

# Ecological site F133BY017TX

## Loamy Bottomland

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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): 133B–Western Coastal Plain

Major Land Resource Area (MLRA) 133B, Western Coastal Plain is in eastern Texas, western Louisiana, and the southwest corner of Arkansas. The area is dominated by coniferous forest covering 45,450 square miles (29,088,000 acres). The region is a hugely diverse transition zone between the eastern deciduous forests and the central grasslands to the west.

### Classification relationships

NatureServe, 2002 - CEGLO07370 – Temporarily flooded cold-deciduous forest Soil Survey Staff, 2011 - Woodland Suitability Group – 1w9 Bottomlands USDA-Natural Resources Conservation Service, 2006. -Major Land Resource Area (MLRA) 133B Van Kley et. al., 2007 - 23xxx.4.2.20 Overcup Oak/Justicia Clayey/Loamy Seasonally to Nearly Regularly Flooded Low River Floodplains Landtype Phase

### Ecological site concept

The ecological site has very deep, somewhat poorly drained soils that are frequently flooded. The site is typically flooded for brief to long periods during normal rainfall years. They will stay flooded starting in November and ending in May. The loamy-textured soils combined with the flooding frequency form the plant community.

### Associated sites

|                    |                                                                                                             |
|--------------------|-------------------------------------------------------------------------------------------------------------|
| <b>F133BY012TX</b> | <b>Wet Terrace</b><br><br>Sites are on higher terrace position and do not flood as frequent or for as long. |
| <b>F133BY013TX</b> | <b>Terrace</b><br><br>Sites are on higher terrace position and do not flood as frequent or for as long.     |
| <b>F133BY018TX</b> | <b>Clayey Bottomland</b><br><br>Sites are similar in position, but clayey textured.                         |

### Similar sites

|                    |                                                                                   |
|--------------------|-----------------------------------------------------------------------------------|
| <b>F133BY016TX</b> | <b>Sandy Bottomland</b><br><br>Sites are similar in position, but sandy textured. |
|--------------------|-----------------------------------------------------------------------------------|

|                    |                                                                                                              |
|--------------------|--------------------------------------------------------------------------------------------------------------|
| <b>F133BY015TX</b> | <b>Swamp</b><br><br>Sites are semi-permanently ponded.                                                       |
| <b>F133BY018TX</b> | <b>Clayey Bottomland</b><br><br>Sites are similar in position, but clayey textured.                          |
| <b>F133BY001TX</b> | <b>Depression</b><br><br>Sites are located on depressions of uplands and terraces.                           |
| <b>F133BY014TX</b> | <b>Creek Bottomland</b><br><br>Sites are narrow and do not flood as frequently or for as long of a duration. |

Table 1. Dominant plant species

|            |                            |
|------------|----------------------------|
| Tree       | (1) <i>Quercus phellos</i> |
| Shrub      | Not specified              |
| Herbaceous | (1) <i>Justicia ovata</i>  |

## Physiographic features

The ecological sites consist of very deep, somewhat poorly drained, moderately permeable soils. These are on nearly level flood plains with slopes ranging from 0 to 1 percent. Flooding can be as short as a few days or long as three months. Flooding generally occurs between November and May.

Table 2. Representative physiographic features

|                    |                                            |
|--------------------|--------------------------------------------|
| Landforms          | (1) Coastal plain > Flood plain            |
| Runoff class       | Low to high                                |
| Flooding duration  | Brief (2 to 7 days) to long (7 to 30 days) |
| Flooding frequency | Occasional to frequent                     |
| Elevation          | 20 – 140 m                                 |
| Slope              | 0 %                                        |
| Water table depth  | 0 – 60 cm                                  |

|        |                                    |
|--------|------------------------------------|
| Aspect | Aspect is not a significant factor |
|--------|------------------------------------|

## Climatic features

The climate of the Western Coastal Plain (MLRA 133B) is humid subtropical with hot summers and mild winters. Canadian air masses that move southward across Texas and Louisiana over the Gulf of Mexico in winter produce cool, cloudy, rainy weather with only rare cold waves that moderate in one or two days. Precipitation is distributed fairly even throughout the year and is most often in the form of slow and gentle rains.

Spring weather can be variable. March is relatively dry while thunderstorm activities increase in April and May. Occasional slow-moving thunderstorms or other weather disturbances may dump excessive amounts of precipitation on the area. Fall has moderate temperatures. Fall experiences an increase of precipitation and frequently has periods of mild, dry, sunny weather. Heavy rain may occur early in the fall because of tropical disturbances, which move westward from the gulf. Tropical storms are a threat to the area in the summer and fall but severe storms are rare. Prolonged droughts and snowfall are rare.

The total annual precipitation ranges from 39 inches in the western part of the region to 60 inches in the eastern part of the region. Approximately 50 percent of the rainfall occurs between April and September, which includes the growing season for most crops. Thunderstorms occur on about 50 days each year and most occur during the summer.

The average relative humidity in mid-afternoon is about 60 percent. Humidity is higher at night and the average at dawn is about 90 percent. The sun shines 70 percent of the time in summer and 50 percent in winter. The prevailing wind is from the south-southeast. Average wind-speed is highest at 11 miles per hour in spring.

**Table 3 Representative climatic features**

|                               |          |
|-------------------------------|----------|
| Frost-free period (average)   | 220 days |
| Freeze-free period (average)  | 250 days |
| Precipitation total (average) | 1,400 mm |

- (1) SHERIDAN [USC00036562], Sheridan, AR
- (2) GILMER 4 WNW [USC00413546], Gilmer, TX
- (3) CALHOUN RSCH STN [USC00161411], Calhoun, LA
- (4) MINDEN [USC00166244], Minden, LA
- (5) CARTHAGE [USC00411500], Carthage, TX
- (6) RUSK [USC00417841], Rusk, TX
- (7) TOLEDO BEND DAM [USC00419068], Anacoco, TX
- (8) CALION L&D [USC00031140], El Dorado, AR
- (9) MAGNOLIA [USC00034548], Magnolia, AR
- (10) DEKALB [USC00412352], Simms, TX
- (11) JENA 4 WSW [USC00164696], Trout, LA
- (12) HUNTSVILLE [USC00414382], Huntsville, TX

## Influencing water features

The site floods regularly and when not flooded typically has a high water table.

## Wetland description

The site supports hydrophytic vegetation and the soils are hydric as long as natural flooding has not been manipulated. Onsite delineations are required as some mapped areas and locations on the peripheries may not fall within the United States Army Corps of Engineers (USACOE) definition of a wetland.

## Soil features

Mattex and Manco are two of the representative soils of the Loamy Bottomlands. This ecological site formed from loamy alluvium and is associated with very deep, somewhat poorly drained, slowly permeable loamy entisols on bottomlands. The first gleyed-subsurface horizon usually appears within 8 to 11 inches. The gleying and other redoximorphic features continue through the profile usually past 80 inches. Gleying and redoximorphic features are caused by prolonged inundation. Other soils correlated to this site include: Amy, Angelina, Bibb, Bleakwood, Dreka, Groom, Guyton, Kanebreak, Mathiston, Mattex, Nahatche, Pophers, Sardis, Marietta, Mooreville, Ochlockonee, and Socagee.

**Table 4. Representative soil features**

|                                             |                                            |
|---------------------------------------------|--------------------------------------------|
| Parent material                             | (1) Alluvium – sandstone and siltstone     |
| Surface texture                             | (1) Loam<br>(2) Clay loam<br>(3) Silt loam |
| Family particle size                        | (1) Loamy                                  |
| Drainage class                              | Somewhat poorly drained                    |
| Permeability class                          | Moderate                                   |
| Soil depth                                  | 200 cm                                     |
| Surface fragment cover <=3"                 | Not specified                              |
| Available water capacity<br>(0-101.6cm)     | 7.62 – 10.16 cm                            |
| Calcium carbonate equivalent<br>(0-101.6cm) | Not specified                              |
| Electrical conductivity<br>(0-101.6cm)      | Not specified                              |
| Sodium adsorption ratio<br>(0-101.6cm)      | Not specified                              |
| Soil reaction (1:1 water)<br>(0-101.6cm)    | 4.5 – 5.5                                  |

|                                                |               |
|------------------------------------------------|---------------|
| Subsurface fragment volume <=3"<br>(0-101.6cm) | Not specified |
|------------------------------------------------|---------------|

## Ecological dynamics

The information in this ecological site description (ESD), including the state-and-transition model (STM), was developed using archeological and historical data, professional experience, and scientific studies. The information is representative of a complex set of plant communities. Not all scenarios or plants are included. Key indicator plants, animals, and ecological processes are described to inform land management decisions.

**Introduction** – Southern Arkansas, western Louisiana, and eastern Texas have been deemed the Pineywoods because of the vast expanse of pine trees. The region represents the western edge of the southern coniferous belt. Historically, the area was covered by pines with mixed hardwoods, sparse shrubs, and a diverse understory of grasses and forbs. Fire played a significant role in reducing the woody competition that generally out-competes the herbaceous understory layer. Fire suppression and land conversion have reduced the amount of historical communities in existence today.

**Background** – Prior to settlement by the Europeans, the reference state for the Loamy Bottomlands was a Willow Oak/Looseleaf Waterwillow (*Quercus phellos*/*Justicia ovata*) Forest. Remnants of this presumed historic plant community still exist where natural conditions are still in place. Evidence of the reference state is found in accounts of early historic explorers to the area, historic forest and biological survey teams, as well as recent ecological studies in the last 30 years.

**Settlement Management** – As human settlement increased throughout the area, so did the increase in logging and grazing by domestic livestock. Oftentimes, an early settler would make camp by logging pines in the area for lodging. The accompanying livestock would graze the upland woodlands filled with warm-season forage during the summer. As the summer grazing season would end, the livestock would naturally begin grazing in the bottoms to forage on large cane breaks and other cool-season plants found in the area. The bottomlands also provided plentiful hunting opportunities for deer, turkey, and squirrel that utilize the acorn crop.

Eventually, the logging became so extensive that by the 1930's most of the region had been cut-over. Replanting trees to historic communities was not common and early foresters began planting loblolly pine (*Pinus taeda*) for its quick growth. The loblolly pines were commonly grown plantation style (site preparation, planting, long-term weed control, etc). This, coupled with the advent of heavy site preparation machinery made the conversion from low-grade hardwood possible.

**Current Management and State** – Today much of the remnant forest is gone, replaced by tree plantations, crops, and pastures. The largest bottomlands of disappearance are areas converted to reservoirs, including Sam Rayburn and Toledo Bend. The areas that have not been converted retain resemblance to pre-settlement conditions. Fire is not a large driver in the bottomlands, hence fire suppression does not play a large role in shaping the forested communities.

**Fire Regimes** – Fire was a natural and important disturbance throughout the Western Gulf Plain. Fire occurred naturally and was started by Native Americans for game movement, insect control, travel, and many other reasons. Contrary to most of the region, the bottomland communities developed with a very infrequent fire regime. The bottomlands are estimated to have burned one in every 50 years. Bottomlands naturally retard fire in a number of ways. Frequent flooding inundates the sites for sometimes months, and fire cannot travel. Another reason for reduced fire intervals is the understory vegetation is somewhat sparse of fine-fuel materials compared to those in the uplands. Coupled with the thicker, fire-resistant leaves adorning much of the vegetation, the bottomlands do not burn very often.

**Disturbance Regimes** – Extreme weather events occur occasionally throughout the region. Tornadoes uproot trees and open canopies in the spring months. In the late summer and early fall, hurricanes or tropical depressions often make landfall, dumping excessive amounts of rain and toppling trees with high winds. Flooding events occur most years in which rainfall is normal or higher. Prolonged flooding due to excessive precipitation can cause mortality in vegetative species that are unable to handle the continuous water, especially during the growing season (March through September). Reservoirs affect the natural flooding regimes. Upstream areas remain flooded longer and the frequency and duration of flooding on downstream areas are also impacted.

**Plant Community Interactions** – The dominant force in shaping the bottomlands is the close-proximity to a water source that floods the site throughout the year. Flooding for one to three months during the dormant season gives rise to plants that tolerate a wetter environment. Micro-relief within the broadly delineated bottomlands also affects the plant dispersion. Plants more adapted to water grow in the lower micro-elevations, and those that are more facultative (less water tolerant) occupy the higher micro-elevations. The difference between the upper and lower elevations could be as little as inches. The loamy surface of the ecological site has gleyed subsoils resulting from lack of oxygen during flooding. The communities are dominated by hardwood trees and an understory that can tolerate the varying conditions accompanying the floods.

## State and transition model

### Additional community tables

Table 5. Community 1.1 plant community composition

| Group | Common Name | Symbol | Scientific Name | Annual Production () | Foliar Cover (%) |
|-------|-------------|--------|-----------------|----------------------|------------------|
|-------|-------------|--------|-----------------|----------------------|------------------|

Table 6. Community 1.1 forest overstory composition

| Common Name        | Symbol | Scientific Name                | Nativity | Height M | Canopy Cover (%) | Diameter Cm | Basal Area (square M/hectare) |
|--------------------|--------|--------------------------------|----------|----------|------------------|-------------|-------------------------------|
| <b>Tree</b>        |        |                                |          |          |                  |             |                               |
| willow oak         | QUPH   | <i>Quercus phellos</i>         | —        | —        | 20-75            | —           | —                             |
| water oak          | QUNI   | <i>Quercus nigra</i>           | —        | —        | 20-60            | —           | —                             |
| overcup oak        | QULY   | <i>Quercus lyrata</i>          | —        | —        | 20-50            | —           | —                             |
| laurel oak         | QULA3  | <i>Quercus laurifolia</i>      | —        | —        | 10-30            | —           | —                             |
| swamp chestnut oak | QUMI   | <i>Quercus michauxii</i>       | —        | —        | 10-30            | —           | —                             |
| sweetgum           | LIST2  | <i>Liquidambar styraciflua</i> | —        | —        | 10-30            | —           | —                             |
| blackgum           | NYSY   | <i>Nyssa sylvatica</i>         | —        | —        | 5-20             | —           | —                             |
| American elm       | ULAM   | <i>Ulmus americana</i>         | —        | —        | 5-20             | —           | —                             |
| red maple          | ACRU   | <i>Acer rubrum</i>             | —        | —        | 5-20             | —           | —                             |

Table 7. Community 1.1 forest understory composition

| Common Name                          | Symbol | Scientific Name                | Nativity | Height (m) | Canopy Cover (%) |
|--------------------------------------|--------|--------------------------------|----------|------------|------------------|
| <b>Grass/grass-like (Graminoids)</b> |        |                                |          |            |                  |
| giant cane                           | ARGI   | <i>Arundinaria gigantea</i>    | —        | —          | 5-35             |
| blunt broom sedge                    | CATR7  | <i>Carex tribuloides</i>       | —        | —          | 5-35             |
| greater bladder sedge                | CAIN12 | <i>Carex intumescens</i>       | —        | —          | 0-10             |
| slender woodoats                     | CHLA6  | <i>Chasmanthium laxum</i>      | —        | —          | 1-5              |
| marsh flatsedge                      | CYPS   | <i>Cyperus pseudovegetus</i>   | —        | —          | 0-3              |
| <b>Forb/Herb</b>                     |        |                                |          |            |                  |
| smallspike false nettle              | BOCY   | <i>Boehmeria cylindrica</i>    | —        | —          | 5-25             |
| camphor pluchea                      | PLCA7  | <i>Pluchea camphorata</i>      | —        | —          | 5-20             |
| Virginia dayflower                   | COVI3  | <i>Commelina virginica</i>     | —        | —          | 1-5              |
| Canada germander                     | TECA3  | <i>Teucrium canadense</i>      | —        | —          | 1-3              |
| smallflower thoroughwort             | EUSE   | <i>Eupatorium semiserratum</i> | —        | —          | 0-3              |
| smooth hedgenettle                   | STTE   | <i>Stachys tenuifolia</i>      | —        | —          | 0-3              |
| sensitive fern                       | ONSE   | <i>Onoclea sensibilis</i>      | —        | —          | 0-1              |
| false indigo bush                    | AMFR   | <i>Amorpha fruticosa</i>       | —        | —          | 0-1              |
| St. Peterswort                       | HYCR3  | <i>Hypericum crux-andreae</i>  | —        | —          | 0-1              |
| sweetscent                           | PLOD   | <i>Pluchea odorata</i>         | —        | —          | 0-1              |
| <b>Shrub/Subshrub</b>                |        |                                |          |            |                  |
| American snowbell                    | STAM4  | <i>Styrax americanus</i>       | —        | —          | 0-10             |
| possumhaw                            | ILDE   | <i>Ilex decidua</i>            | —        | —          | 1-10             |
| dwarf palmetto                       | SAMI8  | <i>Sabal minor</i>             | —        | —          | 1-10             |
| <b>Tree</b>                          |        |                                |          |            |                  |
| willow oak                           | QUPH   | <i>Quercus phellos</i>         | —        | —          | 5-25             |
| laurel oak                           | QULA3  | <i>Quercus laurifolia</i>      | —        | —          | 5-25             |
| green ash                            | FRPE   | <i>Fraxinus pennsylvanica</i>  | —        | —          | 1-5              |
| cherrybark oak                       | QUPA5  | <i>Quercus pagoda</i>          | —        | —          | 1-5              |
| sugarberry                           | CELA   | <i>Celtis laevigata</i>        | —        | —          | 0-5              |
| <b>Vine/Liana</b>                    |        |                                |          |            |                  |

|                         |       |                                 |   |   |      |
|-------------------------|-------|---------------------------------|---|---|------|
| American buckwheat vine | BROV4 | <i>Brunnichia ovata</i>         | – | – | 0-15 |
| climbing dogbane        | TRDI  | <i>Trachelospermum difforme</i> | – | – | 1-10 |
| climbing hempvine       | MISC  | <i>Mikania scandens</i>         | – | – | 0-5  |
| catbird grape           | VIPA7 | <i>Vitis palmata</i>            | – | – | 0-5  |
| American wisteria       | WIFR  | <i>Wisteria frutescens</i>      | – | – | 1-5  |

Table 8. Community 1.2 plant community composition

| Group | Common Name | Symbol | Scientific Name | Annual Production () | Foliar Cover (%) |
|-------|-------------|--------|-----------------|----------------------|------------------|
|-------|-------------|--------|-----------------|----------------------|------------------|

Table 9. Community 1.2 forest understory composition

| Common Name                          | Symbol | Scientific Name                  | Nativity | Height (m) | Canopy Cover (%) |
|--------------------------------------|--------|----------------------------------|----------|------------|------------------|
| <b>Grass/grass-like (Graminoids)</b> |        |                                  |          |            |                  |
| rice cutgrass                        | LEOR   | <i>Leersia oryzoides</i>         | –        | –          | 0-10             |
| common rush                          | JUEF   | <i>Juncus effusus</i>            | –        | –          | 0-10             |
| giant cutgrass                       | ZIMI   | <i>Zizaniopsis miliacea</i>      | –        | –          | 0-10             |
| shortbristle horned beaksedge        | RHCO2  | <i>Rhynchospora corniculata</i>  | –        | –          | 0-10             |
| cypress swamp sedge                  | CAJO2  | <i>Carex jorii</i>               | –        | –          | 1-5              |
| Louisiana sedge                      | CALO6  | <i>Carex louisianica</i>         | –        | –          | 0-5              |
| Frank's sedge                        | CAFR3  | <i>Carex frankii</i>             | –        | –          | 0-3              |
| <b>Forb/Herb</b>                     |        |                                  |          |            |                  |
| looseflower water-willow             | JUOV   | <i>Justicia ovata</i>            | –        | –          | 5-40             |
| lizard's tail                        | SACE   | <i>Saururus cernuus</i>          | –        | –          | 1-10             |
| dotted smartweed                     | POPU5  | <i>Polygonum punctatum</i>       | –        | –          | 0-5              |
| greater marsh St. Johnswort          | TRWA   | <i>Triadenum walteri</i>         | –        | –          | 0-5              |
| whorled marshpennywort               | HYVE2  | <i>Hydrocotyle verticillata</i>  | –        | –          | 0-5              |
| trailing yellow loosestrife          | LYRA3  | <i>Lysimachia radicans</i>       | –        | –          | 0-3              |
| royal fern                           | OSRE   | <i>Osmunda regalis</i>           | –        | –          | 0-3              |
| taperleaf water horehound            | LYRU   | <i>Lycopus rubellus</i>          | –        | –          | 0-3              |
| halberdleaf rosemallow               | HILA2  | <i>Hibiscus laevis</i>           | –        | –          | 0-1              |
| ditch stonecrop                      | PESE6  | <i>Penthorum sedoides</i>        | –        | –          | 0-1              |
| creeping burhead                     | ECCO3  | <i>Echinodorus cordifolius</i>   | –        | –          | 0-1              |
| <b>Shrub/Subshrub</b>                |        |                                  |          |            |                  |
| common buttonbush                    | CEOC2  | <i>Cephalanthus occidentalis</i> | –        | –          | 1-10             |
| eastern swampprivet                  | FOAC   | <i>Forestiera acuminata</i>      | –        | –          | 0-5              |
| western mayhaw                       | CROP   | <i>Crataegus opaca</i>           | –        | –          | 0-3              |
| <b>Tree</b>                          |        |                                  |          |            |                  |
| overcup oak                          | QULY   | <i>Quercus lyrata</i>            | –        | –          | 5-25             |
| planertree                           | PLAQ   | <i>Planera aquatica</i>          | –        | –          | 1-5              |
| swamp tupelo                         | NYBI   | <i>Nyssa biflora</i>             | –        | –          | 1-5              |
| water locust                         | GLAQ   | <i>Gleditsia aquatica</i>        | –        | –          | 0-5              |
| Carolina ash                         | FRCA3  | <i>Fraxinus caroliniana</i>      | –        | –          | 0-3              |
| water hickory                        | CAAQ2  | <i>Carya aquatica</i>            | –        | –          | 0-3              |

Table 10. Community 1.3 plant community composition

| Group | Common Name | Symbol | Scientific Name | Annual Production () | Foliar Cover (%) |
|-------|-------------|--------|-----------------|----------------------|------------------|
|-------|-------------|--------|-----------------|----------------------|------------------|

Table 11. Community 1.3 forest understory composition





|                    |       |                                |   |   |   |   |   |
|--------------------|-------|--------------------------------|---|---|---|---|---|
| eastern cottonwood | PODE3 | <i>Populus deltoides</i>       | – | – | – | – | – |
| green ash          | FRPE  | <i>Fraxinus pennsylvanica</i>  | – | – | – | – | – |
| loblolly pine      | PITA  | <i>Pinus taeda</i>             | – | – | – | – | – |
| sweetgum           | LIST2 | <i>Liquidambar styraciflua</i> | – | – | – | – | – |

**Table 15. Community 4.1 plant community composition**

| Group | Common Name | Symbol | Scientific Name | Annual Production () | Foliar Cover (%) |
|-------|-------------|--------|-----------------|----------------------|------------------|
|-------|-------------|--------|-----------------|----------------------|------------------|

## Animal community

The historic animal community is relatively similar to the current community in the reference state. One major missing component is the black bear. Black bears were highly prevalent across the Western Coastal Plain. Their reduced numbers are directly correlated with the westward expansion of the European settlers. Like other mobile animals in the area, bears would have used multiple ecological sites. The Loamy Bottomlands would have provided the bears with nutrition/food in the form of hard mast (acorns). Other apex predators like the mountain lion and wolf have disappeared in a similar manner.

## Recreational uses

The most popular recreational use is hunting for white-tail deer, waterfowl and other game animals. Bird watching is also becoming increasingly popular.

## Wood products

Pines are used for all types of wood products. Hardwoods are suitable for use as pulpwood, firewood, charcoal, lumber, furniture, railroad ties and pallet material. The wide range of wood products is attributed to the diverse tree species growing on this ecosite.

## Other information

The Loamy Bottomlands contain a high diversity of animal species. Mature oaks drop acorns in the fall that are eaten by a myriad of species from bird to mammal. Woodpeckers are especially common throughout, as well as songbirds and wading birds (when flooded). White-tailed deer are highly adaptable herbivores and use the bottomlands in combinations with other nearby ecological sites. They consume browse from shrubs and small trees, soft mast, hard mast, including the occasional forb. The hardwood ecosystem is typically denser than the surrounding uplands so deer, and other secretive species, use the bottomlands as a travel corridor. Healthy bottomlands provide wild turkeys with almost all habitat needs from nesting to foraging. Adult and juvenile turkeys are opportunistic omnivores and use a variety of food items including animal matter, hard and soft mast, green forage, tubers, seeds, and grains, while poult require high protein foods such as insects and young vegetation. Waterfowl use of the Loamy Bottomlands varies by year depending on flood conditions. When the system is flooded waterfowl take advantage of acorns as a high energy food source. Waterfowl can also be seen feeding on the numerous aquatic invertebrates found in flooded areas. Contrary to migrating waterfowl, wood ducks and hooded mergansers are present year round, so large-natural cavities, and those created by pileated woodpeckers, in dead trees are important. Other common species that utilize the ecosystem include squirrels and woodcock. Squirrels utilize the hard mast species present, while woodcock probe the moist soil for invertebrates.

**Table 16. Representative site productivity**

| Common Name        | Symbol       | Site Index Low | Site Index High | CMAI Low | CMAI High | Age Of CMAI | Site Index Curve Code | Site Index Curve Basis | Citation |
|--------------------|--------------|----------------|-----------------|----------|-----------|-------------|-----------------------|------------------------|----------|
| eastern cottonwood | <i>PODE3</i> | 85             | 95              | 143      | 143       | 50          | –                     | –                      |          |
| loblolly pine      | <i>PITA</i>  | 95             | 103             | 143      | 143       | 50          | –                     | –                      |          |
| sweetgum           | <i>LIST2</i> | 90             | 100             | 114      | 114       | 50          | –                     | –                      |          |
| green ash          | <i>FRPE</i>  | 75             | 85              | 57       | 57        | 50          | –                     | –                      |          |

## Inventory data references

These site descriptions were developed as part a Provisional Ecological Site project using historic soil survey manuscripts, available site descriptions, and low intensity field traverse sampling. Future work to validate the information is needed. This will include field activities to collect low, medium, and high-intensity sampling, soil correlations, and analysis of that data. A final field review, peer review, quality control, and quality assurance review of the will be needed to produce the final document.

## Other references

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## **Approval**

Bryan Christensen, 9/21/2023

## **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                                        | 09/03/2021        |
| 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:

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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:

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