

Botanical Survey of 18-Acre Town of Lyme Parcel at Holt's Ledge

Prepared for the Lyme Conservation Commission

By Alice Schori, Canaan, NH

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Botanical survey visits to the Town parcel occurred four times over the course of the 2017 growing season: May 12 (with Matt Stevens), June 2, July 31 (with Meg Sheehan and Matt), and September 7 (with Matt). Thanks to Matt, the boundaries were well marked and it was possible to concentrate on looking at plants. Over the course of these visits, 153 species of plants were noted, and a list showing common name, scientific name, and date(s) of observation is provided. This is not a comprehensive list of all species occurring on the property, since not every inch of territory was covered. In particular, many species of grasses and sedges were not seen in a condition (with ripe seed present) that would allow for positive identification.

The lower/eastern portion of the parcel is unremarkable, fairly diverse, second (or third?) growth forest, mostly northern hardwoods with some white pine and bits of red spruce and hemlock. Nothing of particular concern was seen there, and it seems unlikely to harbor much in the way of rare species, so I didn't spend a lot of time doing a thorough inventory there.

The upper portion of the parcel, from approximately the old logging road or trail above (east of) the ravine, including both sides of the ravine around the streams and the slope below the cliffs is rich mesic forest. The talus, cliffs, and area above, are an especially rich and botanically interesting area, especially because such circumneutral areas are very uncommon in New Hampshire. The combination of mineral availability and (at least below the cliffs) plentiful moisture makes it a hospitable habitat for numerous species that are uncommon in the state, such as Goldie's fern, bulblet fern, and squirrel corn (all State Watch-list species), Braun's holly fern, Selkirk's violet, blue cohosh, and maidenhair fern.

A few rare species that are known to occur in the general area were not spotted on the Town parcel, but that doesn't necessarily mean that they aren't there. Bristle-leaved sedge (*Carex eburnea*) and smooth cliff fern (*Woodsia glabella*), both S-1/State endangered species, grow (or grew) very close by and could be nestled in cracks or little shelves in the cliff face that were inaccessible and not visible to us. Another S2/State threatened species occurs in the ravine to the north of the parcel and given the similarity in habitat conditions could well occur within the Town parcel.

Two other S1/State endangered species that are known in New Hampshire only from Holt's and Winslow Ledges* definitely do occur here. White flat-topped goldenrod (*Oligoneuron album*, aka upland white aster) clings to cracks and irregularities on the cliff face. It was found both at the lower part of the cliff and above, and it could well occur in scattered, small clusters

everywhere in between. Creeping juniper (*Juniperus horizontalis*) was found on two small, rocky shelves in scrubby woods above the cliffs, near the upper boundary of the parcel. Whether these plants are on Town property or Dartmouth property is not clear and not really important. It also seems likely that there could be other individuals on lower shelves we couldn't reach. The plants we saw were very small, not really thriving, probably waiting for the next big ice storm to knock back the trees and shrubs that are shading them. If there are others on the open cliff face (as there are on neighboring properties just south of this parcel), they may be more vigorous.

As an area with at least four S1/State endangered species growing on or just below the cliffs, Holt's Ledge is of very high conservation concern. Any rare species growing on the cliffs are in danger of being damaged by climbers, especially if they deliberately clean vegetation off the rocks. A more thorough survey of the steepest parts of the ledge would require both technical and botanical expertise and would likely provide more useful information.

Another notable observation is that there were very few non-native species seen in this area and no non-native invasive species. I don't know of a ranking system for such unspoiled natural areas, since it appears that all examples of rich mesic forest in New Hampshire are classified as exemplary, but it seems that this one is really remarkable, special, and worthy of careful stewardship. Recreation infrastructure such as hiking trails are known to be vectors for transport of non-native, invasive plants, many of which already inhabit other parts of Lyme and the upper Connecticut River valley. The absence of such uses in this area may, in part, account for the relatively low incidence of non-native plants. Non-native species such as cypress spurge and apples are present at the top of the cliffs south of the Town parcel, so it might be worth keeping an eye on the upper area and removing any that start encroaching. Owners of other parcels might also be encouraged to try to remove non-natives.

*A third occurrence of *Juniperus horizontalis* may have been found this year in the White Mountain National Forest, but this has not yet been confirmed.

Common name	Scientific name ↓ Visit date →	5/12	6/2	7/31	9/7	Status
Balsam fir	<i>Abies balsamea</i>	x			x	
Striped maple	<i>Acer pensylvanicum</i>	x	x	x	x	
Red maple	<i>Acer rubrum</i>	x	x		x	
Sugar maple	<i>Acer saccharum</i>	x	x	x	x	
Mountain maple	<i>Acer spicatum</i>	x	x	x		
Yarrow	<i>Achillea millefolium</i>			x	x	
Baneberry	<i>Actaea</i> sp.	x	x			
Maidenhair fern	<i>Adiantum pedatum</i>	x	x			
Green or mountain alder	<i>Alnus viridis</i>				x	
Shadbush	<i>Amelanchier</i> sp.	x	x		x	
Round-lobed hepatica	<i>Anemone</i> (<i>Hepatica</i>) <i>americana</i>			x		
Pussytoes	<i>Antennaria</i> sp.			x		
Wild columbine	<i>Aquilegia canadensis</i>			x		
Wild sarsaparilla	<i>Aralia nudicaulis</i>	x	x	x	x	
Spikenard	<i>Aralia racemosa</i>			x		
Jack-in-the-pulpit	<i>Arisaema triphyllum</i>		x			
Lady fern	<i>Athyrium angustum</i> (<i>filix-femina</i>)	x	x	x	x	
Yellow birch	<i>Betula alleghaniensis</i>	x	x	x	x	
Paper or white birch	<i>Betula papyrifera</i>	x	x	x	x	
Gray birch	<i>Betula populifolia</i>				x	
Rattlesnake fern	<i>Botrychium virginianum</i>	x		x		
Long-awned wood grass	<i>Brachyeletrum aristosum</i>	x	x			
Harebell	<i>Campanula rotundifolia</i>			x	x	
Pennsylvania bitter cress	<i>Cardamine pensylvanica</i>		x			
Drooping woodland sedge	<i>Carex arctata</i>		x			
Fibrous-rooted sedge	<i>Carex communis</i> cf		x	x		
Graceful sedge	<i>Carex gracillima</i>		x			
Nerveless woodland sedge	<i>Carex leptoneura</i>		x			
Long-stalked sedge	<i>Carex pedunculata</i>	x	x			
Pennsylvania sedge	<i>Carex pensylvanica</i>	x				
Blue cohosh	<i>Caulophyllum thalictroides</i>	x	x			
Pipsissewa	<i>Chimaphila umbellata</i>	x				
Golden saxifrage or water carpet	<i>Chrysosplenium americanum</i>	x				
Enchanter's nightshade	<i>Circaea lutetiana</i> (<i>quadrisulcata</i>)		x			
Carolina spring beauty	<i>Claytonia caroliniana</i>	x				
Blue-bead lily	<i>Clintonia borealis</i>	x	x	x		
Goldthread	<i>Coptis trifolia</i>	x	x			
Beaked hazelnut	<i>Corylus cornuta</i>	x	x			
Bulblet fern	<i>Cystopteris bulbifera</i>			x		SW
Mackay's fragile fern	<i>Cystopteris tenuis</i>	x		x		
Poverty oatgrass	<i>Danthonia spicata</i>			x	x	
Prickly tree clubmoss	<i>Dendrolycopodium dendroideum</i>	x	x			
Hickey's tree clubmoss	<i>Dendrolycopodium hickeyi</i>	x	x		x	
Flat-branched tree clubmoss	<i>Dendrolycopodium obscurum</i>	x	x			
Hay-scented fern	<i>Dennstaedtia punctilobula</i>		x			

Silvery glade fern	Deparia acrostichoides	x	x			
Tufted hairgrass	Deschampsia cespitosa				x	
Rosette-panicgrass	Dicanthelium sp.				x	
Squirrel corn	Dicentra canadensis	x				SW
Dutchman's breeches	Dicentra cucullaria	x				
Bush honeysuckle	Diervilla lonicera	x	x	x	x	
Southern ground cedar (clubmoss)	Diphasiastrum digitatum	x	x			
Spinulose woodfern	Dryopteris carthusiana		x			
Goldie's woodfern	Dryopteris goldiana		x			SW
Evergreen woodfern	Dryopteris intermedia	x	x			
Marginal woodfern	Dryopteris marginalis	x	x	x	x	
Beechdrops	Epifagus virginiana	x	x	x		
Trailing arbutus	Epigaea repens			x	x	
Field horsetail	Equisetum arevense		x			
Trout lily	Erythronium americanum	x				
White wood aster	Eurybia divaricata		x	x	x	
Large-leaved aster	Eurybia macrophylla cf		x			
American beech	Fagus grandifolia	x	x	x	x	
Wild strawberry	Fragaria virginiana			x		
White ash	Fraxinus americana	x	x	x		
Sweet-scented bedstraw	Galium triflorum cf	x	x	x		
Herb Robert	Geranium robertianum	x	x			
Dwarf rattlesnake plantain (orchid)	Goodyera repens			x		
Checkered rattlesnake plantain	Goodyera tessellata	x				
Oak fern	Gymnocarpium dryopteris	x	x			
Witch hazel	Hamamelis virginiana			x		
Shining firmoss	Huperzia lucidula	x	x			
Water pennywort	Hydrocotyle americana		x			
Jewelweed	Impatiens capensis	x	x			
Common juniper	Juniperus communis				x	
Creeping juniper	Juniperus horizontalis				x	S1 / E
Wood nettle	Laportea canadensis	x	x	x		
Intermediate pinweed	Lechea intermedia cf				x	
American fly honeysuckle	Lonicera canadensis		x			
Common clubmoss	Lycopodium clavatum		x			
Starflower	Lysimachia (Trientalis) borealis	x	x		x	
Canada mayflower	Maianthemum canadense	x	x	x	x	
False Solomon's seal	Maianthemum racemosum	x	x	x		
Ostrich fern	Matteuccia struthiopteris	x	x			
Indian cucumber-root	Medeola virginiana	x	x			
Cow wheat	Melampyrum lineare				x	
Early saxifrage	Micranthes (Saxifraga) virginensis				x	
Partridgeberry	Mitchella repens	x	x			
Miterwort	Mitella diphylla	x				
Naked miterwort	Mitella nuda		x			
Rattlesnake-root	Nabalus sp.	x	x			
Whorled aster	Oclemena acuminata	x	x	x		

White flat-topped goldenrod	Oligoneuron album			x	x	S1 / E
Sensitive fern	Onoclea sensibilis		x			
Sweet cicely	Osmorhiza claytonii	x	x			
Interrupted fern	Osmunda claytoniana	x	x			
Cinnamon fern	Osmundastrum cinnamomeum		x			
Hop hornbeam	Ostrya virginiana	x	x	x	x	
Mountain wood sorrel	Oxalis montana	x	x			
Dwarf ginseng	Panax trifolius	x	x			
Panicgrass	Panicum sp.					
Virginia creeper	Parthenocissus quinquefolia			x		
Narrow beech fern	Phegopteris connectilis	x	x			
Red spruce	Picea rubens	x	x		x	
White pine	Pinus strobus	x	x		x	
Flat-stemmed bluegrass	Poa compressa			x		A
Solomon's seal	Polygonatum pubescens		x	x		
Polypody (fern)	Polypodium sp.	x	x	x		
Christmas fern	Polystichum acrostichoides	x	x	x	x	
Braun's holly fern	Polystichum braunii		x			
Big-toothed aspen	Populus grandidentata	x	x			
Quaking aspen	Populus tremuloides	x			x	
Pin cherry	Prunus pensylvanica			x	x	
Black cherry	Prunus serotina		x		x	
Bracken fern	Pteridium aquilinum	x	x			
Round-leaved pyrola	Pyrola americana				x	
Shinleaf	Pyrola elliptica	x	x			
Red oak	Quercus rubra	x	x	x	x	
Prickly gooseberry or dogberry	Ribes cynosbati	x		x		
Common blackberry	Rubus allegheniensis cf			x		
Red raspberry	Rubus idaeus			x		
Purple-flowering raspberry	Rubus odoratus	x		x		
Dwarf raspberry	Rubus pubescens	x				
Sheep sorrel	Rumex acetosella			x		A
Red-berried elder	Sambucus racemosa	x	x	x		
False melic grass	Schizachne purpurascens			x		
Three-toothed cinquefoil	Sibbaldiopsis tridentata				x	
Silverrod	Solidago bicolor				x	
Blue-stemmed goldenrod	Solidago caesia			x	x	
Early goldenrod	Solidago juncea			x	x	
Rand's goldenrod	Solidago simplex ssp randii v monticola				x	
Showy mountain-ash	Sorbus decora			x		
Bristly clubmoss	Spinulum annotinum	x	x			
Meadowsweet	Spiraea alba var. latifolia				x	
Rose twisted stalk	Streptopus lanceolatus	x	x	x		
Round-leaved dogwood	Swida (Cornus) rugosa			x		
New York fern	Thelypteris noveboracensis	x	x			
Foamflower	Tiarella cordifolia	x	x			
Basswood	Tilia americana			x	x	
Western poison ivy	Toxicodendron rydbergii			x		

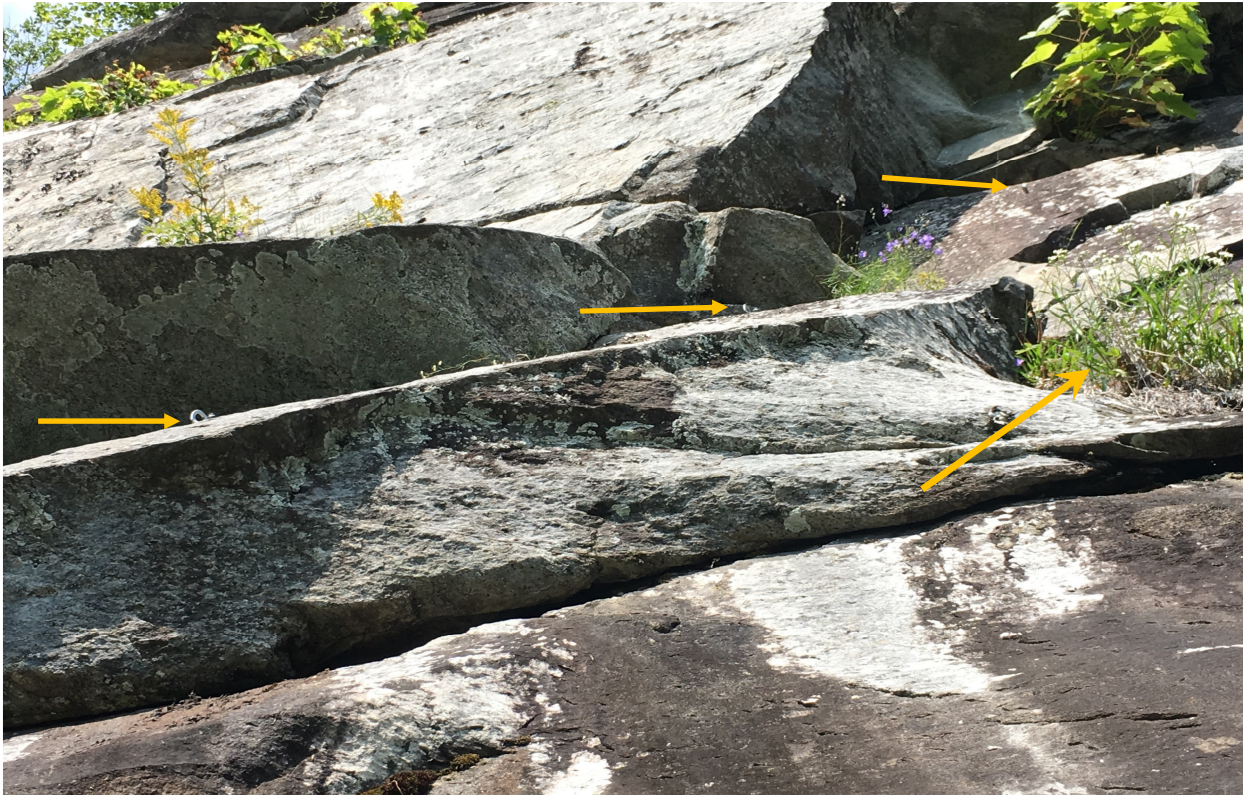
Red trillium	Trillium erectum	x	x			
Painted trillium	Trillium undulatum	x	x			
Hemlock	Tsuga canadensis	x		x	x	
Wild oats	Uvularia sessilifolia	x	x		x	
Early low blueberry	Vaccinium angustifolium				x	
Velvetleaf blueberry	Vaccinium myrtilloides		x		x	
Mullein	Verbascum thapsus			x		A
Maple-leaved viburnum	Viburnum acerifolium	x	x			
Hobblebush	Viburnum lantanoides	x	x			
Northern white violet	Viola pallens	x	x			
Downy yellow violet	Viola pubescens var pubescens		x			
Round-leaved yellow violet	Viola rotundifolia	x	x			
Selkirk's violet	Viola selkirkii	x	x			
"cf" with scientific name indicates probable but not positive identification						
Status: A=alien (non-native), SW=State Watchlist (rare), S1/E=Endangered (<5 occurrences)						
Notes about visits:						
5/12 with Matt Stevens mostly scouting boundaries on upper section of property						
6/2 checking out lower portion, then around ravine below cliffs						
7/31 with Matt S. and Meg Sheehan, mostly along lower edge of cliffs						
9/7 with Matt along top of cliffs						



Oligoneuron album on ledge (photo: M. Sheehan)



Cystopteris bulbifera (photo: M. Sheehan)



Oligoneuron album with fixed climbing protection nearby (photo: M. Sheehan)



Oligoneuron album with fixed climbing protection nearby (photo: M. Stevens)

Alice Schori with assistance and input from Matt Stevens