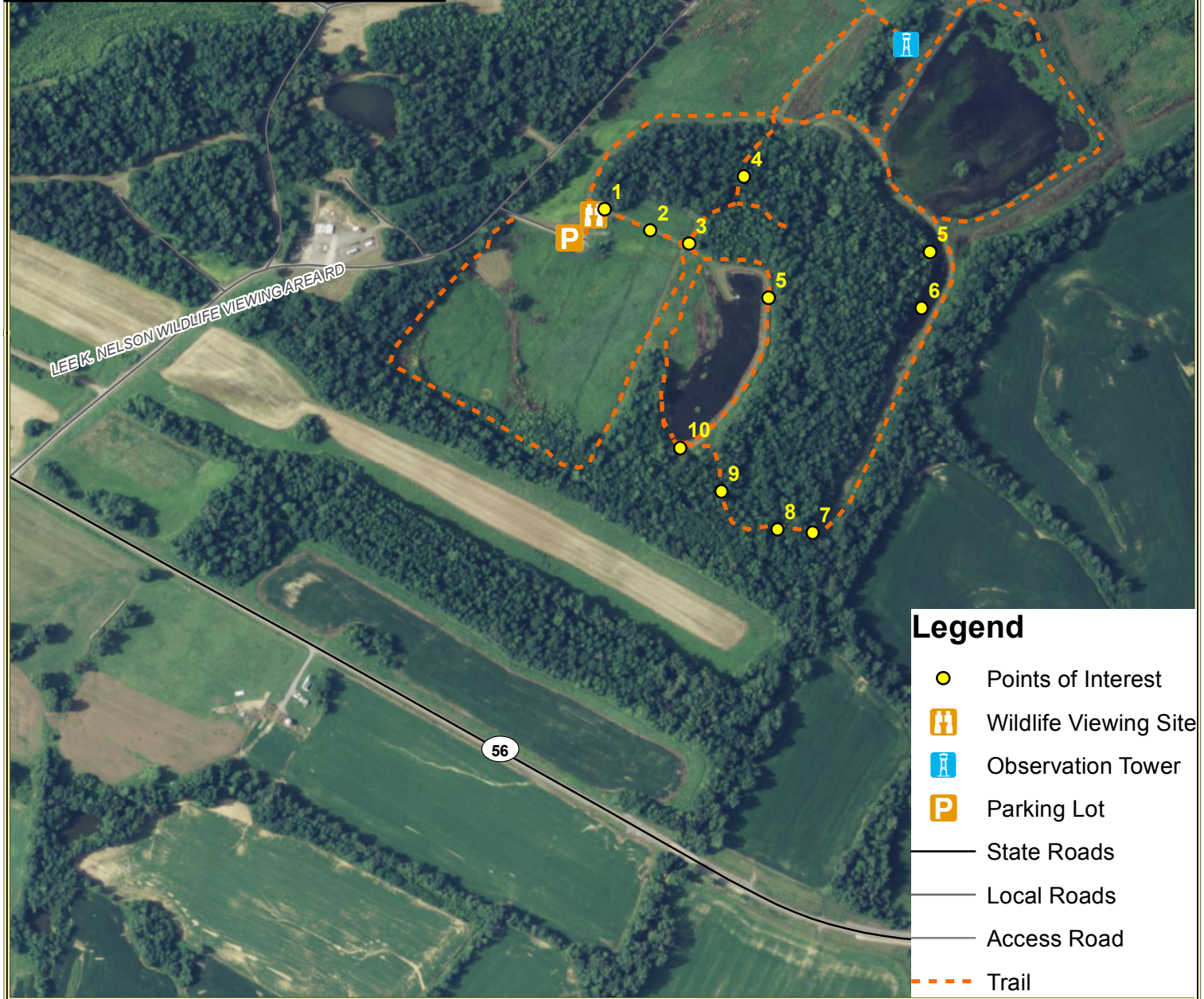
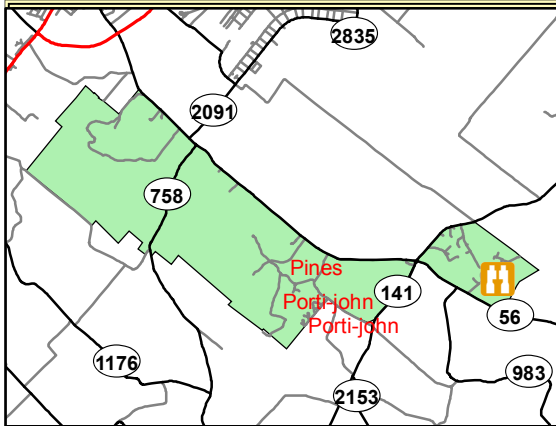
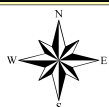


Lee K. Nelson Wildlife Viewing Area Higginson-Henry WMA



Legend

- Points of Interest
- Wildlife Viewing Site
- Observation Tower
- Parking Lot
- State Roads
- Local Roads
- Access Road
- Trail



0 500 1,000 1,500 2,000 Feet

1:7,000

6/2/2015

LEE K. NELSON

**WILDLIFE VIEWING AREA &
OUTDOOR LEARNING LAB**

Acknowledgements

The Kentucky Department of Fish and Wildlife and the Natural Resources Conservation Service wish to thank the agencies, organizations, companies, and individuals that have helped make this cooperative project possible:

Union County Conservation District

Union County Farm Bureau

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Union Countians Working For the Future

Morganfield Durbin Council 1004

Morganfield National Bank

Citizens Bank

First Kentucky Bank

D 7 D Trucking

McElroy Farm Tiling & Excavation

David Wedding Excavating

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Cindy Loxley

Pat Rudd

1. FROM SETTLEMENT TO SANCTUARY

The Lee K. Nelson Wildlife Viewing Area and Outdoor Lab is a recently developed site on the Higginson-Henry Wildlife Management Area. Higginson-Henry WMA, once part of a family farm, has quite an interesting history.

One of the oldest and most familiar names in Union County is that of the Richards family. Some of the earliest records indicate that Lewis Richards, once owner of this property, was born in Virginia in 1754. He was a Revolutionary soldier with the rank of Sergeant serving under General George Rogers Clark. During this period he built the first blockhouse at a site which is now known as Cincinnati, Ohio.

Lewis Richards assisted in an attempt to save some Kentuckians that were captured by the English and their Indian allies in 1779. Unable to overtake them, he destroyed the Indian villages at Chillicothe and Piqua. Richards was also a volunteer at the Battle of Blue Licks, Kentucky in 1782.

In 1800 Lewis Richards came to Union County, Kentucky near Bockville which was then a part of Henderson County. He purchased a large tract of land and settled there. It remained a family farm under World War II (see 4 – home site).

On Dec. 5, 1942, the United States Army began purchasing properties totaling 36,000 acres in Henderson, Union, and Webster Counties, which became Camp Breckinridge Military Reservation. Part of the land purchased was Richards Estate. Camp Breckinridge was an active military base during World War II through the Korean War.

In June of 1968, the Kentucky Department of Fish and Wildlife Resources purchased 5,424 acres from the United States Army later designated as Higginson-Henry Wildlife Management Area. It was named in memory of George T. Higgins, D.M.D. and C.D. Henry, Kentucky State Police, who died tragically in a boating accident while duck hunting on the Ohio River in 1964.

One of the Area's main attractions is Lake Mauzy, named in memory of Caspian "Cap" W. Mauzy, Conservation Education Supervisor and Conservation Officer who served in Union County.

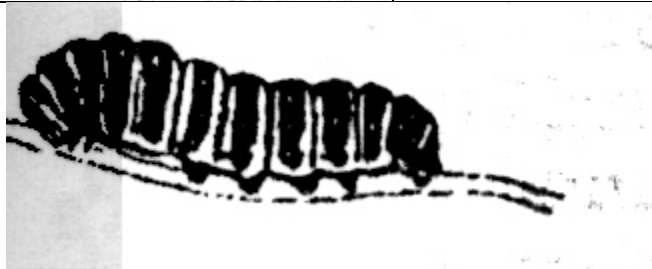
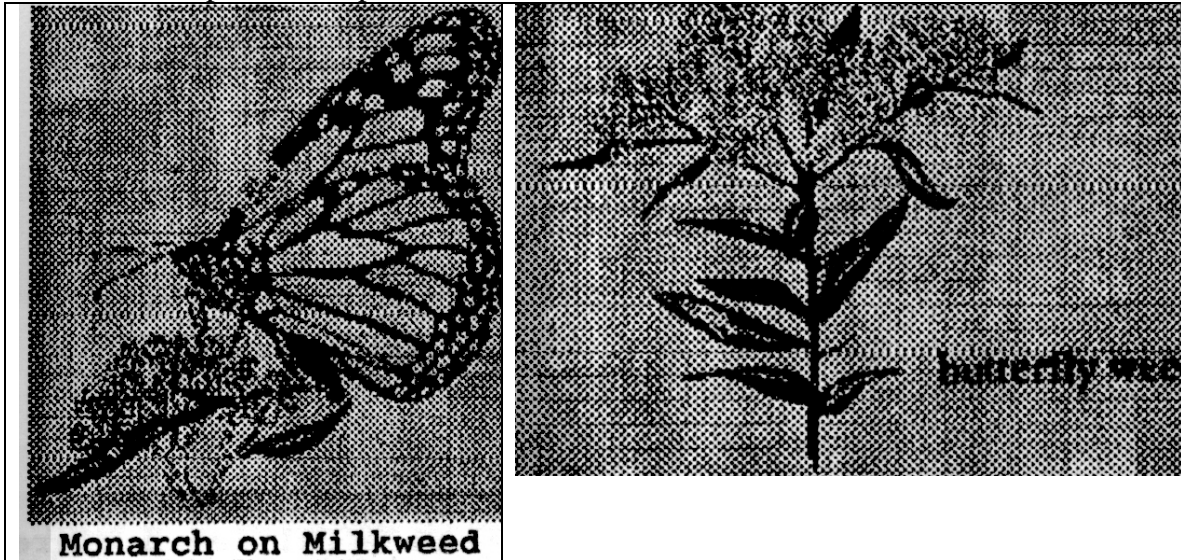
The Viewing Area and Learning Lab was named in honor of Mr. Lee K. Nelson, retired Wildlife Biologist, Researcher and Author who dedicated his 37 years of service to the wildlife and people of the Commonwealth. Thanks Lee.

2. THE PRAIRIE

The prairie is a grassland filled with flowering plants. This natural community was fairly common on some areas of our state. Scientists tell us that Kentucky contained 3 million acres of prairie. These large grasslands were maintained by natural fire, fires set by Native Americans and grazing by large hoofed animals such as buffalo and elk. Buffalo and elk no longer roam vast grasslands. Today only a few thousand acres of native grassland remain.

The prairie that remains provide important nesting habitat for uncommon wildlife species such as the bobolink and Henslow's sparrow. Common species such as the indigo bunting, eastern meadowlark, and northern bobwhite quail also nest there. Prairie voles and meadow jumping mice will live there entire lives there.

Seeds produced by the flowers and grasses provide food in late summer through winter. Some moths and butterflies find their host plants (those plants used for egg laying) there. The larvae utilize the host plant for food. The butterflies feed on the nectar producing flowers. Take time to look for larvae of monarch butterflies on milkweeds. This is their host plant. Examine the leaves surrounding the young flower buds for the newly hatched tiny green caterpillars. Look for the larger, more developed, black and white striped caterpillars on the flower parts of the plant.



3. “LIVING ON THE EDGE”WHERE FOREST, FIELDS, AND WETLAND MEET.

The area where different communities meet is called the edge. From this site you can see where the forested uplands, grasslands and wetlands come together. The intermingling of these communities form a blend of habitats and wildlife that are more diverse than each of the contributing communities.

From this edge it may be possible to view wildlife from forest, field and wetland. The biological diversity of the education area is greatest here. Wildlife species need quality and quantity of habitat to fulfill their requirements for food, water, and cover. The amount of habitat used by an animal during a given year is its home range. Size of home range can vary depending on the quality of the habitat. Generally speaking, the greater the quality of habitat the smaller the home range. The poorer the quality the larger the home range. The edge is where cover is most diverse. This is where trees, shrubs, grass, and water combine to provide nesting sites as well as important escape cover.

Watch for red-tailed hawks as they perch in trees along the edge while scanning the open areas searching for their next meal. Beginning in mid-April listen for the cat-like “mews” of the gray catbirds along these brushy areas where they nesting in dense cover in the edges of this woodland and wetland. Even though birds like the Northern Waterthrush do not nest here, this wetland is important to them as a migratory stopover site as they migrate to their northern nesting grounds.

At dusk, big brown bats may be found as they forage for insects over the wetland and meadow. Short-tailed shrews inhabit areas similar to this, searching day and night for insects, mice, salamanders and in some cases the young of ground nesting birds in order to satisfy their voracious appetite.

Spotted salamanders start their journey to the wetland during the breeding season as first warm rains of late winter-early spring arrive.. Their sophisticated homing instincts take over enabling them to find their way back to breeding grounds.

Spring peepers begin congregating about the shallows of the wetland in spring. Their clear, piping, whistle-like calls can be heard March through June at sunset.

4. IN THE PAST ... OLD HOME SITE.

The site where you are now standing is a portion of the land purchased by Lewis Richards in 1800. It came to be known as the "Richards Farm". Lewis Richards died on Jan. 3, 1846 and his son Thomas inherited the land. The last known residents of the farm homesite were the John Divine family. Quite an extensive list of deed transfers exists concerning this property. Too many to mention here.

Little is known about the buildings that occupied this site; however remnants of foundations to several outbuildings are still present.

Today this land provides homes for wildlife. See if you can find man-made structures created to supply cover for wildlife, (brush pile, nest boxes/houses).

Man-made structures such as brush piles should provide concealment and protection from predators, protection from the elements and create a harbor for seeds to collect and germinate. Brush piles placed in areas where natural cover is limited will enhance the habitat for a variety of wildlife species. Bobwhite quail and song sparrows and cottontail rabbits to white-footed mice, all can benefit from such practices. Wild turkeys may nest in or next to brush piles as well.

Creating bush piles is rather simple. They should be constructed as by-products from other land management practices. Material can be gathered from brush clearing practices to maintain prairie habitat, clearing of wildlife openings, waste Christmas trees, or tree tops from logging operations.

When building brush piles leave an eight inch space below to allow wildlife access. This can be accomplished by using a foundation of rocks or logs to hold the brush off the ground.

Spacing and size of the structures depends on the mobility of the species. With less mobile animals, brush piles should be about 50 to 60 yards from other escape cover. Small brush piles for quail should be at least 5 feet in diameter and 3 feet high. Long brush piles placed in open pastures and shallow hallows can be used for cottontail rabbits. They can be 25 feet to 50 feet long, 5 feet wide and 3 feet high. Other excellent locations to place brush piles are in field corners and along fence rows.

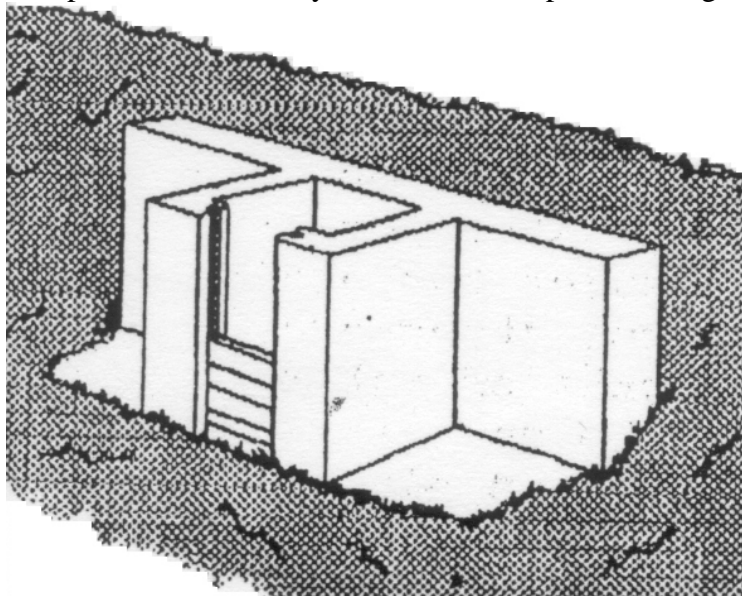
5. MIMICKING NATURE'S WETLAND ENGINEERS.

Beavers are nature's engineers capable of creating valuable wetland habitat through dam building. Dams are built along streams where food sources are plentiful. Once the food supply is exhausted the beavers move on. Over time the dam begins to deteriorate and leak.

By constructing levees and water control structures in suitable habitat man has learned to follow the example of the beaver. The levee, like the beaver dam, holds back the water while the water control structure allows water level fluctuations to occur creating suitable conditions for wetland plants that in turn attract wetland wildlife.

These man-made wetlands are managed to prove as near ideal conditions for wetland plants and animals by controlling water levels. By releasing water through the water control structure, desired depths of water can be maintained to encourage specific wetland plants to grow. The term dewatering refers to removing all water from the wetland enabling seeds or wetland plants to germinate. Once germination occurs then regular inspections of the seedlings will help to determine when re-flooding should take place. By re-flooding the wetland at the proper time, desirable plants can be benefited and undesirable plants can be controlled.

Water control structures should be large enough to allow water flow out of the wetland to maintain lower water levels even during times of flooding. Notice where the water drains from the wetland a riparian area (area adjacent to stream, pond, or lake) has been created between the two cultivated fields (*see special note at end of text). This seasonal stream has encouraged wildlife cover to be established. Seeds from wetland plants are carried by the water and deposited along the bank of the stream.



Water control structure

6. WOOD DUCKS IN KENTUCKY.

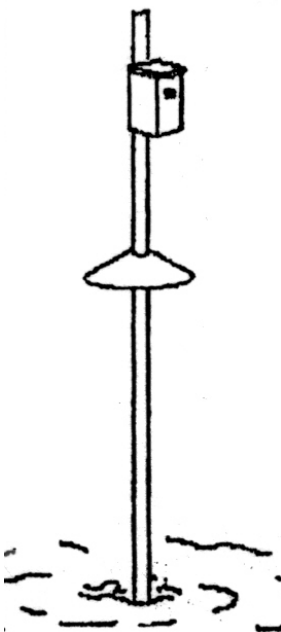
Wood Ducks are Kentucky's most abundant species of nesting waterfowl. This cavity nester can be found nesting throughout the state in a variety of habitats, from wetland areas in the west to forested streams, ponds, and reservoirs in the east.

The striking plumage of the male woodie makes this duck a favorite of waterfowlers, photographers, and birders alike. This crested fowl sporting iridescent greens, purples, and blues contrasting with the white chin patch and red and white of the bill have earned this beauty its following. The female is more subdued shade of gray with an obvious white eye-ring.

Wood ducks nest in natural or artificial cavities, usually close to water. However some nests have been observed long distance from the nearest source of water. Forested wetlands are perhaps some of the most important nesting areas for Wood Ducks because they provide excellent brood habitat. Escape cover is never too far away.

The utilization of wood duck boxes near bodies of water has greatly benefited the species nationwide. Where there is a lack of natural cavities in young stands of timber, nest boxes can fill the void. Never place nest boxes too close together however. This practice encourages "dump nesting" a term referring to the use of a single nest box by more than one female, causing a decline in reproduction.

Woodies return to their nest site in Kentucky in late February and more clutches of eggs are laid by late March. Average clutch size is 8-11 eggs. Broods can be observed in May and June with some late broods appearing in July.



7. WHAT IS A WETLAND?

The primary factors influencing the wetland environment is the presence of water. They are commonly called swamp, marshes, and sloughs. In this ecosystem there is a combining of aquatic and terrestrial communities. The water table is at or near the surface or the land is covered by water. This ecosystem is dominated by plants that can tolerate flooding, live in water saturated soils, and adapt to fluctuating water levels. Wetlands are characterized by unique soils (frequently flooded high clay soils).

Wetlands perform important functions such as improving water quality through filtration of run off, storing flood waters, recharging groundwater supplies as well as providing wildlife habitat.

Wetlands are formed by several functions. Natural processes such as formation of flood plains along rivers, dam building by beavers, groundwater seeps, and sink holes being formed by percolating water have played an important role in the formation of wetlands. Wetlands have been formed by earthquakes. The number one factor in the formation of wetlands in Kentucky is frequent over-bank flooding of streams that flood natural depressions in the floodplains. Flooding usually occurs seasonally causing most wetlands to be dry during a portion of the year.

Human intervention has also contributed to the formation of wetlands through the building of reservoirs, ponds, mining depressions, silt dams, quarrying, road construction and levee building.

Plants and animals must be adaptable to survive in a wetland environment. Some plants have developed openings in the leaves called stomata to allow oxygen to flow through the plant. Others have air spaces in the stems and leaves, air filled roots to replace the roots killed by flooding (willow, ash) or openings in the bark (lenticels). Some plants switch from aerobic to anaerobic respiration.

Animals have adapted as well. Some insects travel to the surface to pick up air bubbles and carry them under water to use later. Adult forms of dragonflies, damselflies, most salamanders and frogs are terrestrial. However all are still dependent upon wetlands for reproduction.

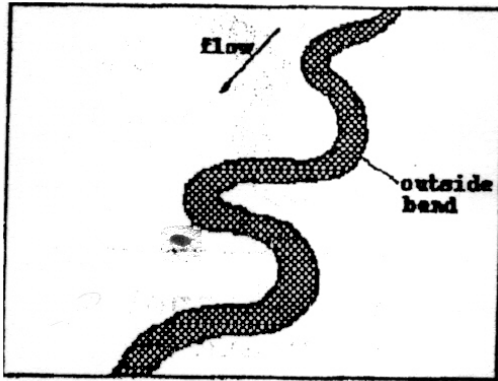
Wetlands are very productive ecosystem. Enormous amounts of energy flow and nutrient cycling take place in them. Plants produce food for small animals that are consumed by larger animals. As plants and animals die, decomposers consume them which release nutrients that were once tied up in living matter.

8. NATURAL PROCESSES THE OXBOW

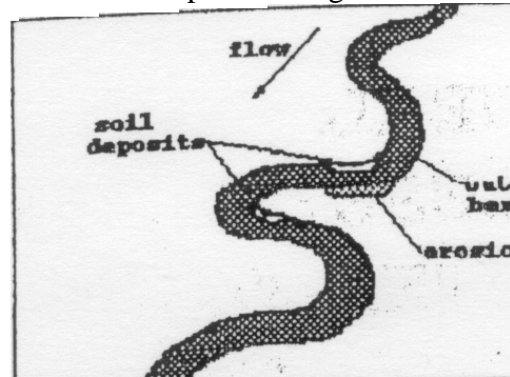
As rivers and streams meander through their flood plains, silt and soils are deposited along the stream bed causing changes in the stream course. In some instances dramatic changes take place. Stream flow can be altered to the point that sections of the old channel are completely cut off from the main channel. When this occurs a natural pond or lake is formed called an oxbow.

The increased meandering of streams creates a widening of the stream valley due to erosion caused by deflected current at the outside bend of a meander. Then banks continue to erode at the outside bend until the stream cuts through the bend. The meander system moves downstream, depositing its soil burden across the stream valley cutting off the outside downstream bend forming an oxbow.

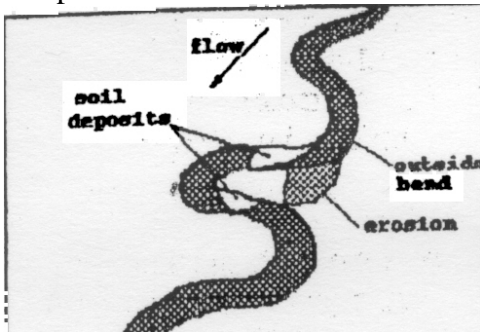
1. River before oxbow



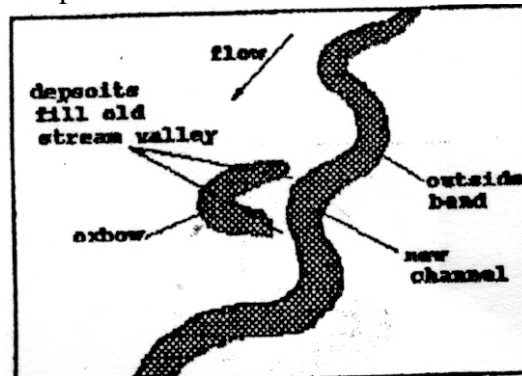
2 Erosion and Soil deposition begin



3. New River channel almost complete



4. new river channel and oxbow complete



9. NATURAL PROCESSES FROM FIELD TO FOREST

The site was an agricultural field in 1938. It is now a woodlot. The natural process that transforms fields to forests is called succession.

Once an agricultural field is abandoned, plants that require an open seed bed invade the bare ground. Quite often these plants have light seeds that can be carried by the wind (dandelion, thistles, foxtail, and milkweed). These short-lived pioneers, successful at first, will be replaced by plants with longer life cycles (ironweed, ragweed). Soon the ground is completely covered with grasses and forbs. To many it looks like an unproductive weedy field. However grasslands have a greater diversity of plants than woodlands.

Soon a shrub stage begins to develop (blackberry, red cedar, sumac, wild plum). Trees begin to invade (seedlings and saplings of box elder, water maple, locust, red bud, winged elm). As the trees increase in size they shade out the grasses and shrubs. Even they will be replaced by longer-lived trees (oaks, maples, hickories).

As the plant community changes the animal community changes. The early stages of succession attracted an abundance of insects, which attracted insect and seed eating birds like the goldfinch. Grasses brought field sparrows, meadowlarks and meadow voles. The shrubs brought cottontail rabbits. The mixture of shrubs and trees provided for yellow-breasted chats, common yellowthroats and white-tailed deer. As the trees replaced the shrubs, summer tanagers and eastern towhees moved in. Eventually the woodlot ages and gray squirrels, woodpeckers, flycatchers, and Kentucky warblers find a home.

See how many different plants species you can identify. Do you see any clues as to what species of plants were present before the woodlot developed? What wildlife species might use this site today?

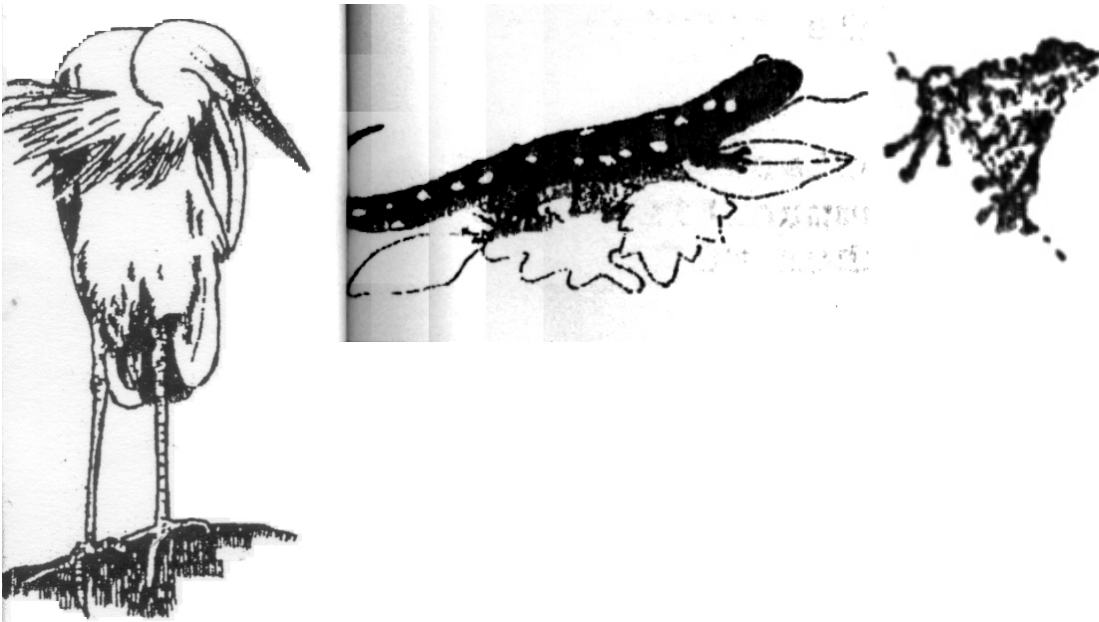
10. BIOLOGICAL DIVERSITY

Biological Diversity or “biodiversity” is an all inclusive term referring to the abundance of all living things. Kentucky’s diversity can be seen in its 3,000 species of wild plants, 236 species of fishes, 55 species of reptiles, 350 species of birds, 75 species of mammals, 2,200 species of moths, 133 species of butterflies and many other species of insects all with specific requirements for survival. All of them living in natural communities found through the different regions of the state. From the mountains of Eastern Kentucky and the Cumberland Plateau, to the Bluegrass and the Knobs in Central Kentucky to the Western Kentucky Coal Fields and Coastal Plain along the Mississippi River.

You have seen the upland sites of grassland and forest. You have experienced moist habitats, some wet seasonally, and others are wet permanently. Some are marshes, others are flooded forest. You have observed where these different communities come together creating unique mixes of plants and animals “living on the edge”.

We are an important part of these natural communities. When we change them we directly affect all living things that inhabit them, including ourselves. We still have not grasped their full potential or purpose, yet we continue to change them.

Aldo Leopold, the father of modern wildlife management wrote, “the first rule of intelligent tinkering is to save all the pieces”. We should learn as much as we can about these habitats before we change them. What have you learned today by walking along the trail? We hope you have enjoyed the beauty of this special area.



*** Special note:**

The two fields are an example of a type of “share cropping”. At Higginson-Henry WMA it is a practice of renting fields to individuals for crop production. An agreed upon percentage of the income generated from the sale of the crops comes back to the wildlife management are to be used to cover operational costs. Five percent of the crop is left unharvested to provide food and cover for wildlife.

Common Wildlife species found:

MAMMALS:

Eastern Cottontail	
Rabbit	_____
Coyote	_____
Big Brown Bat	_____
Gray Fox	_____
Eastern Fox	
Squirrel	_____
Eastern Gray	
Squirrel	_____
White-tailed Deer	_____

BIRDS:

American Goldfinch	_____
Barred Owl	_____
Blue Jay	_____
Canada Goose	_____
Carolina Chickadee	_____
Carolina Wren	_____
Eastern Bluebird	_____
Great Blue Heron	_____
Green Heron	_____
Killdeer	_____
Mourning Dove	_____
Northern Flicker	_____
White-breasted	
Nuthatch	_____
American	
Woodcock	_____
Wood Duck	_____