



# Muddy Hands

Soil and Water Information for Educators Brought to  
You by the Lake and Geauga County Soil and  
Water Conservation Districts



# Fall

## 2003



## A Watch On Wetlands

Wetlands are a specific type of ecosystem that exist in almost every corner of the United States. They are a diverse, yet fragile part of our world. Wetlands are defined by three characteristics: hydrologic conditions, hydric soils, and hydrophytic vegetation.

When the first settlers came to Ohio, they found areas of shallow water or soggy soil filled with lush vegetation and teeming with fish, waterfowl, furbearers and other kinds of wildlife.

Many of the plants in these "wetlands" were strange, exotic looking species found nowhere else in the state — such as the ancient insect-eating pitcher plant and sundew.

In general, **wetlands are low-lying areas that are covered or saturated by water during part of each year. This results in specialized wet soil types and water dependent plants.**

Most of Ohio's wetlands were drained and filled to make way for farms, roadways, houses and other development. Mining,

fluctuating water levels and logging also impacted Ohio's wetlands. In fact, nearly 90 percent of Ohio's original wetlands have disappeared.

From the 1780's to the 1980's, Ohio wetland areas declined from about 5,000,000 acres to about 483,000 acres. Ohio's original wetlands were very large. Examples include The Great Black Swamp, which was once 120 miles in length and an average of 40 miles in width (about the size of Connecticut), and The Scioto and Hog Creek marshes of Hardin County, which once covered 25,000 acres or 39 square miles.

Today, the scale is much different - large wetlands would actually be very small in comparison to original wetlands. For example, only 5 percent of the original Great Black Swamp remains. With the notable exceptions of a few large tracts of marsh and swamp in Ottawa, Sandusky, Lucas, Ashtabula, Geauga and Trumbull Counties, most of Ohio's remaining wetlands are scattered wooded tracts.



### Inside this issue: WETLANDS

Watch on  
Wetlands.....Page 1

Wetlands  
Habitat.....Page 1

Which Wetland is  
Which?.....Page 2

Wetland  
Definitions.....Page 2

Classroom  
Activities.....Page 3

Useful  
Websites.....Page 4

Upcoming  
Opportunities.....Page 4

OEEF  
Grants.....Page 4

### Special Points of

#### Interest:

- ? Wetlands
- ? Why are they important
- ? Wetland definitions
- ? Wetland activities
- ? Wonderful Websites
- ? Upcoming Opportunities
- ? New Education Specialist at Lake SWCD!

### Wetlands as Habitat...why are they important?

It seems we always identify mosquitoes, frogs and horseflies with wet areas, but wetlands are used by many other species. Some species of ducks and geese use wetlands as hideouts during nesting season. The grasses and shrubs protect young ducklings from hawks and owls. Young turtles and fish also hang out in the shallow, vegetated waters. They wouldn't be as safe in open waters. Buttonbush attracts a variety of butterflies as well as bees when it is in bloom. The late-summer blossoms are a great source of food for beehives. Many large animals also rely on wetlands for shelter. In areas with increasing development, often the wet spots are the only areas that still have trees and shrubs. A large marshy area might even be home to deer or a black bear. Muskrats often call marshes home, and the food and shelter materials they need are all right there. Wetlands are teeming with life.



## Which Wetland is Which?

**Wetland Diversity.** *Bog, swamp, marsh, wetland. We've all heard these words and most people believe they are synonyms. But how about a fen or a prairie pothole? A vernal pool? Each of these terms has a slightly different meaning and describes a different type of wetland.*

**Marshes** can be tidal or non-tidal. Tidal marshes are usually brackish (somewhat salty), and the water level fluctuates with the tides. In Ohio we have non-tidal marshes, where the water level changes more seasonally. Non-tidal marshes tend to develop along streams and near lakes. The water can be anywhere from a few inches to a few feet deep.

**A Prairie Pothole** is a type of marsh that develops in the low spots left behind by the glaciers. Melting pieces of ice formed depressions in the topography, which then collect rainwater and snowmelt. A prairie pothole can be temporary or permanent, and the vegetation usually forms concentric rings following the outline of the marsh. Agriculture and commercial development have destroyed about half of U.S. prairie potholes.

**Vernal Pools** are seasonal marsh-type wetlands. They form in shallow depressions and can last a few days or a few months. These areas are vital to amphibians as a safe place for eggs and tadpoles to develop. Since there are no fish, the tadpoles have a better chance of surviving. Vernal pools often fall victim to bulldozers. These are very common throughout Lake and Geauga counties due to the high clay content of the soil.

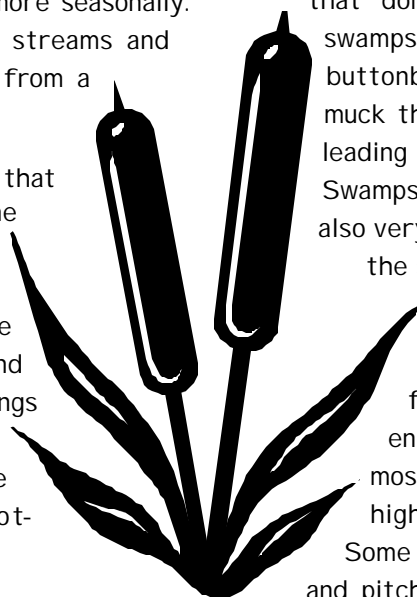
**Wet Meadows** are a type of marsh that commonly occurs in poorly drained areas such as shallow lake basins, low-lying farmland, and the land between shallow marshes and upland areas. These wetlands, which often resemble

grasslands, are typically drier than other marshes except during periods of seasonal high water. For most of the year wet meadows are without standing water, though the high water table allows the soil to remain saturated.

**Swamps** have gotten a bad reputation over the years. In reality, these wooded wetlands are full of interesting plants and animals that usually cannot survive elsewhere. Swamps are categorized by the species of tree or shrub that dominates in that climate. In Ohio, most swamps are characterized by species such as buttonbush and skunk cabbage. The thick, dark muck that collects in a swamp is full of nutrients, leading many areas to be drained for agriculture. Swamps provide important wildlife habitat, and are also very good at absorbing floodwaters, decreasing the severity of flooding.

**Bogs** are unique in the world of wetlands. Most of the water in a bog comes from rainfall, so there are very few nutrients available to plants. The spongy sphagnum moss that develops in a bog can make the water highly acidic, further affecting plant growth. Some plants, including the Venus flytrap, sundew and pitcher plant, respond to the lack of nutrients by trapping insects and digesting them. Another interesting feature of bogs is preservation and mummification. Many animals, and even people, have been preserved for hundreds of years in the peat deposits in bogs.

**A Fen** is similar to a bog, but receives some groundwater and therefore some nutrients. Therefore a fen is less acidic and supports a greater diversity of plants and animals. Fens are also more likely than bogs to be damaged by agriculture or mining. If the groundwater flow is diverted, a fen will become a bog. Once a fen is destroyed, it can take 10,000 years to develop again.



### Some Wetland Definitions....do you know the difference?

**Wetland:** area saturated by surface or ground water so that it supports vegetation adapted for saturated soil conditions

**Fen:** peat-accumulating, groundwater-fed wetland that receives water from mineral soils, usually vegetated with mosses and sedges

**Marsh:** wetland characterized by frequent or continual

flooding and herbaceous vegetation such as cattails and rushes

**Swamp:** wetland characterized by periodic soil saturation and dominated by trees or shrubs

**Bog:** nutrient-poor, precipitation-fed, acidic wetland formed over an accumulation of peat, with mosses, sedges, orchids and coniferous trees

## Activities For Your Classroom...

### Migration Headache (Grades 3-8)

#### A Project Wild Activity

There are variety of remarkable migrating water birds. Many migrating birds require the presence of wetlands in their breeding habitat and on their wintering ground. Since these two regions are often thousands of mile apart, they need wetlands to provide them with food and rest in between.



#### The Activity

1. Select a large playing area about 70 feet in length. Place hula-hoops at either end of the playing field. Choose the number of hula-hoops so that you have one hoop for each three students at each end. Make one end the wintering habitat and the other the nesting habitat.
2. Explain to the students that they are water birds and will migrate between these two areas. Tell them the hula-hoops represent wetlands, which will provide suitable habitat for them. In order for the students to survive the long trip, they must land (have at least one foot in the hoop) in a wetland. If they cannot do this, they will die (these students will move to the sidelines to watch).
3. Explain to students that many factors will limit the survival of populations of migrating water birds; changes in habitat, loss or gain of food sources, etc. Make certain that students know that only 3 birds may occupy one hula-hoop.
4. Begin the activity with the students at the wintering habitat. They will go through their first migration.
5. Explain that there has been no loss of habitat in the area, thus a successful nesting season is at hand.
6. Before the winter migration, remove one or some of the hula-hoops to represent loss of wetland habitat. Explain what may have happened to the habitat; wetland has been drained, oil spill, drought, etc.
7. Remove and add hula-hoops as desired. Keep a graph of the birds that survive and those that die. When all birds find their habitat, have hatchlings (previously dead birds) enter the game.
8. Repeat the process for eight or ten migrations cycles to illustrate the changes in habitat conditions with resulting effects on birds. Give examples of factors that might influence the birds' survival.

### Build Your Own Bog!

#### Project WET Activity (for older students)

Watch this wetland throughout the year!

*You will need:* A 20-gallon glass tank (alternatives: 2-liter bottles per student, plastic pretzel jars, be creative!), small water container, watering can, clear plastic soda bottle, 5 pounds gravel, 1 pound perlite, 3½ pounds activated charcoal (pet or aquarium stores), 10 pounds dry peat moss, 3 pounds sphagnum moss (craft stores, floral shops), potting soil, distilled/dechlorinated water (tap water can be allowed to sit for a few days in an open container), and some 'artifacts' (these could include small nails, wood, fruit, newspaper, copier paper, pennies, anything).

*To Build Your Bog:* Add the perlite first, in a flat layer across the bottom. Next, add a flat layer of gravel, then the activated charcoal. These layers create the drainage that occurs in natural bogs. Next, place the 'artifacts' against the glass and on top of the charcoal. They should be able to be seen from the outside, without disturbing the bog. Add 1-3 inches of peat and compress it. Now put in additional 'artifacts' and loosely pack the remaining peat and most of the sphagnum around them. Be sure to create some topography, and a place for your reservoir. Place a few artifacts on the surface, and bury the small water container in the moss so that it is slightly below the surface. Then the top should be covered with plastic wrap or a sheet of glass.

*To Build Your Composter:* Punch drain holes in the bottom of the plastic soda bottle, and cut the top off. Fill it with the soil, and similar artifacts arranged so they can be seen. This container represents typical soils and should be kept damp but not soggy, and stirred once a week.

*Place both containers near a window, or provide a day/night cycle with artificial lights. The bog should have condensation at all times, and the composter should be kept damp.*

## Useful Websites



- ? <http://www.wes.army.mil/el/wetlands/ysi.html>  
? This site provides a great printable booklet all about wetlands.
- ? <http://www.ducks.ca/cgi-bin/www.cgi?tp=I&pg=SPW048X&ab=1&kp=1102>  
? This is a "Ducks Unlimited" site that offers free education resources on wetlands.
- ? <http://www.audubon.org/campaign/wetland/ecosystem.html>  
? This is the website of the National Audubon Society's Wetland Campaign. It has lots of great information.
- ? <http://www.ohiodnr.com/wildlife/pdf/pub397.pdf>  
? This site is about managing wetlands for wildlife habitat.
- ? <http://www.epa.gov/owow/wetlands/>  
? This is the United States Environmental Protection Agency's official wetland information site.

The Ohio Department of Education is looking for teachers to field-test science and social studies curricula materials. The testing cycles will be in October-November and again in January. Participating teachers would be asked to prepare and present the lesson and provide written feedback. For more information: [http://www.ode.state.oh.us/academic\\_content\\_standards/misc/FieldTestParticipationForm.asp](http://www.ode.state.oh.us/academic_content_standards/misc/FieldTestParticipationForm.asp)

### Your SWCD Contacts:

**Geauga SWCD**– Vicki Domonkos, Public Education Specialist  
440-834-1122  
14269 Claridon-Troy Rd., PO Box 410  
Burton, Ohio 44021  
website: <http://www.geaugaswcd.com>

**Lake SWCD**– Beth Landers, Education Coordinator  
440-350-2730  
125 East Erie St.  
Painesville, Ohio 44077  
website: <http://www.lakecountyohio.org/soil>



## Upcoming Opportunities for Teachers Soil and Water Conservation District Photo Contest

Lake and Geauga SWCD's are sponsoring a photography contest focusing on the importance of streams and lakes as vital resources in our daily lives. We are looking for striking images that capture attention and depict the 2003 theme of "Clean Water For Life". Contact your SWCD office for more information and contest rules, or visit the website at [www.geaugaswcd.com](http://www.geaugaswcd.com). Entries should be submitted to the SWCD of the county that you live in.

### Grant Opportunity with OEEF

The Ohio EPA Office of Environmental Education administers the **Ohio Environmental Education Fund**, which awards more than \$1 million annually in grants to primary and secondary schools, universities, environmental advocacy groups, industry associations, non-profit groups and others for projects that increase awareness and understanding of environmental issues throughout Ohio. In ever-shrinking budgets, this may be a good way for your school to provide better opportunities in science and environmental studies. For guidelines, deadlines, and to download an application, check out <http://web.epa.state.oh.us/oeeef>.

Thank you to the Western Reserve Federation of Conservationists for funding this issue of Muddy Hands and supporting environmental education!

## New Education Specialist at Lake SWCD!

Help welcome Beth Landers to Lake SWCD—she started as the new Education Specialist in September 2003. Beth was a naturalist at Punderson State Park before she decided to join the soil and water world. Congratulations to Beth and welcome aboard!!!



All Lake and Geauga SWCD and USDA programs and services are available without regard to race, age, gender, national origin, political belief, color, religion, disability, sexual orientation, or marital or family status.