

Ecological site F113XY922IL

Loamy Floodplain Forest

Last updated: 5/17/2024
Accessed: 09/03/2026

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 drainage 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 canopy of deciduous trees with an understory of shade-tolerant shrubs and ground flora (LANDFIRE 2009). Loamy Floodplain Forests occur in floodplain steps on smaller floodplains. Soils are well drained and very deep formed from coarse, silty alluvium that are occasional to frequently flooded (Nelson 2010; White 1978). This sycamore – black walnut mesic floodplain forest occurs on well drained floodplain steps and small streams. Stands are dominated by American sycamore (*Platanus occidentalis* L.)*, with a mixture of other species, including boxelder (*Acer negundo* L.), silver maple (*Acer saccharinum* L.), white ash (*Fraxinus americana* L.), green ash (*Fraxinus pennsylvanica* Marshall), black walnut (*Juglans nigra* L.), American elm (*Ulmus americana* L.), bitternut hickory (*Carya cordiformis* (Wangenh.), white oak (*Quercus alba* L.), basswood (*Tilia americana* L.) and slippery elm (*Ulmus rubra* Muhl.). Shrubs include pawpaw (*Asimina triloba* (L.) Dunal) and northern spicebush (*Lindera benzoin* (L.) Blume). Vines may be abundant, including Virginia creeper (*Parthenocissus quinquefolia* (L.) Planch.) and eastern poison ivy (*Toxicodendron radicans* (L.) Kuntze). Herbaceous species include Jack in the pulpit (*Arisaema triphyllum* (L.) Schott), Canadian wildginger (*Asarum canadense* L.), smallspike false nettle (*Boehmeria cylindrica* (L.) Sw.), Virginia wildrye (*Elymus virginicus* L.), Canadian clearweed (*Pilea pumila* (L.) A. Gray), and jumpseed (*Polygonum virginianum* L.). Historically, seasonal, short duration flooding was the primary disturbance factor, while windthrow events and beaver alterations were secondary factors (LANDFIRE 2009; Nelson 2010; NatureServe 2018; Voigt and Mohlenbrock 1964; White 1978).

Associated sites

F113XY911IL	Loamy Till Backslope Forest This ecological site is located on steep backslopes above Loamy Floodplain Forests.
-------------	--

F113XY919IL	Wet Silty Floodplain Forest This ecological site is located in lower floodplains with Loamy Floodplain Forests.
F113XY920IL	Silty Floodplain Forest This ecological site is located in floodplains generally adjacent to but lower than Loamy Floodplain Forests.

Similar sites

F113XY920IL	Silty Floodplain Forest This ecological site is located in lower floodplain areas from Loamy Floodplain Forests.
--------------------	--

Table 1. Dominant plant species

Tree	(1) <i>Platanus occidentalis</i> (2) <i>Juglans nigra</i>
Shrub	(1) <i>Asimina triloba</i>
Herbaceous	(1) <i>Elymus virginicus</i> (2) <i>Arisaema triphyllum</i>

Physiographic features

This site is on well drained coarse-loamy water sediments on narrow floodplains, natural levees, and floodplain steps with slopes of less than 2 percent with occasional to frequent flooding. The site generates some runoff to adjacent lower floodplain sites, and receives some runoff from higher stream terraces and uplands.

Table 2. Representative physiographic features

Landforms	(1) Alluvial plain > Flood plain (2) Alluvial plain > Flood-plain step (3) Alluvial plain > Natural levee (4) Alluvial plain > Terrace--stream or lake
Runoff class	Negligible to low
Flooding duration	Brief (2 to 7 days)
Flooding frequency	Occasional to frequent
Elevation	120 – 260 m

Slope	0 %
Water table depth	40 – 60 cm
Aspect	Aspect is not a significant factor

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)	140-150 days
Freeze-free period (characteristic range)	180-190 days
Precipitation total (characteristic range)	1,070-1,120 mm
Frost-free period (actual range)	140-150 days
Freeze-free period (actual range)	180-190 days
Precipitation total (actual range)	1,040-1,120 mm
Frost-free period (average)	150 days
Freeze-free period (average)	180 days
Precipitation total (average)	1,090 mm

- (1) PANA 3E [USC00116579], Pana, IL
- (2) EFFINGHAM 3SW [USW00093816], Effingham, IL
- (3) FLORA 5 NW [USC00113109], Flora, IL

Influencing water features

This ecological site is typically on high floodplains and natural levees. Stream levels typically respond quickly to storm events, especially in watersheds where surface runoff is dominant. Short- to medium- duration flooding is not uncommon in many areas, particularly during spring and early summer storm events. Stream modifications have altered the hydrology and flooding dynamics in places. Streambeds that are incised into the surrounding floodplain may be a sign of an alternative state. In most areas the water table has a minimal effect on the vegetative community.

Soil features

These soils have no rooting restriction. Organic matter content is variable. They are not affected by seasonal wetness. These soils have moderately permeability and are very deep. They were formed under a mixture of herbaceous and woodland vegetation with periodic depositional flood events. Parent material is loamy alluvium (coarse-loamy particle size family class). They have loam and silt loam surface horizons and loamy subsoils lacking argillic horizons that may be skeletal with depth. Soils of this ecological site are in the Mollisol, Entisol and Inceptisol orders. Soil series associated with this site include Medway and Wirt. (NCSS, 2018; SSS NRCS OSD, 2018)

Table 4. Representative soil features

Parent material	(1) Alluvium
Surface texture	(1) Silt loam (2) Loam
Drainage class	Moderately well drained to well drained
Permeability class	Moderately slow
Soil depth	180 cm
Surface fragment cover <=3"	Not specified
Surface fragment cover >3"	Not specified
Available water capacity (Depth not specified)	15.24 – 20.32 cm
Calcium carbonate equivalent (Depth not specified)	Not specified
Sodium adsorption ratio (Depth not specified)	Not specified
Soil reaction (1:1 water) (Depth not specified)	5.6 – 7.3
Subsurface fragment volume <=3" (Depth not specified)	0 – 10 %

Subsurface fragment volume >3" (Depth not specified)	Not specified
---	---------------

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. Loamy Floodplain Forests form an aspect of this vegetative continuum. This ecological site occurs on floodplain steps. Species characteristic of this ecological site consist of broadleaf deciduous floodplain forest species which exhibits high canopy diversity. (Anderson, 1975; White, 1978).

Historically, Loamy Floodplain Forests were on relatively stable floodplain positions and natural levees that occasionally flooded. It is likely that the hydrology of these streams has altered since pre-settlement because of changes in land use. Current flooding is likely more frequent but brief. Historically these forests were structurally and compositionally diverse, with occasional tree fall gaps caused by flooding and natural mortality providing opportunities for regeneration of overstory species. The understory was also complex, with multiple layers of shade-tolerant species such as pawpaw and spicebush. Numerous species of vines also climb into canopy gaps and a diverse array of ground flora species carpet the forest floor. (NatureServe 2018)

Today many of these ecological sites have been cleared and converted to intensive agriculture. The remaining forests often occur as a narrow band in the floodplain. These remaining bands of forest play an important role as a source of food and shelter for migrating birds. In addition, they are very important for streambank stabilization, capturing sediment and mitigating scour during flood events.

These remaining remnants that still exist also play an important role as a source of food and shelter for migrating birds. In addition, large floodplain trees that extend above the canopy are important nesting sites for bald eagles (*Haliaeetus leucocephalus*) and herons (*Ardea* spp.). (Guyon et. al. 2016). Carefully planned timber harvest can be tolerated by this system, but high-grading of the timber will also degrade the system.

Carefully planned timber harvests can be tolerated in this system, but high grading of the timber will eventually degrade the ecological site. Re-establishment of these riparian forests is important for stream quality and health, as well as for migratory birds. Planting of appropriate species has proven to be quite successful.

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

Additional community tables

Table 5. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
-------	-------------	--------	-----------------	----------------------	------------------

Table 6. Community 1.2 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
-------	-------------	--------	-----------------	----------------------	------------------

Table 7. Community 2.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
-------	-------------	--------	-----------------	----------------------	------------------

Table 8. Community 3.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
-------	-------------	--------	-----------------	----------------------	------------------

Table 9. Community 4.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
-------	-------------	--------	-----------------	----------------------	------------------

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 states and community phases are considered provisional based on the sources identified in ecological site description.

References

- 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://ncsslabsdataart.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: CEG002427**. <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.
- 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 Conterminous 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>.

Other references

Relationship to other established ecological classifications (done)

Biophysical Setting (LANDFIRE, 2009); the reference community of this ecological site is most similar to: South-Central Interior Large Floodplain (CES202.705)

National Vegetation Classification System (NatureServe, 2018): the reference community of this ecological site is most similar to: *Platanus occidentalis* - *Acer saccharinum* - *Juglans nigra* - *Ulmus rubra* Floodplain Forest (CEGL007334)

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 – Mesic Floodplain Forest

Contributors

Douglas 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	09/03/2026
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:
