New York State Department of Environmental Conservation

Freshwater Wetlands Program

More information from this division:

Division of Fish, Wildlife and Marine Resources
Bureau of Habitat

Program Information

Our Mission

It is the mission of the Freshwater Wetlands program to protect, maintain, enhance, and restore freshwater wetlands ecosystems so they provide a broad array of wetlands functions and benefits to the people and the environment of New York.

Wetlands are areas where land and water meet. They are transitional areas between aquatic and upland plant and animal communities, and often have some of the qualities of both. Wetlands also occur where the groundwater occurs near or at the surface, saturating the soil and the root zone of the plants that grow there. Society and scientists have created numerous definitions of wetlands, depending on how they -- both the definitions and the wetlands -- will be used. The state's freshwater wetland act contains a lengthy definition in Environmental Conservation Law §24-0107.1); a simple definition would be:

FRESHWATER WETLANDS are those areas of land and water that support a preponderance of characteristic wetlands plants that out-compete upland plants because of the presence of wetlands hydrology (such as prolonged flooding) or hydric (wet) soils. Freshwater wetlands commonly include marshes, swamps, bogs, and fens.

Some wetlands occur where the groundwater emerges at the surface of the ground, usually on a slope; these commonly are known as hillside seeps or slope wetlands. Probably the most well-recognized wetland is where surface water, such as a pond or lake slopes up to land, where wetlands develop; these are known as fringe wetlands. Riparian wetlands occur in the floodplain adjacent to streams and rivers. Another wetland type is where a depression in the land reaches down into the groundwater; these are the famous prairie potholes of the American Midwest, and the vegetated ponds on Long Island. Finally, wetlands can occur where surface water is trapped in shallow depressions by soil that will not allow the water to seep downwards. These are called depressional or flat wetlands and are common on clay soils in the Lake Plains of western New York.

When scientists look at wetlands, they usually look at a few key characteristics. The most relevant one is water. Water, or the wetland's hydrology, is why the wetland exists. But it also is very elusive. Hydrology changes throughout the year -- ponds get low, streams dry up, wells go dry. It also varies between years. So scientists look for signs that water was there at some recent time and for extended periods of time. Indicators of hydrology include leaves that have turned black from being in the water for a long time, or silt marks on tree trunks.

Vegetation is a more dependable and useful indicator that a wetland is present. Certain plants, known as "hydrophytes," have adapted to survive with their roots growing in water for at least part of the growing season.

Some of these plants, known as "obligates," require water to survive or to out-compete other plants. Typical obligates include cattails, pond lilies, and skunk cabbage. Other plants, known as "facultative" plants, are able to grow in either wet or dry conditions. Common facultative species include red maple and green ash. They can only tell you that a wetland MIGHT be present. Finally, other types of plants, known as upland species, cannot grow and survive in situations where their roots are wet for long periods of time in the growing season. Examples are black locust, black oak, and multiflora rose.

Soils are the other commonly used indicator that wetlands may be present. Wet soils, known as "hydric" soils, develop when they are flooded or saturated for long periods of time, especially if part of the time occurs during the growing season. If the ground is wet for all or most of the year, organic, peat-types of soils (sometimes called muck) develop. When the soils dry out for part of the year, the peat material oxidizes, or breaks down. Then, other signs help indicate wetness: rust stains may develop along the roots of plants, or the color of the soil changes.

When evaluated together, hydrology, soils and vegetation can indicate whether an area is a wetland. Some are obvious: marshes along the coast. Others are very subtle: seasonally flooded red maple swamps.

Wetland Functions and Values

Wetlands perform numerous functions, such as removing excess nutrients from the water that flows through them. These functions in turn provide benefits to the environment and the citizens of the state. For example, the benefit derived from nutrient removal is improved or maintained water quality. This in turn is valued by society for a number of reasons such as clean drinking water, safe recreation, and secure fish and wildlife habitat.

Following are some of the wetlands functions and benefits that are important in New York State:

Flood Protection and Abatement - During storms and periods of heavy rain or spring snow melt, wetlands serve as natural reservoirs or channels for conveying excess water, slowing the movement of water through the watershed. Filling in wetlands often results in

increased flooding, both downstream, by speeding water along, or upstream, by blocking water flow.

Erosion and Sedimentation Control - Wetlands vegetation helps to filter sediment by decreasing water velocity. Suspended particles settle in the wetland and do not enter navigational channels, lakes, and reservoirs. In much the same manner, wetlands also help prevent erosion of shorelines and valuable agricultural land by serving as buffers between wave or stream activity and adjacent lands.

Water Quality Maintenance - Microorganisms in wetlands break down and use nutrients and can significantly reduce levels of natural and human-induced pollution in water as it filters through the wetland. Chemical processes in the soil also immobilize chemicals and heavy metals. Water leaving a wetland is frequently cleaner than water entering the wetland. Wetlands also protect fresh groundwater supplies in coastal areas by preventing saltwater intrusion.

Recharging Groundwater Supplies - Wetlands sometimes are helpful in recharging groundwater. This function is especially important where groundwater is the sole-source of drinking water or constitutes the major source of usable water.

Maintaining Surface Flows - Wetlands frequently serve as groundwater discharge sites, thereby maintaining the quality and quantity of surface water supplies.

Fish and Wildlife Habitats - Many species of fish and wildlife depend on wetlands for critical parts of their life cycle. By providing breeding, nesting, and feeding grounds and cover, wetlands are recognized as one of the most valuable habitats for wildlife. Young fish find food and shelter in the protective vegetation. Many species of endangered, threatened, or special concern fish and wildlife depend on wetlands. Tidal wetlands are vital to the continued health of vertebrate and invertebrate species of the waters of New York's marine district. Over two-thirds of the fish, shellfish and crustaceans harvested in New York (including both commercial and recreational harvest) are dependent on tidal wetlands for some portion of their life cycles. In addition, wetlands are habitat for thousands of species of the plants of New York. One half of New York's

protected native plants, many of which are endangered or threatened, are wetlands species.

Nutrient Production and Cycling - Wetlands are one of the most ecologically productive systems on earth, converting sunlight and nutrients into food sources for animals. Some tidal wetlands exceed even tropical rainforests in energy conversion. Wetlands also serve as filters for sediment and organic and chemical nutrients. These components are recycled in wetlands, where the nutrients are broken down and reentered into the food web.

Recreation - Hiking, bird watching, hunting, fishing, trapping, boating, photography, and camping are some of the recreational uses provided by wetlands. Over 12 million New Yorkers annually participate in these outdoor activities. In a 1991 report to the Legislature on the economic return from hunting, fishing and other uses of wildlife, it was estimated that these activities had a total annual worth of more than $5 million.

Open Space - Wetlands are often the only undeveloped areas along crowded riverfronts and coastal regions or in urbanized areas. In some areas, real estate near open space, such as wetlands, command significantly higher prices.

Educational and Scientific Research - Wetlands provide readily accessible outdoor biophysical laboratories, living classrooms, and vast training and education resources.

Biological Diversity - Society is becoming increasingly concerned about local, regional and global biological diversity. Wetlands are important components of the landscape and contribute significantly to the state's overall biological diversity. Wetlands are habitat for many rare and indigenous species of plants and animals and many in themselves represent unique natural communities.

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Freshwater Wetlands Status and Trends

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How much wetland does New York have and how has it changed in recent years?

It is estimated that as of the mid-1990s, there are approximately 2.4 million acres of wetlands in New York. Some areas, like the Adirondacks and the Lake Plains of western NY contain more wetlands because there are larger expanses of flat topography. Other areas, like the Appalachian Highlands, the Hudson Valley, and Long Island, contain relatively fewer wetlands. DEC began a study in the mid-1990s to assess the current status and trends in freshwater wetlands resource in New York. The study compared mid-1980s and mid-1990s aerial photography for a sample of quadrangles in five ecological zones of the state to determine the amount of wetlands; gains, losses or changes in covertype; and to what those changes could be attributed. Following are some of the highlights of that study.

Characteristics and distribution of wetlands in New York

	Ecological Zone					State Total
	Lake Plains	Appalachian Highlands	Adirondack	Hudson Valley	Coastal Lowlands	
Estimated wetland acres in this ecoregion	883,000	423,000	904,000	170,000	21,000	2,401,000
% of the ecoregion's area in wetland	12.3	3.6	12.4	4.4	2.3	7.2
% of state's wetlands in this ecoregion	36.8	17.6	37.6	7.1	0.9	

% of wetlands that are forested covertype	75.4	57.5	72	61.9	65.3	69.9
% of wetlands that are shrub/scrub covertype	14.2	22.4	13.8	20.9	3.1	15.9
% of wetlands that are emergent covertype	7.9	11.8	9.4	11.6	8.3	9.1
% of wetlands that are open water covertype	3.3	8.3	4.7	5.6	23.3	5.1

Highlights of the Freshwater Wetlands Status and Trends Study

New York has an estimated 2.4 million acres of wetlands. The wettest ecoregions are the Lake Plains and the Adirondacks. Together they encompass 74% of the state's wetlands.

The most common wetland covertype is forested (70%), followed by shrub/scrub (16%), emergent (9%), and wetland open water (5%). We are gaining forested and wetland open water as covertypes. We are losing shrub/scrub and emergent wetlands as covertypes.

Between the mid-80s and mid-90s there was a net gain of approximately 15,500 acres of freshwater wetlands. Net gains occurred mostly in the Lake Plains (+15,200 acres), with more minor gains in the Appalachian Highlands (+2,200 acres), and the Adirondacks (+900 acres). The Coastal Lowlands remained about the same (+70 acres). There was net loss of wetlands in the Hudson Valley (-2,900 acres).

There was a gross gain of approximately 37,900 acres of freshwater wetlands. Most gains occurred in the Lake Plains ecozone (+26,300 acres). Most gains resulted

from agricultural reversion (+28,800 acres) and from modified hydrology (increased run-off) (+8,600 acres). There was a gross loss of approximately 22,500 acres of wetlands. Most losses occurred in the Lake Plains (-11,100 acres) and the Appalachian Highlands (-5,700 acres). Most losses resulted from agricultural conversion (-11,100 acres) and urbanization and its associated impacts, such as road construction (-11,300 acres).

Changes in the Freshwater Wetlands Resource between the mid-1980s and the mid-1990s.

Cause of Change	Estimated Acreage Based on Projections from Study Sample		
	Acres Gained	Acres Lost	Acres with Covertype Change
Agriculture	28,800	11,100	2,100
Urbanization	0	8,200	200
Linear Development	30	900	500
Sand and Gravel Mining	250	2,200	20
Increased Runoff	8600	50	17,200
Beaver Activity	150	0	7,900
Plant Succession	80	0	119,900
Total	37,910	22,450	147,820

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