

## **Ecological site F120CY019IN Moist Silty Alluvium**

Accessed: 05/18/2024

### **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.



**Figure 1. Mapped extent**

Areas shown in blue indicate the maximum mapped extent of this ecological site. Other ecological sites likely occur within the highlighted areas. It is also possible for this ecological site to occur outside of highlighted areas if detailed soil survey has not been completed or recently updated.

### **MLRA notes**

Major Land Resource Area (MLRA): 120C—Kentucky and Indiana Sandstone and Shale Hills and Valleys, Northeastern Part

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This area is entirely in Indiana and makes up about 1,050 square miles (2,725 square kilometers). Physiography: This area is in the Highland Rim Section of the Interior Low Plateaus Province of the Interior Plains. Both large and small tributaries of the Ohio River and the East Fork of the White River dissect the nearly level to very steep uplands in the 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. Summits are narrow and are nearly level to gently sloping. Geology: The geologic materials in this area are of Early and Middle Pennsylvanian and Late Mississippian age. The rocks consist mainly of flat-lying, interbedded sandstone, shale, coal, and siltstone with minor areas of limestone. Bedrock outcrops are common on the bluffs along the Ohio River and its major tributaries. The surficial geologic materials consist mainly of a layer of loess, typically less than 3.5 feet (1 meter) thick, on the less eroded parts of the landscape and stratified sediments of Pleistocene age along the Ohio River and its tributaries. Unconsolidated alluvium is deposited in the river valleys.

Soils: The dominant soil orders in this MLRA are Alfisols, Ultisols, and Inceptisols. The soils in the area have a mesic soil temperature regime, an udic or aquic soil moisture regime, and dominantly mixed mineralogy. They formed dominantly in loess and in residuum derived from siltstone and shale. They range from moderately deep to very deep and from somewhat poorly drained to well drained and are loamy, silty, or clayey. Fragiudults (Spickert and Tilsit series) and Hapludults (Wrays series) are the dominant soils on ridgetops and the upper parts of hills and

knobs. Halpudalfts (Kurtz series), Hapludalts (Gilwood and Gnowbone series), and Dystrudepts (Brownstown series) are on moderately sloping to very steep side slopes. Hapludalts (Coolville, Rarden, Stonehead, and Wellrock series) are on the gently sloping to moderately steep lower parts of side slopes. Hapludalts (Elkinsville series), Fragiudalts (Pekin series), and Fragiaqualfts (Bartle series) are on stream terraces. Dystrudepts (Beanblossom, Cuba, and Steff series) and Endoaquepts (Stendal series) are on flood plains.

## Classification relationships

South-Central Interior Large Floodplain CES202.705

(*Quercus palustris* - *Quercus bicolor* - (*Liquidambar styraciflua*) Swamp Forest, CEG002432)

## Ecological site concept

The communities described in this provisional document reflect plant communities that are likely to be found on these soils and have not been field verified. This PES describes hypotheses based on available data of many different scales and sources and has not been developed utilizing site-specific ecological field monitoring. This PES does not encompass the entire complexity or diversity of these sites. Field studies would be required to develop a comprehensive and science-based restoration plan for these sites.

State 1, Phase 1.1: Forestland.

This pin oak - swamp white oak forest community type is found in multiple states throughout the Midwest and southeast. Stands occur on wet, poorly drained sites and contain a closed to partially open canopy dominated by various species including oaks, maples and sweetgum. Species likely include *Quercus palustris*, *Acer rubrum*, *Liquidambar styraciflua*, *Nyssa sylvatica*, and *Quercus bicolor*. Other wetland hardwood species can occur, including *Acer saccharinum*, *Betula nigra*, *Quercus macrocarpa*, and *Quercus rubra*. Shrub and vine species are variable and may include *Cornus* spp., *Lindera benzoin*, *Parthenocissus quinquefolia*, and *Sambucus canadensis*. Herbaceous species also vary widely. Herbaceous species may include *Cinna* spp., *Carex* spp., *Elymus riparius*, *Elymus virginicus*, *Cardamine bulbosa*, *Cardamine pensylvanica*, *Claytonia virginica*, *Oxalis violacea*, and *Podophyllum peltatum*.

(*Quercus palustris* - *Quercus bicolor* - (*Liquidambar styraciflua*) Swamp Forest, CEG002432)

State 1, Phase 1.1: Forestland.

Plant species dominant:

Sweetgum (*Liquidambar styraciflua*) – pin oak (*Quercus palustris*) / paw paw (*Asimina triloba*) - spicebush (*Lindera benzoin*) / smallspike false nettle (*Boehmeria cylindrica*) - *Cinna arundinacea*

State 2, Phase 2.1: Pastureland.

Plant species dominant:

*Schedonorus arundinaceus* (tall fescue). Species present are dependent upon seeding and management.

State: 3. Phase 3.1: Transitional (Abandoned Field)

Plant species dominant:

Maple (*Acer* spp.) / berries (*Rubus* spp.) / fescue (*Schedonorus arundinaceus*)

This phase is best described as an old field habitat with a mixture of native and introduced grasses and a variety of native and non-native herbs, forbs, seedlings, and saplings. Species will depend on seed sources and ongoing disturbance levels.

State 4, Phase 4.1: Abandoned Cropland

Plant species dominant:

henbit deadnettle (*Lamium amplexicaule*) – mouse-eared chickweed (*Cerastium* L. )

Abandonment of cropland would result in many weed species taking over the site. Initially, annual weeds would be predominate followed by grasses, shrubs and pioneers trees.

State 5, Phase 5.1: Cropland.

Plant species dominants: dependent upon seeding and management.

Most common crops are corn and soybeans.

Restoration of states 2-5 to the reference community would require long-term, intensive management inputs.

**Table 1. Dominant plant species**

|            |  |
|------------|--|
| Tree       | (1) <i>Quercus palustris</i><br>(2) <i>Liquidambar styraciflua</i> |
| Shrub      | (1) <i>Lindera benzoin</i><br>(2) <i>Asimina triloba</i>           |
| Herbaceous | (1) <i>Boehmeria cylindrica</i><br>(2) <i>Cinna arundinacea</i>    |

## Physiographic features

The soils in this group are deep or very deep, moderately well drained to somewhat poorly drained and formed in silty alluvium. They are found on flood plains and flood-plain steps.

**Table 2. Representative physiographic features**

|                    |  |
|--------------------|--|
| Landforms          | (1) Flood plain<br>(2) Flood-plain step    |
| Flooding duration  | Brief (2 to 7 days) to long (7 to 30 days) |
| Flooding frequency | Rare to frequent                           |
| Ponding duration   | Brief (2 to 7 days) to long (7 to 30 days) |
| Ponding frequency  | None to occasional                         |
| Elevation          | 122–229 m                                  |
| Slope              | 0–2%                                       |
| Water table depth  | 25–102 cm                                  |
| Aspect             | Aspect is not a significant factor         |

## Climatic features

Climate: The average annual precipitation in most of this area is 41 to 47 inches (1,040 to 1,195 millimeters). About 60 percent of the precipitation falls during the freeze-free period. Most of the rainfall occurs as high-intensity, convective thunderstorms in summer. Snowfall is common in winter. The average annual temperature is 52 to 56 degrees F (11 to 14 degrees C). The freeze-free period averages 205 days and ranges from 190 to 220 days. The longer freeze-free periods occur along the Ohio River. (Land Resource Regions and Major Land Resource Areas of the United States, the Caribbean, and the Pacific Basin. United States Department of Agriculture. Natural Resources Conservation Service. United States Department of Agriculture Handbook 296. Issued 2006.)

**Table 3. Representative climatic features**

|                               |          |
|-------------------------------|----------|
| Frost-free period (average)   | 175 days |
| Freeze-free period (average)  | 205 days |
| Precipitation total (average) | 1,194 mm |

## Climate stations used

- (1) BLOOMINGTON IN UNIV [USC00120784], Bloomington, IN

## Influencing water features

These sites may be influenced by flooding.

## Soil features

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Table 4. Representative soil features

|   |  |
|---|--|
| Surface texture   | (1) Silt loam<br>(2) Silty clay loam               |
| Drainage class  | Somewhat poorly drained to moderately well drained |
| Soil depth  | 152–203 cm   |
| Surface fragment cover ≤3"                              | 0%   |
| Surface fragment cover >3"                              | 0%   |
| Available water capacity<br>(0–101.6cm)                 | 11.43–19.81 cm                                     |
| Calcium carbonate equivalent<br>(0–101.6cm)             | 0%   |
| Soil reaction (1:1 water)<br>(0–101.6cm)                | 5–6.7  |
| Subsurface fragment volume ≤3"<br>(Depth not specified) | 0–5%   |
| Subsurface fragment volume >3"<br>(Depth not specified) | 0–1%   |

## Ecological dynamics

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Plant species dominant:

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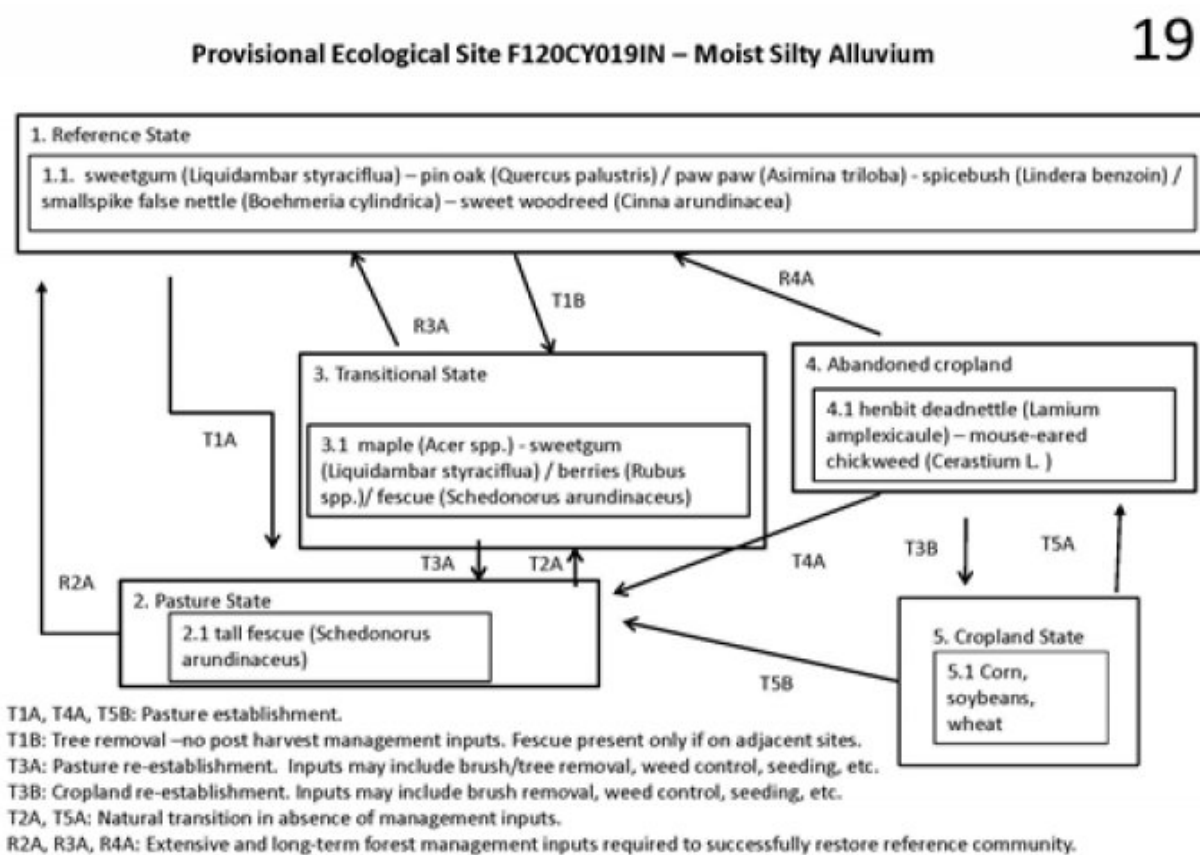
State 5, Phase 5.1: Cropland.

Plant species dominants: dependent upon seeding and management.

Most common crops are corn and soybeans.

Restoration of states 2-5 to the reference community would require long-term, intensive management inputs.

## State and transition model



Most areas in MLRA are cultivated. Corn and soybeans are the principal crops. Some areas are in transitional woodland or pasture.

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Vegbank: [www.vegbank.org](http://www.vegbank.org)

Wildland Fire Management RD&A: <https://www.frames.gov/partner-sites/wfmrda-ffe/home/>

Web Soil Survey, USDA-NRCS: <http://websoilsurvey.nrcs.usda.gov/app/>

Woodland Wildflowers of Illinois: [http://www.illinoiswildflowers.info/woodland/woodland\\_index.htm](http://www.illinoiswildflowers.info/woodland/woodland_index.htm)

## **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)                    |                   |
| Contact for lead author                     |                   |
| Date  |                   |
| Approved by                                 |                   |
| Approval date                               |                   |
| Composition (Indicators 10 and 12) based on | Annual Production |

## Indicators

**1. Number and extent of rills:**

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**2. Presence of water flow patterns:**

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**3. Number and height of erosional pedestals or terracettes:**

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**4. Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):**

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**5. Number of gullies and erosion associated with gullies:**

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**6. Extent of wind scoured, blowouts and/or depositional areas:**

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**7. Amount of litter movement (describe size and distance expected to travel):**

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**8. Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):**

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**9. Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):**

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**10. Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:**

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**11. Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):**

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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:**
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