



Nutrient-poor Basin Swamps

Basin swamps are essentially forested bogs, and like bogs are typically nutrient-poor (oligotrophic). Water inputs tend to be limited to precipitation and subsurface runoff from surrounding uplands, with little influence of groundwater. They often have no perennial stream inflow, but often have slow outlet streams. Basin swamps are generally saturated but do undergo some seasonal water fluctuation, depending largely on the balance between precipitation, evaporation, and plant



transpiration. Shallow to deep layers of muck and peat soils accumulate in the acidic and nutrient-poor conditions found in these poorly drained basins.

Plant species diversity is relatively low within these swamps, compared to mineral-enriched (minerotrophic) swamps. However, the dominant tree species and associated shrubs and herbs differ widely between types of basin swamps, particularly in response to climate variation across the state.

Basin swamps may be dominated by trees or shrubs. Dominant tree species may include red maple (*Acer rubrum*), black gum (*Nyssa sylvatica*), black spruce (*Picea mariana*) and larch (*Larix laricina*), red spruce (*Picea rubens*), northern white cedar (*Thuja occidentalis*), or Atlantic white cedar (*Chamaecyparis thyoides*). Dominant shrub species may include buttonbush (*Cephalanthus occidentalis*), highbush blueberry (*Vaccinium corymbosum*), or winterberry (*Ilex* spp.)

Many basin swamp types, such as black gum-red maple, Atlantic white cedar, or black spruce-larch basin swamps, are mid to late-successional natural community types that can persist for hundreds of years or more. Black gum is an especially long-lived species. Some black gum trees in New Hampshire have been alive for nearly 700 years.

Where Are They Found?

Basin swamps occur in poorly to very poorly drained depressions, usually very isolated from streamflow and groundwater influences. They can be found in perched basins or valley basins, in upland till, bedrock and stratified drift (sand plain) or other valley sediment underlain basins. Some of them are found in stagnant headwater sections of drained basins or in central or isolated "back ends" of swamp systems. They tend to be found in relatively small watersheds of one square mile or less.

The most widespread types include: Red maple/Sphagnum saturated basin swamps; Buttonbush basin swamps; and highbush blueberry-winterberry tall shrub thickets. Black gum-red maple basin swamps are fairly frequent in shallow depressions on hillside benches in southern and south-central New Hampshire, but only a handful of exemplary (large and undisturbed) examples are known.

Black spruce-larch/heath/Sphagnum basin swamps may be found in stagnant areas around bogs and fens or in isolated basins, and are found primarily in northern and north-central New Hampshire. Red spruce/cinnamon fern-three seeded sedge/Sphagnum swamps are found primarily in the White Mountains. Boreal acidic northern white cedar swamps are also found in northern New Hampshire in association with large, acidic, very poorly drained basins, often with spruce swamps. Atlantic white cedar basin swamp types are rare and are restricted to the southern part of the state.





NATURAL COMMUNITIES OF NEW HAMPSHIRE

Types: Buttonbush basin swamp; Red maple/Sphagnum saturated basin swamp with seasonally saturated and seasonally flooded variants; Atlantic white cedar-yellow birch/sweet pepperbush swamp; Boreal Atlantic white cedar swamp; Atlantic white cedar/giant rhododendron swamp; Black spruce-large/heath/Sphagnum basin swamp with four variants; Black gum-red maple basin swamp with four variants; Highbush blueberry-winterberry tall shrub thicket; Boreal acidic northern white cedar swamp; Red spruce/cinnamon fern-three seeded sedge/sphagnum swamp with two variants. [One basin swamp, the swamp white oak basin swamp, is included in the "Mineral-enriched swamps" fact sheet since unlike most other basin swamps it is not nutrient-poor.]

Related Natural Communities: Red maple/sensitive fern-tussock sedge basin/seepage swamp; Speckled alder basin/seepage shrub thicket; Northern hardwood-black ash-conifer seepage swamp; Northern white cedar-balsam fir seepage swamp.

Conservation status: Types vary from rare to common (see "Where Are They Found").

Conservation Considerations:

Basin swamps are typically stable natural community types. They are adapted to seasonal fluctuations in water-levels, but not to extended periods of flooding. These nutrient-poor wetlands are also very sensitive to changes in water chemistry; significant loading of nutrients or other pollutants can alter the species composition and ecological integrity of these swamps. A buffer of undisturbed vegetation (at least 100 feet) is important to help filter stormwater runoff; wider buffers provide greater protection. Activities in adjacent uplands that increase nutrient loads or cause erosion are harmful to the swamps, as are ditching or damming in the local watershed. Logging in or nearby the swamp increases light and other nutrient levels, favoring more competitive species. It can also make canopy trees more vulnerable to windthrow. Any kind of physical disturbance to the soil in the wetland or its upland edges can also allow for the introduction of invasive non-native species.

These fact sheets were prepared by the NH Natural Heritage Bureau, a part of the Division of Forests & Lands in the Department of Resources and Economic Development. NH Natural Heritage is a member of NatureServe, which represents an international network of Heritage programs. Illustration by Libby Davidson from: Wetland, Woodland, Wildland © 2000 The Nature Conservancy & VT Dept. of Fish & Wildlife.

For more information, please visit our web page at www.nh.gov/dred/divisions/forestandlands/bureaus/naturalheritage or call (603) 271-2215.



NH Natural Heritage Bureau
PO Box 1856
Concord, NH 03302-1856

Funded by the Conservation License Plate Trust Fund (the "Mooseplate").
Mooseplate funds received by NH Natural Heritage are vital to developing information that leads to the protection of native plant species and natural communities.