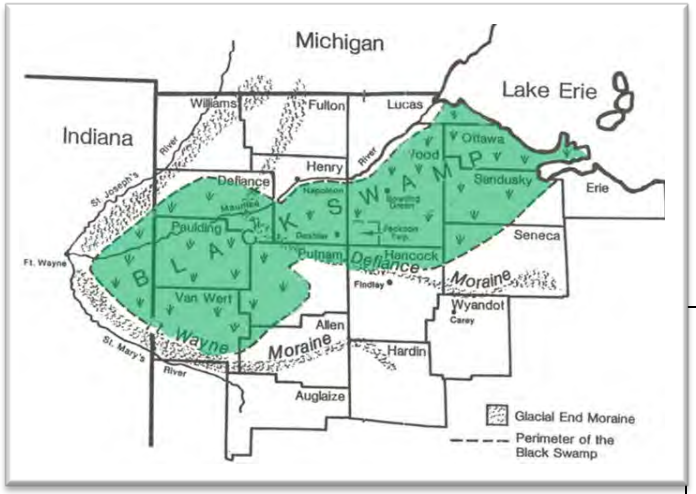
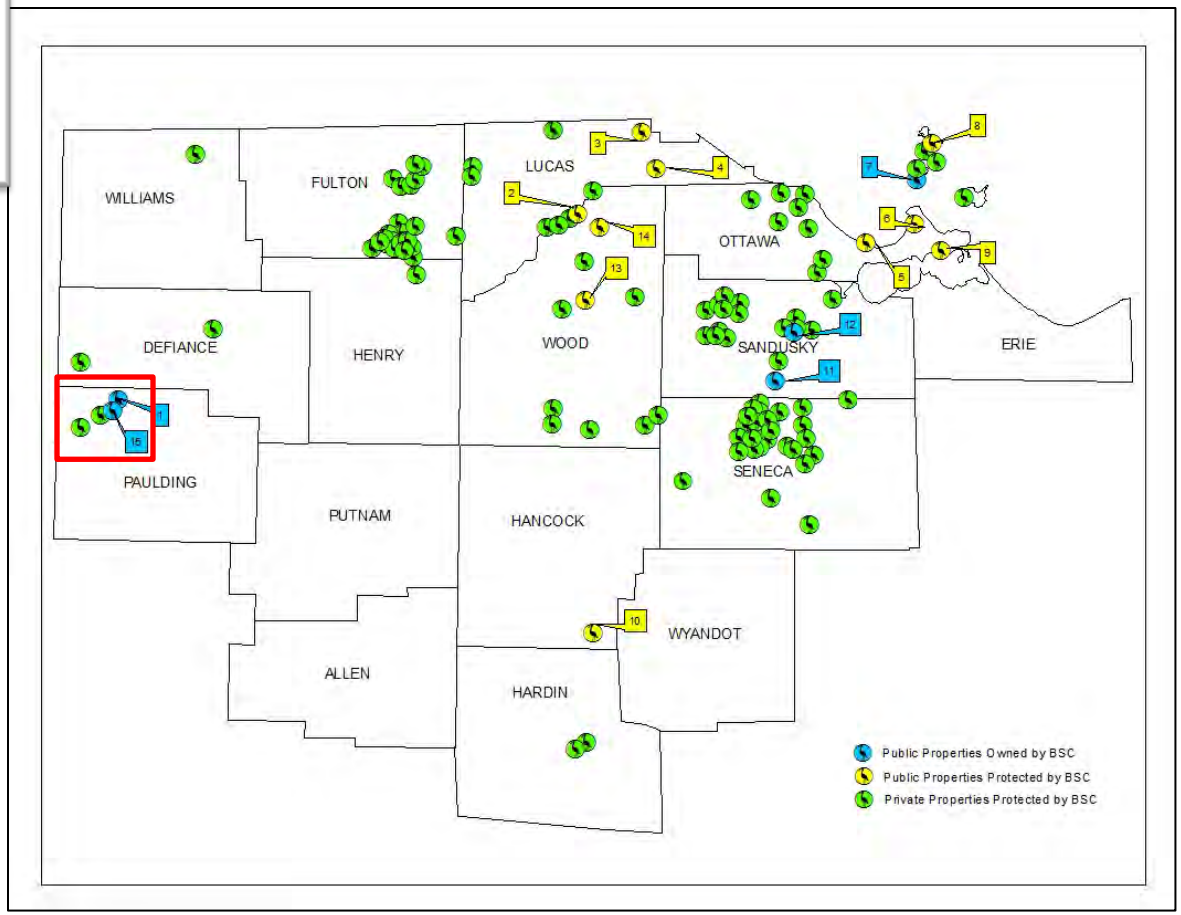
Forrest Woods Nature Preserve
Stream & Wetland Restoration


The mission of Black Swamp Conservancy is to protect and preserve natural and agricultural lands in northwest Ohio for the benefit of future generations.
BLACKSWAMP.ORG

WHERE WE WORK





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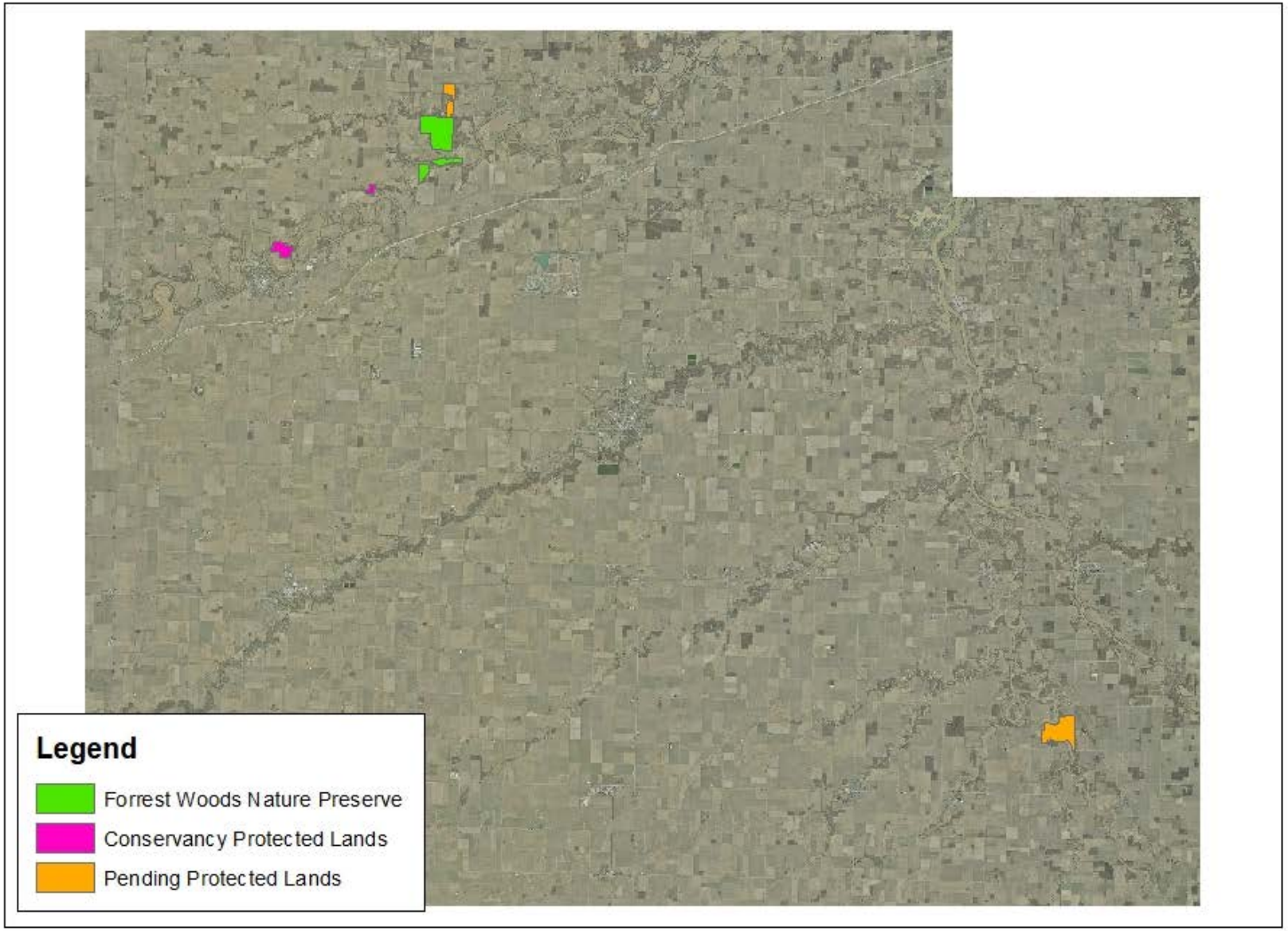
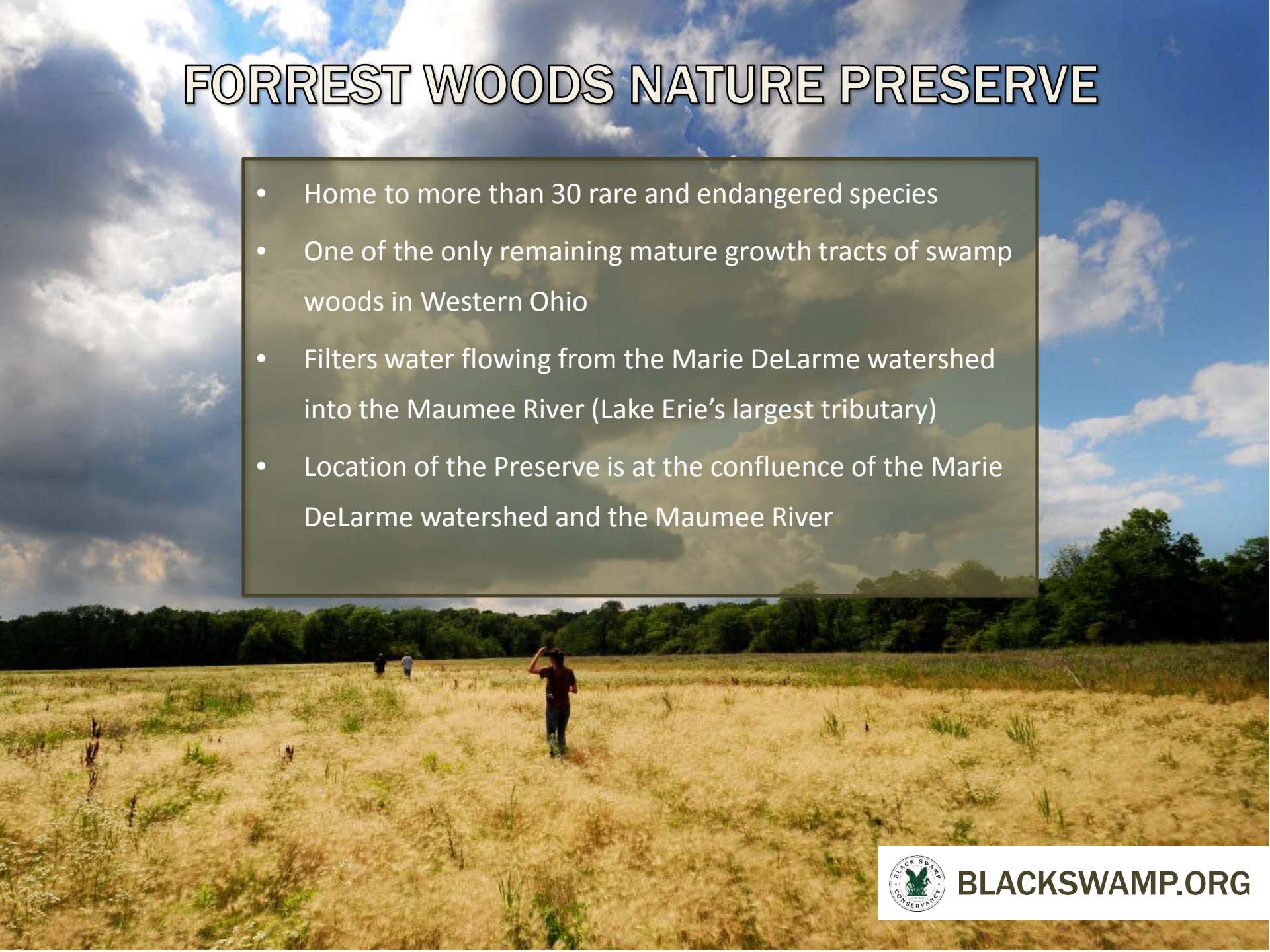
Black Swamp Conservancy in Paulding County




FORREST WOODS NATURE PRESERVE

FORREST WOODS NATURE PRESERVE

- Home to more than 30 rare and endangered species
- One of the only remaining mature growth tracts of swamp woods in Western Ohio
- Filters water flowing from the Marie DeLarme watershed into the Maumee River (Lake Erie's largest tributary)
- Location of the Preserve is at the confluence of the Marie DeLarme watershed and the Maumee River



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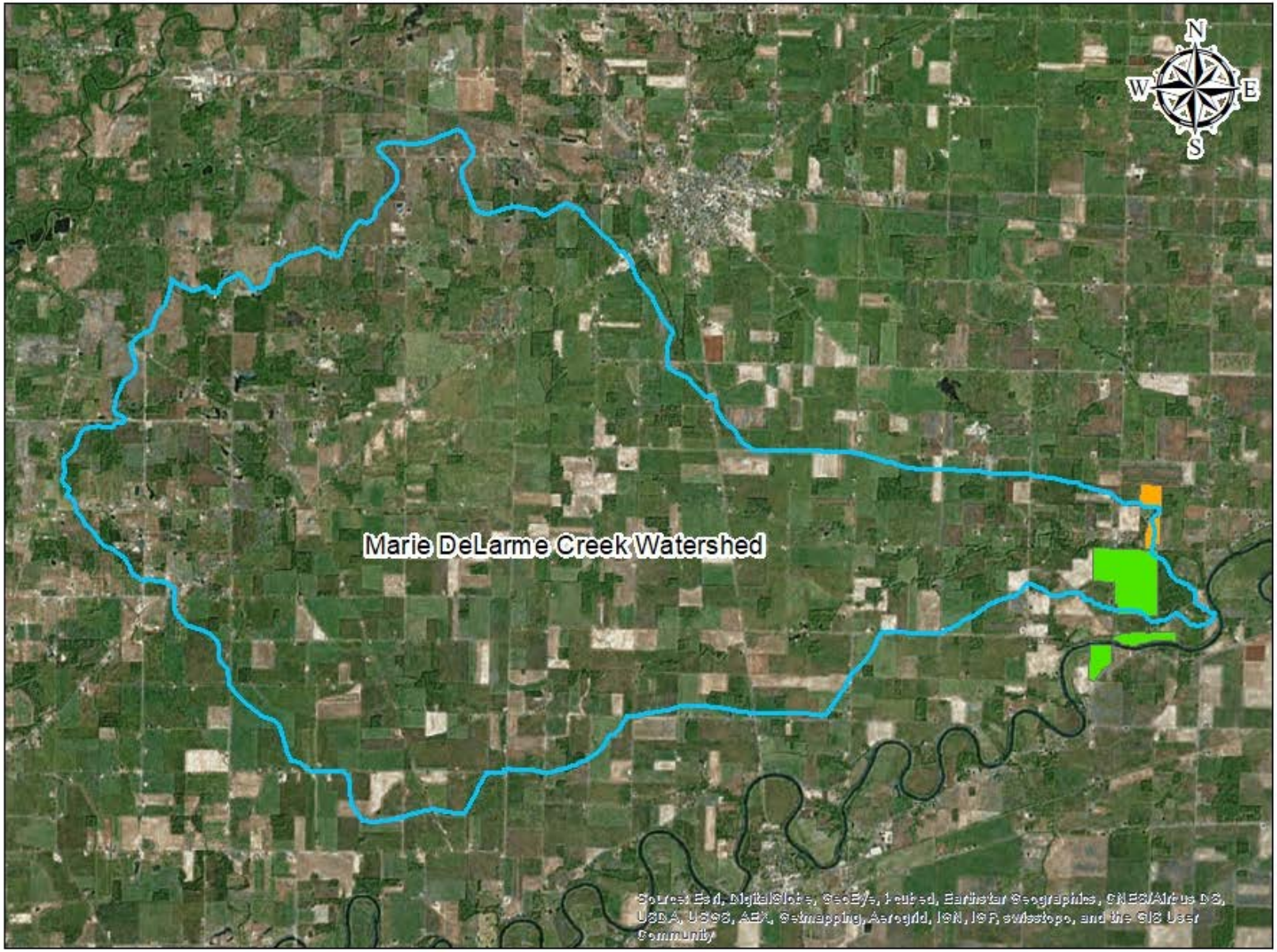
Forrest Woods Nature Preserve



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0 1.5 3 4.5 6 Miles

FORREST WOODS NATURE PRESERVE

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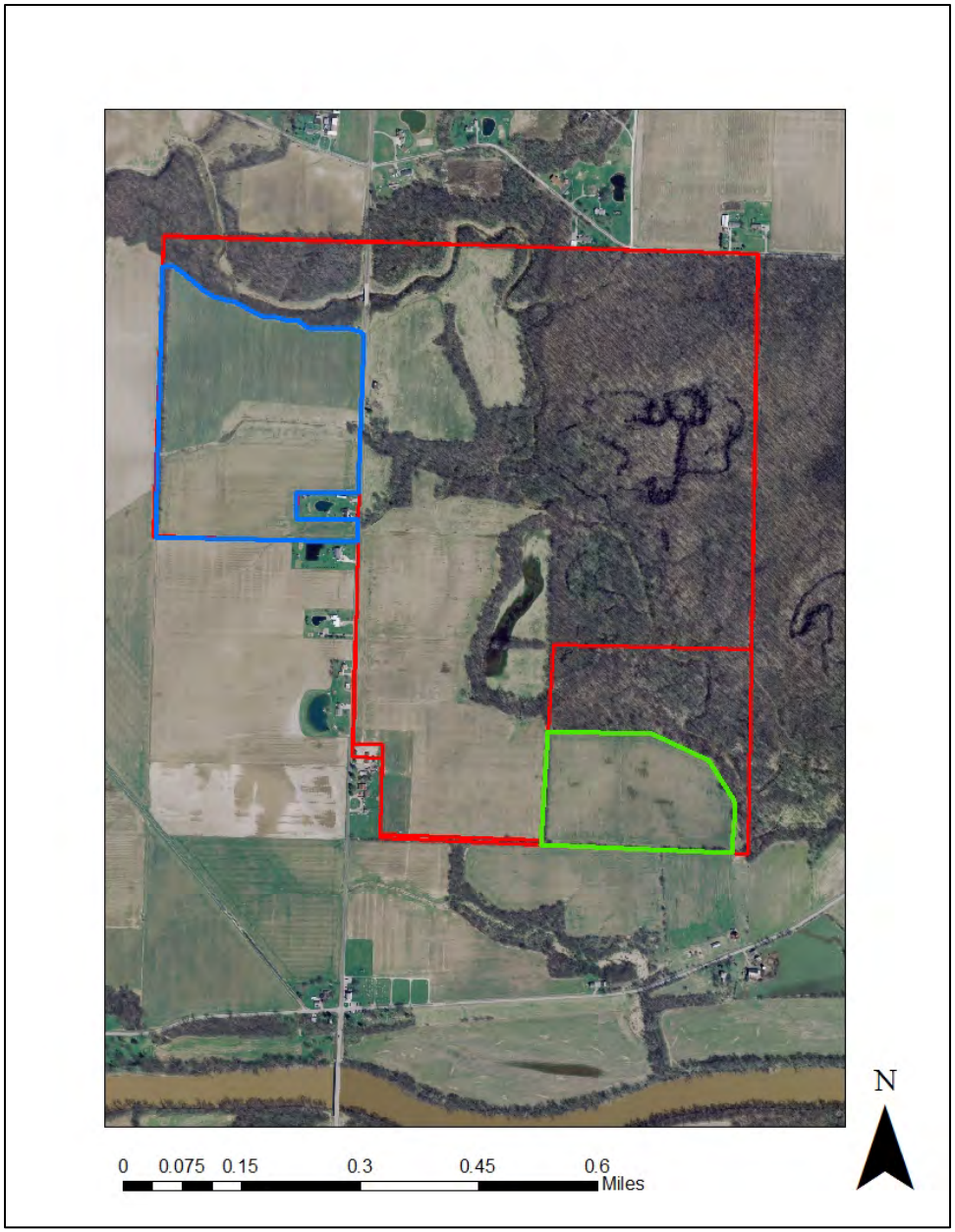
Forrest Woods Restoration




hio
Ohio Environmental
Protection Agency


NATIONAL FISH AND WILDLIFE FOUNDATION
NFWF


Great Lakes
RESTORATION

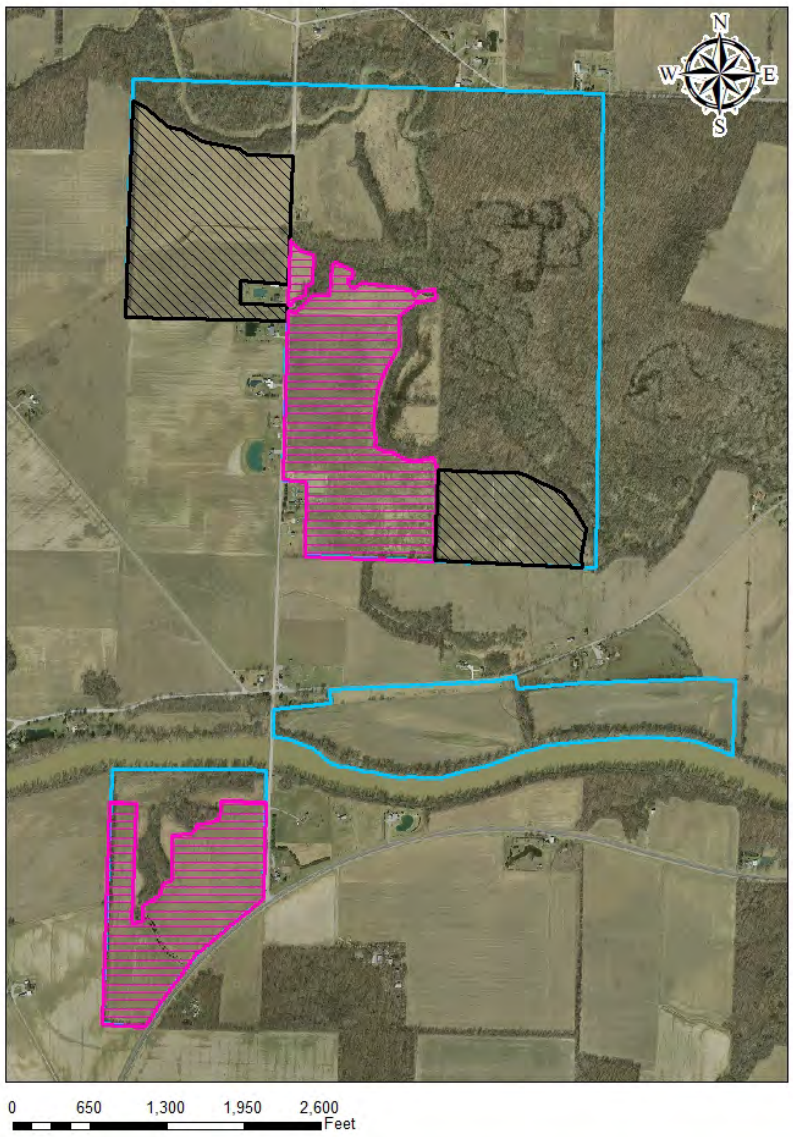
Pre-Construction

Post Construction

Post Construction

- Restored over 45 acres of wetlands, 30 acres of floodplain, & 3,500 linear feet of streams.
- Installed 19 in stream habitat structures
- Salvaged & installed standing dead material from recent storm damage
- Planted with native upland and wetland species and native tree species

Reforestation



Pre-Reforestation

Post Reforestation

Accompanying Research

- Kent State University
  - Nutrient removal study
- Black Swamp Conservancy
  - Water Quality Monitoring Program

KENT STATE UNIVERSITY

Lauren Kinsman-Costello
Assistant Professor
Department of Biology
Nutrient Biogeochemistry

Anne Jefferson
Associate Professor
Department of Geology
Hydrology

Pedro Avellaneda
Post-Doctoral Scholar
Department of Geology
Hydrology

Nick Johnson
Lab Manager
Department of Biology
Field & Lab Support

Scientific Assessment of Restored Ecosystems

- Restoration + Science at the Forrest Woods Nature Preserve Restoration Project
- Better understanding of biogeochemical processes:
  - A) more comprehensive evaluation, and ultimately **improvement, of restoration strategies** aimed at nutrient reduction
  - B) **realistic restoration goals** with specific consideration of the time lags that may limit rapid nutrient improvement on this historically disturbed land.

KSU Monitoring Objectives (2016-2017)

- Pre-restoration (Sept 2016):
  - Baseline soil sampling at wetland site (completed)
  - Nutrient analysis of material used in stream restoration site (ongoing)
- Post-restoration (2017):
  - Approx. monthly surface water quality monitoring
  - Hydrologic assessment (water level and flow monitoring)
  - Post-restoration soil nutrient analysis
- Future:
  - Leverage preliminary data for future support of in-depth, direct measures of nutrient removal functions (e.g., P sorption, denitrification)

Black Swamp Conservancy Monitoring

- 10 year water quality monitoring program:
  - Temperature, DO, Turbidity, flow rate, Nitrate, Ammonium, Phosphorous

Black Swamp Conservancy Monitoring

- Complimentary to Ohio EPA monitoring occurring near the preserve.

- Demonstrate the importance of restoring wetlands near confluences of tributaries and the Maumee River.