USDA Natural Resources Conservation Service

Ecological site F113XY915IL
Lacustrine Terrace Forest

Last updated: 5/17/2024
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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.

MLRA notes

Major Land Resource Area (MLRA): 113X–Central Claypan Areas

The eastern Illinois portion of the Central Claypan Areas MLRA is in the Till Plains Section of the Central Lowland Province of the Interior Plains (USDA-NRCS, 2006) and includes the Southern Till Plain Natural Division of the natural divisions of Illinois (Schwegman, 1973; 1997; IDNR, 2018) in south-central Illinois. South-central Illinois is a dissected Illinoisan till plain south of the terminal Wisconsin moraine. This region consists of nearly level to gently sloping, old till plains. Stream valleys are shallow and generally are narrow. Elevation is about 660 feet (200 meters), increasing gradually from south to north. Local relief is generally low on the broad, flat till plains and flood plains and high on the dissected hills bordering rivers or d rainage systems. The Kaskaskia, Little Muddy, Little Wabash, Embarras, and Skillet Fork rivers are part of this area. This region is covered with loess, which overlies old glacial drift (Illinoisan till) that has a high content of clay. Fragipans are also present. Pennsylvanian limestone and shale bedrock underlay the glacial till. The dominant soil orders in this region are Alfisol and Mollisol. The soils in the area predominantly have a mesic soil temperature regime, an aquic or udic soil moisture regime, and mixed or smectitic mineralogy. They generally are very deep, well drained to poorly drained, and loamy or clayey. (USDA-NRCS, 2006).

Classification relationships

Major Land Resource Area (MLRA) (USDA-NRCS, 2006):
113 – Central Claypan Areas, Eastern Part

U.S. Forest Service Ecoregions (Cleland et al. 2007):
Domain: Humid Temperate Domain
Division: Hot Continental Division
Province: Eastern Broadleaf Forest (Continental)
Province Code: 222
Section: Central Till Plains, Oak-Hickory Section
Section Code: 222G

Ecological site concept

The historic pre-European settlement vegetation on this site was dominated by a continuous overstory canopy of deciduous trees with an understory of shade-tolerant shrubs and ground flora (LANDFIRE 2009). They occur on terraces along major streams and tributaries. Soils are moderately well drained, slowly permeable soils formed in fine textured lacustrine sediments that are seasonally saturated with an intermittent perched high water table from December to April in most years (Nelson 2010; White 1978).

This pin oak (Quercus palustris Münchh.*) - cherrybark oak (Quercus pagoda Raf.) terrace forest community type is found on slowly permeable soils that are seasonally wet (mostly during winter and early spring and dry in late summer and early fall) due to a high subsoil clay content. Along with the dominant canopy species of pin oak and

cherrybark oak, other trees often encountered include American elm (Ulmus americana L.), ash (Fraxinus spp.), sweetgum (Liquidambar styraciflua L.), and Shumard's oak (Quercus shumardii Buckley). The subcanopy is generally sparse and dominated by red maple (Acer rubrum L.), although a diverse mixture of bottomland type of species can be present as well. Trees in this forest range from moderate in size (pin oak: 25 to 30 meters in height, 1 meter in diameter) to very large (cherrybark oak: 30 to 40 meters tall, 1 to 1.5 meters in diameter). Cherrybark oak is one of the tallest southern oaks, with a long, straight trunk, massive branches, and an open, wide-spreading crown. Pin oaks have straight trunks which extend up into a symmetrical, pyramidal crown. The trunks of this tree (below the canopy) display tough, drooping branches commonly referred to as "pins."

Understory, shrub, herbaceous, and vine strata can be dense when moisture conditions are ideal and canopy closure is incomplete (patchy). Possumhaw (Ilex decidua Walter) and green hawthorn (Crataegus viridis L.) dominate the shrub layer. Sedges (Carex spp.) dominate the herbaceous layer, but a diverse mixture of forbs can also be present. Narrowleaf mountainmint (Pycnanthemum tenuifolium Schrad.), an herbaceous species more commonly associated with dry uplands, reflects the dry conditions seasonally found in this forest. trumpet creeper (Campsis radicans (L.) Seem. ex Bureau) and eastern poison ivy (Toxicodendron radicans (L.) Kuntze) dominate the vine stratum. As with other bottomland and terrace forests, vegetation density and diversity are largely regulated by the duration and depth of a seasonal water table and summer drought. (LANDFIRE 2009; Nelson 2010; NatureServe 2018; Voigt and Mohlenbrock 1964).

*All plant common and scientific names in this document were obtained from the U.S. Department of Agriculture – Natural Resources Conservation Service National PLANTS Database (USDA NRCS, 2018).

Associated sites

F113XY924IL	**Clayey Floodplain Forest** This ecological site is located on clayey floodplain steps adjacent to Lacustrine Terrace Forests.
F113XY919IL	**Wet Silty Floodplain Forest** This ecological site is located in silty floodplains below Lacustrine Terrace Forest adjacent to and along stream river courses.

Similar sites

F113XY915IL	**Lacustrine Terrace Forest** There are no similar ecological sites in this MLRA.

Table 1. Dominant plant species

Tree	(1) *Quercus palustris* (2) *Quercus pagoda*
Shrub	(1) *Ilex decidua* (2) *Crataegus viridis*
Herbaceous	(1) *Carex* (2) *Pycnanthemum tenuifolium*

Physiographic features

This site occurs on terraces along major streams and tributaries with slopes ranging from 2 to 18 percent. Some areas are subject to rare flooding. The site receives runoff from adjacent upland sites, and generates runoff to adjacent, downslope sites.

Table 2. Representative physiographic features

Geomorphic position, terraces	(1) Riser (2) Tread
Landforms	(1) Lake plain > Lakebed
Runoff class	Medium to high

Flooding duration	Extremely brief (0.1 to 4 hours) to brief (2 to 7 days)
Flooding frequency	None to rare
Elevation	100–255 m
Slope	2–18%
Water table depth	86 cm
Aspect	W, NW, N, NE, E, SE, S, SW

Climatic features

The soil temperature regime of MLRA 113 is classified as mesic, where the mean annual soil temperature is between 47 and 59°F. Temperature and precipitation occur along a north-south gradient, where temperature and precipitation increase the further south you travel (USDA-NRCS 2006). The majority of the precipitation occurs as rainfall in the form of convective thunderstorms during the growing season.

Table 3. Representative climatic features

Frost-free period (characteristic range)	166-172 days
Freeze-free period (characteristic range)	197-201 days
Precipitation total (characteristic range)	1,118-1,168 mm
Frost-free period (actual range)	165-174 days
Freeze-free period (actual range)	195-203 days
Precipitation total (actual range)	1,118-1,168 mm
Frost-free period (average)	169 days
Freeze-free period (average)	199 days
Precipitation total (average)	1,143 mm

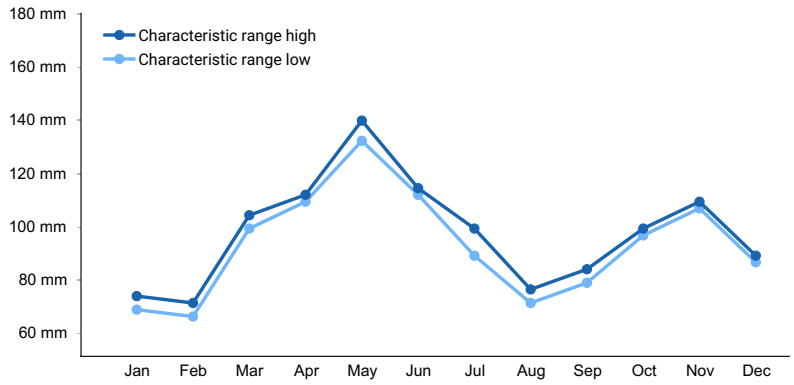


Figure 1. Monthly precipitation range

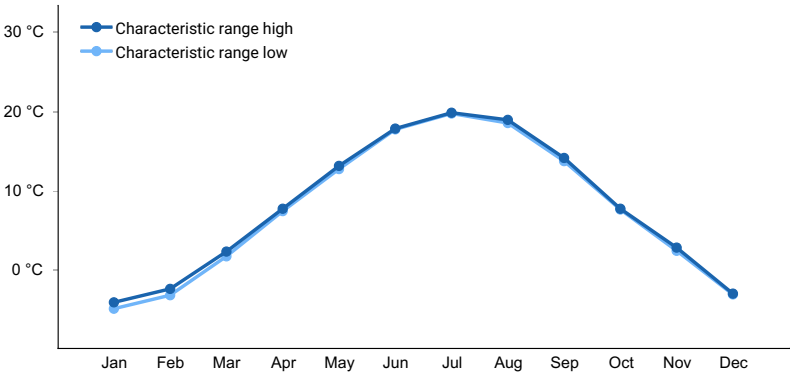


Figure 2. Monthly minimum temperature range

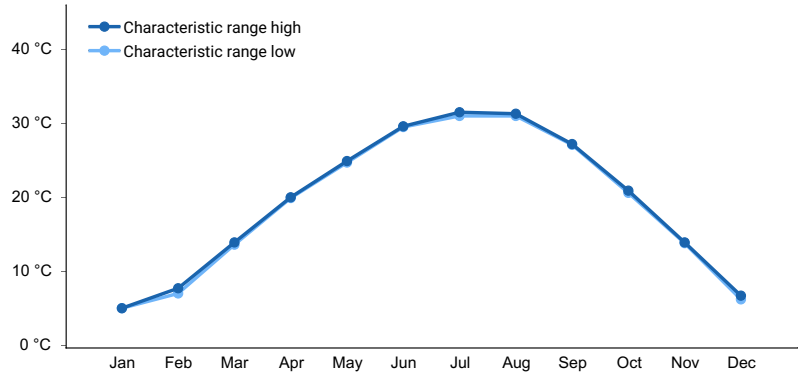


Figure 3. Monthly maximum temperature range

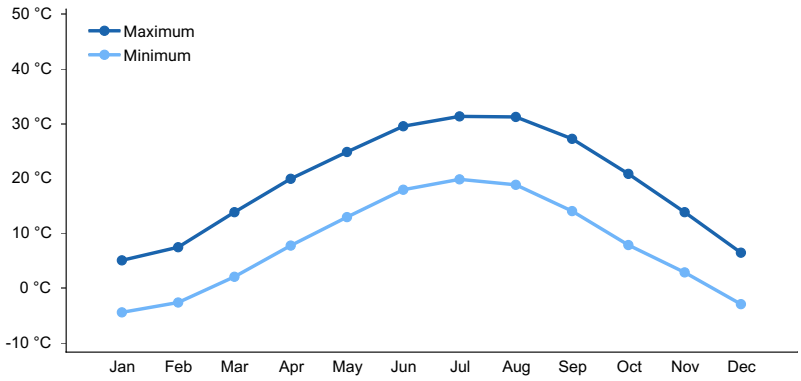


Figure 4. Monthly average minimum and maximum temperature

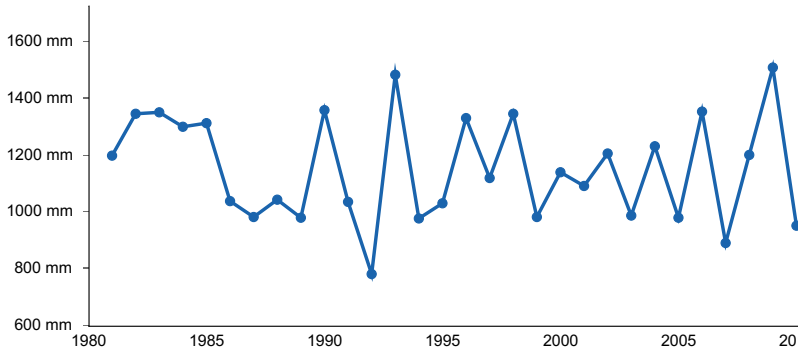


Figure 5. Annual precipitation pattern

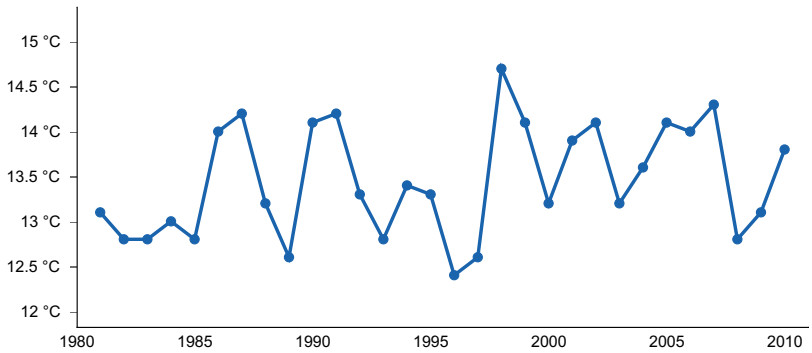


Figure 6. Annual average temperature pattern

Climate stations used

- (1) BENTON 2 N [USC00110608], Benton, IL
- (2) REND LAKE DAM [USC00117187], Benton, IL
- (3) DU QUOIN 4 SE [USC00112483], Du Quoin, IL

Influencing water features

This ecological site is influenced by a seasonal high water table from high groundwater levels. The water table is typically near the surface in late fall and into the spring, receding in the summer. This ecological site is on stream terraces of perennial streams. They are not adjacent to the current stream channel. Stream channelization has altered the flooding dynamics in many places. These sites are in the RIVERINE wetlands class of the Hydrogeomorphic (HGM) classification system (Brinson, 1993), and are Forested Palustrine wetlands (Cowardin et al., 1979). (SSS NRCS WSS, 2018). (SSS NRCS OSD, 2018).

Soil features

These soils are very deep, with seasonal high water tables. They were formed under woodland vegetation. They formed in fine or moderately fine textured lacustrine sediments or alluvium and have a thin surface mantle of loess or other silty material. They have silt loam or silty clay loam surface horizons, with silty clay and clay subsurface layers. Soils of this ecological site are in the Alfisol order, further classified as fine, smectitic, mesic Aquertic Chromic Hapludalfs. Soil series associated with this site include Colp (NCSS, 2018; SSS NRCS OSD, 2018).

Table 4. Representative soil features

Parent material	(1) Loess (2) Lacustrine deposits
Surface texture	(1) Silty clay loam (2) Silt loam
Family particle size	(1) Fine
Drainage class	Moderately well drained
Permeability class	Very slow
Soil depth	183 cm
Surface fragment cover <=3"	0%
Surface fragment cover >3"	0%
Available water capacity (0-182.9cm)	15.24 cm
Calcium carbonate equivalent (Depth not specified)	0–40%
Sodium adsorption ratio (Depth not specified)	0
Soil reaction (1:1 water) (Depth not specified)	4.5–8.4
Subsurface fragment volume <=3" (Depth not specified)	0%
Subsurface fragment volume >3" (Depth not specified)	0%

Ecological dynamics

The MLRA lies within the transition zone between the eastern deciduous forests and the central tallgrass prairies. The heterogeneous topography of the area results in variable microclimates and fuel matrices that in turn are able to support prairies, savannas, woodlands, and forests. Lacustrine Terrace Forests form an aspect of this vegetative continuum. This ecological site occurs on stream terraces that rarely flood. Species characteristic of this ecological site consist of broadleaf deciduous terrace forest species which can exhibit high canopy diversity. (Anderson, 1975; White, 1978).

Fire and seasonal high water tables are likely the dominant natural influencing factors in Lacustrine Terrace Forests. The significant presence of oaks in the community indicate the importance of fire as a natural process to maintain the site, but fire return intervals are currently unknown. Ignition sources included summertime lightning strikes from

convective storms and bimodal, human ignitions during the spring and fall seasons. Native Americans regularly set fires to improve sight lines for hunting, driving large game, improving grazing and browsing habitat, agricultural clearing, and enhancing vital ethnobotanical plants (Barrett 1980; White 1994). Infrequent flooding influenced plant community composition as evidenced by the co-dominance of oak species with floodplain associated species along with seasonally saturated site conditions due to an intermittent perched high water table.

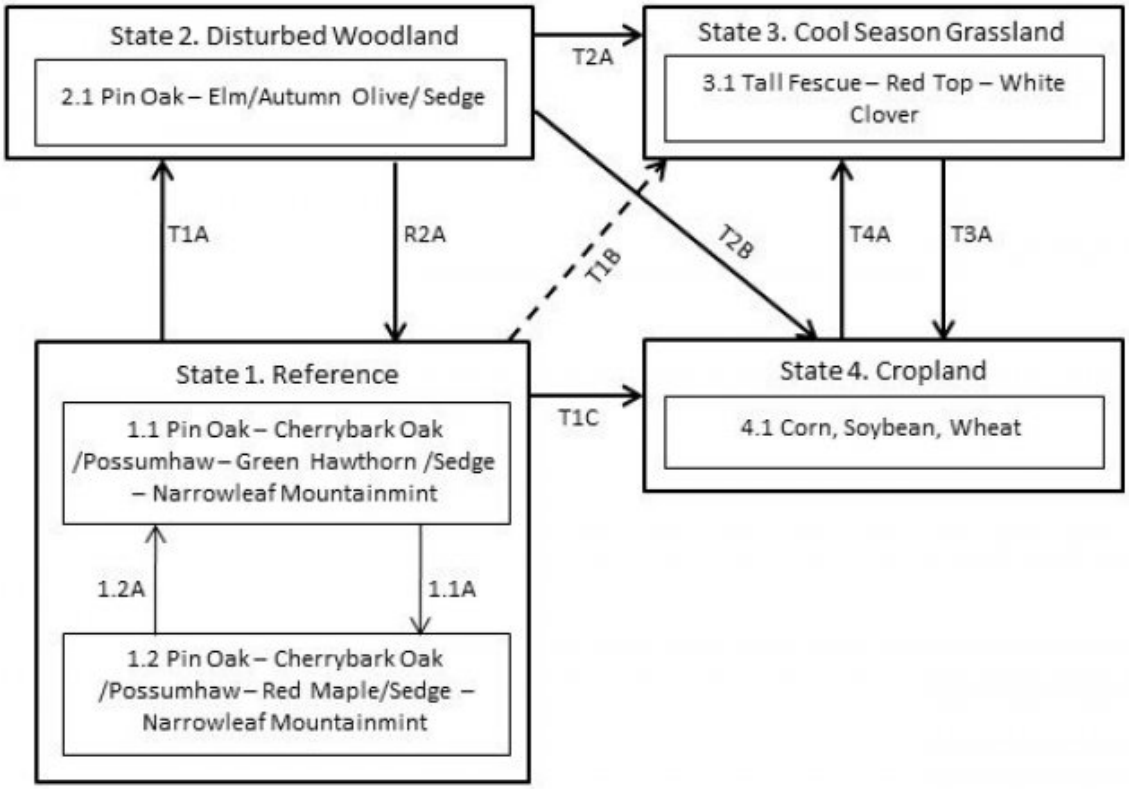
Herbivory by native ungulates have also played a role in shaping this ecological site. Bison (Bos bison) grazing, while present, probably served a more limited role in community composition and structure. Prairie elk (Cervus elaphus) and white-tailed deer (Odocoileus virginianus) likely contributed to woody species reduction as well but are also considered to be of having a lesser impact (LANDFIRE 2009).

Today, many Lacustrine Terrace Forests have been reduced as a result of drainage and clearing for crop production and, to a smaller extent, livestock grazing. Long-term fire suppression of remnant forests has allowed the canopy to close and species composition to shift. Sites have also been degraded by stream channelization which alters the hydrologic flood cycles and, ultimately, the reference plant community (Nelson 2010). A return to the historic plant community may not be possible following extensive land modification, but long-term conservation agriculture or forest reconstruction can help to restore some biotic diversity and ecological function.

A provisional state and transition diagram is depicted in Figure 2. 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 may change as knowledge increases.

State and transition model

Lacustrine Terrace Forest, F113XY915IL
(Provisional)



Code	Event/Activity/Process
T1A	Fire suppression >30 years; woody invasion; repeated timber harvests; domestic uncontrolled grazing
T1B	Tillage; vegetative seeding; grassland management
T1C, T3A	Tillage; conservation cropping system; water management
T2A	Woody removal; tillage; vegetative seeding; grassland management
T2B	Woody removal; tillage; conservation cropping system
T4A	Vegetative seeding ; grassland management
1.1A	Fire-free interval >15 years
1.2A	Fire interval 10-15 years
R2A	Forest stand improvement; access control; prescribed fire; long term stand rotation

State 1
Reference State

The historical reference state for this ecological site was old growth terrace forest. The forest overstory was dominated by pin oak and cherrybark oak. Maximum tree age was likely 150 to 300 years. Periodic disturbances from fire, wind or ice maintained the reference structure and ground flora species. Long disturbance-free periods allowed an increase in both the density of trees and the abundance of shade tolerant species. Two community phases are recognized in the reference state, with shifts between phases based on disturbance frequency. Reference states are very rare today. Lack of natural disturbances has resulted in increased canopy density, which has affected the abundance and diversity of ground flora. Most reference states are currently altered because of timber harvesting, grazing, clearing and conversion to grassland or cropland.

Dominant plant species

- pin oak (*Quercus palustris*), tree
- cherrybark oak (*Quercus pagoda*), tree
- possumhaw (*Ilex decidua*), shrub
- sedge (*Carex*), grass
- narrowleaf mountainmint (*Pycnanthemum tenuifolium*), other herbaceous

Community 1.1
Pin Oak - Cherrybark Oak/ Possumhaw - Green Hawthorn /Sedge - Narrowleaf Mountainmint

Fire interval of 10-15 years

Dominant plant species

- pin oak (*Quercus palustris*), tree
- cherrybark oak (*Quercus pagoda*), tree
- possumhaw (*Ilex decidua*), shrub
- green hawthorn (*Crataegus viridis*), shrub
- sedge (*Carex*), grass
- narrowleaf mountainmint (*Pycnanthemum tenuifolium*), other herbaceous

Community 1.2
Pin Oak - Cherrybark Oak/ Possumhaw - Red Maple /Sedge - Narrowleaf Mountainmint

Fire interval in excess of 15 years.

Dominant plant species

- pin oak (*Quercus palustris*), tree
- cherrybark oak (*Quercus pagoda*), tree
- possumhaw (*Ilex decidua*), shrub
- red maple (*Acer rubrum*), shrub
- sedge (*Carex*), grass
- narrowleaf mountainmint (*Pycnanthemum tenuifolium*), other herbaceous

Pathway 1.1A
Community 1.1 to 1.2

Fire free interval greater than 15 years.

Pathway 1.2A
Community 1.2 to 1.1

Fire interval of 10-15 years.

State 2
Disturbed Woodland

Species composition is altered from the reference state depending on tree selection during harvest and the amount

of uncontrolled domestic livestock grazing. Without periodic canopy disturbance, stem densities and more shade tolerant species will increase in abundance. Some periodic uncontrolled grazing may be occurring.

Dominant plant species

- pin oak (*Quercus palustris*), tree
- elm (*Ulmus*), tree
- autumn olive (*Elaeagnus umbellata*), shrub
- sedge (*Carex*), grass

Community 2.1
Pin Oak - Elm/ Autumn Olive /Sedge

Species composition is altered from the reference state due to disturbances.

Dominant plant species

- pin oak (*Quercus palustris*), tree
- elm (*Ulmus*), tree
- autumn olive (*Elaeagnus umbellata*), shrub
- sedge (*Carex*), grass

State 3
Cool Season Grassland

Conversion of other states to non-native cool season species such as tall fescue (*Schedonorus arundinaceus* (Schreb.) Dumort., nom. cons.) and red clover (*Trifolium pratense* L.) has been common in the Illinois Central Claypan area. Occasionally, these pastures may have scattered bur and pin oaks. Long term uncontrolled grazing can cause significant soil erosion and compaction. A return to the Reference State may be impossible, requiring a very long term series of management options.

Dominant plant species

- tall fescue (*Schedonorus arundinaceus*), grass
- creeping bentgrass (*Agrostis stolonifera*), grass
- white clover (*Trifolium repens*), other herbaceous

Community 3.1
Tall Fescue - Red Top - White Clover

A community dominated by seeded cool season grasses and legumes.

Dominant plant species

- tall fescue (*Schedonorus arundinaceus*), grass
- white clover (*Trifolium repens*), other herbaceous

State 4
Cropland

This is a state that exists currently on slopes less than 10 percent with intensive cropping of corn (*Zea mays* L.), soybeans (*Glycine max* (L.) Merr.), and winter wheat (*Triticum aestivum* L.) occurring. Some conversion to cool season grassland occurs for a limited period of time before transitioning back to cropland.

Dominant plant species

- corn (*Zea mays*), grass
- wheat (*Triticum*), grass
- soybean (*Glycine max*), other herbaceous

Community 4.1
Corn, Soybean, Wheat

Agricultural state with crops such as corn, beans, and winter wheat.

Dominant plant species

- corn (*Zea mays*), grass
- wheat (*Triticum*), grass
- soybean (*Glycine max*), other herbaceous

Transition T1A
State 1 to 2

Fire suppression >30 years; woody invasion; repeated timber harvests; uncontrolled livestock grazing

Transition T1B
State 1 to 3

Clearing; woody removal; vegetative seeding; grassland management

Transition T1C
State 1 to 4

Clearing/woody species removal; tillage; conservation cropping system; water management

Restoration pathway R2A
State 2 to 1

Forest stand improvement; access control; prescribed fire; long term stand rotation

Transition T2A
State 2 to 3

Woody removal; tillage; vegetative seeding; grassland management

Transition T2B
State 2 to 4

Woody removal; tillage; conservation cropping system

Transition T3A
State 3 to 4

Tillage; conservation cropping system; water management

Transition T4A
State 4 to 3

Vegetative seeding ; grassland management

Additional community tables

Inventory data references

No field plots were available for this site. A review of the scientific literature and professional experience were used to approximate the plant communities and ecological dynamics for this provisional ecological site. Information for the state-and-transition model was obtained from the same sources. All community phases are considered

provisional based on the sources identified in ecological site description.

References

Anderson, R.C. and M.R. Anderson. 1975. The presettlement vegetation of Williamson County, Illinois.. Castanea 40:345–363.

Anderson, R.C. 1982. An evolutionary model summarizing the roles of fire, climate, and grazing animals in the origin and maintenance of grasslands. Pages 297–308 in , , and , editors. Grasses and grasslands: systematics and ecology.

Anderson R. C., J. S. Fralish, and J. M. Baskin. 2007. Presettlement forests of Illinois. G. V. Burger, J. E. Ebinger, and G. S. Wilhelm, eds., Proceedings of the Oak Woods Management Workshop 9–19.

Barrett, S.W. 1980. Indians and fire.. Western Wildlands 17–20.

Briggs, J.M., A.K. Knapp, and B.L. Brock. 2002. Expansion of woody plants in tallgrass prairie: a fifteen- year study of fire and fire-grazing interactions. The American Midland Naturalist 147:287–294.

Brinson, M.M. 1993. A hydrogeomorphic classification for wetlands.

Brugam, R.B., P.D. Kilburn, and L.L. Luecking. 2016. Pre-settlement Vegetation of Greene, Jersey and Macoupin Counties along the Prairie/Forest Border in Illinois.. Transactions of the Illinois State Academy of Science 109:9–17.

Cleland, D.T., J.A. Freeouf, J.E. Keys, G.J. Nowacki, C. Carpenter, and W.H. McNab. 2007. Ecological Subregions: Sections and Subsections of the Coterminous United States. USDA Forest Service, General Technical Report WO-76. Washington, DC. 1–92.

Coates, D.T., K.J. Lyman, and J.E. Ebinger. 1992. Woody vegetation structure of a post oak flatwoods in Illinois.. Castanea 57:196–201.

Comer, P.J., D. Faber-Langendoen, R. Evans, S. Gawler, C. Josse, G. Kittel, S. Menard, M. Pyne, M. Reid, K. Schulz, K. Snow, and J. Teague. 2003 (Date accessed). Ecological Systems of the United States: A Working Classification of U.S. Terrestrial Systems.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep water habitats of the United States.. U.S. Dept. of Interior, Fish & Wildlife Service, Office of Biological Services, Washington DC. FWS/OBS-79/31 1–142.

Dey, D.C. and J.M. Kabrick. 2015. Restoration of Midwestern oak woodlands and savannas.. Pages 401–428 in Restoration of Boreal and Temperate Forests, Second Edition. CRC Press, Boca Raton, Florida, USA..

Edgin, B. 1996. Barrens of pre-settlement Lawrence County, Illinois.. Pages 59–65 in Proceedings of the 15th North American Prairie Conference.

Edgin, B. and J.E. Ebinger. 1997. Barrens and the pre-settlement prairie/forest interface in Crawford County,

Illinois.. Castanea 62:260–267.

Edgin, B., R. Beadles, and J.E. Ebinger. 2002. Woody Composition and Structure of Karcher's Post Oak Woods Nature Preserve, Hamilton County, Illinois.. Transactions of the Illinois State Academy of Science 95:251–259.

Edgin B., W. E. McClain, R. Gillespie, and J. E. Ebinger. 2003. Vegetation composition and structure of Eversgerd Post Oak Flatwoods, Clinton County, Illinois.. Northeast Naturalist 10:111–118.

Illinois Department of Natural Resources (IDNR). March 2018 (Date accessed). Natural Divisions - Southern Till Plain..

Irland, L.C. 2000. Ice storms and forest impacts.. The Science of the Total Environment 262:231–242.

Kilburn, P. and R.B. Brugam. 2014. Inventory of Vegetation Studies in Illinois Based on the Public Land Survey Records.. Transactions of the Illinois State Academy of Science 107:13–17.

USGS. 2009 (Date accessed). Landfire National Vegetation Dynamics Models. http://www.LANDFIRE.gov/index.php.

Mohlenbrock R. H. and D. M. Ladd. 1978. Distribution of Illinois Vascular Plants. Southern Illinois Univ. Press, Carbondale and Edwardsville, IL. 281p.

Mohlenbrock R. H. 2003. Vascular Flora of Illinois. Vascular Flora of Illinois, 3rd edition. Southern Illinois University Press, Carbondale, Illinois. 1–736.

National Cooperative Soil Survey (NCSS). 2018 (Date accessed). National Cooperative Soil Characterization Database. https://ncsslabdatamart.sc.egov.usda.gov/.

National Oceanic and Atmospheric Administration (NOAA). 2018 (Date accessed). Climate Data 1980-2010. https://www.ncdc.noaa.gov/data-access/land-based-station-data/find-station.

NatureServe. 2018 (Date accessed). Association Detail Report: CEGL002427. http://explorer.natureserve.org.

Nelson, P. 2010. The Terrestrial Natural Communities of Missouri. Revised edition. Missouri Natural Areas Committee, Department of Natural Resources and the Department of Conservation, Jefferson City. 549p.

Pyne, S.J., P.L. Andrews, and R.D. Laven. 1996. Introduction to Wildland Fire, Second Edition. Introduction to Wildland Fire, Second Edition. John Wiley and Sons, Inc. New York, New York. 1–808.

Schwegman, J.E., G.B. Fell, M.D. Hutchinson, G. Paulson, W.M. Shephard, and J. White. 1973. The natural divisions of Illinois. Comprehensive plan for the Illinois Nature Preserve system. Part 2. Illinois Nature Preserves Commission, Rockford, IL 1–32.

. 2018 (Date accessed). Web Soil Survey (SSS NRCS WSS). https://websoilsurvey.sc.egov.usda.gov/.

SSS NRCS OSD and . 2018 (Date accessed). Official Soil Series Descriptions. https://soilseries.sc.egov.usda.gov/osdname.aspx.

Taft, J.B., M.W. Schwartz, and L.R. Philippe. 1995. Vegetation ecology of flatwoods on the Illinoian till plain. Journal of Vegetation Science 6:647–666.

United States Department of Agriculture, . 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin... USDA Handbook 296 1–682.

USDA, N. 2018 (Date accessed). The PLANTS Database. http://plants.usda.gov.

Voigt J. W. and R. H. Mohlenbrock. 1964. Plant communities of southern Illinois. Plant communities of southern Illinois. Southern Illinois University Press, Carbondale 1–202.

White J. 1978. Natural Areas Inventory Technical Report. Natural Areas Inventory Technical Report: Volume I, Survey Methods and Results. Illinois Natural Areas Inventory, Department of Landscape Architecture, University of Illinois at Urbana/Champaign 1–426.

White, J. and M. Madany. 1978. Classification of natural communities in Illinois (Appendix 30). In J. White, Illinois Natural Areas Inventory Technical Report. Volume 1: Survey Methods and Results. Illinois Natural Areas Inventory, Department of Landscape Architecture, University of Illinois at Urbana/Champaign. 310–405.

Other references

Relationship to other established ecological classifications:
Biophysical Setting (LANDFIRE, 2009); the reference community of this ecological site is most similar to:
Mississippi River High Floodplain (Bottomland) Forest (CES203.196)

National Vegetation Classification System (NatureServe, 2018): the reference community of this ecological site is most similar to: Quercus palustris - (Quercus stellata) - Quercus pagoda / Isoetes spp. Wet Forest (CEGL002101)

Illinois Natural Areas Survey (INAS) (White, 1978); the reference community of this ecological site is most similar to:
INAS Community Class – Floodplain Forest; Natural community – Wet-mesic Floodplain Forest

Contributors

Doug Wallace
Ralph Tucker
Zach Weber

Approval

Suzanne Mayne-Kinney, 5/17/2024

Acknowledgments

Contact information for primary authors: Ralph Tucker (ralph.tucker@mo.usda.gov), Soil Scientist, United States Department of Agriculture - Natural Resources Conservation Service (USDA-NRCS), Union, MO; Zach Weber (zach.weber@il.usda.gov), Soil Scientist, USDA-NRCS, Olney, IL; Douglas Wallace (doug.wallace@mo.usda.gov), Ecologist, USDA-NRCS, Columbia, MO.

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	05/20/2024
Approved by	Suzanne Mayne-Kinney
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:

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

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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:

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

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

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

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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:**

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17. **Perennial plant reproductive capability:**
