

# Wetlands Teacher's Guide



About 10,000 to 12,000 years ago much of what we now call Illinois was covered with gigantic sheets of ice called glaciers. The weather was very cold. However, as the temperature warmed over the years the glaciers began to melt and break up. Chunks of the glaciers settled into low-lying valleys. When the chunks finally melted, the water filled some valleys to form lakes and marshes. As the glaciers melted, there was a tremendous amount of water flowing across the state toward the ocean. This water cut out the channels of our rivers. At the end of this stage, Illinois had 10 million acres of lakes, marshes and swamps as well as the Mississippi and Illinois rivers.

These diverse aquatic habitats are referred to as wetlands. Today only about 10 percent (approximately 1.25 million acres) of our original 8.2 million acres of wetlands remain. Most of the other 90 percent have been destroyed by human activities. The primary reason for loss has been conversion of land for agricultural purposes, though in some areas urban and/or industrial development has been predominantly responsible for wetland destruction and degradation. Under Section 404 of the Clean Water Act, the loss of wetlands in some instances must be mitigated (replacement of or substitution for the lost wetland) by the construction of a like amount of wetlands elsewhere. However, created and restored wetlands cannot recreate the biological and hydrologic complexity of their natural models.

## Wetland I.D.

What is a wetland? What are its characteristics? Who are its inhabitants? Wetlands are areas that are either covered with shallow water or have soils saturated (soaked to capacity) with water for periods during the growing season. The three characteristics of wetlands are the presence of:

1. periodic water;
2. hydric soils (soils that lack oxygen);
3. hydrophytic plants (plants that grow in water or in saturated soil).

Wetlands include marshes, fens, swamps, bogs and certain riparian areas. They are fed by runoff, rainfall, seepage from groundwater or a combination of all these sources. Wetlands consist of living and nonliving things. They are an important part of the watershed. Since there is little free oxygen in wetland environments, the wetland plant life is specially adapted to these conditions, as is the wildlife.

A wetland community can consist of large varieties of living things characteristic to the region and type of wetland. These organisms

are specifically adapted to living in a wetland environment by their individual form, function and behavior. They are either directly or indirectly connected in complex relationships within the wetland system, depending on each other for survival. Positive or negative effects felt by a single member of the “web” are shared by all.

## Wetland Value

Wetlands serve very important environmental functions. Some examples of their usefulness are:

- **storm water and flood control:** Wetlands absorb large amounts of storm water and reduce flooding by storing and slowing down the water force.
- **habitat for threatened and endangered plants and animals:** In Illinois more than 40 percent of these species depend on the 2.6 percent of the landscape remaining as wetland.
- **improvement of water quality:** Wetland vegetation slows sediment build up and absorbs as much as 90 percent of high nutrient levels which can cause further management problems if they reach other wetland areas.

- **habitat:** Wetlands provide food, water and shelter for a variety of plants and wildlife.
- **aesthetics and recreation:** Substantial biological diversity can provide for a diversity of recreational activities and enhance the aesthetic qualities of the site. Wetlands help support fishing, hunting, trapping, paddle sports, wildlife observation and nature photography.
- **education and research:** The rich ecosystems of wetlands are natural locations for biological research and observation.

Wetlands are resources that serve as vital connections between dry land and permanent water. They are often transition areas, changing in response to weather conditions and precipitation patterns. During a dry year a wetland may not be very wet. During a year with heavy rains, that same area may fill and hold water for extended periods. Wetlands may perform different functions in a dry year than in a wet one. This ability is what makes them so unique and so valuable.

## Wetland Locations in Illinois

Several types of wetlands exist in Illinois. They include:

- forested wetlands;
- perennial and intermittent;
- open lakes and lake shores;
- ponds;
- marshes; and
- swamps.

Some of the less common Illinois wetlands are wet prairies, scrub-shrub wetlands, bogs and fens.

Most wetland areas in Illinois are in the northeastern and southern parts of the state and along the Illinois River; however, all counties in Illinois have wetlands, with the number of acres varying from 1,014 acres in Stark County to 35,502 acres in Clinton County. Many people in national, state and county agencies are knowledgeable about wetlands. To find out about wetlands in your area, contact the Illinois Department of Natural Resources or the resource conservationist at your county Soil and Water Conservation District office. Check your telephone directory for contact numbers.

## Wetland Threats

Natural processes and human actions contribute to the continued loss of wetlands in Illinois.

**Soil Erosion:** Soil from exposed land is carried by rainwater into wetlands. This run-off soil makes the wetland water muddy. The muddy water blocks the flow of sunlight plants need to conduct photosynthesis. As a result, animals are deprived of plant food. The thick blanket of sediment is too unstable for plants to take root in. As plants die, animals suffer from a lack of oxygen due to decreased production and increased decomposition. Also, an

abundance of sediment can choke aquatic organisms. As sediment builds up on the bottom, the wetland becomes smaller which increases the risk of flooding during heavy rains.

**Illinois Coastal Management Program:** [http://www.dnr.illinois.gov/cmp/documents/tag\\_b\\_%20shorelineerosion\\_2009\\_02\\_19.pdf](http://www.dnr.illinois.gov/cmp/documents/tag_b_%20shorelineerosion_2009_02_19.pdf)

**Agricultural Lands:** <http://www.dnr.state.il.us/orep/ctap/sumrepo/chap8/chap8t.htm>

**Habitat Destruction:** Historically, wetlands were considered mosquito-filled wastelands and obstacles to development. Many wetlands were drained or filled to make space for urban or industrial development, destroying necessary habitat for plants and animals. See the article at <http://www.dnr.illinois.gov/OI/Documents/Mar12FeatureStory.pdf> for an example.

**Violation of Protection Laws:** State and federal laws protect wetlands and their inhabitants. Violation of these laws may increase water pollution which kills plants and animals, affects drinking water and decreases wetland size. When laws are broken, every part of the wetland ecosystem is damaged.

**Mitigation:** <http://www.dnr.state.il.us/wetlands/ch7a.htm>  
<http://www.dnr.state.il.us/wetlands/ch6d.htm>

**Chemical Pollution:** Some people spray pesticides, herbicides and insecticides to control pests, fungi and insects on their plants. They also treat plants with fertilizers to help them grow. Fertilizers can enhance the growth of bacteria, algae and plants. These chemicals make their way into the soil. When rainwater erodes the soil, the chemicals are carried with the soil into wetlands. Plants and animals take in the chemicals from the water. Chemicals are passed from one animal to the next in the food web. People are also affected by chemical pollution. When we eat fish from a stream that is polluted with chemicals, we absorb some of those chemicals. Review the following Web sites for an example of what can result from chemical pollution and how state agencies work together to overcome the problems.

<http://www.dnr.illinois.gov/oi/documents/june07responsibleneighbors.pdf>  
<http://www.dnr.state.il.us/orep/cas/nrda/projects/lawrenceville/assessmentplan.pdf>  
<http://www.dnr.illinois.gov/pressrelease/indianrefinerysettlement.pdf>

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