Ecological site F128XY502WV
Thermic Floodplain Alluvium

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General information

Provisional. A provisional ecological site description has undergone quality control and quality assurance review. It contains a working state and transition model and enough information to identify the ecological site.

MLRA notes

Major Land Resource Area (MLRA): 128X–Southern Appalachian Ridges and Valleys

MLRA 128, partially shown as the gray shaded area on the accompanying figure, falls into the East and Central Farming and Forest Region. This MLRA is in Tennessee (36 percent), Alabama (27 percent), Virginia (25 percent), and Georgia (12 percent). It makes up about 21,095 square miles (54,660 square kilometers).

Most of this MLRA is in the Tennessee Section of the Valley and Ridge Province of the Appalachian Highlands. The thin stringers in the western part of the area are mostly in the Cumberland Plateau Section of the Appalachian Plateaus Province of the Appalachian Highlands. A separate area of the MLRA in northern Alabama is in the Highland Rim Section of the Interior Low Plateaus Province of the Interior Plains. The western side of the area is dominantly hilly to very steep and is rougher and much steeper than the eastern side, much of which is rolling and hilly. Elevation ranges from 660 feet (200 meters) near the southern end of the area to more than 2,400 feet (730 meters) in the part of the area in the western tip of Virginia. Some isolated linear mountain ridges rise to nearly 4,920 feet (1,500 meters) above sea level.

The MLRA is highly diversified. It has many parallel ridges, narrow intervening valleys, and large areas of low, irregular hills. The bedrock in this area consists of alternating beds of limestone, dolomite, shale, and sandstone of early Paleozoic age. Ridgetops are capped with more resistant carbonate and sandstone layers, and valleys have been eroded into the less resistant shale beds. These folded and faulted layers are at the southernmost extent of the Appalachian Mountains. The narrow river valleys are filled with unconsolidated deposits of clay, silt, sand, and gravel.

Classification relationships

South-Central Interior Large Floodplain (NatureServe)

Ecological site concept

Natureserve describes a similar system as follows: "This floodplain system is found in the Interior Highlands as far west as eastern Oklahoma, as well as throughout the Interior Low Plateau, Cumberlands, Southern Ridge and Valley, and Western Allegheny Plateau, and lower elevations of the Southern Blue Ridge. Examples occur along large rivers or streams where topography and alluvial processes have resulted in a well-developed floodplain. A single occurrence may extend from river's edge across the outermost extent of the floodplain or to where it meets a wet meadow or upland system...Although vegetation is quite variable in this broadly defined system, examples may include Acer saccharinum, Platanus occidentalis, *Liquidambar styraciflua*, and Quercus spp. Understory species are mixed, but include shrubs, such as Cephalanthus occidentalis and Arundinaria gigantea ssp. gigantea, and sedges (Carex spp.). This system likely floods at least once annually and can be altered by occasional severe floods. Impoundments and conversion to agriculture can also impact this system."

Table 1. Dominant plant species

Tree	(1) *Quercus nigra* (2) *Platanus occidentalis*
Shrub	(1) *Lindera benzoin*
Herbaceous	(1) *Arundinaria gigantea*

Physiographic features

This PES occurs primarily in alluvium on flood plains and in upland drainageways in the Ridge and Valley, MLRA 128. It is of large extent.

Table 2. Representative physiographic features

Landforms	(1) Alluvial fan (2) Depression (3) Drainageway
Flooding duration	Long (7 to 30 days)
Flooding frequency	None to frequent
Ponding duration	Very brief (4 to 48 hours) to very long (more than 30 days)
Ponding frequency	Frequent
Elevation	7–2,129 ft
Slope	0–6%
Ponding depth	0–30 in
Water table depth	0–66 in
Aspect	Aspect is not a significant factor

Climatic features

This area falls under the humid, mesothermal climate classification (Thornwaite, 1948). Precipitation is fairly evenly distributed throughout the year, with little or no water deficiency during any season. The average annual precipitation in most of this area is 45 to 55 inches. It increases to the south. Maximum precipitation occurs in midwinter and midsummer, and the minimum occurs in autumn. Most rainfall occurs as high-intensity, convective thunderstorms. Snowfall may occur in winter. Average annual temperatures range from 46 to 70 degrees F, increasing to the south. The freeze-free period averages 205 days and is longest in the southern part of the area and shortest at higher elevations to the north. The growing season corresponds to climate. Local climate can be variable and microclimates factor into the distribution of plants. In general, topographic features such as slope aspect, landform, steepness, and position of the ridges and valleys are important site variables in the distribution of vegetation across the landscape (Martin, 1989).

Table 3. Representative climatic features

Frost-free period (average)	190 days
Freeze-free period (average)	217 days
Precipitation total (average)	53 in

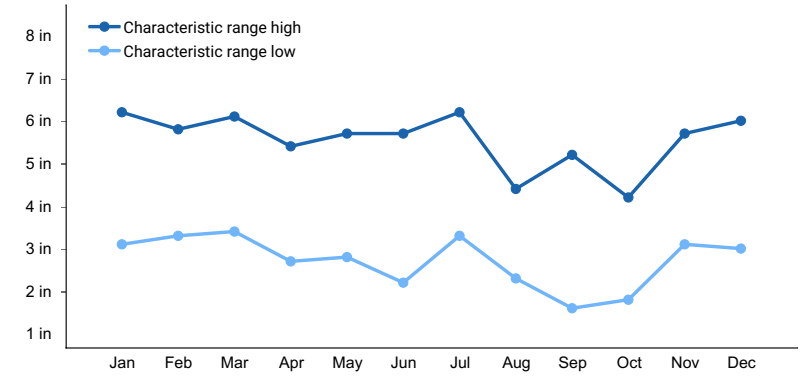

Figure 1. Monthly precipitation range

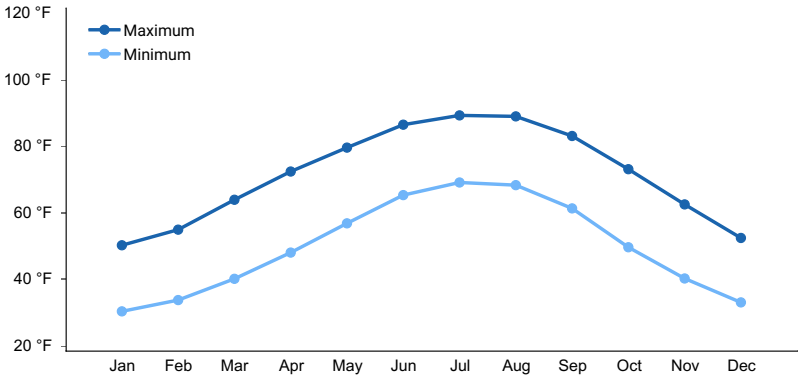

Figure 2. Monthly average minimum and maximum temperature

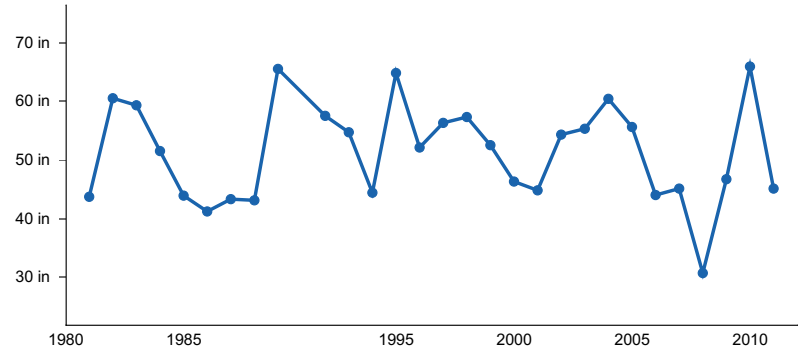

Figure 3. Annual precipitation pattern

Climate stations used

- (1) ROME [USC00097600], Rome, GA
- (2) KNOXVILLE MCGHEE TYSON AP [USW00013891], Alcoa, TN
- (3) TALLADEGA [USC00018024], Talladega, AL
- (4) MORRISTOWN WFO [USC00406272], Morristown, TN
- (5) HUNTSVILLE INTL AP [USW00003856], Madison, AL
- (6) CHATTANOOGA LOVELL AP [USW00013882], Chattanooga, TN

Influencing water features

The vegetation that occurs on this site is influenced by water tolerance. Common species are the water tolerant hardwoods and river cane. Cane breaks would have been a common historic community. This site can be prone to frequent flooding in places at certain times.

Soil features

These soils formed primarily in alluvium on flood plains and in upland drainageways. The slopes range from 0 to 12

percent. They are moderately deep to very deep (20 to more than 60 inches) to bedrock, and are very poorly to excessively drained. The available water capacity of these soils ranges from low to high. The depth to a seasonal high water table ranges from 0 to more than 6 feet. The frequencies of flooding and ponding range from none to frequent. The soil reaction ranges from extremely acid to moderately alkaline (pH from 3.5 to 8.4).

The soil series associated with this site are: Abernathy, Atkins, Augusta, Biltmore, Bloomingdale, Bruno, Buncombe, Chagrin, Chenneby, Chewacla, Choccolocco, Colvard, Combs, Congaree, Craigsville, Cranmore, Dowellton, Dunning, Ealy, Egam, Ellisville, Emory, Ennis, Gaylesville, Greendale, Guthrie, Hamblen, Heiskell, Huntington, Ketona, Kinston, Lee, Lindside, Lobdell, Lobelville, Melvin, Mooreville, Mullins, Nelse, Neubert, Newark, Nolin, Pettyjon, Philo, Pope, Pruitton, Purdy, Riverview, Roane, Roanoke, Robertsville, Rockdell, Sensabaugh, Sewanee, Shellbluff, Staser, Steadman, Stendal, Sterrett, Sturkie, Subligna, Sullivan, Sylacauga, Tanyard, Toccoa, Tupelo, Wax, Weaver, Wehadkee, Whitesburg

Table 4. Representative soil features

Parent material	(1) Alluvium–chert (2) Colluvium–limestone and shale (3) Fluviomarine deposits–limestone, sandstone, and shale
Drainage class	Very poorly drained to excessively drained
Permeability class	Very slow to very rapid
Soil depth	19–72 in
Surface fragment cover <=3"	0–15%
Surface fragment cover >3"	0–15%
Available water capacity (0-40in)	1.4–8.3 in
Soil reaction (1:1 water) (0-40in)	4.6–7.2
Subsurface fragment volume <=3" (Depth not specified)	0–35%
Subsurface fragment volume >3" (Depth not specified)	0–40%

Ecological dynamics

A Natural Heritage (Natureserve) plot from East Armuchee Creek accessed through VegBank classifies this as *Quercus phellos* - *Liquidambar styraciflua* / *Chasmanthium laxum* Cumberland Plateau Forest. The plot was on Chewacla silt loam which are not typically mapped in the Ridge and Valley but were in this case. This probably would not be a "Cumberland Plateau Forest" as it is a thermic soil but the species may be representative.

Another NatureServe plot on the Pocket Trail in Georgia classifies this as *Quercus alba* - (*Quercus rubra*, *Acer saccharum*, *Fagus grandifolia*) / *Aesculus flava* Forest on Steadman silt loam, frequently flooded. This PES currently (as of 7/15/15) does not include a frequently flooded component so that may need to be investigated.

Numerous DeSelm plots characterize this forest type as a mix of floodplain forest species including buckeye, swamp (white) oak, silver maple, water oak, willow (oak), sweetgum, hackberry, elm, sycamore, chestnut oak, white oak, beech, walnut and northern red oak among others. Disturbance histories varied widely among his plots. He noted that many were heavily impacted by deer browse and several others were grazed in the past. One was noted as mowed.

DeSelm vegetation plots also characterize forest type as mixed oak/hickory, white oak/hickory, silver maple/boxelder/sycamore, boxelder/sycamore, and sugar maple/buckeye/basswood. He notes microstegium in the understory of one plot (as a dominant) but also notes river oats (chasmanthium latifolium) and Arundinera (cane), which are native plants indicative of floodplains. He does not note deer browse as a significant concern and only recorded one plot as having been grazed.

State and transition model

Rangeland health reference sheet

Interpreting Indicators of Rangeland Health is a qualitative assessment protocol used to determine ecosystem condition based on benchmark characteristics described in the Reference Sheet. A suite of 17 (or more) indicators are typically considered in an assessment. The ecological site(s) representative of an assessment location must be known prior to applying the protocol and must be verified based on soils and climate. Current plant community cannot be used to identify the ecological site.

Author(s)/participant(s)	
Contact for lead author	
Date	
Approved by	
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:**

2. **Presence of water flow patterns:**

3. **Number and height of erosional pedestals or terracettes:**

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):**

5. **Number of gullies and erosion associated with gullies:**

6. **Extent of wind scoured, blowouts and/or depositional areas:**

7. **Amount of litter movement (describe size and distance expected to travel):**

8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):**

9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):**

10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:**

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11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):**

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12. **Functional/Structural Groups (list in order of descending dominance by above-ground annual-production or live foliar cover using symbols: >>, >, = to indicate much greater than, greater than, and equal to):**

    Dominant:

    Sub-dominant:

    Other:

    Additional:

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13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):**

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14. **Average percent litter cover (%) and depth (in):**

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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):**

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16. **Potential invasive (including noxious) species (native and non-native). List species which BOTH characterize degraded states and have the potential to become a dominant or co-dominant species on the ecological site if their future establishment and growth is not actively controlled by management interventions. Species that become dominant for only one to several years (e.g., short-term response to drought or wildfire) are not invasive plants. Note that unlike other indicators, we are describing what is NOT expected in the reference state for the ecological site:**

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17. **Perennial plant reproductive capability:**
