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Date: January 28, 2005

Dear Friend of Nantahala and Pisgah National Forests:

I am proposing to amend the Land and Resource Management Plan ("Forest Plan") for the Nantahala and Pisgah National Forests ("the Forests") to change the current list of management indicator species (MIS). The original Forest Plan published in 1987 contained 5 mammals, 6 birds, 5 fish, 3 plants, and one invertebrate as MIS. The list of MIS was modified and expanded for Forest Plan Amendment 5 (1994) to 8 mammals, 17 birds, 11 fish, 4 amphibians, 23 plants, and 7 multi-species assemblages. Since that time, the effectiveness of these MIS have been reviewed and it has been determined that the list needs to be updated again. The proposed amendment would streamline the list to 2 mammals, 7 birds, 5 plants, and 4 fish. In addition, eight species assemblages would be monitored, not as MIS, but as a part of the overall Forest Plan monitoring plan.

MIS were established during the development of the Forest Plan in compliance with the 1982 planning regulations (36 C.F.R. 219.19). These regulations require that certain species be selected "In order to estimate the effects of each alternative on fish and wildlife populations...." Further, "These species shall be selected because their population changes are believed to indicate the effects of management activities." Each Forest Plan alternative also had to establish objectives for the maintenance and improvement of habitat for the MIS.

After almost a decade of implementing the Forest Plan with the current MIS list, I am proposing to amend the MIS for the Nantahala and Pisgah National Forests for the following reasons:

- To reduce redundancy. Some MIS are redundant in that several MIS are representing identical communities and habitats. This redundancy is using limited resources for analysis activities that are not providing any additional information on effects to communities and habitats.
- To select species that better represent a specific habitat. Species that are habitat generalists may not make good representatives for specific habitats when a more habitat-specific species can be selected.
- To remove from the list MIS whose population trends cannot be tied to management. For some species population trends are difficult to establish, and population fluctuations are due to a combination of factors and events, many of which may be unrelated to national forest management.
- To increase the efficacy of the MIS list by removing species associated with protected special habitats. Forest Plan direction and standards provide protection for several "special habitats" such as balds, bogs, rock cliffs, and others. In these cases MIS serve no useful purpose for analyzing the effects of management.



Since 1982, the concept of MIS has been subject to critical scientific review, which has identified limits to application and usefulness. Because our plan was developed under the 1982 regulations, MIS requirements are still in effect. We will not begin revision of our Forest Plan for at least two years. Updating our MIS list now is the most prudent course of action given the change in thinking about MIS and the number of years we expect to be using our current Forest Plan before a revised plan is completed.

Let me make it clear that changing the list of MIS would not change the habitat objectives for maintaining viable populations as identified in the Final Supplement to the Final Environmental Impact Statement (Volume II) for Forest Plan Amendment 5. In other words, this amendment won't change the state of the Forests. Habitat will continue to be provided for species diversity. What would change is how we plan to monitor the state of the Forests, and how we evaluate the environmental consequences of our management activities. While we would still analyze effects to the individual selected MIS, the practical effect should be that our environmental assessments would focus more on effects to biological communities and habitat conditions. This approach is more reliable today than it was twenty years ago, because of the vast amount of ecological research that has been conducted over this period.

If a species is dropped from the MIS list, it doesn't mean it isn't important or that we are no longer interested in it. It may simply mean that another species on the list better serves the general purpose for which it was originally selected. It also may mean it isn't feasible to monitor it in a reliable and meaningful way, or that we can't readily associate its population trend with effects of management. We want to be able to evaluate the effects of our management using the most efficient and reliable approaches so as to make the best use of our limited budgets.

Attachment 1 provides a description of the proposed action. Attachment 2 provides reasons why the current MIS were or were not selected for retention, and reasons for adding new MIS. I know MIS is a controversial topic and I and my Staff are ready to meet with you to listen to and discuss your concerns and answer your questions. For additional information contact Ruth Berner, Forest Planner, at (828) 257-4862.

I invite you to provide comments concerning this proposed Forest Plan amendment. Please be specific about any issues you may have with the proposed amendment, including rationale supporting your issues. All comments must be received in this office no later than March 3, 2005. Comments should be addressed to: National Forests in North Carolina, P.O. Box 2750, Asheville, North Carolina 28802, Attn: MIS or, via e-mail, to: comments-southern-north-carolina@fs.fed.us

Sincerely,

JOHN F. RAMEY
Forest Supervisor

Enclosures

Attachment 1

Proposed Action to Amend the List of Management Indicator Species

Existing language from the Land and Resource Management Plan Amendment 5, Nantahala and Pisgah National Forests North Carolina.

From page III-22, Botanical, Wildlife, and Fish Resource Management:

General Direction: “1. Use Management Indicator Species (MIS) for monitoring populations and habitat conditions for all existing native vertebrates (see Chapter III of the accompanying EIS for a list of species).

Standard: “a. Use additional MIS for project level analysis as necessary in order to respond to specific issuers or concerns.”

From page III-23, Botanical, Wildlife, and Fish Resource Management (continued):

General Direction: “3. Maintain viable populations of existing native and desired non-native vertebrate species in the planning area. Protect the following community types when identified as unique in the botanical or wildlife analysis; caves and rare plant communities including bogs, rock cliffs, granitic domes, high elevation rocky summits, barrens and glades, balds, boulder field forests and seeps (Refer to the Supplemental EIS, Appendix L for descriptions of these communities).

Proposed new language.

For page III-22, Botanical, Wildlife, and Fish Resource Management:

General Direction: “1. Use the following Management Indicator Species (MIS) to help indicate effects of plan implementation on fish and wildlife resources:

Mammals: Black bear, white-tailed deer

Birds: Pileated woodpecker, ovenbird, rufous-sided towhee, pine warbler, acadian flycatcher, eastern wild turkey, ruffed grouse

Fish: Wild trout, blacknose dace, smallmouth bass, largemouth bass

Plants: Red oak, ginseng, ramps, Fraser fir, Carolina hemlock”

Standard: “Select MIS from the forest-wide MIS list for use in project-level analysis as appropriate to help indicate project effects on fish and wildlife resources.”

For page III-23, Botanical, Wildlife, and Fish Resource Management (continued): add the following to the list of community types to be protected:
rock outcrops

For Appendix D of the Land and Resource Management Plan Amendment 5, Nantahala and Pisgah National Forests North Carolina:

1. Replace Table D-3 with:

Table D-3. Species groups to be monitored

SPECIES GROUP	MONITORING METHOD	WHY MONITORED
Aquatic Invertebrates	Stream surveys	To evaluate stream health and diversity
Freshwater Mussels	Stream surveys	To detect the presence of several Threatened, Endangered, and Sensitive mussel species
Breeding Birds	Point counts (sight & sound)	As a part of the Region 8 landbird conservation strategy
Bats	Mist netting and/or Anabat (sound detection)	To detect presence of Threatened, Endangered, and Sensitive species and evaluate diversity
Rich Cove Plants	Permanent plots	To evaluate species diversity, habitat relationships, and forestwide distribution
Non-native Invasive Plants	Transects	Some invasives are a threat to native species
Salamanders	Surveys	To evaluate species diversity, habitat relationships, and forestwide distribution
Pine-Oak Heath	Surveys	To evaluate changes to community composition and structure

2. Add Table D-4.

Table D-4. Management Indicator Species

INDICATOR	REASONS FOR SELECTION
Black bear	Helps indicate the effects of management on old forest communities and large contiguous blocks with low levels of human disturbance.
White-tailed deer	Helps indicate the effects of management on ability of national forests to meet public demand for hunting.
Pileated woodpecker	Helps indicate the effects of management on abundance of snags.
Ovenbird	Helps indicate the effects of management on species associated with large patches of contiguous mature deciduous forest.
Rufous-Sided (Eastern) Towhee	Helps indicate the effectiveness of management at maintaining early successional (0-10 years) habitat.
Pine warbler	Helps indicate the effects of management on species associated with xeric yellow pine forests.
Acadian flycatcher	Helps indicate the effects of management on species associated with alluvial forests.
Eastern wild turkey	Helps indicate the effects of management on ability of national forests to meet public demand for hunting.
Ruffed grouse	Helps indicate the effects of management on species associated with early successional habitat 11-20, soft mast producing species, and ability of national forests to meet public demand for hunting.
Wild trout	Helps indicate the effects of management on cold water stream communities.
Blacknose dace	Helps indicate the effects of management on species associated with lower trophic levels of cold water streams.
Smallmouth bass	Helps indicate the effects of management on lower-elevation, warmwater stream communities.
Largemouth bass	Helps indicate the health of recreational fishery and the ability of national forests to meet public demand for fishing.
Red oak	Helps indicate effectiveness of management at maintaining Oak-Hickory plant communities and High Elevation Red Oak plant communities.
Ginseng	Helps indicate effectiveness of management at maintaining mixed mesophytic plant communities, i.e. Rich Coves, and for maintaining sustainable ginseng harvests.
Ramps	Helps indicate the effects of management on northern hardwood forests communities.
Fraser fir	Helps indicate effectiveness of management at maintaining fir-dominated communities at high elevations.
Carolina hemlock	Helps indicate effectiveness of management at maintaining Carolina Hemlock Bluffs

ATTACHMENT 2

PROPOSED CHANGES TO THE LIST OF MANAGEMENT INDICATOR SPECIES

The regulations indicate that the following categories of plants and animals may be represented as MIS, “where appropriate”—“Endangered and threatened plant and animal species identified on State and Federal lists for the planning area; species with special habitat needs that may be influenced significantly by planned management programs; species commonly hunted, fished, or trapped; non-game species of special interest; and additional plant or animal species selected because their population changes are believed to indicate the effects of management activities on other species of selected major biological communities or on water quality.”

SPECIES	REASONS FOR RETENTION, NONRETENTION, OR NEW SELECTION
Black Bear (<i>Ursus americanus</i>) Mammal	Retained because changes in presence and abundance of black bear will be used to help indicate effectiveness of management at maintaining old forest communities (100+ years old) and contiguous areas with low levels of human disturbance (<1 mile open travelway/4 miles ²).
Carolina Northern Flying Squirrel (<i>Glaucomys sabrinus coloratus</i>) Mammal	Not retained because Fraser fir is an adequate indicator of management effects to spruce-fir forest communities, and it will be used to help indicate the effectiveness of management at maintaining fir-dominated communities at high elevation landscapes rather than the Carolina northern flying squirrel. Status of Carolina northern flying squirrel will continue to be monitored under the umbrella of the Endangered Species Act.
White-tailed Deer (<i>Odocoileus virginianus</i>) Mammal	Retained because changes in the abundance of white-tailed deer will be used to indicate the effectiveness of management at providing opportunities for public hunting. Grass/forb openings and hard mast will be analyzed as habitat components necessary for maintaining white-tailed deer.
Raccoon (<i>Procyon lotor</i>) Mammal	Not retained because this species is more of a habitat generalist, being found near any permanent water. Acadian flycatcher is an adequate indicator of riparian forests, and will be used to help indicate the effectiveness of management at maintaining riparian forests rather than the raccoon. Also, public demand for raccoon hunting is not great in North Carolina, therefore any management activities will not affect opportunities for hunting raccoon.
Rabbit (<i>Sylvilagus spp.</i>) Mammal	Not retained because multi-species assemblages are not appropriate for selection as MIS based on regulation language. Grass/forb openings will be analyzed as part of the habitat components for white-tailed deer and eastern wild turkey. Also, public demand for rabbit hunting is not great in North Carolina, therefore any management activities will not affect opportunities for hunting

SPECIES	REASONS FOR RETENION, NONRETENTION, OR NEW SELECTION
	rabbit.
Gray Squirrel (<i>Sciurus carolinensis</i>) Mammal	Not retained because changes in the acres of mature oak forests will be more useful to indicate effectiveness of management at maintaining hard-mast production. Hard mast will be analyzed as part of the habitat components necessary to maintain white-tailed deer and eastern wild turkey. Also, public demand for squirrel hunting is not great in North Carolina, therefore any management activities will not affect opportunities for hunting squirrel.
Bobcat (<i>Felix rufus</i>) Mammal	Not retained because rufous-sided towhee is an adequate indicator of early successional (0-10 years) habitat, and it will be used to help indicate the effectiveness of management at maintaining early successional (0-10 years) habitat rather than the bobcat. Also, public demand for trapping bobcats is not great in North Carolina, therefore any management activities will not affect opportunities for trapping bobcats.
Mink (<i>Mustela vison</i>) Mammal	Not retained because Acadian flycatcher is an adequate indicator of management effects to riparian forest communities, and it will be used to help indicate the effectiveness of management at maintaining riparian habitats rather than the mink. Also, public demand for trapping mink is not great in North Carolina, therefore any management activities will not affect opportunities for trapping mink.
Bats (Various species) Mammal	Not retained because multi-species assemblages are not appropriate for selection as MIS based on regulation language. However, bats as a group will be monitored as a part of the overall Forest Plan monitoring plan to evaluate diversity, distribution, and to detect the presence of Threatened, Endangered, and Sensitive species. Bats were originally selected as an indicator for caves. The Forest Plan identifies protection of caves when site-specific analysis indicates uniqueness of this habitat. Current and future management includes only activities that restore or maintain suitable habitat conditions for cave-related species.
Pileated Woodpecker (<i>Dryocopus pileatus</i>) Bird	Retained because changes in presence and abundance of pileated woodpecker will be used to help indicate effectiveness of management at maintaining snags.
Golden-crowned Kinglet (<i>Regulus satrapa</i>) Bird	Not retained because Fraser fir is an adequate indicator of Spruce-Fir, and will be used to help indicate the effectiveness of management at maintaining fir-dominated communities at high elevations rather than the golden-crowned kinglet.
Veery (<i>Catharus fuscescens</i>)	Not retained because the ovenbird is an adequate indicator of large contiguous patches of mature deciduous forests, and will be used to help indicate the effectiveness of management at maintaining these

SPECIES	REASONS FOR RETENION, NONRETENTION, OR NEW SELECTION
Bird	conditions rather than the veery.
Solitary (Blue headed) Vireo (<i>Vireo solitarius</i>) Bird	Not Retained because ramps is an adequate indicate effectiveness of management at maintaining northern hardwood forest communities, and solitary vireo is more of a habitat generalist, being more of an elevational associate than a forest type associate.
Northern Parula Warbler (<i>Parula americana</i>) Bird	Not retained because the ovenbird is an adequate indicator of large contiguous patches of mature deciduous forests, and will be used to help indicate the effectiveness of management at maintaining these conditions rather than the northern parula warbler.
Ovenbird (<i>Seiurus aurocapillus</i>) Bird	Retained because changes in presence and abundance of ovenbird will be used to help indicate effectiveness of management at maintaining large contiguous patches of mature deciduous forests.
Yellow-Bellied Sapsucker (<i>Sphyrapicus varius</i>) Bird	Not retained because the pileated woodpecker is an adequate indicator of snags, and will be used to help indicate the effectiveness of management at maintaining snags rather than the yellow-bellied sapsucker.
Rufous-Sided (Eastern) Towhee (<i>Pipilo erythrophthalmus</i>) Bird	Retained because changes in the presence and abundance of rufous-sided towhee will be used to help indicate the effectiveness of management at maintaining early successional (0-10 years) habitat
White-breasted Nuthatch (<i>Sitta carolinensis</i>) Bird	Not retained because the pileated woodpecker is an adequate indicator of snags, and will be used to help indicate the effectiveness of management at maintaining snags rather than the white-breasted nuthatch.
Cedar Waxwing (<i>Bombycilla cedrorum</i>) Bird	Not retained because the ruffed grouse is an adequate indicator of soft mast production, and will be used to help indicate the effectiveness of management at maintaining soft mast production rather than the cedar waxwing.
Pine Warbler (<i>Dendroica pinus</i>) Bird	Retained because changes in presence and abundance of pine warbler will be used to help indicate effectiveness of management at maintaining xeric yellow pine forest communities.
Raven (<i>Corvus corax</i>) Bird	Not retained because the Forest Plan identifies protection of open rock outcrops to maintain this species when site-specific analysis indicates uniqueness of this habitat. Current and future management includes only activities that restore or maintain suitable habitat conditions for this species on open rock outcrops.
Field Sparrow (<i>Spizella pusilla</i>) Bird	Not retained because rufous-sided towhee is an adequate indicator of early successional (0-10 years) habitat, and it will be used to help indicate the effectiveness of management at maintaining early successional (0-10years) habitat rather than the field sparrow.
Eastern Wild	Retained because changes in presence and abundance of eastern

SPECIES	REASONS FOR RETENION, NONRETENTION, OR NEW SELECTION
Turkey (<i>Meleagris gallopavo</i>) Bird	wild turkey will be used to help indicate effectiveness of management at meeting public demand for hunting. Grass/forb openings and hard mast will be analyzed as habitat components necessary for maintaining eastern wild turkey.
Ruffed Grouse (<i>Bonasa umbellus</i>) Bird	Retained because changes in presence and abundance of ruffed grouse will be used to help indicate effectiveness of management at maintaining early successional (11-20 years) habitat and soft mast producing species, as well as meeting public demand for hunting.
Peregrine Falcon (<i>Falco peregrinus</i>) Bird	Not retained because the Forest Plan identifies protection of open rock outcrops to maintain this species when site-specific analysis indicates uniqueness of this habitat. Current and future management includes only activities that restore or maintain suitable habitat conditions for this species on open rock outcrops.
Eastern Meadowlark (<i>Sturnella magna</i>) Bird	Not retained because grass/forb openings will be analyzed as a part of the habitat components necessary to maintain white-tailed deer and eastern wild turkey.
Acadian Flycatcher (<i>Empidonax virescens</i>) Bird	New Selection. Changes in presence and abundance of Acadian flycatcher will be used to help indicate effectiveness of management at maintaining riparian forest.
Green Salamander (<i>Aneides aeneus</i>) Amphibian	Not retained because the Forest Plan identifies protection of shaded rock outcrops to maintain this species when site-specific analysis indicates uniqueness of this habitat. Current and future management includes only activities that restore or maintain suitable habitat conditions for this species on shaded rock outcrops. However, salamanders as a group will be monitored as a part of the overall Forest Plan monitoring plan to evaluate diversity, habitat relationships, and forestwide distribution.
Jordan's Salamander (<i>Plethodon jordani</i>) Amphibian	Not retained because the Forest Plan identifies protection of shaded rock outcrops to maintain this species when site-specific analysis indicates uniqueness of this habitat. Current and future management includes only activities that restore or maintain suitable habitat conditions for this species on shaded rock outcrops. However, salamanders as a group will be monitored as a part of the overall Forest Plan monitoring plan to evaluate diversity, habitat relationships, and forestwide distribution.
Spotted Salamander (<i>Ambystoma maculatum</i>) Amphibian	Not retained because the Forest Plan identifies protection of mountain ponds and ephemeral pools to maintain this species when site-specific analysis indicates uniqueness of this habitat. Current and future management includes only activities that restore or maintain suitable habitat conditions for this species in mountain ponds and ephemeral pools. However, salamanders as a group will be monitored as a part of the overall Forest Plan monitoring plan to

SPECIES	REASONS FOR RETENION, NONRETENTION, OR NEW SELECTION
	evaluate diversity, habitat relationships, and forestwide distribution.
Blue Ridge Two-lined Salamander (<i>Eurycea wilderae</i>) Amphibian	Not retained because this salamander is more of a habitat generalist, being found near any permanent water but wandering far into mesic forests. Acadian flycatcher is an adequate indicator of riparian forests, and it will be used to help indicate the effectiveness of management at maintaining riparian forests rather than the Blue Ridge two-lined salamander. However, salamanders as a group will be monitored as a part of the overall Forest Plan monitoring plan to evaluate diversity, habitat relationships, and forestwide distribution.
Brook Trout <i>Salvelinus fontinalis</i> (a fish)	Not retained – see Wild Trout below.
Brown Trout <i>Salmo trutta</i> (a fish)	Not retained – see Wild Trout below.
Rainbow Trout <i>Oncorhynchus mykiss</i> (a fish)	Not retained – see Wild Trout below.
Wild Trout (fish) Brook trout (<i>Salvelinus fontinalis</i>), Brown Trout (<i>Salmo trutta</i>), and Rainbow Trout (<i>Oncorhynchus mykiss</i>)	New Selection to indicate effects of management on species associated with cold water streams. The brook trout (<i>Salvelinus fontinalis</i>) is the only salmonid (trout and charr) species native to the Southern Appalachians and is generally considered to be pollution intolerant and an important water quality indicator. High quality habitat contains abundant macroinvertebrates for food, boulder-cobble stream bottoms with developed pockets of clean gravel for spawning, and water temperatures 68° or less. Brown and rainbow trout require similar habitat conditions and, while not native to North Carolina, are valuable components of coldwater ecosystems. Wild trout populations include all native or naturalized trout populations, relying solely on natural reproduction for recruitment. Wild trout populations do not include those augmented with catchable (>= 7” total length) or fingerling-sized (< 7” total length) trout, where natural reproduction is not sufficient to sustain the population.
Blacknose Dace <i>Rhinichthys atratulus</i> (a fish)	Retained to represent lower trophic levels of coldwater streams. The blacknose dace (<i>Rhinichthys atratulus</i>) is a non-game fish that is generally considered to be pollution intolerant and an important water quality indicator. High quality habitat contains abundant macroinvertebrates for food and cobble and gravel substrate with little sedimentation. Blacknose dace require clean, well-oxygenated water with moderate flow.

SPECIES	REASONS FOR RETENION, NONRETENTION, OR NEW SELECTION
Sculpin <i>Cottus spp</i> (fish)	Not retained because blacknose dace adequately serves to indicate the effects of management on this trophic level. Additionally, sculpin do not occur in Atlantic slope drainages, which includes parts of three ranger districts.
Smallmouth Bass <i>Micropterus dolomieu</i> (a fish)	Retained to help indicate the effects of management on lower-elevation cool- and warmwater stream communities. Smallmouth bass (<i>Micropterus dolomieu</i>) are an important game fish and are found in all major cool- and warmwater streams across the Forests. It inhabits streams with permanent flow and rocky bottoms, and is considered intolerant of high turbidity and sedimentation.
Largemouth Bass <i>Moctopterus salmoides</i> (a fish)	Retained to indicate the effects of management on lakes, ponds, and reservoirs. It is an important species for recreational fisheries, as well as a reliable indicator of lake, reservoir, and pond habitat quality and quantity.
Bluegill <i>Lepomis macrochirus</i> (a fish)	Not retained because largemouth bass serves as an adequate indicator of the effects of management on lake, reservoir, and pond systems.
White sucker <i>Catostomus commersoni</i> . (a fish)	Not retained because the species is generally tolerant of degraded environmental conditions. Additionally, forest-wide IBI surveys capture information on this species, as well as the general health of cool- and warmwater streams.
Redhorse suckers <i>Moxostoma spp.</i> (a fish)	Not retained because members of this group of fishes have been found to be endemic to specific drainages, and are not representative of cool- or warmwater streams in general. The relative rarity of several redhorse species, and difficulty with effective sampling of larger streams make it difficult to determine population levels of effects of management on population levels. Additionally, forest-wide IBI surveys capture information on this species, as well as the general health of cool- and warmwater streams.
Spotfin Chub <i>Cyprinella monacha</i> (a fish)	Not retained because smallmouth bass serves as an adequate indicator of the effects of management on warmwater streams.
Aquatic Invertebrates (various)	Not retained because multi-species assemblages are not appropriate for selection as MIS based on regulation language. However, aquatic invertebrates as a group will be monitored as a part of the overall Forest Plan monitoring plan to evaluate stream health and diversity.
Index of Biotic Integrity (IBI)	Not retained because this is a protocol and not a species, and as such is not appropriate for selection as an MIS. IBI will continue to be developed as a tool for evaluating the health of cool- and warmwater streams.
Freshwater mussels	Not retained because multi-species assemblages are not appropriate

SPECIES	REASONS FOR RETENION, NONRETENTION, OR NEW SELECTION
(various)	for selection as MIS based on regulation language. However, freshwater mussels as a group will to be monitored as a part of the overall Forest Plan monitoring plan to evaluate diversity, distribution, and to detect the presence of Threatened, Endangered, and Sensitive species.
Fraser fir (<i>Abies fraseri</i>) Tree	Retained. Changes in presence and abundance of Fraser fir in the Spruce-Fir zone will be used to help indicate effectiveness of management at maintaining fir dominated communities at high elevations.
Carolina hemlock (<i>Tsuga caroliniana</i>) Tree	Retained. Changes in presence and abundance of Carolina hemlock will be used to help indicate effectiveness of management at maintaining Carolina Hemlock Bluffs.
Ginseng (<i>Panax quinquefolium</i>) Herb	Retained. Changes in presence and abundance of American ginseng will be used to help indicate effectiveness of management at maintaining mixed mesophytic plant communities, i.e. Rich Coves, and for maintaining sustainable ginseng harvests.
Ramps (<i>Allium tricoccum</i>) Herb	New Selection. Changes in presence and abundance of ramps will be used to help indicate effectiveness of management at maintaining northern hardwood forest communities, and for maintaining sustainable ramp harvests.
Red oak (<i>Quercus rubrum</i>) Tree	Retained. Changes in presence and abundance of red oak will be used to help indicate effectiveness of management at maintaining Oak-Hickory plant communities and High Elevation Red Oak plant communities.
Mountain oat-grass (<i>Danthonia compressa</i>) Grass	Not Retained. Forest Plan identifies protection of grassy balds and open rock outcrops to maintain this species when site-specific analysis indicates uniqueness of these plant community types. Current and future management includes only activities that restore or maintain suitable habitat conditions for this species on grassy balds and on open rock outcrops.
Catawba rhododendron (<i>Rhododendron catawbiense</i>) Shrub	Not Retained. Forest Plan identifies protection of heath balds to maintain this species when site-specific analysis indicates uniqueness of this plant community type. Current and future management includes only activities that restore or maintain suitable habitat conditions for this species on heath balds.
Golden saxifrage (<i>Chrysosplenium americanum</i>), umbrella leaf (<i>Diphyllia cymosa</i>), mountain lettuce (<i>Saxifraga micranthidifolia</i>)	Not Retained. Forest Plan identifies protection of forested seep wetlands to maintain this species when site-specific analysis indicates uniqueness of this plant community type. Current and future management includes only activities that restore or maintain suitable habitat conditions for these species in wetlands, i.e. maintaining natural hydrologic condition.

SPECIES	REASONS FOR RETENION, NONRETENTION, OR NEW SELECTION
Herbs	
Prairie dropseed (<i>Sporobolus heterolepsis</i>), slender wheatgrass (<i>Elymus trachycaulus</i>)	Not Retained. Forest Plan identifies protection of barrens and glades to maintain this species when site-specific analysis indicates uniqueness of this plant community type. Current and future management includes only activities that restore or maintain suitable habitat conditions for these species in barrens and glades.
Alumroots, saxifrages	Not- Retained. Forest Plan identifies protection of shaded rock outcrops to maintain this species when site-specific analysis indicates uniqueness of this plant community type. Current and future management includes only activities that restore or maintain suitable habitat conditions for these species on shaded rock outcrops.
Biltmore sedge (<i>Carex biltmoreana</i>), wretched sedge (<i>Carex misera</i>) Sedges	Not Retained. Forest Plan identifies protection of open rock outcrops to maintain this species when site-specific analysis indicates uniqueness of this plant community type. Current and future management includes only activities that restore or maintain suitable habitat conditions for these species on open rock outcrops.
Sphagnum spp.	Not Retained. Forest Plan identifies protection of mountain bogs to maintain this species when site-specific analysis indicates uniqueness of this plant community type. Current and future management includes only activities that restore or maintain suitable habitat conditions for this species in wetlands, i.e. maintaining natural hydrologic condition.
White Oak (<i>Quercus alba</i>), Hickory spp (<i>Carya spp.</i>). Trees	Not Retained. Red oak is an adequate indicator of management in Oak Forests and Oak-Hickory Forests.
Black cherry (<i>Prunus serotina</i>) Tree	Not Retained. Black cherry is a habitat generalist and Ginseng is an adequate indicator of management in Rich Cove Forests.
Basswood (<i>Tilia americana</i>), Buckeye (<i>Aesculus flava</i>)	Not Retained. Ginseng is an adequate indicator of management in Rich Cove Forests.
Twisted stalk (<i>Streptopus roseus</i>) Herb	Not Retained. Solitary vireo is an adequate indicator of management in Northern Hardwood Forests.
Pitch pine (<i>Pinus rigida</i>), Table Mt. Pine (<i>Pinus pungens</i>), Turkey beard (<i>Xerolhyllum</i>)	Not Retained. Pine warbler is an adequate indicator of management in Xeric Yellow Pine Forests. Pine-Oak Heaths (habitat for pitch pines and Table Mt. pines) will be monitored , not as MIS, but as a part of the overall Forest Plan monitoring plan to evaluate changes in community composition and structure.

SPECIES	REASONS FOR RETENTION, NONRETENTION, OR NEW SELECTION
<i>asphodeliodes</i> 2 Trees & an Herb	
Lung lichen (<i>Lobaria pulminaria</i>) Lichen	Not Retained. Black bear is an adequate indicator of management in Old Forests.
Grapes	Not Retained. Ruffed grouse is an adequate indicator of management of Soft Mast Producing Species.
White pine (<i>Pinus strobes</i>) Tree	Not Retained. The species is a habitat generalist and there is disagreement among the scientific community concerning the validity of this taxon, i.e. a white pine 'natural community' in the Southern Appalachians.
Exotic species: Japanese honeysuckle, microstegium, privet, periwinkle	Not Retained. Multi-species assemblages are not appropriate for selection as MIS based on regulation language. However, exotic species as a group will continue to be monitored as part of the overall Forest Plan monitoring plan.