Ecological Site Description

Loamy Floodplain Forest F131AY008MO

- *(Ulmus americana - Celtis occidentalis /Vitis/Carex - Laportea canadensis)*
- (American elm – common hackberry/grape/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 "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 ranges 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.

Loamy Floodplain Forests are within the green areas on the map (Missouri portion only; distributions farther south are currently under review). Sites are locally abundant near the current Mississippi River channel, in Scott and Mississippi counties, Missouri, with a few scattered areas to the south. Soils are very deep and loamy.

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 have no major rooting restriction. The soils were formed under forest vegetation. Organic matter content is variable. They have loam to sandy loam surface horizons, and loamy

subsurface layers. Parent material is alluvium. They are not affected by a high water table. Soil series associated with this site include Bosket, Reelfoot, and Towosahgy.

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 reference community is a forest dominated by an overstory of American elm, hackberry and green ash, with sycamore, sweetgum and other early successional species scattered throughout. Occasionally, bur oak, shellbark hickory, pecan, black walnut and other hardwood species may occur in later stages of development. They often occur as one of the higher positions in a succession of historic river channels or a meander belt.

Flooding of these ecological sites commonly occurred at least once every 3 to 5 years. Loamy sediments made up a significant portion of the alluvium in these floodplains. 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. Oaks, shellbark hickory, pecan and black walnut begin to accumulate in later stages of succession. Catastrophic floods will often partially or completely knock down trees and regenerate this site creating a mosaic of early to late successional floodplain forests.

Because of occasional flooding, these sites, along with riverfront forests are the most abundant remaining floodplain forest type occurring as a rather narrow band of forests traversing the stream edge. These often occur on the river side of levees. These bands of forest play an important role as a source of food and shelter for migrating birds and as a source for course 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 retained a narrow strip of forest along the drainageway, some 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)
BITTERNUT HICKORY	*Carya cordiformis*	10-20	80
GREEN ASH	*Fraxinus pennsylvanica*	10-20	80
PECAN	*Carya illinoinensis*	10-20	80
SYCAMORE	*Platanus occidentalis*	10-20	90
AMERICAN ELM	*Ulmus americana*	10-20	80
BLACK WALNUT	*Juglans nigra*	10-20	80
COMMON HACKBERRY	*Celtis occidentalis*	10-20	80
CHERRYBARK OAK	*Quercus pagoda*	10-20	70
BUR OAK	*Quercus macrocarpa*	10-20	90
SWEETGUM	*Liquidambar styraciflua*	10-20	80

Understory Trees

Common Name	Botanical Name	Cover % (low-high)	Canopy Height (ft)
OHIO BUCKEYE	*Asceleus glabra*	10-20	40
PERSIMMON	*Diospyros virginiana*	5-10	40
BLUE BEECH	*Carpinus caroliniana*	20-30	20

Shrubs

Common Name	Botanical Name	Cover % (low-high)	Canopy Height (ft)
CAROLINA BUCKTHORN	*Rhamnus caroliniana*	5-10	6
SPICE BUSH	*Lindera benzoin*	5-10	6
LEATHERWOOD	*Dirca palustris*	5-10	8
GIANT CANE	*Arundinaria gigantea*	0-20	15

Forbs

Common Name	Botanical Name	Cover % (low-high)
CANADIAN WOODNETTLE	*Laportea canadensis*	5-10
SHINNING BEDSTRAW	*Galium concinum*	5-10
BEAKED AGROMONY	*Agrimonia rostulata*	5-10
CANADIAN BALCK SNAKEROOT	*Sanicula canadensis*	5-10
WHITE AVENS	*Geum canadensis*	5-10
EASTERN WATERLEAF	*Hydrophyllum virginianum*	5-10
LATE FLOWERING THROUGHWORT	*Eupatorium serotinum*	5-10
BIANNUAL LETTUCE	*Lactuca ludoviciana*	5-10
MOODSEED	*Minispermum canadensis*	5-10

Grasses and sedges

Common Name	Botanical Name	Cover % (low-high)
RIVER OATS	*Chasmantheum latifolium*	5-10
BOSC'S PANIC GRASS	*Panicum boscii*	5-10
RICHWOODS SEDGE	*Carex oligocarpa.*	5-10
NODDING FESCUE	*Festuca obtusa*	5-10
EASTERN WOODLAND SEDGE	*Carex blanda*	5-10
VIRGINIA WILDRYE	*Elymus virginicus*	5-10
PARASOL SEDGE	*Carex umbellata*	5-10

Vines

Common Name	Botanical Name	Cover % (low-high)
SUMMER GRAPE	*Vitis aestivalis*	5-10
CAT GREENBRIER	*Smilax glauca*	5-10
VIRGINIA CREEPER	*Parthenocissus quinquefolia*	5-10

Site Interpretations

Wildlife

- 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 tree frog.

Forestry

- Management: Estimated site index values range from 70 to 100. Timber management opportunities are 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: Wetness from flooding – short duration; Use of equipment may be restricted in spring and other excessively wet periods. 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

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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