

Ecological Site Description

Loamy Floodplain Riverfront Forest

F109XY030MO

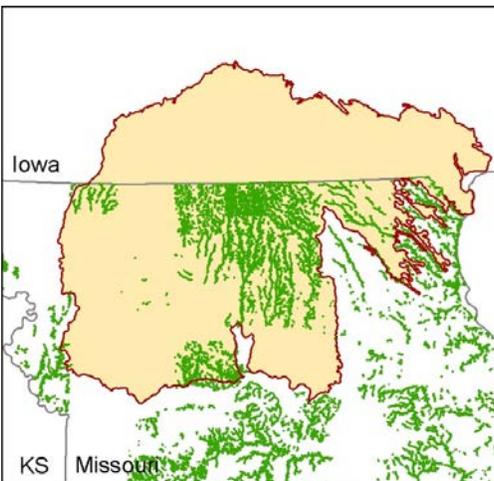
- (*Ulmus americana*-*Celtis occidentalis*/*Vitis-Staphylea trifolia*/*Carex-Laporteia canadensis*)
- (elm-hackberry/grape - American bladdernut/sedge - Canadian woodnettle)

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 “Certified” ESD will be published and will be available via the Web Soil Survey <http://websoilsurvey.nrcs.usda.gov> .)*

Major Land Resource Area: 109 – Iowa and Missouri Heavy Till Plain

Introduction

The Iowa and Missouri Heavy Till Plain (area outlined in red on the map) is an area of rolling hills interspersed with interfluvial divides and alluvial valleys. Elevation ranges from about 660 feet along the lower reaches of rivers, to about 980 feet on stable interfluvial summits in southern Iowa. Relief is about 80 to 160 feet between major streams and adjacent interfluvial summits. Most of the till plain drains south to the Missouri River via the Grand and Chariton River systems, but the northeastern portion drains southeast to the Mississippi River. Loess caps the pre-Illinoian aged till on interfluvial summits, whereas the till is exposed on side slopes. Mississippian aged limestone and Pennsylvanian aged sandstone and shale crop out on lower slopes in some areas.



Loamy Floodplain Riverfront Forests are shown on the green areas on the map. They are distributed across the entire region where they occur as rather narrow ribbons of forest that parallel the streams. They occur on natural levees and low floodplains that flood frequently. A narrow band of Sandy Riverfront Forest may occur next to the stream channel, and Floodplain Wet-Mesic Woodlands often flank them on the other side.

Physiographic Features

This site is on floodplains and natural levees with slopes of 0 to 3% adjacent to existing or historic stream channels. The site receives some runoff from higher floodplains, stream terraces and uplands. This site is subject to occasional to frequent flooding.

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. Some soils are slightly affected by seasonal wetness. Soil series associated with this site include Belknap, Dockery, Fatima, Floris, Kickapoo, Klum, Landes, Nodaway and Wakeland.

Ecological Dynamics

The reference plant community is a forest dominated by an overstory of American elm and hackberry, with sycamore, cottonwood, green ash and other early successional species scattered throughout. Occasionally, bur oak, shellbark hickory, walnut and other hardwood species will occur in later stages of development.

Loamy Floodplain Riverfront Forests were a common natural community of floodplains and natural levees throughout the Iowa and Missouri Heavy Till Plain. They are most prevalent along streams in more rugged landscapes where hillsides and floodplains are mainly forested. They can also occur in prairie landscapes.

Flooding of these ecological sites commonly occurs annually or at least once every 3 years. Loamy sediments, originating from the loess and till in the surrounding uplands, make up a significant portion of the alluvium in these floodplains. The forest is dominated by flood tolerant, pioneer tree species such as elm, hackberry, sycamore, cottonwood and green ash. Young stands of these species tend to stabilize the low floodplain and continue to accumulate loamy materials. Consequently, these ecological sites tend to be near even aged. Young stands are often dense with a sparse understory and ground flora. Over the long term, these floodplains may become so elevated and/or isolated that they begin to accumulate more fine sediments and become more stable. Oak, shellbark hickory and black walnut begin to accumulate in later stages of succession. Catastrophic floods will often partially or completely knock down the early species and regenerate this site creating a mosaic of early to late successional floodplain forests.

Because of the frequent flooding, Loamy Floodplain Riverfront Forests are the most abundant remaining floodplain forest type occurring as a rather narrow band of forests traversing the stream edge. These bands of forest play an important role as a source of food and shelter for migrating birds and as a source for coarse woody debris for the adjacent stream channels.

Today most of these ecological sites have been cleared and converted to agriculture. While many cleared fields have a narrow strip of forest along the stream, these ecological sites are often cleared right up to the bank. In such cases, flooding may cause severe stream bank erosion. Grazing by domestic livestock in the remaining strips of forest, can also kill trees and remove the ground cover, resulting in de-stabilization and degradation of this ecological site as well. Carefully planned timber harvests can be tolerated in this system, but high grading of the timber will eventually degrade the ecological site.

Reference State Plant Community

Canopy Trees

Common Name	Botanical Name	Cover % (low-high)	Canopy Height (ft)
BUR OAK	<i>Quercus macrocarpa</i>	10-20	80
GREEN ASH	<i>Fraxinus pennsylvanica</i>	10-20	80
HACKBERRY	<i>Celtis occidentalis</i>	10-30	80
BITTERNUT HICKORY	<i>Carya cordiformis</i>	10-20	70
SHELLBARK HICKORY	<i>Carya laciniosa</i>	10-20	60
BLACK WALNUT	<i>Juglans nigra</i>	10-20	70
SYCAMORE	<i>Platanus occidentalis</i>	10-20	90
KENTUCKY COFFEE TREE	<i>Gymnocladus dioica</i>	5-10	60
AMERICAN ELM	<i>Ulmus americana</i>	10-30	80
SHUMARD'S OAK	<i>Quercus shumardii</i>	10-20	80

Understory Trees

Common Name	Botanical Name	Cover % (low-high)	Canopy Height (ft)
RED ELM	<i>Ulmus rubra</i>	10-20	50
OHIO BUCKEYE	<i>Aesculus glabra</i>	10-20	40
BLUE BEECH	<i>Carpinus caroliniana</i>	10-20	20
RED MULBERRY	<i>Morus rubra</i>	10-20	40

Shrubs

Common Name	Botanical Name	Cover % (low-high)	Canopy Height (ft)
WAHOO	<i>Euonymus atropurpureus</i>	10-20	12
BLADDERNUT	<i>Staphylea trifolia</i>	10-20	10

Vines

Common Name	Botanical Name	Cover % (low-high)
VIRGINIA CREEPER	<i>Parthenocissus quinquefolia</i>	10-20
SUMMER GRAPE	<i>Vitis aestivalis</i>	10-20
POISON IVY	<i>Toxicodendron radicans</i>	10-20

Forbs

Common Name	Botanical Name	Cover % (low-high)
BLUEBELLS	<i>Mertensia virginica</i>	20-40
PALE VIOLET	<i>Viola striata</i>	5-10
WOOD NETTLE	<i>Laportea canadensis</i>	20-30
GOLDENGLOW	<i>Rudbeckia laciniata</i>	10-20
WATERLEAF	<i>Hydrophyllum virginianum</i>	10-20
FALSE RUE ANEMONE	<i>Isopyrum bitematum</i>	10-20
SNOWY CHAMPION	<i>Silene nivea</i>	10-20
PALE TOUCH ME NOT	<i>Impatiens pallida</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>Equisetum hyemale</i>	10-30
INDIAN WOODOATS	<i>Chasmanthium latifolium</i>	10-30
WILD RYE	<i>Elymus villosus</i>	10-30

Site Interpretations

Wildlife Species

This ecological site is a dense, multi-layered forest, with snags and cavities and down dead wood that provides habitat for many species requiring cool, rich, moist conditions.

Bird species associated with these mature forests include Great Blue Heron (colonies especially in large sycamores and cottonwoods), Bald Eagle, Belted Kingfisher, Red-shouldered Hawk, Northern Parula, Louisiana Waterthrush, Wood Duck, Hooded Merganser, Kentucky Warbler, Hooded Warbler, Acadian Flycatcher, Barred Owl, Pileated Woodpecker, Cerulean Warbler, and Yellow-throated Warbler.

Reptiles and amphibians associated with this ecological site include small-mouthed salamander, central newt, midland brown snake, and gray treefrog.

Glossary

Alfic – soil that has a clay-dominated subsoil (argillic horizon) with moderate to high amounts of bases such as calcium, and were typically formed under woody vegetation.

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).

Mollic – soil that has a thick, dark surface horizon and was typically formed under prairie vegetation

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

Pinery – a vegetative community within the historic pine range in Missouri that has shortleaf pine as a significant tree species

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

Ultic – soil that has a clay-dominated subsoil (argillic horizon) with low amounts of bases such as calcium, and were typically formed under woody vegetation

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