



Division of Fisheries & Wildlife

Wayne F. MacCallum, *Director*

May 11, 2006

Earle Baldwin, Secretary
Athol Open Space Committee
P.O. Box 506
Athol, MA 01331

Re: 2006 Open Space Plan, 06-19743
Town of Athol

Dear Mr. Baldwin:

Thank you for contacting the Natural Heritage and Endangered Species Program regarding the Open Space Plan for the Town of Athol. Enclosed is information on the rare species and ecologically significant natural communities that we have documented in the town.

Enclosed is a list from our database of all rare species and priority or exemplary natural communities currently known to occur or to have occurred in Athol. Fact Sheets describing the species and their habitats are on our website at www.nhesp.org. Relevant pages from the Classification of Natural Communities of Massachusetts are also on our website and enclosed/attached. Any species with a most recent date within the past 25 years is considered to be current.

There is a large variety of rare species in Athol. There are multiple records of several species of stream dragonflies and freshwater mussels, which imply that good populations are present in town. The water quality and quantity of the streams provides good habitat and should be a priority to maintain. Bridle Shiners are fish of slowly moving water. Wood Turtles overwinter in stream banks and tend to stay in the vicinity of the streams and wetlands through the year. Sedge Wrens are the rarest vertebrate animal known to occur in Athol. They nest in moist, not flooded, areas dominated by dense grass and sedges on the margins of rivers, streams and ponds. Their numbers have declined with the changes in land cover associated with the decrease in agriculture: wet pastures provided habitat.

Of the rare plants, two are aquatic, found in lake (Variable Pondweed) or flowing water (Threadfoot). The Mountain Firmoss (a club moss) occurs in a road cut and has continuing problems with shading. Sand Violet occurs in gravelly or sandy areas with little canopy cover. The Athol population has not been seen in 60 years, but plants might be relocated yet! Tuckerman's Sedge is a plant of riverside and other wet meadows, another plant whose population has declined with the reduction in agriculture.

All types of natural communities provide important habitat for common and uncommon species and support the biodiversity of the town. Of the uncommon natural community types tracked by NHESP, Hickory – Hop-hornbeam Forest/Woodland and Spruce-Fir Boreal Swamps have been documented in Athol. Hickory – Hop-hornbeam forest/woodlands are naturally small communities, usually on slopes with shallow soils. Spruce-Fir Boreal Swamps have cool conditions often associated with areas further north. They are wetlands with some peat development that support large trees that create a dark and cool habitat. In addition, because there are nearby, Kettlehole Level Bogs and Level Bogs might be reasonably sought in Athol. We have also documented good occurrences of the more common Low-energy riverbank community along the Miller's River. And there is a very good example, mostly on town land, of the matrix (wide-spread) community type, Northern Hardwood – Hemlock – White Pine Forest. It is



Natural Heritage & Endangered Species Program

Route 135, Westborough, MA 01581 Tel: (508) 792-7270, ext 200 Fax: (508) 792-7821
An Agency of the Department of Fish and Game
<http://www.nhesp.org>

important to conserve and maintain good examples of common community types to provide habitat for all species. That particular example contains areas that may be primary forest, described below, which are particularly important reservoirs of biodiversity in landscapes that were cleared and tilled.

Athol has areas of possible Primary Forest, areas that were forested in the 1830s and in the 1999 MassGIS land use coverage, referred to as "1830s forest" areas. The intent of this datalayer is to identify forested areas that may have been continuously forested. Primary forest is not Old Growth, but does occur on untilled soil. Even though they were usually woodlots and were cut repeatedly and were often pastured, they retain greater native biodiversity than adjoining areas that were tilled. It is not known if the areas in Athol that were forested in the 1830s and 1999 are primary forest, but they are worth checking. Much of the 1830s forest area in north central Athol is on the Wildlife Management Area, so protected. There is another area of 1830s forest south of the town lands (mentioned above), possibly water district land (according to MassGIS's open space datalayer). Several smaller parcels of town land overlap with the 1830s forest. The areas of 1830s forest on private land might be good targets for conservation acquisition to maintain the biodiversity of the town and region.

Athol has many probable vernal pools (Potential Vernal Pools, PVPs, identified through interpreting aerial photographs, available as a datalayer from MassGIS at <http://www.mass.gov/mgis/pvp.htm>), and six certified vernal pools. There are several clusters of vernal pools, which indicate particularly good habitat for species that depend on vernal pools. The clusters mean that there are alternate habitats if something happens to one pool, and slightly different conditions in each may provide different habitats for pool dependent species. Certifying the PVPs would provide more protection to these wetlands and the species that use them. Clusters of PVPs occur on "1830s forest" are even better conservation targets.

A copy of the report on BioMap and Living Waters Core Areas for Athol is available from the NHESP website at <http://www.mass.gov/dfwele/dfw/nhosp/nhtwnreports.htm>. BioMap and Living Waters cores were produced by NHESP to identify the areas of most importance for biodiversity: they are based on known locations of rare species and uncommon natural communities, and incorporate the habitats needed by rare species to maintain the local populations. BioMap focused on species of uplands and wetlands; Living Waters focused on aquatic species. Large maps and copies of the report have been sent to the town showing BioMap and Living Waters areas. Large unfragmented conservation land provides the best opportunities to maintain populations of species and limit further species loss from the town. Land protection by towns that ties in with open space in other towns, and other protected open space, public or private is one way to provide important large areas of biodiversity protection. BioMap and Living Waters polygons are also available from MassGIS at <http://www.mass.gov/mgis/biocore.htm> and <http://www.mass.gov/mgis/lwcore.htm>. In Athol, there is a large BioMap and Living Waters area around Lake Rohunta. There is also a large BioMap core centered on the town land with the good example of the Northern Hardwoods – Hemlock – White Pine Forest. BioMap and Living Waters Core areas extend into adjoining towns and provide opportunities to identify large contiguous undeveloped lands that would be good conservation targets.

Just to differentiate the BioMap and Living Waters core areas from the following Priority and Estimated Habitats: BioMap and Living Waters core areas identify areas particularly important for conservation planning purposes. Priority and Estimated Habitats are regulatory.

The NHESP produces maps for use under the Wetlands Protection Act (Estimated Habitat maps, provided to the Conservation Commission and shown in reduced form in the Natural Heritage Atlas, reduced versions of which are enclosed, and the Massachusetts Endangered Species Act (also in the Natural Heritage Atlas, and enclosed with this letter). These data layers are also available from MassGIS, requiring access to some form of GIS to view them, at <http://www.mass.gov/mgis/wethab.htm> and <http://www.mass.gov/mgis/prihab.htm>. These two sets of maps are created for regulatory use. Estimated Habitats are a complete subset of Priority Habitats that focus on habitat of rare wetlands wildlife. Priority Habitats are drawn for all rare species. Lists of species in each regulatory polygon are enclosed. Early planning and review of development projects under the Wetlands Protection Act regulations and Endangered Species Act does play a very positive role in protecting rare species habitats. Town commissions and boards are encouraged to request the assistance of the Natural Heritage and Endangered

May 11, 2006

Species Program in reviewing any project proposed in the habitat areas of the regulatory areas of the maps in the Natural Heritage Atlas.

Management and monitoring of conservation lands become important as acquisition and protection are accomplished. All wetlands particularly need to maintain their natural water regime, including normal fluctuations and connections with the uplands and other wetlands. Water quantity and quality are ongoing issues for wetlands. Another aspect of managing conservation lands that is important in many areas is controlling invasive non-native species that alter the habitat and occupy space that native species would otherwise use. We strongly recommend monitoring conservation land, and removing non-native species before they become a problem and impact native species.

Please note that this evaluation is based on the most recent information available in the Natural Heritage database, which is constantly being expanded and updated through ongoing research and inventory. Should new rare species information become available, this evaluation may need to be reconsidered.

Please do not hesitate to call me at (508) 792-7270 Ext. 160 if you have any questions.

Sincerely,



Patricia C. Swain, Ph.D.
Ecologist

cc: Melissa Cryan, EOE



Division of Fisheries & Wildlife

Wayne F. MacCallum, *Director*

RARE SPECIES DOCUMENTED IN THE TOWN OF Athol

AS OF April 28, 2006

<u>Scientific Name</u>	<u>Common Name</u>	<u>Status</u>	<u>Most recent Year</u>
VERTEBRATES			
<i>Ardea herodias</i>	Great Blue Heron	- WL	1996
<i>Cistothorus platensis</i>	Sedge Wren	E	2001
<i>Clemmys guttata</i>	Spotted Turtle	SC	1992
<i>Clemmys insculpta</i>	Wood Turtle	SC	2005
<i>Notropis bifrenatus</i>	Bridle Shiner	SC	1996
INVERTEBRATES			
<i>Alasmidonta undulata</i>	Triangle Floater	SC	2004
<i>Enallagma laterale</i>	New England Bluet	SC	2003
<i>Gomphus abbreviatus</i>	Spine-crowned Clubtail	E	2004
<i>Gomphus borealis</i>	Beaverpond Clubtail	SC	2003
<i>Neurocordulia yamaskanensis</i>	Stygian Shadowdragon	SC	2004
<i>Ophiogomphus aspersus</i>	Brook Snaketail	SC	2003
<i>Strophitus undulatus</i>	Creeper	SC	2004
<i>Stylurus scudderi</i>	Zebra Clubtail	E	2005
<i>Stylurus spiniceps</i>	A Clubtail Dragonfly	T	2004
VASCULAR PLANTS			
<i>Carex tuckermanii</i>	Tuckerman's Sedge	E	1931
<i>Huperzia selago</i>	Mountain Firmoss	E	2003
<i>Podostemum ceratophyllum</i>	Threadfoot	SC	2005
<i>Potamogeton diversifolius</i>	Variable Pondweed	E	2002
<i>Viola adunca</i>	Sand Violet	E	1946
NATURAL COMMUNITIES			
Hickory - hop hornbeam forest/woodland	S2		2000
Low-energy riverbank	S4		2000
Northern hardwoods - hemlock - white pine forest	S5		2000
Spruce-fir boreal swamp	S3		2000
CERTIFIED VERNAL POOLS			
6 Certified in Athol			
CERTIFIED VERNAL POOL			2000

This list does not include data sensitive species.
No date given means an old record with no date attached.

KEY TO STATUS - DFW RANK: E = Endangered. T = Threatened. SC = Special Concern. -WL = unofficial Watch List these species are not regulated under MESA. Natural communities are not regulated. The S-ranks for community types reflect general abundance on a 1-5 scale for the state, with S5 being demonstrably secure and S1 being very uncommon (generally <5 viable occurrences in the state).



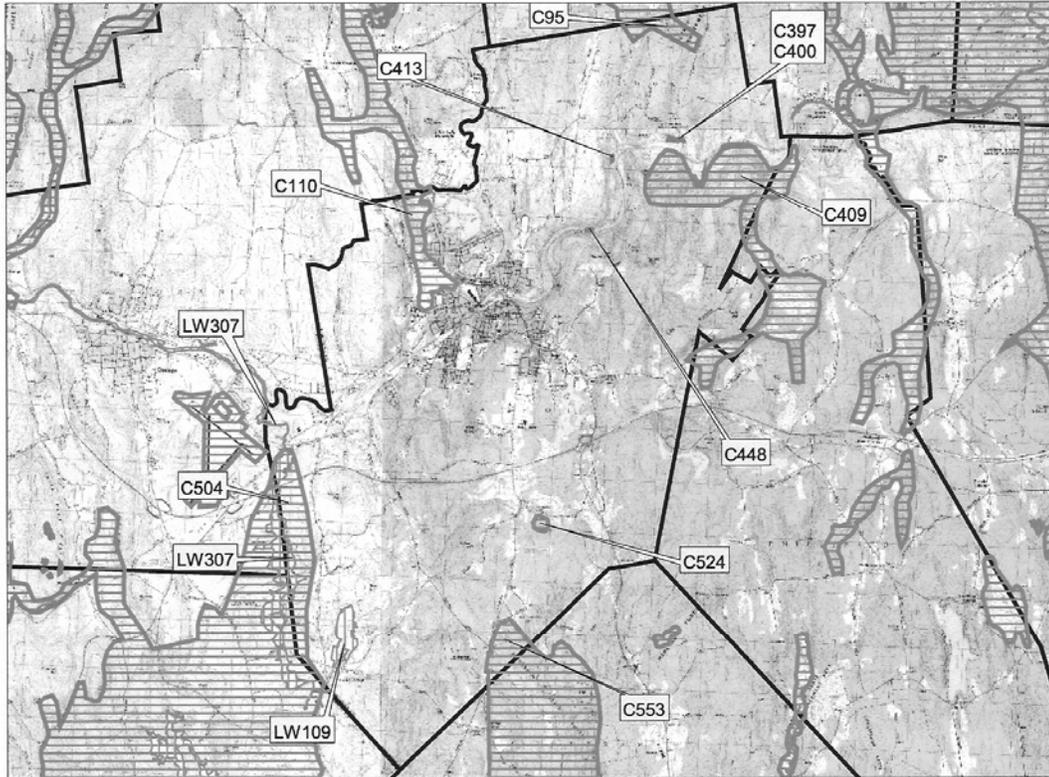
Natural Heritage & Endangered Species Program

Field Headquarters, Westborough, MA 01581 Tel: (508) 792-7270, ext 200 Fax: (508) 792-7821

An Agency of the Department of Fish & Game

<http://www.masswildlife.org>

BioMap and Living Waters: Guiding Land Conservation for Biodiversity



-  **Living Waters Core Habitat**
-  **BioMap Core Habitats**
-  **MA Town Boundaries**



Data Sources:

Living Waters Habitat and Riparian Areas: Created by NHESP 2003.

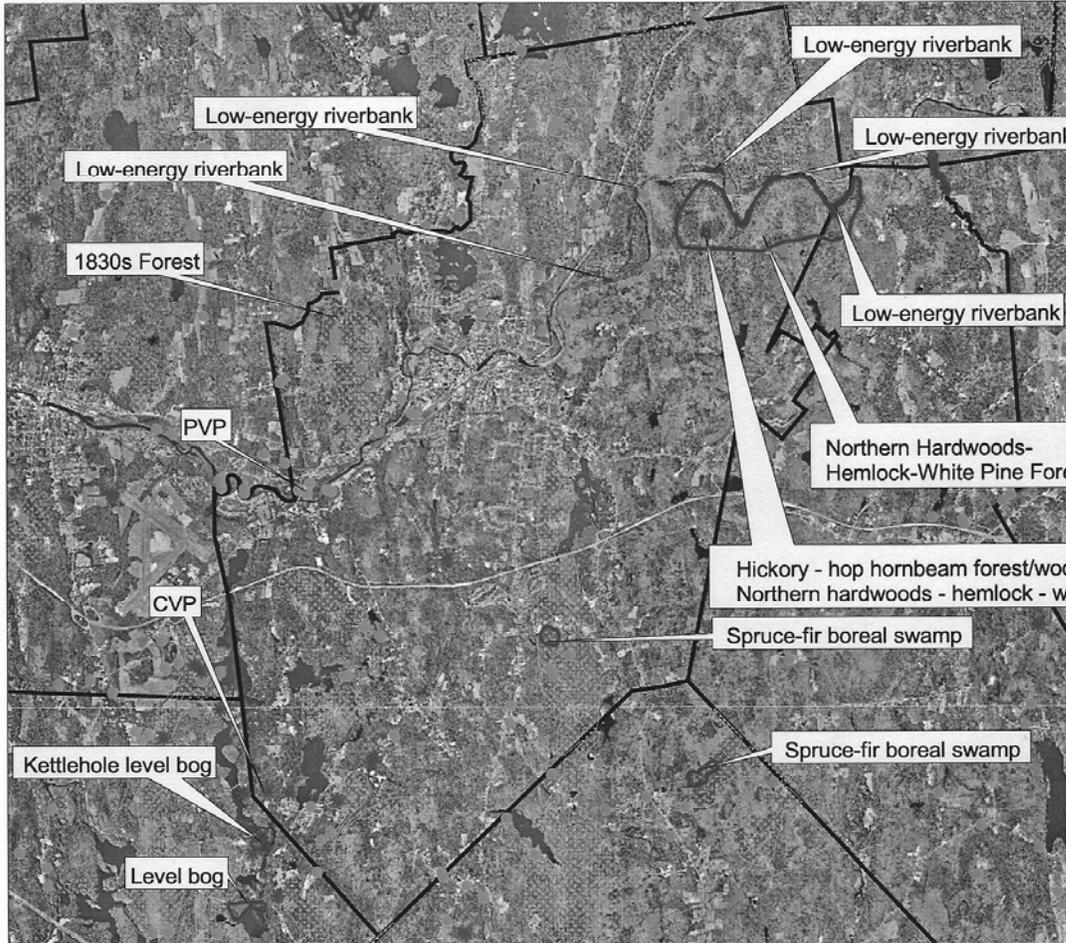
BioMap Core Habitat and SNL: Created by NHESP 2001.

MassGIS

Map printed May 11, 2006

Natural Heritage & Endangered Species Program
Massachusetts Division of Fisheries & Wildlife

Natural Communities and Potential Vernal Pools

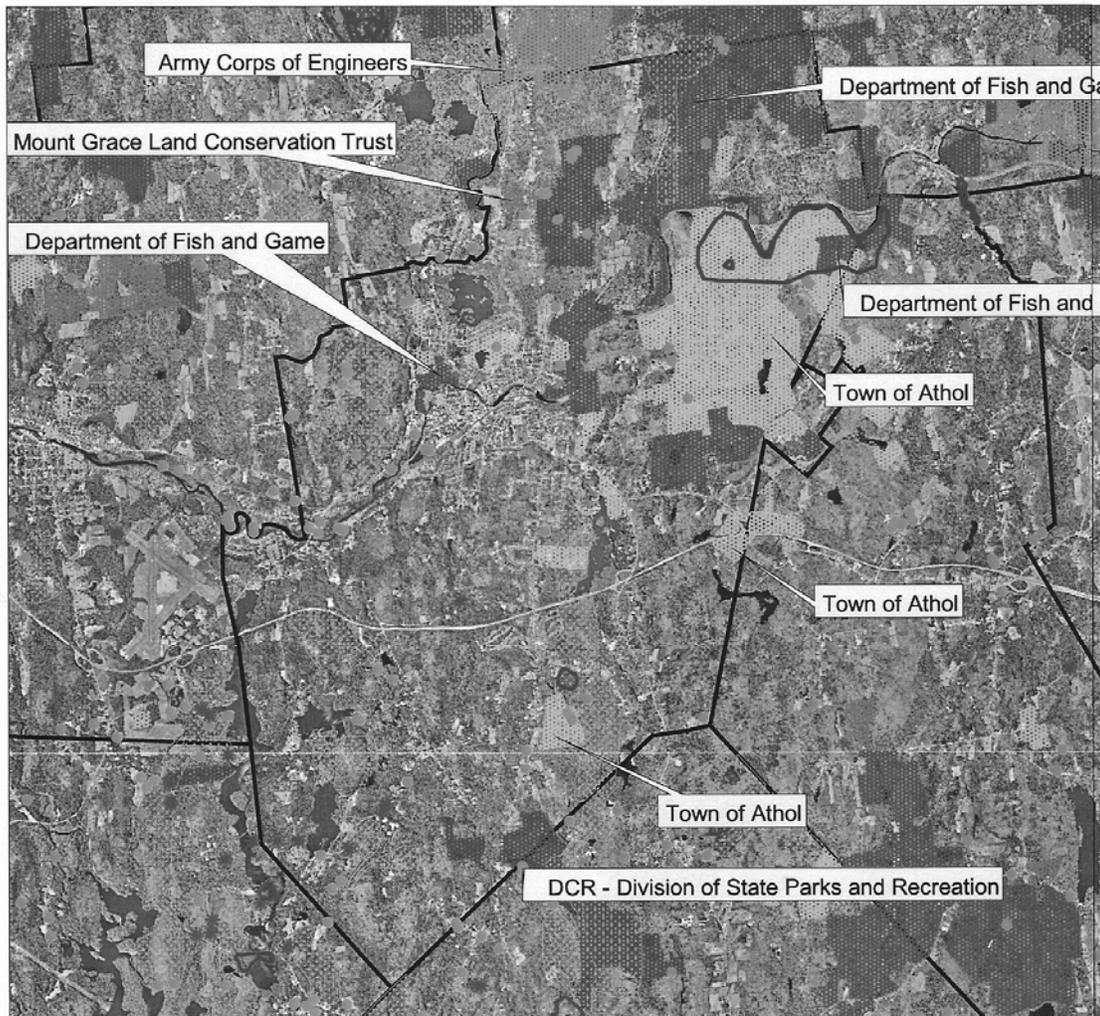


-  NHESP Natural Communities 4-06
-  Certified vernal pools 4-2006
-  Potential Vernal Pools, from aerial interpretation
-  Forested 1830 and current
-  MA Town Boundaries



Data Source: MassGIS and NHESP
May 10, 2006

Athol Open Space



-  NHESP Natural Communities 4-06
-  Certified vernal pools 4-2006
-  Potential Vernal Pools, from aerial interpretation
-  Forested 1830 and current
- OpenSpace by Ownership - Transparent**
-  Federal
-  DCR-State Parks & Recreation
-  Department of Fish & Game
-  Municipal
-  Public Non-Profit
-  Land Trust
-  Conservation Organization
-  MA Town Boundaries

1 0 1 2 Miles




Data from MassGIS and NHESP
Map printed May 11, 2006



Natural Heritage & Endangered Species Program

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www.state.ma.us/dfwele/dfw/nhesp

Description: This plant community is a coniferous swamp characterized by spruce and/or balsam fir as the dominant canopy trees. These swamps are typically found at stream headwaters or in poorly drained basins. Under the tree canopy, these swamps often have a patchy shrub component with mountain holly and other shrubs. The herbaceous layer is characterized by clumps of cinnamon fern with scattered bunchberry and three-seeded bog sedge. Sphagnum mosses tend to carpet the forest floor.

Environment: Boreal swamps occur in stream headwaters or in cold poorly drained areas, typically on acidic glacial till. They tend to be most common in the Berkshire Highlands and in north central portions of Massachusetts. Spruce-fir Boreal Swamps are most common at higher elevations and are often isolated from perennial streams. They typically have a small intermittent outlet channel and if there are any inlets they are usually not perennial. Organic muck or peat soils that are seasonally saturated in these swamps create acidic and nutrient poor conditions.

Characteristic Species: The tree canopy of these forested swamps is variable in cover and dominated by red spruce (*Picea rubens*) or balsam fir (*Abies balsamea*) or a mixture of red or black spruce (*P. mariana*) and balsam fir. There are three noticeable variants of Massachusetts boreal swamps that are described below.

RED SPRUCE VARIANT: These forested swamps tend to occur in north central Massachusetts at elevations between 800-1100 feet. The tree canopy is typically closed and dominated by red spruce. Occasional associates in the canopy are white pine (*Pinus strobus*), eastern hemlock (*Tsuga canadensis*), red maple (*Acer rubrum*), black gum (*Nyssa sylvatica*), and yellow birch (*Betula alleghaniensis*), although these are much lower in abundance than spruce. The subcanopy is usually low in percent cover and may be comprised of one or more of the canopy species. The shrub component is often fairly sparse and grows primarily on the tops and sides of the hummocks. A diagnostic shrub of these swamps is mountain holly (*Nemopanthus mucronatus*). Other associates that may be present include highbush blueberry (*Vaccinium corymbosum*), wild raisin (*Viburnum nudum* var. *cassinoides*), winterberry (*Ilex*

Spruce-Fir Boreal Swamps

State Status: None
Federal Status: None

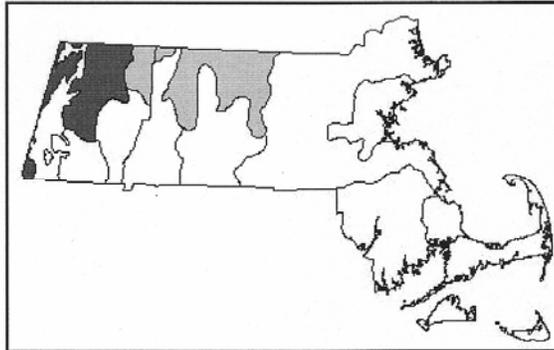


Illustration of spruce-fir swamp by Libby Davidson from *Wetland, Woodland, Wildland: A Guide to the Natural Communities of Vermont* by Elizabeth H. Thompson and Eric R. Sorenson. Vermont Department of Fish & Wildlife and The Nature Conservancy. 2000.

verticillata), and an occasional azalea (*Rhododendron* spp.) or maleberry (*Lyonia ligustrina*). The herb layer is usually prominent and dominated by cinnamon fern (*Osmunda cinnamomea*). Other potential herbaceous associates are Massachusetts fern (*Thelypteris simulata*), goldthread (*Coptis trifolia*), bunchberry (*Cornus canadensis*), creeping snowberry (*Gaultheria hispidula*), and small amounts of three-seeded bog sedge (*Carex trisperma*). On the drier hummocks starflower (*Trientalis borealis*) and wild sarsaparilla (*Aralia nudicaulis*) may occur in small amounts. Saturated or flooded hollows between the hummocks are carpeted with mosses (primarily *Sphagnum* spp.) and are typical of Spruce-fir Boreal Swamps.

Please allow the Natural Heritage & Endangered Species Program to continue to conserve the biodiversity of Massachusetts with a contribution for 'endangered wildlife conservation' on your state income tax form as these donations comprise a significant portion of our operating budget.

Community Name: **SPRUCE - FIR BOREAL SWAMP**
 Community ELCODE: CP1A110000
 SRANK: S3



Concept: Forested wetlands of Berkshire Highlands and north-central Massachusetts dominated by red spruce and balsam fir.

Environmental setting: Spruce-fir swamps are typically found at stream headwaters or in poorly drained basins in the mountainous, northwestern part of the state. They develop in cold, poorly drained areas, typically on acidic glacial till. Elevation ranges from 1500-2000 ft. in the Berkshire Highlands [Weatherbee 1996]. Organic muck or peat soils are seasonally saturated. More work is needed to describe the physical setting and soil profiles of boreal swamps.

Vegetation Description: Red spruce (*Picea rubens*) and balsam fir (*Abies balsamea*) are dominant in the overstory. Other canopy associates are white pine (*Pinus strobus*), black cherry (*Prunus serotina*), tamarack (*Larix laricina*), black spruce (*Picea mariana*), paper birch (*Betula papyrifera*), hemlock (*Tsuga canadensis*), yellow birch (*Betula alleghaniensis*), and red maple (*Acer rubrum*). Unlike spruce-tamarack forested bogs, spruce-fir boreal swamps have red spruce rather than black spruce co-dominant in the canopy, and they typically lack bog indicator species like Labrador tea (*Ledum groenlandicum*) and bog laurel (*Kalmia polifolia*). The following three shrubs almost always occur in boreal swamps: mountain holly (*Nemopanthus mucronatus*), sheep laurel (*Kalmia angustifolia*), and wild raisin (*Viburnum nudum* var. *cassinoides*). Other shrubs include American mountain-ash (*Sorbus americana*), hobble-bush (*Viburnum lantanoides*), and mountain maple (*Acer spicatum*). Typical herbaceous species are northern awned sedge (*Carex gynandra*), New England sedge (*Carex novae-angliae*), goldthread (*Coptis trifolia* ssp. *groenlandica*), creeping snowberry (*Gaultheria hispidula*), bluebead-lily (*Clintonia borealis*), one-sided pyrola (*Orthilia secunda*), bishop's cap (*Mitella diphylla*), lesser mitrewort (*Mitella nuda*), mountain wood-sorrel (*Oxalis montana*), royal fern (*Osmunda regalis*), and pale St. John's-wort (*Hypericum ellipticum*). The ground is often a carpet of mosses, including Sphagnum; more information is needed on the characteristic moss species. Richer variants of the community can occur in areas of calcareous groundwater seepage, but more information is needed.

Associations: Putnam(2001) described three variants: Red Spruce dominated, Mixed Canopy variant, and Balsam Fir variant.

Habitat values for Associated Fauna: Spruce-fir boreal swamps can function as vernal pool habitat if water remains standing for 2-3 months and they lack fish; these areas provide important amphibian breeding habitat.

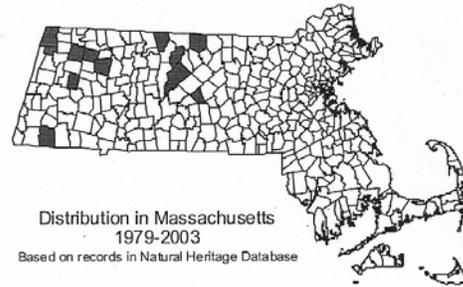
Associated rare plants:

AMELANCHIER BARTRAMIANA	BARTRAM'S SHADBUSH	T
ARCEUTHOBIUM PUSILLUM	DWARF MISTLETOE	SC
LINNAEA BOREALIS	TWINFLOWER	- WL
RIBES TRISTE	SWAMP RED CURRANT	- WL

From: Swain, P.C. & J.B. Kearsley. 2001. Classification of the Natural Communities of Massachusetts. Version 1.3. Natural Heritage & Endangered Species Program, Division of Fisheries & Wildlife. Westborough, MA.

MIXED CANOPY VARIANT: These swamps are most commonly found in the hill towns west of the Connecticut River valley, within the Berkshire Highlands region of the state. The mixed canopy swamps tend to form headwaters for small streams and are located at the base of hillsides. There appears to be groundwater seepage influencing the floristic composition. These swamps usually have an open canopy with a diverse assemblage of trees and shrubs. The trees usually include black spruce (*Picea mariana*), balsam fir (*Abies balsamea*), eastern hemlock (*Tsuga canadensis*), red maple, (*Acer rubrum*), yellow birch (*Betula alleghaniensis*) and occasionally black ash (*Fraxinus nigra*). The subcanopy is often prominent and diverse, including many of the canopy species. Shrubs are often abundant in these swamps and include mountain holly (*Nemopanthus mucronatus*), mountain laurel (*Kalmia latifolia*), wild raisin (*Viburnum nudum* var. *cassinoides*), hobblebush (*Viburnum lantanooides*), and winterberry (*Ilex verticillata*). Occasional poison sumac (*Toxicodendron vernix*), azaleas (*Rhododendron spp.*) or alders (*Alnus spp.*) occur as well. The herbaceous layer is low to moderate in cover and usually includes patches of cinnamon fern (*Osmunda cinnamomea*) or royal fern (*Osmunda regalis* var. *spectabilis*). Other herbaceous associates include blue-bead lily (*Clintonia borealis*), goldthread (*Coptis trifolia*), bunchberry (*Cornus canadensis*), swamp dewberry (*Rubus hispoides*) and three-seeded bog sedge (*Carex trisperma*). Sometimes other sedges are present as well. On the drier hummocks starflower (*Trientalis borealis*) and wild sarsaparilla (*Aralia nudicaulis*) are often found in small amounts. Saturated or flooded hollows occur between the hummocks that are usually carpeted with mosses (primarily *Sphagnum spp.*)

BALSAM FIR VARIANT: These swamps are often quite small and function as headwaters for small streams in the higher elevations close to the mountain tops. The open canopy is usually dominated by balsam fir (*Abies balsamea*), although sometimes it is shared with lesser amounts of red spruce (*Picea rubens*) and yellow birch (*Betula alleghaniensis*). The subcanopy is usually comprised of smaller balsam fir trees with occasional red spruce and American mountain-ash (*Sorbus americana*). Shrubs are not abundant and include mountain holly (*Nemopanthus mucronatus*) and hobblebush (*Viburnum lantanooides*). The herbaceous component is low in cover and is characterized by three-seeded bog sedge (*Carex trisperma*). Other associates include northern awned sedge (*Carex gynandra*), bunchberry (*Cornus canadensis*), goldthread (*Coptis trifolia*), and whorled wood-aster (*Aster acuminatus*). *Sphagnum* mosses carpet the ground.



Management Considerations: Logging, changes in hydrology, development, pollution, and exotic species are the greatest threats to Spruce-Fir Boreal Swamps. Logging within these swamps or even in close proximity in the surrounding uplands may affect the hydrologic patterns, nutrient status, habitat integrity or species composition of these forested wetlands. Swamps that are adjacent to developed areas may be degraded by changes in hydrology, stormwater or wastewater discharges, elevated nutrient inputs, or exotic flora. Sedimentation from nearby logging or construction activities is a significant threat to the ecological integrity and composition of these swamps. In addition to human impacts, beavers (*Castor canadensis*) can cause significant flooding and subsequent changes in community type from forested wetland to open water, marsh or shrub swamp.

The use of undisturbed natural buffers around the best occurrences of Massachusetts Spruce-fir Boreal Swamps is encouraged. Natural wooded buffers reduce the potential for impacts to the swamps from surrounding changes in the environment and will help protect habitats for wildlife that are dependent upon these swamps for food, cover, breeding, or nesting sites.



Black Spruce

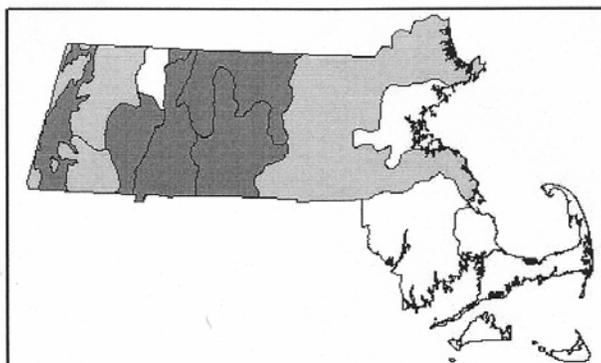
Illustration by C.E. Faxon from *Native and Naturalized Trees of Massachusetts*, Cooperative Extension Service, University of Massachusetts, Amherst, MA, 1978.

Please allow the Natural Heritage & Endangered Species Program to continue to conserve the biodiversity of Massachusetts with a contribution for 'endangered wildlife conservation' on your state income tax form as these donations comprise a significant portion of our operating budget.

Updated 2001

Natural Heritage & Endangered Species Program, Massachusetts Division of Fisheries & Wildlife

Community Name: **HICKORY - HOP HORNBEAM FOREST / WOODLAND**
 Community Code: CT1B2B1000
 SRANK: S2



Concept: Mixed hardwood, open forests with a sparse shrub layer. A nearly continuous cover of graminoids includes a rich diversity of herbaceous flora.

Environmental Setting: Occurrences of the community are usually small (a few acres), on thin, well drained soils, generally in midslope on southern or eastern exposures below balds and rock outcrops on traprock ridges. The community occurs as pockets separated by oak forests growing on deeper, moister soils in erosion channels. There is great variation in environmental conditions among sites.

Vegetation Description: Hickory - hop hornbeam communities are fairly open forests dominated by a variable mixture of hardwoods, including sugar maple (*Acer saccharum*), white ash (*Fraxinus americana*), and red oak (*Quercus rubra*), Shagbark, pignut and Sweet pignut hickories (*Carya ovata*, *C. glabra*, and *C. ovalis*), and Hop-hornbeam (*Ostrya virginiana*) as a regular and abundant subcanopy tree. The forest floor is characteristically covered by Pennsylvania sedge (*Carex pensylvanica*), other sedges (such as *C. pedunculata* and *C. laxiflora*), and grasses such as bottlebrush grass (*Elymus hystrix*), Poverty grass (*Danthonia spicata*) and the non-native Canada bluegrass (*Poa compressa*), with scattered violets (*Viola triloba*), hepaticas (*Hepatica nobilis* var. *obtusata*), and several species of tick-trefoils (including *Desmodium glutinosum* and *D. paniculatum*).

Associations:

Habitat Values for Associated Fauna: These are small community occurrences, and tend to be part of the habitat of species using the surrounding forests. Species of dry sites are most likely to occur in the community occurrences.

Associated Rare Plants:

OXALIS VIOLACEA	VIOLET WOOD-SORREL	T
POA LANGUIDA	DROOPING SPEARGRASS	E
SPHENOPHOLIS NITIDA	SHINING WEDGEGRASS	T

Associated Rare Animals:

NONE KNOWN

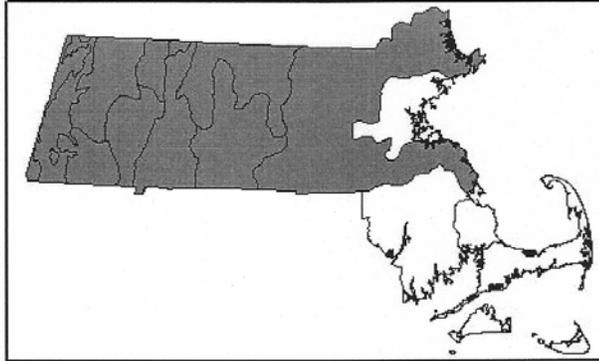
Examples with Public Access: Joseph Skinner State Park, Hadley; Mount Holyoke Range State Park, Amherst; Mt. Toby, Sunderland; Wachusett Meadow WS (MAS), Princeton.

Threats:

Management Needs:

From: Swain, P.C. & J.B. Kearsley. 2001. Classification of the Natural Communities of Massachusetts. Version 1.3. Natural Heritage & Endangered Species Program, Division of Fisheries & Wildlife. Westborough, MA.

Community Name: **NORTHERN HARDWOODS - HEMLOCK - WHITE PINE FOREST**
Community Code: CT1C000000
SRANK: S5

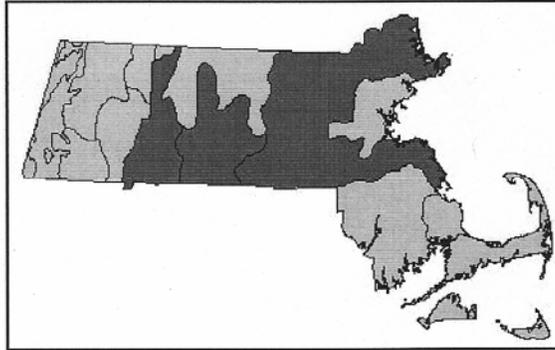


- Concept:** Closed canopy forest dominated by a mix of evergreen and deciduous trees, with sparse shrub and herbaceous layers.
- Environmental Setting:** Widespread in dry to mesic, moderately acidic conditions with moderate levels of nutrients. North facing slopes and ravines, and northern areas.
- Vegetation Description:** The community type ranges from Hemlock in pure stands to a deciduous forest with scattered hemlocks. There are variable combinations of hemlock (*Tsuga canadensis*), sugar maple (*Acer saccharum*), white ash (*Fraxinus americana*), yellow birch (*Betula alleghaniensis*), black cherry (*Prunus serotina*), and red oak (*Quercus rubra*), and white pine (*Pinus strobus*). Beech (*Fagus grandifolia*) occur on southeast facing slopes. There are often scattered paper birch (*Betula papyrifera*), aspen (*Populus tremuloides*), and red maple (*Acer rubrum*). The shrub layer is usually open, but often containing scattered clumps of hobblebush (*Viburnum lantanoides*), red-berried elderberry (*Sambucus racemosa* ssp. *pubens*), fly-honeysuckle (*Lonicera canadensis*), and striped maple (*Acer pensylvanicum*). The herbaceous layer is sparse, but fairly diverse, with intermediate woodfern (*Dryopteris intermedia*), Christmas fern (*Polystichum acrostichoides*), clubmosses (*Lycopodium* spp.), Canada mayflower (*Maianthemum canadense*), white wood aster (*Aster divaricatus*), and wild sarsaparilla (*Aralia nudicaulis*). Occasional spring herbaceous species include painted trillium (*Trillium undulatum*), early yellow violet (*Viola rotundifolia*), broad-leaved spring beauty (*Claytonia caroliniana*), and trout-lily (*Erythronium americanum*).
- Associations:**
- Habitat Values for Associated Fauna:** Many animal species use parts of this type of forest, but geographical variation, structure, size, and local conditions will affect which actual species are present. Many species of neo-tropical migrant songbirds nest in large numbers in larger occurrences, including a variety of warblers. Blackburnian warblers (*Dendroica fusca*) are particularly closely associated with hemlock stands. Northern Goshawk (*Accipiter gentilis*), Barred Owl (*Strix varia*), and Pileated Woodpeckers (*Dryocopus pileatus*) are also to be expected. Mammals include red squirrels (*Tamiasciurus hudsonicus*), gray squirrel (*Sciurus carolinensis*), chipmunks (*Tamias striatus*), redbacked vole (*Clethrionomys gapperi*), short-tailed shrew (*Blarina brevicauda*), masked and smoky shrews (*Sorex cinereus* and *S. fumeus*), and white-footed mouse (*Peromyscus leucopus*). At elevation, deer mouse (*P. maniculatus*) and woodland jumping mouse (*Napaeozapus insignis*) also occur in the forest type. Amphibians include redbacked salamanders (*Plethodon cinereus*) and wood frogs (*Rana sylvatica*); and expected reptiles include redbelly snakes (*Storeria o. occipitomaculata*).

From: Swain, P.C. & J.B. Kearsley. 2001. Classification of the Natural Communities of Massachusetts. Version 1.3. Natural Heritage & Endangered Species Program, Division of Fisheries & Wildlife. Westborough, MA.

Natural Heritage & Endangered Species Program, Massachusetts Division of Fisheries & Wildlife

Community Name: **LOW-ENERGY RIVERBANK**
 Community ELCODE: CP2A0B2300
 SRANK: S4



Concept: Open herbaceous/graminoid communities occurring on sandy or silty mineral soils of river and streambanks that do not experience severe flooding or ice scour.

Environmental setting: Low-energy rivers are smaller, low-gradient rivers that do not experience severe flooding. The riverbanks are generally sandy or silty. They lack the cobble substrate of high-energy areas and the muddy soils of open mud flats. These communities occur on mineral soil rather than the peaty or mucky soil that characterizes alluvial marshes and wet meadows. More information is needed.

Vegetation Description: The species composition is variable but the structure is always an open mixture of herbaceous and graminoid species with occasional scattered shrubs and trees at the inland margin. Common species are reed canary-grass (*Phalaris arundinacea*), which can be dominant, cocksbur-grass (*Echinochloa muricata*), fall panic-grass (*Panicum dichotomiflorum*), rice cut-grass (*Leersia oryzoides*), Canada bluejoint (*Calamagrostis canadensis* var. *canadensis*), St. John's-wort (*Hypericum* spp.), smartweeds (*Polygonum* spp.), and various goldenrod species (*Solidago* spp.). Species typical of disturbed areas, such as cocklebur (*Xanthium strumarium* var. *canadense*) are common in both high and low-energy riverbank communities. Low-energy riverbanks are more sparsely vegetated than marshes and wet meadows.

Associations: No associations have been described in Massachusetts.

Habitat values for Associated Fauna: Can provide turtle nesting habitat, and can be used by riverine odonates

Associated rare plants:
NONE KNOWN

Associated rare animals:

CLEMMYS INSCULPTA	WOOD TURTLE	SC
GOMPHUS FRATERNUS	MIDLAND CLUBTAIL	E
GOMPHUS VASTUS	COBRA CLUBTAIL	SC
GOMPHUS VENTRICOSUS	SKILLET CLUBTAIL	.SC
NEUROCORDULIA OBSOLETA	UMBER SHADOWDRAGON	SC
OPHIOGOMPHUS ASPERSUS	BROOK SNAKETAIL	SC
OPHIOGOMPHUS CAROLUS	RIFFLE SNAKETAIL	T
SOMATOCHLORA CINGULATA	LAKE EMERALD	SC

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SOMATOCHLORA ELONGATA	SKI-TAILED EMERALD	SC
SOMATOCHLORA GEORGIANA	COPPERY EMERALD	E
SOMATOCHLORA KENNEDYI	KENNEDY'S EMERALD	E
SOMATOCHLORA LINEARIS	MOCHA EMERALD	SC
STYLURUS AMNICOLA	RIVERINE CLUBTAIL	E
STYLURUS SCUDDERI	ZEBRA CLUBTAIL	E
STYLURUS SPINICEPS	A CLUBTAIL DRAGONFLY	T

Examples with Public Access: Banks of the Nashua River in Ft. Devens.

Threats: Invasion by non-native plant species is the greatest threat to the community.

Management needs: Non-native plant species removal.

Synonyms

USNVC/TNC: Includes Calamagrostis canadensis – Phalaris arundinacea Herbaceous Alliance [CEGL005174], and Phalaris arundinacea Eastern Herbaceous Vegetation. [CEGL006335].

MA [old name]: SNE low-energy riverbank community [CT1E2B1000].

ME: Includes 2001 – Bluejoint Meadow.

VT: Similar to Rivershore grassland.

NH: Similar to Riverside meadow community.

NY: Not described.

CT: ?

RI: Not described.

Golet & Larson, 1974:

Other:

Author: J. Kearsley

Date: 7/21/99

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