

## **RECOGNIZING WETLANDS**

Many definitions of wetlands exist. Federal definitions can differ from state definitions (as is the case in Connecticut), but most people will agree that wetlands are areas where water is the primary factor in determining the types of plants, soils and wildlife that can be found there. The hydrology (distribution and effects of water on the soil) affects the types of plants that can survive in the area, which in turn affect the wildlife which will utilize the area. The hydrology also directly affects the wildlife present, by providing certain habitats, such as open water areas for ducks, or shallow water for wading birds. These factors combine and interact to form a complex ecosystem which is important to all of us.

### **Recognizing Wetlands**

The Connecticut Department of Transportation (ConnDOT) uses standards set by the U.S. Army Corps of Engineers and the Connecticut Department of Environmental Protection to delineate both federal and state-regulated wetlands.

#### **Federal Wetlands**

In an effort to establish a uniform set of criteria, the Army Corps of Engineers designed a method based on all three criteria: vegetation, soils and hydrology, which became a national standard. The federal definition of a wetland is *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.*

#### **State Wetlands**

State of Connecticut wetlands are defined as land, including submerged land, (excluding tidal wetlands), which consists of any of the soil types designated as poorly drained, very poorly drained, alluvial and flood plain by the Natural Resource Conservation Service of the U.S. Department of Agriculture. Watercourses are defined as rivers, streams, brooks, waterways, lakes, ponds, marshes, swamps, bogs and all other bodies of water, natural or artificial, public or private, which are contained within, flow through or border upon the state or any portion thereof.

ConnDOT has a team of professionals dedicated to recognizing, evaluating and even creating wetlands. Staff within the Office of Environmental Planning have backgrounds in Natural Resource Management, Geology, Biology, Botany and Civil Engineering, among others. It does not take a professional, however, to learn to recognize wetlands, and to appreciate the value they hold.

### **Vegetation**

Plants in wetlands have adapted to survive in soils that are saturated with water during part or all of the growing season. The U.S. Fish and Wildlife Service categorizes plants based on their relative frequency of being found in wetlands. This categorization is known as the Wetland Indicator Status, which differs for each region of the country. This status is used by many organizations and professionals as an accepted method of helping to define wetlands. The categories are as follows:

- Obligate - Found in wetlands 99% of the time
- Facultative Wet - Found in wetlands 67 - 99% of the time
- Facultative - Found in wetlands 34 - 66% of the time
- Facultative Upland - Found in wetlands 1 - 33% of the time
- Upland - Found in wetlands less than 1% of the time

## Soils

Wetland soils are soils that are saturated, flooded or ponded long enough during the growing season to develop anaerobic (lack of free oxygen) conditions in the upper part. These soils are known as *hydric* soils. These soils undergo different chemical and physical reactions than upland soils due to the soil saturation and reducing conditions. Field indicators which have formed during these processes are observable, and are used to define wetland boundaries. In general, wetland organic soils may be recognized as black-colored muck and/or black to dark brown-colored peat. Wetland mineral soils will often have a thick dark organic surface layer, and grey subsurface colors with mottles.

## Hydrology

Wetland hydrology refers to the presence of water at or above the soil surface for a sufficient period of the year to significantly influence the plant types and soils that occur in the area. Gaging stations or groundwater wells are often used to collect data, but many indicators can be observed in the field. In addition to standing or flowing water, less obvious indicators such as water marks on trees, debris lodged in trees, thin layers of sediment on leaves and drift lines provide evidence of periodic flooding or soil saturation.

## Types of Wetlands

There are many types of wetlands and numerous names for these wetland types. The following is a list of definitions of terms often used to describe wetlands found in southern New England. Some of the terms are common names, while others are classifications used by the U.S. Fish and Wildlife Service.

*Swamp* - dominated by trees or shrubs usually with relatively mineral rich soils, flooded for much of the year.

*Marsh* - often continuously inundated with water and dominated by grasslike species and usually with relatively mineral rich organic soils.

*Bog* - a peat-accumulating wetland with little or no influence by the surrounding or underlying mineral soil. Typically acidic pH, with low nutrient availability, and dominated by sphagnum mosses, shrubby heath species and conifer trees.

*Fen* - a peat-accumulating wetland with greater influence by the adjacent mineral soil from drainage or seepage. Typically less acidic pH, with greater nutrient availability than bogs, and often dominated by sedges.

*Wet Meadow* - grassland with often waterlogged soils but without standing water.

*Vernal Pools* - form in topographic depressions found in forested swamps. These areas provide extremely important breeding habitat for amphibians such as mole salamanders and the wood frog.

*Palustrine Forested Wetlands* - commonly called wooded swamps, usually dominated by species such as red maple, white cedar, hemlock, spruce or fir.

*Palustrine Scrub-Shrub Wetlands* - in the Northeast are dominated by woody species in the sapling and shrub stages.

*Palustrine Emergent Wetlands* - marshes and wet meadows are the most prevalent palustrine emergent wetlands in New England. These are wetlands dominated by herbaceous or non-woody vegetation, and usually have either surface water or saturated soils present year round.

*Lacustrine* - inland systems that include permanently flooded lakes and reservoirs, or tidal lakes with low salinity. Vegetation, when present, is usually nonpersistent emergent plants, or submersed or floating plants.

*Riverine* - systems consist of streams and rivers. Riverine habitat refers to wetlands and deepwater areas with flowing water within a channel. Vegetation, when present, is same as in the Lacustrine system.

*Estuarine* - tidal wetlands in low-wave-energy environments where the salinity of the water is greater than 0.5 part per thousand and is variable due to evaporation and mixing of seawater and fresh water.

## ***Coastal Terms***

*Saltmarsh* - is the dominant coastal wetland type along the southern New England coast. It usually occurs behind barrier beaches and at the mouth of tidal rivers where saltwater influence is strongest. Salt marshes are dominated by self-supporting herbaceous vegetation with varying degrees of salt tolerance.

*Tidal Flats* - appear as large expanses of mud, sand, gravel or various combinations of these at low tide. Depending on salinities, some flats may be covered with algae or low-growing plants.

*High Tide Line* - a line or mark left upon tide flats, beaches or along shore objects that indicates the intersection of the land with the water's surface at the maximum height reached by a rising tide. The high tide line may be determined by tidal gages, physical markings or characteristics, vegetation lines, a more or less continuous deposit of fine shell or debris on the foreshore or berm, or other suitable means such as a line of oil or scum along the shore that delineate the general height reached by a rising tide.

*Mean High Water Mark* - with respect to ocean and coastal waters, the line on the shore established by the average of all high tides. It is established by survey based on available tidal data.

*Ordinary High Water Mark* - the line on shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter or debris, or other appropriate means that consider the characteristics of the surrounding areas.

## **Functions and Values of Wetlands**

Wetlands are dynamic communities that can serve different functions at different points in time. Each wetland is a unique ecosystem, performing functions and adding value to the community. Some of the functions and values which are considered when evaluating wetlands are:

*Groundwater Recharge/Discharge* - considers the potential for a wetland to serve as a groundwater recharge and/or discharge area. Recharge relates to the potential for the wetland to contribute water to an aquifer. Discharge relates to the potential for the wetland to serve as an area where ground water can be discharged to the surface.

*Floodflow Alteration - (Storage & Desynchronization)* - considers the effectiveness of the wetland in reducing flood damage by attenuation of floodwaters for prolonged periods following precipitation events.

*Fish and Shellfish Habitat* - considers the effectiveness of waterbodies associated with the wetland in question for fish and shellfish habitat.

*Sediment/Toxicant/Pathogen Retention* - reduces or prevents degradation of water quality. It relates to the effectiveness of the wetland as a trap for sediments, toxicants or pathogens.

*Wildlife Habitat* - considers the effectiveness of the wetland in providing habitat for various types of populations of animals typically associated with wetlands and the wetland edge. Both resident and/or migrating species must be considered.

*Recreation (Consumptive and Non-Consumptive)* - considers the effectiveness of the wetland or its associated waterbodies in providing recreational opportunities.

*Uniqueness/Heritage* - provides certain special values such as archeological sites, unusual aesthetic quality, historical events or unique plants, animals or geologic features, etc.

*Visual Quality/Aesthetics* - relates to the visual and aesthetic qualities of the wetland.

*Threatened or Endangered Species Habitat* - relates to the effectiveness of the wetland or associated waterbodies in supporting threatened or endangered species.

*Nutrient Removal/Retention/Transformation* - relates to the effectiveness of the wetland in preventing adverse

effects of excess nutrients entering aquifers or surface waters.

*Production Export (Nutrient)* - relates to the effectiveness of the wetland in producing food or usable products for human or other living organisms.

*Sediment/Shoreline Stabilization* - relates to the effectiveness of a wetland in stabilizing stream banks and shorelines against erosion.

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