
A. MSNHA Resources

F1. NATURAL RESOURCES

Landscapes and Waters

This section of the report addresses land resources and water resources of various types, as follow.

Land Resources

The land resource topics addressed below in both text and maps include physiography, prominent peaks, slopes and soils.

Physiography

Also referred to as “geomorphology” or “physical geography,” physiography is the study of the physical features of the earth’s surface. As the map on [page 47](#) illustrates, the MSNHA is located within the Highland Rim physiography region. Within this region are various sub-regions. The sole sub-region on the north side of the Tennessee River is the Tennessee Valley (TV). The south side, however, consists of four sub-regions. While the TV sub-region extends along a generally east-west axis across most of the south side of the river, an east-west oriented band of the Little Mountain (LIM) sub-region extends along the southern border of the TV. Below the LIM, another similarly oriented band of the Moulton Valley (MOV) sub-region exists. Also, on both sides of the river along the western edge of the MSNHA are pockets of the Fall Line Hills (FLH) sub-region.

Prominent Peaks

The aesthetic integrity of prominent peaks can be important to the character of a heritage area, especially one having environmentally-oriented themes such as the Tennessee River and Native American Heritage. Because development located on higher elevations will tend to have a greater visual impact on an area’s character than in lower areas, some communities limit or restrict altogether development on certain threshold elevations that would be considered high-visibility hilltops. Likewise, it will be critical that prominent peaks within the MSNHA not be developed – or at least not in a highly visible manner. Fortunately, between the relatively low rate of growth in the area and the expense of developing on peaks, there is very little threat to their integrity within the MSNHA.

This topic is illustrated by the map on [page 48](#). It highlights several dozen prominent peaks within the MSNHA by indicating their name and elevation. Most are referred to as “mountain,” but there are also some utilizing the terms “knob,” “hill,” “point” or some similar term. Elevations for these peaks tend to range between roughly 250 ft. and 325 ft. However, some of the highest peaks are in the southeast portion of Morgan County and they are as high as 391 ft. (Whitesburg Mountain). Other areas having a relatively high concentration of prominent peaks are southern end of Lawrence County, as well as an east-west oriented range central to that county. There are also prominent peaks in the southeast portion of Franklin County and the southern half of Colbert County. There are few prominent peaks adjacent to the Tennessee River or on the north side of the Tennessee River in Lauderdale and Limestone Counties.

Slopes

The slope of land is simply the pitch or amount of vertical increase with every increment of horizontal distance. In short, it is the extent to which land is steep. Slopes are an important issue because the disturbance of steep slopes can result in soil erosion and sedimentation into streams and other lower lying areas. Erosion and sedimentation can have substantially negative consequences for the environment and threaten the health (and even life) of various plant and animal species. Even the use of silt fences during slope disturbance may not be enough to avoid soil erosion and sedimentation.

The issue of steep slopes in the MSNHA is illustrated by the map on [page 49](#). Not surprisingly, the areas of the heritage area having the greatest concentration of steep slopes are consistent with the prominent peaks. Thus, the steepest slopes are in the southeast portion of Morgan County, the southern portion of Lawrence County, and the southeast portion of Franklin County. While less intensive, the northeast corner of Limestone County also has some steep slopes.

Soils

See the soils map for the MSNHA on [page 50](#).

[Need info. from Lee Jones](#)

Water Resources

The water resource topics addressed below in both text and maps include tributaries and wetlands.

The River & Tributaries

The Tennessee River is one of the country's most significant river systems, as it drains 40,000 square miles of land in portions of eight southern states. Because its level drops rapidly, there have historically been extensive segments of shallow water and rapids (shoals) within the segment of the river that traverses the MSNHA. That situation has been altered over the years beginning with the development of dams beginning during the 1920s (Muscle Shoals National Heritage Area Background Study – pg. 16).

Tributaries are streams that flow into a larger or “parent” stream. In the case of the MSNHA, that parent stream is the Tennessee River. From an environmental conservation perspective, natural drainage ways should be protected. They serve as important plant and animal habitats, and they serve critical drainage functions. When development unwisely occurs on or near such drainage ways, they are sometimes engineered from their natural condition to formally channelized drainage ways using concrete and piping. Because of the delicate nature of ecosystems in general and natural drainage ways in particular, such drastic alterations can prove harmful, as there are often unanticipated negative “domino effects” elsewhere in the drainage system.

As the map on [page 51](#) illustrates, the MSNHA is traversed by a series of streams and drainage ways. As with all natural drainage ways, their alignments are quite irregular because they respond to topography and geology. While some of these streams and drainage ways are dry during dry weather, they can have considerable flows during periods of rainfall. Because the many small streams within the higher topographic areas often merge together into a single stream as the elevation decreases and they get closer to the river, the lands adjacent to the river (both north and south) tend to have fewer, but more significant, tributaries.

Wetlands

The federal regulations implementing Section 404 of the Clean Water Act define wetlands as: “*Those areas that are inundated or saturated by surface or ground water (hydrology) at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of*



The Tennessee River is the single most impacting environmental resources within the MSNHA .

vegetation (hydrophytes) typically adapted for life in saturated soil conditions (hydric soils). Wetlands generally include swamps, marshes, bogs, and similar areas.” Wetlands are important to the environment for numerous reasons, including the following:

- Wetlands help to control flooding
- Wetlands filter pollutants from soil and groundwater
- Wetlands serve as habitat for important plants and animals

An examination of the wetlands map on [page 52](#) of this report reveals that the Tennessee River is technically a very broad and elongated wetlands. Likewise, so are many of the tributaries illustrated on the tributaries map and addressed above. Otherwise, the isolated wetlands not associated with stream tend to be located conversely to where the prominent peaks and steep slopes are concentrated. Thus, wetlands within the MSNHA are concentrated within the lower and more level lands adjacent to either side of the Tennessee River. In particular, many areas of Lawrence County and the westerly third of Morgan County have relatively high concentrations of wetlands.

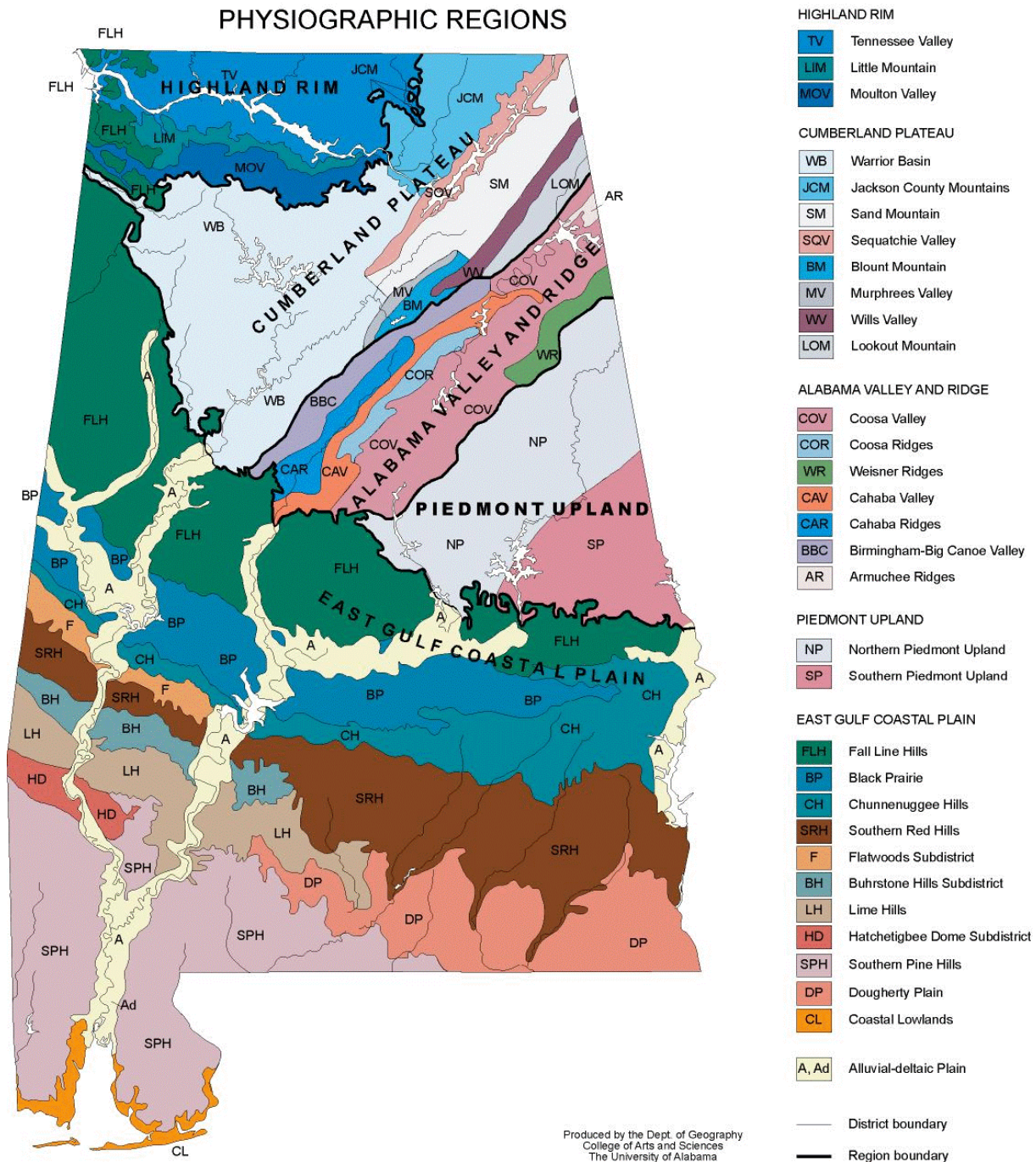
See [Appendix D](#) of this report for an inventory of water resources within the MSNHA. It includes numerous creeks, reservoirs and springs throughout the six-county area.



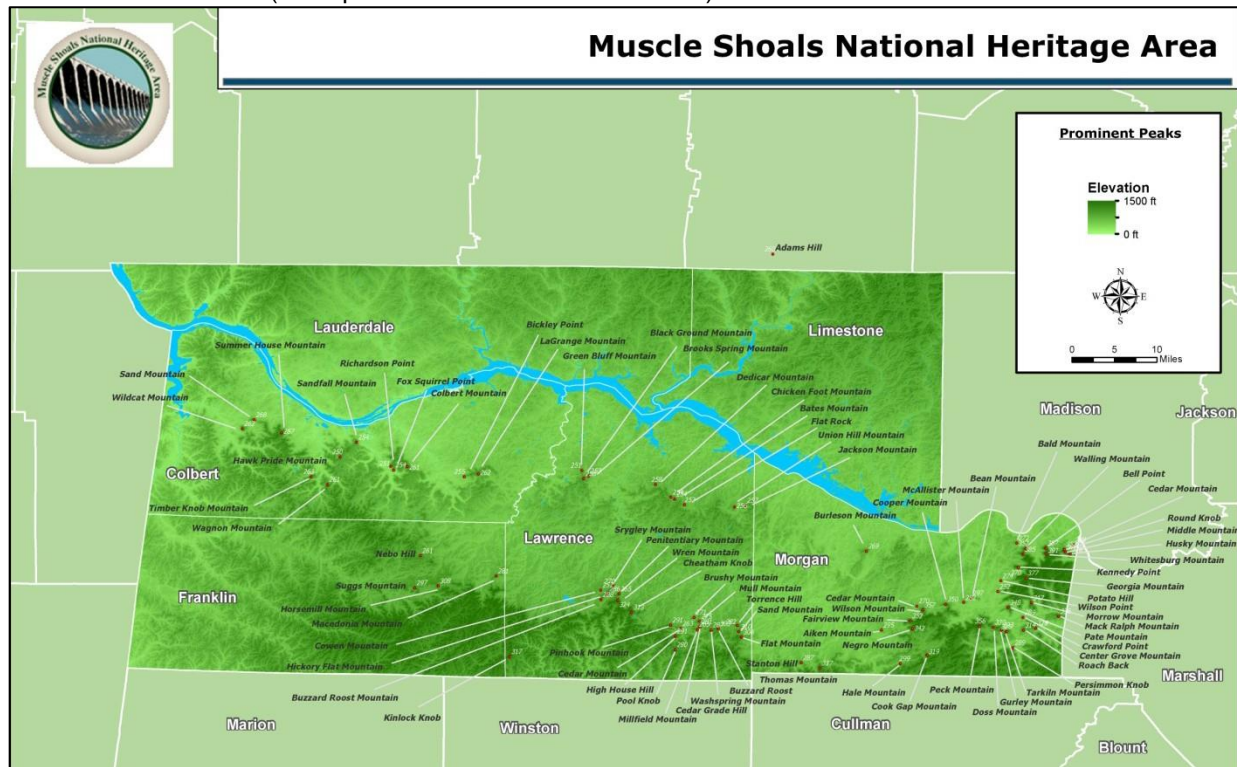
The MSNHA's natural environment is an important factor in shaping a character that will draw heritage tourists.

PHYSIOGRAPHY (to be provided as an 11 X 17 fold-out)

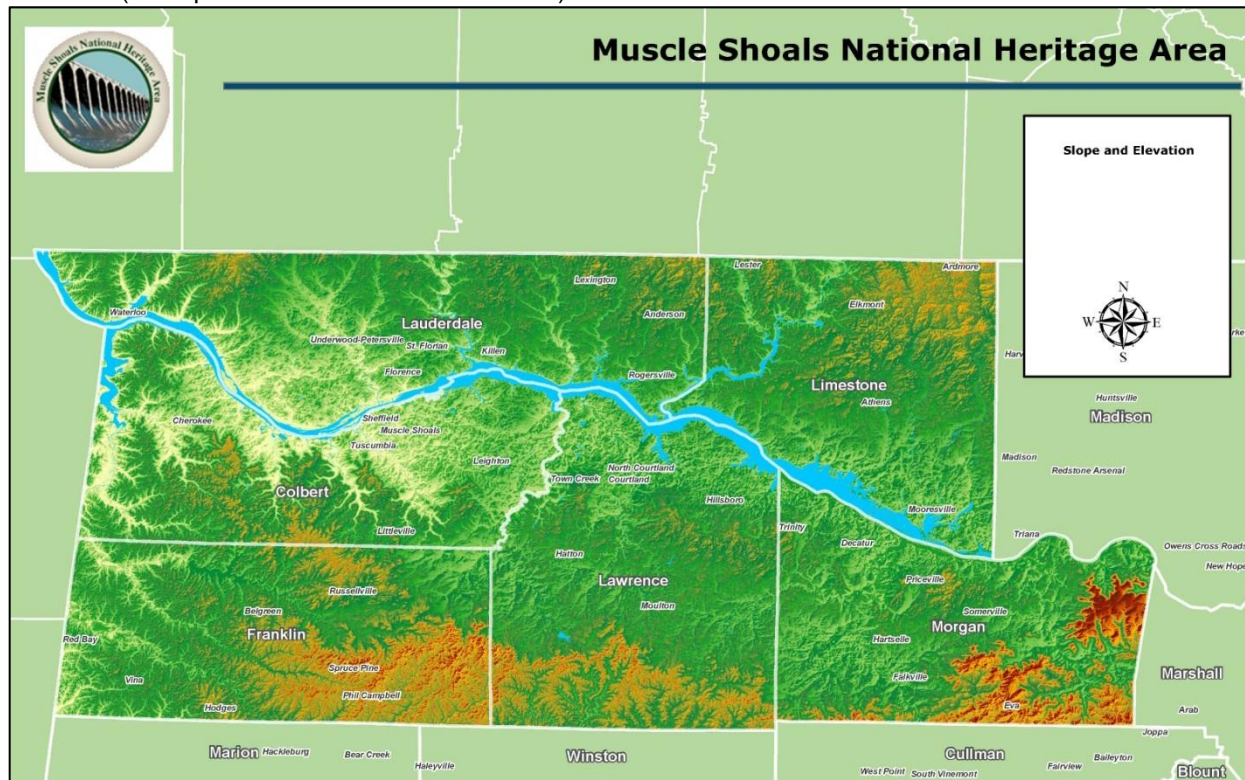
Need Lee Jones to create this map based on the graphic below.



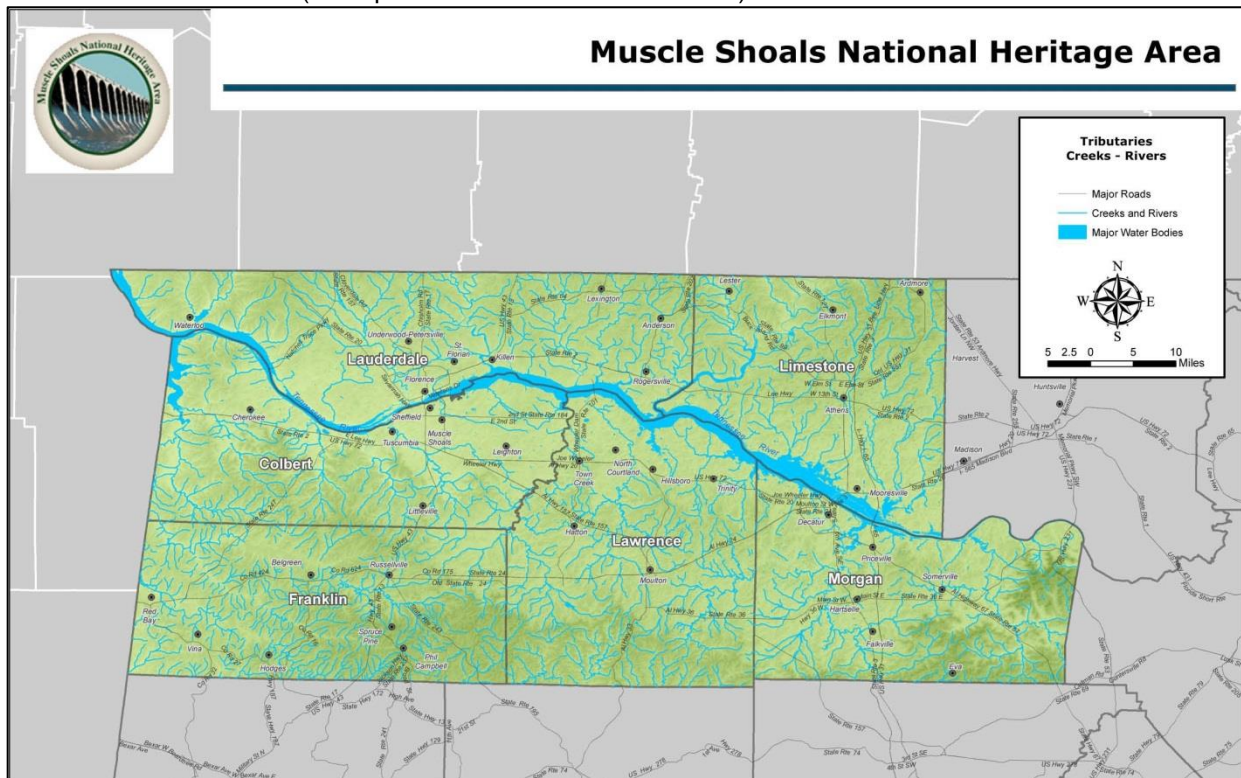
PROMINENT PEAKS (to be provided as an 11 X 17 fold-out)



SLOPES (to be provided as an 11 X 17 fold-out)



RIVER & TRIBUTARIES (to be provided as an 11 X 17 fold-out)



Plant Species

The Muscle Shoals National Heritage Area has a tremendous diversity of plant species. Those considered to be “threatened species” have been included in the biological resources inventory of this report ([Appendix D](#)). Below is a summary of that inventory:

Natural Communities

According to the “Natural Encyclopedia of Earth” (Natural Community - Amanda Garland, April 9, 2009):

“A natural community is an interactive assemblage of organisms, their physical environment, and the natural processes that affect them. Environmental factors such as soil type, bedrock type, moisture level, slope, slope aspect, climate, and the natural disturbance regime play a key role in determining a species’ ability to survive there. The organisms within a natural community include: plants, animals, fungus, and microorganisms. Natural communities occur in patterns throughout the earth and range in size from thousands of acres...”

MSNHA Characteristics

A total of six natural communities are identified in the natural resources inventory of this report. Based on their common names, they include Sandstone Glade, Cumberland Plateau Willow Oak Pond, Cumberland Plateau Clifftop Sandstone Barren, Interior Low Plateau Limestone Glade Ephemeral Pool, Appalachian Low-Elevation Granitic Dome, and Limestone Annual Grass Glade. Three of them are located solely in Lawrence County; two are located in Lawrence, Colbert and Morgan Counties; and the sixth is located solely in Franklin County. Four are designated as imperiled, and two are designated as critically imperiled.

Non-Vascular Plants

Non-vascular plants are those plants without a vascular system (a network of internal connecting tissue for transporting fluid and nutrients). Although non-vascular plants lack these particular tissues, a number of non-vascular plants possess tissues specialized for internal transport of water. Non-vascular plants do not have a wide variety of specialized tissue. Mosses and algae, for example, have no such tissues.

MSNHA Characteristics

Only one type of endangered non-vascular plant is identified in this report’s natural resources inventory for the MSNHA – moss (*Trichostomum crispulum*). It is only identified in Morgan County and it is designated as imperiled.

Vascular Plants

Vascular plants (also known as tracheophytes or higher plants) are those plants that have lignified tissues for conducting water, minerals, and photosynthetic products through the plant. Vascular plants include ferns, conifers, and flowering plants. Trees are one of the most obvious vascular plants because they feature a trunk, limbs, and leaves with veins.

MSNHA Characteristics

A total of 95 endangered vascular plants are identified in this report’s inventory for the MSNHA. Examples include Price’s Potato Bean, Puttyroot, Lake Cress, American Hart’s Tongue Fern, Apalachicola Indigo, Alabama Grapefern, and the American Smoketree. They range in endangerment level from rare to critically imperiled and each of the MSNHA’s six counties has some endangered vascular plants.



American Smoketree

Source: Ohio State Univ. Dept. of Urban Forestry (permitted with credit)

Animal Species

The Muscle Shoals National Heritage Area has a wealth of diverse animal species. The identified “threatened species” are documented in [Appendix D](#) of this report within the biological resources inventory. As just one indicator of the area’s biodiversity, the Wheeler Wildlife Refuge near Decatur has 115 fish species, 74 species of reptiles and amphibians, 47 mammal species, 285 species of songbirds, and 10 federally-listed endangered or threatened species (Muscle Shoals National Heritage Area Background Study, pg. 16). This report’s inventory of threatened animal species includes twelve different categories. Each is summarized briefly below (definitions of each are adapted from Wikipedia):

Amphibians

Amphibians are a class of vertebrate animals (having a backbone or spinal column) such as toads, frogs, caecilians, and salamanders. They are characterized as cold-blooded tetrapods (four-legged amphibians). Amphibians are often used as ecological indicators. In recent decades, there has been a dramatic decline in amphibian populations around the world, and many species are now threatened or extinct.

MSNHA Characteristics

A total of six endangered amphibians have been identified within the MSNHA. Using their common names, they include the Pale Salamander, the Mountain Dusky Salamander, the Green Salamander, the Webster’s Salamander, the Smallmouth Salamander and the Hellbender Salamander. Three are considered rare and three are considered imperiled. At least one of each threatened amphibian species is found in all of the MSNHA’s counties, with the sole exception of Lawrence County.

Arachnids

Arachnids are a class of joint-legged invertebrate animals (lacking a backbone or spinal column) having eight legs, although in some species the front pair of legs may convert to a sensory function. They comprise over 100,000 named species, including spiders, scorpions, ticks and mites.

MSNHA Characteristics

There are seven arachnids identified within the MSNHA as being endangered. Their common names include the Cave Spider, the Pseudoscorpion, the Cave Spring Cave Spider, the Cave Obligate Pseudoscorpion, the Cave Obligate Harvestman, and the Cave Obligate Spider. There are two types of Pseudoscorpions, which are distinguished by their scientific names. All seven species are either imperiled or critically imperiled.

Birds

Technically speaking, birds are feathered, winged, bipedal (two-legged), endothermic (warm-blooded), egg-laying, vertebrate animals. Approximately 10,000 bird species exist today. Birds have a beak with no teeth and a lightweight skeletal system. Their wings are evolved forelimbs, and most bird species can fly.

MSNHA Characteristics

There are 17 species of birds identified in this report’s inventory as being endangered. Examples by their common name include the Lark Sparrow, the Common Ground Dove, and the Bald Eagle. The sole endangered duck is the American Black Duck (Limestone and Morgan Counties), and the sole endangered owl is the Barn Owl (Colbert, Lauderdale, Limestone and Morgan Counties).

Crustaceans

Crustaceans form a very large group of arthropods, which are invertebrate animals having an exoskeleton (external skeleton), a segmented body, and jointed appendages. They include such familiar animals as crabs, lobsters, crayfish, and shrimp. There are 50,000 species of crustaceans, and they are distinguished in part from other groups of arthropods, such as insects, by the possession of biramous (two-parted) limbs. It is noteworthy that “decapods” (having ten limbs) are a category within the broader crustacean group, and they have been distinguished within this report’s inventory. The sole

decapod identified in the inventory is the Alabama Cave Shrimp (*Palaemonias alabamiae*), which is a “critically imperiled” species found in Colbert County.

MSNHA Characteristics

The inventory of natural resources for the MSNHA identified 20 endangered crustaceans, and every one is a type of crayfish. Examples include the Chattahoochee Crayfish, the Thornytail Crayfish, the Appalachian Brook Crayfish, and the Alabama Cave Crayfish. Also, each of the heritage area’s six counties has at least one of these crayfish, and the level of endangerment ranges from rare to critically imperiled.

Fish

Fish are a group of organisms that consist of gill-bearing aquatic vertebrate animals that lack limbs with digits. Most fish are ectothermic (“cold-blooded”), allowing their body temperatures to vary as ambient temperatures change. Fish are abundant in most bodies of water. They can be found in nearly all aquatic environments, from high mountain streams to the depths of the deepest oceans. At 32,000 species, fish exhibit greater species diversity than any other class of vertebrates.

MSNHA Characteristics

There are a total of 83 endangered fish species identified in this report’s natural resources inventory for the MSNHA. Various endangered fish species exist within all six of the heritage area’s counties, and species examples include the Spotted Bullhead, the Bluefin Stoneroller, the River Carpsucker and the Bluestripe Shiner. Among the general types of endangered fish are varieties of catfish, shiners, suckers, darters, chub, bass, and perch. Numerous species of darters and shiners are particularly well represented among the endangered fish. As in the case of the MSNHA’s crustaceans, their levels of endangerment range from rare to critically imperiled.

Insects

Insects are a class of living creatures within the arthropods group that have a chitinous exoskeleton, a three-part body (head, thorax, and abdomen), three pairs of jointed legs, compound eyes, and two antennae. They are among the most diverse groups of animals on the planet, including more than a million described species. They represent more than half of all known living organisms.

One specific type of insect that has been treated separately within this report’s inventory is the hexapod. Hexapods (from the Greek for *six legs*) constitute the largest number of species of arthropods. They include insects, as well as three much smaller groups of wingless arthropods, which are no longer considered insects. Hexapods are named for their most distinctive feature: a consolidated thorax with three pairs of legs. Flies are perhaps the best known hexapods. Most other arthropods have more than three pairs of legs.

MSNHA Characteristics

The inventory of natural resources for the MSNHA includes a total of 42 different insect species. The majority of species are varieties of Caddisfly, with a variety of Cave Beetles also being well represented. As with most of the endangered species, they occur in all of them; they occur in all six of the MSNHA’s six counties and they range from rare to critically imperiled with respect to their endangerment.

Mammals

Mammals are members of a class of air-breathing vertebrate animals characterized by the possession of endothermy (an organism that produces heat through internal means), hair, three middle ear bones, and mammary glands functional in mothers with young. Most mammals also possess sweat glands and specialized teeth.

MSNHA Characteristics

Relative to some of the other types of species within the MSNHA, there is a relatively small number of endangered mammals identified by this report’s inventory. They total only nine and include the following: Prairie Vole, Gray Bat, Northern Myotis, Indiana Bat, Indiana Bat 3/9, Appalachian

Cottontail, Brazilian Free-tailed Bat, Black Bear, and Meadow Jumping Mouse. Each of the six MSNHA counties has at least one of the nine endangered mammal species, and four of the nine species are bats.

Mussels

The common name “mussel” is used for members of several families of clams or bivalvia mollusca, from saltwater and freshwater habitats. These groups have in common a shell whose outline is elongated and asymmetrical compared with other edible clams, which are often more or less rounded or oval. The external color of the shell is often dark blue, blackish, or brown, while the interior is silvery.

MSNHA Characteristics

A total of 66 different endangered mussel species are identified in this report’s natural resources inventory. Examples include the Pink Mucket, the Wavyrayed Lampmussel, the Florida Sandshell, and the Pocketbook. As with most of the other endangered animal species in the MSNHA, these mussels range from rare to critically imperiled, and each of the heritage area’s six counties has some types of endangered mussels.

Reptiles

Reptiles are members of a group of air-breathing, ectothermic (cold-blooded) vertebrates that are characterized by laying shelled eggs (except for some vipers and constrictor snakes that give live birth), and having skin covered in scales and/or scutes. They are tetrapods, either having four limbs or being descended from four-limbed ancestors. Modern reptiles inhabit every continent, with the exception of Antarctica.

MSNHA Characteristics

A total of only seven endangered reptile species are identified in this report’s natural resources inventory. They include the Coal Skink (lizard), the Common Map Turtle, the Ouachita Map Turtle, the Mole King Snake, the Alligator Snapping Turtle, the Brown Water Snake, and the Northern Pine Snake. Thus, three of them are turtles and three are snakes. All seven of the endangered species are designated as being rare, and all six MSNHA counties have one or more of the seven species.

Snails

Snail is a common name applied to most of the members of the molluscan (common name “molluscs” or “mollusks”) class Gastropoda (commonly known as snails and slugs) that have coiled shells in the adult stage. When the word is used in its most general sense, it includes sea snails, land snails and freshwater snails. Snail-like animals that naturally lack a shell, or have only an internal shell, are often called slugs, and land species that have only a very small shell that they cannot retract into are called “semi-slugs.”

MSNHA Characteristics

There are a total of 17 different endangered snail species within the MSNHA. Examples include the Slowwater Elimia, the Armored Rock Snail, the Rustic Rock Snail and the Armored Marstonia. At least one species of each of the 17 exist in each MSNHA county except Franklin. They range from rare to critically imperiled in terms of their endangerment.

Other Resource Types

Land Resources

Appendix D of this report features an inventory of “Land Resources” within the MSNHA that are designated areas for protection. Examples of federally-owned or designated areas include the Bankhead National Forest in Lawrence County, the TVA-owned Bear Creek Lakes in Franklin County, and the Seven-Mile Island National Wildlife Management Area in Lauderdale County. Examples of state-owned or designated natural areas include Elk River Lodge State Park in Limestone County, Joe Wheeler State Park in Lauderdale County, and the many Wildlife Conservation Areas throughout the MSNHA, such as Freedom Hills Wildlife Management Area in Colbert County. A key program in

supporting the state's system of Wildlife Management Areas (WMAs) is the Forever Wild Program, and Freedom Hills serves as an example. During the summer of 2001, the Freedom Hills WMA had decreased in size to about 8,000 acres of state-owned lands and one or two small leases, despite consisting of over 30,000 acres during the 1980s. Fortunately, in 2001 the Forever Wild Program helped purchase 26,300 acres to return the area to its original size. Now the area can be enjoyed by a broad range of users, including hunters ("Outdoor Alabama" magazine – October 2009, pg. 28).

Another important type of land resource documented in the inventory for this report is the Century Farm and the Heritage Farm. Started in 1976 by the State Department of Agriculture and Industries, this program is designed to recognize farms that have been in operation as a family farm over a long period of time and have played a significant role in Alabama history. A "Century Farm" is one that has been in the same family continuously for at least 100 years and currently has some agricultural activities on the farm. The farm must include at least forty acres of land and be owned by the applicant or nominee. A "Heritage Farm" is one that has been operated continuously as a family farm for at least 100 years. It must feature interesting and important historical and agricultural aspects, including one or more structures at least forty years old. The farm must be at least forty acres of land owned and operated by the applicant, who must reside in Alabama. There are dozens of Century and/or Heritage Farms within the MSNHA, including in all six of the heritage area's counties.

Natural Recreation Resources

In addition to an inventory of land resources, a related inventory within [Appendix D](#) of this report features natural recreation resources. An example is the Alabama Woods and Water property, a 1,600-acre site in Morgan County that is privately-owned for hunting, fishing and camping. Within the previously-mentioned Bankhead National Forest are specific recreational resources such as the five-mile Borden Creek Trail and the Brushy Lake Recreation Area. The federally-designated Natchez Trace Parkway, extending 32 miles through the MSNHA, is also considered a natural recreation resource (see map below). And finally, there are numerous municipal parks, such as the 500-acre Point Mallard Park in Decatur, the 70-acre Diebert Park in Florence, and the one-mile linear Riverfront Park along Pickwick Lake in Sheffield.



A 32-mile segment of the Natchez Trace Parkway traverses the MSNHA (shaded in beige). Source: National Park Service.

Categorical Exclusion

Appendix G of this report addresses in detail the Categorical Exclusion (CE) issue relevant to federal environmental regulations. Below is a summary of the background section and conclusions.

Background

An important requirement for creating a National Heritage Area (NHA) Management Plan is to follow all applicable federal environmental policies. The most significant of such policies is the 1970 National Environmental Policy Act (NEPA). The Council on Environmental Quality (CEQ) was established by Congress to be responsible for implementing NEPA. In turn, the CEQ produced the DO-12 handbook (Director's Order) to guide parties in meeting NEPA requirements.

During the first few decades of the National Park Service's NHA program, NHAs followed Environmental Assessment (EA) or Environmental Impact Statement (EIS) requirements, although the requirement for an EIS rarely occurred, if ever. Thus, the vast majority of NHAs, if not all, followed the path of the EA when addressing NEPA within their management planning processes. On March 22, 2011, the NPS's Office of the Solicitor and Environmental Quality Division (EQD) determined that Categorical Exclusion (CE) 3.3-R applied to the Gullah Geechee National Heritage Corridor's Management Plan because the actions described in the plan would not result in immediate ground disturbance or measureable environmental impacts.

Conclusions

The determination of whether a CE is appropriate for this Management Plan is being based upon three key input factors:

- 1) The *inventory and analysis of natural and cultural resources* contained within the Background Study component of the draft Management Plan for the MSNHA;
- 2) The *public input* solicited through the various scoping meetings that were conducted as part of the planning process and documented in the Public Involvement Strategy of the draft Management Plan for the MSNHA; and
- 3) The *foundation statement* within the Background Study component of the draft Management Plan that predicts what the ultimate MSNHA might become.

A consideration and contrasting of these three inputs, in light of the CE requirements, as well as recent precedents such as the Gulla Geechee National Heritage Corridor, underscores the conclusion that no significant impacts on natural, cultural or social resources are anticipated from the future implementation of the MSNHA Management Plan. Consequently, a CE per Section 3.3 should apply to this project.