



Natural Heritage & Endangered Species Program

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Shrub Swamp (S5)

State Status: None
Federal Status: None



Shrub Swamp showing rivulet, hummocks, and shrubs extending towards the upland. Photo: Patricia Serrentino, consulting wildlife ecologist.

Description: Shrub Swamps are wetland communities dominated by wetland shrubs. They may form in a variety of settings including in higher areas of deep or shallow emergent marshes or on the margins of those, along the middle of the gradient of soil saturation and water level inundation from uplands to more open water wetlands, and along the edges of water bodies.

Shrubs may occur in several height strata, ranging from less than one meter to 5 meters, or may occur at a relatively uniform height, forming a dense thicket.

Environment: Shrub Swamp Communities occur in lowlands, along the margins of rivers, streams and other waterbodies and along or within the boundaries of forested or herbaceous dominated wetlands. Shrub wetlands may be periodically flooded but soils are saturated year-round. The soils are generally mineral with high organic content, though some shrub swamps may exist on organic soils. Shrub Swamps exist within a hydrologic gradient between forested and herbaceous dominated wetlands.

Shrub swamps may contain areas of open water or rivulets that carry water through the wetland complex. They may also have patches of open wetlands best characterized as shallow or deep emergent marshes. Shrub density can be variable, ranging from dense thickets (>75% cover) to somewhat more open (50-75%) with graminoid, herbaceous or open water between. Soils may be mineral or

contain substantial organic matter due to years of decomposition of leaves and herbaceous material.

Characteristic Species: The species composition of Shrub Swamp Communities is highly variable between sites and within sites as well. There are several possible dominant and codominant shrub species in shrub swamps and these include speckled alder (*Alnus incana*), smooth alder (*Alnus serrulata*), highbush blueberry (*Vaccinium corymbosum*), meadowsweet (*Spiraea alba* var. *latifolia*), hardhack (*S. tomentosa*), buttonbush (*Cephalanthus occidentalis*), maleberry (*Lyonia ligustrina*), swamp azalea

(*Rhododendron viscosum*), silky dogwood (*Cornus amomum*), winterberry (*Ilex verticillata*), sweet gale (*Myrica gale*), highbush blueberry (*Vaccinium corymbosum*), elderberry (*Sanguisorba canadensis*), several species of willow including pussy willow (*Salix discolor*) black willow (*S. nigra*), silky willow (*S. sericea*), sageleaf willow (*S. candida*), autumn willow (*S. serissima*), dewberry (*Rubus hispidus*), arrowwood (*Viburnum dentatum*), poison sumac (*Toxicodendron vernix*), and spicebush (*Lindera benzoin*).

Trees may be widely scattered and stunted and may include red maple (*Acer rubrum*), gray birch (*Betula populifolia*), white pine (*Pinus strobus*), larch (*Larix laricina*) or other species found in either forested swamps or adjacent uplands including eastern hemlock (*Tsuga canadensis*), yellow birch (*Betula allegheniensis*), red spruce (*Picea rubens*), and black spruce (*P. mariana*). In general, a shrub community will have <25% cover of tree canopy.

The herbaceous layer is usually sparse due to the density of shrubs. Species may include skunk cabbage (*Symplocarpus foetidus*), cat-tails (*Typha latifolia*), cinnamon fern (*Osmunda cinnamomea*), sensitive fern (*Onoclea sensibilis*), royal fern (*Osmunda regalis*), marsh fern (*Thelypteris palustris*), horsetail (*Equisetum arvense*), tussock sedge (*Carex stricta*), great bladder sedge (*Carex intumescens*), nodding sedge (*Carex gynandra*), awlfruit sedge (*Carex stipata*), bluejoint grass (*Calamagrostis canadensis*), burr reed (*Sparganium* sp.), sweet flag (*Acorus americanus*), virgin's-bower (*Clematis virginiana*), swamp candles (*Lysimachia terrestris*), clearweed (*Pilea pumila*), Jack-in-the-pulpit (*Arisaema triphyllum*), blue flag (*Iris versicolor*), and turtlehead (*Chelone glabra*).

While nonvascular flora are not a major component, sphagnum has been recorded in substantial abundance in some occurrences.

Invasive species can include reed canary grass (*Phalaris arundinacea*), common buckthorn (*Rhamnus alnifolia*) and purple loosestrife (*Lythrum salicaria*).

Several rare amphibians and reptiles are found in shrub swamps including wood turtles (*Clemmys insculpta*, SC), Jefferson salamanders (*Ambystoma jeffersonianum*, SC) and marbled salamanders (*Ambystoma opacum*, T). Pools in the Shrub Swamp may act as vernal pools habitat used by these and other species.

Range: Shrub swamps are found everywhere in Massachusetts. Shrub swamps can range from small patches, either isolated or as part of a larger wetland complex to occurrences in excess of 50-100 acres. They generally are part of larger complexes of several wetland types.

Related Communities: Acidic shrub fens are peatlands, often dominated by low growing shrubs, along with sphagnum moss and herbaceous species of varying abundance. All of the forested swamp communities (e.g., red maple swamp, black gum swamp, hemlock-hardwood swamp, spruce-tamarack bogs and spruce-fir boreal swamps) contain a significant shrub component, and may grade into shrub swamps in areas where the tree canopy is more open.

Status in Massachusetts: Shrub swamps are ranked as S5, secure in the state.

Management Considerations: Many of the dominant wetland shrubs can tolerate periods of inundation. They may be topkilled by flooding events, but resprout once water levels recede. However, alteration in hydrology, from stormwater discharges or impoundments can significantly alter shrub swamp composition by increasing or decreasing water level and the period of inundation, particularly if increased water level is maintained for more than 2-3 years. This could shift the shrub swamp to a shallow or deep emergent marsh.

Reductions in water level may allow for increased abundance of trees, particularly red maple, resulting in succession from a shrub swamp to a red maple or other forested swamp. Water level reduction may also result from sedimentation from adjacent land uses, such as agriculture. Such activities can increase the amount of nutrients in wetland systems thereby influencing species composition and abundance.

Fire may also be a factor in some shrub swamps as noted in several occurrence records. Fire may reduce the overall density of shrub vegetation, and allow for increases in diversity of the shrub and herbaceous flora. It may also set back tree coverage and maintain a sparse canopy. Fire management would require careful planning to avoid burning when water levels were low and smoldering for long periods could occur. In addition, it would be difficult to create breaks within a large wetland, so prescribed fires may have to be large and encompass an entire

wetland area, by necessity. Mechanical treatments in the winter, when the surface is frozen, might be used to alter shrub structure or reduce tree density if needed.

Some invasive species are capable of becoming established in shrub swamps including glossy buckthorn (*Rhamnus frangula*) and purple loosestrife (*Lythrum salicaria*).

References:

Mitsch, W.J. and J.G. Gosselink 1993. Wetlands. Van Nostrand Reinhold, New York, NY.

Swain, P. C., and J. B. Kearsley. 2001. Classification of natural communities of Massachusetts. September 2001 draft. Natural Heritage and Endangered Species Program, Massachusetts Division of Fisheries and Wildlife. Westborough, MA.

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