



Division of Fisheries & Wildlife

Wayne F. MacCallum, *Director*

November 9, 2009

Michael Penko
Upton Open Space Committee
Upton, MA 01568

Re: OSRP – NHESP #09-27376, Town of Upton

Dear Mr. Penko:

Enclosed is information you requested on the rare species and other forms of biodiversity that NHESP has documented in the Upton for the Open Space & Recreation Plan. This letter and any of the information with it may be made public and used in the Open Space Plan.

In general, the most important areas of Upton to protect to maintain known biodiversity are the areas in and around the 2008 Priority Habitat (PH), BioMap (2001), and Living Waters (2003) cores available from MassGIS, links are given throughout the letter. Any land managing activities in these areas need to include consideration of the rare species and their habitats. Because BioMap and Living Waters were intended as conservation planning tools, they were based on more aspects of biodiversity than the regulated species and often resulted in larger polygons than the regulatory Priority Habitats (and their subset, Estimated Habitats (EH)). However, BioMap and Living Waters are static reports and the Priority and Estimated Habitats are updated regularly.

The enclosed list of rare species known to occur in or to have occurred in Upton has species protected under the Massachusetts Endangered Species Act (MESA) some of which have habitat also protected under the Wetlands Protection Act, Certified Vernal Pools (sixteen in Upton), and other, not regulated, indicators of local biodiversity, including Watch Listed plants, delisted species, and priority and exemplary natural communities. Any MESA listed species with a most recent observation date within the past 25 years is considered to be current. Older dates may be species that have not been recently inventoried, or they may have been lost from Upton as land use, water quality, and other aspects of habitat have changed. Fact Sheets describing many of the MESA listed species and their habitats are available on our website at http://www.mass.gov/dfwele/dfw/nhesp/species_info/mesa_list/mesa_list.htm. Natural community fact sheets are available at http://www.mass.gov/dfwele/dfw/nhesp/natural_communities/fact_sheets.htm. We encourage inclusion of the list of species in the town and their factsheets in the open space plan.

Most of the currently known rare animal species in Upton are associated with wetlands: rivers and lakes, vernal pools, swamps, and acidic fens. Although the various rare turtles and salamanders in Upton have varied habitat requirements, they all require wetlands and adjoining forests, which are found in PH1414 including EH45 and BioMap Core C996 and LW271 and LW413, along the West River, Center Brook, and Warren Brook. The Priority Habitat includes more of the river because of species reported after the BioMap and Living Waters reports were written. PH1414 provides important habitat to a good population of Wood Turtles; Box turtles use upland forests and wetlands in them along the rivers; and the salamanders use vernal pools and surrounding forests along the river and elsewhere in town. In addition,

Natural Heritage & Endangered Species Program

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DFW's Fisheries section has identified streams throughout Massachusetts that provide important habitat for native cold water fisheries (CFR, Coldwater Fisheries Resources): in Upton these include those same streams: West River and Center and Warren Brooks. Buffers along these streams that maintain shade and filter inflowing sediments are important for maintaining their water – and habitat – quality. Culverts in the streams should be maintained to allow movement of fish, turtles, and other aquatic species.

http://www.mass.gov/dfwele/dfw/fisheries/conservation/cfr/cfr_blackstone.htm

The only animal in Upton that is not a species of wetlands is the Oak Hairstreak butterfly. The adult Oak Hairstreaks feed (nectar) in dry, open oak woodlands and their edges, including clearings, abandoned gravel pits and powerlines. There is good habitat for this species in Upton.

Philadelphia Panic-grass (SC), is an herbaceous annual grass known only historically from Upton. It requires open, sunny habitat, usually on sandy soil associated with river or pond borders with seasonal flooding. It is an opportunistic species that grows best in low water years when the pond or river is down and the shorelines expand to provide more of its preferred habitat. Being a species that is difficult to identify that grows with other members of the genus, it might still be in Upton, having robust populations only occasionally when conditions are ideal. Large Whorled Pogonia (WL) is at the northern edge of its range in Massachusetts, it has been extirpated from Maine and is considered very rare in New Hampshire and Vermont. In Massachusetts it is on the non-regulatory plant watch list so that NHESP can keep track of occurrences and remain assured that it does not need additional protections. It grows in acid soils in oak woods and near acidic fens.

Over the years, several types of acidic peatland natural communities have been identified in Upton. These types of natural communities have limited acreage throughout the state, being more typical of cooler areas. Acidic Graminoid Fens, Acidic Shrub Fens, and Spruce-Tamarack Bog Forests are peatlands that need not only cool conditions (mostly not under the town's control), but require high water quality and maintained water quantity. Alterations such as extracting gravel near fens or harvesting around peatlands and forested wetlands may change hydrologic cycles that could lead to the deterioration of these natural communities and the subsequent loss of known habitat for uncommon species like a rare dragonfly that breeds in peatlands, the recently delisted the Four-toed Salamander, and a peatland specific rare plant. Surrounding forests that are maintained as large and unfragmented as possible provide habitat themselves and buffer wetlands and streams. One such peatland is partially on town conservation land on Peppercorn Hill, in BioMap Core 966 and PH106. It is also in older forest described below. That town land also includes PH492, with included EH396, and several PVPs – a very good, diverse area for biodiversity protection. That area would be very good for adjacent land protection to enhance the biodiversity present there. Another acidic peatland in older forest is in PH501 and BioMap Core921. Some of this is on the state forest, most is not on conservation land (according the open space layer in MassGIS) and would be a good target for protection. The most threatened peatlands in Upton are an Acidic Shrub Fen (recently reclassified from Level Bog since bog openings are not dominant) and a Spruce-Tamarack Bog Forest in BioMap Core 996 just east of the West River, with almost abutting development and old gravel pits in the southern part of town. Because these occur together in a larger wetland, they could provide good habitat for wetland species. However, since there is very little buffering on two sides, they are at risk of nutrient input and changes in water quantity and quality. To retain these communities, it is important to maintain the current narrow wooded buffers between the houses and the shrub fen and between the spruce tamarack area and the gravel pits. Protecting the land would improve the chances of the communities remaining little disturbed. The large wetland here itself serves to buffer water going into the West River.

Protecting any unprotected areas of the Priority Habitats and BioMap cores would protect habitat of rare, and also common, species and enhance their viability. Protecting areas adjacent to existing conservation land limits fragmentation and maintains a variety of habitats.

Upton has 12 Certified Vernal Pools (CVP) and a large number (96) of Potential Vernal Pools (PVP) (identified from aerial photographs, needing verification on the ground). Areas of swamps also provide habitat for vernal pool species. The PVP data are available as a datalayer from MassGIS at <http://www.mass.gov/mgis/pvp.htm> and shown on one of the enclosed maps. Certifying the PVPs that have not been examined would provide additional protection to these wetlands and the species that use

them. Clusters of vernal pools provide extra habitat value for the species that use them since each pool is somewhat different and provides alternate habitats in different years and seasons. Any such lands already protected are good sites for biodiversity and good cores for larger properties. When clusters are on “1830s forest” described next, they are particularly good targets for protection.

Upton is one of the towns with town wide maps showing areas forested in the 1830s, areas of possible Primary Forest, most of which were untilled woodlots and wooded pastures (areas shown on an enclosed map). Such lands have greater biodiversity than areas that have been tilled. These are not Old Growth, they have been harvested and pastured, but the ground may not have been tilled. Harvard Forest digitized maps from the 1830s that the Massachusetts legislature mandated that the Towns make. Upton’s map exists and shows areas that were forested in the 1830s. NHESP GIS staff took those data and combined them with information from MassGIS’ landcover datalayer made from 1999 aerial photos. Although a great deal will have gone on in those areas in the time between the map dates, some areas that were forested in both times won’t ever have been tilled. Surveys of the soil structure in the individual sites are necessary to determine whether those sites are Primary Forest. The importance of primary forest is that such sites retain more native biodiversity than sites that have been tilled: soil fauna and flora, microorganisms and plants that reproduce primarily vegetatively contribute to the higher biodiversity. In addition, a variety of species of wildflowers are more common in untilled forests than previously tilled lands. The areas of 1830s forest on private land would be good targets for conservation acquisition to maintain the biodiversity of the town and region. The Harvard Forest website contains information on the 1830s forest datalayer and copies of papers with discussion of the information.

<http://harvardforest.fas.harvard.edu/data/p01/hf014/1830readme.html>

Harvard Forest. 2002. 1830 Map Project. Harvard Forest Archives, Petersham, MA.

Hall, B., G. Motzkin, D. R. Foster, M. Syfert, and J. Burk. 2002. Three hundred years of forest and land-use change in Massachusetts, USA. *Journal of Biogeography* 129: 1319-1135.

Large unfragmented conservation land provides the best opportunities to maintain populations of species and limit species loss from the Town. Land protection that ties in with open space in other municipalities, and other protected open space, public or private is one way to provide important large areas of biodiversity protection. For example, some of the 1830s forest is in conservation land, but there are areas adjacent to or near the protected open space that might be targeted as important areas for biodiversity protection.

We encourage you to print a map showing the BioMap and Living Waters (LW) core areas and label the polygons, which will make the print report more useful. A copy of the report can be downloaded from <http://www.mass.gov/dfwele/dfw/nhesp/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. BioMap and Living Waters polygons are available from MassGIS at <http://www.mass.gov/mgis/biocore.htm> and <http://www.mass.gov/mgis/lwcore.htm>. We encourage inclusion of the BioMap report and a map identifying the core areas in the Open Space Plan. Please note that the descriptions of the BioMap cores includes lists of species that occur anywhere in the Core areas: species not actually known from Upton may be listed. These species might well be expected anywhere in the core areas.

In Upton, there are several BioMap core areas – the areas (with the new Priority Habitats) of most importance to protect in order to maintain the biodiversity of the Town, region, and state, as discussed above. Protecting land within the core areas will enhance the habitat value of existing conservation land and protected open space. A large BioMap Core, C996, in the southwestern part of the town and C921 in the northeastern part extend into adjoining towns, emphasizing the importance of looking beyond the town lines when considering lands for protection of biodiversity. Living Waters Cores were calculated separately from the BioMap cores, based on and emphasizing the aquatic conditions, both in and distinct from the BioMap Cores. LW271 is an important stretch of the West River with BioMap C996, and LW413 extends up the Center Brook beyond the BioMap core.

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. However they are updated regularly (most recently in late 2008), and the BioMap / Living Waters report is static (data from 2001 and 2003), so misses some of the most recently identified rare species areas. Together, the two separate sets of polygons now best reflect the known aspects of biodiversity in town.

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, and the Massachusetts Endangered Species Act (MESA) (also in the Natural Heritage Atlas). 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, so include all Estimated Habitats as well as habitat for MESA listed plants and upland animals. Early planning and review of development projects under the Wetlands Protection Act regulations and Massachusetts Endangered Species Act plays 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 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 protection is accomplished. Wetlands particularly need to maintain their natural water regime, including normal fluctuations and connections with the uplands and other wetlands. Maintaining water quantity and quality are ongoing issues. Another important management issue is invasive non-native species that alter the land 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.

The BioMap and Living Waters core areas and the more recently updated areas of Priority Habitat are particularly valuable in ecological terms, and important to the conservation of many species. Completing conservation protection of remaining unprotected land in those areas would improve the viability of these special areas - size and continuity of open space is particularly important for supporting wildlife populations. Preventing habitat fragmentation is vital in protecting the ecosystem, for the rare species on the enclosed list, as well as for additional common species, particularly reptiles and amphibians.

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) 389-6352 if you have any questions.

Sincerely,

Patricia C. Swain, Ph.D.
Ecologist

cc: Melissa Cryan, EEA



Division of Fisheries & Wildlife

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Rare Species and Natural Communities Documented in the Town of Upton AS OF November 5, 2009

<u>Scientific Name</u>	<u>Common Name</u>	<u>MESA Status</u>	<u>Most recent Year</u>
VERTEBRATES			
<i>Ambystoma laterale</i>	Blue-spotted Salamander	SC	2001
<i>Ambystoma opacum</i>	Marbled Salamander	T	1989
<i>Clemmys guttata</i> (8 sites)	Spotted Turtle	Delisted	1998
<i>Hemidactylum scutatum</i>	Four-toed Salamander	Delisted	2007
<i>Notropis bifrenatus</i>	Bridle Shiner	SC	1994
<i>Terrapene carolina</i>	Eastern Box Turtle	SC	2006
INVERTEBRATES			
<i>Alasmidonta undulata</i>	Triangle Floater	SC	1999
<i>Satyrium favonius</i>	Oak Hairstreak	SC	2000
VASCULAR PLANTS			
<i>Isotria verticillata</i>	Large Whorled Pogonia	WL	
<i>Panicum philadelphicum</i> ssp. <i>philadelphicum</i>	Philadelphia Panic-grass	SC	1944
NATURAL COMMUNITIES			
Acidic graminoid fen	S3		1998
Acidic shrub fen (3)	S3		2009
Spruce – Tamarack Bog Forest	S2		2009
CERTIFIED VERNAL POOLS			
Certified Vernal Pool (# 16)			2008

This list does not include data sensitive species. Some Watch List dates are not available.

KEY TO MESA STATUS: E = Endangered. T = Threatened. SC = Special Concern. WL = unofficial Watch List, not regulated. Delisted – species no longer protected under MESA. Natural Communities are not regulated. S (state abundance) ranks are on a 1 to 5 scale, with S1 being considered vulnerable, generally having 1 to 5 good occurrences, and S5 being demonstrably secure. Community types ranked S1, S2, and S3 are priority for conservation protection.



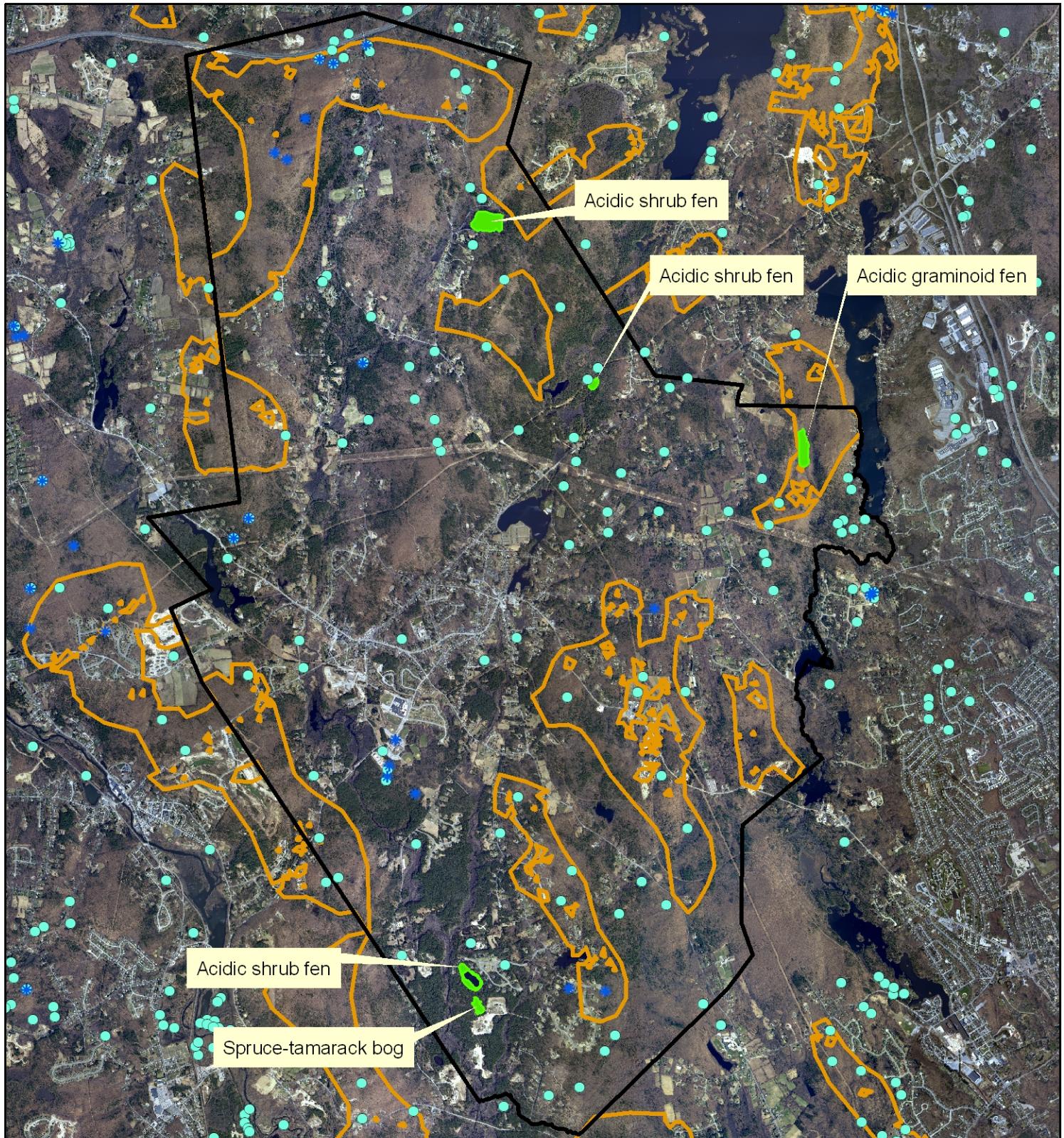
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Upton - NHESP Priority Natural Communities



Map created November 6, 2009

Legend

- * Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority Natural Communities
- Forested in 1830s and 1999

Background: MassGIS 2005 Orthophoto

0 0.25 0.5 1 1.5 Miles

