USDA Natural Resources Conservation Service

Ecological site F115XB031MO
Loamy Floodplain Forest

Accessed: 05/19/2024

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): 115X–Central Mississippi Valley Wooded Slopes

The Central Mississippi Valley Wooded Slopes, Western Part (area outlined in red on the map) consists mainly of the deeply dissected, loess-covered hills bordering the Missouri and Mississippi Rivers as well as the floodplains and terraces of these rivers. It wraps around the northeast corner of the Ozark Uplift, and constitutes the southern border of the Pre-Illinoisan-aged till plain. Elevation ranges from about 320 feet along the Mississippi River near Cape Girardeau in the south to about 1,020 feet on the highest ridges near Hillsboro, MO in the east. Local relief varies from 10 to 20 feet in the major river floodplains, to 50 to 100 feet in the dissected uplands, with bluffs of 200 to 350 feet along the Mississippi and Missouri Rivers. Underlying bedrock is mainly Ordovician-aged dolomite and sandstone, with Mississippian-aged limestone north of the Missouri River.

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 a Riverfront Bottomland Forest.

National Vegetation Classification System Vegetation Association (NatureServe, 2010):
The reference state for this ecological site is most similar to a Fraxinus pennsylvanica - Celtis spp. - Quercus spp. - Platanus occidentalis Bottomland Forest (CEGL002410).

Geographic relationship to the Missouri Ecological Classification System (Nigh & Schroeder, 2002):
This ecological site occurs primarily in Land Type Associations of the following Subsections:
Inner Ozark Border
Outer Ozark Border
Mississippi River Hills

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”.

Loamy Floodplain Forests (green areas on the map) are widely distributed on the tributary floodplains of the

Missouri and Mississippi Rivers. Sites are typically associated with a variety of upland drainageway, terrace and footslope ecological sites in the secondary stream valleys. Soils are loamy and very deep, and are subject to frequent flooding. The reference plant community is forest dominated by American elm, hackberry, sycamore, eastern cottonwood, and green ash.

Associated sites

F115XB015MO	**Sandy/Loamy Floodplain Forest** Sandy/Loamy Floodplain Forests sometimes form a complex with this ecological site.
F115XB041MO	**Clayey Floodplain Forest** Clayey Floodplain Forests are commonly adjacent to Loamy Floodplain Forests, but farther away from the main channel.
R115XB042MO	**Ponded Floodplain Prairie** Ponded Floodplain Prairies are in the lowest former channel areas that have high seasonal water tables with some ponding.

Similar sites

F115XB028MO	**Loamy/Gravelly Upland Drainageway Forest** Loamy/Gravelly Upland Drainageway Forests are upstream, in narrow drainageways. The reference state woodland community in the Upland Drainageways contains more upland species, such as white oak and mockernut hickory.

Table 1. Dominant plant species

Tree	(1) *Ulmus americana* (2) *Celtis occidentalis*
Shrub	(1) *Vitis* (2) *Staphylea trifolia*
Herbaceous	(1) *Carex* (2) *Laportea canadensis*

Physiographic features

This site is on low floodplains with slopes of 0 to 3 percent. The site receives some runoff from higher floodplains, stream terraces and uplands. This site is subject to frequent flooding.

The following figure (adapted from Davis, 2004) shows the typical landscape position of this ecological site on floodplains of major tributaries to the Missouri and Mississippi rivers. This site is within the area labeled as “3” on the figure, and is typically adjacent to the river channel in these tributary systems.

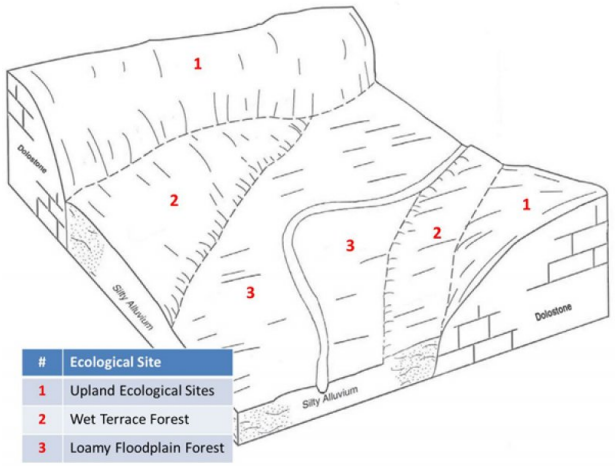


Figure 2. Landscape relationships for this ecological site.

Table 2. Representative physiographic features

Landforms	(1) Flood plain
Flooding duration	Very brief (4 to 48 hours) to long (7 to 30 days)
Flooding frequency	Frequent
Ponding frequency	None
Slope	0–3%
Water table depth	15–152 cm
Aspect	Aspect is not a significant factor

Climatic features

The Central Mississippi Valley Wooded Slopes, Western Part 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 Central Mississippi Valley Wooded Slopes, Western Part 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 diagonally crossing the MLRA from northwest to southeast. Both mean annual temperature and precipitation exhibit gradients along this line.

The average annual precipitation in most of this area is 38 to 48 inches. The average annual temperature is 53 to 57 degrees F. Mean January minimum temperature follows the northwest-to-southeast 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 the same gradient as temperature. 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. Snowfall is common in winter.

During years when precipitation is normal, moisture is stored in the soil profile 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. Higher daytime temperatures of bare rock surfaces and higher reflectivity of these unvegetated surfaces create characteristic glade and cliff ecological sites. 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 ecological site is measurably different from the climate of the more open grassland or savanna ecological sites.

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 (average)	177 days
Freeze-free period (average)	198 days
Precipitation total (average)	1,143 mm

Climate stations used

- (1) CAPE GIRARDEAU MUNI AP [USW00003935], Chaffee, MO
- (2) ALTON MELVIN PRICE L&D [USC00110137], West Alton, IL
- (3) KASKASKIA RVR NAV LOCK [USC00114629], Ellis Grove, IL
- (4) BOONVILLE [USC00230817], Boonville, MO
- (5) ELSBERRY 1 S [USC00232591], Elsberry, MO
- (6) JEFFERSON CITY WTP [USC00234271], Jefferson City, MO

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. Streambeds that are typically incised into the surrounding floodplain by as much as 10 feet may be a sign of an alternative state.

Some soils in this ecological site have seasonal water tables in the winter and spring, generally receding with the falling river levels in the early summer. In most areas the water table has a minimal effect on the vegetative community.

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 uni-directional on the longitudinal axis parallel to the valley as water flows downhill along the valley gradient.

Soil features

These soils have no rooting restriction. They were formed under forest vegetation, with periodic depositional flood events. Organic matter content is variable. Parent material is alluvium. They have silt loam surface horizons, and loamy subsoils that may be skeletal with depth. Some soils are affected by seasonal wetness. Soil series associated with this site include Arenzville, Armiesburg, Coffeen, Dameron, Dockery, Dupo, Haymond, Jamesfin, Medway, Motark, Orion, Perche, Racket, Riley, Sensabaugh, Sharon, Wakeland, Wilbur, and Wirt.

The accompanying picture of the Dameron series shows dark, loamy alluvium, underlain by stratified very gravelly sediments. Picture from Baker (1998).

Figure 7. Dameron series

Table 4. Representative soil features

Surface texture	(1) Silt loam
Family particle size	(1) Loamy
Drainage class	Poorly drained to well drained
Permeability class	Moderately slow to moderate
Soil depth	183 cm
Surface fragment cover <=3"	0–3%
Surface fragment cover >3"	0–3%
Available water capacity (0-101.6cm)	12.7–20.32 cm
Calcium carbonate equivalent (0-101.6cm)	0%
Electrical conductivity (0-101.6cm)	0–2 mmhos/cm
Sodium adsorption ratio (0-101.6cm)	0
Soil reaction (1:1 water) (0-101.6cm)	4.5–7.3
Subsurface fragment volume <=3" (Depth not specified)	0–50%
Subsurface fragment volume >3" (Depth not specified)	0–6%

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 plant community is a forest dominated by an overstory of American elm and hackberry with sycamore, eastern cottonwood, green ash and other early successional species scattered throughout. Occasionally, bur oak, shellbark hickory, black walnut and other hardwood species may occur in later stages of development.

Canopy height is 85 to 110 feet with a canopy closure of 80 to 100 percent.

Loamy Floodplain Riverfront Forests were a common natural community on the Missouri and Mississippi River floodplains. They occur on natural levees and low floodplains that flood frequently. Flooding of these ecological sites commonly occurs annually or at least once every 3 years. Loamy sediments, originating from the loess and till in the surrounding uplands, make up a significant portion of the alluvium in these floodplains.

The forest is dominated by flood tolerant, tree species such as elm, hackberry, sycamore, cottonwood and green ash. Young stands of these species tend to stabilize the low floodplain and continue to accumulate loamy materials. Consequently, these developing 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 elevated and/or isolated and begin to accumulate more fine sediments, becoming more stable and enduring. Oaks, shellbark hickory and black walnut begin to accumulate in these later stages of succession. Catastrophic floods will often partially or completely knock down the earlier species and regenerate this site creating a mosaic of early to late successional floodplain forests.

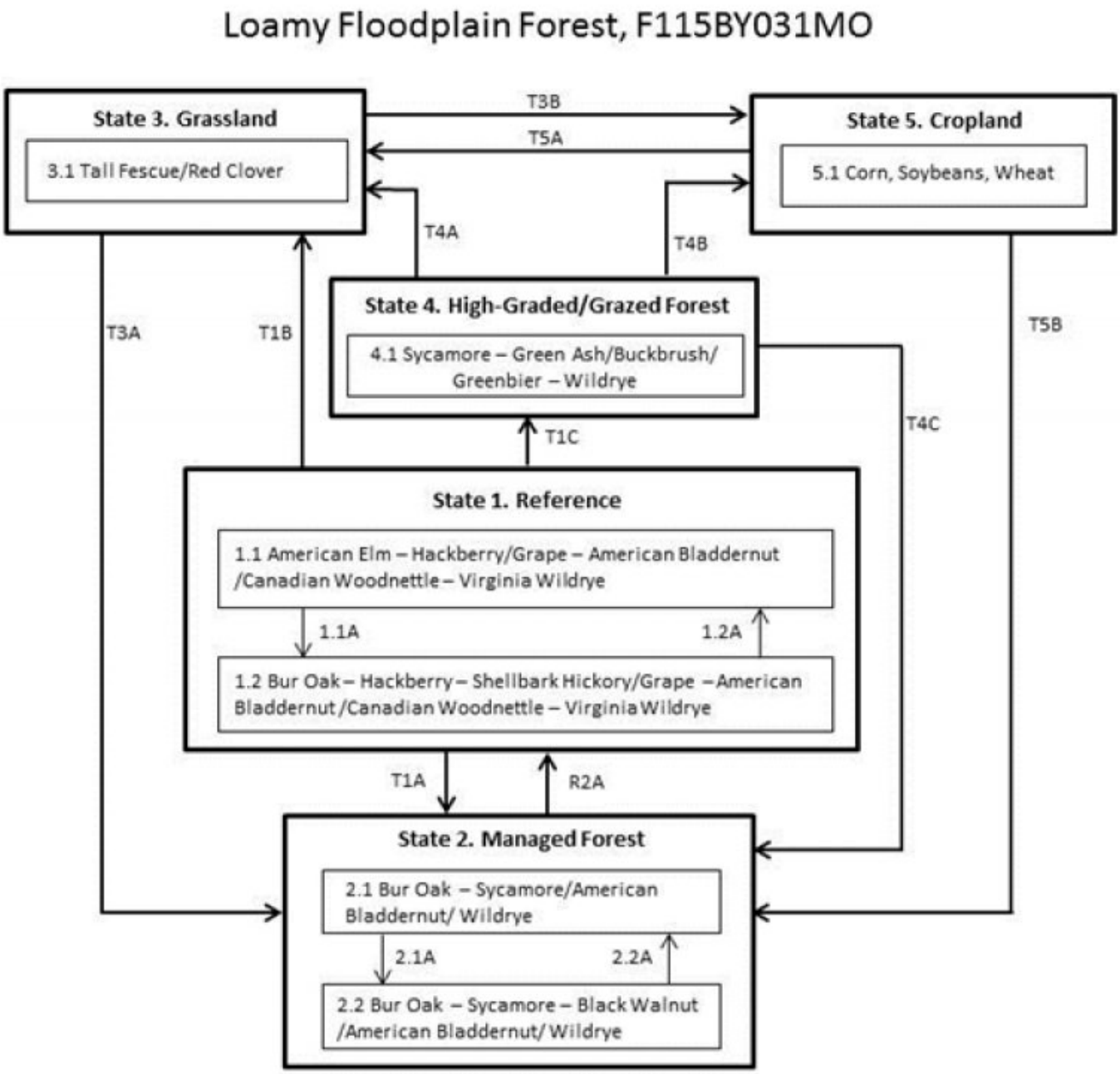
These sites are very productive. Today most of these ecological sites have been cleared and converted to agriculture. While some cleared fields have retained a narrow strip of forest along the river, other sites are often cleared right up to the bank. In such cases, flooding may cause severe stream bank erosion.

Uncontrolled grazing by domestic livestock in the remaining strips of forest is not uncommon and can cause significant damage, killing trees and removing the ground cover, resulting in further 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.

Loamy Floodplain Forests, generally occurring as a rather narrow band of forests traversing the river edge, are an abundant floodplain forest type. These bands of forest still 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 systems.

A State and Transition Diagram is depicted in Figure 1follows. 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/Process
T1A	Uneven-age timber management; harvesting
T1B, T4A	Clearing; pasture planting; prescribed grazing
T5A	Pasture planting; prescribed grazing
T1C	Poorly planned harvest (high-grading); uncontrolled grazing
T3B	Tillage; conservation cropping system
T4B	Clearing; tillage; conservation cropping system
T3A, T5B	Tree planting; long-term succession (+30-50 years); forest stand improvement; access control
T4C	Forest stand improvement; access control
R2A	Forest stand improvement; long term succession (+10-20 years)
1.1A	Long term succession (+10-30 years); sediment accumulation
1.2A	Catastrophic flood: blow-down
2.1A	Crop Tree Release; little to no harvesting (10-20 years)
2.2A	Uneven-age timber management; harvesting

Figure 8. State and transition diagram for this ecological s

State 1

Reference

The historical reference state for this ecological site was old growth bottomland forest. Natural flooding cycles were the primary processes affecting this ecologic site. Maximum tree age was likely 150 to 200 years. The understory was complex, with multiple layers of shade-tolerant species. A highly diverse ground flora was also present. Vines were common and went well into the canopy. Scattered open areas were common. A change to more frequent, higher-intensity floods on the modern landscape creates more frequent canopy gaps, and introduces or helps to maintain more flood-tolerant species such as sycamore, eastern cottonwood, green ash and hackberry. Over the long term, these floodplains may become more elevated and/or isolated and accumulate more fine sediments, becoming more stable and enduring. Oaks, shellbark hickory and black walnut begin to accumulate in these later stages of succession. Catastrophic floods will often partially or completely knock down the early species and regenerate this site creating a mosaic of early to late successional floodplain forests.

Community 1.1
American Elm – Hackberry/Grape – American Bladdernut /Canadian Woodnettle – Virginia Wildrye

This community phase is characterized by frequent flood events which impact on the canopy structure and species composition. Old growth species such as sycamore, eastern cottonwood, American elm and hackberry are common.

Forest overstory. The Overstory Species list is based on field surveys and commonly occurring species listed in Nelson (2010).

Forest understory. The Understory Species list is based on field surveys and commonly occurring species listed in Nelson (2010).

Community 1.2
Bur Oak – Hackberry – Shellbark Hickory/Grape – American Bladdernut /Canadian Woodnettle – Virginia

Over the long term, phase 1.1 may become more elevated and/or isolated and accumulate more sediments, becoming more stable and enduring. Oaks, shellbark hickory and black walnut begin to accumulate in these later stages of succession.

Forest overstory. The Overstory Species list is based on Missouri field surveys and reports.

Forest understory. The Understory Species list is based on Missouri field surveys and reports.

State 2
Managed Forest

Where this state remains, it has often been subjected to very selective timber harvests. While these forested areas may resemble the reference state, the diversity of tree species has been selectively (removal of oak and walnut) altered. Reducing harvests and extending rotations will cause a transition to community phase 2.2. Eliminating harvests, implementing selective thinning, and allowing long term succession may allow a return to the reference state where hydrologic regimes are least altered.

Community 2.1
Bur Oak – Sycamore/American Bladdernut/ Wildrye

This community phase has often been subjected to selective timber harvests. While these forested areas may resemble the reference state (some old growth), the diversity of tree species has been selectively (removal of oak and walnut) altered.

Community 2.2
Bur Oak – Sycamore – Black Walnut /American Bladdernut/ Wildrye

Reducing harvests and extending rotations will cause a transition to this community phase. Eliminating harvests, implementing selective thinning, and allowing long term succession may allow a return to the reference state where hydrologic regimes are least altered.

State 3
Grassland

Many acres of this ecological site have been converted to non-native grasslands of tall fescue and red clover. This state frequently transitions to a cropland state especially when commodity prices are high. A return to a near-reference state from this state is not recommended. Transitioning to a Managed Forest state is possible through long-term commitments of time and money.

Community 3.1
Tall Fescue/Red Clover

This phase is well managed grassland, composed of non-native cool season grasses and legumes. Grazing and haying is occurring. The effects of long-term liming on soil pH, and calcium and magnesium content, is most evident in this phase. Studies show that these soils have higher pH and higher base status in soil horizons as much as two feet below the surface, relative to poorly managed grassland and to woodland communities (where liming is not practiced).

State 4
High Graded/Grazed Forest

This state is subjected to uncontrolled grazing and high-graded timber harvests. The grazing will open up the understory and remove much of the diverse ground flora. This can lead to erosion of the topsoil during floods. Grazed units also often undergo timber harvest removing a wide variety of outstanding hardwood trees, further diminishing the structural and compositional diversity. A return to the near-reference state will require a long-term commitment including the elimination of grazing, planting of trees and perhaps shrub and herbaceous species, and very limited targeted timber harvests and thinning.

Community 4.1
Sycamore – Green Ash/Buckbrush/ Greenbier – Wildrye

This is the only phase associated with this state at this time. See the corresponding state narrative for details.

State 5
Cropland

Many areas of this ecological site have been converted to row crop agriculture. A return to the near-reference state is not practical from this state. Transitioning to a Managed Forest state may be possible through long-term commitments of time and money.

Community 5.1
Corn, Soybeans, Wheat

This is the only phase associated with this state at this time. See the corresponding state narrative for details.

Additional community tables

Table 5. Community 1.1 forest overstory composition

Common Name	Symbol	Scientific Name	Nativity	Height (M)	Canopy Cover (%)	Diameter (Cm)	Basal Area (Square M/Hectare)
Tree							
bitternut hickory	CACO15	*Carya cordiformis*	Native	–	–	–	–
shellbark hickory	CALA21	*Carya laciniosa*	Native	–	–	–	–
sugarberry	CELA	*Celtis laevigata*	Native	–	–	–	–
common hackberry	CEOC	*Celtis occidentalis*	Native	–	–	–	–
green ash	FRPE	*Fraxinus pennsylvanica*	Native	–	–	–	–
Kentucky coffeetree	GYDI	*Gymnocladus dioicus*	Native	–	–	–	–
black walnut	JUNI	*Juglans nigra*	Native	–	–	–	–
American sycamore	PLOC	*Platanus occidentalis*	Native	–	–	–	–
bur oak	QUMA2	*Quercus macrocarpa*	Native	–	–	–	–
American elm	ULAM	*Ulmus americana*	Native	–	–	–	–
silver maple	ACSA2	*Acer saccharinum*	Native	–	–	–	–

Table 6. Community 1.1 forest understory composition

Common Name	Symbol	Scientific Name	Nativity	Height (M)	Canopy Cover (%)
Grass/grass-like (Graminoids)					
hop sedge	CALU4	*Carex lupulina*	Native	–	–
squarrose sedge	CASQ2	*Carex squarrosa*	Native	–	–
Indian woodoats	CHLA5	*Chasmanthium latifolium*	Native	–	–
Virginia wildrye	ELVI3	*Elymus virginicus*	Native	–	–
scouringrush horsetail	EQHY	*Equisetum hyemale*	Native	–	–
Forb/Herb					
eastern false rue anemone	ENBI	*Enemion biternatum*	Native	–	–
eastern waterleaf	HYVI	*Hydrophyllum virginianum*	Native	–	–
pale touch-me-not	IMPA	*Impatiens pallida*	Native	–	–
Canadian woodnettle	LACA3	*Laportea canadensis*	Native	–	–
Virginia bluebells	MEVI3	*Mertensia virginica*	Native	–	–
cutleaf coneflower	RULA3	*Rudbeckia laciniata*	Native	–	–
evening campion	SINI	*Silene nivea*	Native	–	–
striped cream violet	VIST3	*Viola striata*	Native	–	–
Shrub/Subshrub					
burningbush	EUAT5	*Euonymus atropurpureus*	Native	–	–
American bladdernut	STTR	*Staphylea trifolia*	Native	–	–
Tree					
Ohio buckeye	AEGL	*Aesculus glabra*	Native	–	–
American hornbeam	CACA18	*Carpinus caroliniana*	Native	–	–
red mulberry	MORU2	*Morus rubra*	Native	–	–
slippery elm	ULRU	*Ulmus rubra*	Native	–	–
Vine/Liana					
Virginia creeper	PAQU2	*Parthenocissus quinquefolia*	Native	–	–
eastern poison ivy	TORA2	*Toxicodendron radicans*	Native	–	–
summer grape	VIAE	*Vitis aestivalis*	Native	–	–

Table 7. Community 1.2 forest overstory composition

Common Name	Symbol	Scientific Name	Nativity	Height (M)	Canopy Cover (%)	Diameter (Cm)	Basal Area (Square M/Hectare)
Tree							
black maple	ACNI5	*Acer nigrum*	Native	–	–	–	–
silver maple	ACSA2	*Acer saccharinum*	Native	–	–	–	–
sugar maple	ACSA3	*Acer saccharum*	Native	–	–	–	–
Ohio buckeye	AEGL	*Aesculus glabra*	Native	–	–	–	–
bitternut hickory	CACO15	*Carya cordiformis*	Native	–	–	–	–
shellbark hickory	CALA21	*Carya laciniosa*	Native	–	–	–	–
American elm	ULAM	*Ulmus americana*	Native	–	–	–	–
slippery elm	ULRU	*Ulmus rubra*	Native	–	–	–	–
common hackberry	CEOC	*Celtis occidentalis*	Native	–	–	–	–
green ash	FRPE	*Fraxinus pennsylvanica*	Native	–	–	–	–
black walnut	JUNI	*Juglans nigra*	Native	–	–	–	–
American sycamore	PLOC	*Platanus occidentalis*	Native	–	–	–	–
eastern cottonwood	PODE3	*Populus deltoides*	Native	–	–	–	–
American basswood	TIAM	*Tilia americana*	Native	–	–	–	–

Table 8. Community 1.2 forest understory composition

Common Name	Symbol	Scientific Name	Nativity	Height (M)	Canopy Cover (%)
Grass/grass-like (Graminoids)					
Virginia wildrye	ELVI3	*Elymus virginicus*	Native	–	–
nodding fescue	FESU3	*Festuca subverticillata*	Native	–	–
eastern narrowleaf sedge	CAAM8	*Carex amphibola*	Native	–	–
eastern woodland sedge	CABL	*Carex blanda*	Native	–	–
rosy sedge	CARO22	*Carex rosea*	–	–	–
Indian woodoats	CHLA5	*Chasmanthium latifolium*	Native	–	–
Forb/Herb					
bluntleaf waterleaf	HYCA3	*Hydrophyllum canadense*	Native	–	–
jewelweed	IMCA	*Impatiens capensis*	Native	–	–
Canadian woodnettle	LACA3	*Laportea canadensis*	Native	–	–
smallspike false nettle	BOCY	*Boehmeria cylindrica*	Native	–	–
Canadian honewort	CRCA9	*Cryptotaenia canadensis*	Native	–	–
wingstem	VEAL	*Verbesina alternifolia*	Native	–	–
common blue violet	VISO	*Viola sororia*	Native	–	–
cutleaf coneflower	RULA3	*Rudbeckia laciniata*	Native	–	–
Canadian blacksnakeroot	SACA15	*Sanicula canadensis*	Native	–	–
smooth hedgenettle	STTE	*Stachys tenuifolia*	Native	–	–
smooth blue aster	SYLA3	*Symphyotrichum laeve*	Native	–	–
calico aster	SYLA4	*Symphyotrichum lateriflorum*	Native	–	–
white snakeroot	AGAL5	*Ageratina altissima*	Native	–	–
American hogpeanut	AMBR2	*Amphicarpaea bracteata*	Native	–	–
Canadian wildginger	ASCA	*Asarum canadense*	Native	–	–
wild blue phlox	PHDI5	*Phlox divaricata*	Native	–	–
Canadian clearweed	PIPU2	*Pilea pumila*	Native	–	–
dotted smartweed	POPU5	*Polygonum punctatum*	Native	–	–
Greek valerian	PORE2	*Polemonium reptans*	Native	–	–
jumpseed	POVI2	*Polygonum virginianum*	Native	–	–
bristly buttercup	RAHI	*Ranunculus hispidus*	Native	–	–
Fern/fern ally					
rattlesnake fern	BOVI	*Botrychium virginianum*	Native	–	–
Shrub/Subshrub					
northern spicebush	LIBE3	*Lindera benzoin*	Native	–	–
roughleaf dogwood	CODR	*Cornus drummondii*	Native	–	–
pawpaw	ASTR	*Asimina triloba*	Native	–	–
calico aster	SYLA4	*Symphyotrichum lateriflorum*	Native	–	–

Animal community

Wildlife Species (MDC 2006):

This ecological site is a dense, muti-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 treefrog.

Other information

Forestry (NRCS 2002, 2014):

Management: Field collected site index values average 87 for green ash, 91 for eastern cottonwood and 75 for silver maple. Timber management opportunities are good to excellent. 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 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. Where possible, favor swamp white oak, bur oak, black walnut, pecan, sycamore, and cottonwood. Maintain adequate riparian buffer areas.

Limitations: Wetness from flooding – short duration and/or 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.

Inventory data references

Loamy Floodplain Forest – Potential Reference – F115BY031MO

Plot DIGGCA03 – Jamesfin soil
Located in Marshall Diggs CA, Audrain County, MO
Latitude: 39.07861
Longitude: -91.63593

Plot GRCASP_KS10 – Haymond soil
Located in Graham Cave State Park, Montgomery County, MO
Latitude: 38.905461
Longitude: -91.588885

Plot GRCASP08 – Haymond soil
Located in Graham Cave State Park, Montgomery County, MO
Latitude: 38.904649
Longitude: -91.584279

Plot MAJUCA01 – Dockery soil
Located in Marshall Junction CA, Saline County, MO
Latitude: 38.946022
Longitude: -93.261057

Other references

Baker, John L. 1998. Soil Survey of Cooper County, Missouri. U.S. Dept. of Agric. Natural Resources Conservation Service.

Brinson, M.M. 1993. A hydrogeomorphic classification for wetlands. Technical Report WRP-DE-4, U.S. Army Corps of Engineers, Engineer Waterways Experiment Station, Vicksburg, MS.

Cowardin, L.M., V. Carter, F.C. Golet, & E.T. LaRoe. 1979. Classification of wetlands and deepwater habitats of the

United States. U.S. Dept. of Interior, Fish & Wildlife Service, Office of Biological Services, Washington DC.

Davis, Keith O. 2004. Soil Survey of Cole County, Missouri. U.S. Dept. of Agric. Natural Resources Conservation Service.

MDC, 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.

University of Missouri Climate Center - http://climate.missouri.edu/climate.php; accessed June 2012

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/

Contributors

Fred Young
Doug Wallace

Acknowledgments

Missouri Department of Conservation and Missouri Department of Natural Resources personnel provided significant and helpful field and technical support in the development of this ecological site.

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	
Approved by	
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:**
