

## Ecological site F130BY012WV Non-Hydric Floodplains

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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): 130B–Southern Blue Ridge

This MLRA is in North Carolina (51 percent), Tennessee (18 percent), Georgia (17 percent), Virginia (10 percent), and South Carolina (4 percent). It makes up about 16,080 square miles (41,665 square kilometers). It is locally known as the Southern Appalachians. It includes Lenoir, Morganton, Marion, Hendersonville, Waynesville, and Asheville, North Carolina; Gatlinburg, Tennessee; Damascus and Galax, Virginia; Walhalla, South Carolina; and Cleveland, Dahlonega, and Ellijay, Georgia. Interstate 40 crosses the parts of the area in Tennessee and North Carolina. Interstate 77 crosses the part in Virginia. Many national forests are in the area, including the Jefferson, Cherokee, Nantahala, Pisgah, and Chattahoochee National Forests. The Appalachian Trail begins on Springer Mountain in Georgia, near Amicalola State Park. The Great Smoky Mountains National Park is in this MLRA. The Mount Rogers National Recreation Area is in the part of the MLRA in Virginia. The Cherokee Indian Reservation is west of Waynesville, North Carolina.

### Classification relationships

This ecosite is found in mountains in MLRA 130B: Southern Blue Ridge

This is a complex system that encompasses a matrix of co-occurring vegetation communities. Data and maps produced by the SE GAP Analysis Project were queried (USGS 2001). At the most detailed level natural vegetation is represented by NatureServe's Ecological System classification (NatureServe 2017). Data has been cross-walked with NVC classification levels (Class, Subclass, Formation, Division, Macrogroup, Ecological System). The classification approach used was the International Terrestrial Ecological Systems Classification (ITESC) (NatureServe 2007 and White 2003). Ecological Systems were cross-checked with the Vegetation Classification System developed for the Great Smoky Mountains National Park (GRSM) in 2009.

### Ecological site concept

About 80 percent of the acreage is cleared and used for pasture or cropland. The remainder is in woods. Wooded areas are mainly mixed hardwoods that include yellow-poplar, northern red oak, sycamore, black walnut, red maple, and hickories. Understory plants include rhododendron, ironwood, flowering dogwood, alder, greenbrier, and switchcane. Important crops grown are corn, tobacco, small grain, and vegetable crops. The soils included in this site concept are more well-drained than those in hydric floodplains and therefore differences in vegetation based on water tolerance is likely. This should be investigated in the field where future projects are identified. At the scale of PES, very little difference was discernable.

### Associated sites

|             |                    |
|-------------|--------------------|
| F130BY011WV | Hydric Floodplains |
|-------------|--------------------|

## Similar sites

|             |                    |
|-------------|--------------------|
| F130BY011WV | Hydric Floodplains |
|-------------|--------------------|

**Table 1. Dominant plant species**

|            |               |
|------------|---------------|
| Tree       | Not specified |
| Shrub      | Not specified |
| Herbaceous | Not specified |

## Physiographic features

This MLRA is mainly in the Southern Section of the Blue Ridge Province of the Appalachian Highlands. The southern tip of the MLRA and two protruding areas to the east are in the Piedmont Uplands Section of the Piedmont Province of the Appalachian Highlands. This MLRA consists of several distinct topographic areas, including the Blue Ridge Escarpment on the eastern edge of the area, the New River Plateau on the northern end, interior low and intermediate mountains throughout the MLRA, intermountain basins between the major mountains, and the high mountains making up the bulk of the MLRA. Elevation ranges from about 900 feet (275 meters) at the south and southwest boundaries of the area to more than 6,600 feet (2,010 meters) at the crest of the Great Smoky and Black Mountain ranges.

The extent of the major Hydrologic Unit Areas (identified by four-digit numbers) that make up this MLRA is as follows: Upper Tennessee (0601), 46 percent; Kanawha (0505), 13 percent; Middle Tennessee-Hiwassee (0602), 12 percent; Edisto-Santee (0305), 9 percent; Alabama (0315), 8 percent; Ogeechee-Savannah (0306), 6 percent; Pee Dee (0304), 4 percent; Chowan-Roanoke (0301), 1 percent; and Apalachicola (0313), 1 percent. From north to south, the major rivers in this area are the New River in Virginia; the Yadkin, Catawba, French Broad, Little Tennessee, and Hiwassee Rivers in North Carolina; the Saluda, Seneca, Chattooga, and Tugaloo Rivers in South Carolina; and the Toccoa and Coosawattee Rivers in Georgia. The Tugaloo River is a headwater stream of the Savannah River, and the French Broad, Little Tennessee, Hiwassee, and Ocoee Rivers also flow into Tennessee in this area. The Hiwassee River in Tennessee and the Conasauga River in Georgia have been designated National Wild and Scenic Rivers in this area. The Chattooga River (made famous in the motion picture "Deliverance") in South Carolina is a National Scenic River.

**Table 2. Representative physiographic features**

|                    |  |
|--------------------|--|
| Landforms          | (1) Flood plain<br>(2) Valley<br>(3) Drainageway |
| Flooding duration  | Brief (2 to 7 days)                              |
| Flooding frequency | None to frequent                                 |
| Ponding duration   | Very brief (4 to 48 hours)                       |
| Ponding frequency  | None to rare                                     |
| Elevation          | 300–1,240 m                                      |
| Slope              | 0–8%   |
| Ponding depth      | 0–18 cm  |
| Water table depth  | 30–160 cm  |

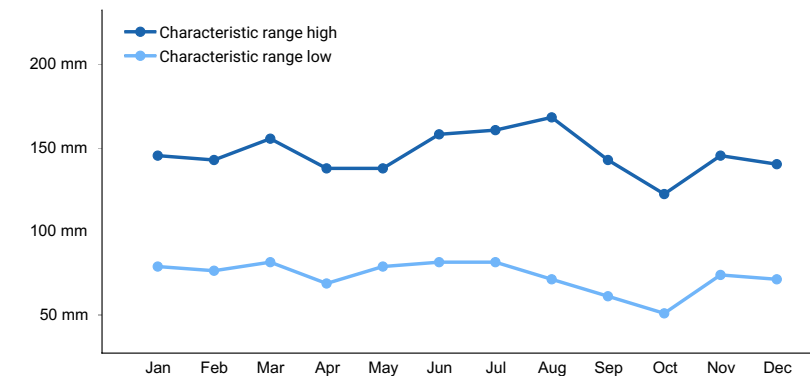
## Climatic features

The average annual precipitation in this area generally is 36 to 60 inches (915 to 1,525 millimeters), generally increasing with elevation. It is 60 to 90 inches (1,525 to 2,285 millimeters) in southwestern North Carolina and northeastern Georgia and can be as much as 119 inches (3,025 millimeters) on the higher peaks in the MLRA. Much of the precipitation occurs as snow at the higher elevations. The amount of precipitation is lowest in the fall. The average annual temperature ranges from 46 to 60 degrees F (8 to 16 degrees C), decreasing with elevation.

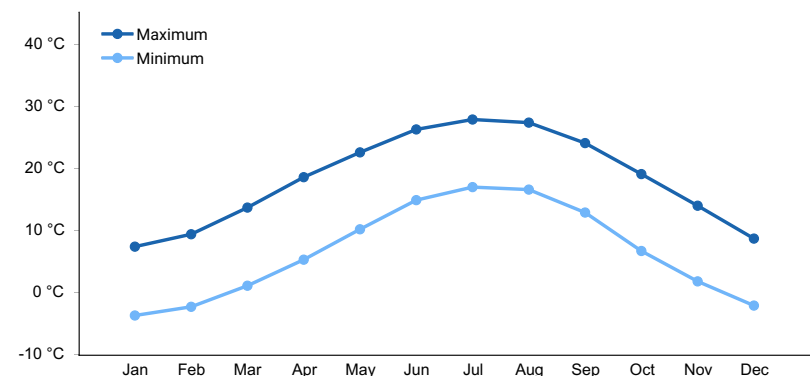
The freeze-free period averages 185 days and ranges from 135 to 235 days. The freeze-free period is shorter at high elevations and on valley floors because of cold air drainage. Microclimate differences resulting from aspect significantly affect the type and vigor of the plant communities in the area. South- and west-facing slopes are warmer and drier than north- and east-facing slopes and those shaded by the higher mountains.

**Table 3. Representative climatic features**

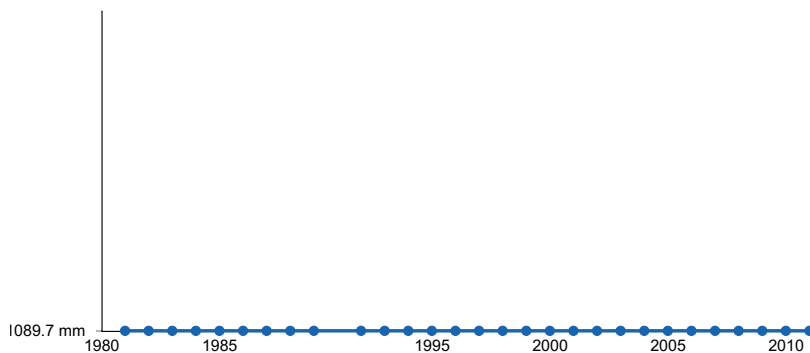
|                               |          |
|-------------------------------|----------|
| Frost-free period (average)   | 160 days |
| Freeze-free period (average)  | 190 days |
| Precipitation total (average) | 1,397 mm |



**Figure 1. Monthly precipitation range**



**Figure 2. Monthly average minimum and maximum temperature**



**Figure 3. Annual precipitation pattern**

## Climate stations used

- (1) JASPER 1 NNW [USC00094648], Jasper, GA
- (2) GALAX RADIO WBRF [USC00443267], Galax, VA
- (3) FRANKLIN [USC00313228], Franklin, NC
- (4) CLAYTON 1 SSW [USC00091982], Clayton, GA

- (5) GRANDFATHER MTN [USC00313565], Collettsville, NC
- (6) ASHEVILLE [USW00013872], Asheville, NC

## Influencing water features

The vegetation that occurs on this site is influenced by water tolerance. This site is subject to flooding.

## Soil features

The soil series associated with this site include: French, Rosman, Biltmore, Bandana, Reddies, Dellwood, Whiteside, and Cullowhee.

**Table 4. Representative soil features**

|  |   |
|--|---|
| Parent material  | (1) Alluvium–metasedimentary rock<br>(2) Colluvium–gneiss         |
| Surface texture  | (1) Cobbly fine sandy loam<br>(2) Gravelly loam<br>(3) Loamy sand |
| Family particle size                                     | (1) Loamy   |
| Drainage class   | Somewhat poorly drained to well drained                           |
| Permeability class                                       | Moderate to rapid   |
| Soil depth   | 41–94 cm  |
| Surface fragment cover <=3"                              | 0%  |
| Surface fragment cover >3"                               | 0%  |
| Available water capacity<br>(0-101.6cm)                  | 5.08–24.89 cm   |
| Soil reaction (1:1 water)<br>(0-101.6cm)                 | 5.3–5.9   |
| Subsurface fragment volume <=3"<br>(Depth not specified) | 0–60%   |
| Subsurface fragment volume >3"<br>(Depth not specified)  | 0–25%   |

## Ecological dynamics

The vast majority of this site is cleared and used for pasture or cropland. The remainder is forested. Reference conditions are difficult to establish for this site due to the level of past and current disturbance. It is unclear which NatureServe classification best fits. The USDA-NRCS Official Series Descriptions list the following as important trees in forested areas and classify this as “mixed hardwoods”: yellow-poplar, northern red oak, sycamore, black walnut, red maple, and hickories. Important crops listed include corn for grain and silage, small grains, truck crops, and burley tobacco.

## State and transition model

Non-Hydric Floodplains  
DRAFT PES  
F130BY012WV



T1A Establishment of pastureland or agricultural crops

R2A Abandonment (~100 years until reversion to forest); control of non-native plants and pests where needed

T1B Invasion by a number of non-native forest pests and plants

R3A Management of invasive species (mechanical, chemical, biological control, etc.)

## State 1 Mixed hardwoods

The reference state for this site is unclear due to the level of current and past disturbance. A mixed hardwood forest is assumed based on available literature. However, field investigation is really needed to further refine this concept. This will likely be deemed "naturalized" rather than reference due to the level of disturbance, even prior to European settlement.

## State 2

## **Managed State**

For the purpose of PES, all managed land was lumped into one state. This includes cropland, pasture and hay. All of these will likely need to be separated as future projects are refined.

## **State 3 Invaded State**

Invasive, non-native pests, pathogens and plants is a threat to this site. The impact and response vary by species (both of the host and the invader) but often will include combinations of mechanical, biological, chemical and cultural control. Tree breeding programs for genetic resistance and germplasm conservation may be important considerations, especially in front an incoming invasion if reforestation is planned after it passes. It is always best if local genetic material can be used if restoration efforts are attempted.

## **Transition T1A State 1 to 2**

Conversion to agricultural production. Pasture and hay are the most common. Practices vary based on site-specific conditions.

## **Transition T1B State 1 to 3**

Invasion by non-native forest pests and pathogens and/or weedy plants.

## **Restoration pathway R3A State 2 to 1**

Restoration strategies will depend on the type and extent of management and should be determined case-by-case.

## **Restoration pathway R3A State 3 to 1**

Management of invasive species (mechanical, chemical, biological control, etc.)

## **Other references**

Comer PJ, Faber-Langendoen D, Evans R, Gawler SC, Josse C, Kittel G, Menard S, Pyne M, Reid M, Schulz K, Snow K, and Teague J. 2003. Ecological Systems of the United States: A Working Classification of U.S. Terrestrial Systems. NatureServe, Arlington, Virginia.

Fleming, G. P., P. P. Coulling, K. D. Patterson, and K. Taverna. 2005. The natural communities of Virginia: Classification of ecological community groups. Second approximation. Version 2.1. Virginia Department of Conservation and Recreation, Division of Natural Heritage, Richmond, VA.  
[<http://www.dcr.virginia.gov/dnh/ncintro.htm>]

Jenkins, M.A. 2007. Vegetation Communities of the Great Smoky Mountains National Park. Southeastern Naturalist 1:35-56.

National Park Service. Center for Remote Sensing and Mapping Science/University of Georgia. 2009. Great Smoky Mountains National Park Vegetation Mapping Project - Spatial Vegetation Data.  
<http://www1.usgs.gov/vip/grsm/grsmgeodata.zip>.

NatureServe. 2009. International Ecological Classification Standard: Terrestrial Ecological Classifications. NatureServe Central Databases. Arlington, VA, U.S.A. Data current as of 06 February 2009.

Natureserve. 2018. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.0. NatureServe, Arlington, VA. U.S.A. Available <http://explorer.natureserve.org>. Accessed [April 10, 2018].

Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. 2006. Land Resource Regions and Major Land Resource Areas of the United States, the Caribbean, and the Pacific Basin. Agricultural Handbook 296 digital maps and attributes. Available online. Accessed [5/7/2018].

Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Official Soil Series Descriptions. Available online. Accessed [5/7/2018].

US Geological Survey, Gap Analysis Program (GAP). August 2011. National Land Cover, Version 2.

White, R.D., K.D. Patterson, A. Weakley, E.J. Ulrey, and J. Drake. 2003. Vegetation classification of Great Smoky Mountains National Park. Report submitted to BRD-NPS Vegetation Mapping Program. NatureServe, Durham, NC. 376 pp.

## Contributors

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## Approval

Nels Barrett, 9/07/2018

## Acknowledgments

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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:

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### 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):**



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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:**

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