

Ecological site F114XA502IN

Till Uplands

Last updated: 9/26/2024
Accessed: 10/03/2026

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): 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

USFS: 222 Eastern Broadleaf Forest (Continental) Province Homoya's Natural Regions of Indiana: Bluegrass Region The following NatureServe Explorer Ecological System has a high level of probability to match the ecological site found on these soils. North-Central Interior Dry-Mesic Oak Forest and Woodland-CES202.046. Southern Interior Low Plateau Dry-Mesic Oak Forest - CES202.898.

Ecological site concept

Till Upland Forest sites were historically a diverse and complex mosaic of forest species. High-quality, old-growth forest on wetter micro-sites exhibited wet oak forest species such as pin oak, swamp white oak, swamp chestnut oak, and sweetgum. However, most of these sites are characterized by more mesic forest species such as northern red oak, sugar maple, white ash, mockernut hickory, bitternut hickory, tulip poplar, and hickory. Overall, the soils in this group will present a wet-mesic to mesic upland deciduous forest complex dictated by soil drainage and restrictive layer depth. The majority of sites today have a history of disturbance. Ruderal versions of this community are common. Sugar maple, tulip poplar, and beech have gained prominence on many sites.

Associated sites

F114XA504IN	Sloping Till Upland Forest Soils in the Sloping Till Upland Forest group are located higher on steeper slopes.
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Similar sites

F114XA504IN	Sloping Till Upland Forest The Sloping Till Upland Forest soils will share vegetative similarities including many species of trees.
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Table 1. Dominant plant species

Tree	(1) <i>Quercus rubra</i> (2) <i>Acer saccharum</i>
Shrub	(1) <i>Lindera benzoin</i>
Herbaceous	(1) <i>Parthenocissus quinquefolia</i> (2) <i>Claytonia</i>

Physiographic features

These sites are located on upland till plains.

Figure 1. Physiographic Image - Block diagram with Cincinnati and Rossmoyne soils on the landscape.

Figure 2. Physiographic Image -Block diagram with Cincinnati and Rossmoyne soils on the landscape.

Table 2. Representative physiographic features

Landforms	(1) Upland > Till plain
Runoff class	Low to medium
Flooding frequency	None
Ponding frequency	None
Elevation	110 – 400 m
Slope	0 – 20 %
Water table depth	40 – 150 cm
Aspect	W, NW, N, NE, E, SE, S, SW

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 3 Representative climatic features

Frost-free period (characteristic range)	150-160 days
Freeze-free period (characteristic range)	180-180 days

Precipitation total (characteristic range)	1,140-1,190 mm
Frost-free period (actual range)	150-160 days
Freeze-free period (actual range)	180-190 days
Precipitation total (actual range)	1,090-1,190 mm
Frost-free period (average)	160 days
Freeze-free period (average)	180 days
Precipitation total (average)	1,170 mm

- (1) HILLSBORO [USC00333758], Hillsboro, OH
- (2) MILFORD [USC00335268], Milford, OH
- (3) NORTH VERNON 2 ESE [USC00126435], North Vernon, IN
- (4) SEYMOUR 2 N [USC00127935], Seymour, IN
- (5) SCOTTSBURG [USC00127875], Scottsburg, IN

Influencing water features

These sites are not influenced by riparian or wetland features.

Soil features

Soils for this group include moderately well drained and well drained soils formed on till plains. They have seasonally high water tables and some series have a fragipan.

Series currently include Blocher, Cincinnati, Homewood, Jonesboro, Nabb, Nicely, Rossmoyne, Ryker, and Titusville. ESD development may result in further refinement of this group.

Table 4. Representative soil features

Parent material	(1) Till
Surface texture	(1) Clay loam (2) Silt loam (3) Silty clay loam
Drainage class	Somewhat poorly drained to moderately well drained
Permeability class	Slow to moderate

Depth to restrictive layer	40 – 90 cm
Soil depth	150 – 200 cm
Surface fragment cover <=3"	0 – 10 %
Surface fragment cover >3"	Not specified
Available water capacity (Depth not specified)	11.68 – 18.29 cm
Soil reaction (1:1 water) (Depth not specified)	4.6 – 6.3
Subsurface fragment volume <=3" (Depth not specified)	0 – 10 %
Subsurface fragment volume >3" (Depth not specified)	Not specified

Ecological dynamics

These sites are a mature, hardwood forest with a dense canopy and a diverse understory layer. Dominants include northern red oak (*Quercus rubra*), sugar maple (*Acer saccharum*), basswood (*Tilia Americana*), American beech (*Fagus grandifolia*), and white oak (*Quercus alba*). Associates include hickory (*Carya* spp.), American elm (*Ulmus americana*), white ash (*Fraxinus americana*), black cherry (*Prunus serotina*), and hickory (*Carya* spp.).

The subcanopy and sapling layers often contain hophornbeam (*Ostrya virginiana*), cherry (*Prunus* spp.), flowering dogwood (*Cornus florida*) and spicebush (*Lindera benzoin*). The understory of these sites will contain dozens of forbs and herb species typical of a mesic deciduous forest. The understory of these sites will contain dozens of forbs and herb species typical of a mesic deciduous forest.

This type may occur where, historically, fires were more prevalent; current stands may represent both mesic and somewhat more dry-mesic stands protected from fire that are shifting from oak dominance to maple, basswood and elm dominance.

Most sites have been cleared and are utilized for agricultural production. Remaining wooded sites have usually been disturbed (oak removal) with little or no post-management activities. These disturbed sites revert to sugar maple, basswood, red maple, tulip poplar, and/or white ash. Invasive species are impacting the ecology of many sites.

State and transition model

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 2.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 7. Community 3.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 8. Community 3.2 plant community composition

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

No field monitoring was conducted as part of this PES development. Future ESD development may result in plant community edits, soil mapunits being added or removed from this grouping, and/or additions or modifications to the narratives, tables, vegetation descriptions and state and transition model.

Other references

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Approval

Greg Schmidt, 9/26/2024

Acknowledgments

PES documents developed for adjacent MLRAs in Indiana and Ohio served as a source of information as these regions often shared similar soil series with MLRA 114A. NRCS county soil surveys where a valuable reference including tree species observed on site by NRCS staff. Soil Survey and NRCS Indiana resource soil scientists contributed field observation, field notes, and extensive soil mapping expertise. In accordance with Federal Civil Rights law and U.S. Department of Agriculture (USDA) Civil Rights regulations and policies, the USDA, its agencies, offices, and employees, and institutions participating in or administering USDA programs are prohibited from discriminating based on race, color, national origin, religion, sex, gender identity (including gender expression), sexual orientation, disability, age, marital status, family/parental status, income derived from a public assistance program, political beliefs, or reprisal or retaliation for prior credible activity, in any program or activity conducted or funded by USDA (not all bases apply to all programs). Remedies and complaint filing deadlines vary by program or incident. Persons with disabilities who require alternative means of communication for program information (e.g., Braille, large print, audiotape, American Sign Language, etc.) should contact the responsible Agency or USDA's TARGET Center at (202) 720-2600 (voice and TTY) or contact USDA through the Federal Relay Service at (800) 877-8339. Additionally, program information may be made available in languages other than English. To file a program discrimination complaint, complete the USDA Program Discrimination Complaint Form, AD-3027, found online at How to File a Program Discrimination Complaint and at any USDA office or write a letter addressed to USDA and provide in the letter all of the information

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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	10/03/2026
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:
