

Ecological site F111XE102OH

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): 111X–Indiana and Ohio Till Plain

111E – Indiana and Ohio Till Plain, Eastern Part. Most of this area is in the Till Plains Section of the Central Lowlands Province of the Interior Plains. The northeast tip of the area is in the Southern New York Section of the Appalachian Highlands. The entire area has been glaciated. It is dominated by ground moraines that are broken in places by kames, lake plains, outwash plains, terraces, and stream valleys. Narrow, shallow valleys commonly are along the few large streams in the area. Elevation ranges from 580 to 1,400 feet (175 to 425 meters), increasing gradually from west to east. Relief is mainly a few meters, but in some areas hills rise as much as 100 feet (30 meters) above the adjoining plain. The extent of the major Hydrologic Unit Areas (identified by four-digit numbers) that make up this MLRA is as follows: Scioto (0506), 33 percent; Muskingum (0504), 31 percent; and Western Lake Erie (0410), 28 percent; Upper Ohio (0503), 5 percent; and Southern Lake Erie (0411), 3 percent. The headwaters of many rivers in central Ohio, including the Vermillion, Black Fork, Sandusky, Little Scioto, and Olentangy Rivers, are in this MLRA. This MLRA is underlain by late Devonian shale and sandstone. Surficial materials include glacial deposits of till, glaciolacustrine sediments, and outwash from Wisconsin and older glacial periods.

Classification relationships

Major Land Resource Area (USDA-Natural Resources Conservation Service, 2006) USFS Ecological Regions (USDA, 2007): Sections –Central Till Plains, Beech Maple (222H), Western Glaciated Allegheny Plateau (221F) Subsections – Allegheny Plateau (221Fa), Bluffton Till Plains (222Ha), Miami-Scioto Plain – Tipton Till Plain (222Hb) NatureServe Systems anticipated (NatureServe, 2011): Agriculture - Cultivated Crops and Irrigated Agriculture, Agriculture – Pasture/Hay, North-Central Interior Beech-Maple Forest, North-Central Interior Dry-Mesic Oak Forest and Woodland, Ruderal Forest, Ruderal Upland - Old Field LANDFIRE Biophysical Settings anticipated (USGS, 2010): North-Central Interior Beech-Maple Forest, North-Central Interior Dry-Mesic Oak Forest and Woodland

Ecological site concept

This site is an upland site formed on lacustrine parent materials in soils that are somewhat poorly to moderately well drained. These soils generally occur on lake plains, moraines, or terraces often with some slope or on a convex surface. The site is located on generally flat topography, but slopes can reach to 18% at the margins of the landform features. The characteristic vegetation of the site is a mesic forest with the understory and canopy dominated by fire sensitive, shade tolerant species most notably sugar maple and American beech, with tulip tree and basswood also being common. Canopy level associates include white oak, hackberry, and black walnut. Catastrophic windthrow was the most common, large scale disturbance event on this site and even those only occurred about every 300-500 years. Small gap disturbance caused by local windthrow or mortality was the main disturbance event that allowed the site to become dominated by fire sensitive, shade tolerant species. The largest risk to extant natural representation of the site is by invasion of non-native plants that, if unchecked, can dominate the understory. This greatly changes the species richness and diversity of the understory as the non-native plants, particularly species of Asian bush honeysuckle, exclude most all other species. The dominant canopy level trees are not threatened by these species, however given enough time this change could alter the composition of the canopy by altering the species that can get established in the understory. A large portion of this site has been drained and is in agricultural production. The majority of the converted acres is used for small grain rotations, specifically corn and soybeans. A much smaller amount of the site is also used for growing forage that is used for pasture or hay production. These sites are predominately cool season grass species and legumes such as tall fescue and clover species. The largest risk to extant natural representation of the site is by invasion of non-native plants that, if unchecked, can dominate the understory.

Associated sites

F111XE101OH	Lacustrine Flatwood Lacustrine Flatwood. Soils very poorly or poorly drained
F111XE501OH	Till Depression Till Depression. Located on glacial till parent materials; generally lower on the landscape; frequently ponded.

Similar sites

F111XE301OH	Wet Restricted Wet Restricted. Located on residuum parent materials; soils are somewhat poorly drained.
F111XE502OH	Wet Till Ridge Wet Till Ridge. Located on glacial till parent materials; site located on a convex landscape position; soils are somewhat poorly drained.
F111XE403OH	Outwash Upland Outwash Upland. Located on outwash parent materials; soils are very poorly to somewhat poorly drained; site often located higher on the landscape.
F111XE503OH	Till Ridge Till Ridge. Located on glacial till parent materials; site located on a convex landscape position; soils are moderately well to well drained.
F111XE204OH	Dry Alluvium Forest Dry Alluvium Forest. Located on alluvium parent materials; soils are moderately well to well drained.

Table 1. Dominant plant species

Tree	(1) <i>Acer saccharum</i> (2) <i>Fagus grandifolia</i>
Shrub	Not specified
Herbaceous	Not specified

Physiographic features

This ecological site is found in till plain landscapes in MLRA 111E: Indiana and Ohio Till Plain, Eastern Part. It developed on lake plains, deltas, flats, and outwash plains on lacustrine parent material. Landform positions include footslopes, backslopes, shoulders, and summits with slopes that range from 0 to 18 percent.

Figure 1. Block diagram showing soils on the landscape.

Table 2. Representative physiographic features

Landforms	(1) Lake plain (2) Delta plain (3) Outwash plain
Runoff class	Low to high
Flooding frequency	None
Ponding frequency	None
Elevation	150 – 370 m
Slope	0 – 20 %
Water table depth	30 – 150 cm
Aspect	Aspect is not a significant factor

Climatic features

The average annual precipitation in this area is 35 to 41 (890 to 1,040 millimeters). Most of the rainfall occurs as convective thunderstorms during the growing season. About half or more of the precipitation occurs during the freeze-free period. Snowfall is common in winter. The average annual temperature is 48 to 52 degrees F (9 to 11 degrees C). The freeze-free period averages about 185 days and ranges from 165 to 205 days.

Table 3 Representative climatic features

Frost-free period (characteristic range)	130-150 days
Freeze-free period (characteristic range)	170-180 days
Precipitation total (characteristic range)	990-1,070 mm
Frost-free period (actual range)	130-150 days
Freeze-free period (actual range)	170-180 days
Precipitation total (actual range)	990-1,120 mm
Frost-free period (average)	140 days

Freeze-free period (average)	180 days
Precipitation total (average)	1,040 mm

- (1) CHIPPEWA LAKE [USC00331541], Medina, OH
- (2) LANCASTER [USC00334403], Lancaster, OH
- (3) WESTERVILLE [USC00338951], Westerville, OH
- (4) GALION WTR WKS [USC00333021], Galion, OH
- (5) MANSFIELD LAHM MUNI AP [USW00014891], Mansfield, OH

Influencing water features

This ecological site is not influenced by wetland or riparian water features.

Soil features

The soil series associated with this site are: Tuscola, Shinrock, Mentor, Kibbie, Glenford, Fitchville. They are very deep, somewhat poorly drained to well drained, and moderately slow to moderately rapid permeable soils, with strongly acidic to neutral soil reaction, that formed in glaciofluvial deposits, glaciolacustrine deposits, or lacustrine deposits.

Parent Materials Kind: glaciofluvial deposits, glaciolacustrine deposits, lacustrine deposits

Surface Texture: fine sandy loam, loam, silt loam

Subsurface Texture group: loamy

Figure 8. Location of mapunits in the MLRA

Table 4. Representative soil features

Parent material	(1) Lacustrine deposits (2) Glaciolacustrine deposits (3) Glaciofluvial deposits
Surface texture	(1) Loam (2) Silt loam (3) Fine sandy loam
Drainage class	Somewhat poorly drained to well drained
Permeability class	Moderately slow to moderately rapid
Soil depth	200 cm
Surface fragment cover <=3"	Not specified

Surface fragment cover >3"	Not specified
Available water capacity (Depth not specified)	14.48 – 20.07 cm
Calcium carbonate equivalent (Depth not specified)	0 – 20 %
Electrical conductivity (Depth not specified)	Not specified
Sodium adsorption ratio (Depth not specified)	Not specified
Soil reaction (1:1 water) (Depth not specified)	5.5 – 7.9
Subsurface fragment volume <=3" (Depth not specified)	0 – 10 %
Subsurface fragment volume >3" (Depth not specified)	Not specified

Ecological dynamics

The historic plant community of the Lacustrine Forest ecological site is a mesic forest. The dominant species in the canopy and understory are sugar maple and American beech, with white oak. Canopy associates may include tulip tree, basswood, and black walnut. Small gap disturbance is the most common disturbance event that allowed propagation of these species. Stand replacing fire was rare (

State and transition model

Figure 9. STM

Figure 10. Legend

Additional community tables

Table 5. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 6. Community 1.2 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 7. Community 2.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 8. Community 3.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 9. Community 3.2 plant community composition

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

Site concept developed through expert opinion, review of the literature, and field reconnaissance.

Other references

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Approval

Greg Schmidt, 9/11/2024

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)	TYLER STAGGS
Contact for lead author	
Date	02/07/2022
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:
