Ecological site F111XE503OH
Till Ridge

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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, Northeastern Interior Dry-Mesic Oak Forest LANDFIRE Biophysical Settings anticipated (USGS, 2010): North-Central Interior Beech-Maple Forest, Northeastern Interior Dry-Mesic Oak Forest

Ecological site concept

This site is an upland site formed on glacial till parent materials located in a swell (convex) landscape position. It is located on summits, shoulders and backslopes on steep slopes that can be up to 50%. The soils are moderately well to well drained with the surface being in the loamy texture group. The characteristic vegetation of the site is of a till forest with the understory and canopy dominated by sugar maple, American beech, and basswood. Canopy level associates include white oak, bitternut and shagbark hickory, and black walnut. The site is dominated by shade tolerant, fire sensitive species. The most common disturbance dynamic is individual tree or small group mortality or windthrow with catastrophic windthrow or damage from ice storms to occur very infrequently. 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. Currently, the majority of this site is being used for corn and soybean rotations.

Associated sites

F111XE501OH	**Till Depression** Site is in a concave landscape position and frequently flooded.

F111XE502OH	**Wet Till Ridge** Soils are somewhat poorly drained.

Similar sites

F111XE502OH	**Wet Till Ridge** Soils are somewhat poorly drained.
F111XE403OH	**Outwash Upland** Located on outwash parent materials; soils surface light in color; soils are very poorly to somewhat poorly drained.
F111XE301OH	**Wet Restricted** Located on residuum parent materials; soils are somewhat poorly drained.
F111XE102OH	**Lacustrine Forest** Located on lacustrine parent materials; soils are somewhat poorly drained or drier.

Table 1. Dominant plant species

Tree	(1) *Acer saccharum* (2) *Fagus grandifolia*
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 an upland site. This site was formed on glacial till, often times with loess or silty layers at the surface, on till plains and moraines. It is located on the summits, shoulders, and backslopes with slopes that range from 2 to 50 percent.

Figure 1. block diagram showing soils on the landscape

Table 2. Representative physiographic features

Landforms	(1) Till plain (2) Moraine
Runoff class	Low to high

Flooding frequency	None
Ponding frequency	None
Elevation	210 – 430 m
Slope	0 – 50 %
Water table depth	50 – 150 cm
Aspect	W, NW, N, NE, E, SE, S, SW

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)	170-180 days
Precipitation total (characteristic range)	990-1,040 mm
Frost-free period (actual range)	130-150 days
Freeze-free period (actual range)	170-180 days
Precipitation total (actual range)	990-1,070 mm
Frost-free period (average)	140 days
Freeze-free period (average)	180 days
Precipitation total (average)	1,020 mm

- (1) BUCYRUS [USC00331072], Bucyrus, OH
- (2) GALION WTR WKS [USC00333021], Galion, OH

- (3) CENTERBURG 2 SE [USC00331404], Centerburg, OH
- (4) CHIPPEWA LAKE [USC00331541], Medina, OH
- (5) WESTERVILLE [USC00338951], Westerville, 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: Lykens, Lybrand, Kendallville, Hennepin, Centerburg, Cardington, Amanda, Alexandria. They are moderately deep to deep, moderately well drained to well drained, and slow to moderate permeable soils, with very acidic to neutral soil reaction, that formed in till from limestone, sandstone, and shale.

Parent Materials Kind: till
Surface Texture: clay loam, loam, silt loam, silty clay loam
Subsurface Texture group: loamy

Figure 8. location of mapunits in the MLRA

Table 4. Representative soil features

Parent material	(1) Till
Surface texture	(1) Clay loam (2) Loam (3) Silt loam (4) Silty clay loam
Drainage class	Moderately well drained to well drained
Permeability class	Slow to moderate
Soil depth	90 – 110 cm
Surface fragment cover <=3"	Not specified
Surface fragment cover >3"	Not specified
Available water capacity (Depth not specified)	12.45 – 18.8 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)	10 – 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 Till Ridge ecological site is a till forest with the dominant species in the canopy being sugar maple, beech, and basswood. Canopy associates include white oak, bitternut and shagbark hickory, and black walnut. This site is dominated by fire sensitive and shade tolerant species. Species with these characteristics make it to the canopy via gap-phase recruitment on a local scale. Large scale, stand replacing disturbance was very infrequent, but was usually the result of large scale windthrow or ice damage.

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 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 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 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:

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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:**
