

# Lantern Ridge Open Space Beacon Falls, Connecticut



## *King's Mark Environmental Review Team Report*

*King's Mark Resource Conservation and Development Area, Inc.*

***Lantern Ridge Open Space  
Beacon Falls, Connecticut***



***Environmental Review Report***

***Prepared by the King's Mark Environmental Review Team***

***Of the  
King's Mark  
Resource Conservation & Development Area, Inc.***

***For the  
Conservation Commission  
Beacon Falls***

***December 2010***

***Report #355***

# Acknowledgements

This report is an outgrowth of a request from the Beacon Falls Conservation Commission to the Southwest Conservation District (SWCD) and the King's Mark Resource Conservation and Development Area (RC&D) Council and ERT Subcommittee for their consideration and approval. The request was approved and the measure reviewed by the King's Mark Environmental Review Team (ERT).

The King's Mark Environmental Review Team Coordinator, Elaine Sych, would like to thank and gratefully acknowledge the following Team members whose professionalism and expertise were invaluable to the completion of this report.

The field review took place on Tuesday, June 22, 2010.

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*\*This section is from the Rimmon Brook Subdivision ERT Report dated May 1990.*

I would also like to thank Diane Betkoski, Anita Goerig and Chris Bielik, Beacon Falls Conservation Commission and Richard Minnick, Beacon Falls Inland Wetlands and Watercourses Commission and Open Space Steward for their cooperation and assistance during this environmental review.

Prior to the review day, each Team member received a summary of the proposed project with location maps. During the field review Team members were given additional information. Some Team members made separate or additional trip while others conducted a map review only. Following the review, reports from each Team member were submitted to the ERT coordinator for compilation and editing into this final report.

This report represents the Team's findings. It is not meant to compete with private consultants by providing site plans or detailed solutions to development problems. The Team does not recommend what final action should be taken on a proposed project - all final decisions rest with the town. This report identifies the existing resource base and evaluates its significance to the proposed use, and also suggests considerations that should be of concern to the town. The results of this Team action are oriented toward the development of better environmental quality and the long term economics of land use.

The King's Mark RC&D Executive Council hopes you will find this report of value and assistance in management planning for the Lantern Ridge Open Space.

If you require additional information please contact:

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# **Introduction**

## **Introduction**

The Beacon Falls Conservation Commission has requested Environmental Review Team (ERT) assistance in reviewing the Lantern Ridge Open Space.

Lantern Ridge Open Space is a 97 acre parcel of town owned open space that is under the stewardship of the Conservation Commission. The property is heavily forested and has varied terrain that is steep and rocky with areas of wetlands and marsh. The site contains Rimmon Brook and Rimmon Brook North, as well as possible areas with vernal pools.

A 1990 King's Mark RC&D Area ERT report was completed for a much larger parcel (260+ acres) proposed for subdivision that straddled the Beacon Falls-Seymour town line that included the Lantern Ridge Open Space. (Please see Appendix for maps and Fisheries Resources section.)

## **Objectives of the ERT Study**

The Conservation Commission is now in the process of determining the best use of the parcel for active and/or passive recreation and how to best manage the property. A natural resource inventory and management guidelines will be used by the commission to develop a stewardship plan to protect and enhance the site while opening it up for public enjoyment.

## **The ERT Process**

Through the efforts of the Beacon Falls Conservation Commission this environmental review and report was prepared for the Town of Beacon Falls.

This report provides an information base and a series of recommendations and guidelines which cover the topics requested by the town. Team members were able to review maps, plans and supporting documentation provided by the applicant.

The review process consisted of four phases:

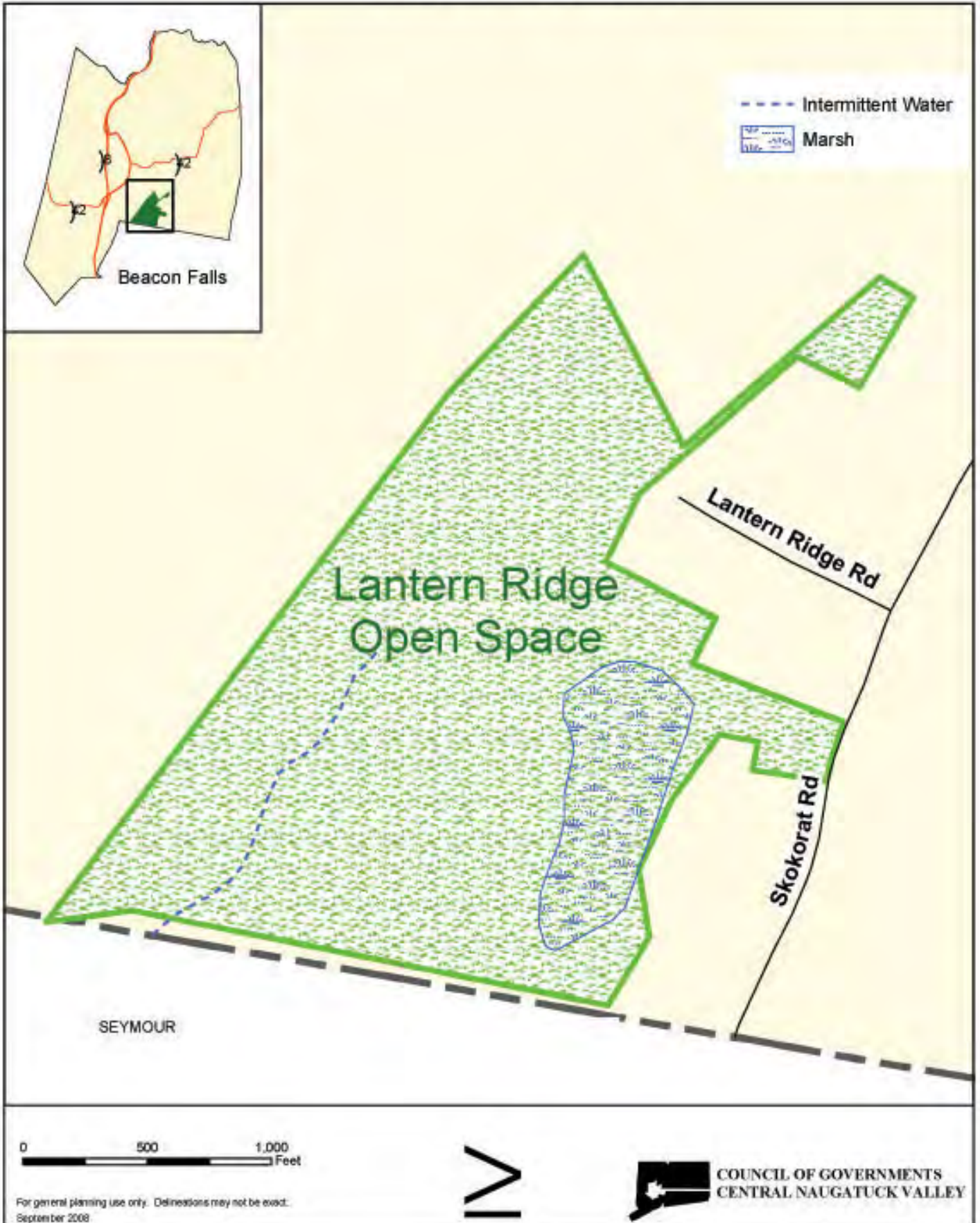
1. Inventory of the site's natural resources;
2. Assessment of these resources;
3. Identification of resource areas and review of plans; and
4. Presentation of education, management and land use guidelines.

The data collection phase involved both literature and field research. The field review was conducted Tuesday, June 22, 2010. The emphasis of the field review was on the exchange of ideas, concerns and recommendations. Being on site allowed Team members to verify

information and to identify other resources. Some Team members made separate or additional trip while others conducted a map review only.

Once Team members had assimilated an adequate data base, they were able to analyze and interpret their findings. Individual Team members then prepared and submitted their reports to the ERT coordinator for compilation into this final ERT report.

Open Space Parcel - Lantern Ridge





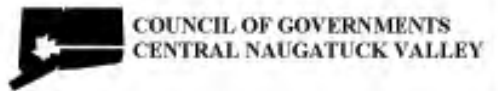


# Beacon Falls Committed Open Space



Source: "Roads", c1984-2008 Tele Atlas, Rel. 0408  
 "Town Boundary", "Hydrography", DEP  
 "Open Space", Town of Beacon Falls

For general planning purposes only. Delineations may not be exact. September 2008



# Topography and Geology

The Lantern Ridge Open Space parcel is an area dominated by wetlands, thin soils, and steep slopes. The western boundary of the parcel lies on steep east-facing slopes of Rock Rimmon, a high ridge adjacent to the Naugatuck River. Although Rock Rimmon reaches an elevation of around 640 feet, the highest part of the slope within the parcel boundary is just greater than 560 feet above sea level. The east facing slope drops abruptly and in places forms vertical and even slightly overhanging cliffs. The south-flowing Rimmon Brook and north flowing North Rimmon Brook lie in the deep valley on the east side of Rock Rimmon. The col (the gap in the ridge) between the two brooks is about 900 feet south of where North Rimmon Brook leaves the parcel. The col has an elevation of about 375'.

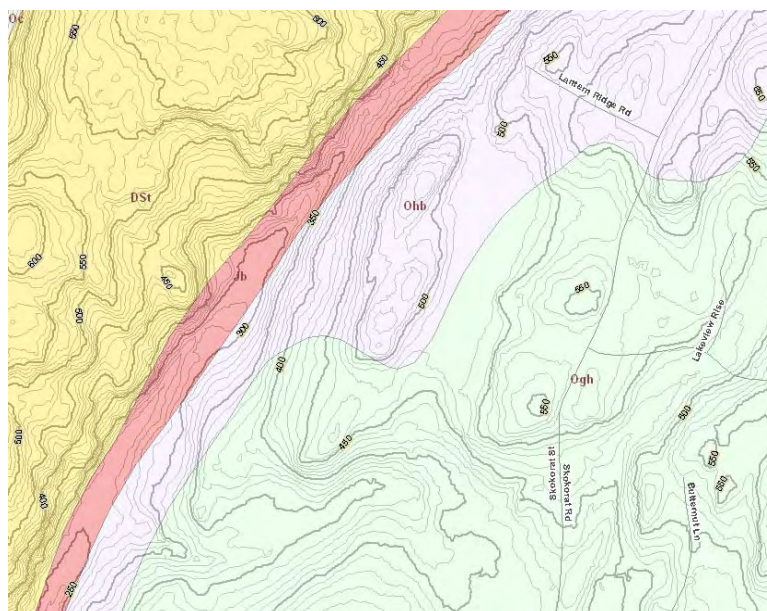
Rimmon Brook exits the parcel at an elevation of about 275'. The west facing slopes of the Rimmon brooks are not as steep as those on Rock Rimmon but nonetheless are quite formidable in places. These slopes ascend to two knobs which both have elevations in excess of 500'. The northern knob reaches an elevation of just greater than 550'. The slopes to the east of these knobs descend less steeply to a wetland area that has an elevation of about 475'. The wetland drains to the south into an intermittent stream that flows into Rimmon Brook.

Total relief on the parcel is about 385' and slopes are mostly moderate, steep, and excessively steep. In addition, many are covered by tangles of Mountain Laurel, making cross-country travel (bush-wacking) difficult.

## Bedrock Geology

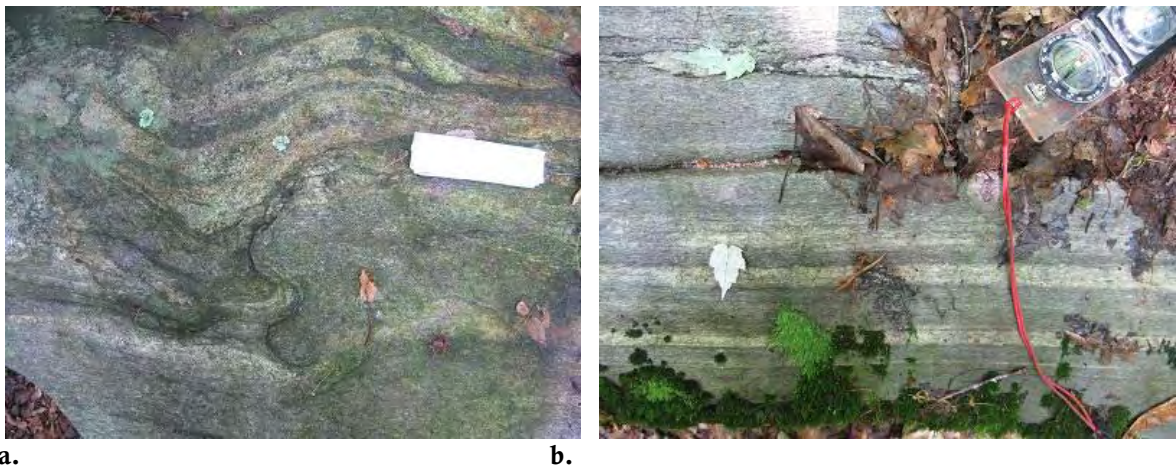
The parcel lies within the Naugatuck Quadrangle. Bedrock within the quadrangle was described by Carr (1960). Geologic nomenclature (rock formation names) was modified by Rodgers (1985) to be consistent with a state-wide compilation.

**Figure 1. Bedrock geologic map of parcel and surrounding area on topographic base map, after Rodgers, 1985. Oldest rocks are the Golden Hill Schist (Ogh: pale green color on map). The slightly younger Beardsley Member of the Harrison Gneiss (Ohb) is very light gray color on map. The Devonian Straits Schist is shown in yellow (DSt). The red band is underlain by Jurassic diabase (Jb) that intruded along a fault plane. Topographic contour interval is 10'. The map is just greater than a half mile in width.**



Soils on most of the parcel are thin and numerous outcrops of ledge may be found. In general, the eastern 3/4+ of the parcel is underlain by gneiss. The western 1/8th is underlain by schist. Trap rock underlies the deepest part of the Rimmon brooks valley.

The oldest rocks are Ordovician (around 475 million years old) granitic gneisses and schists. They are mapped as the Beardsly Member of the Harrison Gneiss (Ohb on Fig. 1) and the Golden Hill Schist (Ogh on Figure 1) by Rodgers. The Golden Hill is older according to Rodgers. It is purported to consist of grey to silvery medium to coarse grained schist and granofels. This Team member's observation during a field excursion during a steamy July morning found gray granitic gneiss/granofels in the area mapped by Rodgers as Golden Hill Schist (Figure 2). It consists of banded biotite-quartz-plagioclase gneiss/granofels. The difference between the bands is mainly the varying abundance of biotite mica and coarser or finer constituent crystal-size. No schistosity<sup>1</sup> was noted in the local area.



**Figure 2. Rocks from the south-eastern part of the parcel are mapped as Golden Hill Schist. They, however are more gneissic than schistose. White area in a. is folded piece of 8.5x11 piece of paper. Its dimension parallel to the bottom of the image is 8.5". Compass in b. is 2.5" wide.**

The Beardsly Member of the Harrison Gneiss (Ohb) forms moderate sized outcrops on the two knobs in the center of the parcel (Figure 3a). It consists of foliated granitic gneiss composed of plagioclase feldspar and lesser amounts of quartz (Figure 3b). In some areas the feldspar forms elongate porphyroblasts<sup>2</sup> that parallel the foliation (Figure 3c). Biotite is a minor constituent. The resulting rock is light to moderate gray and poorly banded. In places thin veins filled with plagioclase feldspar and quartz cut the gneiss (Figure 3d).

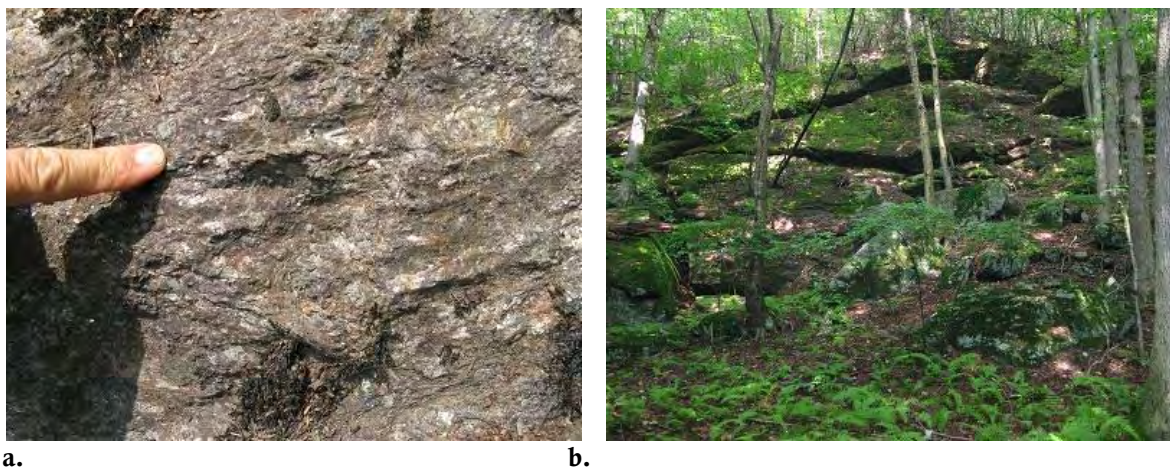
The western part of the parcel is underlain by Straits Schist (DSs) that is Devonian in age (about 400 million years). Schist is remarkably resistant to glacial erosion and in many places forms ridges. The Straits Schist is coarse grained and silvery to gray on a freshly broken surface, although it weathers brownish. It is steeply dipping toward the east and forms local cliffs along Rimmon Brooks.



**Figure 3. a. Typical outcrops of the Beardsley Member of the Harrison Gneiss on the knobs in the central portion of the parcel. Moderate slopes are capped by abrupt east facing ledge that may be as much as 5 feet high. Outcrops on top of the knob are low and discontinuous. No outcrops were found on the steep west facing slope. The rock has an overall grey appearance. b. Typical Beardsley Member gneiss. (Compass is 2.5" wide).c. Porphyroblastic gneiss of the Beardsly Member (little finger of glove at right is about 3/4" wide). d. Local feldspathic veins cut the Beardsley Member.**

The schist is a brown-weathering biotite-bearing quartz muscovite schist (Figure 4a). Some layers contain plentiful garnets. According to Rodgers, it was in fault contact with the metamorphic rocks to the east of Rimmon Brook. The fault apparently weakened the rock allowing glacial erosional-processes to carve a steep-walled valley (Figure 4b). Later, during the early Jurassic, basaltic-magma intruded along the fault-plane (Figure 4c).

Carr (1960) reports outcrops of diabase (which he refers to as dolerite, as does Rodgers) which form a dike about 20' thick (Carr, p.19). Outcrops were not observed during the field observation. The dike is thought to be part of a system of fissures that fed the youngest basalt lava flow in the Hartford Basin (Philpotts and Martello, 1986). The dike is mapped as Buttress Diabase (Jb) by Rodgers, 1985, but is referred to as the Bridgeport dike by Philpotts and Martello. The lava flow that forms the Hampdon Basalt was fed by fissure eruptions that, when they cooled and solidified, formed the Bridgeport Dike. In this area it intruded into an older fault (Carr, 1960).



a.

b.



c.

**Figure 4. a. The Straits Schist consists of brown-weathering, garnet bearing muscovite schist. b. East facing cliffs of Straits Schist exposed near the col between Rimmon Brook and North Rimmon Brook. c. Deep, steep-sided valley near the headwaters of south-flowing Rimmon Brook. Straits schist is exposed on left. Alluvium in bottom of valley has covered a diabase dike.**

### **Surficial Geology**

A relatively thin veneer of glacial till covers much of the area. Glacial till is unsorted material which ranges in size from tiny, clay-sized, particles to large, cobbles and small boulders. It consists of debris ground up by southward flowing Ice Age glaciers while they were active, and left behind when they melted. Ice, about a mile thick at its peak, melted away from this area about 16,500 (radiocarbon) years ago (Stone and others, 2005). Nearby areas contain deposits of sand and gravel deposited by glacial melt-water streams. None, however, were recognized on the parcel.

A small swamp fills a local bedrock scour basin that formed by glacial erosion. Peat and organic muck, of the order of 5' thick(+/-), fill the basin to an elevation of 475'.

### **References**

- Carr, M.H., *The Bedrock Geology of the Naugatuck Quadrangle, with Map*. State Geological and Nat. Hist. Surv of Connecticut, Quad. Rpt. #9, 25p.
- Philpotts, A.R., and Martello, A., 1986, Diabase feeder dikes for the Mesozoic basalts of the Hartford Basin, Connecticut. *Am. Journ. Science*, v.286:105-126.
- Rodgers, John, 1985, *Bedrock Geological Map of Connecticut*. State Geological and Natural History Survey of Connecticut, Nat'l. Resource Atlas Series, 1:125,000, 2 sheets.
- Stone, J.R., Schafer, J.P., London, E.H., DiGiacomo-Cohen, M.L., Lewis, R.S., and Thompson, W.B., 2005, *Quaternary Geologic Map of Connecticut and Long Island Sound Basin (1:125,000)*. U.S. Geol. Surv. Sci. Invest. Map # 2784.

1. A type of cleavage characteristic of metamorphic rocks, notably schists and phyllites, in which the rocks tend to split along parallel planes defined by the distribution and parallel arrangement of platy mineral crystals.
2. Porphyroblasts are distinctly large crystals in a metamorphic rock.

# Soils Resources

This soil resources report applies to the approximately 97-acre parcel referred to as Lantern Ridge, which is located along Skokarat Road along the south central border of Beacon Falls. The information in this report is based on the USDA's historical soils series descriptions and the new digital mapping unit descriptions as presented in the Soil Survey of Connecticut, remote survey interpretations plus field observations.

## Mapping Units – Exhibit #1

### **Wetland Soils**

USDA Soil #3 - Map Unit RN – Ridgebury, Leicester and Whitman extremely stony fine sandy loams. Consists of nearly level to gently sloping, poorly drained soils in drainageways and depressions on glacial uplands. Ridgebury soils are very deep and derived mainly from gneiss and schist. Typically, they have a friable loam or fine sandy loam surface layer and subsoil over a firm fine sandy loam or sandy loam dense till substratum. Ridgebury soils have a perched watertable within 1.5 feet of the surface much of the year.

### **Concerns**



#### ***Parking Area***

**Redesign** - This soil type abuts the current parking area off of Skokarat Road, which needs to be redesigned, provide adequate buffering (35' min) from the parking area. Consideration of a potential access route for maintenance and EMS responses into the parcel from this

point should be explored.

#### ***Stormwater Runoff***

Maintain a pervious parking surface that allows surface water to flow into a sand filter around its down slope perimeter. This feature should sequester entrained solids and slow the introduction of non-point source pollutants from vehicles.



### ***Traversing the Intermittent Stream***

Create a stream crossing by using a simple logging road bridge design to access the upland soils to the north to extend the trail system. The use of a bridge will limit the disturbance to the stream channel and the wetlands.



USDA Soil #17 – Timakwa and Natchaug – aka: Map Unit AA – Adrian & Palm soils

This map unit consists primarily of Adrian and Palm soils on 0 to 3 percent slopes. Adrian soils are very deep and very poorly drained. Typically, these soils have an organic layer 16 to 51 inches thick. The underlying layer is of a sandy or loamy texture to a depth of 60 inches or more. These soils have a watertable within 12 inches of the soil surface.

This significant, high quality wetland is roughly 9-acres in size and trends north to south along the parcels eastern border. A proposed trail system around the wetland will be placed upon the surrounding upland soils, which are steep and present a severe erosion hazard when disturbed.

### **Concerns**

#### ***Erosion & Siltation***

The layout of the trail system needs to adequately buffer the wetlands, control surface water runoff and maintain a nominal footprint that minimizes upland soil disturbance.

#### ***Vernal Pools***

Evidence of potential perched watertables, drainageways and depressions throughout the site may warrant a field study to qualify and quantify any additional vernal pools on site. The ground-truthing of potential vernal pools in the surrounding uplands should be considered to investigate, inventory and determine enhanced buffering distances to limit their disturbance and preserve the viability of these pools and their associated upland environments.

#### ***Wetland Crossings and Trails***

Upland trails proposed around the wetlands require greater buffering distances, erosion and siltation control and less intrusive, plus raised walkways across wetland areas and watercourses. Active recreation such as mountain biking should be relegated to specific areas to cross any wetlands or watercourses on site. Minimize the size of the crossing,

provide hard armoring of the crossing and stabilize the upslope area leading to these crossings.

### ***Wetland Education Walkways***

In an effort to enhance the environmental education component, a couple of strategically placed, raised walkways into the wetlands would be an asset to the trail system. Walkways could be constructed with minimal impact and physical footprint.

### ***Note***

Guidance on buffering distances can be obtained from MCA Technical Paper NO.5, *Conserving Pool-Breeding Amphibians in Residential and Commercial Developments in the Northeastern United States*, authored by Michael W. Klemmens, Ph.D. and Aram Calhoun, Ph.D.

### **Non-wetland Soils**

CrC – Charlton-Chatfield soil 3 to 15 percent slopes. USDA Soil #73C.

CpE – Charlton-Chatfield soil 15 to 45 percent slopes. USDA Soil #73E.

This complex consists of well-drained soils located on uplands where the relief is affected by underlying bedrock. The Charlton component has moderate or moderately rapid permeability. Runoff is medium to rapid. The Chatfield component has moderate to moderately rapid permeability above the bedrock.

This complex has fair to poor potential for community development. The Charlton component has fair potential for development and the Chatfield has poor potential for development due to its shallowness to bedrock.

Intensive enhanced conservation measures such as temporary vegetation and siltation basins are frequently needed to prevent excessive runoff, erosion and siltation.

### **Concerns**

Their steep slopes and shallowness to bedrock limit Chatfield soils, which is approx. 20 to 40 inches in depth.

The fine particulates of schist and gneiss associated with these soils stay in suspension for extended periods. Limiting land disturbances atop of these soils, which requires the rerouting of trails and limiting public access to these steeper areas, can avoid contamination from siltation.

### ***“C” Slope***

Approximately 7-acres of these Charlton soils possess steeper slopes with the majority located on the north and south ends of the large wetland on site, where the topographic relief will dictate the placement of the trail in close proximity to the wetland.

Both soils have a moderate to severe erosion hazard associated with them and enhanced conservation measures are needed with the increase in steepness of slope as in the CrE soil type.

### ***Trails***

The expanding width of the trails and their proximity to the wetlands has stripped vegetation, accelerated erosion and caused siltation within the wetlands. Buffers to these areas need to be established and a redesign of the trail layout plus access points should be entertained.

Maintain narrow trails and stabilize trailsides with ground covers.

Blazing of new trails atop of steeper sections should be discouraged.

Provide runoff diversions at the top of slope. Utilize permanent diversions to direct runoff into vegetated or semi-armored areas to reduce runoff volumes and velocities. Install waterbars across trails at intervals dictated by slope angle at length shown.

Waterbar Spacing along Steeper Trails –

1% slope @ 440'	2% slope @ 245'	5% @ 125'
10% slope @ 78'	15% slope @ 58'	

USDA Soil # 75C-MapUnit HrC–Hollis-Chatfield Rock outcrop complex, 3 to 15 percent slopes. This complex consists primarily of two dominant soils and areas of outcrop that are so intermingled on the landscape that they could not be separated on the map. Hollis soils are shallow and well drained soils. Typically, they have fine sandy loam surface layer and subsoil over bedrock at a depth of 10 to 20 inches. These soils do not have a watertable within their 20-inch depth.

The second soil is the Chatfield soil component, which is moderately deep and well drained. Typically, they have a fine sandy loam surface layer and subsoil over hard bedrock at a 20 to 40 inch depth.

The rock outcrops consist of exposures of hard crystalline bedrock, commonly gneiss, schist or granite. The outcrops typically are on knobs, ledges and ridgelines.

USDA Soil # 75E - Map Unit HSE – Hollis - Rock outcrop - complex, 15 to 45 percent slopes. The map unit is limited mainly by steep-to-steep slopes, shallowness to bedrock and rock outcrops. This map unit has poor potential for development. Erosion hazard is severe. If these soils are disturbed for construction, intensive conservation measures, such as mulching, re-establish vegetative cover and siltation basins are needed to diffuse surface runoff to control excessive runoff, erosion and siltation.

USDA Soil #76E – RPE Rock, Outcrop – Hollis complex, 8 to 45 percent slopes. The RPE map unit is composed dominantly of Rock outcrop and Hollis soils. These two components are so intermingled on the ground that they could not be separated on the

map. The Hollis soils are shallow and somewhat excessively drained. Typically, they have a fine sandy loam texture overlying consolidated bedrock at a depth of 10 to 20 inches. The Rock outcrop consists of consolidated bedrock.

### **Natural Resource History / Education Trails**

Trails are the key to bringing people and wildlife together. Trail systems should be located to take advantage of terrain and existing habitat and conform to existing landscape textures. Effective trail planning and layout can enhance the learning and aesthetic aspects of passive outdoor recreation by providing easy access to varied habitats. A nature trail, including informational signs, provides insight into the geology and ecology of an area. The information provided increases awareness, allows the general public to appreciate a particular animal, plant or habitat and its ecological value and fosters a stewardship of our natural resources that will serve our communities for generations to come.

#### ***Environmental Education***

This site also offers a wide array of science based educational opportunities from the study of aquatic and terrestrial flora and fauna, forestry management, and the enhancement of a diverse habitat base that will serve as a sanctuary to the wildlife.

Specific habitats on site could serve as staging areas for outdoor living classrooms / laboratories in and around the property. This would expand and enhance all grade level science based curriculums in the school system and other environmental groups.

#### ***Trails***

Guidance on developing a trail system can be obtained by contacting the CT Forest and Parks Association located on RT 66 in Middlefield, CT. Onsite they have the J.R. Camp Outdoor Classroom and Demonstration Forest where they provide training for hike leaders and educators. [www.ctwoodlands.org](http://www.ctwoodlands.org)

#### ***Curriculum***

CT DEP can facilitate the development or enhancement of existing environmental programs in the school system through Project Wet and Project Wild and additional educator programs.

Kellogg Environmental Center & Osborne Homestead Museum  
500 Hawthorne Avenue  
Derby, CT  
(203) 734-2513  
Contact: Sue Quincy

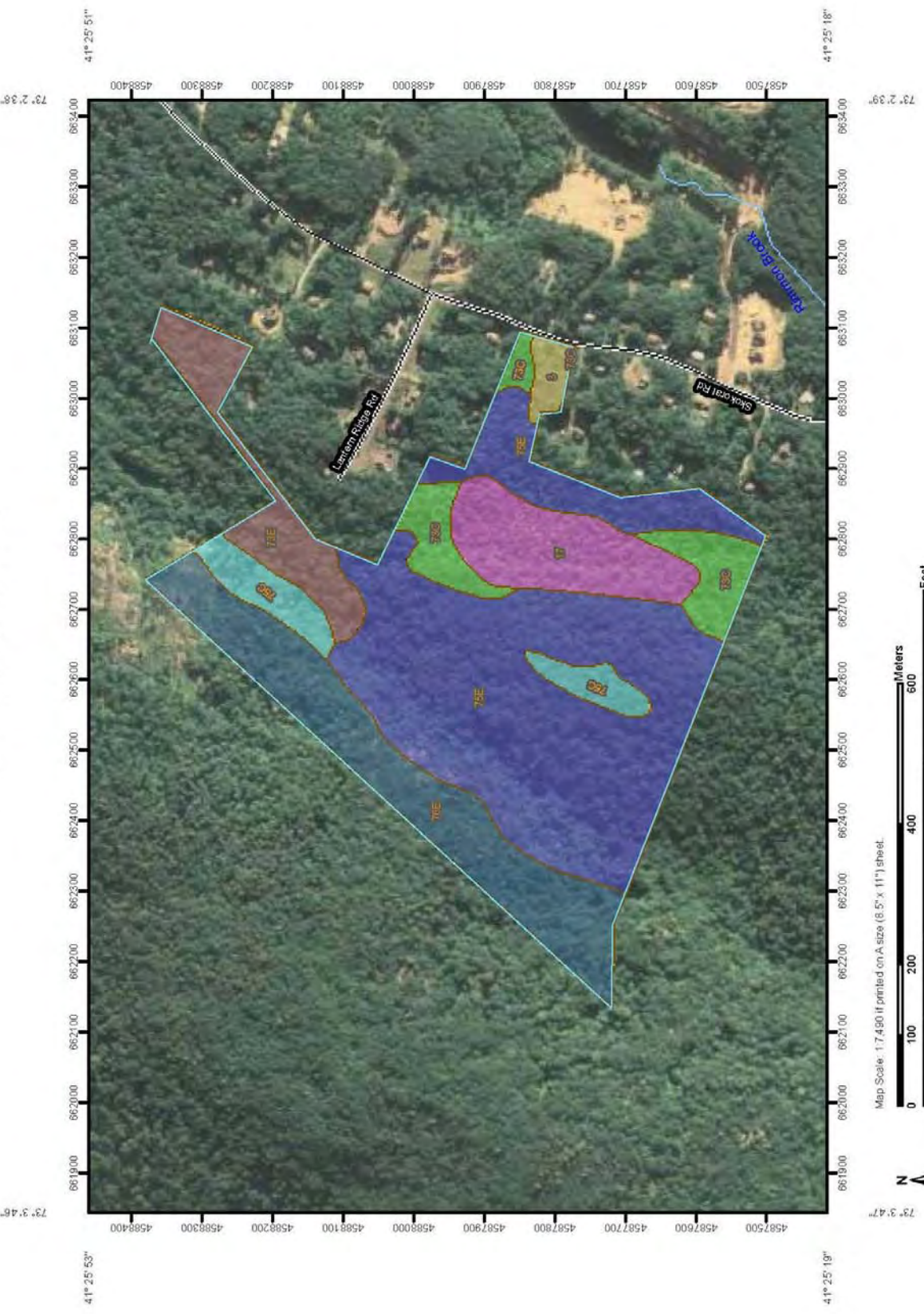
#### ***Land Use Planning Opportunities***

The extensive perimeter and the number of abutters around the parcel have given rise to a number of trails that encroach on and adversely impact the natural resources on site.



Limiting access and narrowing trails will limit active uses such as ATV's, 4x4's, mountain bikes and horses. Increasing public access and passive recreation uses will invite greater use by the public, which deters the incursion of motorized vehicle use and abuses.

The property needs to have a long-term natural resource conservation / forest management plan, which encompasses goals and objectives for increasing and maintaining biodiversity, integrates year round passive recreational uses that can provide a platform for education that showcases and preserves its natural resources, provides public access, serves the citizenry of Beacon Falls.

Map Unit Name—State of Connecticut  
(Lantern Ridge Open Space, Beacon Falls)



## MAP LEGEND

 Area of Interest (AOI)	 Cities
 Area of Interest (AOI)	<b>Water Features</b>
 Soils	 Oceans
 Soil Map Units	 Streams and Canals
<b>Soil Ratings</b>	<b>Transportation</b>
 Chaffon-Chatfield complex, 15 to 45 percent slopes, very rocky	 Rails
 Chaffon-Chatfield complex, 3 to 15 percent slopes, very rocky	 Interstate Highways
 Hollis-Chatfield-Rock outcrop complex, 15 to 45 percent slopes	 US Routes
 Hollis-Chatfield-Rock outcrop complex, 3 to 15 percent slopes	 Major Roads
 Ridgebury, Leicester, and Whitman soils, extremely stony	 Local Roads
 Rock outcrop-Hollis complex, 3 to 45 percent slopes	
 Timakwa and Natchaug soils	
 Not rated or not available	
<b>Political Features</b>	

## MAP INFORMATION

Map Scale: 1:7,490 if printed on A size (8.5" x 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:12,000. Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service  
 Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>  
 Coordinate System: UTM Zone 18N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: State of Connecticut  
 Survey Area Data: Version 7, Dec 3, 2009

Date(s) aerial images were photographed: 8/14/2006

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

## Map Unit Name

Map Unit Name— Summary by Map Unit — State of Connecticut				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
3	Ridgebury, Leicester, and Whitman soils, extremely stony	Ridgebury, Leicester, and Whitman soils, extremely stony	1.3	1.5%
17	Timakwa and Natchaug soils	Timakwa and Natchaug soils	8.9	9.9%
73C	Charlton-Chatfield complex, 3 to 15 percent slopes, very rocky	Charlton-Chatfield complex, 3 to 15 percent slopes, very rocky	6.7	7.4%
73E	Charlton-Chatfield complex, 15 to 45 percent slopes, very rocky	Charlton-Chatfield complex, 15 to 45 percent slopes, very rocky	7.2	7.9%
75C	Hollis-Chatfield-Rock outcrop complex, 3 to 15 percent slopes	Hollis-Chatfield-Rock outcrop complex, 3 to 15 percent slopes	4.8	5.3%
75E	Hollis-Chatfield-Rock outcrop complex, 15 to 45 percent slopes	Hollis-Chatfield-Rock outcrop complex, 15 to 45 percent slopes	44.8	49.4%
76E	Rock outcrop-Hollis complex, 3 to 45 percent slopes	Rock outcrop-Hollis complex, 3 to 45 percent slopes	16.9	18.6%
<b>Totals for Area of Interest</b>			<b>90.7</b>	<b>100.0%</b>

## Description

A soil map unit is a collection of soil areas or nonsoil areas (miscellaneous areas) delineated in a soil survey. Each map unit is given a name that uniquely identifies the unit in a particular soil survey area.

## Rating Options

*Aggregation Method:* No Aggregation Necessary

*Tie-break Rule:* Lower



## **Landscape Ecologist – Invasive Plant Review**

With the exception of the Japanese Stilt Grass (*Microstegium vimineum*) infestation, the site appears to be remarkably free of invasive plants. The lack of recent clearings no doubt contributes to that. The swamp (with its soils that have muck to a depth of greater than 2 ½ feet) was not investigated.

Five invasive plant issues are addressed:

1. Japanese Stilt Grass infestation by the woods road that parallels N. Fork Rimmon Brook
2. Reasons to work with abutting landowners to control vehicular access to the property.
3. Control of invasives at parking area
4. Pro-active early detection and rapid response to scattered individuals of invasive woody plants
5. Recommended investigation of swamp when soils are frozen

### **Japanese Stilt Grass infestation along the woods road that parallels N. Fork Rimmon Brook**

Patches of Japanese Stilt Grass (*Microstegium vimineum*) were found along the woods road that parallels the North Fork of Rimmon Brook. In addition, Stilt Grass is beginning to cover a section of the flat along the stream.



There are two concerns. First, Japanese Stilt Grass is harmful in many habitats. It grows in dense stands that shade out native annuals, perennials and woody plant seedlings. It grows particularly well in the rich soils of moist floodplains especially under partly sunny conditions (as is the case in the stream flat). However, its growth is not limited

to floodplains; it also can grow in upland woods where soils are fertile and it will grow along roadsides and other open areas as well.

The second concern is that once established, Japanese Stilt Grass spreads very quickly within the immediate site and beyond. Each plant produces up to 1000 seeds. Thus, a scattered covering of Stilt Grass one year can become a very thick patch the next.



Seeds are spread in rainwater runoff and when they become stuck to other materials (animal fur, people's shoes and socks, vehicle tires, etc.).

As an annual, its sole method of reproduction is by seed; therefore, control of seed production is the key to getting rid of Japanese Stilt Grass. Methods for control include hand pulling, cutting it when the flowers are first spotted (not later because they will begin producing seed and not early in the season because cutting stimulates flowering), and chemical control. Japanese Stilt Grass pulls up easily (in contrast to the look-alike native perennial White Grass [*Leersia virginica*] which often grows along

with the Stilt Grass). Cutting generally does not kill associated perennial plants (because they resprout), whereas chemicals do kill non-target species. A walk-through of the site is advised prior to cutting or spraying to flush out any amphibians that may be hiding in the grass. More details on the three control methods as applied to Japanese Stilt Grass are available in the reference section.

With any method of control, it is essential to prevent re-establishment of the invasive plants. Follow-up control will be required to take care of plants that sprout from buried seeds. Old seeds may survive up to five years. In addition, preventing new seeds from coming into areas where control has been done is integral to long-term success. One nearby source of new seeds is the large patch of Japanese Stilt Grass that is located in the tract to the South in the open flat where the woods road meets Skokarat Road.

Japanese Stilt Grass is readily identified in the field. (Details on species identification are in reference section.) Japanese Stilt Grass is a late-blooming annual. Because it is a late-bloomer, it had not yet flowered August 2, 2010 (even in this year in which flowering has been two weeks early).

Invasive Plants Fact Sheet –

<http://www.hort.uconn.edu/cipwg/pdfs/factsheets/tnc/japanesestiltgrass.pdf>

(Also see Appendix).

**Reasons to work with abutting landowners to control vehicular access to the property.**

Vehicles driving in the vicinity of North Rimmons Brook on the woods road and old logging roads with some off- road travel are creating erosion problems where tires have churned the soil. Vehicle tires bring in weed seeds. The invasive Japanese Stilt Grass grows in places on the dry road shoulder as well as in moist places along the road and in the adjacent stream flat. If the recreation goal for the property does not include vehicle use, then working with abutting landowners to control vehicular access to the property would be advised to prevent the movement of roadside Japanese Stilt Grass onto and within the property (as well as to prevent further soil and water quality degradation).



### **Control of invasives at parking area**

Scattered invasive plants are associated with the parking area. It is important to control invasives in this area because of the potential for hikers spreading seeds more deeply into the tract. In addition to species listed on the official State list of Invasive and Potentially Invasive Plants, the parking area has a patch of Mugwort (*Artemisia vulgaris*), a tall, weedy non-native plant that spreads into dense patches, choking out native plants. It would be desirable to prevent this species from seeding further into the tract. Control is a long-term effort because of the dense root system.



In the effort to prevent people from bringing seeds into natural areas, the Midwest Invasive Plant Network recommends installing boot brush stands at trailheads. An example may be found at:

<http://mipn.org/Boot%20Brush%20Summary.pdf>.

(Also see Appendix).

### **Early Detection and Rapid Response to Scattered Individuals**

Certain species listed on the official State list of Invasive and Potentially Invasive Plants were observed mostly as scattered individual plants (including in the vicinity of the parking area). Overall, these species are not causing great harm to habitat quality at this point. However, sooner rather than later is the time to seek out and control them to prevent populations from expanding. Early spring and fall are the best time to locate them because these species leaf out earlier and hold their leaves later than most native species. Before undertaking control, always verify that the species identification is correct.

Particular note was taken of the following species.

Autumn-olive (*Elaeagnus umbellatus*)

Japanese Barberry (*Berberis thunbergii*)

Multiflora Rosa (*Rosa multiflora*)

Oriental (Asiatic) Bittersweet (*Celastrus orbiculatus*)

Winged Euonymus aka Burning Bush (*Euonymus alatus*)

Of the scattered species listed, the Japanese Barberry is the most widespread. As with Winged Euonymus, Japanese Barberry survives fairly well in forest shade.

In addition, throughout the property, an on-going and vigilant watch for three herbaceous species is recommended. Japanese Stilt Grass seeds may be being spread beyond the stream area by hikers and animals. Garlic mustard (*Alliaria petiolata*) is on the increase in Connecticut. Its seeds are spread down roads by snowploughs and in wooded areas by vehicles, hikers, and deer. Both Japanese Stilt Grass and Garlic Mustard develop into dense herbaceous patches in which other herbaceous species and woody plant seedlings are shaded out. In addition, Garlic Mustard roots exude a chemical that harms the roots of woody plant seedlings. The third early-detection species, Mile-a-minute Vine (*Polygonum perfoliatum*), is an annual that covers other plants like Kudzu vines do. Currently it is present in only 18 Connecticut towns. It is very invasive; and, those 18 towns include nearby Monroe, Newtown, and North Haven. Scattered individuals of all three species should be pulled upon sighting. If the population is too big to handle on the spot, a plan for handling it should be made immediately. If the plants have flowered, the pulled plants should be bagged on site (so as to not spread seeds on the way out) and later disposed of as “trash” (not put into mulch piles).

### **Recommended Investigation of Swamp When Soils are Frozen**

The swamp has soils with over 2 ½ feet of muck. No investigation was made. A more practical time to navigate the area in search of invasive species is when frozen soil is present. Japanese Barberry and Multiflora Rose (already on the property) may be found on hummocks particularly where tree cover is sparse. In other wetlands, Glossy Buckthorn (*Frangula alnus*) is found, particularly at wetland margins. Purple Loosestrife (*Lythrum salicaria*) and Phragmites (*Phragmites australis*) are additional possibilities at the wetland margin.

### **General Web-based Sources of Further Information on Invasive Species**

Identification: <http://www.ct.nrcs.usda.gov/plants.html>

Photos: <http://www.invasiveplantatlas.org/>

Winter Appearance and other photos: [http://www.srs.fs.fed.us/pubs/gtr/gtr\\_srs119.pdf](http://www.srs.fs.fed.us/pubs/gtr/gtr_srs119.pdf)

Connecticut Invasive Plant Working Group: [www.hort.uconn.edu/cipwg](http://www.hort.uconn.edu/cipwg)

### **Web-links to Individual Species (some files may be slow to load) -**

Autumn-olive (*Elaeagnus umbellata*)

ID: [ftp://ftp-fc.sc.egov.usda.gov/CT/invasives/AutumnOlive\\_9-14-09.pdf](ftp://ftp-fc.sc.egov.usda.gov/CT/invasives/AutumnOlive_9-14-09.pdf)

Control: <http://mdc.mo.gov/landwater-care/plant-management/invasive-plant-management/autumn-olive>

Garlic Mustard (*Alliaria petiolata*)

ID: [ftp://ftp-fc.sc.egov.usda.gov/CT/invasives/GarlicMustard\\_09-14-09.pdf](ftp://ftp-fc.sc.egov.usda.gov/CT/invasives/GarlicMustard_09-14-09.pdf)

Glossy Buckthorn (*Frangula alnus*)

ID: [ftp://ftp-fc.sc.egov.usda.gov/CT/invasives/glossy\\_buckthorn.pdf](ftp://ftp-fc.sc.egov.usda.gov/CT/invasives/glossy_buckthorn.pdf)

Japanese Barberry (*Berberis thunbergii*)

ID: [ftp://ftp-fc.sc.egov.usda.gov/CT/invasives/japanese\\_barberry.pdf](ftp://ftp-fc.sc.egov.usda.gov/CT/invasives/japanese_barberry.pdf)

Control: <http://www.nps.gov/plants/alien/fact/pdf/beth1.pdf>

Japanese Stilt Grass aka Nepalese Browntop in Southeast USA (*Microstegium vimineum*)

ID: [ftp://ftp-fc.sc.egov.usda.gov/CT/invasives/japanese\\_stiltgrass.pdf](ftp://ftp-fc.sc.egov.usda.gov/CT/invasives/japanese_stiltgrass.pdf)

Control: <http://www.nps.gov/plants/alien/fact/pdf/mivi1.pdf>.

Mile-a-minute Vine (*Polygonum perfoliatum*)

ID, Control, and more: <http://www.hort.uconn.edu/mam/>

Mugwort (*Artemisa vulgaris*)

ID: [http://www.ppws.vt.edu/scott/weed\\_id/artvu.htm](http://www.ppws.vt.edu/scott/weed_id/artvu.htm) .

Multiflora Rose (*Rosa multiflora*)

ID: [ftp://ftp-fc.sc.egov.usda.gov/CT/invasives/multiflora\\_rose.pdf](ftp://ftp-fc.sc.egov.usda.gov/CT/invasives/multiflora_rose.pdf)

Control: <http://www.nps.gov/plants/alien/fact/pdf/romu1.pdf>

Oriental (Asiatic) Bittersweet (*Celastrus orbiculatus*)

ID: [ftp://ftp-fc.sc.egov.usda.gov/CT/invasives/asiatic\\_bittersweet.pdf](ftp://ftp-fc.sc.egov.usda.gov/CT/invasives/asiatic_bittersweet.pdf)

Control: <http://www.nps.gov/plants/alien/fact/pdf/ceor1.pdf>

Phragmites aka Common Reed (*Phragmites australis*)

ID: [ftp://ftp-fc.sc.egov.usda.gov/CT/invasives/common\\_reed.pdf](ftp://ftp-fc.sc.egov.usda.gov/CT/invasives/common_reed.pdf)

ID: <http://agbiopubs.sdstate.edu/articles/FS957.pdf>

Purple Loosestrife (*Lythrum salicaria*)

ID: [ftp://ftp-fc.sc.egov.usda.gov/CT/invasives/PurpleLoosestrife\\_9-14-09.pdf](ftp://ftp-fc.sc.egov.usda.gov/CT/invasives/PurpleLoosestrife_9-14-09.pdf)

ID: <http://agbiopubs.sdstate.edu/articles/FS957.pdf>

Winged Euonymus aka Burning Bush (*Euonymus alatus*)

ID: <ftp://ftp-fc.sc.egov.usda.gov/CT/invasives/winged-euonymus.pdf>

Control: <http://www.town.boxborough.ma.us/BurningBush.pdf>

# The Natural Diversity Data Base

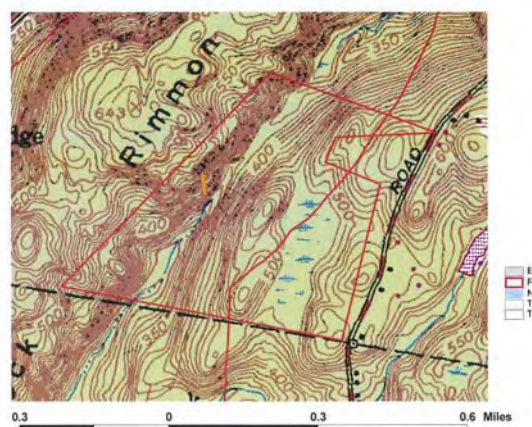
The Natural diversity Data Base maps and files regarding the project area have been reviewed. According to our information, there is a population of Mountain Spleenwort (*Asplenium montanum*), a State Threatened fern (RCSA Sec 26-306) from the area indicated on the following map. It is recommended that this area be left undisturbed. For example, hiking trails or direct access to this steep area should not be created.



Natural Diversity Data Base information includes all information regarding critical biologic resources available to us at the time of the request. This information is a compilation of data collected over the years by the Environmental & Geographic Information Center's Geological and Natural History Survey and cooperating units of DEP, private conservation groups and the scientific community. This information is not necessarily the result of comprehensive or site-specific field investigations. Consultations with the Data Base should not be substituted for on-site surveys required for environmental assessments. Current research projects and new contributors continue to identify additional populations of species and locations of habitats of concern, as well as, enhance existing data. Such new information is incorporated into the Data Base as it become available.

<http://www.ct-botanical-society.org/ferns/aspleniummont.html>

## State listed Plant location



# **Forestry Resources**

## **Overview**

The Lantern Ridge Open Space Property totals approximately 97 acres and is located west of Skokorat Road, just north of the Seymour town line. In 2009 the Beacon Falls Conservation Commission became the official steward of the property. At the ERT pre site visit meeting, members of the Conservation Commission stated that their main objectives are to “protect and enhance the site while opening it up for public enjoyment.” To this end, non-vehicular activities which are passive in nature and have limited impact on the natural resources that are present would be best suited for this site.

## **Stewardship Recommendations**

- Locate, mark, monitor and maintain all property boundaries. Post property boundaries at all access points.
- Accurately locate and map all trails with GPS. Evaluate the condition and use value of all trails. Determine which trails should be maintained and kept open and which should be closed and allowed to recover from abuse. Determine if new trails should be developed for educational use.
- Identify and fell dead and hazardous trees that are present within striking distance of trails that are authorized for use. In addition remove any large dead branches on otherwise healthy trees that could fall on trail users.
- Install erosion control measures on all authorized and unauthorized trails.
- Improve and enlarge parking area along Skokorat Road.
- Provide informational signs at parking areas along with maps of the property.
- Gate or block all access points at property boundaries to discourage unauthorized motor vehicle use.
- Stabilize and or repair the access road that runs along Rimmon brook and North Rimmon Brook for emergency use.
- Locate and control or eradicate non-native invasive plant species.

## **Vegetation**

The Lantern Ridge Open Space Property may be divided into several broad vegetation categories. These include Mixed Hardwoods, Oak Ridge, Hardwood Swamp, and Softwoods-Hardwoods. Below are brief descriptions of each of the vegetation categories found on this property. The location and acreage of these areas are approximate and were obtained from 1995 and 2004 aerial photographs and 2004 orthophotos. They are depicted on the Vegetation Type Map. The field inventories of vegetation types were conducted in June and August of 2010. A more comprehensive inventory of the



herbaceous vegetation that is present in each of these categories should be made at different times throughout the year by a qualified botanist.

The vegetation that has developed on this tract is diverse and strongly reflects the underlying soils that are present and the past use of the land. Historically, this section of Beacon Falls was primarily used as pasture for goats and sheep. Less productive areas were used as woodlots for charcoal and fuelwood or left idle. Stonewalls, barbed wire fences and blocking stones that still remain from split rail fences that have long since rotted away, delineate local property boundaries.

The operable portions of this property have a long history of harvesting activities. The last major sawtimber harvest probably occurred in the late 1970s or early 1980s when almost all of the merchantable oak were removed from all accessible portions of the property. More recently, a 2-acre section of the property located at the northwestern corner was included in a harvest which took place on an abutting property. Today, the accessible portions of the property are crisscrossed with old logging haul roads and skid trails. Many of these roads and trails are in poor condition and will continue to deteriorate unless they are maintained and where possible closed to motorized vehicles.

Several non-native invasive plant species have become established throughout this property. These include Japanese Stilt Grass, Multiflora rose, Japanese Barberry, Autumn Olive, Winged Euonymus, Asiatic bittersweet and Mugwort. In this report, non-native invasive plant species will be marked with an "\*" for easier identification in the vegetation type descriptions. As noted several times elsewhere in this report, these species are of special concern because they are non-native and have the potential to become major components of the ecosystem by out competing native species. Although some of these species provide wildlife with food and cover, they are aggressive competitors, disrupt natural ecosystem balance and degrade biodiversity.

At the present time, mechanical removal (pulling) of some of these plants should be effective especially where limited numbers of individuals are present. This type of removal usually works best with shrub species when the soil is moist. Plants that are removed in this way should not be placed back on the ground because many of these species will re-root and become reestablished.

In areas where non-native invasive species are well established, an Integrated Vegetation Management (IVM) approach may be the most practical solution and should be considered. The IVM approach utilizes a combination of control methods to best manage targeted populations of non-native invasive species. These options may include mechanical, chemical, cultural and biological methods. The goal of this approach is to discourage (manage) the non-native invasive species and encourage the natural re-establishment of native plant communities.

Specific forest management recommendations aimed at improving the overall health, stability and diversity of this property are suggested for the Mixed Hardwoods vegetation type. Management practices include crop tree selection and release. This practice is

focused on removing the unhealthy and poor quality trees that are interfering with the growth of healthy trees. However, implementation of this practice may be unrealistic based on access restrictions, site limitations and proposed use.

### **Vegetation Type Descriptions**

**A. Mixed Hardwoods:** This Mixed Hardwood vegetation type totals approximately 51 acres and is generally restricted to the somewhat deeper and richer soiled valleys and side slopes. As stated earlier, the accessible portions of this vegetation type received a harvest that removed most of the larger oaks as sawtimber and a portion of the smaller hardwoods as firewood approximately twenty-five years ago. Today, this area is dominated by reasonably healthy pole (5" to 11" in diameter at breast height (d.b.h.)), to small sawtimber (12" in d.b.h. and larger) size trees which range from 70 to about 110 years of age. The overstory in this vegetation type is made up of a variety of oaks including red oak, black oak, white oak, scarlet oak and chestnut oak along with American beech, black birch, sugar maple, red maple, yellow birch, tulip tree, sassafras, gray birch, shagbark hickory, pignut hickory, mockernut hickory and occasional eastern hemlock. Red oak, yellow birch, red maple, white ash, and tuliptree dominate where this Mixed Hardwood type makes a transition to the Hardwood Swamp type. Larger and older trees are present but they are few in numbers and scattered. They were probably left during the last harvest because they were not accessible, large enough or valuable enough to be cut and be sold as timber at that time.

The understory vegetation, which is present, includes hardwood tree seedlings, mountain laurel, witch-hazel, maple leaved viburnum, hophornbeam, American hornbeam, azalea, American chestnut sprouts, highbush blueberry and scattered Japanese barberry\*.

Ground cover vegetation includes poison ivy, Virginia creeper, rattlesnake plantain, Canada mayflower, wood aster, club moss, bracken fern, Christmas fern, maidenhair fern, evergreen wood fern, hayscented fern, interrupted fern, lady fern, New York fern, cinnamon fern and many species of grasses, sedges and wild flowers.

In some areas the trees are becoming somewhat crowded and are beginning to decline in health and vigor. A fuelwood thinning following the Crop Tree Selection method of thinning would help to reduce the crowded condition and allow potential crop trees to improve in health and vigor over time. Trees that are removed to release crop trees, may be harvested and utilized as fuelwood, felled or deadened in place and left standing for wildlife. Up to 40 trees per acre should be chosen as crop trees. These trees should be released to full sunlight by removing the competing trees from three out of four sides of their crowns. Poor quality defective trees that are not providing specific benefits to wildlife such as the production of desirable mast or suitable cavities may also be harvested or deadened in place at this time. Implementation of this practice may be unrealistic based on access restrictions, site limitations and proposed use.

**B. Oak Ridge:** This stand, which totals approximately 21 acres is located on the eastern slope of Rock Rimmon and is characterized by droughty, shallow to bedrock soils with extremely low productivity for hardwoods. In some areas, where the bedrock is completely exposed, little or no vegetation is present except for several species of lichens and mosses. As a result of the droughty soil conditions many of the trees are very short, are growing extremely slowly and have a stunted appearance. Included are seedling to small sawtimber size chestnut oak, scarlet oak, black oak, red maple, black birch and pignut hickory with scattered eastern red cedar, eastern white pine and eastern hemlock intermixed. Mountain laurel is present in the understory with witch-hazel, highbush blueberry, maple-leaved viburnum and hardwood tree seedlings. The ground cover that is present includes huckleberry, lowbush blueberry, clubmosses, lichens, mosses, common polypody, grasses and sedges. Although not observed, there is a population of Mountain Spleenwort (*Asplenium montanum*), a State Threatened fern present in this vegetation type.

**C. Hardwood Swamp:** There are three Hardwood Swamp areas that total approximately 16 acres located within this tract. Two of these wetlands are associated with North Rimmon Brook and the other is at the headwaters of Hockanum Brook to the north. The vegetation that is present in all of these wetlands is somewhat variable but generally dominated by all size classes of red maple. Other tree species that are present include yellow birch and white ash with occasional black birch, gray birch, tuliptree, sugar maple and eastern hemlock. Several of the larger red maple that are present have cavities that make excellent den sites for many species of wildlife including wood ducks. There are also many standing dead trees called snags that are being utilized by a variety of birds.

Shrub species that are present include highbush blueberry, spicebush, sweet pepperbush, mountain laurel, speckled alder, arrowwood viburnum, swamp azalea, swamp rose, winterberry, American hornbeam, witch-hazel, Japanese barberry\* and multiflora rose\*.

Skunk cabbage, false hellebore, tussock sedge, club moss, sphagnum moss, larger blue flag, Canada mayflower, violets, Indian cucumber root, wild geranium, Jack-in-the-pulpit, Solomon's seal, false Solomon's seal, cardinal-flower, trillium, tall meadow rue, poison ivy, Virginia creeper, cinnamon fern, sensitive fern, evergreen wood fern, royal fern, grasses and sedges are widespread throughout as ground cover. Several patches of Japanese Stilt Grass\* are present on the access road that runs along North Rimmon Brook. Mugwort\*, a weedy non-native plant has become well established at the parking area at the edge of the wetland along Skokorat Road.

**D. Oak Ridge:** Two Oak Ridge stands which total approximately 4.5 acres are located on rocky knoll tops and are characterized by droughty, shallow to bedrock soils with very low productivity for hardwoods. As in stand B. above, the droughty soil conditions limit tree growth causing their somewhat stunted appearance. Included are seedling to pole size chestnut oak, white oak, scarlet oak, black oak, red maple, black birch, sassafras and pignut hickory. Mountain laurel is dense in some areas. Witch-hazel, highbush blueberry, maple-leaved viburnum and hardwood tree seedlings are scattered throughout

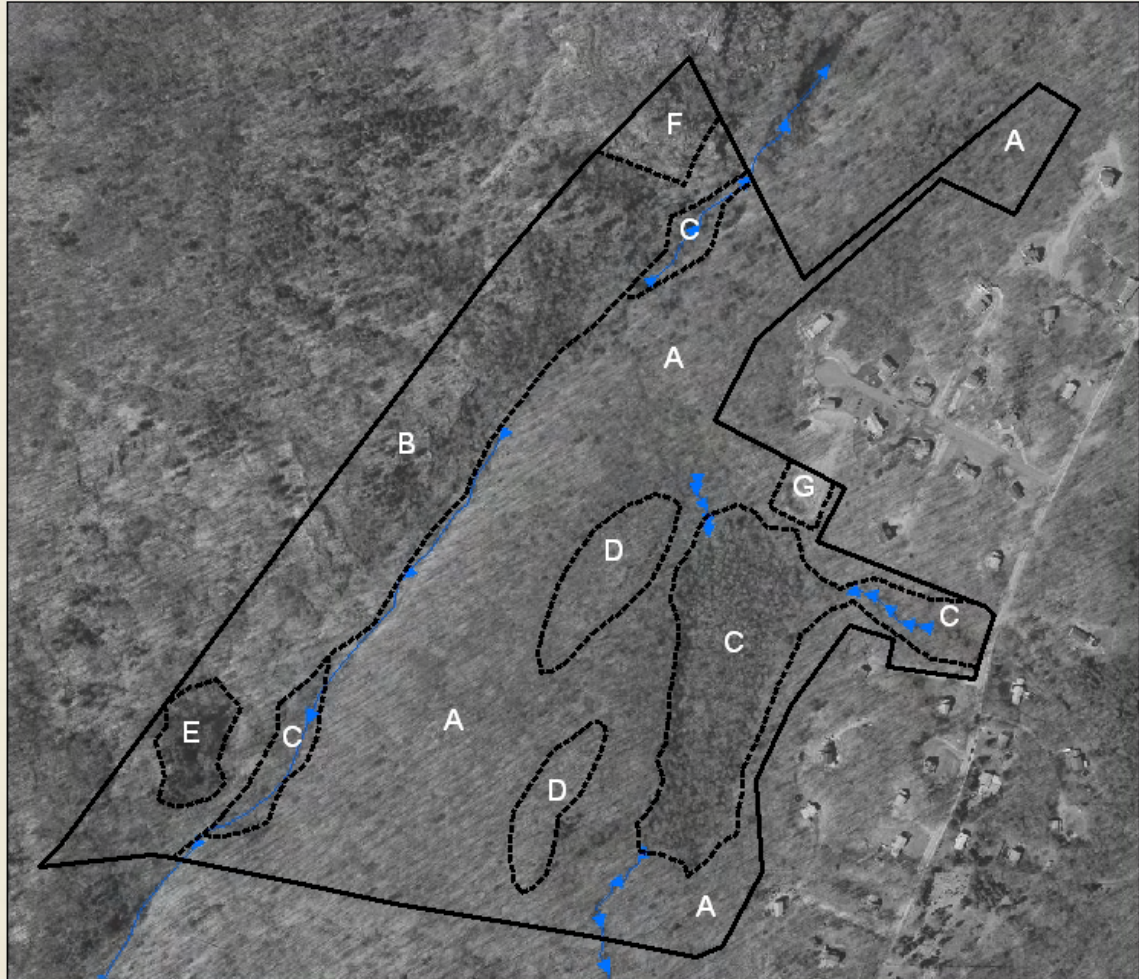
where there are gaps in the mountain laurel. The ground cover that is present includes huckleberry, lowbush blueberry, sheep laurel, clubmosses, lichens, mosses, grasses and sedges.

**E. Softwoods-Hardwoods:** Approximately 2 acres of the Softwood-Hardwoods vegetation type is present within this parcel. Over 60% of this vegetation type is made up of a mixture of pole to small sawtimber size eastern white pine, eastern hemlock and scattered eastern red cedar. Intermixed are hardwood tree species including chestnut oak, scarlet oak, black oak, red maple, black birch and pignut hickory. Understory vegetation includes scattered hardwood tree seedlings. The ground cover that is present includes huckleberry, lowbush blueberry, club mosses, lichens, mosses, common polypody, grasses and sedges.

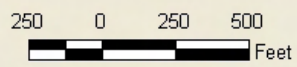
**F. Oak Ridge:** This 2+- acre Oak Ridge area is identical to stand B. above, however the larger trees were removed when the abutting property was recently harvested. This area is now dominated by hardwood tree seedlings, mountain laurel, witch-hazel, highbush blueberry, maple-leaved viburnum, huckleberry, lowbush blueberry, club mosses, lichens, mosses, grasses and sedges.

**G. Mixed Hardwoods:** This disturbed area which totals approximately 0.5 acres was once the site of a small pond or pool that was partially filled in. The area was excavated and is now vegetated with hardwood tree seedlings including black birch, red maple and bigtooth aspen. Staghorn sumac, autumn olive\*, multiflora rose\*, winged euonymus\* and Asiatic Bittersweet\* have also become established. Chain link fencing surrounds this area making access difficult.

# LANTERN RIDGE OPEN SPACE BEACON FALLS, CT VEGETATION TYPE MAP



2004 ORTHOPHOTO



## LEGEND

- PROPERTY BOUNDARY
- VEGETATION TYPE BOUNDARY1
- ▶▶▶▶ BROOK

## VEGETATION TYPES

A. Mixed Hardwoods	51+- Acres
B. Oak Ridge	21+- Acres
C. Hardwood Swamp	16+- Acres
D. Oak Ridge	4.5+- Acres
E. Softwoods-Hardwoods	2+- Acres
F. Oak Ridge	2+- Acres
G. Mixed Hardwoods	0.5+- Acres

## Wildlife Resources

A site inspection was conducted on June 22, 2010 to evaluate existing wildlife habitat on the property. The property is located on Skokorat Rd on the Eastern side of Route 8 in Beacon Falls, borders the Seymour town line and is approximately 97 acres. The property was originally under jurisdiction of the town Land Use Board and was passed on to the Conservation Commission in the last quarter of 2009. The current goal is to understand the characteristics of the property as a key to determining management. The site is comprised of habitat types including mature mixed deciduous forest, deciduous forest and wetlands, including Rimmon Brook, a substantial marsh, intermittent streams, and at least one vernal pool. The property is bounded to the northeast and east by houses and mostly by undeveloped forest to the northwest and south. The Conservation Commission has requested information to assist in their decision for management of this resource.

The property is mostly composed of mature forest dominated by oak and birch. The oak provides hard mast (nuts, acorns) production which creates forage for a diversity of wildlife to include bear, turkey, deer, squirrels and raccoons. There is also a noticeable dispersion of hickories which provide mast and cover for wildlife, especially noted were shagbark hickory commonly utilized by several species of tree roosting bats. Dead trees, snags, are present providing den trees and homes for insects. Woodpeckers, warblers and nuthatches feed and nest in these trees. The understory is heavily browsed by deer and outcompeted by the dense overstory. Relatively few invasives were noted, those found were primarily along the developed boundary and by unofficial travel on interior roads. There is steep rocky terrain running from the southwest to the northwest along the westerly border. This type of terrain provides excellent cover and habitat for wildlife such as weasels, bobcat and snakes. Overall, this forested area provides good to excellent habitat – providing cover, food, nesting and roosting places and denning sites.



Wetlands include Rimmon Brook and associated wetlands, a substantial marsh along the eastern portion of the property and at least one vernal pool. Riparian zone habitat, the area along the edge of rivers and streams, is important in protecting and enhancing aquatic habitat, as well as providing travel corridors for species such as white tailed deer, and providing habitat for species such as water shrews, some amphibians and many



invertebrates. This habitat also provides for diversity, wildlife travel corridors and beneficial edge areas important to wildlife. A myriad of wildlife sign (see attachment A) was noted at the site visit and indicated that the area was used by skunk, raccoon, squirrel, deer, fisher, chipmunk, mouse, coyote, fox, opossum, salamander and mink. A wood frog, was observed in the riparian zone.



Vernal pools are small, temporary bodies of standing fresh water that are typically filled in spring and dry out most years. There is no inlet or outlet, and therefore fish are not found in these pools. Vernal pools are important to the survival of many species of reptiles and amphibians that utilize wetlands for reproduction. For some species, such as the wood frog and the spotted salamander, vernal pools are critical because it is the only

type of wetland in which they will successfully breed. These species are also dependent on the presence of healthy forested uplands surrounding the vernal pool, because, when not breeding, this is where they spend the balance of their life cycle. Calhoun and Klemens (2002) recommend that the upland areas around breeding pools up to a distance of 750 feet be considered critical upland habitat, that at least 75% of that zone be kept undisturbed and that a partially closed-canopy stand be maintained.

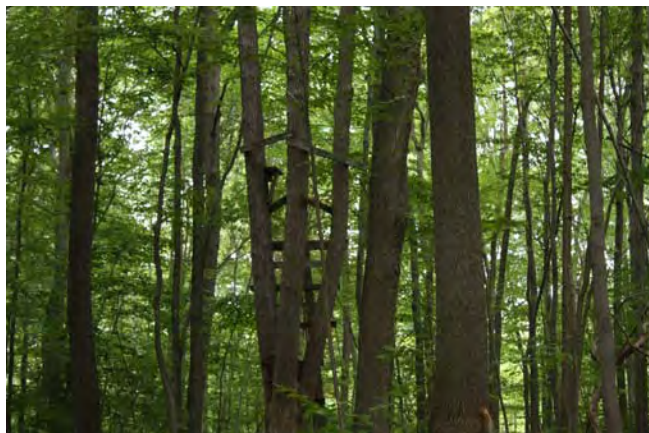
### **Habitat Management Recommendations**

The Lantern Ridge property parcel is a medium-large parcel, providing valuable wildlife habitat in moderately developed surroundings. Undeveloped parcels close to or over 100 acres are increasingly rare, particularly parcels with the quality of habitat including wetlands and forested uplands. Passive recreation may be best suited for this parcel.

### **Limiting Recreational Impacts to Wildlife**

As the intensity of human recreational use of an area increases, the value of the area to wildlife significantly decreases. Highly disturbing, intense activities include creation of parking areas, while lower-disturbance recreational activities could include biking and walking trails, if located appropriately and not overused. Walking trails should only be considered lower-disturbance if dogs are kept on leashes and under control at all times so that nest disturbance and general harassment of wildlife is minimized. Ideally, these lower-intensity activities should be limited to trails that have already been established, so new impacts are not made. However, if new trails are to be established, guidelines for protecting wildlife resources should be followed (see Attachment B). Any trail creation should consider the unofficial trails criss-crossing the property and the heavy unofficial ATV and 4WD usage with negative impacts to habitat. Dogs should be leashed at all times and should not be allowed to run through riparian areas.

Management could also include non-native invasive species control for all developed edges and along interior roads. Invasive species such as autumn olive and Asiatic bittersweet can dominate the native vegetation, significantly reducing native plant diversity. They displace native vegetation that provides high-quality forage, cover, and nesting sites, thereby diminishing the value of an area to wildlife. Japanese stiltgrass and barberry were also noted. Invasive species control can be accomplished through manual pulling (although very labor intensive) or through the use of herbicides such as Roundup®. Intensive deer browse is also a limiting factor in maintaining good native habitat quality. This could be managed with consideration for controlled harvest. Such management could also prevent extensive poaching, suspected from the deer stand noted on the property.





## **Summary**

The Lantern Ridge property has the potential to provide high-value habitat for wildlife due to both the large acreage of undeveloped habitat and the variety of habitats types of which it is comprised. For wildlife, large blocks of habitat are always better, as they can provide a greater variety of food (different types of acorns, catkins, a variety of fruits, etc.), more nesting and roosting sites, and areas for cover, and support those species with large territory requirements as well as more pairs of species with smaller territory requirements. Continued stewardship of this area will conserve the inherent wildlife values and maintaining the quality of habitat will provide for the needs of both common and uncommon native wildlife.

## **References**

Calhoun, A. J. K. and M.W. Klemens. 2002. Best Development Practices: Conserving Pool Breeding Amphibians in Residential and Commercial Developments in the Northeastern United States. MCA Technical Paper No. 5, WCS, Bronx NY, 57 pp.

**MassWildlife**  
**Pocket Guide to MA Animal Tracks**

**Track Pattern**

 White-Tailed Deer 2 1/2" - 3"	 Moose 4 1/2" - 5 1/2"
 Dog 2 1/4" - 4"	 Coyote
 Red Fox	 Gray Fox
 Bob Cat 2"	 House Cat 1 1/8"
 Otter: 3 1/4"	 Fisher: 2 1/4"
 Mink: 1 5/8"	 Weasel: 1/2" - 1"

**Track Pattern**

 Raccoon H: 4" F: 2 1/2"	 Striped Skunk H: 1 1/2" F: 1 1/2"
 Porcupine H: 2" F: 2 1/2"	 Beaver H: 6" F: 3"
 Black Bear H: 7-9" F: 4 1/2"	 Opossum H: 2" F: 1 3/4"
 Woodchuck H: 2 1/4" F: 2"	 Muskrat H: 1 1/2" F: 1"
 Showshoe Hare H: 5" F: 1 1/2"	 Cottontail Rabbit H: 4" F: 1"
 Gray Squirrel H: 2 1/4" F: 1 1/2"	 White-footed Mouse H: 5/8" F: 1/4"
 Crow: 2 1/2"	 Turkey: 4"
	 Ruffed Grouse: 2"

**Tracks Not To Scale**  
 Tracks will show considerable variation depending upon conditions of ground (snow, mud, dust, sand, etc.) and movement of animal.

**Legend:**  
 F: Front Track  
 H: Hind Track  
 T: Tail marks may be present

**Protect wildlife and its habitat. Support the Wildlands Fund.**  
 Division of Fisheries & Wildlife Field HQ  
 1 Rabbit Hill Rd., Westboro, MA 01581  
 508.792.7270 • www.state.ma.us/dfwele/dfw



13. CHIPMUNK



Salamander Tracks



## ATTACHMENT B

### **General Guidelines For Protecting Wildlife Resources When Developing Trails**

Some properties may lend themselves to providing a variety of recreational opportunities (e.g., hiking, hunting, fishing, nature study and photography, horseback riding, mountain biking.) Properly designed trails can provide excellent opportunities to increase public appreciation for wildlife and the ecological values of various habitats. Trails should be designed to enhance the learning and aesthetic aspects of outdoor recreation while minimizing damage to the landscape. They should be laid out to pass by or through the various cover types and other special features represented on the property while avoiding those areas prone to erosion or that contain plants or animals that may be impacted by human disturbance. Uses that are generally considered “compatible” could impact sensitive resources depending on the location, timing and frequency of their occurrence. For example, while regulated fishing is considered an accepted form of outdoor recreation, there could be impacts associated with it, such as streambank erosion at heavily used sites. The overall level of disturbance to vegetation/habitat and wildlife can be significantly reduced by establishing one or two (will depend on property size and degree of importance to natural resources) multiple-use trails rather than several single/exclusive-use trails.

Some guidelines to follow when developing a trail system include:

- Narrow, passive-use recreation trails with natural substrate that would require minimal vegetation removal, maintain forest canopy closure, prohibit the use of motorized vehicles, and require dog owners to keep their dogs under control, are preferred to reduce environmental impacts and disturbance to wildlife. Abandoned roadways (e.g., farm/logging roads) should be incorporated into the trail system whenever possible and appropriate to minimize cutting activity/vegetation removal;
- If a paved, multi-purpose trail is established, avoid the use of curbing. If it is necessary, Cape Cod style curbing (curbing at 45 degree angle) is recommended;
- Know the characteristics of the property and plan the layout so that the trail passes by or through a variety of habitat types;
- Make the trail as exciting and safe as possible and follow a closed loop design. Avoid long straight stretches of >100'; trails with curves and bends add an element of surprise and anticipation and appear more “natural”;
- Traversing wetlands and steep slopes should be avoided whenever possible to minimize erosion and sedimentation problems; where wetlands must be crossed, a boardwalk system should be used;
- The property boundaries and trail should be well marked. It is best to provide a map/informational leaflet describing the wildlife values associated with the property (e.g., value of wetlands, various habitat types/stages of succession, habitat management practices) and guidelines for responsible trail use;
- Potential impacts of trails on private property owners should be identified. Where trails bisect private property, the access should be of adequate width and the trail well-marked to help avoid potential conflicts (e.g., trespass by trail users);

- For more specific guidance on trail design and construction contact the Connecticut Forest & Park Association (860-346-2372 or [www.ctwoodlands.org](http://www.ctwoodlands.org)) or Appalachian Mountain Club ([www.outdoors.org](http://www.outdoors.org));
- For an extensive literature review about the effects of different types of recreation activities on wildlife, visit web site [www.Montanatws.org](http://www.Montanatws.org) – 307 page document published in 1999 entitled, “Effects of recreation on Rocky Mountain wildlife: A review for Montana.”

*Prepared by the CT DEP Wildlife Division for the Partners In Stewardship Program (June 2002)*

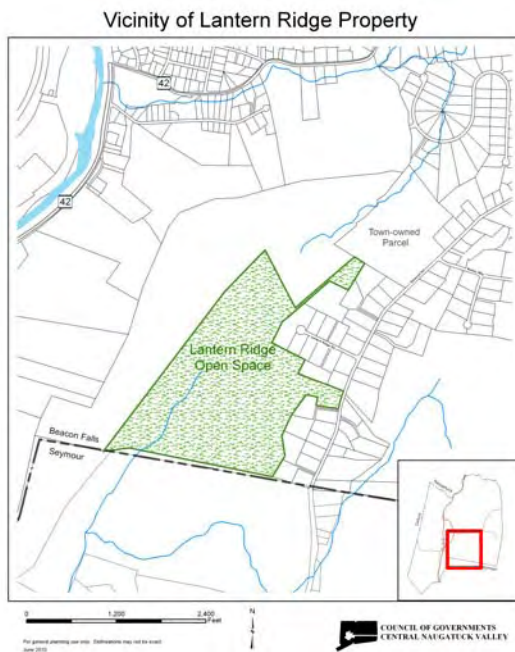
*Questions? Contact CT DEP Wildlife Division at 860-295-9523 (Eastern CT) or 860-675-8130 (Western CT)*

# Planning Considerations

## Site Overview

The 97-acre Lantern Ridge property is located along Skokorat Road in Beacon Falls on the Seymour Town Line. Primary access to the site is through a gated dirt driveway extending from Skokorat Road. The driveway ends in a makeshift parking area that could accommodate roughly six automobiles. Alternate pedestrian access is available through trails extending to the north and south into adjacent properties.

The property is wooded and includes two streams, Rimmon Brook and Rimmon Brook North. Rimmon Brook continues south into Seymour, emptying out into Silver Lake, while Rimmon Brook North flows north to Hockanum Brook. The streamcourses are situated in the Rimmon Brook valley below a steep vertical rock cliff leading up to Rock Rimmon. In the eastern portion of the property is an area of wetlands adjacent to the nearby homes. The land around the property has seen some development over the years after a subdivision that created lots for 30 housing units. This subdivision was the subject of an earlier ERT in 1990. At its northernmost point, the property connects to a 19.6-acre parcel of undeveloped town-owned property. To the south, it abuts a 124-acre forested property in the town of Seymour that is privately-owned.



## **Zoning**

The parcel is in an area zoned R-1, allowing single-family homes on lots of 45,000 square feet or larger. It is preserved open space owned by the town and has been under stewardship of the Beacon Falls Conservation Commission since 2009.

The majority of land surrounding the property is undeveloped with low-density residential development along the eastern boundary, where homes are situated on 1-acre minimum lots. The adjacent property to the south in Seymour is zoned R-40 for residential development on minimum 40,000-acre lots.

## **State Plan of Conservation and Development 2005-2010**

The property contains preservation and conservation areas as defined in the State Plan of C&D. These areas are a high priority for preservation. They should be effectively managed to preserve habitats for plants and animals and to protect the state's water resources. Several policies under Growth Management Principle #4 describe the state's recommended approach to preservation and conservation areas:

- Restore, enhance and create productive wetlands or watercourses.
- Incorporate into projects occurring within *or adjacent to these areas*, site planning, architectural, or design restrictions, land use restrictions, buffers or fencing appropriate to protect and manage the area and to prevent subsequent pressure for additional development or uncontrolled access.
- Encourage public use in conformance with management plans that foster long-range, multi-purpose usage.
- Include mitigation measures necessary both to protect against degradation and to enhance environmental quality.

## **Regional Plan of Conservation and Development: 2008**

The property is identified as preserved open space in the Regional Plan, which recommends maximizing the benefits of open space by giving priority to:

- The protection of water resources and lands which protect water quality. (p. 68)

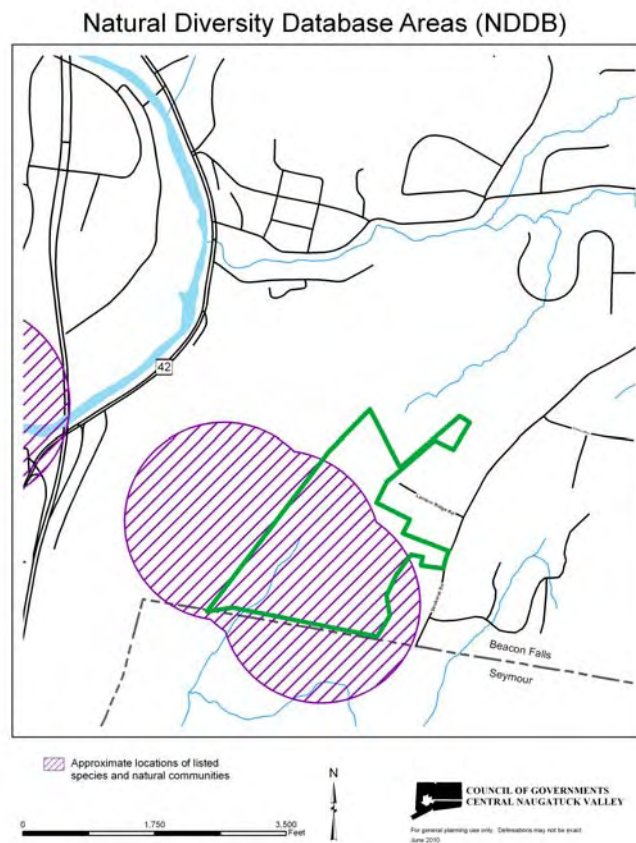
With two streams originating on the property and poorly drained soils (wetlands), this area represents a significant conservation opportunity. (p. 30) Any threats to the quality of these streams will have an impact on the region's water resources.

The Regional Plan also advocates for effective strategies to support preservation of natural resources. It recommends:

- Encourag[ing] appropriate activities in open space areas to avoid unwanted damage, such as soil erosion, trampled vegetation, litter, fires, and ensure proper management. (p. 70)

In developing a management plan for the property, the Conservation Commission should consider activities that will have a limited impact on natural resources. Passive recreation may be best suited for this sensitive area.

The plan also recognizes Natural Diversity Database Areas (NDDB) as areas that “should ... be protected from development activities.” (p. 30) These areas are identified by the CT DEP as approximate locations of endangered, threatened and special concern species and significant natural communities in Connecticut. Portions of the property are identified as natural diversity areas.



## **Town of Beacon Falls Plan of Conservation and Development 2002**

The Lantern Ridge property was not identified as open space in the town’s Plan of Conservation and Development 2002. The plan identifies the protection of watercourses and waterbodies as the highest priority for the town’s conservation efforts with specific mention of Rimmon Brook, which runs directly through the property. The property contains

approximately 16 acres of wetlands as well as slopes in excess of 25%; characteristics that are also identified as high priorities for conservation. (p. 11)

The plan further recommends that the town “consider the importance of large stands of forest and farmlands in maintaining an ecologically balanced environment.” (p. 18) The town should look at other undeveloped parcels around the Lantern Ridge property as a way to increase the amount of contiguous forested land to be preserved. While trail connections to other open space properties may be difficult, considering natural barriers and developments, preservation of additional forestland in the area would be a benefit to the town.

## **Recreation Plans**

### ***Connecticut Recreational Trails Plan 2005***

Two of the main goals outlined in the Trails Plan are *ensuring the continuity and linkage of trails around the State* (Goal #1) and *utilizing trails as educational media* (Goal #5). In response to the first goal, the Town should determine the potential for connecting the trails on the property with other trails and open space properties in the area as part of a larger initiative to fill in the gaps between trails statewide. There are limited opportunities for connecting trails, but any that could be identified would be of great benefit.

As an educational tool, recreational trails can be used to teach the public about resource protection and management in forests, wildlife areas, wetlands, or agricultural lands. The Plan suggests developing contextual “stories” for trails by bringing together different stakeholder groups that share an interest in preservation (i.e. local historians, naturalists, and tourism officials).

## **Coordination with Local Educational Institutions**

The history and characteristics of this property and the potential for future educational activities should be considered as a valuable resource to local students interested in wildlife and geology. The presence of woodland habitats, streams, wetlands, and unique geologic formations make this property an ideal location for staging field trips in environmental science or Earth science courses.

## **Regulated Activities**

During the field review of the property, evidence of off-highway vehicle (OHV) use and unauthorized hunting were apparent. Since the property contains many sensitive environmental areas, OHVs should be prohibited. Unrestricted use of these vehicles leads to erosion, destroys plant life, and disrupts wildlife habitats. The town should consider an open space ordinance that restricts the use of recreational vehicles on town-owned land, such as those in Plainville and Berlin.



Arrangements should be made to coordinate with the Seymour Conservation Commission and the adjacent landowner in that town to better restrict access from Skokorat Road through the neighboring property to the south.

While hunting should not necessarily be prohibited on the property, a proper management plan should dictate the specific conditions for hunting. Ordinances from Ridgefield and Fairfield, for example, have been used to give control of hunting on town-owned land to the Conservation Commissions, as they see fit. These can be used as a model, if the town would prefer to allow regulated hunting rather than a prohibition.

# **Appendix**

- 1. Fisheries Resources Section – Rimmon Brook Subdivision ERT Report 1990**
- 2. Japanese Stilt Grass Fact Sheets**
- 3. Boot Brush Stations**

- c) Exceptionally tall trees, used by raptors as perching and nesting sites, should be encouraged.
- d) Brush debris from tree clearing should be piled to provide cover for small mammals, birds, amphibians and reptiles.
- e) Shrubs, vines and trees which produce fruit should be encouraged (or can be planted as part of the landscaping in conjunction with the development), especially those that produce fruit which persists through the winter (winterberry). See Appendix C for a list of suggested shrub and tree species that can be encouraged and/or planted to benefit wildlife.

## FISHERIES RESOURCES

### Site Description

The proposed Rimmon Brook Subdivision site contains 2 perennial watercourses, Rimmon Brook and Skokorat Brook. Both brooks are coldwater streams with steep to moderate gradients producing flows predominated by shallow riffle interspersed with moving pool. There are 2 distinct areas of Skokorat Brook which contain cascades. Rimmon Brook, the larger of the 2 streams, ranges in width from 10-20 feet and averages approximately 1.5 feet in depth. Skokorat Brook, tributary to Rimmon Brook, is approximately 6 feet in width and averages 1 foot in depth. The streams have similarities, including substrate of small boulder, cobble, gravel, coarse sand and sand/silt fines, riparian vegetation of mature hardwoods and woody shrubs, instream fisheries habitat composed of small boulders, undercut banks, over hanging vegetation and accumulations of fallen debris.

Rimmon Brook and Skokorat Brook are presumed to be Class A surface waters. Designated uses for Class A surface waters include potential drinking water supply, fish and wildlife habitat, recreational use, agricultural and industrial supply and other purposes. Lying almost entirely within an undisturbed area, the watersheds of both Rimmon Brook and Skokorat Brook have been protected from development and

subsequent water quality degradation. Alterations to the streams have to date been from forest road/trail crossing(s), which have not altered water or habitat quality.

#### Aquatic Resources

The Inland Fisheries Division does not have a recorded fisheries investigation of either Rimmon Brook or Skokorat Brook. Both streams have the physical characteristics of a coldwater stream. Anticipated fish species include brook trout, blacknose dace, longnose dace, tessellated darter and white sucker. Brook trout were observed in Skokorat Brook, while brook trout and blacknose dace were observed in Rimmon Brook. The species observed are presumed to be of naturally reproducing stocks. Fish were not observed in the section of Rimmon Brook upstream of the Skokorat Brook confluence. Both streams should allow for excellent small stream trout fishing. However, increased angling pressure may quickly deplete the existing population of fish and may require supplemental stocking.

#### Impacts

The proposed subdivision may have impacts on both Rimmon Brook and Skokorat Brook, including:

- 1) The placement of weir structures to control flood waters will result in the loss of existing stream habitat and become a barrier to the free movement of stream fish. Because the weir structures will impound and slow stream currents, they have the potential to precipitate sediments carried by the stream(s), creating deposits which can overtop and subsequently eliminate the existing stream habitat.
- 2) The installation of culverts to allow for roadway stream crossings will eliminate existing stream habitat and may create a barrier to the free movement of stream fish.
- 3) During construction the potential for sedimentation of the watercourses caused by the overland flow of water over scarified soils, recently excavated/filled areas or stockpiled materials following storm events can cause habitat degradation. There exists a great potential for increased surface runoff, considering the topography of the site. Siltation of the brook can fill gravel interstices and impact native brook trout reproduction.

- 4) The introduction of sand and oils to the stream may occur during site development and future usage. Surface drainage from roads, driveways and other impervious areas within the proposed subdivision may allow these pollutants to enter the streamcourses. This will result in long-term water quality degradation. In the short term, contaminants from impervious areas may enter the stream and cause fish kills. These contaminants are most evident after the "first flush" following a precipitation event.
- 5) Runoff and leaching of nutrients from lawn fertilizers will stimulate excessive aquatic plant growth, while the introduction of lawn chemicals may result in fish kills and water quality degradation.
- 6) Any water quality problems and habitat degradation to Rimmon Brook and Skokorat Brook due to increased sedimentation, road and stormwater drainage and lawn pesticides and fertilizers will eventually be observed in downstream areas of Rimmon Brook.

### Recommendations

The impact to the aquatic resources of Rimmon Brook and Skokorat Brook from the proposed subdivision can be minimized by implementing these measures:

- 1) Maintain at a minimum a 100-foot open space buffer zone along the subdivision's closest encroachment to both streams. No construction or alteration of riparian habitat should take place within this zone.
- 2) The proposed stormwater management plan involves storage within streamcourses by the installation of weirs. The stormwater management system should not be designed to rely on the creation of impoundments within either stream channel. The stormwater system should be designed to:
  - a) Adequately hold stormwater runoff from the site and be placed outside of the stream(s) floodplain;
  - b) Not allow the direct entry of stormwater to the streamcourses; and
  - c) Adequately permit access for periodic maintenance.
- 3) Consider alternatives to the proposed culvert roadway crossings such as span bridges and/or culverts designed with specific fish passage capabilities.
- 4) A comprehensive E&S control plan should be developed and installed prior to the start of construction and maintained through all construction phases. Mitigative measures should include, but not be limited to, above ground detention/retention basin(s), catch basins, silt fences and haybales.

Surface runoff should not be allowed to directly enter either streamcourse. Once construction is initiated, officials from the Towns of Beacon Falls and Seymour must regularly police this subdivision to ensure that all E&S controls are properly implaced and are being regularly maintained with provisions to address corrective measures in case of emergency situations. In addition, a regularly scheduled maintenance of all detention/retention basins and catch basins should be required.

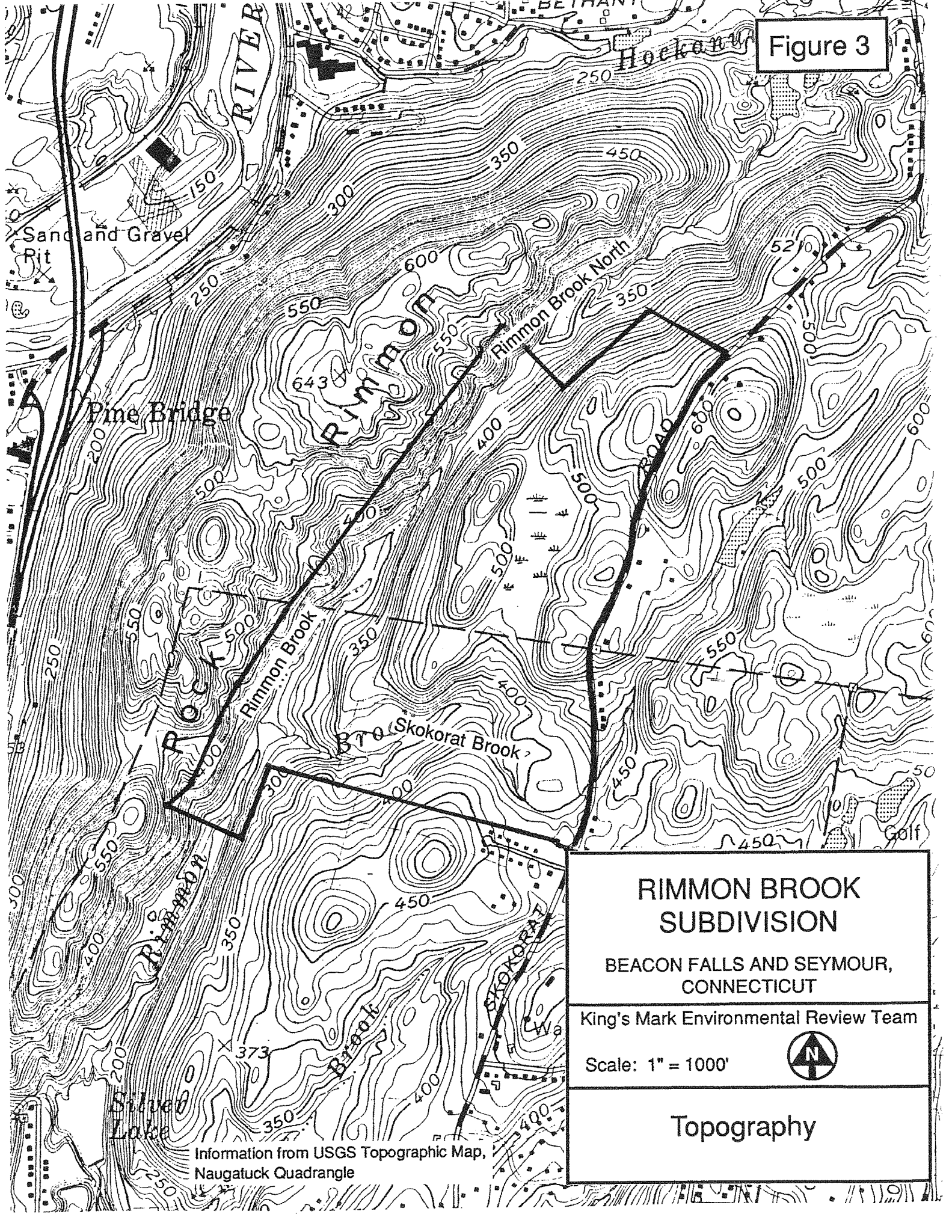
- 5) Establish restrictions for liming, fertilizing and the introduction of chemicals to manicured lawns of the proposed subdivision. This restriction will abate the amount of additional nutrients entering the waterbodies on the site.

#### THREATENED AND ENDANGERED PLANT AND ANIMAL SPECIES

According to the Natural Diversity Data Base, there are no Federally Endangered or Threatened Species or Connecticut "Species of Special Concern" on the site.

Natural Diversity Data Base information includes all information regarding critical biologic resources available at the time of the request. This information is a compilation of data collected over the years by the Natural Resources Center's Geologic and Natural History Survey and cooperating units of DEP, private conservation groups and the scientific community. This information is not necessarily the result of comprehensive or site-specific field investigations. Consultation with the Data Base should not be substituted for on-site surveys required for environmental assessments. Current research projects and new contributors continue to identify additional populations of and locations of habitats of concern, as well as enhance existing data. New information is incorporated into the Data Base as it becomes available.

Figure 3



**RIMMON BROOK  
SUBDIVISION**

BEACON FALLS AND SEYMOUR,  
CONNECTICUT

King's Mark Environmental Review Team

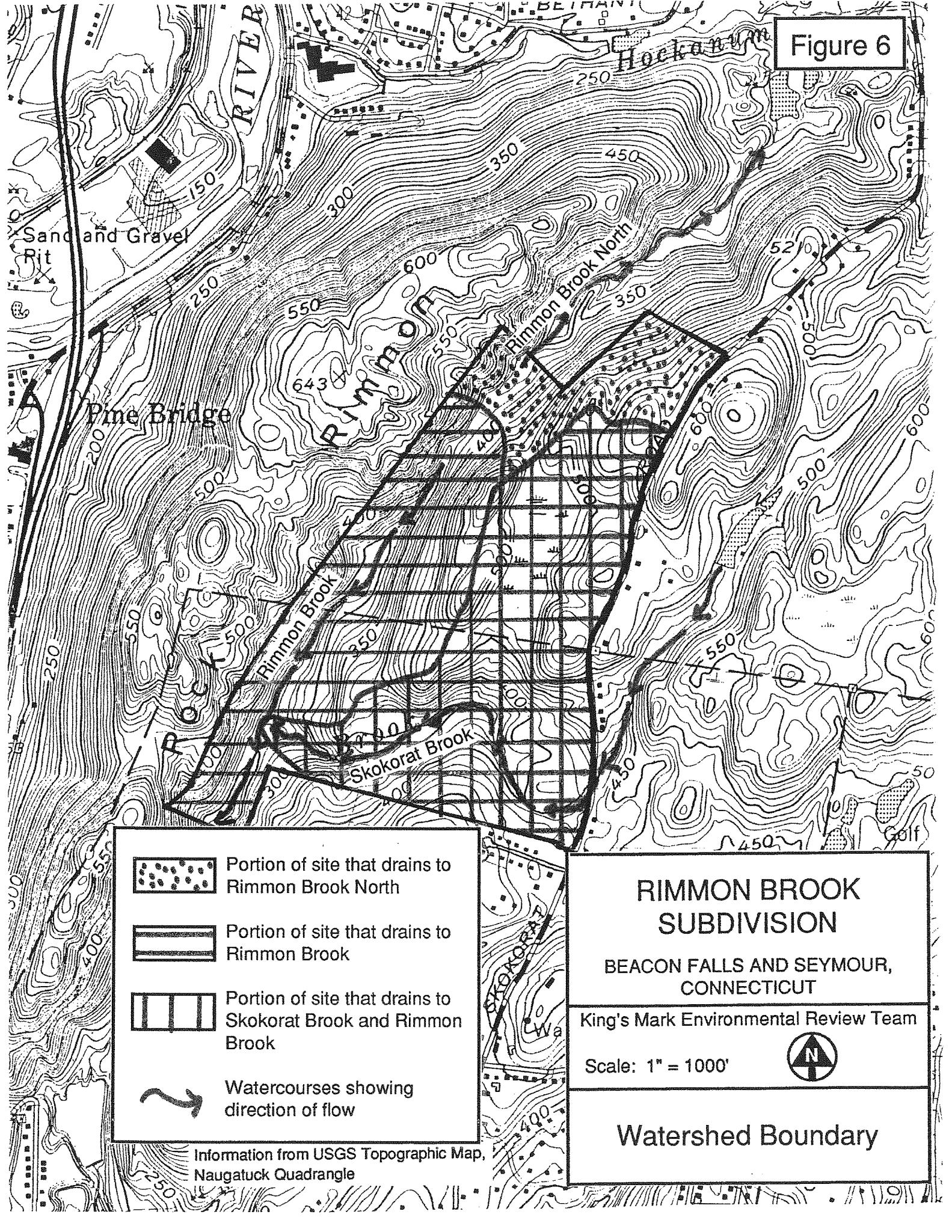
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**Topography**

Information from USGS Topographic Map,  
Naugatuck Quadrangle

Figure 6



-  Portion of site that drains to Rimmon Brook North
-  Portion of site that drains to Rimmon Brook
-  Portion of site that drains to Skokorat Brook and Rimmon Brook
-  Watercourses showing direction of flow

## RIMMON BROOK SUBDIVISION

BEACON FALLS AND SEYMOUR,  
CONNECTICUT

King's Mark Environmental Review Team

Scale: 1" = 1000'



Watershed Boundary

Information from USGS Topographic Map,  
Naugatuck Quadrangle

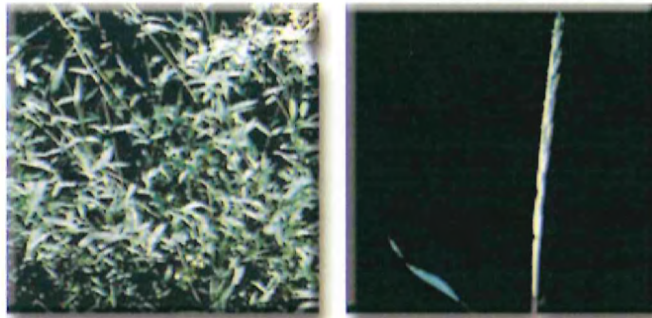


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**Department of Environmental Protection  
Environmental and Geographic Information Center  
79 Elm St., Hartford, CT 06106 (860) 424-3540**

### **Invasive Plant Information Sheet**

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### **Japanese Stilt Grass *Microstegium vimineum* Grass Family (Poaceae/Gramineae)**

**Ecological Impact:** Japanese stilt grass readily establishes in disturbed areas like floodplains and areas that are mowed or tilled. It is adapted to low light conditions and prefers moist, shaded locations where it forms dense stands that displace native understory vegetation.

**Control Methods:** The most effective control method for Japanese stilt grass is to prevent its spread into natural plant communities by avoiding disturbance to the vegetation and soils of these areas. Early control of new infestations will greatly reduce the likelihood of establishment. Small populations are fairly easy to eradicate by hand pulling or cutting. Large populations may require herbicide treatment.

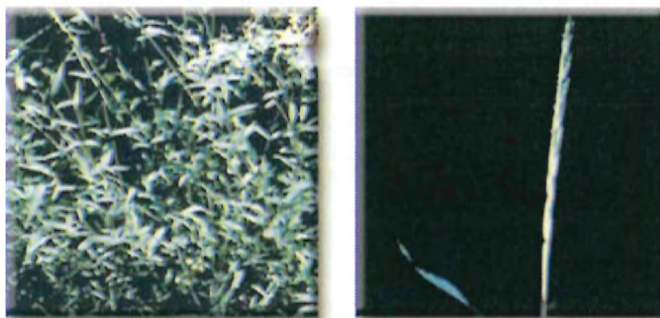
**Mechanical Control:** Small populations can be controlled and often eliminated by hand pulling or cutting. Hand removal is best done in August or early September when plants are in full bloom, but before seeds are produced. Pulling earlier in the summer disturbs the soil and allows for germination of new plants from the seed bank. For larger stands, a more effective method is to cut the plants in late summer using a mower or weed whacker. Being an annual, Japanese stilt grass cut late in the season will die back and not produce new shoots. Seeds remain viable in the soil for at least three years and germinate readily when the soil is disturbed. Annual monitoring is suggested for at least seven years to exhaust the seed bank.

**Chemical Control:** Extensive populations can be controlled by applying a systemic herbicide like glyphosate (e.g., Roundup™ or Rodeo™), an herbicidal soap, or herbicides specific to grasses. If applying glyphosate and plants are in or near wetlands, only Rodeo™ should be used. Glyphosate is a non-selective herbicide that will kill all vegetation. Thus, managers should be cautious not to spray so heavily that the herbicide drips off the leaves.

**Biological Control:** There are no known methods of biological control.

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## Invasive Plants Fact Sheet



### Japanese Stilt Grass *Microstegium vimineum* (Trin.) A. Camus Grass Family (Poaceae)

**Status:** Not yet common (reported in five counties), but invasive in Connecticut.

**Description:** Japanese stilt grass is a non-native lime-green grass, 24 to 40 inches in height. This shade-tolerant annual is a native of Asia, but has recently spread into New York and Connecticut. It is most easily recognized by its leaves, which are distinctly tapered at both ends and about two to three inches long. The flower clusters occur at the tip of long stalks. In the fall, identification becomes somewhat easier after the plant develops a slight purplish tinge. It grows in dense monotypic stands and should be considered invasive.

**Preferred habitat:** Japanese stilt grass occupies various habitats such as river banks, flood-plains, swamps, woodland thickets, and roadsides. It spreads rapidly through naturally or artificially disturbed areas, replacing herbaceous ground vegetation within three to five years. In undisturbed areas, it may spread more slowly. Since it prefers moist and shaded areas, Japanese stilt grass is particularly common in wooded areas near streams or wetlands.

**Seasonal Cycle:** Japanese stilt grass germinates in June, flowers in late August, and produces seeds from late September to early November. Under optimal conditions, one plant may produce more than 1,000 seeds, but 100 seeds per plant is more typical. Since the mode of seed dispersal has not yet been studied, and there are no obvious mechanisms of dispersal such as hooks or barbs, the rapid expansion of Japanese stilt grass is not well understood.

**Distribution:** Subsequent to its first collection in Tennessee in 1919, Japanese stilt grass has spread northward. By 1960 it had reached Ohio and Pennsylvania and eastward to all the coastal states from Florida to New Jersey. More recently it has been found along the Hudson River in New York, and has been collected from sparse populations in most Connecticut counties. (At present, Japanese stilt grass is being monitored at a Nature Conservancy site in East Haddam along the Connecticut River.) Other points of interest: Japanese stilt grass does not appear in most familiar field guides, but does in more extensive botanical references. It may be listed under *Microstegium vimineum*, or in some manuals under its synonym, *Eulalia viminea*. (*Eulalia* is also the common name for another, unrelated grass.) Japanese stilt grass is also called Chinese packing grass, because it was once used to protect porcelain during shipment. This may be the way it was introduced into the United States.

**Control:** Because Japanese stilt grass threatens native wetland species, monitoring and eradication may become necessary to prevent it from spreading into floodplains and tidal marshes. It is time-consuming to remove, but pulling by hand is effective if it is thorough and timed correctly. Pulling before mid-September reduces unintentional spread of the current year's seeds. However, pulling before early July allows germination of new plants from the seed bank, which will mature during the remaining season and produce seeds. August and early September seem to be good times to pull plants by hand in Connecticut. A weed whacker may be used on dense stands as long as the stalks are non-flowering and the plants do not have enough time to mature and produce seeds. Smaller populations are relatively easy to eradicate, but continued monitoring is necessary because it takes at least seven years to exhaust the seed bank in the soil. Following eradication, surveys to check for repopulation should be carried out every two years. Additional information sources: Manual of Vascular Plants of Northeastern United States and Adjacent Canada (second edition). H.A. Gleason and A. Cronquist. New York Botanical Garden, 1991. For more detailed information: Monitoring Plan for *Microstegium vimineum* at Chapman Pond, East Haddam, Connecticut. Beth P. Lapin. Unpublished report of The Nature Conservancy, 1994. Diagnostic information: Flowers: racemes 2-5 cm, approximate, few in the panicle; pedicel flattened, ciliate; glumes 5 mm, awnless; lemmas shorter than glumes, the fertile lemma awnless or often with a slender awn, 4-8 mm. Leaves: lanceolate blades, 5-8 cm. This fact sheet has been prepared by The Nature Conservancy Connecticut Chapter in cooperation with The Natural Diversity Data Base of the Connecticut Department of Environmental Protection. It may be reproduced without permission.

The Nature Conservancy, Connecticut Chapter  
55 High Street Middletown, CT 06457  
Department of Environmental Protection Geological and Natural History Survey Natural Diversity  
Data Base  
79 Elm Street Hartford, CT 06106

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## MAINE INVASIVE PLANTS

# Japanese Stilt Grass (Chinese Packing Grass)

***Microstegium vimineum***  
(Grass Family)

### Threats to Native Habitats

Japanese stilt grass is a highly aggressive species capable of colonizing a wide variety of habitats. It is successful in both high and low light conditions and in moist to moderately dry soils. It readily invades natural areas, replacing native species with nearly monospecific stands. It spreads opportunistically following disturbance, especially where canopy openings have resulted. In Pennsylvania, defoliation from gypsy moths allowed this species to colonize vast expanses of upland forest. Infestations of Japanese stilt grass change the habitat of the forest floor, making it less hospitable for some ground-nesting bird species.

### Description

Japanese stilt grass is a relatively weak-stemmed annual that grows from one to three feet in height. Its hairless stems have a sprawling growth habit, are usually branched, and often root at the lower nodes. Each stem has many alternately arranged, lance-shaped leaves, which are pale green and up to three inches in long. The leaves have a silvery stripe of reflective hairs down the middle of the upper surface. Spikes with numerous quarter-inch-long, flattened, trapezoid-shaped flowers emerge from the top of the plant and from the branch axils in late summer. Identification becomes easier in the fall when the plants develop a light purplish tinge. This species is similar in appearance to the uncommon native white grass (*Leersia virginica*), which is found in Maine along the margins of some streams and rivers. Consult an experienced botanist for help in identifying Japanese stilt grass.

### Habitat

Stilt grass occurs in a wide variety of settings including floodplains, forested wetlands, lowland



*Japanese Stilt Grass* (photo by Leslie J. Mehrhoff, courtesy of the New England Wild Flower Society)

forests, upland forests, successional fields, forest edges, thickets and utility corridors. Infestations spread most rapidly in disturbed areas such as flood-scoured stream banks, abandoned or seldom-used roadbeds and utility corridors that receive annual mowing. It colonizes undisturbed habitats more slowly, but expands opportunistically in areas with canopy openings or soil disturbances.

### Distribution

The native range of this species includes tropical eastern and central Asia. It is thought to have reached North America in the early 1900s when the plants were used as packing material for fragile

trade goods. It is currently established in nearly all the states east of the Mississippi River and along the gulf coast, with the notable exception of northern New England. Observations indicate that it is slowly spreading northward.

## Control

As with all invasive plants, prevention is the best method of control. Avoid transferring seeds of stilt grass to new locations on clothing or otherwise. As stilt grass is a weak-rooted annual, new or relatively small infestations can be pulled up by hand. Effective hand-pulling will require follow-up visits for several seasons to remove plants emerging from seeds stored in the soil. Larger populations can be mowed or weed-whacked, which should be done when plants are mature but seeds have not set. Mowing before seeds have set will prevent plants from sending up new shoots and making new crops of seeds. For more extensive infestations, a systemic herbicide (i.e., glyphosate), or an herbicide specific to annual grasses may be a better choice. If applying herbicides to plants in wetland areas, use a product designed for use in wetlands. Use herbicides responsibly and follow manufacturer's directions. Contact the Maine Department of Agriculture for information on restrictions that apply to the use of herbicides. Consult a licensed herbicide applicator before applying herbicides over large areas.

## References:

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Gleason, H.A. and A. Cronquist. *Manual of Vascular Plants of Northeastern United States and Adjacent Canada, Second Edition*. New York: New York Botanical Garden, 1991.

**For more information or for a more extensive list of references on invasive species contact:**

**Don Cameron**  
**Maine Natural Areas Program**  
**Department of Conservation**  
**#93 State House Station**  
**Augusta, ME 04333-0093**  
**(207-287-8044)**

or

**Lois Berg Stack**  
**University of Maine Cooperative Extension**  
**495 College Avenue, Orono, ME 04469**  
**(800-870-7270)**

*Materials developed by the Maine Natural Areas Program for use by University of Maine Cooperative Extension. This fact sheet was made possible by a gift from the Maine Outdoor Heritage Fund and New England Grows.*



### ***A Member of the University of Maine System***

Published and distributed in furtherance of Acts of Congress of May 8 and June 30, 1914, by the University of Maine Cooperative Extension, the Land Grant University of the state of Maine and the U.S. Department of Agriculture cooperating. Cooperative Extension and other agencies of the U.S.D.A. provide equal opportunities in programs and employment. 3/04

## Boot Brush Stations

Ellen Jacquart, Indiana Chapter of The Nature Conservancy

June 15, 2006

The design and idea were taken from John Exo who led a Univ. of Wisconsin – Extension project to produce stations like this a few years ago. We wanted a consistent look and message for around the state, so we got local grant money to do a similar project and produced 35 stations for use on Forest Service, Indiana DNR, local land trust, and TNC preserves (all those logos are in the left banner of the sign).

### Frame Assembly

Ruth Risler, Best-Ex, Inc  
820 Industrial Court  
P.O. Box 454  
Baraboo, WI  
608-356-4882  
[ruth@best-exfab.com](mailto:ruth@best-exfab.com)

\$196 per frame assembly (frame for sign and boot brush holder, both made to slide over 2 – 4”x 4”s) when we ordered around 35 units. This does not include shipping, which was about \$300 for the 35 to be shipped to one address. Very solid materials; they also sent some replacement brushes should the first ones start to wear out. We added the 2” x 4” frame filled with gravel around the base of the station to trap any seeds.



### Sign

Michael Brown, Crystal Graphics, Inc.  
Suite 200  
4225 Drane Field Road  
Lakeland, FL 33811  
1-863-577-2000

\$93 per sign (18”x 24”, 1/8” thick Colorgard Embedment) when we ordered 35, plus shipping costs of \$30. This was by far the cheapest quote we got for this kind of sign. Very durable, no need to cover with plastic. The sign was designed by Lise Schools of Interpretive Ideas, P.O. Box 355, Okemos, MI, 517-347-0861

**Wipe Your Feet!**  
Please brush your boots before entering this natural area.

The tiny seeds of invasive plants can hide in the soles of your shoes. Wiping your shoes on the boot brush (at the base of this sign) will prevent seeds from entering this natural area.

**Invaders From Afar**  
Non-native invasive plants have come into the United States from other countries in a number of ways. Some were introduced as garden plants or wildlife food. Unfortunately, these highly aggressive plants have spread uncontrollably. Their unrestricted growth chokes our forests, suppressing native plants and decreasing wildlife habitat.

**Immigrants From Other Lands**  
Indiana has been invaded by several non-native plant species. Each of these problem species has a different origin and history. Two examples that can be spread by your boots.

**Japanese Stilt Grass**  
(*Microstegium vimineum*) is native to Asia. Another common name is Chinese packing grass. The grass was dried and used as packing material. In this way, its seeds went all over the world. An individual plant can produce up to 1000 seeds. It can be identified by a silvery stripe down the center of each leaf. Japanese stilt grass grows in dense patches and can crowd out native plants within 7-8 years. Japanese stilt grass develops habitat for ground nesting birds. It occurs locally in southern and central Indiana and is moving north quickly.

**Garlic Mustard** (*Alliaria petiolata*) is a native of Europe. It was brought to America by settlers as a vitamin-rich herb. Garlic mustard seeds are dispersed inadvertently by people and vehicles. Once established, garlic mustard displaces forest wildflowers such as trillium, jacks-in-the-woods and blood salve. Compared to the diversity of plants it eliminates, garlic mustard provides little food for wildlife. Garlic mustard is invading forests in many parts of Indiana.

**Are You Harboring an Invasive?**  
Invasive plant populations can get their start from one seed. Please use the boot brush and help keep this natural area native. Thank you.

## **About the Team**

The King's Mark Environmental Review Team (ERT) is a group of environmental professionals drawn together from a variety of federal, state and regional agencies. Specialists on the Team include geologists, biologists, soil scientists, foresters, climatologists and landscape architects, recreational specialists, engineers and planners. The ERT operates with state funding under the aegis of the King's Mark Resource Conservation and Development (RC&D) Area - an 83 town area serving western Connecticut. ([www.kingsmark.org](http://www.kingsmark.org))

As a public service activity, the Team is available to serve towns within the King's Mark RC&D Area - *free of charge*.

### **Purpose of the Environmental Review Team**

The Environmental Review Team is available to assist towns in the review of sites proposed for major land use activities or natural resource inventories for critical areas. For example, the ERT has been involved in the review of a wide range of significant land use activities including subdivisions, sanitary landfills, commercial and industrial developments and recreation/open space projects.

Reviews are conducted in the interest of providing information and analysis that will assist towns and developers in environmentally sound decision making. This is done through identifying the natural resource base of the site and highlighting opportunities and limitations for the proposed land use.

### **Requesting an Environmental Review**

Environmental reviews may be requested by the chief elected official of a municipality or the chairman of an administrative agency such as planning and zoning, conservation or inland wetlands. Environmental Review Request Forms are available at your local Conservation District and through the King's Mark ERT Coordinator. This request form must include a summary of the proposed project, a location map of the project site, written permission from the landowner / developer allowing the Team to enter the property for the purposes of a review and a statement identifying the specific areas of concern the Team members should investigate. When this request is reviewed by the local Conservation District and approved by the King's Mark RC&D Executive Council, the Team will undertake the review. At present, the ERT can undertake approximately two reviews per month depending on scheduling and Team member availability.

For additional information regarding the Environmental Review Team, please contact the King's Mark ERT Coordinator, Connecticut Environmental Review Team, P.O. Box 70, Haddam, CT 06438. The telephone number is 860-345-3977, [connecticutert@aol.com](mailto:connecticutert@aol.com), [www.ctert.org](http://www.ctert.org).