Ecological Site Description

Claypan Terrace Woodland F131AY001MO

- *(Quercus palustris - Quercus phellos/Forestiera acuminata /Carex*)
- (pin oak - willow oak /swamp privet/ sedge)

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. Elevations 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.

Claypan Terrace Woodlands 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 near the St. Francis River. Soils have a silty clay subsoil that perches water in the spring, and affects rooting depth.

Physiographic Features

This site is on high, loess-covered stream terraces that are nearly level. Some areas are subject to flooding.

Soil Features

These soils have silty clay subsoils at about 8 to 13 inches, which impede but do not exclude rooting. The soils were formed under a mixture of woodland and prairie vegetation, and have thin,

light-colored surface horizons. They have silt loam surface horizons, and silty clay to clay subsoils. Parent material is loess underlain by clayey alluvium. A seasonal high water table is perched above the clayey subsoil during the spring months in most years. Soil series associated with this site include Overcup.

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 historic reference community was a well-developed woodland with moderately tall trees (60 to 80 feet) and a semi open canopy (70 to 80 percent). Pin oak and willow oak are dominant species. The understory is rather open with scattered saplings and shrubs of possum haw and swamp privet, and a variable ground flora with dense patches of sedges interspersed with lower, wetter open areas.

Prior to floodplain management (levees and ditches), these areas were flooded occasionally. In most years, flood duration would have been rather short, occupying these sites for less than a month as waters receded to lower swamp positions. In addition to flooding, occasional fire during extreme dry periods also played a role in keeping woody species at bay. Extreme periods of inundation or drought, along with periodic fire kept the canopy open and ground flora well developed. It also allowed for periodic regeneration of canopy oaks.

Today most of these ecological sites have been drained and intensively farmed. Only a very few remnants exist. While their flood regime has been altered, their position and soil properties still make them prime candidates for bottomland woodland management. Where present, they often are much denser with limited ground flora or oak regeneration. Thinning, hydrologic restoration and perhaps some fire will play an important role in their management.

Although timber products are of limited value, logging does occur, and influences the community. Occasional partial cuts provide sunlight to the woodland floor, stimulating native woodland ground flora. However, in the absence of fire and continual cultural treatments, oaks sprout and grow into a dense stand, again shading out the sun-loving ground flora. Partial cutting and prescribed fire can, however, restore the more open structure and diversity of ground flora species. Managed areas show an exceptional resiliency. This type of management may provide timber products, wildlife habitat, and potential native forage.

Reference State Plant Community

Canopy Trees

Common Name	Botanical Name	Cover % (low-high)	Canopy Height (ft)
PIN OAK	*Quercus palustris*	20-30	80
WILLOW OAK	*Quercus phellos*	20-30	70
OVERCUP OAK	*Quercus lyrata*	5-10	70
CHERRYBARK OAK	*Quercus pagoda*	5-10	80
PERSIMMON	*Diospyros virginiana*	5-10	50
SWAMP RED MAPLE	*Acer rubrum v. drummondii*	10-20	60
GREEN ASH	*Fraxinus pennsylvanica*	10-20	60

Shrubs

Common Name	Botanical Name	Cover % (low-high)	Canopy Height (ft)
SWAMP PRIVET	*Forestiera acuminata*	5-20	10
POSSUM HAW	*Ilex decidua*	5-20	12

Forbs

Common Name	Botanical Name	Cover % (low-high)
GOLDEN ROD	*Euthamia leptocephala*	5-10
STIFF MARSH BEDSTRAW	*Galium tinctorium*	5-10
COMMON WATER HEMLOCK	*Cicuta maculata*	5-10
VIOLET WOOD SORREL	*Oxalis violacea*	5-10
MARSH PHLOX	*Phlox glaberrima*	5-10
CAROLINA SPIDER LILY	*Hymenocaallis caroliniana*	5-10
LIZARD'S TAIL	*Saururus cernuus*	5-10

Grasses and sedges

Common Name	Botanical Name	Cover % (low-high)
SHORELINE SEDGE	*Carex hyalinolepis*	5-20
HOP SEDGE	*Carex lupulina*	5-20
CATTAIL SEDGE	*Carex typhina*	5-20
FOX SEDGE	*Carex vulpinoidea*	5-20
SHORTBEAK SEDGE	*Carex brevior*	5-20
SLENDER SPIKERUSH	*Elocharis verrucosa*	5-20

Site Interpretations

Wildlife

- Tall emergent trees along with an uneven canopy structure and canopy gaps are important for heron colonies, eagle nesting, Mississippi kites, and other bird species. Large diameter and cavity trees are important.
- Important migratory songbird stopover sites.
- Ephemeral pools provide important amphibian breeding habitat.
- Bird species associated with early-successional Woodlands are Indigo Bunting, Willow Flycatcher, Common Yellowthroat, Blue-gray Gnatcatcher, Gray Catbird, Song Sparrow, and Yellow-breasted Chat. Bird species associated with mid-successional Woodlands are Indigo Bunting, Willow Flycatcher, Yellow Warbler, and Great Crested Flycatcher. Birds of late-successional Woodlands include Red-headed Woodpecker, Indigo Bunting, Yellow

Warbler, Eastern Wood-Pewee, Great Crested Flycatcher, Tree Swallow, Orchard Oriole, and Baltimore Oriole.

- Reptile and amphibian species associated with Bottomland Woodlands include tiger salamander, small-mouthed salamander, midland brown snake, gray treefrog, plains leopard frog, southern leopard frog, and western chorus frog.

Forestry

- Management: Site index values range from 71 for pecan, 86 for pin oak and 107 for cottonwood. 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 and high water table; 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 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. Unsurfaced roads and skid trails may be impassable during rainy periods. Restrict activities to dry periods or surfaced areas. The surface layer is firm when dry and sticky when wet and becomes cloddy if tilled. Seedling mortality may occur during the summer because of lack of adequate soil moisture.

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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