

## *Ecological Site Description*

### **Loamy Floodplain Woodland**

**F112XY058MO**

- (*Quercus palustris* - *Quercus macrocarpa*//*Carex* - *Spartina pectinata*)
- (pin oak – bur oak//sedge – prairie cord grass)

An Ecological Site Description (ESD) is a reference document of ecological knowledge regarding a particular land area (ecological site). An ESD describes ecological potential and ecosystem dynamics of land areas and their potential management. Ecological sites are linked to soil survey map unit components, which allows for mapping of ecological sites. (**NOTE:** *This is a “provisional” ESD, and is subject to change. It contains basic ecological information sufficient for conservation planning and land management in Missouri. After additional information is developed and reviewed, a “Correlated” ESD will be published and will be available via the Web Soil Survey <http://websoilsurvey.nrcs.usda.gov> .)*

**Major Land Resource Area:** 112 – Cherokee Prairies

#### **Introduction**

The Cherokee Prairies MLRA (outlined in red on the map) is a nearly level to rolling, weakly dissected plain. Elevation ranges from about 330 feet along the Verdigris River in the south to over 1,300 feet along the northwest border with the Flint Hills. Local relief is three to ten feet, with major valley floodplains typically less than eight feet below the adjacent uplands. The northern and eastern part of the area is primarily in the Osage River watershed, and the southern part is mainly in the Neosho and Verdigris River watersheds. Loess blankets the northern part of the area but thins to the south. Nearly all of the upland plain is underlain with Pennsylvanian aged sandstones and shales, and most upland soils are formed in residuum from these materials.



Wet Floodplain Woodlands are within the green areas on the map (Missouri portion only; relationships to Kansas and Oklahoma Ecological Sites are currently under review).

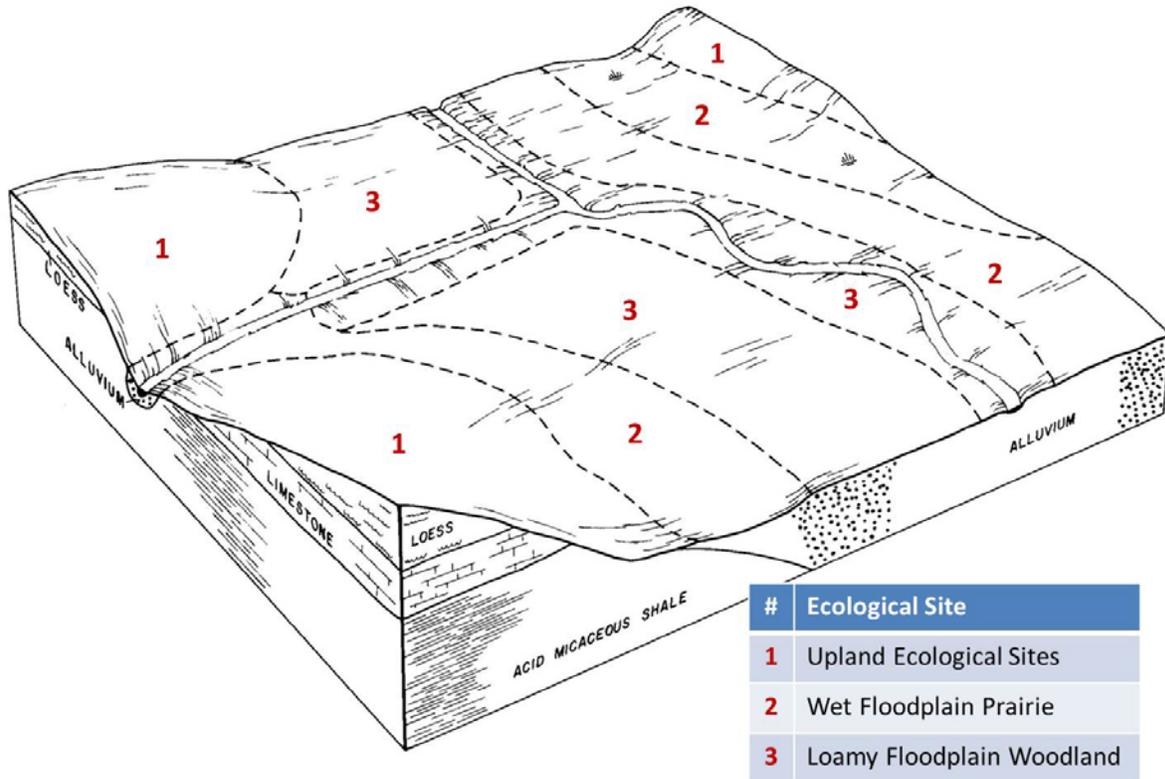
They are not extensive, occurring along major streams in the area. Soils are very deep and loamy, have high seasonal water tables, and are subject to flooding.

#### **Physiographic Features**

This site is on floodplains, particularly on natural levees adjacent to the current or historic stream channel. Slopes are less than 2 percent. The site receives some runoff from higher floodplains, stream terraces and uplands. This site is subject to frequent flooding. Scour and/or deposition is common during flooding, which impacts vegetation dynamics.

The following figure (adapted from Simmons, 1980) shows the typical landscape position of this ecological site, and landscape relationships with other ecological sites. It is within the area labeled “3” on the figure, and is typically adjacent to the active stream channel. Wet Floodplain Prairie sites

are often adjacent to this site, farther from the stream channel. The dashed lines within the Loamy Floodplain Woodland and Wet Floodplain Prairie areas on the diagram indicate the various soils included in the ecological sites.



**Soil Features**

These soils have no rooting restriction. They were formed under forest vegetation, with periodic depositional flood events. Organic matter content is variable. Parent material is alluvium. They have silt loam or sandy loam surface horizons, and loamy subsoils. These soils are affected by seasonal wetness. Soil series associated with this site include Dockery.

**Ecological Dynamics**

*Information contained in this section was developed using historical data, professional experience, field reviews, and scientific studies. The information presented is representative of very complex vegetation communities. Key indicator plants, animals and ecological processes are described to help inform land management decisions. Plant communities will differ across the MLRA because of the naturally occurring variability in weather, soils, and aspect. The Reference Plant Community is not necessarily the management goal. The species lists are representative and are not botanical descriptions of all species occurring, or potentially occurring, on this site. They are not intended to cover every situation or the full range of conditions, species, and responses for the site.*

Loamy Floodplain Woodlands are on floodplain positions that flooded frequently, occurring annually or at least once every 3 years. The reference plant community is dominated by a wide variety of deciduous hardwood tree species, tolerant of seasonally wet conditions including bur oak, shellbark hickory, swamp white oak, and sycamore. Trees are generally large and tall forming a

dense, closed canopy. Woodlands are distinguished from forest, by their relatively open understory, and the presence of sun-loving ground flora species. Characteristic plants in the ground flora can be used to gauge the restoration potential of a stand along with remnant open-grown old-age trees, and tree height growth.

Because of their proximity to prairies, fire played a significant role in the maintenance of these systems. It is likely that these ecological sites burned at least once every 3 to 5 years. These periodic fires kept woodlands open, removed the litter, and stimulated the growth and flowering of the grasses and forbs. During fire free intervals, woody understory species increased and the herbaceous understory diminished. The return of fire would open the woodlands up again and stimulate the abundant ground flora.

These woodlands were also subjected to occasional disturbances from wind and ice, as well as grazing by native large herbivores, such as bison, elk, and deer. Wind and ice would have periodically opened the canopy up by knocking over trees or breaking substantial branches off canopy trees. Grazing by native herbivores would have effectively kept understory conditions more open, creating conditions more favorable to oak reproduction and woodland ground flora species.

Both historically and today, these woodlands are structurally and compositionally diverse, with occasional tree fall gaps and natural mortality, providing opportunities for regeneration of overstory species and keeping the canopy and understory open, with a dense ground flora of wet tolerant grasses, sedges and asters.

Today, the Loamy Floodplain Woodlands are largely converted to pasture and cropland. Where they do still occur, they often occur as a rather narrow band of forest traversing the riverfront forest or stream edge. They are regularly denser in the absence of fire, and their composition is usually altered. These bands of forest play an important role as a source of food and shelter for migrating birds. In addition, they are very important in stream bank stabilization.

Carefully planned timber harvests can be tolerated on these sites, but high grading of the timber will ultimately degrade the sites. Re-establishment of these woodlands is important for stream quality and stream health, and as critical habitat for migratory birds. Planting of later successional species on the appropriate landscape position and soils and introducing prescribed fire has proven to be an effective means for restoration.

**Reference State Plant Community**

Canopy Trees

Common Name	Botanical Name	Cover % (low-high)	Canopy Height (ft)
BUR OAK	<i>Quercus macrocarpa</i>	20-30	80
GREEN ASH	<i>Fraxinus pennsylvanica</i>	10-20	80
PIN OAK	<i>Quercus palustris</i>	20-30	80
SWAMP WHITE OAK	<i>Quercus bicolor</i>	10-20	80
SHELLBARK HICKORY	<i>Carya laciniosa</i>	10-20	60
EASTERN COTTONWOOD	<i>Populus deltoides</i>	5-10	90
AMERICAN ELM	<i>Ulmus americana</i>	10-20	80

## Forbs

Common Name	Botanical Name	Cover % (low-high)
SAWTOOTH SUNFLOWER	<i>Helianthus grosseserratus</i>	10-20
IRON WEED	<i>Veronia gigantea</i>	5-10
BLUE VERVAIN	<i>Verbena hastata</i>	

## Grasses and sedges

Common Name	Botanical Name	Cover % (low-high)
HOP SEDGE	<i>Carex lupulina</i>	10-30
SQUARROSE SEDGE	<i>Carex squarrosa</i>	10-30
SCOURING RUSH	<i>Carex grayi</i>	10-30
SHORELINE SEDGE	<i>Carex hyalinolepis</i>	10-30
FRANK'S SEDGE	<i>Carex frankii</i>	10-30
PRAIRIE CORD GRASS	<i>Spartina pectinata</i>	10-30
WOOD REED GRASS	<i>Cinna arundinacea</i>	10-30
BLUEJOINT GRASS	<i>Calamagrostis canadensis</i>	10-30

## Site Interpretations

## Wildlife

- Tall emergent trees along with an uneven canopy structure and canopy gaps associated with this ecological site are important for heron colonies, eagle nesting, Mississippi kites, and other bird species in addition to being important migratory songbird stopover sites.
- Ephemeral pools provide important amphibian breeding habitat.
- Bird species associated with these sites include Indigo Bunting, Willow Flycatcher, Yellow Warbler, Red-headed Woodpecker, Eastern Wood-Pewee, Great Crested Flycatcher, Tree Swallow, Orchard Oriole, and Baltimore Oriole.
- Reptile and amphibian species associated with Floodplain Woodlands include tiger salamander, small-mouthed salamander, midland brown snake, gray treefrog, plains leopard frog, southern leopard frog, and western chorus frog.

## Forestry

- **Management:** Field collected site index values average 84 for green ash and 91 for eastern cottonwood. Timber management opportunities are good to excellent. Create group openings of at least 2 acres. Large clearcuts should be minimized if possible to reduce impacts on wildlife and aesthetics. Uneven-aged management using single tree selection or small group selection cuttings of ½ to 1 acre are other options that can be used if clear cutting is not desired or warranted. Harvest methods that leave some mature trees to provide shade and soil protection may be desirable. Where possible, favor swamp white oak, bur oak, black walnut, pecan, sycamore, and cottonwood. Maintain adequate riparian buffer areas.
- **Limitations:** Wetness from flooding – short duration and/or high water table; Use of equipment may be restricted in spring and other excessively wet periods. Equipment use when wet may compact soil and damage tree roots. Tree planting is difficult during spring flooding periods. Seedling mortality may be high due to excess wetness. Ridging the soil and planting on the ridges may increase survival.

**Glossary**

*Backslope* – a hillslope profile position that forms the steepest and generally linear, middle portion of the slope.

*Backswamp* – marshy or swampy, depressed areas of flood plains between natural levees and valley sides or terraces

*Calcareous* – the presence of calcium carbonate in the soil parent material within the rooting zone; relatively alkaline

*Claypan* – a dense, compact, slowly permeable layer in the subsoil having much higher clay content than the overlying material

*Chert* – hard, extremely dense or compact crystalline sedimentary rock, consisting dominantly of interlocking crystals of quartz

*Cliff* – a significant vertical, or near vertical, rock exposure

*Dolomite* – a type of sedimentary rock that is a carbonate mineral composed of calcium magnesium carbonate

*Drainageway* – the upper most reach of a stream channel system characterized by little meandering

*Dry* – a site where soil moisture is limiting during the growing season; low available water capacity

*Dune* – a low mound, ridge, bank or hill of loose, wind-blown sand

*Exposed* – steep, south and west-facing slopes, which are warmer and drier than other slope aspects

*Flatwoods* – a type of woodland that occurs on soils with a root restricting subsoil layer within 20 to 30 inches, resulting in very slow runoff and ponding that remains saturated for most of the winter and early spring months but dries out and becomes very dry in the summer months; plants that grow there must be adapted to both conditions

*Floodplain* – the nearly level plain that borders a stream and is subject to inundation under flood-stage conditions

*Footslope* – a hillslope position at the base of a slope where hillslope sediment (colluvium) accumulates

*Forest* – a vegetative community dominated by trees forming a closed canopy and interspersed with shade-tolerant understory species

*Fragipan* – a dense, brittle subsoil horizon that is extremely hard and compact when dry

*Glade* – open, rocky, barren vegetative community dominated by drought-adapted forbs and grasses, typically with scattered, stunted woody plants

*Igneous* – bedrock formed by cooling and solidification of magma. Granite and rhyolite are typical igneous bedrocks in Missouri

*Limestone* – a type of sedimentary rock composed largely of calcium carbonate

*Loess* – material transported and deposited by wind and consisting predominantly of silt-size particles

*Loamy* – soil material containing a relatively equal mixture of sand and silt and a somewhat smaller proportion of clay

*Marsh* – a type of wetland that is dominated by herbaceous rather than woody plant species

*Moist* – a site that is moderately well to well drained and has high available water capacity, resulting in a well-balanced supply of moisture (neither too dry nor too wet).

*Mudstone* – blocky or massive, fine-grained sedimentary rock in which the proportions of clay and silt are approximately equal

*Natric* – a soil horizon that displays a blocky, columnar, or prismatic structure and has a subhorizon with an exchangeable-sodium saturation of over 15%

*Outwash* – stratified sediments of sand and gravel removed or “washed out” from a glacier by melt-water streams

*Prairie* – a vegetative community dominated by perennial grasses and forbs with scattered shrubs and very few trees

*Protected* – steep, north- and east-facing slopes, which are cooler and moister than other slope aspects

*Residuum* - unconsolidated, weathered, or partly weathered mineral material that accumulates by disintegration of bedrock in place

*Riser* – a component of terraces and flood-plain steps consisting of the steep side slope; the escarpment

*Riverfront* – a vegetative community in the floodplain immediately adjacent and generally parallel to a river or stream channel

*Sandy* – a coarse-sized soil containing a large mixture of sand and gravels and a somewhat smaller proportion of silts and clays with excessive drainage

*Sandstone* – a sedimentary rock containing dominantly sand-size particles

*Savanna* – grasslands interspersed with open-grown scattered trees, groupings of trees, and shrubs

*Shale* – a sedimentary rock formed from clay, silty clay, or silty clay loam deposits and having the tendency to split into thin layers

*Shallow* – a site with bedrock within 20 inches of the surface

*Shoulder* – the slope profile position that forms the convex surface near the top of a hill slope; it comprises the transition zone from summit to backslope

*Sinkhole* – a closed, circular or elliptical depression, commonly funnel-shaped, characterized by subsurface drainage and formed either by dissolution of the surface of underlying bedrock or by collapse of underlying caves within bedrock

*Summit* – the top or highest area of a hillslope

*Swale* – shallow, closed depressions irregularly spaced across a floodplain or terrace with an irregularly undulating surface.

*Swamp* – an area of low, saturated ground, intermittently or permanently covered with water, and predominantly vegetated by shrubs and trees.

*Talus* – rock fragments of any size or shape (usually coarse and angular) derived from and lying at the base of a cliff or very steep rock slope.

*Terrace* – a step-like surface, bordering a valley floor that represents the former position of a flood plain

*Till* – dominantly unsorted and unstratified soil material deposited directly by a glacier

*Upland* – a general term for the higher ground of a region, in contrast with a low-lying, adjacent land such as a valley or floodplain

*Wet* – a somewhat poorly, poorly or very poorly drained site that has an oversupply of moisture during the growing season

*Woodland* – a highly variable vegetative community with a canopy of trees ranging from 30 to 100 percent closure with a sparse midstory and a dense ground flora of grasses, sedges and forbs

## References

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