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

Rare Habitats

Background

Rare habitats are defined as those ecological communities that are rare on the Nantahala and Pisgah NFs or rare in the southern Appalachians with a global rank of G3 or less. All the types/subtypes were determined either from Natureserve.org or from the 2012 Guide to the Natural Communities of North Carolina, 4th Approximation. The number of rare habitat sites across the forest is determined from the Biotics database as maintained by the NC Natural Heritage Program, and information from forest personnel and cooperators. As such, the number of sites can be fluid as new locations are found.

Rare habitats vary by rarity and the number of sites documented across the Nantahala and Pisgah NFs. The rarest habitats on the national forest are calcareous oak-walnut forests, serpentine woodlands (barrens), upland pools, and floodplain pools. Globally, the rarest habitats within the two forests are grassy balds, heath balds, serpentine woodlands, beech gap forests, calcareous oak-walnut forests, and various subtypes of high and low elevation rocky summits.

Desired Conditions

- Rare habitats are rare across the landscape but present at their natural distribution patterns.
- Rare habitats are resilient in the face of changing climate, pests, and disturbance events.
- Natural disturbance patterns, such as lightning-caused wildfires, occur within rare habitats and are not disrupted, if possible.
- Interpretive media and information is available regarding rare habitats.
- Recreation use within rare habitats does not negatively impact the persistence of associated species and ecosystem functions.
- Southern Appalachian Bogs have less than 40% canopy cover and less than 25% shrub cover. They include appropriate Sphagnum moss species and provide suitable habitat for associated herbaceous and woody plant species, including federally threatened and endangered species, and species of conservation concern.
- Swamp forest bog complexes have a closed canopy and a dense understory of evergreen shrubs. They contain small gaps in the canopy, up to 1/4 acre in size with greater than 50% cover of Sphagnum mosses, grasses, and/or sedges.
- Grassy Balds have less than 25% canopy cover. The grassy bald subtype has less than 25% shrub cover compared to the alder bald subtype which has greater than 50% green alder (*Alnus viridis* ssp. *crispa*) shrub cover. Both types have greater than 50% native grasses or sedges, including mountain oat-grass (*Danthonia compressa*), wavy hairgrass (*Avenella flexuosa*), Pennsylvania sedge (*Carex pensylvanica*) and/or flexuous sedge

(*Carex flexuosa*), and herbaceous species. Neither type has greater than 15% blackberry (*Rubus canadensis*) cover.

- Heath Balds are free of trees and are densely covered with shrubs, primarily members of the heath, Ericaceae family.
- Carolina Hemlock Bluffs are free of hemlock woolly adelgid. Within all three subtypes, Carolina hemlock is regenerating and provides at least 40% canopy cover.
- Spray Cliffs are sediment free, provide habitat for federally endangered rock gnome lichen (*Gymnoderma lineare*), and have a high diversity of moss and liverwort species.
- Upland/Vernal Pools are seasonally saturated, have a shallow depth of water, are free of woody plants, and have associated herbaceous species. Sphagnum moss and threeway sedge (*Dulchium arundinaceum*) are often associated with upland pools.
- Floodplain Pools are present during periodic naturally occurring flooding events, have few emergent herbaceous species, have short-lived, annuals and biennials, herbaceous species on their periphery, and have appropriate aquatic animals.
- Seeps are widespread across the forest. Seeps are small, typically less than 1/10 acre, permanently saturated wetlands generally embedded within the streamside zone. Characteristic wetland plant and animal species are associated with seeps.
- Rocky Bar and Shores occur along naturally functioning floodplains, are dynamic and variable, either densely covered with shrubs or herbaceous species, based on the frequency of flooding, and provide suitable habitats for rare plants, such as Virginia Spiraea (*Spiraea virginiana*), and animals, such as Junaluska salamander (*Eurycea junaluska*).
- Semi-permanent impoundments are influenced and maintained by beaver activity and provide habitat for wetland plants as well as associated animals. They are often dominated by herbaceous vegetation such as common rush (*Juncus effusus*), woolgrass bulrush (*Scirpus cyperinus*), or cutgrass (*Leersia* species) or shrubs such as black alder (*Alnus serrulata*).
- Rocky White Pine forests occur on steep slopes, typically greater than 50%, in sheltered gorges, have greater than 60% white pine (*Pinus strobus*) cover in the canopy, white pine regenerating in the understory, and a dense shrub layer.
- Red cedar-hardwood woodlands are associated with granitic outcrops, have less than 70% total canopy cover, greater than 30% canopy cover of red cedar, regenerating red cedar, and associated rare plant and animal species of conservation concern, such as cliff stonecrop (*Sedum glaucophyllum*) or Appalachian tawny crescent (*Phyciodes batesii maconensis*).
- Calcareous oak-walnut woodlands have less than 70% total canopy cover, have chinkapin oak (*Quercus muhlenbergia*), red oak (Quercus rubra) and black walnut (*Juglans nigra)*

regenerating, and associated plant species of conservation concern. Wildland fires occur every 7-12 years, providing an open woodland structural diversity.

- Serpentine woodlands (barrens) have less than 60% total canopy cover, have regenerating pitch pine (*Pinus rigida* and white oak (*Quercus alba*), greater than 50% grass cover, and associated plant species of conservation concern. Wildland fires occur every 7-12 years, providing an open woodland structural diversity.
- Low elevation glades, including the three subtypes, have an open canopy structure with less than 60% canopy, greater than 40% grasses and/or spikemoss coverage, include Biltmore sedge (*Carex biltmoreana*) for the one subtype, and associated plant species of conservation concern.
- High Elevation Rocky Summits have less than 20% shrub coverage and provide habitat for a diversity of rock adapted herbaceous, moss, liverwort, and lichen species, including the federally listed spreading avens (*Geum radiatum*), Roan bluet (*Houstonia montana*), Blue Ridge goldenrod (*Solidago spithamaea*), and rock gnome lichen (*Gymnoderma lineare*).
- Low Elevation Rocky Summits have less than 20% shrub cover, (greater than 1 meter in height), and provide habitat for a diversity of low growing subshrubs and herbaceous species including the federally-listed mountain golden heather (*Hudsonia montana*) and Heller's blazing-star (*Liatris helleri*). Wildland fires occur every 5-10 years, providing structural diversity and removal of accumulating duff.
- High Elevation Granitic Domes have less than 30% shrub coverage, greater than 30% twisted hair spikemoss (*Bryodesma tortipilum*), and provide habitat for a diversity of rock adapted herbaceous, moss, liverwort, and lichen species, including species of conservation concern such as divided leaf ragwort (*Packera millefollium)* and granite dome goldenrod (*Solidago simulans*). Appalachian ragwort (*Packera anonyma*) is not present and does not result in hybridization with divided leaf ragwort.
- Low Elevation Granitic Domes have less than 30% shrub coverage, have greater than 20% rock spikemoss (*Bryodesma rupestre*), and provide habitat for a diversity of rock adapted herbaceous, moss, liverwort, and lichen species.
- Montane Cliffs, including acidic, basic and mafic types are variable in size, from a half acre to greater than two acres, and have canopy trees only on their periphery. They provide habitat for a diverse group of herbaceous, moss, liverwort, and lichen species, including species of conservation concern.
- Caves and abandoned mines known to support bats are not trampled or impacted by recreationists and provide habitat free from white nose syndrome for a diversity of bats.
- Boulderfields have a diversity of canopy tree species, including yellow birch (*Betula alleghaniensis*), sugar maple (*Acer saccharum*), and buckeye (*Aesculus flava*), with greater than 80% percent total coverage. A mosaic of different boulder shapes and sizes occur and are covered with greater than 30% mosses. They provide habitat for a diverse

group of herbaceous, moss, liverwort, and lichen species, including federally listed species and species of conservation concern.

- Beech Gaps are dominated by wind swept short height beech (*Fagus grandifolia*). Beech trees are producing seedlings and saplings within the Pennsylvania sedge dominated understory layer. A diversity of plant and animal species persist, including species of conservation concern.

Standards

- Management within or adjacent to rocky areas, including boulderfields, low and high elevation rocky summits and granitic domes, glades, or cliffs, shall maintain habitat characteristics required by species occupying those areas.
- Maintain, sign, and enforce closure areas at low elevation rocky summits for the protection of *Hudsonia montana*.
- Maintain, sign, and enforce closure areas at Montane Cliffs for the protection of the peregrine falcon.
- Caves and abandoned mines known to support bat populations are protected, and locations of biologically significant caves are not available to the public.
- Caves, abandoned mines, and large rock shelters supporting bat populations shall be identified as smoke-sensitive targets when bats are present.

Management Approaches

- Rare habitats are mapped when encountered and maintained in a GIS database that is available and utilized in project level planning.
- Consider impacts to rare habitats from landscape level prescribed burns. Maintain or restore habitats such as Carolina hemlock bluffs and calcareous oak-walnut woodlands, with periodic burns while reducing impacts to older mature Carolina hemlock or walnut trees, greater than 12 inches diameter at breast height.
- Consider impacts, hydrological or physical, to Southern Appalachian bogs and swamp forest bog complexes when implementing a vegetation management project within ¼ mile of these rare habitats.
- Incorporate an adaptive management approach for restoring and reducing woody plant encroachment on grassy balds, alder balds, and in Southern Appalachian bogs. All viable tools and approaches such as silviculture methods, grazing, prescribed fire, targeted herbicide application, and/or mowing should be considered for reducing the canopy and competing shrubs within balds and bogs.
- Emphasize brushy and shrubby inclusions and edges within old fields, pastures, and high elevation balds to restore or enhance wildlife habitat diversity.

See also: Trails