

Partnerships in Wetland Management

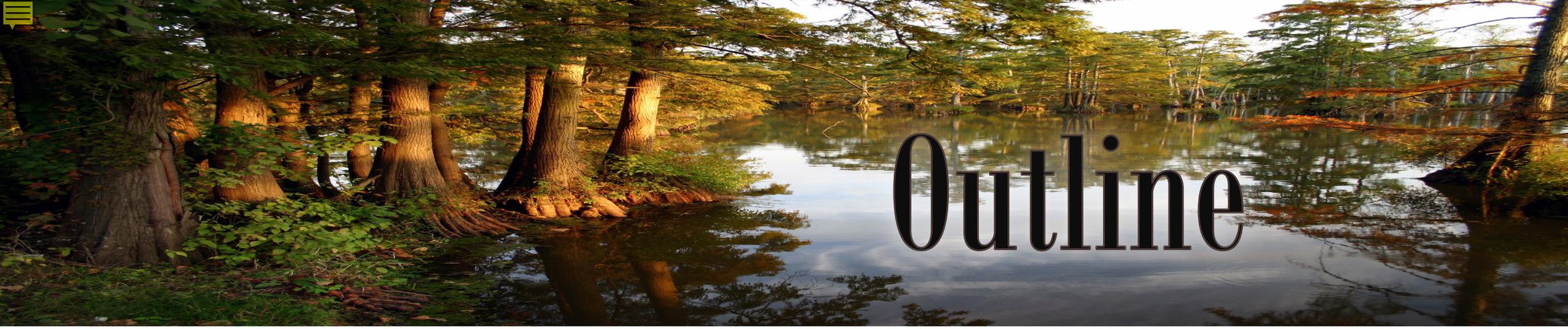
Working together to manage
wetlands today and into the
future



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Outline

History of the Mingo Basin

Hydrology and Habitat

Partnerships

Working with and for the Public



Mingo Basin

Changing of the land

Table 6. Decline of Missouri's southeastern lowland forest by ten year intervals between 1870 and 1970 and estimated forest area remaining in 1975 (from Korte and Fredrickson 1977).

Interval	Influencing factors	Acres lost	Percent loss	
			Interval	Cumulative total
Before 1870	State and Federal Swamp Acts	300,000	12.5	12.5
1870-1880	Lumbering, railroads	115,000	4.8	17.3
1880-1890	Lumbering, railroads	142,000	5.9	23.2
1890-1900	Agriculture, drainage financed by long-term bonds	162,000	6.8	30.0
1900-1910	Lumbering, dipper dredge developed, Little River Drainage District formed	270,000	11.3	41.3
1910-1920	Lumbering	325,000	13.5	54.8
1920-1930	Cotton production	209,000	8.7	63.5
1930-1940	Depression, cotton production	133,000	5.5	69.0
1940-1950	World War II, agriculture subsidy, government assisted drainage, soybeans	216,000	9.0	78.0
1950-1960	Agricultural mechanization, drought, increased use of synthetic fibers, soybeans	61,000	2.5	80.5
1960-1970	Large farm equipment, expanding agricultural market, rapid population increase	237,000	9.9	90.4
1970-1975	Larger farms and fields, larger equipment, high soybean prices	132,000 ^a	5.5	95.9
Total loss		2,302,000		95.9

Forest acres remaining in 1975

Total 98,000 or 4.1 percent of original 2.4 million acres

Total in blocks of 1,000 acres or more

27,000 or 1.1 percent of original 2.4 million acres

^aAcres lost derived by deducting total forest left (as determined by aerial reconnaissance) and losses from all other periods from total lowland forest area before clearing.

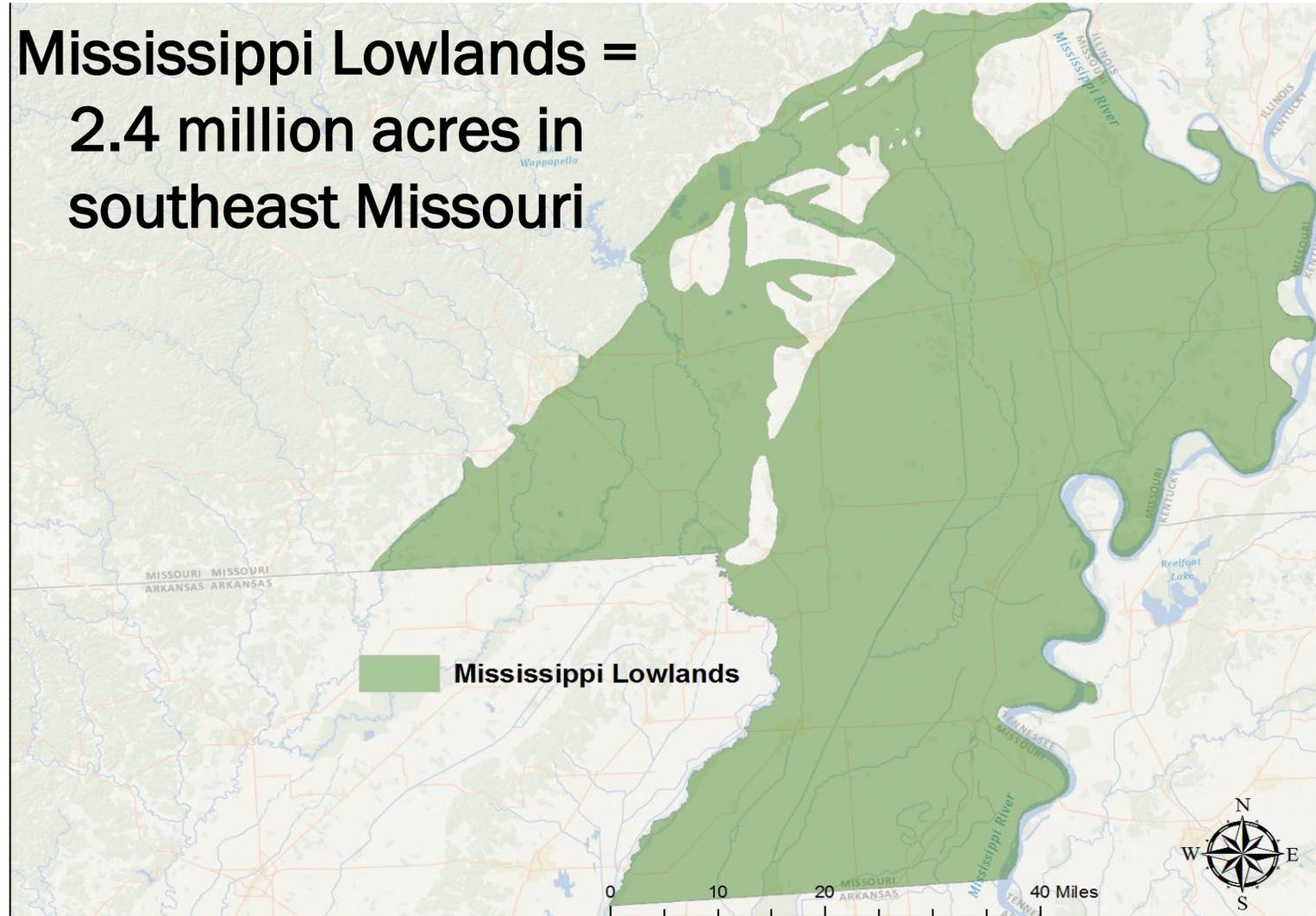


Duck Creek and Mingo

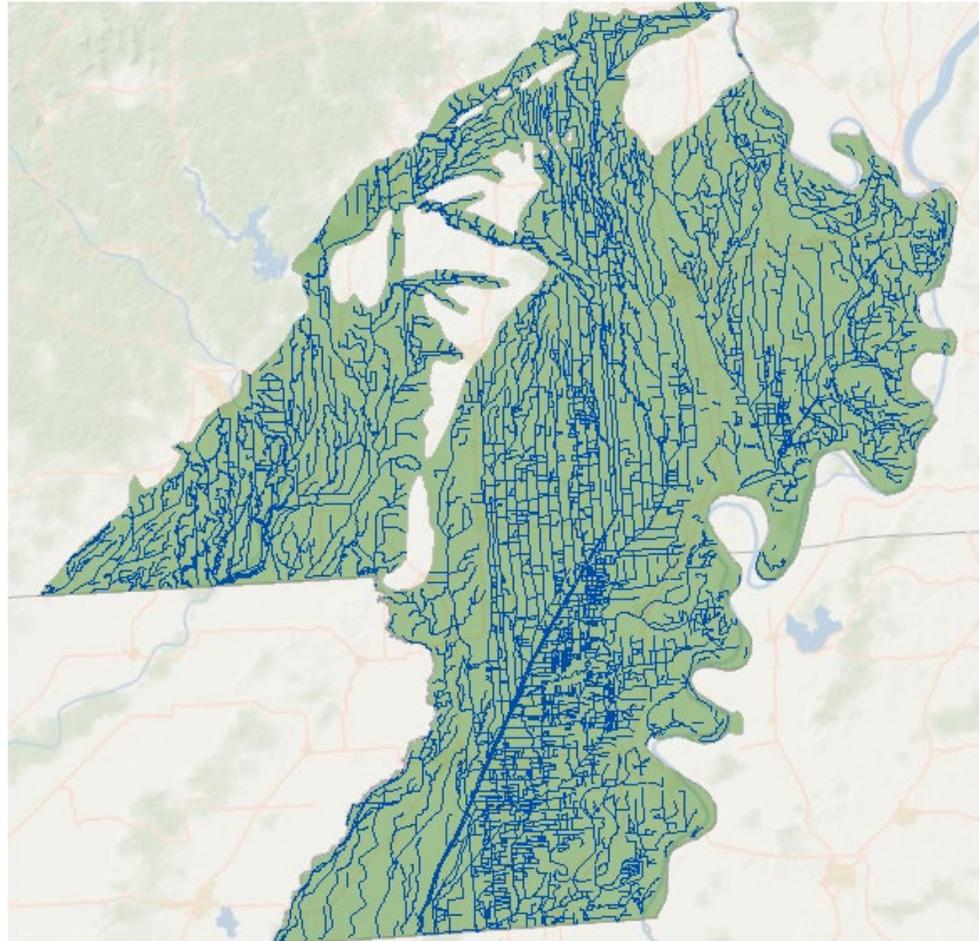
- The Missouri Department of Conservation purchased the land for the area in 1950 in order to establish a waterfowl hunting area in conjunction with Mingo National Wildlife Refuge.
- Consisting of 6,318-acres, the area contains 1,500 acres of open marsh, 2,700 acres of bottomland forest which includes, 1,200 acres of managed greentree reservoirs and a 1,800 acre lake.
- Mingo National Wildlife Refuge was established in 1944 under the authority of the Migratory Bird Treaty Act as a resting and wintering area for waterfowl and other migratory birds, and for the preservation of bottomland hardwood forest.
- The refuge contains 21,592 acres and lies in a basin formed in an ancient abandoned channel of the Mississippi River. The refuge contains 15,000 acres of bottomland hardwood forest, 3,500 acres of marsh and water, 1,300 acres of upland hardwoods, 1,200 acres of cropland and moist soil units and 500 acres of grassland and early successional forest habitat.

Historic Condition

Mississippi Lowlands =
2.4 million acres in
southeast Missouri



From 2.4 million acres to 50,000 acres



The Mingo Basin

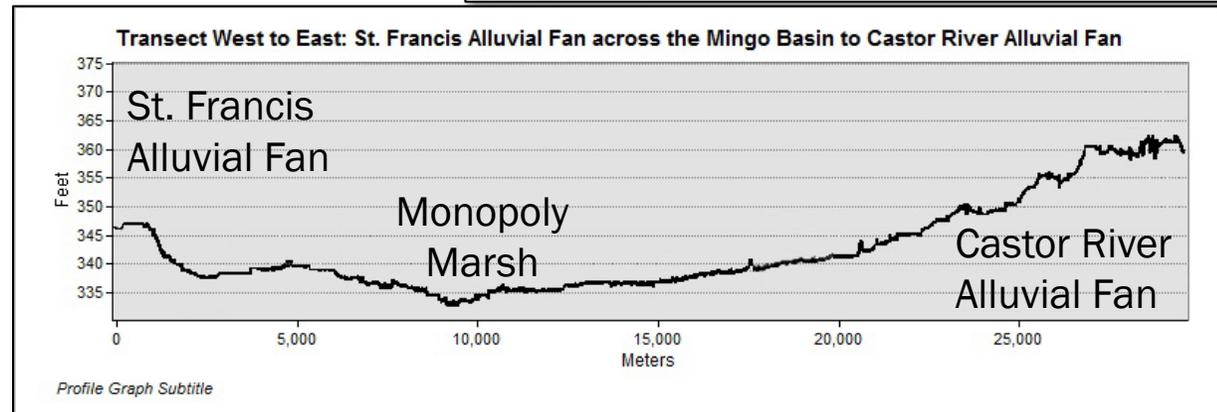
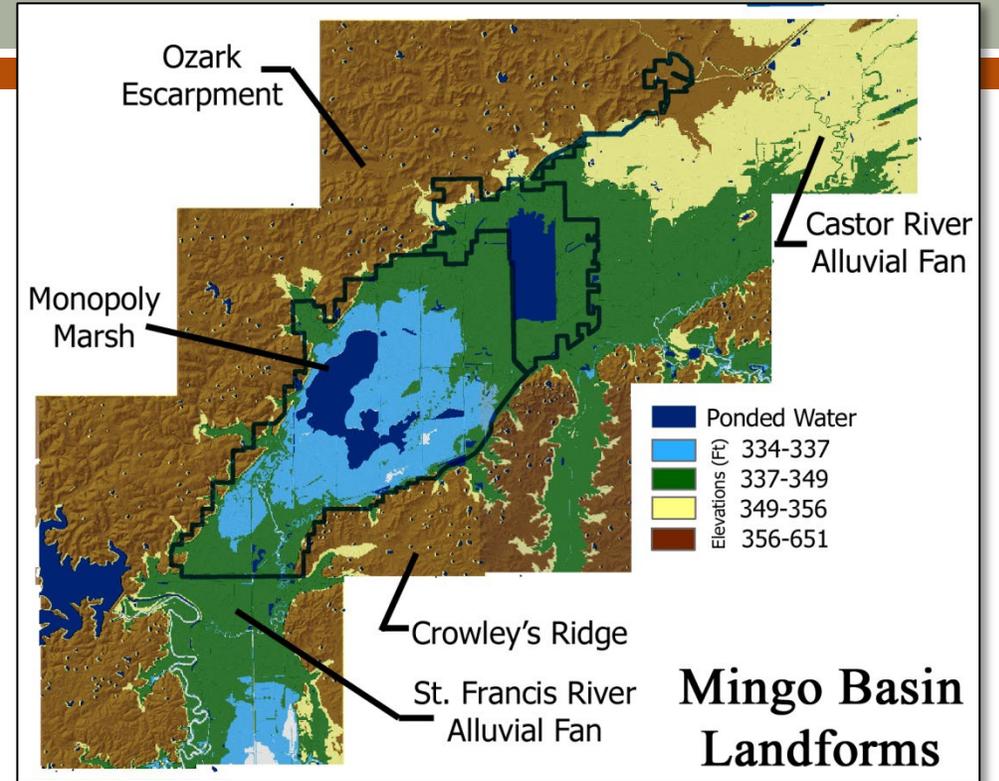
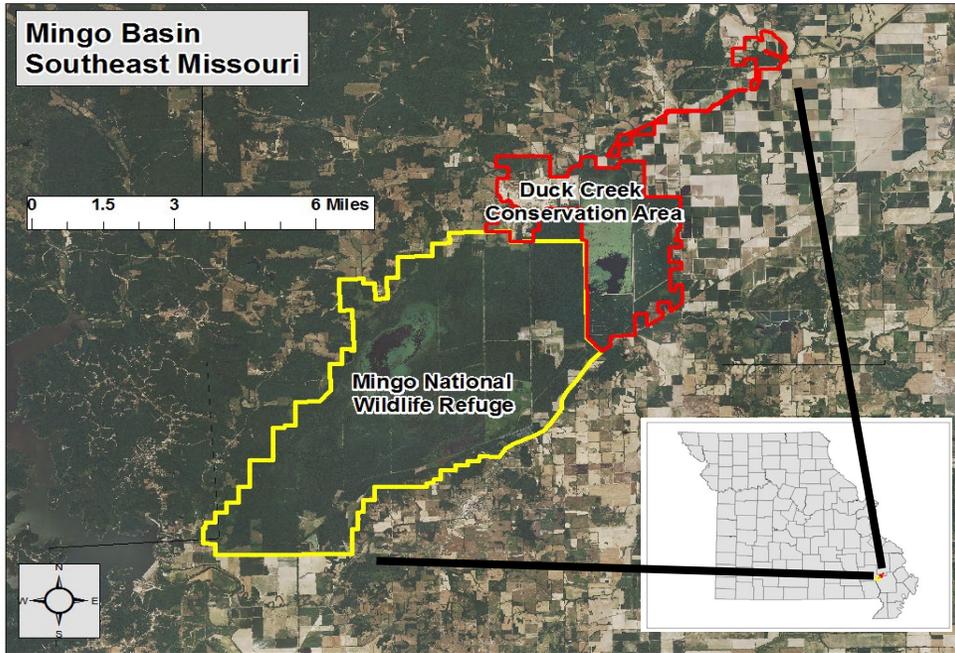


Mississippi
Alluvial Valley

The Mingo Basin



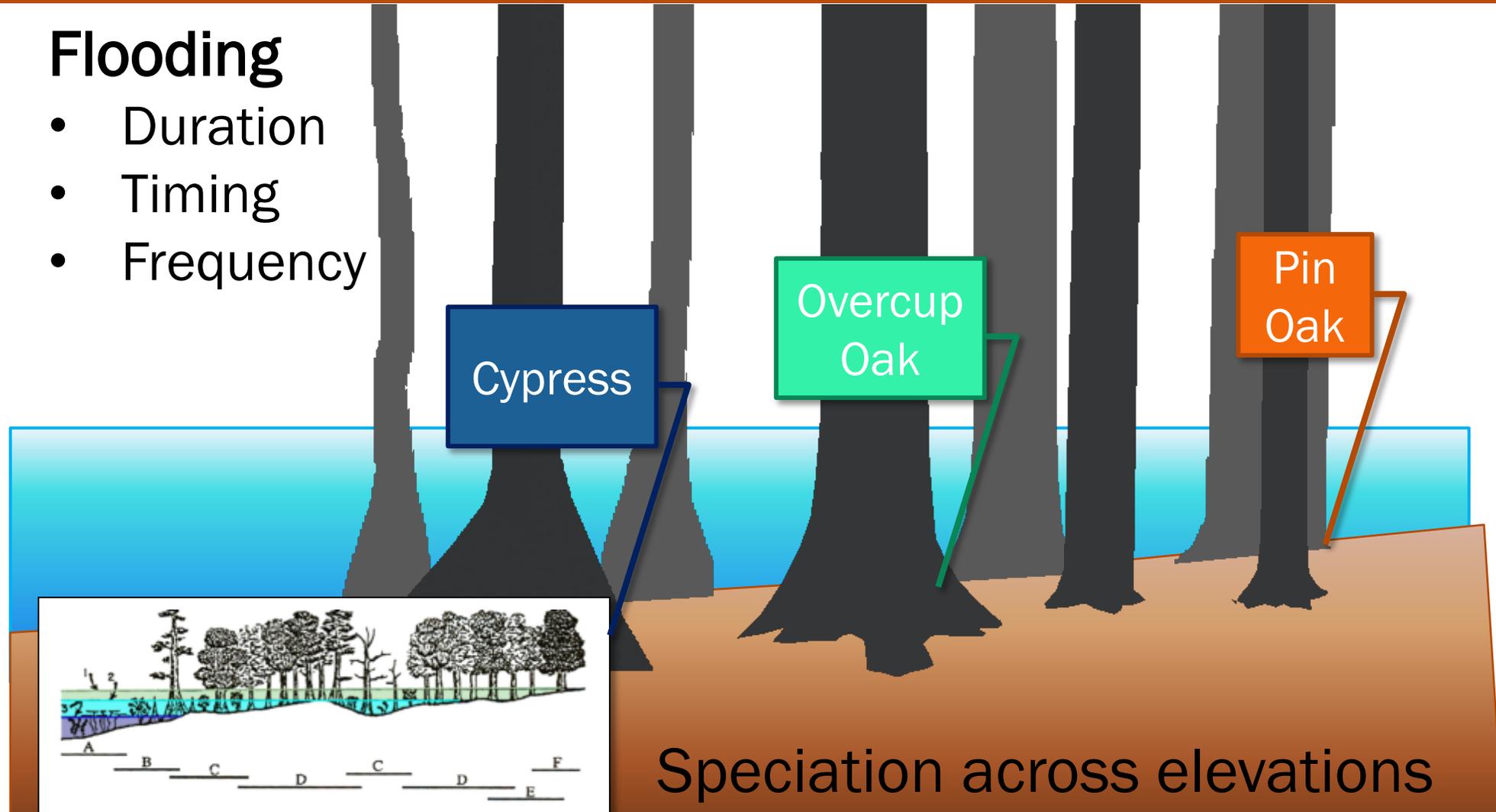
Mingo Basin Features



Bottomland Hardwood Communities

Flooding

- Duration
- Timing
- Frequency

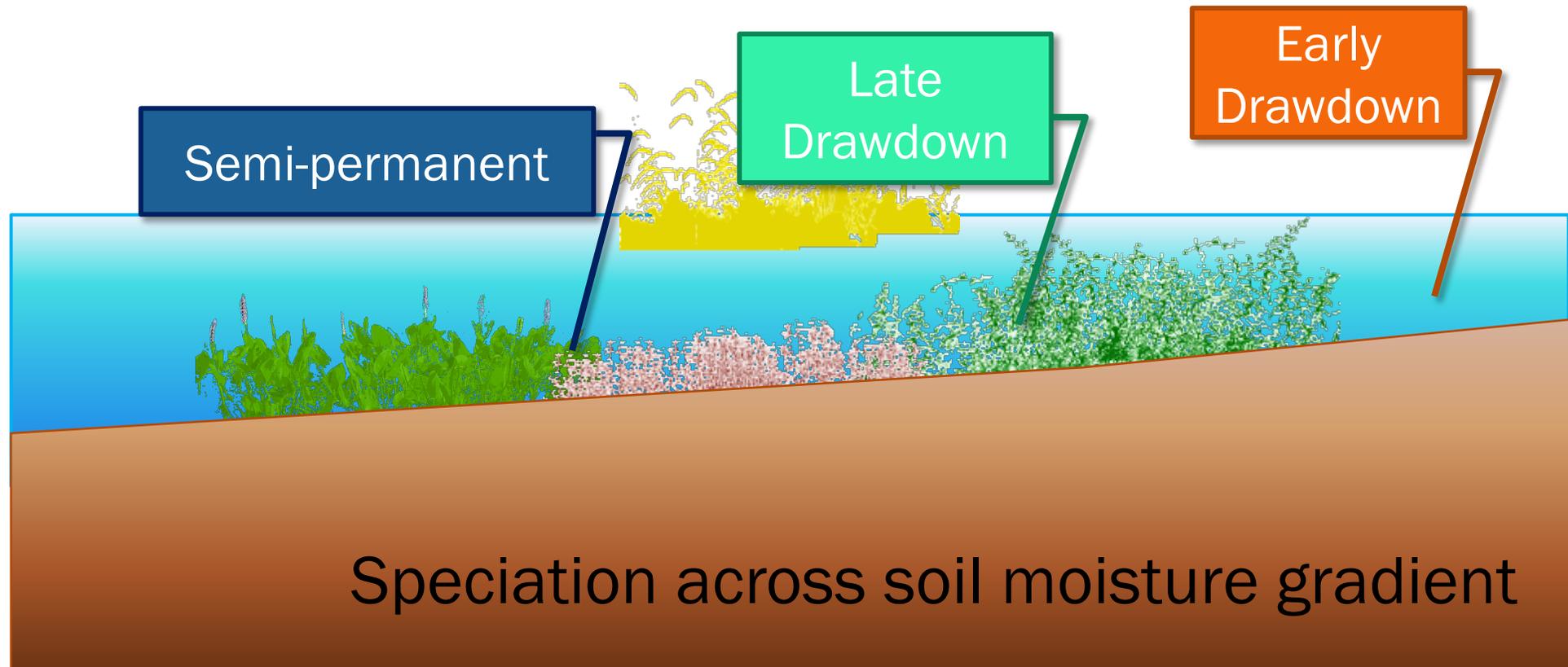


Speciation across elevations

Herbaceous Wetland Communities

Flooding

- Duration
- Timing
- Soil Type
- Water Depth

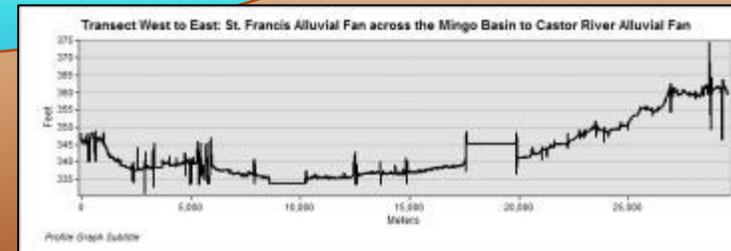
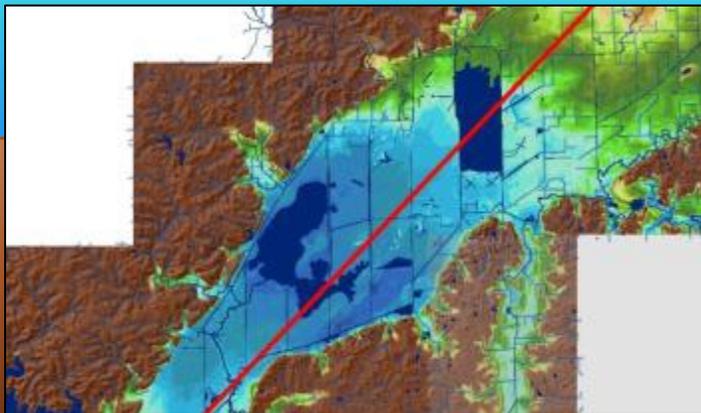
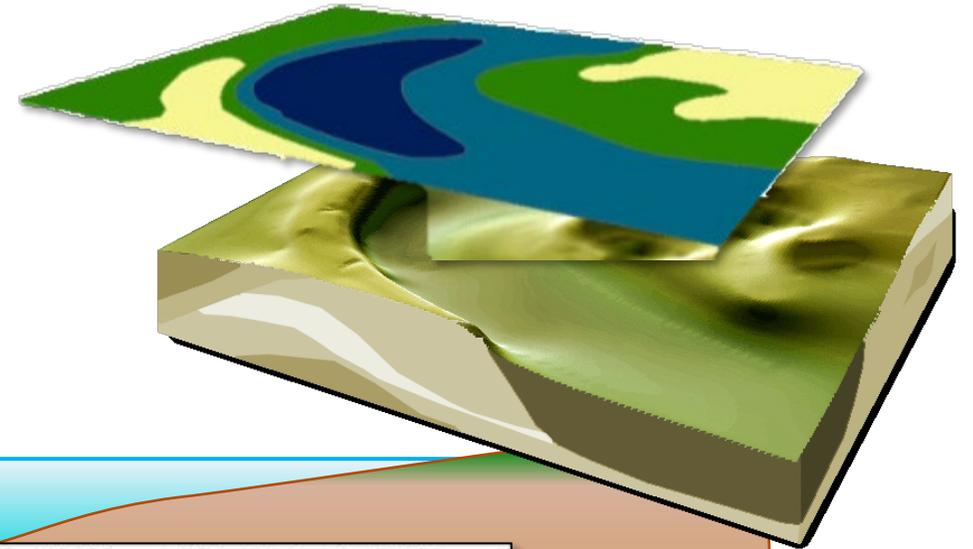


Managing water

Topography

- Underlying factor for management
- Understanding is critical
- Digital Elevation Models
 - Lidar, RTK, Conventional Survey

Extent of Suitable Habitat



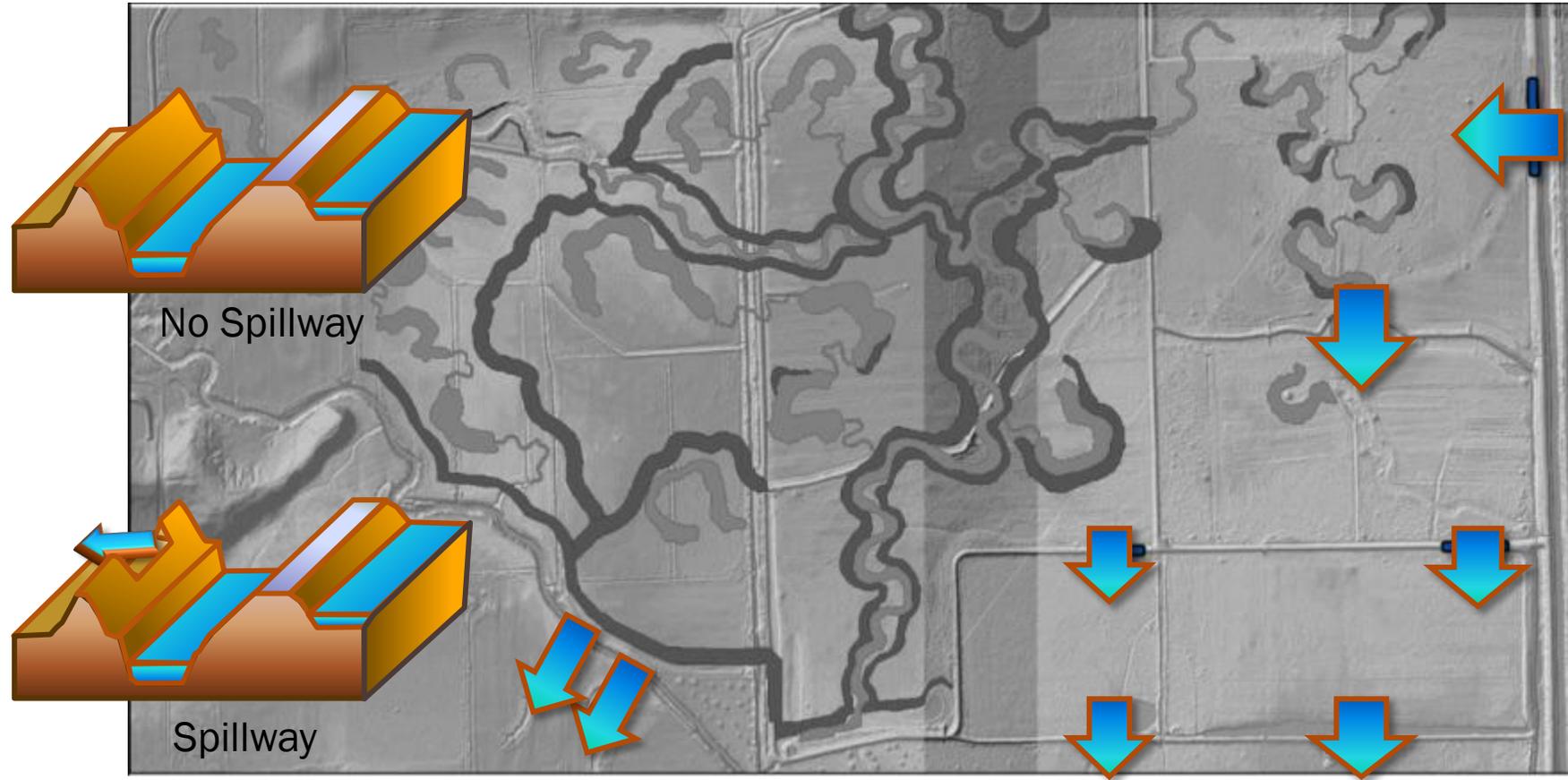
NAWCA – Taking Turns

- NAWCA I - Restoration of Units A and B at Duck Creek
- NAWCA II - Removal and installation of a new spillway at Mingo NWR
- NAWCA III – Restoring forest resources in Pools 2 and 3 at Duck Creek



NAWCA I -Restoring Natural Water Flow Patterns

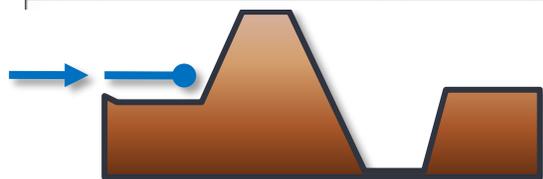
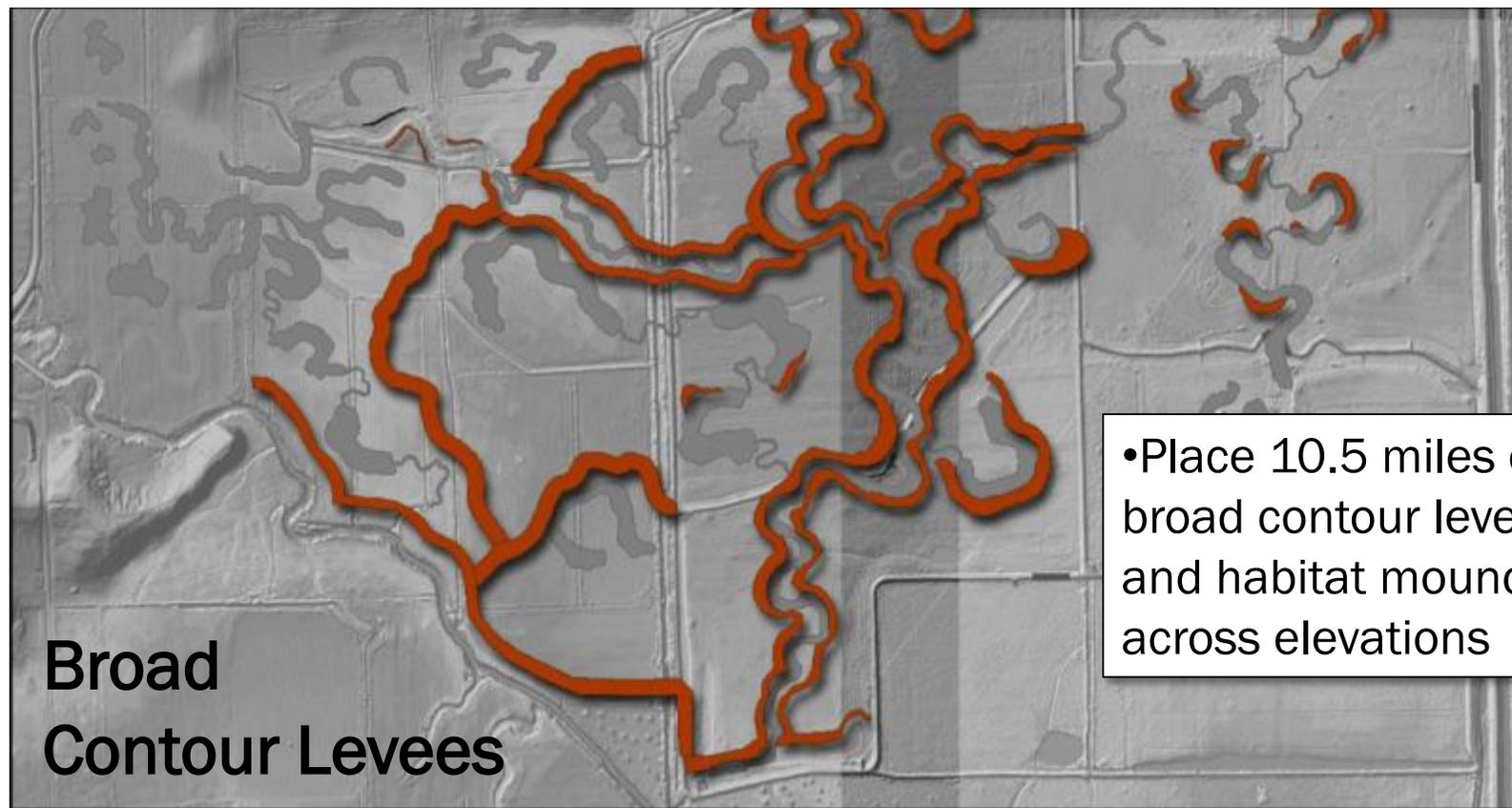
Notching Levees for Flood Relief: Cut down to full pool elev. Allow flood waters to spreadout



Creating Spillways

NAWCA I - Mimicking Natural Water Regimes

Contour levees: 10:1 side slopes, located along 2-2.5 contours, <6 inch freeboard



NAWCA I - Mimicking Natural Water Regimes

Stream Restoration and Creative Scours:

Allow for independent water control, slow down water, spread it out, increase habitat diversity



NAWCA II – Allowing the Water to Pass



NAWCA III — Pools 2 & 3 Infrastructure

- Managing Forest Resources at the landscape level
- Broad structures keep water moving
- Water flow is critical to forest health



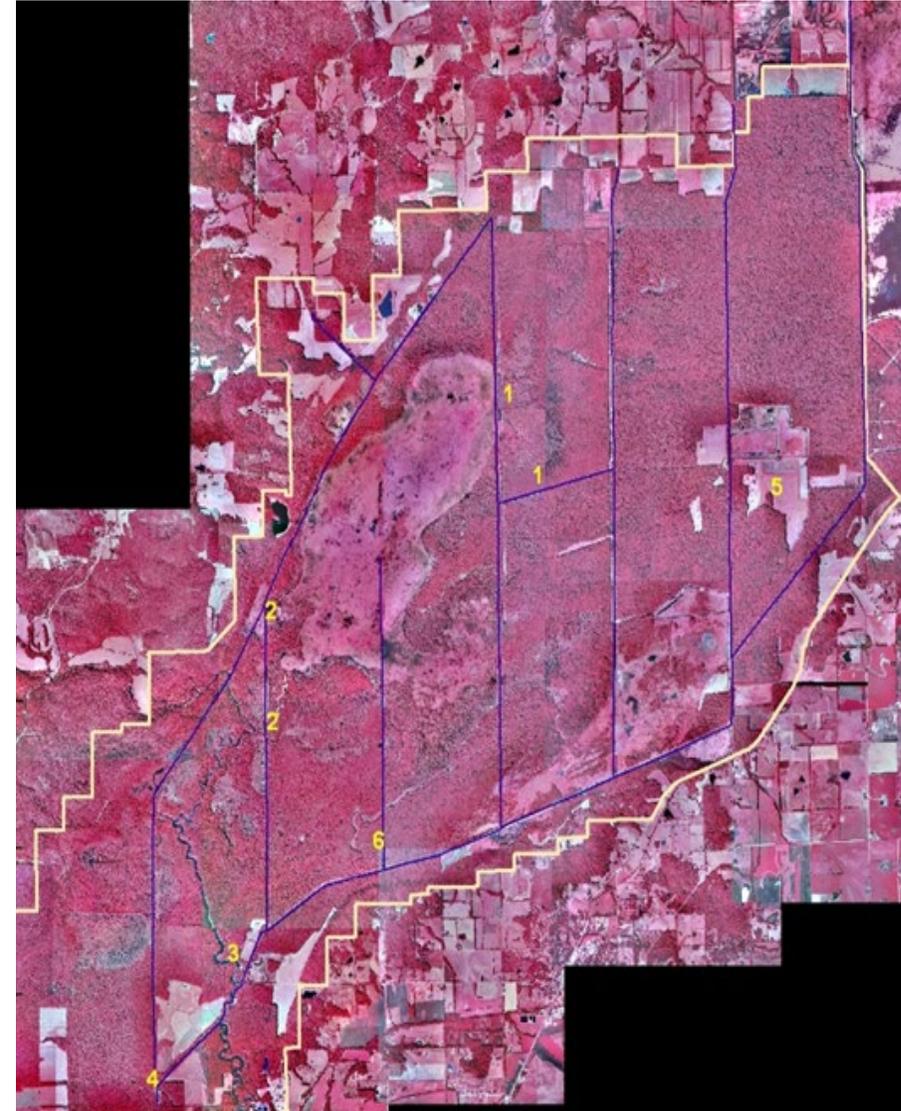


NAWCA III – Pools 2 & 3 Infrastructure Removal

- Managing Forest Resources at a micro level
- ID'd areas of oak mortality as places water was trapped
- Lidar helped prioritize which spoil piles were causing problems
- Water flow is critical to forest health



Into the Future



Projects

1. Low water crossings
2. Levee Breaches
3. Water Control Structure Replacement
4. Ditch 10 Plug Removal
5. New Irrigation Well



Public Use Partnership

- Hunting has a long tradition in the Mingo Basin.
- A daily draw system is used on both areas and is conducted by MDC.
- Drawings are held pre-season, during season and daily.
- Coordination between the two agencies includes flood-up timing and depth, number of parties allowed in each unit and post harvest data collection.
- This partnership plays a critical role in the public's enjoyment and use of Duck Creek and Mingo

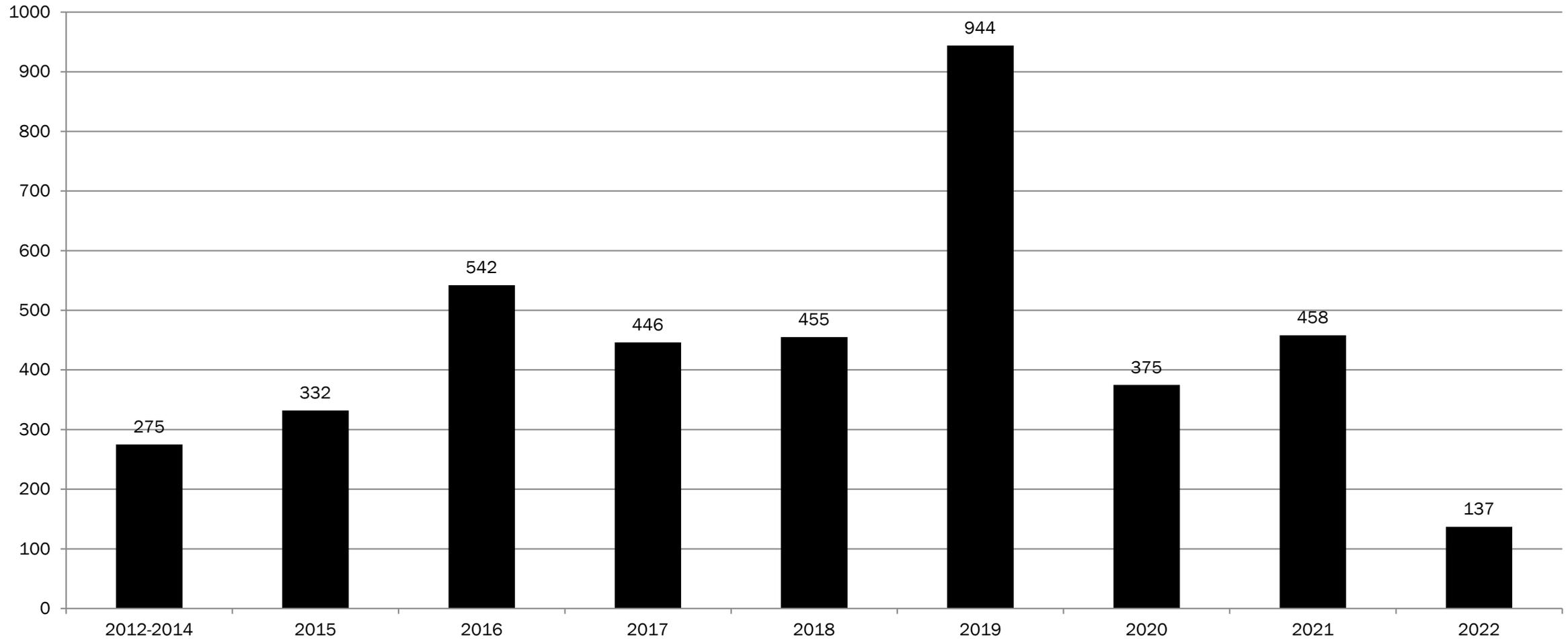


Working Together to Eradicate Pigs



What success looks like

Feral Hogs Killed by Year on Mingo NWR since 2012



Missouri Drop Trap



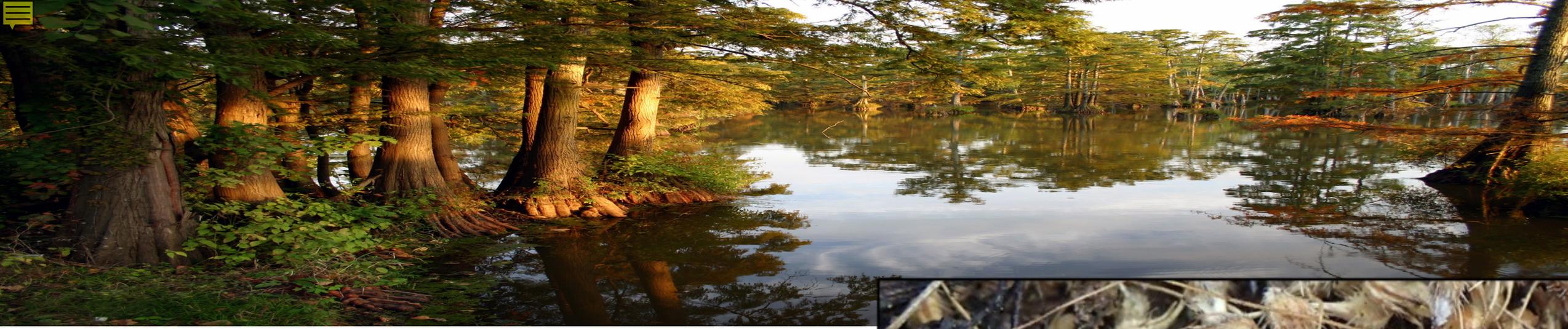
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Questions



A special thanks to Frank Nelson for the use of his slides.