

The Vegetation of Aton Forest

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2009.02.24

Upper Slopes

Plant communities of upper slopes tend to be dry sites covered by short forests, sparse woodlands or open non-forested communities. They include summit, crest and ridge sites as well as the high slopes below these areas.

DRY ACIDIC - CIRCUMNEUTRAL FORESTS & WOODLANDS

The Hickory Woodland, as found on Knapp Hill (elev. 1629) and Chimney Hill (elev. 1501), is an unusual type of plant community, not fully understood scientifically. They are found on very shallow soils of summits and crests as open woodlands. They contain dry-site species such as shagbark hickory, white ash, white oak and hop hornbeam, more commonly found to the south of, or at lower elevations than Norfolk, with a ground cover of early sedge. Spring ephemerals, such as Carolina spring beauty, trout lily, wood anemone and dwarf ginseng common and are often at their most abundant. The marginal wood fern is also common. Shrubs are generally absent.

[**The Chestnut Oak Woodland**, such as the one on the summit of Haystack Mountain, is another uncommon plant community, also found on shallow soils of summits. There are no known examples on Aton Forest. Red and white oaks, white ash and white pine are common and there are often shrub layers of black huckleberry, lowbush blueberry and mountain laurel. Grasses such as little bluestem and poverty grass occur in the herb layer. Early sedge and many spring ephemerals are also common.]

The Red Oak Forest is a common type of our summits and upper slopes, especially on south and west facing slopes. Examples are found on Laitinen Hill (elev. 1593, above Woodchuck Hill) and Tows Hill (elev. 1655). Though red oak frequently dominates, there are many trees associated with this species: black birch, red and sugar maples, beech, white ash and shagbark hickory. A shrub layer is usually present and may be sparse or dense, low or high, often including maple-leaved viburnum, beaked hazelnut, witch-hazel and mountain-laurel. Young trees are common in the understory, although the oaks and hickories are generally absent in all but recently cut-over areas. Woodland flowers likely to be found include spotted geranium, common wood aster and wild sarsaparilla. On rocky sites wild columbine, early saxifrage and pale corydalis can be found.

Occasionally on very shallow summits, steep slopes and north slopes, **Hemlock** can dominate. Often there is no shrub or herb layer present here, though mountain-laurel can form extensive patches usually at the edges of the evergreen-dominated cover. An example of this occurs on Ivy Knoll (near The Ledges). **White Pine** sometimes produces relatively pure stands on summits as well, again understory and groundcover tends to be sparse, though hemlock is often in the sub-canopy and species such as mountain-laurel and Canada mayflower can form dense patches.

Non-forested sites, often areas of exposed bedrock, are generally dominated by the shrub species that co-exist in the previously described woodlands. Sometimes grasses like little bluestem or sedges are common. The area known as The Ledges is such a location, with exposed bedrock, often covered in lichens. Mosses are common and several species of shrubs and trees occur at the margins or tenaciously holding on to fissures in the rock surface. Many of these plants are stunted in growth and taller plants can become uprooted, re-exposing the bedrock and opening the site to more light. There are no known exclusively non-forest shrub or graminoid types on Aton Forest. Sparse woodlands types may have a dense understory of shrubs such as Mountain-laurel, but trees still form a partial overstory.

Mid-slope

Mid-slope sites are the average or mesic landscape site, neither dry nor wet, between the upper and lower slopes. Many forest trees achieve their best growth in these areas.

A number of hardwood species can dominate the mid-slopes of our region. Generally these are referred to as **Mixed or Transition Hardwoods** types. Forests dominated by **Red Oak** are common in town, many the result of past land clearing for agriculture, lumber and charcoal production. This is one of our fastest growing species, easily obtaining a diameter of three feet within 100 years. Many of our forests have an emergent tree layer of red oak, which is surpassed in height only by white pine. However, with the loss of farmland and the steady increase in mature forestland locally, these two species will have limited reproduction potential without active management. Common associates or co-dominants of the red oak include beech, red and sugar maple, black and paper birch, hemlock, big-tooth aspen, white pine and black cherry.

The Northern Hardwood plant community is common in Norfolk, although much less so in the rest of Connecticut. As its name suggests, this is the typical hardwood forest type of the North Woods. Here beech, sugar maple and yellow birch are the primary components and hemlock frequent or even co-dominant. The shrub layer, when present, includes striped maple, beech, hemlock and often hobblebush and American yew, which can survive under the shade of mature northern hardwoods. Christmas fern and wood ferns can be abundant in the herb layer and painted trillium and bluebead lily are typical wildflowers of the community.

On richer or moister sites, a variation or Transition type occurs. Sugar maple, white ash and basswood dominate and red oak, beech, yellow birch and hemlock are frequent associates. Differing from the classic northern hardwoods, this community often has a richer shrub or herb layer. When shrubs are abundant, common species include red-berried elder, striped and mountain maples (which can develop into small trees), witch-hazel and round-leaved dogwood, along with sugar maple and beech, which commonly reproduce under the shrub layer. Winterberry is found on wetter sites, lower slopes & wetlands. Where shrubs are few, the herb layer can be thick with blue cohosh, wild leek, wild ginger, Dutchman's breeches, red trillium, bloodroot, trout lily, Carolina spring beauty, twin-leaf toothwort, New England sedge, maidenhair fern, Christmas fern, lady fern and wood ferns.

Old Fields

Following the abandonment of farm fields, the succeeding plant communities vary with the type of previous agricultural practice (ploughed land, hayfield, pasture), the seed sources available nearby, soil type and depth, soil moisture, and other factors (drought and other weather extremes, insect outbreaks, native herbivore pressure, etc.). Initially, fields are dominated by non-native grasses and wildflowers such as orchard grass, timothy, common milkweed, ox-eye daisy, ragged robin, hawkweeds and common buttercup. Soon many of our native perennial wildflowers such as goldenrods and asters come to dominate and more showy flowers may arrive, like Canada and wood lilies, wild bergamot and black-eyed susan. Little bluestem is the common old-field grass on drier sites. Eventually shrubs and young trees (which may have become established unseen early on) become the obvious feature of the field. Typical plants are low- and highbush blueberry, common juniper, meadowsweet, maleberry, chokecherry, black chokeberry, arrowwood, shadbush, staghorn sumac and musclewood. Tree species that can grow rapidly on such sites include white pine, white ash, red maple, red oak, black cherry, paper birch, quaking aspen and hop hornbeam. Red cedar and gray birch are not as common as they are in other parts of the state, but individuals may be found scattered throughout these sites. When there has been a good seed year for white pine following the succession of mowing in hayfields, this species can form dense stands and quickly dominate a field to the exclusion of any other plants. White pine, hemlock, mountain laurel, common juniper, Japanese barberry and multiflora rose may characterize old pasture lands, as livestock tend to avoid these species while consuming the co-existing hardwoods, grasses and wildflowers.

Talus Slope

Mesic Talus Slopes are areas covered by fallen rocks or boulders near the base of steep hills or cliffs. Examples occur along the east and north sides of Knapp Hill, the south side of Ivy Knoll, the west side of Chimney Hill. These are generally occupied by hardwoods typical of old fields or heavily logged sites, such as red oak, white ash and black birch, creating an open woodland. Witch-hazel, striped maple, Virginia creeper and bindweeds are common plants, while hemlock can also dominate these sites. On north slopes yellow birch may be common as well, with red-berried elder, mountain maple, blackberry and polypody ferns in the understory of the sparse tree cover.

Lower Slope

Lower slope forests tend to be moister than the previously discussed sites and often are marginal to wetlands. These sites grade from moist hillsides to areas where the soils are sometimes saturated.

Hemlock-dominated Forests are very common on lower slopes, often mixed with white pine and hardwoods such as red oak, sugar maple, beech, yellow birch, red maple, white ash and black birch. The shrub layer in these evergreen-dominated sites is usually sparse but may include mountain laurel, maple-leaved viburnum and witch-hazel or hobblebush and American yew. Beech and striped maple also occur. The herb layer is also often sparse under these hemlock forests. Common wildflowers are wild sarsaparilla, starflower, partridgeberry, Indian pipe and

Canada mayflower. Moister sites have a richer herb layer, which may include Intermediate wood fern, marginal wood fern, shining clubmoss, partridgeberry, wild sarsaparilla, red trillium, whorled wood aster, wood-sorrel, bluebead lily, Indian cucumber, goldthread, blue cohosh, wild ginger, bloodroot, Dutchman's breeches and wild leeks.

Seeps, which are frequent within these lower slope sites, can create gaps in the forest canopy. Shrubs like red-berried elder and mountain maple occur on rocky sites and common herbs include wild leeks, maiden-hair fern, beech fern, oak fern and jewelweed.

Variants on the Northern Hardwoods and Mixed or Transition Hardwoods also occur on lower slopes. Red oak may be abundant and become massive trees. Tulip-poplar, a tree much more common in southern Connecticut, is occasionally found on these sites and can achieve great size. All the other **Northern and Mixed Hardwoods** commonly occur on lower slopes. Hobblebush, beech, striped maple, shadbush, red-berried elder and mountain maple may be found in the shrub layer. Intermediate wood fern, shining clubmoss, partridgeberry, wild sarsaparilla, red trillium, whorled wood aster, wood-sorrel, bluebead lily, Indian cucumber, goldthread, blue cohosh, wild ginger, bloodroot, Dutchman's breeches and wild leeks may be found in the herb layer.

Wetlands

Swamps are forested wetlands and Norfolk has not only an abundance of swamps, but some that are unusual types for Connecticut.

The extremely rare **Red Spruce-dominated Swamps** (such as Holleran Swamp) are mixed with hemlock, red maple and yellow birch. There are no known examples of this type on Aton Forest. Dwarf mistletoe, a semi-parasitic species on red spruce, occurs in the upper canopy of this forest. The shrub layer includes mountain holly, mountain laurel, highbush blueberry and common winterberry. The herb layer has a base of sphagnum moss with cinnamon fern, bluebead lily, goldthread, lowbush blueberry and sedges common.

The rare **Black Spruce-dominated Swamps** (such as at Beckley Bog) are mixed with tamarack, red spruce and white pine. There are no known examples of this type on Aton Forest. Common shrubs include mountain holly, highbush blueberry, withe-rod and common winterberry. Common plants of the herb layer include sheep laurel, leatherleaf, cranberry, round-leaf sundew, pitcher plant, sedges, rushes and sphagnum.

Red Maple Swamps (such as found near the intersection of North Colebrook and State Line Hill roads) are the most common types on Aton Forest. Black ash and yellow birch are common associates in the tree layer. The groundcover or understory is often a patchwork either dominated by shrubs or sedges and ferns. The shrub layer can be dense with several species easily found: spicebush, silky dogwood, speckled alder, arrowwood, poison sumac, willows, highbush blueberry, common winterberry, and sheep-laurel. The herb layer may be equally developed and includes sedges, false hellebore, rue anemone, swamp saxifrage, jewelweed, sensitive fern, cinnamon fern, ostrich fern, royal fern, crested fern, Clinton's fern, false-nettle, clearweed, bunchberry and purple avens. Some rare plants such as early coral-root.

Hemlock Swamps are very common also, and tend to be cool and deeply shaded, often with a sparse understory. Yellow birch, red maple and white pine are common associates in the tree layer. The shrub layer may include spicebush, common winterberry, highbush blueberry, mountain holly and mountain laurel. Common herbs include cinnamon fern, royal fern, goldthread, wood-sorrel, sensitive fern, painted trillium, jack-in-the-pulpit and sphagnum.

Yellow Birch Swamps (Knox Swamp) are boggy sites with a partial canopy of yellow birch, red maple, and white and black ash. Hemlock and white pine occur but are generally quite stunted and therefore leaving the swamp relatively open, allowing the shrub and herb communities to develop dense covers. Sphagnum mosses are omnipresent and ferns can dominate. Common herbs include cinnamon fern, crested fern, Clinton's fern, sensitive fern, swamp saxifrage, rue anemone, bunchberry, sedges, and orchids. Shrubs such as common winterberry, gooseberries, highbush blueberry, and viburnums are common to abundant, especially towards the north end of the swamp where depths are shallower to the basin substrate. The rare early coral-root and naked miterwort can be found here. A narrow band of Hemlock swamp is often found at the margins, with a continuous sphagnum groundcover and common herbs such as goldthread and wood sorrel. A similar type occurs on small amounts of higher ground within the swamp, often the decomposed remains of tipped-over trees.

Forested floodplains occupy relatively small areas along the larger streams and rivers of Norfolk. Some high floodplain occurs along the Blackberry River where trees typical of such sites may be found: cottonwood, quaking aspen, black willow, red maple and white pine. A shrub understory is generally absent, but the herb layer is often rich in ferns and spring ephemerals. Riparian forests occur on the banks of larger streams and rivers. Some of the floodplain species occur, with the addition of hemlock and yellow birch, while cottonwood and black willow tend to drop out. Shrubs such as shadbush, hobblebush and American yew may also occur.

Several types of shrub wetland communities can be found in town. They may be dominated by speckled alder, pussy willow, common winterberry, meadowsweet, steeplebush, buttonbush, or a mixture of any of these. Highbush blueberry, withe-rod, common elderberry, mountain azalea and mountain laurel may also be present, often at the margins. Many ferns, sedges and rushes are common associates in the herb layer.

One rare type is the Leatherleaf Bog (found within Beckley Bog). Leatherleaf, a shrub more common in northern New England wetlands, is a low plant growing in the herb layer alongside sheep-laurel, cranberry, roundleaf sundew, pitcher plant and sedges. Orchids are noteworthy species here, often restricted to these sites. In the shrub layer, commonly found plants include black spruce, tamarack, white pine, mountain holly, highbush blueberry, withe-rod and common winterberry.

Marshes tend to be wetter sites where most shrubs do not thrive. Some are long-stable communities, from tall stands of common cattail and common reed to short tussock sedge and bur weed marshes. Others may be more dynamic, especially where beaver are active and water levels change periodically. Other emergent species may dominate some sites, such as pickerel weed, arrowhead and smartweeds. In deeper water, floating aquatics dominate with species like

yellow and white pond lilies, watershield and bladderworts. In Beaver Pond some tussock sedge tussocks have become detached but still alive. These were possibly detached by winter ice and rising water levels.

Wet Meadow communities generally are not submerged during the growing season. These communities are variable and diverse. Reed canary grass can dominate large sections of these meadows, much like the common reed. Other species that may be present are joe-pye weed, boneset, green-headed coneflower, St. Johnsworts, swamp candles, blue-flag iris, fowl grass, fringed gentian, cardinal flower, marsh fern and sensitive fern.

Red Oak and other hardwoods

The most extensive oak/hardwood forest cover is on the generally south-facing slopes (also some level areas) south of North Colebrook Road. Prior to Egler, these lands were owned and farmed by Stedmen and Laitinen. There are large portions of these hardwoods with Woodland Grass understory (no shrubs), the only places I have seen great masses of this species. It occurs occasionally in many different habitats (wetlands, hardwoods, mixed hardwoods and conifers). There are occasional patches in the old roadways; very distinctive in that the patch occurs within the bounds of the roadbed only. Ferns (Hay-scented and New York) commonly dominate the understory as well on these slopes and flats. The most common shrub, and usually in dense patches, is Mountain-laurel.