Chapter IV Threats to Wetlands

The Facts on Threats

- In the 1600's, over 200 million acres of wetlands existed in the lower 48 states. By the mid-1970's, only 99 million acres remained – a loss of approximately 54% of the original acreage.
- Wetlands loss from the mid-1950's to the mid-1970's is the result of agricultural conversion (87%)*, urban development (8%), and other development (5%).
- Certain states have lost more wetlands than others:

  California & Iowa — over 90% of original wetlands.

  Nebraska — over 90% of wetlands in the Rainwater Basin. These wetlands are heavily used by migratory birds, and overcrowding results in outbreaks of disease.

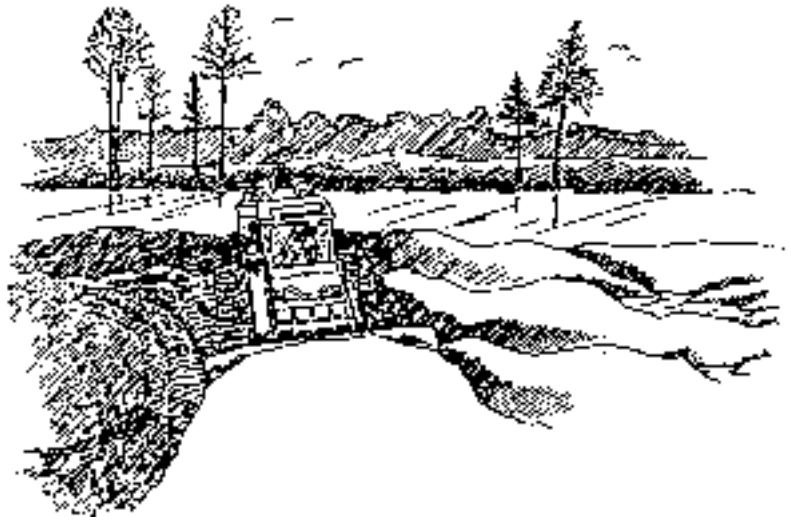
  Mississippi — 80% of original bottomland hardwood forests.

  Louisiana — loses 30,000 to 40,000 acres of coastal wetlands each year.
- Michigan, Minnesota, Louisiana, North Dakota, and Connecticut have lost over half of their original wetlands.

*This figure may have changed substantially since the mid-1970's.

A History of Wetland Loss

Until recently, wetlands have been considered mosquito-infested, mucky, dangerous, and unhealthful places – certainly not a place to take your class! Due in part to these misconceptions, over half of the wetlands in the U.S. have been destroyed since the 1700's. They have been drained for agricultural activities, filled for housing developments and industrial complexes, and used as dumping sites for household and hazardous wastes. Despite the fact that scientists have discovered wetlands to be valuable ecosystems, their destruction continues worldwide.

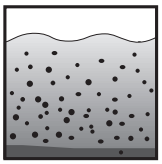


How Are Wetlands Lost?

Human Activities

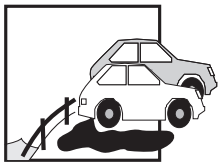
Urban & suburban development — filling and dredging wetlands for houses, commercial buildings, ports, highways, airports, waste disposal sites, and other construction projects. Paving large areas with asphalt and concrete increases the rate and amount of surface runoff which increases the likelihood of flooding. Development can also cause *fragmentation* of large wetland systems. For example, road crossings disrupt the continuity of a system and adversely impact wildlife. Numerous, small impacts to wetlands within a watershed can add up to a significant cumulative loss.

Some Nonpoint Source Pollutants



Bacteria and viruses — found in sewage and septic tank effluents as well as in rainwater runoff from streets and farms.

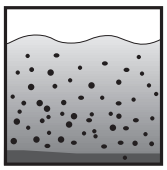
Nutrients — while nutrients like nitrogen and phosphorus are essential ingredients for plants and animals, excessive amounts in water result in accelerated growth of algae. Blooms of algae block out sunlight needed by plants and pollute the water.



Petroleum products — gasoline, oil, and grease are often carried by rain from streets, parking lots, and commercial areas.

Organic chemicals — pesticides and household or industrial cleaners and solvents are carried by rain from farms and commercial areas to water bodies.

Heavy metals — lead, arsenic, mercury, copper, chromium, zinc, and cadmium originate in vehicle exhaust, industrial emissions, incinerators, and landfills. They may be carried by rain water or leached directly into groundwater.



Sediments — The energy of moving water erodes and suspends particles of sand, silt, clay, plant material, and microscopic plankton. This creates a condition called *turbidity*. While turbidity is a natural condition, it can be harmfully accelerated by land use that removes protective vegetative cover and exposes bare soil. Excessive turbidity causes problems for spawning fish and drinking water quality. Turbidity also blocks light penetration thus reducing aquatic plant growth.

Agricultural activities — ditching, draining, and clearing wetlands for farming.

Pond and lake construction — diking, excavating, and flooding wetlands for water supply, flood protection, recreation, and other purposes.

Mining — for peat, coal, sand, gravel, and other products.

Natural Threats

Erosion, sea level rise, droughts, hurricanes, and overgrazing by wildlife can also impact wetlands.

Wetland Degradation

Pollution from pesticides, heavy metals, sediments, domestic sewage, and fertilizers discharged from a variety of *point sources* (e.g., direct discharges from industrial complexes) or *nonpoint sources* (e.g., runoff carrying road salt from highways) degrade the quality of wetland waters.

There are many ways to remove pollutants from water, but they are generally very complicated and expensive to implement. It is far better to prevent pollutants from getting into water supplies in the first place. Wetlands are effective filters for some, though not all, potential water pollutants.

CONSEQUENCES OF WETLAND LOSS

Flooding

Billions of local, state, and federal dollars have been spent over the years to dike and dam rivers to prevent them from flooding. Nonetheless, floods continue to seriously damage the property and livelihoods of thousands of Americans, as evidenced by the 1993 flooding of the Midwest. Wetlands are natural flood control systems – they absorb peak flood flows and later release them more slowly, reducing flood damage to property downstream.

Loss of Wildlife Habitat

Up to 45% of rare and endangered species rely to some extent on wetlands to some extent for their survival. As other habitats are lost to development, wetlands even become the last refuge for those animals not usually thought of as wetland-dependent, such as the black bear and Florida panther.

Example: The drainage of 90% of the wetlands in Nebraska's Rainwater Basin for agriculture has concentrated waterfowl in greater densities in the few remaining areas, causing outbreaks of disease. In 1980, 80,000 birds died of avian cholera because of overcrowding in the Basin.

Declining Water Quality

Wetland loss can also result in water quality decline.

Example: Forested wetlands play an important role in reducing excessive nutrients entering the Chesapeake Bay. One wetland was shown to remove approximately 80% of phosphorus and 90% of nitrogen from a tributary entering the Bay. Destruction of these wetlands would increase *eutrophication* (see Chapter III, page 53 for discussion). Atlantic menhaden, the Bay's second most plentiful catch, often suffer mass kills because of a lack of oxygen caused by eutrophication.

Getting Your Students Involved:

How are our lives linked to the health of the environment? What would happen if wetlands disappeared? Record the ways students think their lives might be affected.

Are there any common, everyday activities that you could be doing that impact wetlands, positively or negatively? Get your students engaged in a discussion that might involve the following questions:

- Are there any roads you drive on that cross wetlands?
- What kind of an impact might this have (causes fragmentation, run off of salt, gas, and oil)?
- Are there any shopping areas, airports, or houses in town that are built on, or near, wetlands?
- Are there any state or local parks that you visit that protect wetlands? Do any of the students hunt or fish?