What Are Wetlands?

Introduction

Wetlands are the interfaces between land and water. They are characterized by having hydric soils (soil that has been wet long enough to have oxidized reactions), hydrologic periods of being wet at least 5% of the growing season, and having hydrophytic plants (plant found in wetlands more than not).

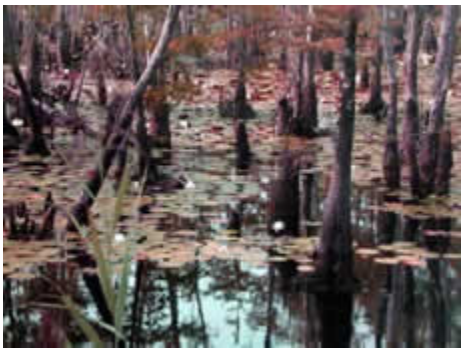
Generally, wetlands are lands where saturation with water is the dominant factor determining the nature of soil development and the types of plant and animal communities living in the soil and on its surface. Wetlands vary widely because of regional and local differences in soils, topography, climate, hydrology, water chemistry, vegetation, and other factors, including human disturbance. Indeed, wetlands are found from the tundra to the tropics and on every continent except Antarctica.

For regulatory purposes under the Clean Water Act, the term wetlands means "those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs and similar areas."

Wetlands perform three primary functions. One is providing a habitat for plants and animals that live primarily in wetland areas. Migrating birds are a primary user of wetlands. A second function is flood control. Wetlands can store large amounts of water and when heavy rains occur (even hurricanes). Wetlands will store much of the water accumulation and reduce the flooding in surrounding areas. The third function is water quality. Wetlands purify the water of harmful chemicals from human use (pesticides, herbicides, cleaning solutions, etc.), pathogens, and particulates.

What are Wetlands?

Wetlands are areas where water covers the soil, or is present either at or near the surface of the soil all year or for varying periods of time during the year, including during the growing season. Water saturation (hydrology) largely determines how the soil develops and the types of plant and animal communities living in and on the soil. Wetlands may support both aquatic and terrestrial species. The prolonged presence of water creates conditions that favor the growth of specially adapted plants (hydrophytes) and promote the development of characteristic wetland (hydric) soils.



Wetlands vary widely because of regional and local differences in soils, topography, climate, hydrology, water chemistry, vegetation, and other factors, including human disturbance. Indeed, wetlands are found from the tundra to the tropics and on every continent except Antarctica. Two general categories of wetlands are recognized: coastal or tidal wetlands and inland or non-tidal wetlands.

Coastal wetlands in the United States, as their name suggests, are found along the Atlantic, Pacific, Alaskan, and Gulf coasts. They are closely linked to our nation's estuaries, where sea water mixes with fresh water to form an environment of varying salinities. The salt water and the fluctuating water levels (due to tidal action) combine to create a rather difficult environment for most plants. Consequently, many shallow coastal areas are unvegetated mud flats or sand flats. Some plants, however, have successfully adapted to this environment. Certain grasses and grasslike plants that adapt to the saline conditions form the tidal salt marshes that are found along the Atlantic, Gulf, and Pacific coasts. Mangrove swamps, with salt-loving shrubs or trees, are common in tropical climates, such as in southern Florida and Puerto Rico. Some tidal freshwater wetlands form beyond the upper edges of tidal salt marshes where the influence of salt water ends.
Inland wetlands are most common on floodplains along rivers and streams (riparian wetlands), in isolated depressions surrounded by dry land (for example, playas, basins, and "potholes"), along the margins of lakes and ponds, and in other low-lying areas where the groundwater intercepts the soil surface or where precipitation sufficiently saturates the soil (vernal pools and bogs). Inland wetlands include marshes and wet meadows dominated by herbaceous plants, swamps dominated by shrubs, and wooded swamps dominated by trees.

Certain types of inland wetlands are common to particular regions of the country such as North Carolina.

Many of these wetlands are seasonal (they are dry one or more seasons every year), and, particularly in the arid and semiarid West, may be wet only periodically. The quantity of water present and the timing of its presence in part determine the functions of a wetland and its role in the environment. Even wetlands that appear dry at times for significant parts of the year -- such as vernal pools-- often provide critical habitat for wildlife adapted to breeding exclusively in these areas.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Why Protect Wetlands?

Wetlands are among the most productive ecosystems in the world, comparable to rain forests and coral reefs. An immense variety of species of microbes, plants, insects, amphibians, reptiles, birds, fish, and mammals can be part of a wetland ecosystem. Physical and chemical features such as climate, landscape shape (topology), geology, and the movement and abundance of water help to determine the plants and animals that inhabit each wetland. The complex, dynamic relationships among the organisms inhabiting the wetland environment are

referred to as food webs. (see illustration).This is why wetlands in Texas, North Carolina, and Alaska differ from one another.

Wetlands can be thought of as "biological supermarkets." They provide great volumes of food that attract many animal species. These animals use wetlands for part of or all of their life-cycle. Dead plant leaves and stems break down in the water to form small particles of organic material called "detritus." This enriched material feeds many small aquatic insects, shellfish, and small fish that are food for larger predatory fish, reptiles, amphibians, birds, and mammals.

The functions of a wetland and the values of these functions to human society depend on a complex set of relationships between the wetland and the other ecosystems in the watershed. A watershed is a geographic area in which water, sediments, and dissolved materials drain from higher elevations to a common low-lying outlet or basin a point on a larger stream, lake, underlying aquifer, or estuary.

Wetlands play an integral role in the ecology of the watershed. The combination of shallow water, high levels of nutrients, and primary productivity is ideal for the development of organisms that form the base of the food web and feed many species of fish, amphibians, shellfish, and insects. Many species of birds and mammals rely on wetlands for food, water, and shelter, especially during migration and breeding.

Wetlands' microbes, plants, and wildlife are part of global cycles for water, nitrogen, and sulfur. Furthermore, scientists are beginning to realize that atmospheric maintenance may be an additional wetlands function. Wetlands store carbon within their plant communities and soil instead of releasing it to the atmosphere as carbon dioxide. Thus wetlands help to moderate global climate conditions.

Historically, wetlands have been considered unimportant, even worthless. At best, they were considered useful only when filled or drained. However, during the last twenty to thirty years, scientists and policy makers have become more aware of the value of wetlands to landowners and the general public. These wetland values may include:

- water storage, including limiting the effects of floods and droughts;
- water purification;
- shoreline stabilization;
- habitat for waterfowl and other animals, and plants;
- erosion protection;
- production of fish and shellfish;
- food production;
- timber production;
- education and research;
- recreation; and
- open space and aesthetic values.

Increased awareness of the value of wetlands has resulted in a number of regulations and programs designed to protect wetlands and the benefits they provide.


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Administrative History

Legislation Affecting Wetlands

Legislation	Responsible Agency	Regulated Activity
Section 404 Clean Water Act (1972)	US. Army Corps of Engineers	Discharge of dredged or fill materials into waters of the United States
Section 401 Clean Water Act (1972)	NC DENR Division of Water Quality	Discharge of pollutants in surface waters of the state
NC Coastal Area Management Act (1974)	Division of Coastal Management	Development in designated "Areas of Environmental Concern"
Division of Coastal Management State Dredge and Fill Act (1969)	Division of Coastal Management	Filling or dredging in estuarine waters, tidelands, marshlands, and state-owned lakes
Title XIV: 1990 Food, Agriculture, Conservation and Trade Act (Swampbuster)	Agricultural Stabilization and Conservation Service	Conversion of wetlands for the purpose of agricultural production