Ecological Site Description

Wet Floodplain Woodland F107BY026MO

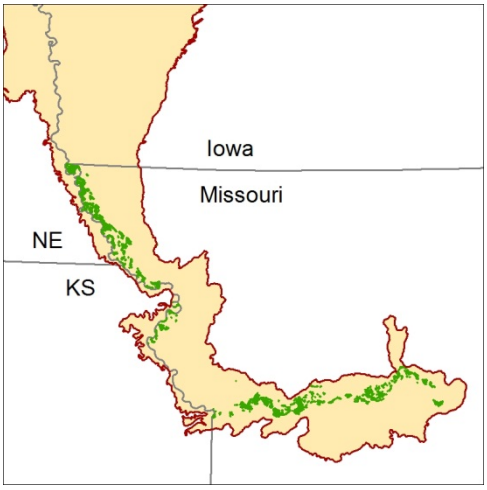
- (*Quercus palustris - Quercus macrocarpa//Carex - Spartina pectinata*)
- (pin oak – bur oak//sedge – prairie cord grass)

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: 107B – Iowa and Missouri Deep Loess Hills

Introduction

The Iowa and Missouri Deep Loess Hills (area outlined in red) encompass the Missouri River floodplain and associated loess-covered uplands, from about Sioux City Iowa in the north to central Missouri. Elevation is about 1,565 feet on the highest ridges, to about 600 feet along the Missouri River near Glasgow in central Missouri. Local relief varies from 10 to 20 feet in the major river floodplains, to 50 to 100 feet in the dissected uplands, with loess bluffs of 200 to 300 feet along the Missouri River. The loess thins with distance from the Missouri river, and local relief decreases. The loess caps pre-Illinoian till, which crops out on lower hillslopes near the edges of the MLRA. The underlying bedrock is mainly Pennsylvanian and Cretaceous-aged shale, mudstone and sandstone.



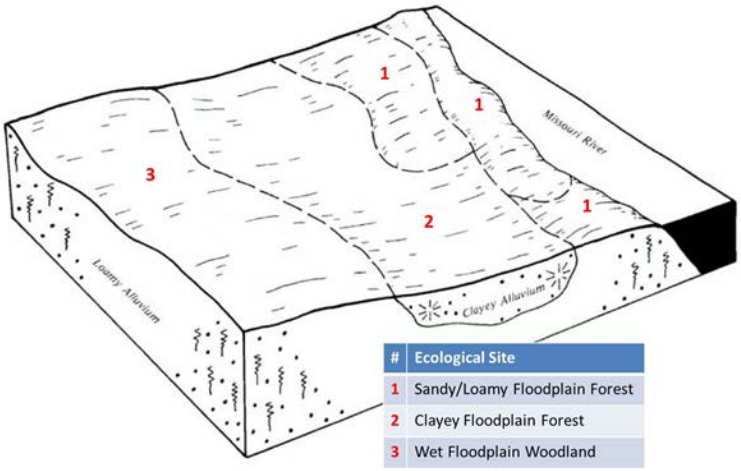
Wet Floodplain Woodlands are within the green areas on the map (Missouri portion only; Iowa distributions are currently under review). These sites are widely distributed on the Missouri River floodplain. Sites are typically associated with the Floodplain Forest ecological sites. Soils are loamy and very deep, with seasonal high water tables.

Physiographic Features

This site is on the Missouri River floodplain, with slopes of less than 2 percent. Areas not protected by levees are subject to frequent flooding.

The following figure (adapted from Young & Kowalewycz. 1994) shows the typical landscape position of this ecological site, and landscape relationships with other ecological sites. The site is within the area labeled "3", on the Missouri River floodplain. Floodplain Forest sites are associated

with this ecological site, and are closer to the river. The dashed lines within the Sandy/Loamy Floodplain Forest indicates different soils within this site..



#	Ecological Site
1	Sandy/Loamy Floodplain Forest
2	Clayey Floodplain Forest
3	Wet Floodplain Woodland

Soil Features

These soils are very deep, with seasonal high water tables. They were formed under a mixture of herbaceous wetland and woodland vegetation, with periodic depositional flood events. Organic matter content is variable. Parent material is calcareous alluvium. They have silt loam or silty clay loam surface horizons, and loamy subsoils that are calcareous. Soil series associated with this site include Dupo, Gilliam, Modale, Moville, and Paxico.

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.

Wet Floodplain Woodlands occupy a transitional area between lower, wetter and more clayey wet prairies and higher, better drained riverfront forests. They have loamy to clayey soil textures and are poorly drained, consequently limiting the density of trees creating a woodland structure.

In addition, the transitional position between prairie and riverfront forest causes periodic fire to have an influence on their woodland structure. Elm, bur oak, pin oak and shellbark hickory form a medium to tall (70 to 80 feet), semi-open (60 to 80 percent) canopy over an understory with a dense sedge ground cover.

Prior to levee development and channeling, these areas were regularly flooded by a mixture of over-bank, headwater floods and slow-moving backwater floods. In most years, flood duration would have been rather short, occupying these sites for less than a month as waters receded to lower prairie and marsh areas. In addition to flooding, periodic fire also played a role in controlling woody species. Fire during dry periods kept the canopy and understory open, and promoted a dense herbaceous ground flora.

Today most of these ecological sites have been cleared, drained and farmed. Only a few high quality remnants exist. While their flood regime has been altered, their landscape position and soil properties still make them prime candidates for wet woodland development and management. These ecological sites are optimal locations for oak management in the floodplains.

Reference State Plant Community

Canopy Trees

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

Shrubs

Common Name	Botanical Name	Cover % (low-high)	Canopy Height (ft)
BUTTONBUSH	*Cephalanthus occidentalis*	5-20	10

Forbs

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

Grasses and sedges

Common Name	Botanical Name	Cover % (low-high)
HOP SEDGE	*Carex lupulina*	10-30
SQUARROSE SEDGE	*Carex squarrosa*	10-30
SCOURING RUSH	*Carex grayi*	10-30
SHORELINE SEDGE	*Carex hyalinolepis*	10-30
FRANK'S SEDGE	*Carex frankii*	10-30
PRAIRIE CORD GRASS	*Spartina pectinata*	10-30
WOOD REED GRASS	*Cinna arundinacea*	10-30
BLUEJOINT GRASS	*Calamagrostis canadensis*	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 additional 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: Estimated site index values range from 50 to 90. On the wettest sites, timber management opportunities may be limited. Management of these groups is often difficult

because of the great variation in species, age, stocking levels and seasonal wetness. Use seed-tree, group selection, or clear cutting regeneration methods. Harvest favoring reproduction of the less-shade tolerant species such as swamp white oak, pin oak, sycamore, and cottonwood. Maintain adequate riparian buffer areas.

- Limitations: Wetness from flooding; high water table. Use of equipment may be restricted in spring and other excessively wet periods. Restrict activities to dry periods or surfaced areas. Equipment use when wet may compact soil and damage tree roots. Unsurfaced roads and traffic areas tend to be slippery and form ruts easily. Access to forests is easiest during periods in late summer or winter when soils are frozen or dry. Planting is extremely difficult during spring periods. Seedling mortality may be high due to excess wetness. Unsurfaced roads and skid trails may be impassable during rainy periods.

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
River hills – a geographic area characterized by thick, dissected loess deposits, formed immediately adjacent to the edges of the Missouri and Mississippi River floodplains

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

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