USDA Natural Resources Conservation Service

# Ecological site PX136X00X630
# Flood Plain Levee Forest, Sandy

Accessed: 05/13/2025

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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 excessively drained floodplains. Generally these are rivers where the floodplain is wide but may also include well-developed levees in the broad floodplains of smaller creeks in Triassic basins. Soils are sandy and generally very fertile. Flooding is fairly frequent but generally of short duration. Soils are excessively drained when not flooded.

**Table 1. Dominant plant species**

| | |
|---|---|
| Tree | (1) *Liriodendron tulipifera* |
| Shrub | (1) *Asimina triloba* |
| Herbaceous | (1) *Arundinaria gigantea* |

## Legacy ID

F136XY630GA

## 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.

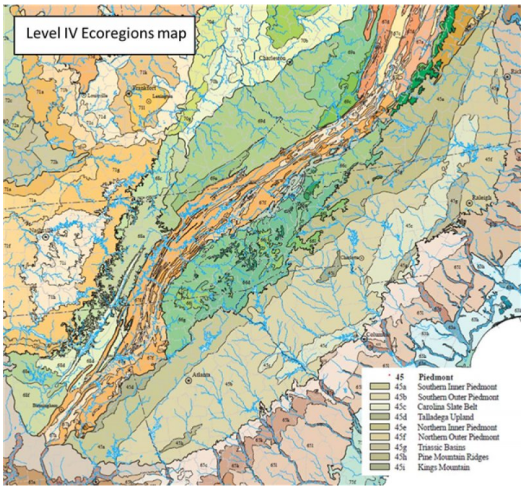


**Figure 1. EPA Level IV Ecoregions map.**

**Table 2. Representative physiographic features**

| | |
|---|---|
| Landforms | (1) Flood plain |
| Flooding frequency | Rare to frequent |
| Ponding frequency | None |
| Slope | 0–5% |
| Water table depth | 152 cm |

## Climatic features

This ecological site occurs in the thermic temperature regime for MLRA 136. The thermic soil temperature regime has mean annual soil temperatures of 15° C or more, but less than 22 °C; and a difference between mean summer and mean winter soil temperatures of greater than 5 °C at 50 cm below the surface.

The average annual precipitation is 45 to 60 inches (1,145 to 1,525 millimeters) 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) | 195 days |
| Freeze-free period (average) | 225 days |
| Precipitation total (average) | 1,321 mm |

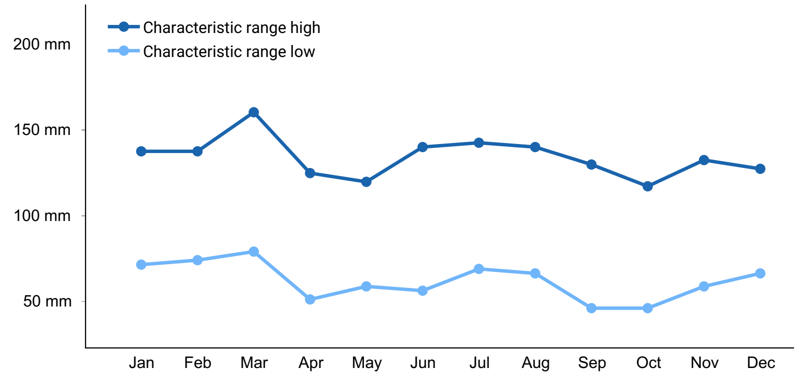


**Figure 2. Monthly precipitation range**

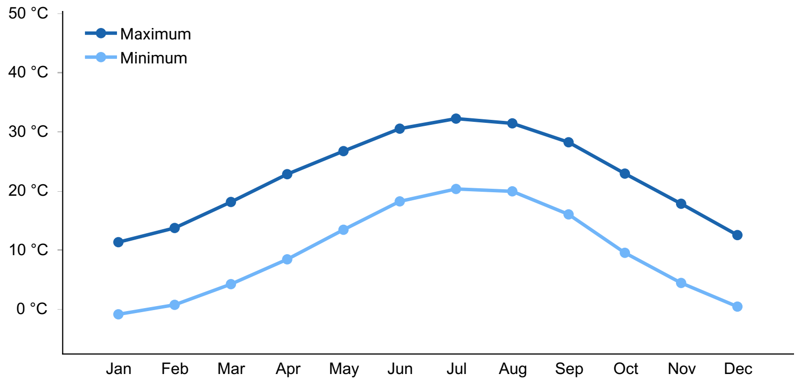


**Figure 3. Monthly average minimum and maximum temperature**

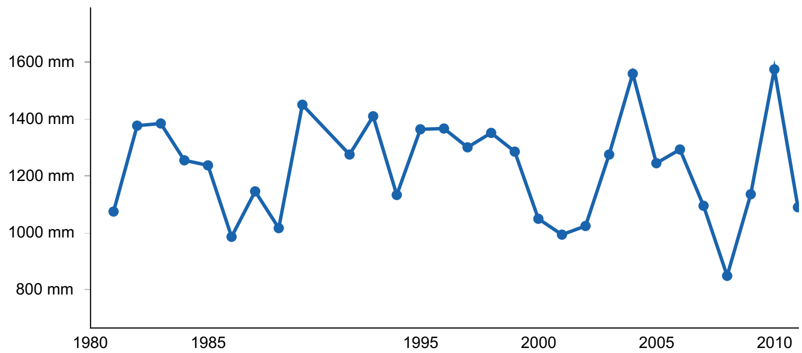


**Figure 4. Annual precipitation pattern**

## Climate stations used

- (1) ASHLAND 3 ENE [USC00010369], Ashland, AL

- (2) ROCKFORD 3 ESE [USC00017020], Rockford, AL
- (3) EXPERIMENT [USC00093271], Griffin, GA
- (4) GAINESVILLE [USC00093621], Gainesville, GA
- (5) MILLEDGEVILLE [USC00095874], Milledgeville, GA
- (6) WEST POINT [USC00099291], Lanett, GA
- (7) SALISBURY [USC00317615], Salisbury, NC
- (8) SIMMS WTP [USC00387885], Chesnee, SC
- (9) CHARLOTTE DOUGLAS AP [USW00013881], Charlotte, NC
- (10) CARROLLTON [USC00091640], Carrollton, GA
- (11) COVINGTON [USC00092318], Covington, GA
- (12) ALBEMARLE [USC00310090], Albemarle, NC
- (13) NEWBERRY [USC00386209], Newberry, SC
- (14) COLUMBUS METRO AP [USW00093842], Columbus, GA
- (15) DALLAS 7 NE [USC00092485], Dallas, GA
- (16) ASHEBORO 2 W [USC00310286], Asheboro, NC
- (17) SILER CITY 2 N [USC00317924], Siler City, NC
- (18) CHESNEE 7 WSW [USC00381625], Chesnee, SC
- (19) CLEMSON UNIV [USC00381770], Clemson, SC
- (20) CHASE CITY [USC00441606], Chase City, VA
- (21) HICKORY FAA AP [USW00003810], Hickory, NC
- (22) GREENWOOD [USC00383754], Greenwood, SC
- (23) CROZIER [USC00442142], Maidens, VA
- (24) ATHENS BEN EPPS AP [USW00013873], Athens, GA

## Influencing water features

## Soil features

Soils associated with this ecological site fall within the thermic soil temperature regime of MLRA 136. The thermic soil temperature regime is defined as having a difference in soil temperature of 6 degrees C or more between mean summer (June, July, and August in the Northern Hemisphere) and mean winter (December, January, and February in the Northern Hemisphere) and a mean annual soil temperature of:15 degree C (59 degrees F) to 22 degrees C (72 degrees F). Soils are excessively drained and include the soil series Buncombe. These soils have lower available water for plant growth.

**Table 4. Representative soil features**

| | |
|---|---|
| Surface texture | (1) Coarse sand<br>(2) Loamy sand<br>(3) Sand |
| Family particle size | (1) Sandy |
| Drainage class | Excessively drained |
| Permeability class | Rapid |
| Soil depth | 152 cm |
| Available water capacity (0-101.6cm) | 5.08–10.16 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) | 4.6–6.1 |

| | |
|---|---|
| Subsurface fragment volume <=3" (Depth not specified) | 0–5% |

## Ecological dynamics

Dynamics: Flooding, deposition and loss of alluvial material, and windthrow result in a constantly changing environment. Floods disturb vegetation by washing away plants and soil. In more severe floods, small parts of the forest may be eroded or completely washed away. The tendency of streamside trees to lean toward the river has both positive and negative consequences. Leaning trees gain access to higher light levels that potentially increase growth rates, but because a greater part of their trunks are immersed in fast running water during heavy floods, they are particularly susceptible to being uprooted and washed away. Prolonged flooding can also stress or kill flood plain trees. Most flood plain trees can tolerate short periods of flooding, but few species can handle prolonged flooding during the growing season.
Flood plains are continually dynamic with the deposition of new sediment and the loss of old sediment. Sandbars and mudflats form on the inside curves or rivers, and regular flooding deposits alluvial material. Flood plain soils consist of alluvium that can range from 15 to 250 feet thick. Heavy mud deposition during the growing season kill herbaceous plants and the seedlings and saplings of woody plants.
Storms, tornadoes, and occasional hurricanes can cause considerable wind damage. Shallow root systems allow flood plain trees to use the uppermost soil region, where anaerobic conditions are less likely, but make them more vulnerable to windthrow. Trunks of wind-toppled trees often lie scattered across flood plains. The openings created by downed trees increase the abundance and diversity of herbaceous plants and facilitate forest regeneration. Today, flood plain forests exist in various stages of succession following tree removal. Very few tracts with old-growth trees are known. (Spira, 2011)

## State and transition model

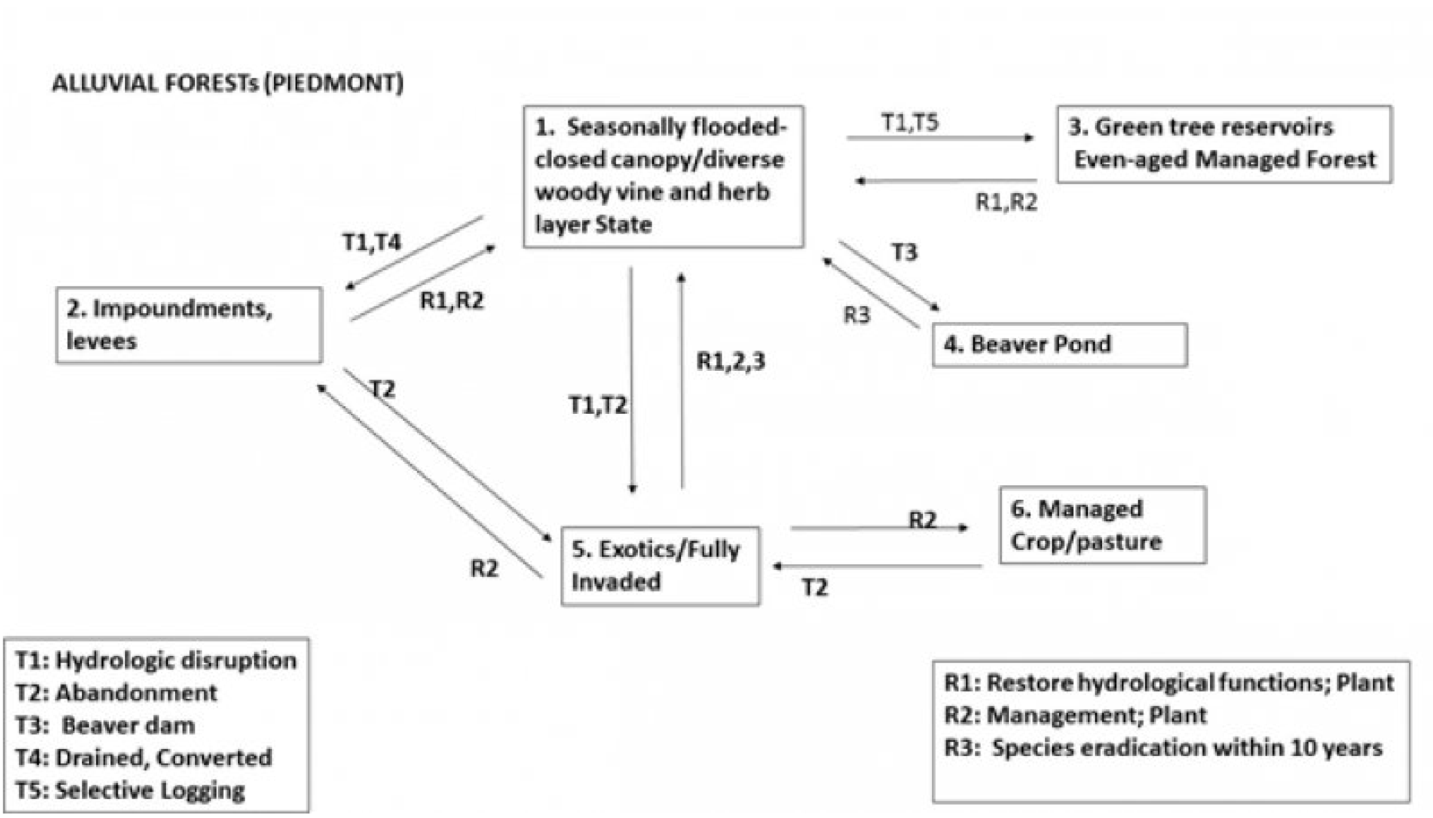


**Figure 6. state and transition model**

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## 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:**

17. **Perennial plant reproductive capability:**