

Ecological Site Description

Wet Backswamp Forest

F131AY012MO

- (*Quercus lyrata* - *Carya aquatica*/*Forestiera acuminata*/*Carex* - *Impatiens*)
- (overcup oak – water hickory/swamp privet/sedge – touch-me-not)

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.

Wet Backswamp Forests are within the green areas on the map (Missouri portion only; distributions farther south are currently under review). These areas are widespread, particularly west of the Floodplain Forest ecological sites. They are often associated with the Braided Terrace ecological sites. Soils are very deep and clayey, with high water tables.

Physiographic Features

These sites are on nearly level backswamp positions on floodplains and braided stream terraces of the Mississippi River. Areas not protected by levees are subject to flooding.

Soil Features

These soils are very deep and clayey throughout, with high water tables. The soils were formed under forest vegetation. Organic matter content is variable. Parent material is alluvium. They have

silty clay loam to clay surface layers, with clayey subsurface layers. These soils are affected by seasonal wetness, and are subject to brief ponding. Soil series associated with this site include Alligator, Amagon, Kobel, Mhoon, and Sharkey.

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 associated with clayey deposits that occurred in areas of slower moving water, such as isolated, concave meander scars or backwater areas between the natural levees formed nearer the channel. Current management of the river has drastically altered this dynamic process although the clayey soil texture and seasonally high water table still influences the characteristics of these floodplain forest communities.

Historically, Wet Backswamp Forests were on floodplain positions that flooded annually. Flooding was from backwater, as well as overbank flooding. Compared to the surrounding meander belt terraces and channels, they held water longer. The historic flood regime was mainly in late fall and winter and its duration was for 3 to 6 months. Consequently, a wide variety of very flood tolerant species such as overcup oak, water hickory, water locust, pumpkin ash, swamp cottonwood, swamp red maple, water elm and buttonbush were present. The lowest, wettest areas also had bald cypress and swamp tupelo. Trees were 70 to 90 feet tall with a canopy closure of 80 to 100. The understory was relatively open, and the ground flora species rather sparse as flooding and ponding extended well into the growing season.

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

Today many of these backswamp forests in the Mississippi Alluvial Plain are cleared and converted to cropland. However occasional remnants do exist, and because the remnants are often in the lowest, wettest areas, their flood and ponding regime may be minimally altered. These blocks of forest play an important role as a source of food and shelter for migrating birds. Planting of flood tolerant 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)
WATER OAK	<i>Quercus nigra</i>	10-20	80
GREEN ASH	<i>Fraxinus pennsylvanica</i>	10-20	80
PUMPKIN ASH	<i>Fraxinus profunda</i>	10-20	80
BALD CYPRESS	<i>Celtis laevigata</i>	5-20	90
OVERCUP OAK	<i>Quercus lyrata</i>	10-20	70
BUR OAK	<i>Quercus macrocarpa</i>	10-20	90
SILVER MAPLE	<i>Acer saccharinum</i>	10-20	80
SWAMP COTTONWOOD	<i>Populus heterophylla</i>	10-20	90
SWAMP RED MAPLE	<i>Acer rubrum v. drummondii</i>	10-20	80
WATER LOCUST	<i>Gleditsia aquatica</i>	0-10	70
WATER TUPELO	<i>Nyssa aquatica</i>	0-10	80
WATER HICKORY	<i>Carya aquatica</i>	0-10	70

Understory Trees

Common Name	Botanical Name	Cover % (low-high)	Canopy Height (ft)
BLACK WILLOW	<i>Salix nigra</i>	5-10	50
PLANER TREE	<i>Planer aquatica</i>	5-10	40

Shrubs

Common Name	Botanical Name	Cover % (low-high)	Canopy Height (ft)
BUTTONBUSH	<i>Cephalanthus occidentalis</i>	5-10	8
SWAMP ROSE	<i>Rosa palustris</i>	5-10	5
SWAMP PRIVET	<i>Forestiera acuminata</i>	10-20	10

Forbs

Common Name	Botanical Name	Cover % (low-high)
CLEARWEED	<i>Pilea pumila</i>	5-20
LIZARD'S TAIL	<i>Saururus cernuus</i>	5-20
CYLINDRIC PRIMROSE	<i>Ludwigia glandulosa</i>	5-20
AMERICAN SNOWBELL	<i>Styrax americanus</i>	5-20
WATERLEAF	<i>Hydrophyllum virginianum</i>	5-20
DOTTED KNOTWEED	<i>Polygonum punctatum</i>	5-20
SWAMP BEGGAR TICKS	<i>Bidens discoidea</i>	5-20
PALE TOUCH-ME-NOT	<i>Impatiens pallida</i>	5-20
FALSE NETTLE	<i>Boehmeria cylindrica</i>	5-20
SHARPWING MONKEY FLOWER	<i>Mimulus alatus</i>	5-20
BUTTERWEED	<i>Senecio glabellus</i>	5-20
COPPER IRIS	<i>Iris fulva</i>	0-10

Grasses and sedges

Common Name	Botanical Name	Cover % (low-high)
RICE CUTGRASS	<i>Leersia oryzoides</i>	5-20
LOUISIANA SEDGE	<i>Carex louisianica</i>	5-20
BLADDER SEDGE	<i>Carex intumescens</i>	5-20
THICKET SEDGE	<i>Carex abscondia</i>	5-20
LOW WOODLAND SEDGE	<i>Carex socialis</i>	5-20
GIANT SEDGE	<i>Carex gigantea</i>	5-20

Site Interpretations

Wildlife

- Moist conditions with abundant coarse woody debris make this type important for many herptiles.
- Ephemeral pools provide important amphibian breeding habitat.
- Periodic inundation and acorns provide important habitat for migrating ducks (especially mallards) and breeding ducks including wood ducks and hooded mergansers.
- Tall emergent trees along with an uneven canopy structure and canopy gaps are important for heron colonies, eagle nesting, Mississippi kites, cerulean warblers and other bird species.
- Important migratory songbird stopover sites and seasonal inundation important for water birds.
- Bird species associated with backswamps include Wood Duck, Hooded Merganser, Barred Owl, Cerulean Warbler, Prothonotary Warbler, Pileated Woodpecker, Red-headed Woodpecker, Yellow-throated Vireo, Brown Creeper, Yellow-crowned Night Heron, Black-crowned Night Heron, and Tree Swallow.
- Reptile and amphibian species associated with backswamps include: broad-banded water snake, western mud snake, western cottonmouth, Mississippi green water snake, three-toed amphiuma, green tree frog, Mississippi mud turtle, and western lesser siren.

Forestry

- Management: Estimated site index values range from 50 to 90. Frequent flooding or permanent ponding severely restricts timber management opportunities. Harvesting may be possible only in very dry years or during winter periods when the ground or water is completely frozen. Widespread regeneration may require a prolonged dry cycle. These areas are best maintained for wildlife and water quality purposes. Maintain adequate riparian buffer areas.
- Limitations: Wetness from flooding, long term ponding and high water table; Soils are not suitable for the use of ordinary crawler tractors or rubber-tired skidders. Special harvesting equipment may be needed. 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 will be high due to excess wetness and ponding.

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.