USDA Natural Resources
Conservation Service

Ecological site F116AY042MO
Sandy/Gravelly Floodplain Forest

Last updated: 9/24/2020
Accessed: 05/11/2025

General information

Provisional. A provisional ecological site description has undergone quality control and quality assurance review. It contains a working state and transition model and enough information to identify the ecological site.

Figure 1. Mapped extent

Areas shown in blue indicate the maximum mapped extent of this ecological site. Other ecological sites likely occur within the highlighted areas. It is also possible for this ecological site to occur outside of highlighted areas if detailed soil survey has not been completed or recently updated.

MLRA notes

Major Land Resource Area (MLRA): 116A–Ozark Highland

The Ozark Highland constitutes the Salem Plateau of the Ozark Uplift. Elevation ranges from about 300 feet on the southeast edge of the Ozark escarpment, to about 1,600 feet in the west, adjacent to the Burlington Escarpment of the Springfield Plateau. The underlying bedrock is mainly horizontally bedded Ordovician-aged dolomites and sandstones that dip gently away from the uplift apex in southeast Missouri. Cambrian dolomites are exposed on deeply dissected hillslopes. In some places, Pennsylvanian and Mississipian sediments overlie the plateau. Relief varies, from the gently rolling central plateau areas to deeply dissected hillslopes associated with drainageways such as the Buffalo, Current, Eleven Point and White Rivers.

Classification relationships

Terrestrial Natural Community Type in Missouri (Nelson, 2010):
The reference state for this ecological site is most similar to a Riverfront Forest.

Missouri Department of Conservation Forest and Woodland Communities (MDC, 2006):
The reference state for this ecological site is most similar to Riverfront Bottomland Forest.

National Vegetation Classification System Vegetation Association (NatureServe, 2010):

The reference state for this ecological site is most similar to Betula nigra - Platanus occidentalis Forest (CEGL002086).

Geographic relationship to the Missouri Ecological Classification System (Nigh and Schroeder, 2002):
This ecological site is widespread across the Ozark Highlands Section.

Ecological site concept

NOTE: This is a “provisional” Ecological Site Description (ESD) that is under development. It contains basic ecological information that can be used for conservation planning, application and land management. After additional information is collected, analyzed and reviewed, this ESD will be refined and published as “Approved”.

Sandy/Gravelly Floodplain Forests occur throughout the Ozark Highland along most streams. Soils are very gravelly, and subject to flooding. The reference plant community is a forest dominated by sycamore and eastern cottonwood.

Associated sites

F116AY011MO	**Chert Upland Woodland** Chert Upland Woodlands, and other upland and backslope ecological sites, are upslope.
F116AY034MO	**Loamy Terrace Forest** Loamy Terrace Forests are upslope.
F116AY035MO	**Wet Terrace Forest** Wet Terrace Forests are upslope.
F116AY039MO	**Loamy Floodplain Step Forest** Loamy Floodplain Step Forests are on higher floodplain surfaces, and flood less frequently. They may have more upland species in the forest community, and they are more likely to be cleared for pasture use.
F116AY041MO	**Loamy Floodplain Forest** Loamy Floodplain Forest sites have a higher water holding capacity. Flood velocities are generally not as high, so ground flora may be more developed. They are more likely to be cleared for pasture use. These sites often occur in a matrix with Sandy/Gravelly ecological sites.

Similar sites

F116AY041MO	**Loamy Floodplain Forest** Loamy Floodplain Forest sites have a higher water holding capacity. Flood velocities are generally not as high, so ground flora may be more developed. They are more likely to be cleared for pasture use. These sites often occur in a matrix with Sandy/Gravelly ecological sites.

Table 1. Dominant plant species

Tree	(1) *Platanus occidentalis* (2) *Populus deltoides*
Shrub	(1) *Salix interior* (2) *Vitis*
Herbaceous	(1) *Laportea canadensis*

Physiographic features

This site is on floodplains with slopes of 0 to 3 percent. This ecological site is generally on the lowest floodplain directly adjacent to the stream channel, but also occurs along abandoned channels farther from the active stream channel. The site receives some runoff from higher floodplains, stream terraces and uplands. This site is subject to frequent flooding.

The following figure (adapted from Simmons et al, 2006) shows the typical landscape position of this ecological site, and landscape relationships with other ecological sites. It is within the area labeled “5” on the figure, directly adjacent to the stream channel. Sandy/Gravelly Floodplain Forest sites are typically associated with Floodplain

Step sites, labeled “4”, and with Terrace sites, labeled “3”.

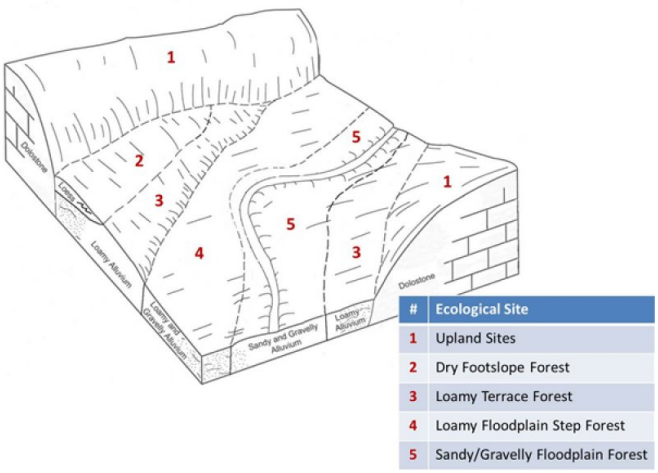


Figure 2. Landscape relationships for this ecological site.

Table 2. Representative physiographic features

Landforms	(1) Flood plain
Flooding duration	Very brief (4 to 48 hours) to brief (2 to 7 days)
Flooding frequency	Occasional to frequent
Ponding frequency	None
Slope	0–3%
Water table depth	60 in
Aspect	Aspect is not a significant factor

Climatic features

The Ozark Highland has a continental type of climate marked by strong seasonality. In winter, dry-cold air masses, unchallenged by any topographic barriers, periodically swing south from the northern plains and Canada. If they invade reasonably humid air, snowfall and rainfall result. In summer, moist, warm air masses, equally unchallenged by topographic barriers, swing north from the Gulf of Mexico and can produce abundant amounts of rain, either by fronts or by convectional processes. In some summers, high pressure stagnates over the region, creating extended droughty periods. Spring and fall are transitional seasons when abrupt changes in temperature and precipitation may occur due to successive, fast-moving fronts separating contrasting air masses.

The Ozark Highland experiences regional differences in climates, but these differences do not have obvious geographic boundaries. Regional climates grade inconspicuously into each other. The basic gradient for most climatic characteristics is along a line crossing the MLRA from northwest to southeast.
The average annual precipitation in almost all of this area is 38 to 45 inches. Snow falls nearly every winter, but the snow cover lasts for only a few days. The average annual temperature is about 53 to 60 degrees F. The lower temperatures occur at the higher elevations in the western part of the MLRA. Mean January minimum temperature follows a stronger north-to-south gradient. However, mean July maximum temperature shows hardly any geographic variation in the MLRA. Mean July maximum temperatures have a range of only two or three degrees across the area.

Mean annual precipitation varies along a northwest to southeast gradient. Seasonal climatic variations are more complex. Seasonality in precipitation is very pronounced due to strong continental influences. June precipitation, for example, averages three to four times greater than January precipitation. Most of the rainfall occurs as high-intensity, convective thunderstorms in summer.

During years when precipitation comes in a fairly normal manner, moisture is stored in the top layers of the soil during the winter and early spring, when evaporation and transpiration are low. During the summer months the loss

of water by evaporation and transpiration is high, and if rainfall fails to occur at frequent intervals, drought will result. Drought directly affects plant and animal life by limiting water supplies, especially at times of high temperatures and high evaporation rates.

Superimposed upon the basic MLRA climatic patterns are local topographic influences that create topoclimatic, or microclimatic variations. In regions of appreciable relief, for example, air drainage at nighttime may produce temperatures several degrees lower in valley bottoms than on side slopes. At critical times during the year, this phenomenon may produce later spring or earlier fall freezes in valley bottoms. Deep sinkholes often have a microclimate significantly cooler, moister, and shadier than surrounding surfaces, a phenomenon that may result in a strikingly different ecology. Higher daytime temperatures of bare rock surfaces and higher reflectivity of these unvegetated surfaces may create distinctive environmental niches such as glades and cliffs.

Slope orientation is an important topographic influence on climate. Summits and south-and-west-facing slopes are regularly warmer and drier than adjacent north- and-east-facing slopes. Finally, the climate within a canopied forest is measurably different from the climate of a more open grassland or savanna areas.

Source: University of Missouri Climate Center - http://climate.missouri.edu/climate.php; Land Resource Regions and Major Land Resource Areas of the United States, the Caribbean, and the Pacific Basin, United States Department of Agriculture Handbook 296 - http://soils.usda.gov/survey/geography/mlra/

Table 3. Representative climatic features

Frost-free period (characteristic range)	151-168 days
Freeze-free period (characteristic range)	187-201 days
Precipitation total (characteristic range)	45-49 in
Frost-free period (actual range)	142-173 days
Freeze-free period (actual range)	182-206 days
Precipitation total (actual range)	43-51 in
Frost-free period (average)	159 days
Freeze-free period (average)	194 days
Precipitation total (average)	47 in

Climate stations used

- (1) MTN HOME 1 NNW [USC00035036], Mountain Home, AR
- (2) LICKING 4N [USC00234919], Licking, MO
- (3) FESTUS [USC00232850], Crystal City, MO
- (4) STILWELL 5 NNW [USC00348506], Stilwell, OK

Influencing water features

This ecological site is typically in natural levee positions directly adjacent to a perennial stream. Stream levels typically respond quickly to storm events, especially in watersheds where surface runoff is dominant. Short- to medium- duration flooding is common in many areas, particularly during spring and early summer storm events. Constructed levees, often accompanied by stream channelization, have altered the hydrology and flooding dynamics in many places.

This site is in the RIVERINE class of the Hydrogeomorphic (HGM) classification system (Brinson, 1993). The stream hydrograph drives the inflows and outflows of RIVERINE wetlands. Water moves into floodplain wetlands as surface water during flood stage, or as groundwater exchange from the stream channel to the floodplain during high flow stages. As the flood stage recedes, surface and groundwater return to the channel. The direction of movement is horizontal. The direction is also bi-directional in the lateral axis across the floodplain but is unidirectional on the longitudinal axis parallel to the valley as water flows downhill along the valley gradient. In floodplains with high permeability sands and gravels, the volume of flow in the lateral and longitudinal directions is quite large and can

exceed the volume of stream flow in the active channel.

Cowardin wetland types (Cowardin et al., 1979), include: Palustrine Emergent Temporarily Flooded and Seasonally Flooded

Soil features

These soils have low plant-available water capacity, due to an abundance of coarse fragments. They were formed under forest vegetation, with periodic depositional flood events. Organic matter content is variable. Parent material is alluvium. They have sandy loam, loam or silt loam surface horizons that are gravelly to very gravelly in places, and sandy or loamy subsoils that are generally skeletal. They are not affected by seasonal wetness. Soil series associated with this site include Batcave, Bloomsdale, Cedargap, Elsah, Huzzah, Kaintuck, Midco, Perche, Pinerun, Relfe, Riverwash, Sandbur, Tilk, and Wideman.

The accompanying picture of the Cedargap series shows the abundant gravel and cobble content that characterizes these skeletal soils. Scale is in feet. Picture courtesy of John Preston, NRCS.

Figure 9. Cedargap series

Table 4. Representative soil features

Parent material	(1) Alluvium
Surface texture	(1) Very gravelly sandy loam (2) Gravelly loam (3) Silt loam
Family particle size	(1) Sandy
Drainage class	Well drained to excessively drained
Permeability class	Slow to moderately rapid
Soil depth	72 in
Surface fragment cover <=3"	0–75%
Surface fragment cover >3"	0–2%
Available water capacity (0-40in)	1–6 in
Calcium carbonate equivalent (0-40in)	0%
Electrical conductivity (0-40in)	0–2 mmhos/cm
Sodium adsorption ratio (0-40in)	0

Soil reaction (1:1 water) (0-40in)	5.1–7.8
Subsurface fragment volume <=3" (Depth not specified)	20–75%
Subsurface fragment volume >3" (Depth not specified)	0–5%

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.

Interior Ozark streams are generally high-gradient, with frequent, flashy floods after significant rainfall events. Flooding of Sandy/Gravelly Floodplain Forests typically occurs annually or at least once every three years. Cherty gravel and sandy sediments, originating from the predominance of cherty dolomites and sandstone strata in the surrounding uplands, make up a significant portion of the alluvium in most Interior Ozark floodplains. These materials are normally deposited near the stream where fast-moving waters can carry and release them. Gravel bar succession to forest is dominated by flood tolerant, pioneer tree species such as sycamore, eastern cottonwood and willow. Young stands of these species stabilize the floodplain gravel bars, and continue to trap coarse-textured floodwater sediments.

Consequently, many Sandy/Gravelly 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, finer sediments accumulate on the forest floor, and a dense ground flora of grasses and nettles develops. Over time, the local stream may down-cut into the floodplain or meander away from the site, thereby altering the flooding regime. The lower frequency of floods and slower floodwaters results in deposition of loamy sediments. Ultimately, shade tolerant elm, ash, and hackberry will accumulate in the understory and the forest may succeed to a Loamy Floodplain Forest ecological site dominated by these species. However, catastrophic floods will often partially or completely knock down the early successional species and regenerate the ecological site. Consequently, this site is typically a mosaic of early to late successional floodplain forest.

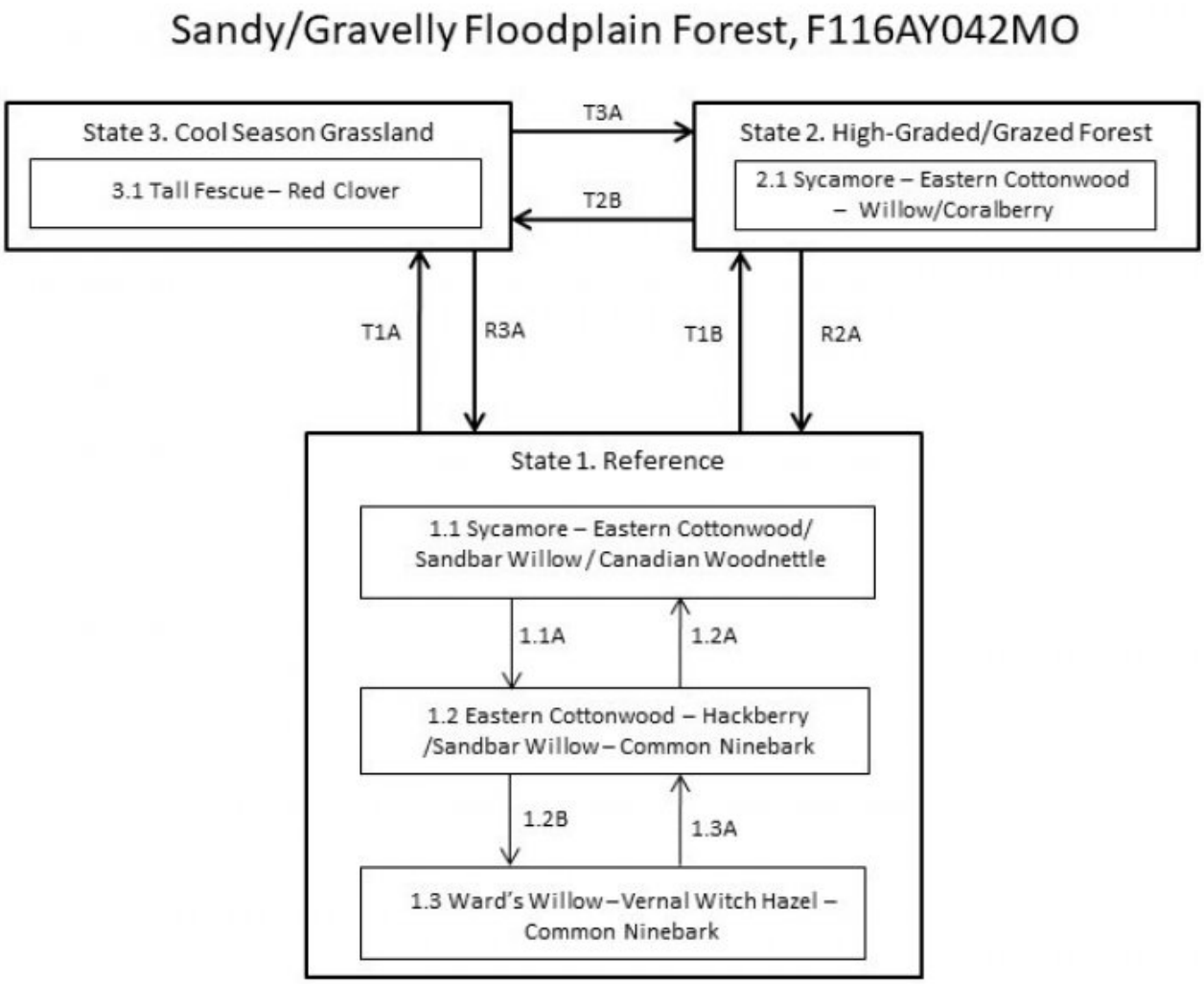
Today many Sandy/Gravelly Floodplain Forests in Missouri have been cleared and converted to agriculture and are often cleared right up to the bank. In such cases, severe flooding may cause stream bank erosion and complete loss of this ecological site. Grazing by domestic livestock in the remaining strips of forest, can also kill trees and remove the ground cover, resulting in de-stabilization and potential loss of this ecological site as well.

Remaining remnants still exist along un-leveed areas and within levees. They often occur as a rather narrow band of trees and shrubs traversing the stream 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.

A State and Transition Diagram follows. Detailed descriptions of each state, transition, plant community, and pathway follow the model. This model is based on available experimental research, field observations, professional consensus, and interpretations. It is likely to change as knowledge increases.

State and transition model



Code	Event/Activity
T1A, T2B	Clearing; pasture planting; prescribed grazing; hayland management
T1B	Poorly planned harvest (high grading); uncontrolled grazing
T3A	Uncontrolled grazing; woody invasion (+20-40 years)
R2A	Grazing exclusion; access control; tree planting; forest stand improvement
R3A	Tree planting; long term succession (+50-70 years)
1.1A	Flooding disturbance
1.2A	No flooding disturbance
1.2B	Severe streambank and channel instability and erosion
1.3A	Long-term stability; reduction in flood regime intensity

Figure 10. State and transition diagram for this ecological site

State 1

Reference

Sandy/Gravelly Floodplain Forests are dominated by mature sycamore and/or eastern cottonwood. While these species can occur together, sycamores tend to dominate the smaller, higher energy streams with more gravel, while cottonwoods are more dominant on larger rivers with less gravel. Maximum tree age, historically, was probably about 100 years. However, patches of younger, early successional trees and shrubs occur mainly along the flood-prone edges or interior high-water channels of the mature forest. Willows are common in the younger patches and persist along the edges of the mature forest where there is more light. Younger patches tend to occur on recently deposited sands and gravels, and have a sparse understory. These gravel bars and intermittent stream channels are in the early stages of ecological succession, and are typically on point bar deposits. They are characterized by a sparse to abundant ground cover of grasses and forbs. Shrubs such as coastal plain willow, Ozark witchhazel and common ninebark can create a 100 percent cover in places, and tree seedlings of cottonwood are common. Frequent, high-velocity flood events deposit fresh sand and gravel in places, often derived from stream bank erosion of upstream sites in States 2 or 3. Other places are scoured by these flood events. As the stream meanders farther away from these sites, flooding events decrease in frequency and intensity, and the state will gradually develop into the early seral Sandy/Gravelly Floodplain Forest community. Mature forest phases have a more stable surface with a dense ground flora of wildrye, spikegrass and nettle. Dense tangles of vines can also occur, especially associated with canopy gaps. Slippery elm, green ash and hackberry also succeed into the canopy gaps.

Community 1.1
Sycamore – Cottonwood/ Sandbar Willow / Canadian Woodnettle

Figure 11. Reference phase at Shaw Nature Reserve, Franklin County, MO; photo credit MDC.

This phase is dominated by mature sycamore and eastern cottonwood. While these species can occur together, sycamores tend to dominate the smaller, higher energy streams with more gravel, while eastern cottonwood is more dominant on larger rivers with less gravel.

Forest overstory. The Overstory Species list is based on field reconnaissance as well as commonly occurring species listed in Nelson 2010; names and symbols are from USDA PLANTS database.

Forest understory. The Understory Species list is based on field reconnaissance as well as commonly occurring species listed in Nelson 2010; names and symbols are from USDA PLANTS database.

Community 1.2
Cottonwood –Hackberry/Sandbar Willow - Ninebark

These mature forest phases have a more stable surface with a dense ground flora of wildrye, spikegrass and nettle. Dense tangles of vines can also occur, especially associated with canopy gaps. Slippery elm, green ash and hackberry also succeed into these canopy gaps.

Community 1.3
Ward’s Willow – Vernal Witch Hazel – Common Ninebark

Patches of younger, early successional trees and shrubs occur mainly along the flood-prone edges or interior high-water channels of the mature forest. Willows are common in the younger patches and persist along the edges of the mature forest where there is more light. Younger patches tend to occur on recently deposited sands and gravels, and have a sparse understory.

Pathway P1.1A
Community 1.1 to 1.2

Flooding disturbance

Pathway P1.2A
Community 1.2 to 1.1

No flooding disturbance

Pathway P1.2B
Community 1.2 to 1.3

Severe streambank and channel instability and erosion

Pathway P1.3A
Community 1.3 to 1.2

Long-term stability; reduction in flood regime intensity

State 2
High-Graded/Grazed Forest

Sandy/Gravelly Floodplain Forest reference sites subjected to repeated, high-graded timber harvests and domestic grazing transition to this state. This state exhibits an over-abundance of less desirable tree species, and weedy understory species such as coralberry. The vegetation offers little nutritional value for cattle, and excessive stocking damages tree boles, degrades understory species composition, destabilizes stream banks and results in soil compaction and accelerated erosion and runoff during flood events. Restoration of the riverfront forest can be facilitated by exclusion of cattle coupled with tree planting.

Community 2.1
Sycamore – Eastern Cottonwood – Willow/Coralberry

State 3
Cool Season Grassland

Conversion of Sandy/Gravelly Floodplain Forest ecological sites to planted, non-native pasture species such as tall fescue can occur in the Ozark highlands. Frequent flooding and low available water capacity make non-native pastures difficult to maintain in a healthy, productive state on this ecological site. Restoration of the Sandy/Gravelly Floodplain Forests can be achieved over time by discontinuing grazing and active pasture management and allowing natural woody succession to occur. Tree planting, especially to bring in desired species, may be necessary.

Community 3.1
Tall Fescue/Red Clover

This is an herbaceous community that is typically dominated by tall fescue. Various other grass and forb species are typically present, in various amounts. Shrub and pioneer tree species such as sycamore and cottonwood typically invade sites that are not regularly managed.

Transition T1B

State 1 to 2

Poorly planned harvest (high grading); uncontrolled grazing

Transition T1A
State 1 to 3

Clearing; pasture planting; prescribed grazing; hayland management

Restoration pathway R2A
State 2 to 1

The Riverfront Forest can be restored if cattle are excluded from the forest, timber harvest is discontinued and timber stand improvement, including tree planting, is implemented.

Transition T2B
State 2 to 3

This transition is the result of clearing the forest community and planting pasture species or crops.

Restoration pathway R3A
State 3 to 1

The Early Seral Riverfront Forest can be restored if pasture management and grazing are terminated and tree planting is implemented.

Restoration pathway T3A
State 3 to 2

Uncontrolled grazing; woody invasion (+20-40 years)

Additional community tables

Table 5. Community 1.1 forest overstory composition

Common Name	Symbol	Scientific Name	Nativity	Height (Ft)	Canopy Cover (%)	Diameter (In)	Basal Area (Square Ft/Acre)
Tree							
American sycamore	PLOC	*Platanus occidentalis*	Native	–	–	–	–
silver maple	ACSA2	*Acer saccharinum*	Native	–	–	–	–
common hackberry	CEOC	*Celtis occidentalis*	Native	–	–	–	–
green ash	FRPE	*Fraxinus pennsylvanica*	Native	–	–	–	–
boxelder	ACNE2	*Acer negundo*	Native	–	–	–	–
eastern cottonwood	PODE3	*Populus deltoides*	Native	–	–	–	–
bur oak	QUMA2	*Quercus macrocarpa*	Native	–	–	–	–
American elm	ULAM	*Ulmus americana*	Native	–	–	–	–
Shumard's oak	QUSH	*Quercus shumardii*	Native	–	–	–	–
sugar maple	ACSA3	*Acer saccharum*	Native	–	–	–	–
sugarberry	CELA	*Celtis laevigata*	Native	–	–	–	–
shellbark hickory	CALA21	*Carya laciniosa*	Native	–	–	–	–
river birch	BENI	*Betula nigra*	Native	–	–	–	–
black willow	SANI	*Salix nigra*	Native	–	–	–	–

Table 6. Community 1.1 forest understory composition

Common Name	Symbol	Scientific Name	Nativity	Height (Ft)	Canopy Cover (%)
Grass/grass-like (Graminoids)					
Virginia wildrye	ELVI3	*Elymus virginicus*	Native	–	5–75
giant cane	ARGI	*Arundinaria gigantea*	Native	–	10–25
Indian woodoats	CHLA5	*Chasmanthium latifolium*	Native	–	0.1–2
rock muhly	MUSO	*Muhlenbergia sobolifera*	Native	–	1–2
Canada wildrye	ELCA4	*Elymus canadensis*	Native	–	0–1
hairy wildrye	ELVI	*Elymus villosus*	Native	–	–
scouringrush horsetail	EQHY	*Equisetum hyemale*	Native	–	–
Forb/Herb					
Canadian woodnettle	LACA3	*Laportea canadensis*	Native	–	–
cutleaf coneflower	RULA3	*Rudbeckia laciniata*	Native	–	–
wingstem	VEAL	*Verbesina alternifolia*	Native	–	–
common blue violet	VISO	*Viola sororia*	Native	–	–
jumpseed	POVI2	*Polygonum virginianum*	Native	–	–
giant goldenrod	SOGI	*Solidago gigantea*	Native	–	–
Canadian clearweed	PIPU2	*Pilea pumila*	Native	–	–
calico aster	SYLAA	*Symphyotrichum lateriflorum var. angustifolium*	Native	–	–
lateflowering thoroughwort	EUSE2	*Eupatorium serotinum*	Native	–	–
American ginseng	PAQU	*Panax quinquefolius*	Native	–	–
stinging nettle	URDI	*Urtica dioica*	Native	–	–
smooth Solomon's seal	POBI2	*Polygonatum biflorum*	Native		

smooth Solomon's seal	POBI2	*Polygonatum biflorum*	Native	–	–
blue mistflower	COCO13	*Conoclinium coelestinum*	Native	–	–
Canadian honewort	CRCA9	*Cryptotaenia canadensis*	Native	–	–
browneyed Susan	RUTR2	*Rudbeckia triloba*	Native	–	–
American bellflower	CAAM18	*Campanulastrum americanum*	Native	–	–
white crownbeard	VEVI3	*Verbesina virginica*	Native	–	–
Virginia threeseed mercury	ACVI	*Acalypha virginica*	Native	–	–
smallspike false nettle	BOCY	*Boehmeria cylindrica*	Native	–	–
jumpseed	POVI2	*Polygonum virginianum*	Native	–	–
Shrub/Subshrub					
northern spicebush	LIBE3	*Lindera benzoin*	Native	–	–
silky dogwood	COOB9	*Cornus obliqua*	Native	–	–
Virginia creeper	PAQU2	*Parthenocissus quinquefolia*	Native	–	–
stiff dogwood	COFO	*Cornus foemina*	Native	–	–
common ninebark	PHOP	*Physocarpus opulifolius*	Native	–	–
Ozark witchhazel	HAVE2	*Hamamelis vernalis*	Native	–	–
peachleaf willow	SAAM2	*Salix amygdaloides*	Native	–	–
narrowleaf willow	SAEX	*Salix exigua*	Native	–	–
Vine/Liana					
Virginia creeper	PAQU2	*Parthenocissus quinquefolia*	Native	–	–
eastern poison ivy	TORA2	*Toxicodendron radicans*	Native	–	–
heartleaf peppervine	AMCO2	*Ampelopsis cordata*	Native	–	–
graybark grape	VICI2	*Vitis cinerea*	Native	–	–
riverbank grape	VIRI	*Vitis riparia*	Native	–	–
frost grape	VIVU	*Vitis vulpina*	Native	–	–
trumpet creeper	CARA2	*Campsis radicans*	Native	–	–

Animal community

Wildlife (MDC 2006):

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 treefrog, and southern leopard frog.

Other information

Forestry (NRCS 2002, 2014):

Management: Field measured site index values range from 47 to 66 for oak and 57 to 90 for non-oak species. 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: Wetness from short duration flooding; coarse fragments in profile. The use of equipment may be restricted in spring and other excessively wet periods. Disturbing the surface excessively in harvesting operations and building roads increases soil losses, which may leave a greater amount of coarse fragments on the surface. Tree planting is difficult during spring flooding periods. Mechanical tree planting may be limited due to coarse fragments on surface.

Inventory data references

Potential Reference Sites: Sandy/Gravelly Floodplain Forest

Plot SHNAMB02 – Kaintuck soil
Located in Shaw Nature Reserve, MOBOT, Franklin County, MO
Latitude: 38.460822
Longitude: -90.815817

Plot HUZZCA07 – Sandbur soil
Located in Huzzah CA, Crawford County, MO
Latitude: 38.024778
Longitude: -91.210868

Plot MERASP05 - Kaintuck soil
Located in Meramec State Park, Franklin County, MO
Latitude: 38.238337
Longitude: -91.082564

Plot TUBLFS01 – Sandbur soil
Located in Tunnel Bluff Natural Area, MTNF, USFS, Ripley County, MO
Latitude: 36.48439
Longitude: -90.5102

Plot WOWOCA02 – Sandbur soil
Located in Woodson K. Woods CA, Crawford County, MO
Latitude: 37.967013
Longitude: -91.521568

Other references

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Approval

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Rangeland health reference sheet

Interpreting Indicators of Rangeland Health is a qualitative assessment protocol used to determine ecosystem condition based on benchmark characteristics described in the Reference Sheet. A suite of 17 (or more) indicators are typically considered in an assessment. The ecological site(s) representative of an assessment location must be known prior to applying the protocol and must be verified based on soils and climate. Current plant community cannot be used to identify the ecological site.

Author(s)/participant(s)	
Contact for lead author	
Date	05/11/2025
Approved by	Nels Barrett
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:**

2. **Presence of water flow patterns:**

3. **Number and height of erosional pedestals or terracettes:**

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):**

5. **Number of gullies and erosion associated with gullies:**

6. **Extent of wind scoured, blowouts and/or depositional areas:**

7. **Amount of litter movement (describe size and distance expected to travel):**

8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):**

9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):**

10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:**

11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):**

12. **Functional/Structural Groups (list in order of descending dominance by above-ground annual-production or live foliar cover using symbols: >>, >, = to indicate much greater than, greater than, and equal to):**

    Dominant:

    Sub-dominant:

    Other:

    Additional:

13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):**

14. **Average percent litter cover (%) and depth (in):**

15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):**

16. **Potential invasive (including noxious) species (native and non-native). List species which BOTH characterize degraded states and have the potential to become a dominant or co-dominant species on the ecological site if their future establishment and growth is not actively controlled by management interventions. Species that become dominant for only one to several years (e.g., short-term response to drought or wildfire) are not invasive plants. Note that unlike other indicators, we are describing what is NOT expected in the reference state for the ecological site:**

17. **Perennial plant reproductive capability:**