Ecological site F114XA103IN
Sloping Lacustrine Forest

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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): 114X–Southern Illinois and Indiana Thin Loess and Till Plain

MLRA 114A makes up about 4,550 square miles (11,795 square kilometers). The three parts of this MRLA are mostly in the Till Plains Section of the Central Lowland Province of the Interior Plains. The western third of the western part is in the Highland Rim Section of the Interior Low Plateaus Province of the Interior Plains. The eastern half of the eastern part is in the Kanawha Section of the Appalachian Plateaus Province of the Appalachian Highlands. Both large and small tributaries of the Ohio River dissect the nearly level to very steep glaciated uplands in this area. The major streams and rivers have well defined valleys with broad flood plains and numerous stream terraces. The flood plains along the smaller streams are narrow. Broad summits are nearly level to gently sloping. Elevation ranges from 320 feet (100 meters) on the southernmost flood plain along the Ohio River to 1,250 feet (380 meters) on the highest ridges. Local relief is mainly 10 to 50 feet (3 to 15 meters), but it can be 50 to 100 feet (15 to 30 meters) along drainageways and streams. Also, the Ohio River bluffs are as much as 300 feet (90 meters) above the river valley floor.

Classification relationships

222 Eastern Broadleaf Forest (Continental) Province. Bluegrass Natural Region of Indiana. Homoya's Natural Regions of Indiana. The following NatureServe Explorer Ecological community has a high level of probability to match the ecological site reference community found on these soils. Field work is required for verification and conformation. Quercus rubra - (Acer saccharum, Quercus alba) Forest Translated Name: Northern Red Oak - (Sugar Maple, White Oak) Forest Common Name: Red Oak - Sugar Maple - Elm Forest Unique Identifier: CEGL005017

Ecological site concept

Historically, Sloping Lacustrine Forest sites were mature, high-quality, upland deciduous forests. Soils in this groups area generally formed in lacustrine parent materials and are moderately well drain to well drained. Sites occur on glacial lake plains, moraines, or high stream terraces often with slope or on a convex surface. High quality reference site species include northern red oak, white oak, American beech, sugar maple, tulip polar, shagbark hickory, bitternut hickory, white ash, American elm, black walnut, basswood, black gum, and sassafras. Mid-canopy species may include flowering dogwood (Cornus florida), hophornbeam (Ostrya virginiana), and red maple (Acer rubrum). Shrubs include spicebush (Lindera benzoin) and mapleleaf viburnum (Viburnum acerifolium L.). Without disturbance, the understory community will be dense, with rich diversity, and numerous spring ephemerals. On many sites, the dominant canopy trees are now American beech, sugar maple, and/or tulip poplar as oaks have historically been removed. Associate species may include basswood, white ash, yellow buckeye, hornbeam, and hop-hornbeam. On mature sites, a dense tree canopy will form a thick layer of ground-level humus and leaf litter. Understory plants will vary depending on available sunlight. Without post-harvest management, these sites will transition after large-scale disturbances from an oak-mixed hardwood forest to a post-disturbance maple-beech-poplar forest.

Associated sites

F114XA102IN	**Lacustrine Terrace Forest** Lacustrine Terrace Forest. Soils in this group are predominately somewhat poorly drained and have lower slopes.

Similar sites

F114XA102IN	**Lacustrine Terrace Forest** Lacustrine Terrace Forest. These sites share some similar species but have lower slopes.

Table 1. Dominant plant species

Tree	(1) *Quercus* (2) *Carya ovata*
Shrub	(1) *Lindera benzoin* (2) *Viburnum acerifolium*
Herbaceous	(1) *Sanicula* (2) *Botrychium virginianum*

Physiographic features

These soils are located on lacustrine soil and are often located on terraces and low hillsides.

Table 2. Representative physiographic features

Landforms	(1) Hills > Hillside (2) Lake plain > Hill (3) Valley > Terrace
Runoff class	Negligible to high
Flooding duration	Extremely brief (0.1 to 4 hours) to brief (2 to 7 days)
Flooding frequency	None to very rare
Ponding frequency	None
Elevation	100 – 370 m
Slope	10 – 30 %
Water table depth	50 – 180 cm
Aspect	W, NW, N, NE, E, SE, S, SW

Table 3. Representative physiographic features (actual ranges)

Runoff class	Not specified
Flooding duration	Not specified
Flooding frequency	Not specified
Ponding frequency	Not specified
Elevation	Not specified
Slope	0 – 40 %
Water table depth	Not specified

Climatic features

About 60 percent of the precipitation falls during the freeze-free period. Most of the rainfall occurs as high-intensity, convective thunderstorms during summer. Snowfall is common in winter. The freeze-free period averages about 180 days.

Table 4 Representative climatic features

Frost-free period (characteristic range)	150-160 days
Freeze-free period (characteristic range)	180-180 days
Precipitation total (characteristic range)	1,170-1,190 mm
Frost-free period (actual range)	150-160 days
Freeze-free period (actual range)	180-180 days
Precipitation total (actual range)	1,170-1,190 mm
Frost-free period (average)	160 days
Freeze-free period (average)	180 days
Precipitation total (average)	1,170 mm

- (1) SEYMOUR 2 N [USC00127935], Seymour, IN

- (2) NORTH VERNON 2 ESE [USC00126435], North Vernon, IN
- (3) MILFORD [USC00335268], Milford, OH

Influencing water features

This ecological site is not influenced by wetland or riparian water features. Sites may have a seasonally high water table.

Soil features

The soils on these sites are very deep, moderately well drained to well drained, and have slow to moderate permeability. Soil series currently included in this group are Glenford, Elkinsville, Markland, Mentor, Millstone, and Shircliff.

Table 5. Representative soil features

Parent material	(1) Lacustrine deposits (2) Glaciolacustrine deposits (3) Alluvium (4) Loess
Surface texture	(1) Silt loam (2) Loam (3) Silty clay loam
Drainage class	Moderately well drained to well drained
Permeability class	Slow to moderate
Depth to restrictive layer	200 cm
Soil depth	200 cm
Surface fragment cover <=3"	Not specified
Surface fragment cover >3"	Not specified
Available water capacity (Depth not specified)	12.7 – 20.32 cm
Calcium carbonate equivalent (Depth not specified)	0 – 20 %

Soil reaction (1:1 water) (Depth not specified)	10 – 7.5
Subsurface fragment volume <=3" (Depth not specified)	Not specified
Subsurface fragment volume >3" (Depth not specified)	Not specified

Ecological dynamics

The reference community is a high-quality, mature, deciduous forest with a substantial oak component. Species include northern red oak, white oak, shagbark hickory, sugar maple, American beech, black walnut, black oak, tulip poplar, basswood, and American elm. Subcanopy trees may include black cherry, sassafras, red maple, sugar maple, and American hophornbeam. Shrub layers are often quite variable depending on topography and aspect. Typical forest understory plants include Virginia creeper (Parthenocissus quinquefolia), rattlesnake fern (Botrychium virginianum), tick trefoils (Desmodium spp.), bedstraws (Gallium spp.), and snakeroot (Sanicula spp.).

According to USDA-USFS LANDFIRE, full stand replacing disturbance events on these sites were uncommon. Small gap disturbance was the most common disturbance event that allowed propagation of these species. Disturbances without timber stand improvement will result in a dominance of sugar maple and tulip poplar with a subcomponent of red maple, white ash, and sassafras.

Remaining wooded sites have few oaks due to cutting , fire suppression, and invasive shrubs. Few high quality forest sites remain due to disturbance such as logging, agricultural conversion, and urban development.

State and transition model

Additional community tables

Table 6. Community 1.1 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 3.2 plant community composition

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

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Approval

Greg Schmidt, 9/26/2024

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)	A Arends, ESI Specialist.
Contact for lead author	
Date	09/26/2026
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:

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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:**
