Ecological site PX136X00X200
Mesic Temperature Regime, Basic Upland Flats and Depressions, Expansive Clay, Seasonally Wet and Dry

Accessed: 10/12/2024

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): 136X–Southern Piedmont

This area is in North Carolina (29 percent), Georgia (27 percent), Virginia (21 percent), South Carolina (16 percent), and Alabama (7 percent). It makes up about 64,395 square miles (166,865 square kilometers). (Ag Bulletin 296)

The northeast-southwest trending Piedmont ecoregion comprises a transitional area between the mostly mountainous ecoregions of the Appalachians to the northwest and the relatively flat coastal plain to the southeast. It is a complex mosaic of Precambrian and Paleozoic metamorphic and igneous rocks with moderately dissected irregular plains and some hills. (EPA Ecoregions descriptions)

ADD APPROPRIATE ECOREGION DESCRIPTION(S)

Classification relationships

A PROVISIONAL ECOLOGICAL SITE is a conceptual grouping of soil map unit components within a Major Land Resource Area (MLRA) based on the similarities in response to management. Although there may be wide variability in the productivity of the soils grouped into a Provisional Site, the soil vegetation interactions as expressed in the State and Transition Model are similar and the management actions required to achieve objectives, whether maintaining the existing ecological state or managing for an alternative state, are similar. Provisional Sites are likely to be refined into more precise group during the process of meeting the APPROVED ECOLOGICAL SITE DESCRIPTION criteria.

This PROVISIONAL ECOLOGICAL SITE has been developed to meet the standards established in the National Ecological Site Handbook. The information associated with this ecological site does not meet the Approved Ecological Site Description Standard, but it has been through a Quality Control and Quality Assurance processes to assure consistency and completeness. Further investigations, reviews and correlations are necessary before it becomes an Approved Ecological Site Description.

Ecological site concept

This ecological site occurs on flood plains and drainageways that are elevated several meters above the river. They occur on sites that are higher above the river and not flooded.

This site differs from Bottomland Forest, Mesic Temperature Regime because the soils are hydric. The site is also poorly drained. It occurs in the mesic soil temperature regime portion of the Southern Piedmont MLRA.

Table 1. Dominant plant species

Tree	(1) *Liquidambar styraciflua* (2) *Quercus phellos*
Shrub	Not specified
Herbaceous	(1) *Chasmanthium latifolium*

Legacy ID

F136XY200VA

Physiographic features

Most of MLRA 136 is in the Piedmont Upland Section of the Piedmont Province of the Appalachian Highlands. A very small part of the MLRA, in central North Carolina, is in the Atlantic Plain Division. A very small part in the Roanoke, Virginia, area is on the eastern edge of the Blue Ridge Province of the Appalachian Highlands. This MLRA is a rolling to hilly upland with a well-defined drainage pattern. The original plateau has been dissected by streams, resulting in narrow to fairly broad upland ridgetops and short slopes. Valley floors are very narrow, and stream terraces are minor. Elevation ranges from 330 to 1,310 feet (100 to 400 m), increasing gradually from south to north.

Geology:
Precambrian and Paleozoic metamorphic and igneous rocks underlie almost all of this MLRA. The dominant metamorphic rock types include biotite gneiss, schist, slate, quartzite, phyllite, and amphibolite. The dominant igneous rock types are granite and metamorphosed granite. Some gabbro and other mafic igneous rocks also occur, and diabase dikes are not uncommon. The Carolina Slate terrane occurs just east of an imaginary centerline in this MLRA. It consists of metamorphic rocks with some metavolcanics and metasediments. Scattered graben basins, which are bounded by faults where the ground between the faults has dropped down, occur from South Carolina to south of Charlottesville and Richmond, Virginia. These basins have Triassic and Jurassic siltstone, shale, sandstone, and mudstone. River valleys have recent alluvium and few terraces.

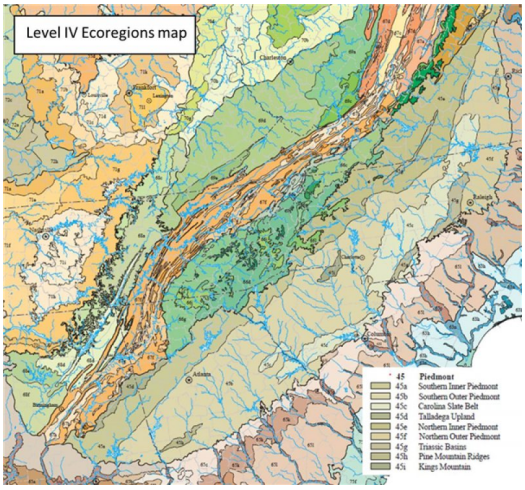

Figure 1. EPA Level IV Ecoregion map.

Table 2. Representative physiographic features

Landforms	(1) Flood plain (2) Drainageway (3) Interfluve
Flooding frequency	None
Ponding frequency	None
Slope	0–4%
Water table depth	6–12 in
Aspect	Aspect is not a significant factor

Climatic features

The average annual precipitation is 37 to 45 inches (940 to 1,145 millimeters) at the northern end of this area, is 45 to 60 inches (1,145 to 1,525 millimeters) at the southern end, and is as much as 75 inches (1,905 millimeters) in a small, high-elevation area in northeastern Georgia. The precipitation generally is evenly distributed throughout the year. It is lowest in autumn. Most of the rainfall occurs as high-intensity, convective thunderstorms during the growing season. Significant moisture also comes from the movement of warm and cold fronts across the MLRA from November to April. High amounts of rain can occur during hurricanes at the same time of the year. Snowfall typically is light. The average annual temperature is 53 to 64 degrees F (12 to 18 degrees C). The freeze-free period averages 230 days and ranges from 185 to 275 days. Both the mean annual temperature and length of the freeze-free period increase from north to south and with decreasing elevation.

Table 3. Representative climatic features

Frost-free period (average)	174 days
Freeze-free period (average)	198 days
Precipitation total (average)	48 in

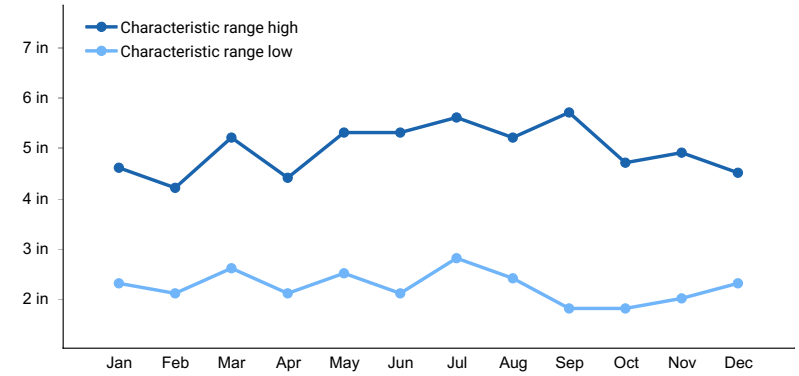

Figure 2. Monthly precipitation range

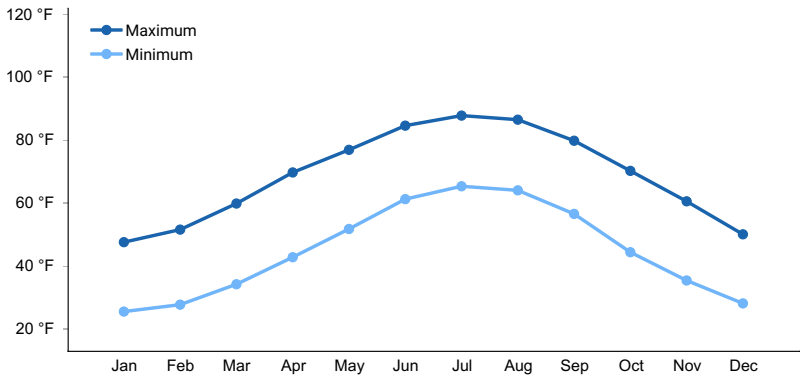

Figure 3. Monthly average minimum and maximum temperature

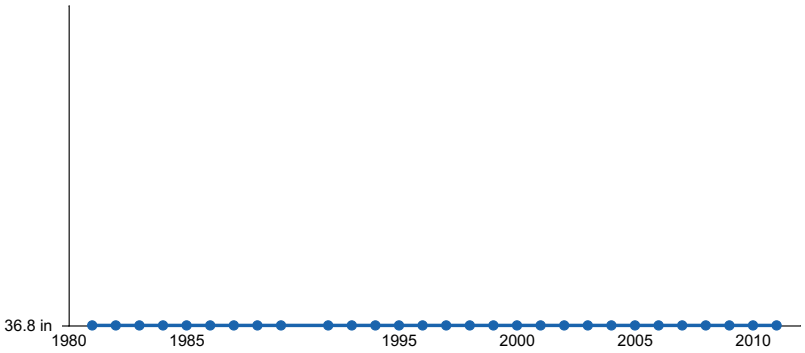

Figure 4. Annual precipitation pattern

Climate stations used

- (1) FOREST CITY 6 SW [USC00313150], Forest City, NC
- (2) SHELBY 2 NNE [USC00317845], Shelby, NC
- (3) APPOMATTOX [USC00440243], Appomattox, VA
- (4) BROOKNEAL [USC00441082], Brookneal, VA
- (5) PALMYRA 3S [USC00446491], Palmyra, VA
- (6) MARTINSVILLE FLTR PLT [USC00445300], Martinsville, VA
- (7) TYE RIVER 1 SE [USC00448600], Amherst, VA
- (8) GASTONIA [USC00313356], Gastonia, NC
- (9) LOUISA [USC00445050], Louisa, VA
- (10) HICKORY FAA AP [USW00003810], Hickory, NC
- (11) LENOIR [USC00314938], Lenoir, NC
- (12) YADKINVILLE 6 E [USC00319675], East Bend, NC
- (13) CROZIER [USC00442142], Maidens, VA
- (14) ROCKY MT [USC00447338], Rocky Mount, VA
- (15) WASHINGTON DC DULLES AP [USW00093738], Chantilly, VA

Influencing water features

The extent of the major Hydrologic Unit Areas (identified by four-digit numbers) that make up this MLRA is as follows: Edisto-Santee (0305), 18 percent; Chowan-Roanoke (0301), 14 percent; Apalachicola (0313), 10 percent; Pee Dee (0304), 10 percent; Ogeechee-Savannah (0306), 10 percent; Alabama (0315), 9 percent; Altamaha-St. Marys (0307), 9 percent; Lower Chesapeake (0208), 9 percent; Neuse-Pamlico (0302), 5 percent; Cape Fear (0303), 5 percent; and Potomac (0207), 1 percent. Some of the major rivers in this MLRA are, from north to south, the Roanoke, Cape Fear, Savannah, Altamaha, Chattahoochee, and Alabama Rivers. These rivers typically form within the Piedmont Province and flow east and south across the Coastal Plain Province and empty into the Atlantic Ocean or Gulf of Mexico.

Soil features

Soils associated with this ecological site occur in the mesic soil temperature regime of MLRA 136. This soil temperature regime is defined as: The mean annual soil temperature is 8 degree C or higher but lower than 15 degrees C, and the difference between mean summer and mean winter soil temperatures is 6 degrees C or more either at a depth of 50 cm below the soil surface or at a densic, lithic, or paralithic contact, whichever is shallower. These poorly drained hydric soils are in a fine particle size family and have smectitic mineralogy. They appear to be formed from clayey alluvium of the Triassic Basin. Dominant components are the Elbert and Leaksville soil series.

Table 4. Representative soil features

Surface texture	(1) Silt loam (2) Loam
Family particle size	(1) Clayey
Drainage class	Poorly drained

Soil depth	24 in
Surface fragment cover <=3"	0–12%
Available water capacity (0-40in)	1–7 in
Calcium carbonate equivalent (0-40in)	0%
Electrical conductivity (0-40in)	0 mmhos/cm
Sodium adsorption ratio (0-40in)	0
Soil reaction (1:1 water) (0-40in)	5–6
Subsurface fragment volume <=3" (Depth not specified)	0–10%

Ecological dynamics

Flooding does not play an important role in this site. Trees regenerate mainly through gap formation caused by windthrow or other single-tree mortality. Windthrow patches may be somewhat larger and more frequent than in most forests because of the sandy soil and open edge along the river.

State and transition model

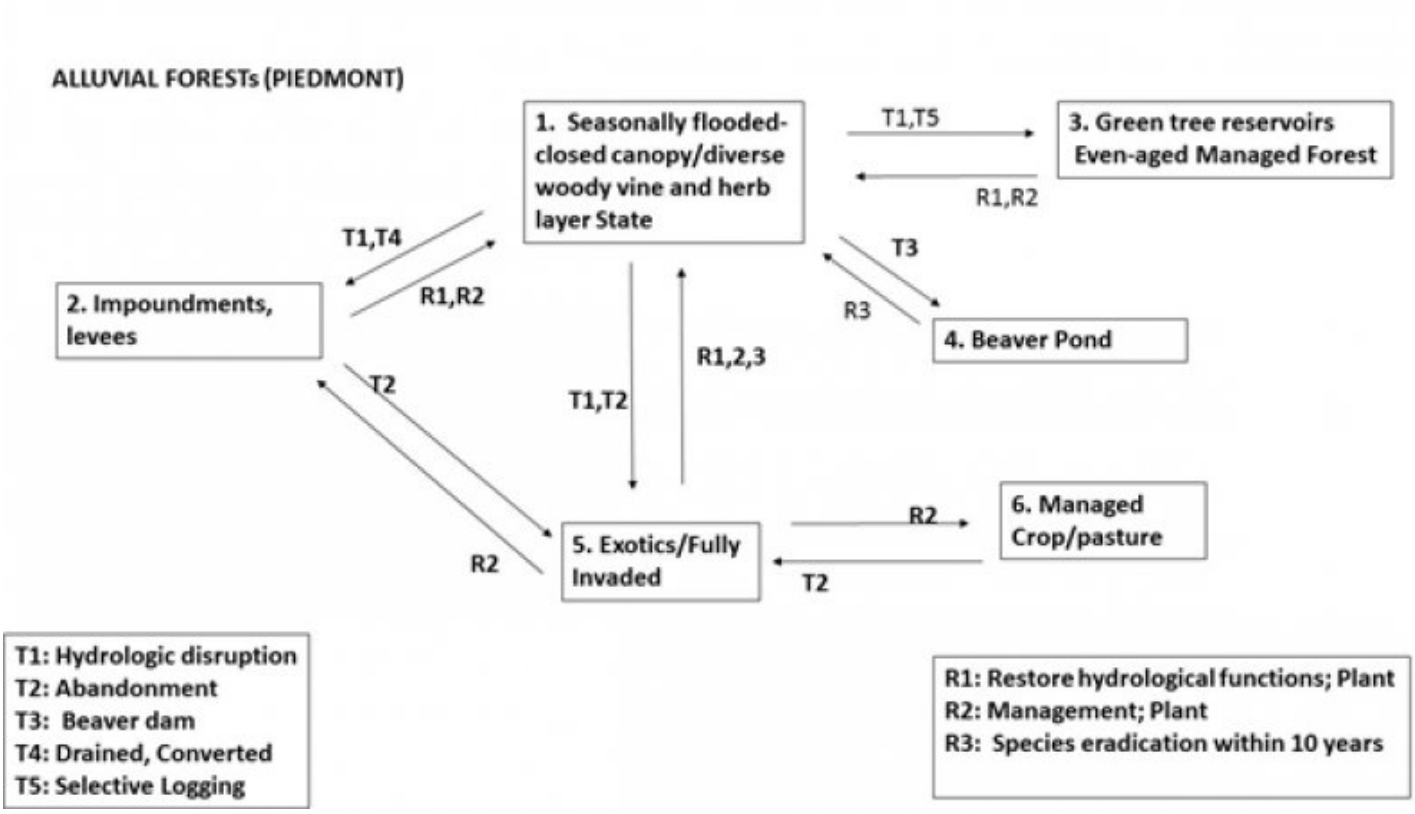

Figure 6. state and transition model

Other references

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Wharton, C.H. 1978. The natural environments of Georgia. Bulletin 114. Georgia Department of Natural Resources. Atlanta.

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:**

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

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

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

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

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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:**