THE MANAGEMENT NEEDS OF THE MAJOR FOREST COMMUNITIES OF OAK MOUNTAIN STATE PARK

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December 2003

Purpose: The purpose of this document is to introduce the reader to the two main forest communities that exist within Oak Mountain State Park. Recent and on-going policy decisions and debates have generated much public interest in the management of the park. In addition, recent advances have been made in understanding the importance of the park as a resource for biodiversity conservation. Thus, there is need for those who have interest in the park's future to understand the ecology of the park's forests, and what management interventions will be needed to ensure the long-term survival of these forests.

Disclaimer: The views and opinions in this document are the author's, and not necessarily those of Birmingham-Southern College.

Note March 2005: An updated and revised edition of this document is needed.

Document Outline:

1. Introduction:

There are two major forest ecosystems in Oak Mountain State Park (OMSP), the Mixed Mesophytic Forest Community (MMFC) and Mountain Longleaf Pine Forest Community (MLLPFC). Both are natural features of the park and both are important for biodiversity conservation. However, these two forest ecosystems are quite different in their ecology and species composition, and will require different management strategies for ensuring their survival through time. This document first provides a description of the basic ecology of these two forest ecosystems. This is followed by a description of the management needs of these two ecosystems in order to prioritize their continued existence in the park. Following a summary with conclusions, a glossary is provided to help the reader with terms that may be unfamiliar.

2. The Ecology:

2A. The Mountain Longleaf Pine Forest Community (MLLPFC) at OMSP:

Forest Structure: These forests are dominated by longleaf pine (Pinus palustris). Other trees are found in these forests including blackjack oak (Quercus marilandica) sourwood (Oxydendrum arboreum), post oak (Q. stellata), and sand hickory (Carya pallida; see Appendix for more species). In healthy longleaf forests, the canopy is open, with much sunlight reaching the understory. The understory has many species of grasses and herbaceous plants. Fires are a frequent natural disturbance in these forests. The soils are thin to moderately developed, with high to moderate levels of drainage.

Geographic Distribution: Longleaf pine forests, generally, are found from Virginia south to Florida and west to Texas. Prior to European colonization, the longleaf pine forests covered 65-95 million acres (for reference, Alabama is 33.5 million acres). The longleaf pine forest community is now restricted to 1-2% of its former range. Longleaf forests in the Piedmont, Cumberland Plateau, and Ridge and Valley regions of North Central Alabama and NW Georgia are called the mountain longleaf forests. The mountain longleaf forests differ from the more widespread coastal plain longleaf in their topography and plant community composition.

Status in OMSP: Historically, the MLLPFC in OMSP was found on the upper slopes of foothills, and the ridges and south facing slopes of DOM. Most of these forests were logged in the 1930s and 1950s. The former extent of these forests is evident from the current distribution of LLP and the distribution of LLP stumps left from the logging. The quality of these remnant forests is highly variable (see below).

Regeneration Cycles in the MLLPFC: Longleaf pine and most of the herbaceous and woody vegetation that grows in its company cannot regenerate and/or survive in shade. Thus, wherever one finds a longleaf pine, one knows that the forest had to have been open when that tree established and grew as a seedling. Typically, recurrent fires initiated by lightning keep the forests open. In some areas within OMSP where there is much exposed bedrock, the rocky terrain keeps the forest open in addition to fire. Longleaf pines and the other species living within this community have various strategies to survive fire. When fire is suppressed in longleaf forests, hardwood trees that are not tolerant of fire can invade and grow. As they fill up the forest, their shade prevents

longleaf seedlings and understory herbaceous plants from growing. Thus, longleaf pines and associated species are highly dependent on fire in order to keep out more competitive species.

Biodiversity importance of MLLPFC: The longleaf pine forest community is one of the most biodiverse forests in North America. Due to its former extensive range and rapid reduction in extent, the longleaf forest is one in peril. These forests harbor many rare and endangered plants and animals (e.g., Red-cockaded Woodpecker, Picoides borealis). The extent of the MLLPFC has also been reduced to a few isolated patches among which OMSP figures prominently. Despite the history of logging prior to the park's establishment, it is very possible that the longleaf forest at OMSP is one of the largest and best quality remnants of MLLPFC remaining in the world.

Threats to the MLLPFC in OMSP: There are three main threats to the MLLPFC in the park: A) fire suppression, B) catastrophic fire, and C) fragmentation. A) Since fires have not been a part of the park's ecology for several decades, fire intolerant hardwood species have been steadily invading the longleaf forests in the park. If left unchecked, these species will out-compete the longleaf and other plant species found in these areas. B) When fires are not allowed to burn through longleaf forests, fuels (e.g., leaf litter, branches) build up to levels that can support an intense, catastrophic fire given the right conditions. While longleaf pine and its associate species can tolerate low intensity fires, high intensity fires can kill even the largest longleaf trees. As long as fuels are allowed to accumulate, this threat will exist. C) Many of the patches of MLLPFC scattered throughout the park were once connected when this forest was more extensive. It is now likely very difficult for many plants and animals of the longleaf pine to travel throughout the park given that their habitat is so fragmented.

2B. The Mixed Mesophytic Forest Community (MMFC):

Forest Structure: The term mesophytic literally means (mid-sized leaves) and refers to the widespread ecological relationship where plants on better soils (higher moisture content, higher nutrient availability, greater soil depth) generally have larger leaves than plants on poorer soils (less moisture availability, fewer nutrients, shallower soil depth). The term 'mixed' refers to the fact that several tree species share dominance in the canopy. These forests typically have a mixture of deciduous and evergreen (pine) species; these species are largely distinct from those species in the MLLPFC.

Geographic Distribution: The MMFC found in North Central Alabama is part of a much larger forest type that is common throughout the lower elevations of the Southern Appalachians, Ridge and Valley Province, Piedmont, Cumberland Plateau, and adjoining areas.

Status in OMSP: Historically, the MMFC was found in areas adjacent to streams, the lower slopes of foothills, and many of the cool moist areas on the northwest facing slopes of DOM. Currently, MMFC occupies those aforementioned areas where the forest has not been cleared for other human uses (lakes, the golf course, buildings, roads, and parking areas). In addition, MMFC has increased in extent in the range formerly occupied by LLPFC. In general, this forest is increasing in extent, replacing the MLLPFC as a result of the absence of fire.

It is very likely that some of the largest hardwoods of the MMFC were logged in the last two centuries. The MMFC in most regions of the park where it was historically found tends

to have a high density of small-to-moderate size classes of adult trees. The high density and size of these trees here suggests that many of these trees are second growth. With time, the most competitive of these trees will survive while the others are thinned out due to competition.

Regeneration Cycles in the MMFC: Regeneration cycles within MMFC revolve around the death of trees, either as individuals or as groups. Natural tree death can be caused by several factors, most notably disease, lightning, and storm windthrow. When a tree dies in the forest, a gap in the canopy is created allowing direct sunlight to reach the forest floor. This light is intercepted by young trees in the understory and promotes their growth. Quite often, the trees that begin growing on the forest floor in these gaps are what are called early-successional trees. These trees require at least some direct sun to survive, and if sunlight is abundant they can have a very fast growth rate. Once the gap has some shade in the understory, late-successional species that grow well in shade will establish and thrive. These late-successional species will eventually replace the early-successional species that first established in the gap. For example, in a recent tree fall gap in a MMFC, early-successional species including loblolly pine (Pinus taeda), black cherry (Prunus serotina), and sweetgum (Liquidamber styraciflua) might establish. These would later be replaced by late-successional trees such as white oak (Q. alba), shagbark hickory (C. ovata), American beech (Fagus grandifolia), and southern sugar maple (Acer saccharum). See Appendix A for more species typical of the MMFC.

The role of fire as a natural disturbance in MMFC is controversial. Most evidence suggests that fire was not a frequent disturbance in these forests, but there is limited evidence to the contrary. Likely in some of the dryer zones of the MMFC, fire was an occasional visitor during extremely dry years, spreading from communities that frequently burned (esp. MLLPFC). In seasonally or abnormally dry conditions, the fuels in the understory of MMFC usually contain sufficient moisture to make them less likely to burn. These would be the higher, dryer slopes, and the trees there would likely be those of the MMFC that are more resistant to fire (having thicker bark and the ability to resprout after fire). Any very large trees that are typical of MMFC will be resistant to low-intensity fire.

Biodiversity importance of MMFC: The MMFC is an important forest type in the region, providing important habitat for many species. While very extensive in its current geographic range, most of this is secondary forest, meaning that it is forest that has grown back after the original old growth forest was cleared. Most original MMFCs were heavily logged, or were cleared for agriculture and later abandoned. There is to be expected a general positive correlation in the age of the second growth forest and the importance of that forest for rare or threatened plant and animal species. Thus, secondary MMFC can have high numbers of plant and animal species, but most of these species are common and not threatened. The MMFC at OMSP is a mix of recent and moderately old secondary forest. With some exception, the understory is devoid of the rich herbaceous plant species that would populate old growth forest. However, pockets of rare plants can be found in stands of older growth forest. The younger secondary forests that have invaded fire-suppressed and logged MLLPFC usually only harbor common species.

Threats to the MMFC in OMSP: There was probably widespread logging of the largest hardwoods from these forests in the park. Currently, there are two major threats to the integrity of the MMFC in the park: A) forest loss and fragmentation and B) overgrazing

by deer. A) As with most ecosystems, the larger and more intact (less fragmented) a forest is, the higher quality the habitat is for its native wildlife and flora. Forests that are dissected by roads and clearings have less habitat for sensitive species of plants and animals. Generally speaking, management plans for the park should strive to maximize the amount of forest cover in the park, and reduce the fragmentation created by forest clearance and road construction. B) At the time of this writing (December 2003) the deer population in the park and surrounding area is very large. There is much evidence to suggest that the deer are having a very major impact on the forest by grazing on young trees and herbaceous plants in the understory of the MMFC. As a consequence, the understory of the MMFC is either devoid of plants, or is dominated by those species that deer do not prefer to graze.

3. The Management Needs:

The following section is written to explain the basic management strategies that will be needed to protect the biodiversity of the two forest types in the park. Biodiversity conservation is the *only* goal for these management suggestions. Any revenue or other benefits generated from management (e.g., selling of thinned timber) would be a secondary goal, though such secondary objectives are not considered here. It should also be noted that the management strategies below are suggested starting points for developing a much more detailed management plan for these forest types. Both forest types have different needs in order for the native biodiversity to be sustained in the coming century. The forest classifications below are based on the historic range of these forests, not on the current range.

It should be noted that one benefit of managing for biodiversity is that important ecological services provided by these forests are maintained (e.g., clean water production via watershed protection). Another benefit are the visitors to the park that visit primarily to enjoy the species of plants and animals in the park that are not easily be found in the highly urbanized landscape of Jefferson and Shelby counties.

It should be noted that many of the ecological problems in the park will take human intervention to correct. Some stakeholders that care deeply about the park would prefer to "let nature take its course". The problem with this passive management approach is that we will lose dozens of plant and animal species that live in the park. Indeed, without active management we very likely see the loss of the MLLPFC in the park during the next century. Without active management in the MMFC, we will see the elimination of many bird and plant species that reside in the park. Thus, a choice to not intervene and "let nature take its course" is a choice to eliminate dozens of species from the park. Many of these species are those that are declining in population size throughout the Southeast.

3A. Management of the Mountain Longleaf Pine Forest Community within OMSP:

There are four parameters to consider for quickly judging the 'health' of longleaf forest communities: 1) presence older trees; 2) openness of canopy; 3) diversity of understory herbaceous vegetation; 4) degree of hardwood invasion. A healthy longleaf pine forest would have numerous old-growth trees. These trees would be spaced such that canopies are often not touching one another. This canopy openness allows light to the understory where a diverse array

of herbaceous plants reside. Finally, this LLP forest would have low density of fire intolerant trees invading from the mixed mesophytic forest.

Longleaf Pine Forest Community – Stand Types:

Four stand types are recognized here based on their current vegetative structure, composition, and management needs and potentials.

High quality LLP stands.

Description: Despite having been logged, these stands have old-growth trees, or at least older trees present. There is some canopy openness maintained, though many areas have canopy closure due to hardwoods that have invaded. The understory tends to have a high diversity of herbaceous plants. Invasion by fire-intolerant hardwoods is occurring, and tends to be worse where soil moisture is high. They are some of the best-preserved mountain longleaf pine forest that survived last century, and they are the most precious biodiversity resource in the park.

Where: These stands are the open habitats on the ridge and southeast facing slopes of DOM. Some of these stands can be found on a few of the hills in the foothills section of the park.

Management needs: No efforts should be spared to protect these stands and ensure their persistence into the future. Fortunately, these stands should require the least degree of human intervention to promote their sustainability. Re-introducing low-intensity fire into these systems will be key to their survival. These fires will reduce the densities of fire-intolerant hardwood species that have invaded during the past decades when fire has largely been absent. Prescribed burns will also keep fuelloads down, thus reducing risk of catastrophic fires. Low-intensity fires will not kill the few larger invasive hardwoods that are now in these areas. These trees can be killed by girdling and/or poisoning. Removing these trees from these sites is not recommended. Removal would require operating heavy machinery in habitats whose plants are very sensitive and whose soils are vulnerable to erosion. Such machinery should only be used to construct firelines to contain and safely manage the prescribed burns.

Management Priority: Highest. These habitats have the greatest number of species of concern to biodiversity conservation, and represent the most unique habitats in the park. Management of these areas through prescribed burns will be relatively easy relative to other Types of LLP stands in the park.

Dense Secondary LLP Stands.

Description: These are areas where the original LLP forest was logged, and young LLP recruited in high densities. Presumably there were no fires during the growth stage when these young trees would have been vulnerable to death by fire. These forest stands have great potential to become 'healthy' MLLPFC, but currently have too many trees. Individual trees cannot grow very large due to the intense competition between all the similarly sized LLP. These densely packed trees let very little light to the understory, so the herbaceous layer is thin or absent. Some shade tolerant hardwood trees have invaded. The duff layer (layer of dead pine needles on ground) is very thick.

Where: These stands are found on some of the foothills and some patches on the lower slopes of the southeast-facing slope of DOM.

Management needs: To help these stands become biodiverse longleaf communities, it is recommended that these stands be thinned. The largest trees should be left, while smaller size classes of trees be felled. Management plans need to include removal of the slash (felled trunks, branches and needles) or else fuel loads will be dangerously high after logging. In subsequent seasons, prescribed burns should be used to maintain an open under- and mid-story where herbaceous plants typical of MLLPFC can reestablish naturally or with human help. One possibility is to drag these stems down slope to help serve as an erosion barrier below burn areas and transient or permanent streams on lower slopes.

Management Priority: Moderately high – With proper management, these sites have much potential to become high quality, healthy MLLPFCs. The management needs are moderately high initially (thinning), but subsequent management should mostly require only prescribed burns.

Invaded LLP stands:

Description: These are former LLP community where hardwoods have invaded as a result of logging and fire suppression. After logging, many early-successional trees of the MMP invaded longleaf stands in the foothills and are now at canopy height (e.g., sweetgum, loblolly pine, black oak). A few adult LLP trees persist, but there are no young LLP due to high level of shade in understory. Only a few plants of the herbaceous community from the MLLPFC remain. Understory with young late-successional hardwoods, though this component suppressed due to deer browse.

Where: These are mainly in the foothills section of the parks, exclusive of areas on stream floodplains and on the lower slopes of hills. These areas can also be found on the ridge and slopes of DOM. The easiest way to recognize these areas in the park is to look for areas where LLP stumps are found below a canopy dominated by hardwoods.

Management needs: These areas will require the most intervention to return them to a healthy MLLPFC. While a few adult trees typical of the MLLPFC remain, there have been many decades for hardwoods to invade. Some of the hardwoods present on these sites are now large. The hardwood canopy will need to be thinned, and subsequent management steps taken to keep the forest open for the regeneration of the vegetation typical of MLLPFC. Slash generated from the thinning should be removed to reduce fuel loads and to create room for recruitment and growth of plants typical of the MLLPFC.

Management Priority: Low - these stands will require an intensive amount of management relative to the other LLP stand types in the park. It is recommended that restoration of the MLLPFC on these sites be part of a long-term strategy for managing park biodiversity. However, restoration efforts in the other LLP stand types in the park are more critically needed and would pay off sooner. Because most the remnant adult longleaf and other trees of the MLLPFC in these stands can likely survive for another decade (perhaps with the exception of remnant blackjack oak trees that appear to be dying rapidly), future efforts could focus on managing these sites.

SPB Attacked Loblolly Stands:

Description: These are invaded LLP stands (see above), where high densities of loblolly pine recruited after logging. Many of these areas have attracted the Southern Pine Beetle (SPB) which infests the stand and kills all/most the Loblollies. Resulting damage due to falling trees, and/or salvage logging leave an open canopy with dense understory full of vines, grasses, shrubs, and young trees. Because of the open canopy, these sites would be prime locations to plant longleaf pine seedlings and restore a longleaf pine community.

Where: These sites are in the foothills on hills where loblolly pine dominated the forest regrowth after the logging last century.

Management Needs: These areas could become focal points for longleaf restoration with the planting of LLP seedling plugs. The canopy is already thinned and prescribed burns can be used to keep the understory clear. LLP seedlings can be planted and the site managed for their maturation through the use of periodic prescribed burns. A wealth of information exists on how to restore LLP using these methods, and some managers are conducting longleaf restoration in SPB attacked sites.

Management Priority: Moderately high – these areas are already in poor condition due to the death of the mature loblolly pines and the subsequent opening of the canopy due to their falling/felling and/or removal. If not managed, these will become secondary mixed mesophytic forest again. However, with seedling planting and the subsequent implementation of a periodic prescribed burn regime these can become important LLP stands in several decades. Funding for planting might be available via grants featuring carbon offset projects.

3A. Management of the Mixed Mesophytic Forest Community within OMSP:

A 'healthy' mixed mesophytic forest community would have large tall trees of a variety of species. The understory would be rich with herbaceous plant species, especially those that are typical of cool, moist, shady habitats (e.g., trillium, orchids). Occasional tree death would result in the regeneration of forest in the resulting gaps.

Deer population control:

Description: The deer population in OMSP appears to be very high. Deer and/or deer sign are seen very frequently even in remote areas of the park. Three factors contribute to the formation of this larger herd. First, the historic presence of cougar, red wolf, and bobcat would keep deer populations down – with the possible exception of bobcat, these predators have been extirpated from the park. Second, deer thrive in landscapes that include a mix of forest and cleared areas. Such habitats are now abundant within the park and areas adjacent to the park. Third, the absence of hunting in the park has also indirectly contributed to a large deer herd.

Very probably due to deer browsing, there is only a very sparse understory of herbaceous plants in most of the MMFC in the park. Tree and shrub regeneration appears to be limited to those species that deer do not favor. Not only does the plant life suffer, but animals that depend on a rich understory layer suffer as well (e.g., birds such as Hooded Warbler, Louisiana Waterthrush, Ovenbird, Wood thrush). In this way the

deer are determining what the future MMFC will be in the future. Thus, controlling the deer population of the park should be a high priority for protecting the plant biodiversity and forest regeneration cycles in the park.

The deer population in the park should be viewed as part of a larger population that extends beyond the park borders. Reducing the deer herd in the park will also aid the recovery of the understory herbaceous plant community in the MLLPFC where deer browse keeps some plant populations down. Creating a smaller deer herd will also result in fewer deer-vehicle collisions in the park and surrounding roadways. A smaller deer herd will also increase the health of surviving deer because more resources will be available per capita. It is also likely that reducing the deer population in the park will reduce the population of chiggers and ticks that frustrate park users in the warmer months.

Where: the problem appears to be park wide, though deer herds probably show seasonal movements within the park (e.g., preferring stream valleys during winter).

Management needs: The most efficient way to reduce the deer herd would be to spotlight at night and shoot deer with firearms. At the time of this writing, the park is planning on using bow-hunts to reduce the herd. The effectiveness of this remains to be seen. One problem to expect is that hunters prefer to take bucks rather than does, while the most efficient way to reduce herd size is to reduce the number of does. Methods of herd control involving the continual injection of contraceptives into females (via dart gun) would be prohibitively expensive, slow, and ineffective in a park this size.

Management priority: High. The deer herd seems to be greatly inhibiting the survival of many plant species in the park.

Historic MMFC:

Description: In areas where the MMFC historically occurred in the park, these forests should once have contained large trees with a rich plant understory. Old-growth trees have likely been logged from most the park, and smaller second growth trees now dominate the canopy. The understory of these forests is lacking in diversity of herbaceous plants and regenerating trees predominately due to deer browse.

Where: Historically, the MMFC was found in areas adjacent to streams, the lower slopes of foothills, and many of the cool moist areas on the northwest facing slopes of DOM.

Management Needs: As stated above, controlling the deer herd is critical to this community. Efforts to restore the herbaceous plant community would be beneficial, but until the deer herd is controlled, such efforts would be in vain. At this time, no manipulations of the native species in these forests is recommended. However, an in-depth inventory of the forest structure and composition of the MMFC may reveal management needs. Exotic invasive species should be eliminated in the park wherever they have/will establish, especially plants like Chinese privet and Microstegium that can greatly negatively affect the ecology of these forests.

Invaded LLP stands:

These are the stands described above in the section on MLLPFC. These stands are new MMFC that has invaded logged and fire suppressed longleaf communities. Because the MLLPFC is a community in greater peril than the MMFC, and because these young mixed mesophytic forests contain no/very few species of conservation

concern, it is recommended that these sites be managed for longleaf pine forest community.

4. Summary:

OMSP is one of the most important nature reserves in North Central Alabama. Its most important current contribution to biodiversity conservation is its harboring of the Mountain Longleaf Pine Forest Community (MLPFC), an ecosystem that is at great risk of disappearing this century. The presence of larger areas of MLPFC and the good health of some of these stands gives OMSP regional prominence in biodiversity conservation in the Southeastern US. Of secondary importance is the Mixed Mesophytic Forest Community that offers habitat for many other plant and animal species. Without active management strategies described above, both forest ecosystems will likely lose most of the species that make them unique and important to biodiversity conservation in the region. It is strongly recommended that a comprehensive biodiversity management plan be developed for the park, one that prioritizes above all else the sustainable existence of these two forest communities and the species of native plants and animals that reside within.

5. Glossary:

Biodiversity: in this document this term refers to all the native species that use or live in a particular natural area.

Catastrophic fire: a fire so intense that it kills most organisms it encounters, even those adapted to ecosystems that burn with low intensity fires on a regular basis.

Community: all the organisms living in a defined area. In this document, community refers to all the living organisms that have lived together through recent evolutionary history in a particular ecosystem.

DOM: Double Oak Mountain – the large mountain running NE to SW through the park.

Early-successional trees: trees that are adapted for colonizing and growing in areas that are disturbed. These species usually require direct sunlight for their survival and growth, and have rapid growth relative to late-successional trees.

Ecosystem: the non-living components and processes in an area in combination with the organisms that live in that area.

Fuelload: the amount of burnable fuels in a forest.

Habitats: locations within an ecosystem that provide a unique set of resources for particular organisms.

Hardwoods: trees that produce dense woody tissues. Typically a term used to refer to broadleaf trees as opposed to the pines, or softwoods. Though these terms are in common usage, strictly speaking, they are misnomers. Some pines (e.g., longleaf pine) have harder wood than some deciduous trees.

Herbaceous: plants lacking woody tissue

Late-successional trees: Trees that are slower growing that early-successional trees and can tolerate shade. These are the species that dominate forests long after a disturbance and consequent forest succession.

LLP: longleaf pine (Pinus palustris)

Mesic: moist soil conditions, but not saturated or wet.

Mesophytic Forest: Forest composed of mainly deciduous trees that require moist soils.

Mixed forest: Forest containing both evergreen and deciduous trees.

MLLPFC: Mountain Longleaf Pine Forest Community
MMFC: Mixed Mesophytic Forest Community
Old-growth forest: stands of forest that have survived a very long time without large-scale human or natural disturbances. The exact age at which a stand is designated old-growth can vary among users of the term.
Old-growth trees: individual trees that are very old. E.g., longleaf pine > 100 yrs old. The exact age at which a tree is designated old-growth can vary among users of the term.
OMSP: Oak Mountain State Park
Prescribed burn: fire deliberately set as a tool for reducing fuel and/or promoting the growth of particular plant species in forest.
Regeneration: in this document the term is used to refer to the processes by which dead adult plants are replaced by new plants.
Salvage logging: logging to extract usable timber in a situation where trees are dying or have died due to a natural disturbance (disease, storm).
Secondary Forest: forest that has grown back after a large disturbance (e.g., logging).
Woody vegetation: trees and shrubs.

6. Appendix A:

Trees typical of the two major forest types in OMSP. Hardwoods that commonly invade longleaf communities are not listed with that community. Trees are not listed in order of abundance or density.

Mountain Longleaf Pine Forest Community:

- Longleaf Pine
- Virginia Pine
- Blackjack Oak
- Boynton's Oak
- Post Oak
- Rock Chestnut Oak
- Sourwood
- Blackgum
- Sand Hickory
- Mockernut Hickory
- Winged Sumac
- Flowering Dogwood
- Persimmon
- Hawthorns (Various Species)

Mixed Mesophytic Forest Community:

- Loblolly Pine
- Shortleaf Pine
- White Oak
- Water Oak
- Willow Oak
- Black Oak
- Shumard Oak
- Northern Red Oak
- Southern Red Oak
- Pignut Hickory
- Shagbark Hickory
- Red Maple
- Southern Sugar Maple
- Sweetgum
- Black Cherry
- American Beech
- Winged Elm