
ENVIRONMENTAL Fact Sheet



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Red Maple Swamp Communities

General Description

Red maple forested wetlands, better known as red maple swamps, are the most abundant freshwater wetland type in New Hampshire and throughout the northeast. As indicated by its name, red maple (*Acer rubrum*) is the dominant tree species found in red maple swamps. Red maple is tolerant of various site conditions, and red maple swamps occur in various hydrogeological settings.

Red maple swamps can occur on river terraces, in oxbows, behind natural levees, and on the low-lying inner floodplain of rivers. They can also be found in undrained basins. Such swamps exhibit the characteristic mound-and-pool topography, where trees and shrubs are rooted primarily in mounds. Red maple swamps can also occur on slopes or in shallow depressions along intermittent or upper perennial streams.

Depending upon the location of a swamp, its soil may be either organic or mineral in composition. In most of the northeast, soils of red maple swamps are acidic and low in available plant nutrients. These acidic and nutrient poor conditions are common characteristics of soils throughout New England. However, there are swamps that receive calcium-rich groundwater or surface water that originates from limestone, marble, or lime-rich deposits. This mineral-rich water supports a greater diversity of plant species. Such areas are known as calcareous seepage swamps. In New Hampshire, seepage swamps dominated by red maple occur primarily in the southwestern part of the state.

Ecology & Environment

Red maple is a moderately flood-tolerant tree that is most common on sites that are intermediate in wetness between permanent flooding and temporary or intermittent flooding. The red maples ability to persist under these adverse conditions when compared with other wetland tree species, lies in its ability to produce a heavy seed crop nearly every spring, its rapid seed germination, and its ability to vigorously sprout from stumps and damaged seedlings on a variety of disturbed sites.

Water levels in red maple swamps are highly dynamic. They typically vary between seasons, years, and individual swamps. In New Hampshire, red maple swamp water levels are normally highest during the winter and spring, and lowest during late summer or early fall. The distribution of plant species in a swamp is influenced by how long the soil remains saturated. Red maple's predominate in swamps where soils are saturated or flooded from late fall through early summer in most years.

The two most important aspects of the red maple swamp plant community are structure (i.e. vegetation height, density, percent cover, number of developed vegetation layers, etc.) and floristic composition. Structure is a primary factor in wildlife habitat selection. Breeding birds prefer forest habitats that contain several vegetation layers rather than simpler communities dominated by herbs or shrubs. Small mammals (mice, voles, shrews) prefer swamps with abundant shrub cover and a variety of tree and shrub species. Larger mammals (otters, mink, beaver, white-tailed deer) extensively use red maple swamps, preferably swamps along lakeshores/watercourses, or those containing perennial streams.

The seasonal flooding of red maple swamps provides the standing water that many amphibians require for breeding, and provides feeding and resting areas for migrating waterfowl. Swamps containing streams tend to support a higher number of species of reptiles and amphibians than forests lacking streams.

Plant and Animal Species

Red maple swamps may contain as many as five separate and extremely vital vegetation layers. These layers include:

- Trees
- Samples
- Shrubs
- Herbs (ferns, wildflowers, grasses)
- Ground cover (mosses, lichens)

In the northeast, the flora of red maple swamps is rich and diverse, including at least 50 species of trees, more than 90 species of shrubs and vines, and more than 300 species of nonwoody plants. However, a few species usually predominate at any one site. In New Hampshire, there are several species of plants that are found in red maple swamps that are state listed as either critically endangered, endangered, or threatened. Such plants include Yellow and Showy Lady's Slippers, Great Rhododendron, and Swamp Azalea.

Some tree species commonly associated with red maple swamps include the white ash, Eastern white pine, and balsam fir. Black ash is often associated with red maple in calcareous seepage swamps. Shrub abundance may vary widely within a swamp. Some shrub species include spicebush, mountain laurel, and highbush blueberry. Herb layer composition is unique to each swamp. Swamps with mound-and-pool topography have a relatively higher variety of herb species. Some examples of herbs include cinnamon fern, skunk cabbage, and gold thread.

In New Hampshire, red maple swamps are home to such rare species as the marbled salamander. They are the principal forest type used by breeding wood ducks in the northeast. Songbirds (e.g., Canada warbler, veery) and birds of prey (e.g., red-shouldered hawk, barred owl) have an affinity for red maple swamps. Nearly 50 species of mammals live in red maple swamps, including black bears, white-tailed deer, moose, and bats.

Functions and Values

In addition to providing habitat to wetland dependent and upland wildlife, red maple swamps perform many functions that bear directly on public safety, health, and welfare. Their ability to reduce the peak level of floods and to delay the flood crest is widely recognized. By collecting precipitation and overland flow and recharging the underlying groundwater system, swamps may augment domestic and municipal water supplies. Forested wetlands improve surface water quality by retaining, removing, or transforming pollutants that enter the wetland through stormwater and wastewater discharges.

Red maple swamps are valuable for their use as recreation and open space areas, and their scenic beauty. They are frequented by hunters, wildlife photographers, and birdwatchers. What would New Hampshire be like without the brilliant yellow, red, and orange foliage of red maples in the fall?

Human Impacts

As upland areas become urbanized, the volume of stormwater runoff entering the wetland may increase dramatically. Stormwater runoff and wastewater discharges introduce pollutants that have the ability to interrupt and/or impact various wetland functions. Stormwater can carry pollutants such as road salt, oil, grease, gasoline, fertilizers, pesticides, and heavy metals directly into nearby swamp communities. Increased runoff, and the accumulation of such substances in swamp soils can adversely affect the water regime and water quality, plant growth, invertebrate life in the soil and in surface waters, as well as amphibians and other forms of wildlife higher in the food chain.

Human activities in upland areas immediately adjacent to red maple swamps may also adversely affect the functions and values of those wetlands. These operations may include the clearing of natural vegetation, reduction of groundwater recharge through paving, and installation of private septic systems.

For a red maple swamp to maintain a high level of wildlife diversity, it must sustain several layers of vegetation. To support diverse wildlife, there must be an ample and clean water supply to sustain the diverse plant community. Therefore, projects being undertaken in or adjacent to red maple swamps (e.g., road or pond construction) need to take the necessary measures to ensure that water regimes and water quality are not negatively impacted, and that vegetation layers and defined swamp edges are maintained. In addition, logging in such forests should only be undertaken when the ground is frozen.

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