



New York Field Office

## Wetlands: An Introduction

**S**wamp, quagmire, mosquito breeding area, wasteland...People often use these terms when referring to wetlands. Since colonial times, many have regarded wetlands as useless. Approximately 46% of the original 221 million acres of wetlands in the lower 48 states of the United States have been filled, drained, and converted to other “more valuable uses.” This translates into a loss of over 60 acres of wetlands each hour between the 1780s and the 1980s.

Our knowledge and understanding of wetlands has increased dramatically during the last two decades. This knowledge has led to an appreciation of wetlands values and functions. We must protect this necessary part of the natural landscape.

### What Are Wetlands?

**S**o, exactly what are wetlands? What functions do they possess and why do they deserve protection?

Wetlands are transitional zones. Many occur between terrestrial (upland) ecosystems and deepwater aquatic systems and are part of a continuous gradient between the two. Both the terrestrial and aquatic ecosystems influence wetlands and both are influenced by wetlands. Wetlands commonly occur along the shore of streams and lakes, along coastal embayments and estuaries, on slopes where springs surface, and in shallow depressions surrounded by upland.

We identify wetlands by three main properties: hydrology of the site, hydric (associated with water) soils, and hydrophytic (“water plant”) vegetation.

### Hydrology

**P**roper hydrology is the most important factor in establishing and maintaining wetlands. Hydrologic pathways such as precipitation (rainfall and snowfall), ground water discharge and recharge, surface water runoff and flooding, and tidal flow transport water, energy, and nutrients to and from wetlands. Water depth and flow patterns and duration and frequency of flooding influence soil

properties and, in turn, determine the flora and fauna that develop in a wetland.

### Hydric Soils

**T**he Soil Conservation Service defines “hydric soil” as “a soil that is saturated, flooded, or impounded long enough during the growing season to develop anaerobic conditions in the upper part.” Soils may be classified as one of two major types: mineral soils or organic soils. Examples of hydric organic soils include muck and peat. Water logged soils have low oxygen content and changeable chemical conditions. These factors significantly limit the diversity and quantity of rooted plants that can survive in them.

### Hydrophytic Vegetation

**W**etlands present harsh living conditions that include anoxic (no oxygen) soils, extreme variations in soil and water salinity, and water level fluctuations. Hydrophytes have developed unique structural and physiological adaptations in order to withstand wetland stresses. One important adaptation is aerenchyma, special air spaces which allow oxygen to diffuse from the portions of the plant above the water to the roots. Some common wetland plants include: cattails, tussock sedge, smooth cordgrass, salt hay grass, cinnamon fern, reed canary grass, speckled alder, green ash, and American elm.

### Wetland Types

**W**etlands in the United States may be divided into five major systems: marine, estuarine, lacustrine, riverine, and palustrine. Marine and estuarine systems include coastal wetlands, such as tidal marshes and mangrove swamps. Lacustrine, riverine, and palustrine habitats represent freshwater systems which account for approximately 90% of the nation’s wetlands. Lacustrine wetlands are associated with lakes. Riverine wetlands occur along rivers and streams. Palustrine wetlands include marshes, wet meadows, scrub-shrub wetlands, and forested wetlands.

## Functions and Values

Scientists value natural wetlands for the many functions they perform in our environment. Wetlands provide crucial habitat – breeding, resting, and feeding areas to a variety of fish, shellfish, and wildlife. In the mid-1980s, reports stated that the annual commercial harvest of wetland dependent coastal fish and shellfish were valued at more than \$10 billion.

Wetlands perform an essential role in improving water quality by intercepting storm water runoff from the land and filtering nutrients, pollutants, and sediments from the water. Wetlands also slow water flow, allowing suspended materials to drop out of the water. Wetlands store water and slowly release the stored water downstream. Because of this process, wetlands both reduce flooding and provide a source of water during drought. This flood water storage capability is particularly important in urban areas where surface water runoff increases the potential for flood damage to private property. In the early 1970s, the U.S. Army Corps of Engineers recognized the value of wetlands of flood storage and concluded that wetlands protection, as compared to engineered reservoirs, walls, and dikes, was the “least-cost solution” for flooding problems in some areas.

Wetland vegetation protects shorelines from erosion by binding the soil, buffering wave action, and reducing water action, and reducing water velocity through friction. Many natural products including timber, fish, shellfish, wildlife, cranberries, blueberries, and wild rice are produced in wetlands. Numerous recreational activities such as photography, canoeing, hunting, and fishing take place in and around wetlands as well.

## Why Protect Wetlands?

Scientific studies demonstrating wetland values increased public awareness of wetland benefits and stimulated concern for wetland protection. A variety of policies, laws, and regulations have promoted the protection of wetlands. Nevertheless, wetlands continue to be altered and destroyed through drainage, dredging, filling, conversion for agricultural uses, water pollution, and mineral extraction. New York State alone has lost over 60% of its original wetlands.

State and local laws serve to augment federal wetland protection policies. Most local governments have the authority to institute and enforce zoning

ordinances, subdivision regulations, and building and sanitary codes. For example, local officials can manage and zone floodplain wetlands so as to minimize human encroachment and maximize floodwater retention. This management saves private property and millions of tax dollars.

## In Conclusion...

Wetlands provide many benefits to humanity—free of charge. Resource managers value wetlands for their contributions to flood control, groundwater recharge, pollution absorption, and as habitat for a variety of fish and wildlife. The public values wetlands for their educational, recreational, and aesthetic properties. Altering wetlands for development greatly diminishes their effectiveness in providing these important functions. It is in the public’s best interest to protect our remaining wetlands. As Aldo Leopold stated in the *Sand County Almanac*, “a thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends to do otherwise.”

For further information, contact: U.S. Fish and Wildlife Service, 3817 Luker Road, Cortland, NY 13045. (607) 753-9334.