Ecological Site Description

Loess Terrace Forest F131AY018MO

- *(Quercus pagoda - Quercus michauxii/Euonymus atropurpureus/Carex - Hydrophyllum virginianum)*
- (cherrybark oak – swamp chestnut oak/eastern wahoo/sedge – eastern waterleaf)

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 sand 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.

Loess Terrace Forests are within the green areas on the map (Missouri portion only; distributions farther south are currently under review). These sites are locally extensive west of Crowley's Ridge, mainly in Butler County, Missouri. They are closely associated with Wet Loess Terrace ecological sites. Soils are very deep and loamy.

Physiographic Features

This site is on loess-covered stream terraces and floodplains that are nearly level (0 to 2 percent slopes). Some 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, and have thin, light-colored surface horizons. They have silt loam surface horizons, and loamy subsoils. Parent material is loess or alluvium derived from loess. These soils are not affected by seasonal wetness. Soil series associated with this site include Adler and Oaklimeter.

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.

Loess Terrace Forests in the western lowlands are on ancient terrace positions that occasionally flood. The tree canopy is tall (80 to 100) and closed (90 to 100 percent cover) with a dense multilayered understory. Much of the flooding is from ponding of rainfall and sheet flow across these landscapes. Because their soils are better drained they represent one of the dryer forest types in the region. Consequently, cherrybark oak and swamp chestnut oak, as well as American elm and shellbark hickory are more prominent, and the understory better developed than adjacent wet areas. A diverse array of ground flora species, especially sedges, carpets the forest floor.

Flooding, wind and ice storms were likely the most important disturbances in this region. All would have created occasional canopy gaps so that the oak species could regenerate.

The productive Loess Terrace Forest sites have regularly been harvested, or cleared and converted to cropland. However occasional remnants do exist. These remaining blocks of forest play an important role as a source of food and shelter for migrating birds.

Carefully planned timber harvest can be tolerated by this system, but high-grading of the timber will also degrade the system. Re-establishment of these forests is important for stream quality and health, as well as for migratory birds. Planting of late-successional species on the appropriate landscape position and soils has proven to be quite successful.

Reference State Plant Community
Canopy Trees

Common Name	Botanical Name	Cover % (low-high)	Canopy Height (ft)
BITTERNUT HICKORY	*Carya cordiformis*	10-30	80
SWAMP CHESTNUT OAK	*Quercus michauxii*	10-30	70
CHERRYBARK OAK	*Quercus pagoda*	10-30	100
SWEET GUM	*Liquidambar styraciflua*	10-20	100
AMERICAN ELM	*Ulmus americana*	10-20	80
BLACK WALNUT	*Juglans nigra*	5-10	90
WHITE ASH	*Fraxinus americana*	5-10	70
SHELLBARK HICKORY	*Carya laciniosa*	5-10	80

Understory Trees

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

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

Shrubs

Common Name	Botanical Name	Cover % (low-high)	Canopy Height (ft)
CAROLINA BUCKTHORN	*Rhamnus caroliniana*	5-10	6
EASTERN WAHOO	*Euonymus atropurpureus*	10-20	8
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
POINTED LEAF TICKTREFOIL	*Desmodium glutinosum*	5-10
WHITE AVENS	*Geum canadensis*	5-10
EASTERN WATERLEAF	*Hydrophyllum virginianum*	10-20
LATE FLOWERING THROUGHWORT	*Eupatorium serotinum*	5-10
YELLOW WOOD SORREL	*Oxalis stricta*	5-10
TOOTHWORT	*Cardamine concatenata*	5-10
YELLOW PASSIONFLOWER	*Passiflora lutea*	5-10
BIANNUAL LETTUCE	*Lactuca ludoviciana*	5-10
MOODSEED	*Minispermum canadensis*	5-10
WILD GINGER	*Asarum canadense*	5-10
EARLY MEADOW RUE	*Thalictrum dioicum*	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

Site Interpretations

Wildlife

- Wild turkey, white-tailed deer, and eastern gray squirrel depend on hard and soft mast food sources and are typical upland game species of this type.
- Birds associated with mid-successional stages include Whip-poor-will and Wood Thrush while birds associated with late-successional stages include Worm-eating warbler, Whip-poor-will, Great Crested Flycatcher, Ovenbird, Pileated Woodpecker, Wood Thrush, Red-eyed Vireo, Northern Parula, Louisiana Waterthrush (near streams), and Broad-winged Hawk.
- Reptile and amphibian species associated with mature forests include: ringed salamander, spotted salamander, marbled salamander, central newt, long-tailed salamander, dark-sided salamander, southern red-backed salamander, three-toed box turtle, western worm snake, western earth snake, and American toad.

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. Maintain adequate riparian buffer areas.

- Limitations: No major limitations or restrictions. Occasional periods of seasonal wetness; 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 may be difficult during spring flooding 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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