Ecological site F111XE203OH
Wet Alluvium Forest

Last updated: 9/11/2024
Accessed: 11/06/2026

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): 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 LANDFIRE Biophysical Settings anticipated (USGS, 2010): Central Interior and Appalachian Floodplain Systems, Central Interior and Appalachian Riparian Systems, North-Central Interior Beech-Maple Forest

Ecological site concept

This site is a wetland/riparian site formed on alluvial parent materials that are poorly to somewhat poorly drained. It is located along the floodplain, often on steps, natural levees, and terraces, of lotic systems in loamy alluvial deposits overlaying coarser materials. The site is generally constrained to a narrow landscape position that is influenced by the adjacent uplands and riparian areas. Flooding can be nonexistent to frequent, depending on the riparian system with durations up to 30 days. Landscape position and internal drainage preclude ponding from occurring on this site. The characteristic vegetation of the site is that of a riparian forest dominated principally by silver maple and swamp white oak. Additional canopy level species include green ash, sugar maple, elm, and basswood. Active hydrologic and geomorphic process, along with windthrow of established trees, drive the long interval disturbance regime of this tree dominated site. These macro and micro scale disturbance events creates mixed-aged forests that contains both late and early seral species. These dynamics have been drastically changed due to the installation of levees, dams, and channelization of the system. Establishment woody non-native, invasive species, followed by no management to control them, can alter the state of the site. The invasive species can persist in the understory as a component and then spread rapidly with an opening in the canopy. They can come to dominate the understory of the site, while the canopy level species remain, relatively, unchanged. Removal of the woody species, installation of tile, and agricultural practices move this site to a new state. Much of the historic acres of this site have been transitioned to agriculture with the bulk of those acres being in corn and soybean rotations.

Associated sites

F111XE203OH	**Wet Alluvium Forest** Dry Alluvium Floodplain.Soils are moderately well to well drained; surface dark in color
F111XE204OH	**Dry Alluvium Forest** Dry Alluvium Forest.Soils are moderately well to well drained
F111XE201OH	**Wet Alluvium Floodplain** Wet Alluvium Floodplain.Soils are very poorly drained; surface dark in color

Similar sites

F111XE201OH	**Wet Alluvium Floodplain** Wet alluvium floodplain.Soils are very poorly drained; surface dark in color.
F111XE101OH	**Lacustrine Flatwood** Lacustrine floodplain. Located on lacustrine parent materials.

Table 1. Dominant plant species

Tree	(1) *Acer saccharinum* (2) *Quercus bicolor*
Shrub	Not specified
Herbaceous	Not specified

Physiographic features

This site is located in the 111E - Indiana and Ohio Till Plain, Eastern Part MLRA. It is classified as a wetland/riparian site. This site was formed in loamy alluvium on flood plains. This creates a long, linear expression of the site on the landscape with slopes ranging from 0 to 2 percent

Figure 1. block diagram showing soils on the landscape

Table 2. Representative physiographic features

Landforms	(1) River valley > Flood plain
Runoff class	Negligible to low
Flooding duration	Extremely brief (0.1 to 4 hours) to long (7 to 30 days)

Flooding frequency	None to frequent
Ponding frequency	None
Elevation	100 – 320 m
Slope	0 %
Water table depth	10 – 60 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)	140-150 days
Freeze-free period (characteristic range)	180-180 days
Precipitation total (characteristic range)	1,040-1,070 mm
Frost-free period (actual range)	140-150 days
Freeze-free period (actual range)	180-180 days
Precipitation total (actual range)	1,020-1,120 mm
Frost-free period (average)	150 days
Freeze-free period (average)	180 days
Precipitation total (average)	1,070 mm

- (1) NEWARK WATER WKS [USC00335747], Newark, OH
- (2) BUCYRUS [USC00331072], Bucyrus, OH

- (3) CENTERBURG 2 SE [USC00331404], Centerburg, OH
- (4) GALION WTR WKS [USC00333021], Galion, OH
- (5) MANSFIELD LAHM MUNI AP [USW00014891], Mansfield, OH

Influencing water features

This site is characterized by its location in a floodplain of a perennial stream and therefore it is most affected by the flooding, scouring, and channel movement of the adjacent lotic system. Flooding can be occasional to frequent with a long (7 to 30 day) duration depending on the riverine system. Ponding does not occur on the site largely due to drainage and coarseness of soil, but also due to landform position. The proximity of the site to a perennial stream/river and therefore low topographic location result in a seasonally high water table in the spring that recedes somewhat during the summer. Levees, dams, and channelization have greatly altered the hydrology and flooding of the riparian systems in many places.

The hydrogeographic model classification for this site is RIVERINE: Alluvial Plain, Stream Terrace, Flood Plain; forested. This site has a Cowardin Classification of PFO6An; it is a forested palustrine system that is temporarily flooded on mineral soil.

Soil features

The soil series associated with this site are: Shoals, Orrville, Newark, Killbuck, Holly. They are very deep, poorly drained to somewhat poorly drained, and moderately slow to moderately rapid permeable soils, with slightly acidic to neutral soil reaction that formed in alluvium.

Parent Materials Kind: alluvium
Surface Texture: silt loam
Subsurface Texture group: loamy

Figure 8. Map showing location of mapunits within the MLRA

Table 4. Representative soil features

Parent material	(1) Alluvium
Surface texture	(1) Silt loam
Drainage class	Poorly drained to somewhat excessively 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)	17.02 – 20.83 cm
Calcium carbonate equivalent (Depth not specified)	0 – 10 %

Electrical conductivity (Depth not specified)	Not specified
Sodium adsorption ratio (Depth not specified)	Not specified
Soil reaction (1:1 water) (Depth not specified)	6.2 – 10
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 Wet Alluvium Forest ecological site is a riparian forest. The dominant species in the canopy are silver maple and swamp white oak, with green ash being common as well. This site is the result of hydrologic and geomorphic process at the macro scale and windthrow on a more local scale. The disturbance regime is one of somewhat frequent low intensity flooding events punctuated by high intensity events (ie. 100+ year floods, tornadoes, or ice storms). Micro scale disturbance such as windthrow or localized mortality lead the site to being a mixed-age forest.

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 (%)

Table 6. Community 2.1 plant community composition

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

Table 7. Community 3.1 plant community composition

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

Table 8. Community 3.2 plant community composition

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

Inventory data references

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

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:

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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:**
