

Ecological Site Description

Sandy Floodplain Forest

F131AY009MO

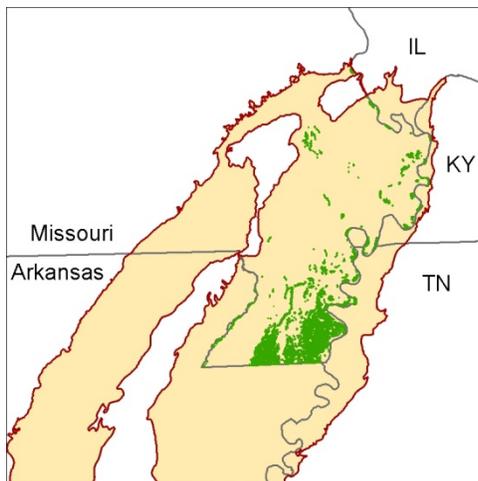
- (*Salix nigra* - *Populus deltoides*/*Crataegus viridis*/*Laportea canadensis*)
- (black willow – eastern cottonwood/green haw/Canadian woodnettle)

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

Major Land Resource Area: 131A – Southern Mississippi River Alluvium

Introduction

The Southern Mississippi River Alluvium (area outlined in red on the map; northern portion only) is a vast alluvial plain, stretching from the confluence of the Mississippi and Ohio Rivers to tidewater areas of the Gulf of Mexico. The area is formed primarily in sediments deposited by the Mississippi River, with significant contributions from the St Francis and Black Rivers west of Crowley’s Ridge, in the northern part of the area. A variety of alluvial landforms are present, including natural levees, sand splays, backswamps, channels, swales, stream terraces and braided terraces. Dunes have formed from wind redistribution of alluvial sands, and loess deposits overlie older terraces to the west. Elevation range from about 330 feet in the north to sea level in the south. Local relief is low, and much of the area appears flat, although low escarpments and other slight changes in elevation often indicate major changes in hydrology and soils.



Sandy Floodplain Forests are within the green areas on the map (Missouri portion only; distributions farther south are currently under review). These areas are widely scattered in the eastern part of the area, near the current Mississippi River channel, and are most abundant in Pemiscot and southeastern Dunklin counties, Missouri. They are closely associated with Loamy Floodplain ecological sites in areas closer to the river, and with Wet Backswamp sites in Dunklin County, farther from the river. Soils are very deep and sandy.

Sandy Floodplain Forests are within the green areas on the map (Missouri portion only; distributions farther south are currently under review). These areas are widely scattered in the eastern part of the area, near the current Mississippi River channel, and are most abundant in Pemiscot and southeastern Dunklin counties, Missouri. They are closely associated with Loamy Floodplain ecological sites in areas closer to the river, and with Wet Backswamp sites in Dunklin County, farther from the river. Soils are very deep and sandy.

Physiographic Features

These sites are on nearly level floodplains of the Mississippi River. Areas not protected by levees are subject to flooding.

Soil Features

These soils are very deep and sandy throughout, with low plant-available water capacity. The soils were formed under forest vegetation, and have thin, light-colored surface horizons. Parent material is alluvium. They have fine sandy loam to fine sand surface layers, with sandy subsurface layers. These soils are not affected by seasonal wetness. Soil series associated with this site include Broseley, Canalou, Crevasse, Lilbourn, and Steele.

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.

The Mississippi River was a very dynamic system with frequent flooding. The river was historically a very dynamic system with frequent flooding and multiple braided channels shifting back and forth across the floodplain. Loamy, coarse loamy and sandy deposits of sediment dominate the floodplain in this region, and the sandy materials are the youngest, most recently deposited substrate in this matrix. They were closely associated with Loamy Floodplain ecological sites in areas closer to the river and with Wet Backswamp sites, farther from the river. Soils are very deep and sandy.

Flooding of Sandy Floodplain Forest occurred annually or at least once every 3 years. Sand bar succession to forest was dominated by flood tolerant, pioneer tree species such as willow and cottonwood. Young stands of these species tend to stabilize the riverfront floodplain and continue to accumulate coarse materials. Consequently, many Sandy Floodplain Forests tend to be even aged. Young stands are often dense with a sparse understory and ground flora. As the forest matures, canopy gaps provide more light while more fine sediments accumulate on the forest floor, resulting in a dense ground flora of grasses and nettles.

Over the long term, these sites may become so elevated and isolated that they begin to accumulate even more fine sediments. Ultimately, shade tolerant elm, ash, and hackberry will accumulate in the understory and the forest may succeed to a Loamy Floodplain Forest dominated by these species. However, catastrophic floods will often partially or completely knock down the early successional species and regenerate this ecological system. Consequently, this ecological site is often made up of a mosaic of early to late successional floodplain forest.

Today most floodplain forests in this region have been cleared and converted to agriculture. Remaining remnants still exist along un-leveed areas, within levees and on islands. They often occur as a rather narrow band of trees and shrubs traversing the drainageway edge. These bands of forest play an important role as a source of food and shelter for migrating birds. In addition, isolated large sycamore and cottonwood trees that rise above the canopy are important nesting sites for bald eagles and herons.

Re-establishment of these riparian forests is important for stream quality and health, as well as for migratory birds. Planting of early successional pioneer species on these sites has proven to be quite successful.

Reference State Plant Community

Canopy Trees

Common Name	Botanical Name	Cover % (low-high)	Canopy Height (ft)
BLACK WILLOW	<i>Salix nigra</i>	10-40	60
EASTERN COTTONWOOD	<i>Populus deltoides</i>	10-30	80
HACKBERRY	<i>Celtis occidentalis</i>	5-20	70
SUGARBERRY	<i>Celtis laevigata</i>	5-20	70
RIVER BIRCH	<i>Betula nigra</i>	5-20	80
SYCAMORE	<i>Platanus occidentalis</i>	5-20	90
SILVER MAPLE	<i>Acer saccharinum</i>	5-10	60
AMERICAN ELM	<i>Ulmus americana</i>	5-20	70

Understory Trees

Common Name	Botanical Name	Cover % (low-high)	Canopy Height (ft)
BOX ELDER	<i>Acer negundo</i>	10-20	50
GREEN HAW	<i>Crataegus viridis</i>	10-20	20

Shrubs

Common Name	Botanical Name	Cover % (low-high)	Canopy Height (ft)
GRAY DOGWOOD	<i>Cornus foemina</i>	5-10	12
SANDBAR WILLOW	<i>Salix interior</i>	10-20	20
PEACH-LEAVED WILLOW	<i>Salix amygdaloides</i>	10-20	20

Vines

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

Forbs

Common Name	Botanical Name	Cover % (low-high)
WHITE WOODLAND ASTER	<i>Aster lateriflorus</i>	10-20
TALL NETTLE	<i>Urtica dioica</i>	5-10
WOOD NETTLE	<i>Laportea canadensis</i>	20-30
GOLDENGLOW	<i>Rudbeckia laciniata</i>	10-20
LATE GOLDENROD	<i>Solidago gigantea</i>	10-20
BROWN-EYED SUSAN	<i>Rudbeckia triloba</i>	10-20
TOUCH-ME-NOT	<i>Impatiens pallida</i>	10-20

Grasses and sedges

Common Name	Botanical Name	Cover % (low-high)
HAIRY WILD RYE	<i>Elymus villosus</i>	5-20
SCOURING RUSH	<i>Equisetum hyemale</i>	5-20
INDIAN WOODOATS	<i>Chasmanthium latifolium</i>	5-20
VIRGINIA WILD RYE	<i>Elymus virginicus</i>	5-20

Site Interpretations

Wildlife

- This community provides important streamside attributes such as: riparian stability; stream shading, important floodplain connectivity between the river and interior sloughs, and inputs to streams of coarse woody debris.
- Tall emergent sycamores and cottonwoods along with an uneven canopy structure and canopy gaps are important for heron colonies, eagle nesting, Mississippi kites, cerulean warblers and other bird species and are important migratory songbird stopover sites.
- Bird species associated with early-successional Riverfront Forests include: White-eyed Vireo, Yellow-breasted Chat, Common Yellowthroat, Indigo Bunting, Gray Catbird, Willow Flycatcher, Orchard Oriole, and Brown Thrasher.
- Birds associated with mid-successional Riverfront Forests include: American Redstart, Northern Parula, and Willow Flycatcher.
- Birds associated with late-successional Riverfront 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, and Swainson's Warbler (sites with giant cane or dense sapling/brambles in the understory).
- Amphibian and reptile species associated with Riverfront Forest include: small-mouthed salamander, central newt, midland brown snake, gray tree frog, and southern leopard frog.

Forestry

- **Management:** Estimated site index values may exceed 80. Soil fertility and available water capacity may be low to moderate. Timber management opportunities are fair to good. 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. Maintain adequate riparian buffer areas.
- **Limitations:** Seasonal wetness; sandy profile. The sandy upper layer may hinder the use of wheeled equipment especially when the soil is saturated or very dry. Seedling mortality may occur because of lack of adequate soil moisture during dry 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

References

Missouri Department of Conservation. 2006. Missouri Forest and Woodland Community Profiles. Missouri Department of Conservation, Jefferson City, Missouri.

Natural Resources Conservation Service. 2002. Woodland Suitability Groups. Missouri FOTG, Section II, Soil Interpretations and Reports. 30 pgs.

Natural Resources Conservation Service. Site Index Reports. Accessed May 2014.
https://esi.sc.egov.usda.gov/ESI_Forestland/pgFSWelcome.aspx

NatureServe. 2010. Vegetation Associations of Missouri (revised). NatureServe, St. Paul, Minnesota.

Nelson, Paul W. 2010. The Terrestrial Natural Communities of Missouri. Missouri Department of Conservation, Jefferson City, Missouri.

Nigh, Timothy A., & Walter A. Schroeder. 2002. Atlas of Missouri Ecoregions. Missouri Department of Conservation, Jefferson City, Missouri.