

Ecological site PX136X00X160

Mesic temperature regime, high terraces, very rare inundation

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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): 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 terraces, flats, and drainageways that are elevated several meters above the river. They occur on sites that are higher above the river and less frequently flooded.

This site differs from Bottomland Forest, Mesic Temperature Regime, hydric because the soils are not hydric. The site is also better drained. It occurs in the mesic soil temperature regime portion of the Southern Piedmont MLRA.

This ecological site occurs on well, moderately well, and somewhat poorly drained soils along flats, drainageways, and terraces that can be seasonally flooded. This site has pronounced hummock-and-hollow microtopography. The tree canopy is closed to partially open and dominated by *Acer rubrum* and *Fraxinus pennsylvanica*. Other canopy associates may include *Nyssa sylvatica*, *Liquidambar styraciflua*, *Ulmus americana*, *Quercus lyrata*, *Quercus phellos*, *Quercus lyrata*, and *Populus heterophylla*. The shrub layer includes *Lindera benzoin*, *Leucothoe racemosa*,

Ilex verticillata, Viburnum spp., and Fraxinus pennsylvanica saplings. The herb layer is characterized by Saururus cernuus, Peltandra virginica, Boehmeria cylindrica, Triadenum walteri, Cinna arundinacea, Pilea pumila, Impatiens capensis, Osmunda regalis, Leersia oryzoides, Leersia virginica, Glyceria striata, Commelina virginica, Rumex verticillatus, Carex spp., and Polygonum arifolium.

Table 1. Dominant plant species

Tree	(1) <i>Liquidambar styraciflua</i> (2) <i>Quercus phellos</i>
Shrub	Not specified
Herbaceous	Not specified

Legacy ID

F136XY160VA

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.

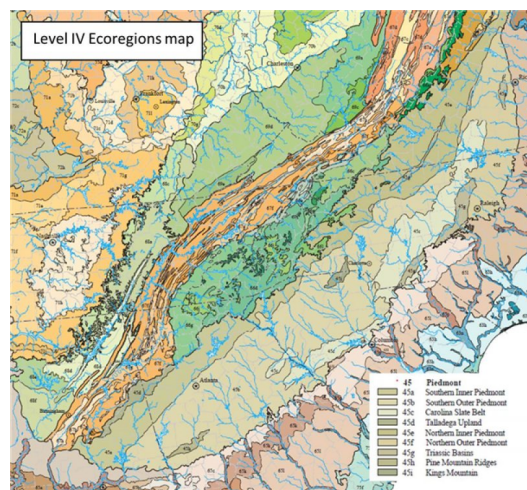


Figure 1. EPA Level IV Ecoregion map.

Table 2. Representative physiographic features

Landforms	(1) Stream terrace (2) Drainageway
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Flooding frequency	None to rare
Ponding frequency	None
Slope	2–25%
Water table depth	38 cm
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)	1,219 mm

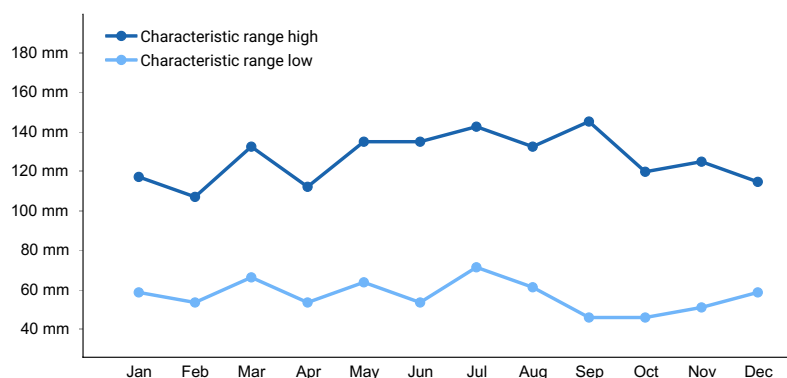


Figure 2. Monthly precipitation range

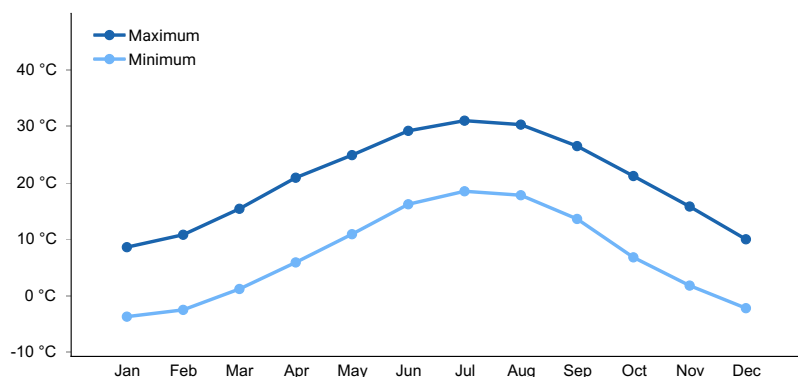


Figure 3. Monthly average minimum and maximum temperature

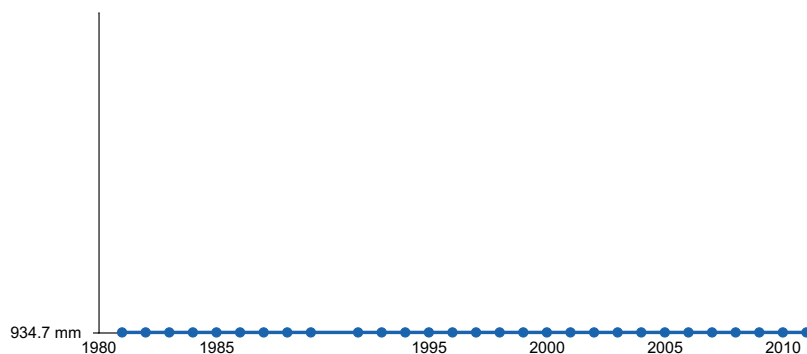


Figure 4. Annual precipitation pattern

Climate stations used

- (1) FOREST CITY 6 SW [USC00313150], Forest City, NC
- (2) LENOIR [USC00314938], Lenoir, NC
- (3) ROCKY MT [USC00447338], Rocky Mount, VA
- (4) TYE RIVER 1 SE [USC00448600], Amherst, VA
- (5) SHELBY 2 NNE [USC00317845], Shelby, NC
- (6) BROOKNEAL [USC00441082], Brookneal, VA
- (7) CROZIER [USC00442142], Maidens, VA
- (8) HICKORY FAA AP [USW00003810], Hickory, NC
- (9) YADKINVILLE 6 E [USC00319675], East Bend, NC
- (10) MARTINSVILLE FLTR PLT [USC00445300], Martinsville, VA
- (11) WASHINGTON DC DULLES AP [USW00093738], Chantilly, VA
- (12) GASTONIA [USC00313356], Gastonia, NC
- (13) APPOMATTOX [USC00440243], Appomattox, VA
- (14) LOUISA [USC00445050], Louisa, VA
- (15) PALMYRA 3S [USC00446491], Palmyra, 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. The soils are somewhat poorly, moderately well, or well drained with rare or no flooding. The particle size class family is fine or fine-loamy, and there is no restriction within 150 cm (60 inches). Representative components are the Banister, Braddock, Danripple, Pfafftown, and Wintergreen soil series.

Table 4. Representative soil features

Surface texture	(1) Cobbly loam (2) Gravelly fine sandy loam (3) Sandy loam
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Drainage class	Somewhat poorly drained to well drained
Permeability class	Slow to moderate
Soil depth	152 cm
Surface fragment cover <=3"	0–28%
Available water capacity (0-101.6cm)	15.24–25.4 cm
Calcium carbonate equivalent (0-101.6cm)	0%
Electrical conductivity (0-101.6cm)	0 mmhos/cm
Sodium adsorption ratio (0-101.6cm)	0
Soil reaction (1:1 water) (0-101.6cm)	4.5–6.2

Ecological dynamics

This ecological site occurs on drainageways or terraces that are elevated several meters above the river. They occur on sites that are higher above the river and less frequently flooded. Flooding does not play an important role in this site. Steeper slopes reduce the effects of any flooding that does occur. 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

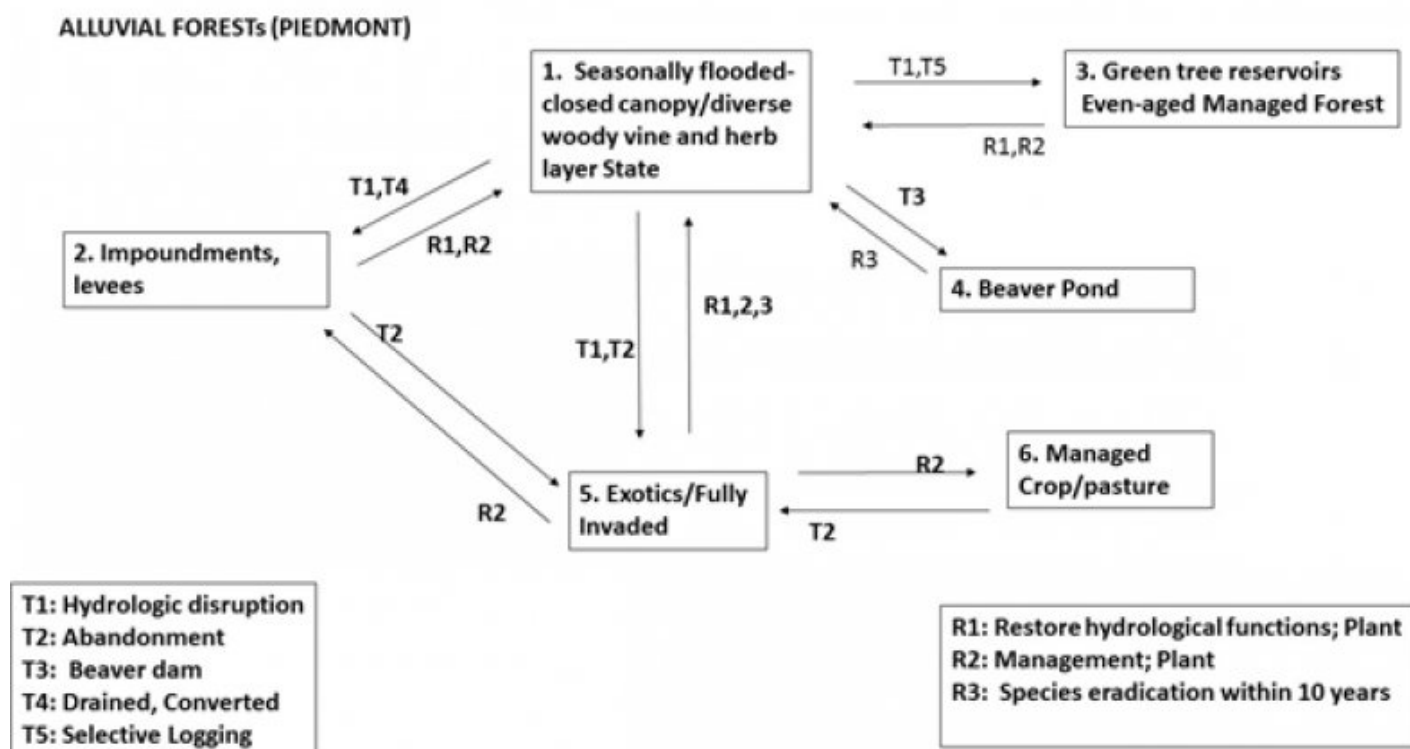


Figure 6. state and transition model

Other references

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NatureServe. 2013. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. Available <http://www.natureserve.org/explorer>. (Accessed May 24, 2013).

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Spira, Timothy P. 2011. Wildflowers and Plant Communities of the Southern Appalachian Mountains and Piedmont. The University of North Carolina Press. Chapel Hill.

United States Department of Agriculture, Natural Resources Conservation Service, 2006. Land Resource Regions and Major Land Resource Areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296.

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:**
-
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:**
-
11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):**
-
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:
-
13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):**
-
14. **Average percent litter cover (%) and depth (in):**
-
15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):**
-

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:**
-