide opportunities for public involvement.*
- *Implementing the TAP may require additional NEPA analysis that addresses specific proposals.*
- *Related draft plan components are contained in the following sections: Transportation and Forest Access*

15. Develop and implement a **forestwide road maintenance plan** that identifies priority maintenance activities, funding sources, and performance responsibilities, over the life of the plan. The work presented in this plan is prioritized to promote public safety, prevent erosion, protect water quality, and maintain forest access, with an emphasis on priority watersheds.

    Background and rationale:

    - *Ongoing road maintenance contributes to preventing erosion and promoting clean water. Effective management or improving management practices can often be as effective as implementing restoration projects.*
    - *Best Management Practices are consistently implemented for new projects and monitoring data verifies they are successful in preventing sediment reaching streams.*
    - *A road maintenance plan prioritizing road maintenance needs would to improve efficiency. The maintenance plan can identify a variety of tools, such as cost sharing agreements and partnerships, to complete work.*
    - *The first priority of the road maintenance plan will be to address any courses of sediment from roads in priority watersheds.*
    - *Related draft plan components are contained in the following sections: Transportation and Forest Access*

16. **Unauthorized road and trail miles** within priority watersheds will be identified and prioritized for decommissioning to minimize erosion and sedimentation. A minimum of 50 miles of unauthorized roads and trails will be decommissioned during the life of the plan.

    Background and rationale:

    - *Unauthorized roads and trails are considered together here as many unauthorized roads are frequently used as trails.*
    - *Unauthorized routes (roads and trails) develop without agency authorization, environmental analysis and do not have the same status as NFS roads and NFS trails included in the forest transportation system. Many unauthorized routes cause unacceptable resource impacts. It is possible that some roads and trails which are not on the map are actually authorized, but not shown via a mapping error.*
    - *Over the past planning period, hundreds of miles of unauthorized roads and trails have been decommissioned through preventing access,*

correcting erosion issues and removing stream impediments such as culverts.

- *The scale of this issue is not known and needs to be assessed. By identifying the presence of unauthorized roads, priority needs can be determined and acted upon.*
- *Unauthorized roads are subject to decommissioning at any time that funding becomes available for that purpose.*
- *Related draft plan components are contained in the following sections: Transportation and Forest Access*

17. Develop **action plans for ten priority watersheds** for restoration. Improve the conditions of two to four priority watersheds from "functioning at risk" to "properly functioning," considering the following improvements over the life of the plan:
    - Improve three to five water quality problems from "impaired" or "functioning at risk" to "properly functioning" condition;
    - Restore approximately 15 to 20 acres of stream ecosystem, focusing on restoring floodplain connectivity, stream channel function (for example large woody debris), and native riparian vegetation;
    - Perform road maintenance activities on 15 miles of roads;
    - Perform trail maintenance activities on approximately 15 miles of trails, emphasizing trails within 100 feet of streams;
    - Decommission unneeded roads that are adversely affecting aquatic health.

Background and rationale:

- *Over the past planning period, thousands of acres of watershed improvements have been accomplished on the Forests. These projects stabilized soil erosion and reduced sources of human caused sediment in numerous watersheds.*
- *The annual watershed improvement program (totaling from 200 to 500 acres per year of improvements) has taken great strides to improve water quality on NFS lands and cumulatively downstream.*
- *The Planning Rule requires land management plans to "identify watershed(s) that are a priority for maintenance or restoration" (36 CFR 219.7(f)(1)).*
- *Priority watersheds identified in the plan are those where plan objectives for restoration would concentrate on maintaining or improving watershed condition.*
- *This objective averages the development of one watershed action plan per year for the first decade, and begins implementing these action plans.*
- *Within each watershed, exact needs will vary. Attributes found to have the greatest adverse impact on watershed condition ranking in the Watershed Condition Framework are associated with water quality problems; the lack of large woody debris in streams; absence of brook trout; roads and trails not maintained to standard; soil contamination; and fire condition class. The needs identified above will allow flexibility to address the Watershed Condition Framework concerns while meeting the specific needs identified in the watershed.*
- *Related draft plan components are contained in the following sections: Soils, Water*

18. Assess three to five **Groundwater Dependent Ecosystems** (including springs, seeps, wetlands, and southern Appalachian bogs) and implement actions needed to maintain or restore groundwater connectivity to these systems, over the life of the plan.

    Background and Rationale:
    - *Ground water-dependent ecosystems are to be managed such that they are protected by (1) maintaining natural patterns of recharge and discharge, and minimizing disruption to ground water levels that are critical for ecosystems; (2) not polluting or causing significant changes in ground water quality; and (3) rehabilitating degraded ground water systems where possible.*
    - *We do not currently have an abundance of information about groundwater connectivity; therefore, this objective will improve our understanding of conditions and needs.*
    - *Related draft plan components are contained in the following sections Aquatic Systems (including wildlife), Water*

19. Work with partners to complete the assessment of **aquatic organism passage** (AOP) needs across the Forests over the life of the plan. Prioritize completion of AOP needs that enables reconnection of fragmented populations of brook trout and other aquatic federally-listed species or species of conservation concern, or restoration of these species to suitable unoccupied habitat.

    Background and rationale:

    - *There is a need to include direction in this plan for improving aquatic organism passage in streams where it is compromised. Needs include restoring and expanding the range of native aquatic species and connectivity of fragmented populations, with extra consideration of areas with high aquatic biological diversity.*
    - *NFsNC will continue the practice of designing and implementing stream rehabilitation projects using natural channel design techniques.*
    - *See the related annual Objective 24 below which contributes to this one.*
    - *Related draft plan components are contained in the following sections Aquatic Systems (including wildlife), Water*

20. Maintain or expand the occupied range of **brook trout** across the Forest. Additionally, maintain or increase populations within this range over the life of the plan.

    Background and rationale:

    - *Brook Trout (Salvelinus fontinalis) are the only trout native to much of the eastern US. Here they are found in only the coldest and cleanest water and serve as indicators of the health of the watersheds they inhabit. A decline in brook trout populations can function as an early warning that the health of an entire system is at risk.*

- *In pre-Colonial times, brook trout were present in nearly every coldwater stream and river in the eastern US. Sensitive to changes in water quality, wild brook trout began to disappear as the eastern landscape and land uses transformed. Threats to water quality and wild brook trout persist today, as the US population and resource needs increasingly expand.*
- *As water quality declined and native brook trout disappeared, rainbow trout and brown trout were introduced. As forests returned and aquatic habitat improved, these non-native fish expanded their range and now compete with brook trout for food and space. Most remaining high quality trout habitat is occupied by non-native fish.*
- *The Eastern Brook Trout Joint Venture identifies the Great Smoky Mountains National Park and the Cherokee, Nantahala, and Pisgah National Forests as places supporting the highest quality trout habitat remaining in the Southeast.*
- *Over the last 20 years, the Forest Service has actively restored riparian habitats and brook trout populations, and restored aquatic organism passage at some stream crossings, resulting in a greater range of brook trout on the Nantahala and Pisgah NFs.*
- *The Forest Service is working with the North Carolina Wildlife Resources Commission to update the map of the current occupied range of Brook Trout. This map will provide a 2016 baseline for this objective.*
- *Activities the Forest Service would take to implement this objective include removal of habitat barriers, restoration of hydrology and habitat, and population augmentation. Continued protection and connection of these small, fragmented brook trout populations will ensure their long-term survival in the face of droughts and floods.*
- *Suggested monitoring metrics include an annually updated map of occupied range and results from a long-term monitoring project with North Carolina Wildlife Resources Commission and US Fish and Wildlife Service.*
- *Related draft plan components are contained in the following sections* *Aquatic Systems (including wildlife)*

21. Maintain or expand the occupied range of **freshwater mussels and other aquatic species of conservation concern and federally-listed species** across the Forest. Additionally, maintain or increase populations within this range over the life of the plan.

    Background and rationale

    - *North Carolina cool- and warm water streams support a diversity of aquatic species, including many nongame fish, crayfish, and freshwater mussels. Many of these species are rare or of conservation concern*
    - *The southeastern US supports the highest aquatic species diversity in the entire US. Southeastern fishes make up 62% of the US fauna, and nearly 50% of the North American fish fauna. Molluscan diversity in the region is 'globally unparalleled', with 91% of all US mussel species found in the*

southeast. Crayfish diversity and global importance in the region rivals that of mollusks.. Crayfish in the southeast comprise 95% of the total species found in all of North America.

- *Unfortunately, patterns of imperilment are similar. Greater than two-thirds of the nation's freshwater mussel and crayfish species are extinct, imperiled, or vulnerable, and the majority of these at-risk species are native to the southeast. The number of imperiled freshwater fishes in the southeast (84) is greater than any other region in the country and the percentage of imperiled species is second only to the western US.*
- *In North Carolina, water quality has improved over the last several decades in many waters that were historically polluted primarily by point-source discharges; however, overall habitat degradation continues to threaten the health of aquatic communities. Increased development and urbanization; poorly managed crop and animal agriculture; and mining activities impact aquatic systems with point and nonpoint source inputs. Additionally, impoundments on major rivers and tributaries drastically alter the hydrologic regime of many North Carolina waterways and result in habitat fragmentation; blockage of fish migration routes; and physical habitat alterations.*
- *The Forest Service is working with the North Carolina Wildlife Resources Commission to update the map of the current occupied range of freshwater mussels. This map will provide a 2016 baseline for this objective.*
- *Activities the Forest Service would take to implement this objective include removal of habitat barriers, restoration of hydrology and habitat, and population augmentation.*
- *Objective 13 also addresses aquatic Species of Conservation Concern.*
- *Related draft plan components are contained in the following sections Aquatic Systems (including wildlife), Threatened and Endangered Species and Species of Conservation Concern (including wildlife)*

Annually

22. Restore three to five acres of **streamside zones** annually, where past activities have decreased vegetative diversity.

Background and rationale

- *Streamside zones are found at the transition between aquatic and terrestrial. These zones are a primary influence on whether water quality is poor or excellent; whether stream fisheries habitat is rich with an abundance of large woody debris; whether high quality food and cover are available for terrestrial animals; and whether stream associated plant communities are maintained.*
- *Trends in riparian area diversity are improving where diverse tree and understory species exists. However, in areas where vegetation composition is predominantly hemlock with an understory of rhododendron; trends in*

riparian habitat diversity are likely to decline. The rhododendron dominates the vegetation composition in these stands because of the exclusive nature of the rhododendron.

- *This objective would continue the current pace of work toward improving the diversity and health of streamside zones, which would have a cascading impact to broader forest health.*
- *Related draft plan components are contained in the following sections: Streamside Zones (including wildlife)*

23. Implement three to five **stream channel improvement projects** annually, focusing on restoring floodplain connectivity, stream bank stability, and enhancement of aquatic habitat diversity, using natural channel concepts.

Background and rationale

- *The Watershed Condition Framework found that 91% of the forest watersheds were "functioning at risk" for channel morphology. These watersheds were found to have fair stream channel conditions – neither good nor poor. Improvements can be made the shapes of channels and how they change in shape and direction.*
- *Large woody debris is a major factor in channel morphology in the mountains. Trends in large woody debris in stream channels are improving where a diversity of tree and understory species exists in the streamside area. However, in areas where vegetation composition is predominantly hemlock with an understory of rhododendron, trends in large woody debris are likely to have a short-term improvement, followed by a long-term decline.*
- *The Nantahala and Pisgah NFs have designed and implemented numerous stream rehabilitation projects using natural channel design techniques. Such techniques simulate the natural function of streams to restore the dimension, pattern, and profile, resulting in improved aquatic and riparian habitat. Structures have been installed in streams using boulders and trees to mimic flow deflectors and pool creators. Tall eroded stream banks have been restored to stable slopes and vegetated with transplants, native grasses, and trees and shrubs. Water quality, aquatic habitat, and riparian areas have been improved largely in stream reaches adversely impacted by roads and recreation.*
- *Over the past planning period we have done well to meet the existing standard to "use habitat restoration, improvement, and reintroduction to re-establish or expand native species populations and diversity." This objective will continue that ongoing work at a pace consistent with recent years.*
- *Related draft plan components are contained in the following sections: Aquatic Systems (including wildlife)*

24. Replace a minimum of two **impaired stream crossings** annually to improve aquatic organism passage and aquatic community connectivity across the planning unit.

Background and rationale:

- *Connectivity is critical to the long-term health and resiliency of Brook Trout and other species. (See additional rationale above for Objectives 19, 20, and 21). The Nantahala and Pisgah NFs have restored aquatic organism passage and some stream crossings across the forest; however there are opportunities still remaining.*
- *The suggested metric for monitoring would be number of stream miles that are reconnected.*
- *Related draft plan components are contained in the following sections: Aquatic Systems (including wildlife)*

25. Assess **Acid Neutralizing Capacity** in one priority watershed annually, and utilize the information to influence watershed management and restoration.

Background and Rationale:

- *This objective has been developed to mitigate the effects of acid deposition, more commonly known as acid rain.*
- *Stream acid neutralizing capacity is an indicator of the ability of the soils and streams to buffer strong acids. The Acid Neutralizing Capacity also serves as one of the Water Quality Condition indicators in the Watershed Condition Framework.*
- *In watersheds across the Forests, extensive areas of soil base cations (especially calcium) loss is present because of contamination from atmospheric deposition, resulting in sulfur and/or nitrogen deposition above terrestrial critical loads. In nearly 93 percent of watersheds in The Watershed Condition Framework, "Soil Contamination" was ranked as an Impaired Function due to atmospheric deposition.*
- *The Watershed Condition Framework called for improving soil nutrient content where appropriate in watersheds showing adverse effects from acid deposition.*
- *As a result of the Watershed Condition Framework, priority watersheds were identified for restoration of multiple watershed needs.*
- *Development of a new tool using a simple mass balance equation helps assess the long-term stream Acid Neutralizing Capacity, and this tool along with future tools developed, can be applied and refined over the life of the plan.*
- *Related draft plan components are contained in the following sections: Air, Soils*

Connecting People to the Land

From the very beginning, the forests of Western North Carolina have been recognized for their importance to people. The rich cultural mosaic of people who have called this region their home depend on the forest for scenic beauty, year-round outdoor play and exercise, spiritual renewal, traditional uses like hunting and gathering, and economic opportunity. Under this theme, the plan recognizes the contribution of the Pisgah and Nantahala NFs to communities and quality of life in the broader region, and the cultural traditions and economies that depend on the forest. Objectives address management of sustainable recreation, volunteerism, nature-based education, nontimber forest products, protection of cultural resources, and relationship with Federally Recognized Tribes.

Objectives under this theme

26. Move toward a more ecologically, socially, and economically **sustainable recreation program**, by:
    A. Implement **collaborative recreation planning** with stakeholders and local communities to develop strategic guidance for sustainable recreation for the future within 5 years.
    B. Maintaining and operating priority developed recreation sites to **a facility condition index** of 90% or better and to National Quality Standards over 10 years.

Background and rationale:

- *Most Americans come to know (and love) National Forest System lands through recreation. The Nantahala and Pisgah NFs connect to these visitors through trails, developed recreation areas, and vast hunting, fishing, camping, and education experiences. Although the Forest Service has invested millions of dollars in recreation, it can no longer afford to finance aging facilities, poorly designed trails, and underused picnic areas and campsites, and other recreation areas. Even if budgets did increase, it would be unrealistic to expect any public land manager to meet the desires of all users in all locations. Although agency employees have tried, the Forest Service cannot be all things to all people in all places. To sustain recreation benefits, we all must think differently and act differently.*
- *The Forest Service must work with others to choose investments wisely. People inside and outside the agency must plan and implement innovative solutions. The objectives here are designed to help the Nantahala and Pisgah focus on the recreation sites that meet the existing and future needs of the changing public, while reducing investment in sites that are not sustainable. Currently, priority developed recreation sites are managed to approximately 80% of the facility condition index, and this objective would prioritize maintaining and operating them to 90% while reducing investment in sites that are no longer sustainable.*
- *Community engagement is essential for creating a sustainable recreation program. We need to tap into the enormous energy and creativity of people in the communities*

surrounding the Pisgah and Nantahala National Forests who care for and value the many benefits they provide. The Nantahala and Pisgah NFs have identified a need to conduct collaborative recreation planning with local communities and stakeholders to understand public values and develop a shared vision for the future. Collaborating openly and honestly with partners, communities and other organizations toward common goals will increase transparency and communication, which often lead to trust, confidence, and accountability.

- *Related draft plan components are contained in the following sections: Recreation.*

27. Move toward a more **sustainable trail system** over the life of the plan by
    A. Complete **Trail Management Objectives** for all National Forest System trails over the life the plan, and schedule trail maintenance tasks accordingly.
    B. Eliminate 10% of **deferred maintenance** backlog on off-highway vehicle trails; accomplished primarily using volunteers, fee revenue, and grants, over the life the plan.
    C. Double the number of trail miles meeting **National Quality Standards**, over the life the plan.
    D. Create new 10 **new loop trail opportunities** by linking existing forest trails, over the life the plan.

Background and rationale

- *Trail Management Objectives identify designed and allowed trail uses, maintenance frequencies, and design parameters; thus providing trail-specific guidance to insure appropriate management and maintenance. Trail Management Objectives are needed for all system trails.*
- *Off-highway vehicle trails require more frequent maintenance than trails managed for other uses and deferred maintenance needs accumulate quickly if not addressed. As of 2016, there are about 56 off-highway vehicle trail miles, with about 20 maintained to standard. Emphasizing a reduction in deferred maintenance will move off-highway vehicle trails to a more sustainable condition.*
- *Trails not maintained to standard have the potential to accumulate deferred maintenance needs, contribute sediment to streams, and degrade user experience. Currently, an average of 25% of forest trails meet National Quality Standards. Doubling this number would be an ambitious but achievable objective.*
- *Diverse members of the public have strongly requested additional loop trail opportunities; however, trail creation and maintenance is a substantial long-term investment to create and maintain. Rather than building completely new trails, this objective recognizes new opportunities by constructing short connectors and by linking existing trails. Creating the trail connectors can be a small investment; as little as a half-mile of additional trails. Even small linkages to existing trails require project specific analysis, such as endangered species and archeological surveys to assess trail locations. Given the analysis and implementation requirements, creating 10 loop opportunities represents a reasonable amount to*

be accomplish during this plan period. Loop trails could be diversified to benefit all types of forest users (hiking, biking, horseback riding, and motorized trails).

- *Related draft plan components are contained in the following sections: Recreation: Trails*

28. Over the life of the plan, implement **sustainable building design** technologies that reduce operating costs by 5% or higher.

    Background and rationale:

    - *The USFS is a leader in sustainable building design, implementing innovative technology that reduces energy use and is more cost effective. Strategies can be implemented across Nantahala and Pisgah facilities to reduce the natural resource impact of facitilies, while saving funds.*
    - *Related draft plan components are contained in the following sections: Facilities*

29. Continue to foster a strong community of forest **volunteers**, by increasing volunteer hours by 10% over the life of the plan.

    Background and rationale:

    - *Volunteers and partnerships are key to managing and maintaining national forest resources. Volunteerism provides the community opportunities to contribute to sustainable management of their public lands. Increasing volunteer hours should be an indicator of improved volunteer interest, effective collaboration, and successful program management.*
    - *Current volunteer hours on the forest are estimated as youth conservation corps hours, hours from partnership and organization agreements, and individual and group volunteer hours. Volunteers help with task as diverse as our resource management – everything from trail and site maintenance, road and river cleanups, archeological surveys, hosting interpretive events, providing information to forest visitors, and much more.*
    - *In Fiscal Year 2013, which represents a typical annual year, volunteers contributed more than 105,000 hours to the Pisgah and Nantahala NFs, which is roughly equivalent to 60 years of contributed time and a total estimated value of more than $2.3 million.*
    - *Related draft plan components are contained in the following sections: Community Connections*

30. Every two years within the implementation of the plan, each Ranger District will implement at least one new educational opportunity that is designed to provide **youth or underserved populations** a better understanding of their natural and cultural environments and to provide opportunities for people to develop a sense of stewardship and appreciation of the forests. Educational opportunities will vary by Ranger District depending on the local need.

Background and Rationale:

- *National direction requires that the development of plan components take into account opportunities to connect people with nature by expanding outreach to more youth, Tribes, minority, and low income populations.*
- *Currently, the Nantahala and Pisgah NFs conduct interpretive programs and provided outreach to visitors and local communities. Visitors engage in educational, hands-on, curriculum-based programs such as Leave No Trace, Smokey Bear, and Woodsy Owl. Additionally, the Forest Service provides community outreach programming such as kids fishing days, natural resource career opportunity days, and alternative spring break options.*
- *New programming will provide the Forest Service with the opportunity to expand programming efforts to better connect with the changing population which is becoming more ethnically diversity as well as more youth and low income populations.*
- *Strong and effective relationships with a the nation's diverse public will provide the opportunity to raise awareness and develop understanding of multi-use management practices which is essential to sustaining the health, diversity, and productivity of national forests to meet the needs of present and future generations.*
- *Related draft plan components are contained in the following sections: Conservation Education*

31. To improve management of non-timber forest products, every ten years of plan implementation:
    A. Assess 2-4 **non-timber forest products** to ensure sustainability and stable populations for species with higher harvest rates or biological susceptibility such as American ginseng, ramps, Galax and Fraser fir.

    B. Augment or establish at least 5 **ginseng populations** with Southern Appalachian germplasm (seeds or transplants).

Background and rationale:

- *There is a long cultural history of both personal and commercial collection of medicinal plants, floral greens, and edibles.*
- *National standards require sustainable harvest of non-timber forest products.*
- *Emerging markets of popular medical plants can rapidly change the level of collections on the Forest.*
- *Each non-timber forest product will be assessed individually to determine any need to modify collection protocols or limiting collection permits.*
- *Ginseng is the most valuable medicinal collected in these forests. Given a history of introducing seed from other portions of its range (Canada and the northern US), there are concerns about maintaining a local southern Appalachian ecotype.*
- *Related draft plan components are contained in the following sections: Forest Products (Non-timber)*

32. Take the following actions to **protect cultural resources**:
    A. Over the life of the plan, reduce maintenance needs at archeological sites and historic structures by 50%.
    B. Over the life of the plan, reduce the backlog of site evaluations by 60%.
    C. Within three years of plan implementation, identify sites that are at high risk from looting impacts.

Background and Rationale:

- *Cultural resources include the artifacts, archeological sites, and built environments created by past inhabitants and those areas used or affected by them with their ways of life. The condition of cultural resources and historic structures across the plan area vary by resource type, location, and age.*
- *Maintenance is needed for sites to prevent resource loss. In the Forest Plan Assessment, deferred maintenance costs for 52 Priority Heritage Assets was assessed at more than $400,000.*
- *Prehistoric and historic archeological sites and structures and objects may be determined eligible for the National Register of Historic Places. At the time of the Forest Plan Assessment, the Forests had recorded 3,615 cultural resources. Of those, 238 have been determined eligible and are managed to preserve and protect their significant characteristics. Another 1,242 are unevaluated and also managed for preservation. This objective would increase the total number of evaluated sites.*
- *Archeological site looting and artifact collecting can adversely impact cultural resources by removing artifacts from their site locations, disturbing previously preserved cultural deposits, accelerating erosion, and destroying irreplaceable scientific information. As part of this objective, the forests will complete inventories to identify significant cultural resources in areas of high site likelihood in order to prioritize preservation and salvage needs prior to possible irretrievable resource loss.*
- *This objective will further opportunities to increase public engagement and partnerships in the Heritage Resources Program and provide the public with opportunities for connections to the land.*
- *Related draft plan components are contained in the following sections: Cultural Resources*

33. Foster and sustain strong relationships with **Federally Recognized Tribes** through the following actions:
    A. Within two year of plan implementation, complete a Tribal Communication plan and a Memorandum of Understanding.
    B. Within three years of plan implementation, develop a Tribal partnership for restoration.

Background and Rationale:

- *American Indian Tribes associated with the plan area include federally recognized Indian tribes with historic ties and interests in the management of the Nantahala and Pisgah NFs. National direction requires formal consultation and development of partnerships with Tribes.*

- *Strong and effective relationships with Tribes will provide the opportunity to raise awareness and to develop understanding which are essential to meaningful consultation and productive partnerships.*
- *Related draft plan components are contained in the following sections: Tribal Resources*

34. Develop additional management direction for the **Trail of Tears** through the following actions:

A. Within two years of plan approval, complete a Cultural Landscape Report.
B. Within three years of plan approval, complete the Comprehensive Management Plan and finalize mapping of the Trail and corridor.
C. Within three years of plan approval implement signage as appropriate of historical routes for the Trail of Tears and Unicoi Turnpike.

Background and Rationale:

- *The Trail of Tears is a National Historic Trail with required national direction for preservation, restoration and interpretation.*
- *A Comprehensive Management Plan will provide direction and guidance for this unique historic trail and is planned to be developed in consultation with Tribes, along with the National Park Service, other National Forests, State Historic Preservation Office agencies, and other partners such as the Trail of Tears.*
- *The objectives proposed here are currently being discussed by the groups identified in the bullet above.*
- *There will be a separate section of the plan containing direction for the Trail of Tears, and plan components are currently under development and consultation.*
- *Related draft plan components are contained in the following sections: Tribal Resources.*

Appendix A: Criteria used to develop objectives

All objectives must

1. Relate to one of the three FPR themes identified:
   (1) Providing clean and abundant water,
   (2) Connecting People to the Land, or
   (3) Enhancing and Restoring Resiliency.

2. Contribute to sustainability.
   a. *Ecological: Important for ecological integrity. Ecological integrity occurs when dominant ecological characteristics (for example, composition, structure, function, connectivity, and species composition and diversity) occur within the natural range of variation and can withstand and recover from most perturbations imposed by natural environmental dynamics or human influence.*
   b. *Social: Important for supporting the network of relationships, traditions, cultures, and activities that connect people to the land and to one another, and support vibrant communities.*
   c. *Economic: Important for society to produce and consume or otherwise benefit from goods and services including contributions to jobs and market and nonmarket benefit.*

3. Have a high degree of management feasibility and public support.
   Pursuit of the objective has high degree of public interest, broad support, and management has the technical and fiscal capability to achieve.

4. Reduce risk of non-attainment of progress toward desired conditions.
   If the objective is not established or achieved, substantial negative consequences to the degree of change toward the desired conditions could result (for example progress toward desired conditions could slow or be reversed). Conversely, the degree of change could have substantial positive consequences if attained (for example, progress toward desired conditions could be substantially faster).

Additionally, objectives should

5. Contribute to ongoing performance.
   The objective or monitoring item reflects a long-term commitment.

6. Enhance management effectiveness and efficiency.
   Improves or moves toward operating within Forest Service fiscal capability.

7. Provide partnering opportunities or coordination activities.
   One or more partners are willing to commit resources.