Ecological site PX133A00X004
Dry And Dry-Mesic Oak

Accessed: 05/10/2025

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): 133A–Southern Coastal Plain

This MLRA (shown in orange in the figure above) is in Alabama (26 percent), Mississippi (24 percent), Georgia (21 percent), Florida (8 percent), North Carolina (7 percent), Virginia (5 percent), South Carolina (4 percent), Tennessee (4 percent), and Louisiana (1 percent). It makes up about 106,485 square miles (275,930 square kilometers). It is the largest MLRA in the U.S. The city of Alexandria, Virginia, is at the northernmost tip of the area. The MLRA also includes Fredericksburg, Richmond, and Petersburg, Virginia; Rocky Mount, Goldsboro, Fayetteville, and Lumberton, North Carolina; Florence, Sumter, and Orangeburg, South Carolina; Albany and Tifton, Georgia; Tallahassee, Florida; Tuskegee, Eufaula, Selma, and Tuscaloosa, Alabama; Savannah, Tennessee; Corinth, Starkville, Grenada, Meridian, Hattiesburg, and McComb, Mississippi; and Bogalusa, Louisiana. Interstates 95, 64, 85, 40, 20, 20/59, 26, 16, 75, 10, 65, 59, and 55 cross this area from north to south. This area extends from Virginia to Louisiana and Mississippi, but it is almost entirely within three sections of the Coastal Plain Province of the Atlantic Plain. The northern part is in the Embayed Section, the middle part is in the Sea Island Section, and the southern part is in the East Gulf Coastal Plain Section. This MLRA is strongly dissected into nearly level and gently undulating valleys and gently sloping to steep uplands. Stream valleys generally are narrow in their upper reaches but become broad and have widely meandering stream channels as they approach the coast. Elevation ranges from 80 to 655 feet (25 to 200 meters), increasing gradually from the lower Coastal Plain northward. Local relief is mainly 10 to 20 feet (3 to 6 meters), but it is 80 to 165 feet (25 to 50 meters) in some of the more deeply dissected areas.

Classification relationships

ATTENTION: This ecological site meets the requirements for PROVISIONAL. A provisional ecological site is established after ecological site concepts are developed and an initial state-and-transition model is drafted. A provisional ecological site typically will include literature reviews, land use history information, legacy data, and must include some soils data, ocular estimates for canopy and/or species composition by weight, and some line-point intercept information. A provisional ecological site provides the conceptual framework of soil-site correlation for the development of the ESD. For more information about this ecological site, please contact your local NRCS office.

Ecological site concept

This system encompasses oak-dominated forests of somewhat fire-sheltered dry to dry-mesic sites in the Mid-Atlantic
and South Atlantic coastal plains from southeastern Virginia to Georgia. Sites where this system occurs are somewhat protected from
most natural fires by some combination of steeper topography, isolation from the spread of fire, and limited flammability of the
vegetation. If fires were more frequent, the vegetation would likely be replaced by more fire-tolerant southern pines, especially Pinus
palustris. This system occurs in dry-mesic to dry but not xeric sites, generally on upper to midslopes in bluff systems, but
occasionally it occurs on broader uplands or on the highest parts of non-flooded river terraces. Soils are generally

acidic, though
calcareous soils occur occasionally (as in Carya glabra - Tilia americana var. caroliniana - Acer barbatum / Trillium maculatum
Forest (CEGL004747)). Soils are loamy to clayey and well-drained but not excessively drained. Similar sites with coarse sandy soils
tend to support other ecological systems, in part due to the influence of more frequent fire. Sites are somewhat protected from most
natural fires by steep topography and by limited flammability of the vegetation. Fires that penetrate them are generally low in intensity and have fairly limited ecological effect. Descriptions of Ecological Systems for Modeling of LANDFIRE Biophysical Settings
Ecological Systems
06 October 2007
Descriptions provided to TNC and LANDFIRE by NatureServe

Table 1. Dominant plant species

Tree	(1) *Quercus alba* (2) *Quercus falcata*
Shrub	(1) *Carya* (2) *Acer barbatum*
Herbaceous	(1) *Chasmanthium sessiliflorum* (2) *Trillium maculatum*

Legacy ID

F133AY004NC

Physiographic features

TheThis area extends from Virginia to Louisiana and Mississippi, but it is almost entirely within three sections of the Coastal Plain Province of the Atlantic Plain. The northern part is in the Embayed Section, the middle part is in the Sea Island Section, and the southern part is in the East Gulf Coastal Plain Section. This MLRA is strongly dissected into nearly level and gently undulating valleys and gently sloping to steep uplands. Stream valleys generally are narrow in their upper reaches but become broad and have widely meandering stream channels as they approach the coast. Elevation ranges from 80 to 655 feet (25 to 200 meters), increasing gradually from the lower Coastal Plain northward. Local relief is mainly 10 to 20 feet (3 to 6 meters), but it is 80 to 165 feet (25 to 50 meters) in some of the more deeply dissected areas.

Table 2. Representative physiographic features

Landforms	(1) Marine terrace (2) Hill (3) Ridge
Flooding frequency	None
Ponding frequency	None
Elevation	120–660 ft
Slope	0–30%
Water table depth	72–80 in
Aspect	SE

Climatic features

The average annual precipitation in this area ranges from 41 to 53 inches (1,041 to 1,346 millimeters). Maxiumum precipitation occurs in midsummer, and the minimum occurs in autumn. High-intensity, convective thunderstorms account for summer rainfall. If snow occurs at all, it is in small amounts.

The average annual temperature ranges from 59 to 65 degrees F (15 to 18 degrees C).

Climate data is based on Normal PRISM data for the period 1981-2010.

Table 3. Representative climatic features

Frost-free period (average)	204 days
Freeze-free period (average)	232 days
Precipitation total (average)	50 in

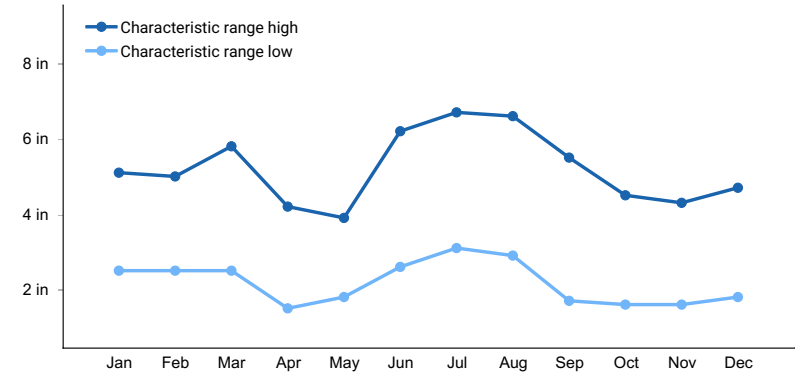

Figure 1. Monthly precipitation range

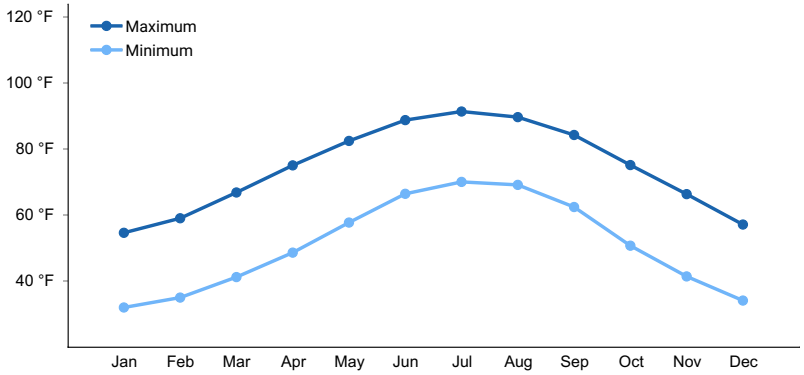

Figure 2. Monthly average minimum and maximum temperature

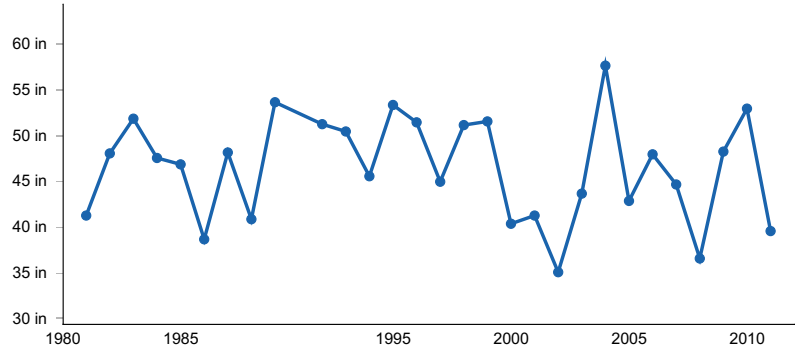

Figure 3. Annual precipitation pattern

Climate stations used

- (1) HAMLET [USC00313784], Hamlet, NC
- (2) JACKSON SPRINGS 5 WNW [USC00314464], Jackson Springs, NC
- (3) JOHNSTON 4 SW [USC00384607], Johnston, SC
- (4) BYRON EXP STN [USC00091448], Byron, GA

- (5) MACON MIDDLE GA RGNL AP [USW00003813], Macon, GA
- (6) AUGUSTA BUSH FLD AP [USW00003820], Augusta, GA
- (7) POPE AFB [USW00013714], Fort Bragg, NC
- (8) COLUMBIA [USW00013883], West Columbia, SC
- (9) AIKEN 5SE [USC00380074], Aiken, SC
- (10) CAMDEN 3 W [USC00381310], Camden, SC
- (11) SANDHILL RSCH ELGIN [USC00387666], Elgin, SC
- (12) CHERAW [USC00381588], Cheraw, SC
- (13) PELION 4 NW [USC00386775], Pelion, SC

Influencing water features

No water features significantly influence this site.

Soil features

The Norfolk and Thursa series are the only known series in the same family. The Bama, Noboco, Pikeville, Ruston and Warnock series are in closely related families in the Southern Coastal Plain. Norfolk soils are on similar positions but have yellower subsoils. Thursa soils are on similar positions but have yellower upper subsoils that are more than 10 inches in thickness. None of the other competing series have kandic horizons. Bama, Pikeville and Ruston soils are on similar positions but have more than 20 percent silt in the control section. In addition, Pikeville soils have more than 15 percent gravel in the profile and Ruston soils have a bisequal profile. The moderately well or well drained Noboco are on similar to lower positions and have yellower subsoils. The moderately well drained Warnock soils are on similar positions in the Western Coastal Plain, have yellower subsoils and have Bx horizons in the lower subsoil.

GEOGRAPHIC SETTING: Orangeburg soils are on nearly level to strongly sloping uplands of the Coastal Plain. Slopes range from 0 to 25 percent. Near the type location, the mean annual temperature ranges from 63 to 68 degrees F., and the mean annual precipitation ranges from 42 to 53 inches. The climate is humid subtropical. The number of frost-free days ranges from 215 to 270. Elevation ranges from 170 to 500 feet above sea level.

GEOGRAPHICALLY ASSOCIATED SOILS: These include the competing Norfolk series and the Americus, Benevolence, Dothan, Eustis, Faceville, Fuquay, Grady, Greenville, Lucy, Red Bay, Tifton, Vaucluse, and Wagram series. All of these series, except Grady and Vaucluse soils are on similar positions. The somewhat excessively drained Americus and Eustis soils have weakly expressed Bt horizons. In addition, Americus soils are Rhodic. Benevolence soils have coarse-loamy subsoils. Dothan, Fuquay, and Tifton soils have horizons containing 5 percent or more plinthite in the subsoil. In addition, Fuquay soils have surface and subsurface layers 20 to 40 inches in thickness while Tifton soils have more than 5 percent, by volume, ironstone throughout the profile. Faceville and Greenville soils have clayey control sections. In addition, Greenville soils are Rhodic. The poorly drained Grady soils are in depressions on uplands or along shallow drainageways and have clayey control sections. Lucy and Wagram soils have surface and subsurface layers 20 to 40 inches in thickness. In addition, Wagram has yellower subsoils. Red Bay soils are Rhodic. Vaucluse soils are on upland slope breaks, have yellower subsoils and have the upper boundary of a brittle layer within 36 inches of the soil surface.

DRAINAGE AND PERMEABILITY: Well drained; medium runoff, slow runoff in level areas with sandy surfaces; moderate permeability.

USE AND VEGETATION: Most areas of Orangeburg soils are used for growing cotton, corn, tobacco and peanuts. Some areas are in pasture and woodland. Forest species include longleaf pine, shortleaf pine, loblolly pine, various oaks, hickory and dogwood.

Tifton, Orangeburg Dothan
Lakeland
Fuquay
Norfolk
Faceville
Goldsboro
Emporia

Slagle
Kempsville
Rumford
Suffolk
Sassafras

Table 4. Representative soil features

Surface texture	(1) Loamy sand (2) Sand (3) Fine sand
Drainage class	Well drained to somewhat excessively drained
Permeability class	Moderately rapid to moderately slow
Soil depth	80 in
Surface fragment cover <=3"	0%
Surface fragment cover >3"	0%
Available water capacity (0-40in)	5–10 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)	4.5–6.5
Subsurface fragment volume <=3" (Depth not specified)	0–10%
Subsurface fragment volume >3" (Depth not specified)	0%

Ecological dynamics

The Pine / Scrub Oak is a naturally occurring woodland vegetation which is found on sandy soils of dry uplands in the North Carolina Sandhills (part of MLRA 137)and MLRA 133. These sites are prone to wildland fire and probably naturally burned as frequently as every few years. Fires were ignited by lightning or by humans. Prior to the construction of roads, wildland fires may have burned extensive areas (1000s of acres). While most lightning in this area is associated with rain, dry lighting combined with high winds does start wildland fires. Today, prescribed fire is used by land managing agencies, to maintain and restore the Pine / Scrub Oak Sandhill. The ecological dynamics of the Pine / Scrub Oak Sandhill is dependent on fire. There are two sources of fuel for the surface fires typical of the Pine / Scrub Oak Sandhill, these are longleaf pine needles and the native herbaceous ground cover, especially the native grasses such as wiregrass (*Aristida stricta*). Naturally functioning examples of Pine / Scrub Oak Sandhill need both these sources of fuel for the frequent fires that are typical. The loss of either the longleaf pine (*Pinus palustris*) trees, or the native herbaceous ground cover can lead to less frequent surface fires, since fine fuels are reduced. During the 19th century, longleaf pine declined as a result of turpentine extraction methods which damaged the trees, and left them more susceptible to further damage from fire. Longleaf pine timber was coveted for its strength and durability, and many areas were nearly completely cut over in the early 20th century. In some of these areas intense fires burned in the left over logging slash, as the timber industry moved on to other areas where large longleaf pine trees remained. Longleaf pine is slower growing and without fire does not regenerate as easily as loblolly pine. Many areas that used to have longleaf pine became dominated by loblolly pine and hardwood trees as wildland fires were controlled in the middle of the 20th century. In recent decades land managers have become skilled at managing longleaf pine woodlands and the value of longleaf pine forest products has gained more

attention. The special qualities of the longleaf pine woodlands are now recognized for their wildlife value, beauty and high biological diversity. Numerous rare plants and animals persist in the Pine / Scrub Oak Sandhill habitats, especially on the larger public lands, such as Fort Bragg and the Sandhills Gamelands.
The state and transition model has the natural Pine / Scrub Oak Sandhill on the very upper left, open longleaf pine forests generally along the top and left and closed hardwood and loblolly pine forests along the bottom. Pastures and old fields are on the right.

State and transition model

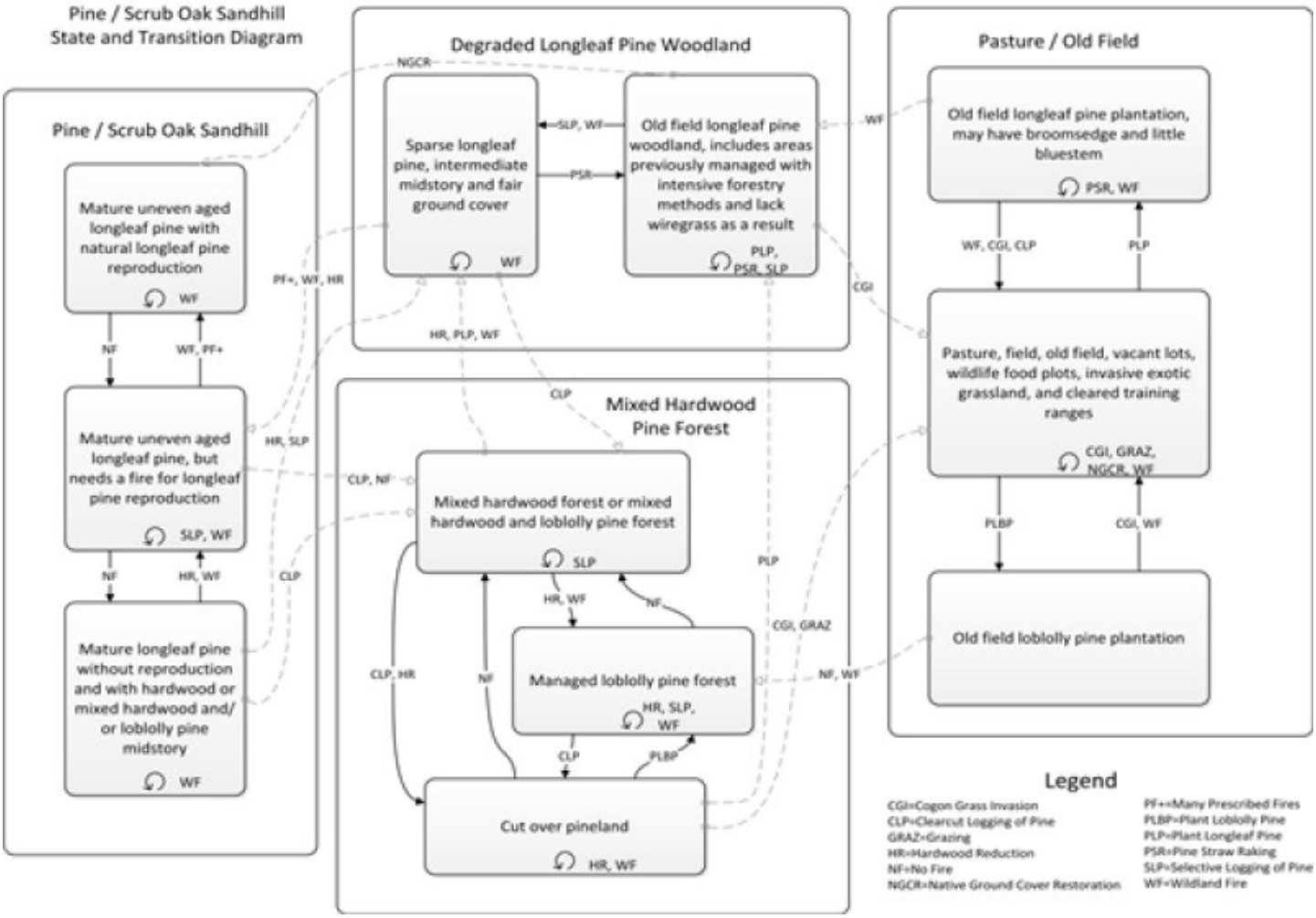

Figure 5. image

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:**

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

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

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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:

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:**