

Ecological site F121XY030KY

Poorly Drained & Very Poorly Drained Floodplain

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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): 121X–Kentucky Bluegrass

General: MLRA 121 is in Kentucky (83 percent), southern Ohio (11 percent), and southern Indiana (6 percent). It makes up about 10,680 square miles (27,670 square kilometers). The cities of Cincinnati, Ohio, and Louisville, Frankfort, and Lexington, Kentucky, are in this area. Physiography: This area is primarily in the Lexington Plain Section of the Interior Low Plateaus Province of the Interior Plains. Soils: The dominant soil orders in MLRA 121 are Alfisols, Inceptisols, and Mollisols. The soils in the area dominantly have a mesic soil temperature regime, an udic soil moisture regime, and mixed mineralogy. They are shallow to very deep, generally well-drained, and loamy or clayey. Hapludalfs formed in residuum on hills and ridges (Beasley, Cynthiana, Eden, Faywood, Lowell, and McAfee series) and in loess over residuum on hills and ridges (Carmel and Shelbyville series). Paleudalfs (Crider and Maury series) formed in loess or other silty sediments over residuum on hills and ridges. Fragiudalfs (Nicholson series) formed in loess over residuum on ridges. Hapludolls formed in residuum on hills and ridges (Fairmount series) and in alluvium on floodplains (Huntington series). Eutrudepts (Nolin series) formed in alluvium on flood plains. Geology: Most of this area has an Ordovician-age limestone that has been brought to the surface in the Jessamine Dome, a high part of a much larger structure called the Cincinnati Arch. The strata of limestone have a propensity to form caves and karst topography. Younger units of thin-bedded shale, siltstone, and limestone occur at the eastern and western edges of the area. The area has no coal-bearing units. Pleistocene-age loess deposits cover most of the bedrock units in this MLRA, and some glacial lake sediments are at the surface in the northwest corner of the area. Unconsolidated alluvium is deposited in the river valleys.

Classification relationships

Riparian Forest (Kentucky State Nature Preserves Commission, 2009) Small Stream Scour Forest (Kentucky State Nature Preserves Commission, 2009)

Ecological site concept

The Poorly Drained & Very Poorly Drained Floodplain ecological site includes poorly and very poorly drained floodplain mapunits. Representative soils include: Dunning, Lanton, Melvin. Field work is required to refine this grouping of soils and may result in multiple ecological site descriptions being developed. State 1, Phase 1.1: Plant species dominants: *Platanus occidentalis*-*Populus deltoides*/*Salix nigra* –*Cephalanthus occidentalis*/ Common name: American sycamore – cottonwood / black willow – buttonbush/ The flooding and ponding regime characteristic of individual sites would greatly influence the forest community development and open areas of cane, sedges and grasses may exist within these communities. Wetland oaks may have once been influential on these soils, but existing communities today are dominated by sycamore, cottonwood, silver maple, and green ash. Understory species may include paw paw, spicebush, dogwoods, and boxelder. The herbaceous layers are variable depending on substrate, flooding frequency, flooding duration, drainage, and topography. State: 2. Pasture State 2, Phase 2.1: Managed Pasture. Plant species dominants: *Schedonorus arundinaceus* (tall fescue) State: 3 – Transitional (Abandoned) Field State 3, Phases 3.1: *Acer saccharinum*-*Liriodendron tulipifera*/*Rosa multiflora*-*Rubus* spp. /*Schedonorus arundinaceus* Narrative: Tree species regeneration on these sites will depend on the severity and duration of disturbance, soil characteristics, available water, adjacent plant communities, seed sources, post-disturbance management inputs, and presence or absence of continued site disturbances (grazing). State: 4. Old Cropfield Pioneer Woodland State 4, Phase 4.1: Plant species dominants: henbit deadnettle (*Lamium amplexicaule*)- mouse-eared chickweed (*Cerastium* L.) Narrative: This state is characterized by plant species considered weeds – predominately non-native, undesirable annual and perennial plants that quickly invade an abandoned cropfield. Species composition will depend on length of abandonment, previous and ongoing disturbances, and adjacent seed sources. State: 5. Cropland State 5, Phase 5.1: Plant species dominants: *Zea* spp. – *Glycine* spp. Plants on these sites will be dependent upon seeding and management. Most common crops are corn and soybeans. Due to the drainage issues on these soil, many have been tiled extensively to facilitate crop production.

Associated sites

F121XY031KY	Somewhat Poorly Drained Floodplain Somewhat poorly drained Floodplains
F121XY033KY	Well Drained & Moderately Well Drained Floodplain Well Drained and Moderately Well Drained Floodplains

Table 1. Dominant plant species

Tree	(1) <i>Platanus occidentalis</i> (2) <i>Populus deltoides</i>
Shrub	(1) <i>Salix nigra</i> (2) <i>Cephalanthus occidentalis</i>
Herbaceous	Not specified

Physiographic features

This group includes poorly and very poorly drained floodplain mapunits.

Table 2. Representative physiographic features

Landforms	(1) Flood plain
Runoff class	Very low to low
Flooding duration	Extremely brief (0.1 to 4 hours) to brief (2 to 7 days)
Flooding frequency	Occasional to frequent
Ponding frequency	None
Elevation	130 – 270 m
Slope	0 %
Water table depth	10 – 50 cm
Aspect	Aspect is not a significant factor

Climatic features

MLRA climate summary: The average annual precipitation in most of this area is 41 to 45 inches. It is 45 to 52 inches along the southern edge of the area. About one-half of the precipitation falls during the growing season. Most of the rainfall occurs as high-intensity, convective thunderstorms. The annual snowfall averages about 14 inches (370 millimeters). The average annual temperature is 51 to 57 degrees F (10 to 14 degrees C). From: Land Resource Regions and Major Land Resource Areas of the United States, the Caribbean, and the Pacific Basin (U.S. Department of Agriculture Handbook 296, 2006)

Table 3 Representative climatic features

Frost-free period (characteristic range)	160-180 days
Freeze-free period (characteristic range)	190-200 days
Precipitation total (characteristic range)	1,090-1,140 mm
Frost-free period (actual range)	160-180 days
Freeze-free period (actual range)	190-210 days
Precipitation total (actual range)	1,090-1,140 mm
Frost-free period (average)	170 days
Freeze-free period (average)	190 days
Precipitation total (average)	1,120 mm

- (1) CINCINNATI NORTHERN KY AP [USW00093814], Burlington, KY
- (2) LEXINGTON BLUEGRASS AP [USW00093820], Lexington, KY
- (3) LOUISVILLE INTL AP [USW00093821], Louisville, KY

Influencing water features

These sites occur along rivers and streams throughout MLRA 121.

Wetland description

National Wetland Inventory classification (Cowardin 1979):

Class: Palustrine

Subclass: Forested, Scrub-shrub, and/or Emergent

Water regime: Seasonally-saturated, seasonally-flooded

Soil features

Poorly Drained floodplain mapunits in MLRA 121. Representative soils include: Dunning, Lanton, Melvin.

Table 4. Representative soil features

Parent material	(1) Alluvium
Surface texture	(1) Silty clay loam
Family particle size	(1) Loamy
Drainage class	Very poorly drained to poorly drained
Permeability class	Very slow to moderately slow
Soil depth	140 – 180 cm
Surface fragment cover <=3"	Not specified
Surface fragment cover >3"	Not specified
Available water capacity (0-101.6cm)	12.7 – 20.32 cm
Soil reaction (1:1 water) (0-101.6cm)	5.6 – 7.8
Subsurface fragment volume <=3" (Depth not specified)	0 – 10 %
Subsurface fragment volume >3" (Depth not specified)	Not specified

Ecological dynamics

Field work is required to refine this grouping of soils and may result in multiple ecological site descriptions being developed.

State 1, Phase 1.1:

Plant species dominants: *Platanus occidentalis*-*Populus deltoides*/*Salix nigra* –*Cephalanthus occidentalis*/

Common name: American sycamore – cottonwood / black willow – buttonbush/

The flooding and ponding regime characteristic of individual sites would greatly influence the forest community development and open areas of cane, sedges and grasses may exist within these communities. Wetland oaks may have once been influential on these soils, but existing communities today are dominated by sycamore, cottonwood, silver maple, and green ash. Understory species may include paw paw, spicebush, dogwoods, and boxelder. The herbaceous layers are variable depending on substrate, flooding frequency, flooding duration, drainage, and topography.

State: 2. Pasture

State 2, Phase 2.1: Managed Pasture. Plant species dominants: *Schedonorus arundinaceus* (tall fescue)

State: 3 – Transitional (Abandoned) Field

State 3, Phases 3.1: *Acer saccharinum*-*Liriodendron tulipifera*/*Rosa multiflora*- *Rubus* spp. /*Schedonorus arundinaceus*

Narrative: Tree species regeneration on these sites will depend on the severity and duration of disturbance, soil characteristics, available water, adjacent plant communities, seed sources, post-disturbance management inputs, and presence or absence of continued site disturbances (grazing).

State: 4. Old Cropfield Pioneer Woodland

State 4, Phase 4.1: Plant species dominants: henbit deadnettle (*Lamium amplexicaule*)- mouse-eared chickweed (*Cerastium* L.)

Narrative: This state is characterized by plant species considered weeds – predominately non-native, undesirable annual and perennial plants that quickly invade an abandoned cropfield. Species composition will depend on length of abandonment, previous and ongoing disturbances, and adjacent seed sources.

State: 5. Cropland

State 5, Phase 5.1: Plant species dominants: *Zea* spp. – *Glycine* spp.

Plants on these sites will be dependent upon seeding and management. Most common crops are corn and soybeans. Due to the drainage issues on these soil, many have been tilled extensively to facilitate crop production.

State and transition model

Figure 7. MLRA 121, Group 30

Additional community tables

Inventory data references

Site Development and Testing Plan Future work is needed, as described in a future project plan, to validate the information presented in this provisional ecological site description. Future work includes field sampling, data collection and analysis by qualified vegetation ecologists and soil scientists. As warranted, annual reviews of the project plan can be conducted by the Ecological Site Technical Team. A final field review, peer review, quality control, and quality assurance reviews of the ESD are necessary to approve a final document.

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Contributors

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Approval

Greg Schmidt, 10/01/2024

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	09/18/2026
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:
