



Open Space Understory Study



January 7, 2019

RIDGEFIELD CONSERVATION COMMISSION

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Preface

The deer hunt in Ridgefield has been in process for 13 years. The efficacy of the hunt can impact many factors including the condition of the forest understory in town. This brief report focuses on the understory with a view towards determining whether or not there is discernible difference in understory conditions between open space areas that have been hunted vis-a-vis those that have not. The Ridgefield Conservation Commission undertook this study by comparing understory conditions in 2018 with those in 2010 that were conducted as part of our Natural Resource Inventory of Ridgefield.

Members of the commission that contributed to this study, both in the conduct of the necessary field studies as well as with data review and writing of the report, include:

- Susan Baker
- Eric Beckenstein
- David Cronin
- Jack Kace
- Daniel C. Levine
- Alan Pilch

James Coyle did the overall editing and document compilation.

The commission also wishes to express its thanks to Edward Faison of Highstead who contributed his expertise both to the writing and review of the document. Mr. Faison also played a large role in the 2010 study.

1.0 Background

The Ridgefield Conservation Commission (RCC) was established in 1962 by Town Ordinance. The RCC also serves as the Flood and Erosion Control Board. Overall, our mission is to manage and protect Ridgefield's open spaces and trails. To that end, we:

- Act in an advisory capacity to the Ridgefield Planning and Zoning Commission/Inland Wetlands Board on development issues.
- Manage a Ranger Program that enables town citizens to monitor and report on the state of open space parcels, including trails.
- Enforce the 2016 Open Space Use Ordinance, a means of insuring greater compliance with activities in the town's open spaces.
- Manage and acquire (including via donations) additional land inventory.

As it relates to the deer hunt in Ridgefield, the commission considers which open spaces and trails should be closed to the public during the hunting season in order to allow the hunt to proceed. Each year, we meet with the Deer Management Implementation Committee (DMIC) to speak about the hunt, as it pertains to:

- Open spaces to be hunted.
- Public safety.
- Notifying the community of the hunt.
- Making sure that homeowners that live in close proximity to hunted open spaces are aware of hunt dates.
- Appropriate signage is posted (on which parcels hunting will be permitted, etc.).

However, Ridgefield residents have increasingly expressed their dissatisfaction with the closure of open spaces and trails in order to allow hunting. Ridgefield residents walk, hike, and explore Ridgefield's trails and open spaces throughout all seasons. For this reason, the commission takes its role in closing open spaces and trails very seriously.

1.1 History of the Deer Hunt in Ridgefield

In 2004, the Board of Selectmen (BOS) considered several issues associated with the perceived overpopulation of white-tailed deer in Ridgefield. Of central concern to town voters were deer ticks and Lyme disease, car accidents involving deer, destruction of landscaping and the costs associated, and damage to the woodland "understory" and related adverse impacts to flora and fauna.

The Ridgefield Deer Committee was appointed by the BOS to investigate deer management and to study ways to manage the deer population in Ridgefield. The committee had 16 meetings and invited expert speakers on the topic. The committee issued its report to the BOS with its findings and several major recommendations. On June 27, 2005, the 19-member deer committee voted nearly unanimously to approve recommendations including controlled hunting on town open space lands. On July 6, 2005, a report was presented to the BOS.

On May 31, 2006, the Town of Ridgefield passed the Controlled Hunt Ordinance, by a vote of 531 to 94. This ordinance was voted on at a special town meeting following an extensive study and report by the Ridgefield Deer Committee. The ordinance (Section 4-75, Controlled Hunting) states:

“On open space lands under the jurisdiction of the Conservation Commission and owned by the Town, the Board of Selectmen, after written referral to and response by the Conservation Commission and after the Board of Selectmen’s review and approval of the procedures, practices and safety measures to be followed by the Deer Management Committee, may from time to time authorize the Deer Management Committee to initiate and supervise a controlled hunt of deer on open space lands.”.

Section 4-75 clearly states “Board of Selectmen...may from time to time authorize the Deer Management Committee to initiate and supervise a controlled hunt of deer on open space lands.” The ordinance does not suggest that the hunt be in perpetuity.

In turn, the BOS created the Deer Management Implementation Committee (DMIC) to implement the controlled hunting recommendations, and Ridgefield had its first controlled hunt in the 2006-2007 season. Expanding in scope during 2007-2008 to include additional Ridgefield open space parcels and state-owned parcels, the hunt has remained in place for 13 consecutive years.

Key Findings from the 2005 Report

The findings of note included:

- Ridgefield does have a serious problem with deer overpopulation.
- Estimates of existing deer densities range from 40 to 80 per square mile in Ridgefield. Only one aerial survey had been conducted along the southeast boundary of the town, and DEEP estimated that there were 79 deer per square mile in that area.
- It was decided that 20 or fewer deer per square mile be the target density for Ridgefield. The report also states that for natural reforestation to take place, the deer population should be between 18 and 25 per square mile.
- The problem manifests itself in elevated rates of Lyme disease, unacceptably large numbers of auto accidents involving deer, and extensive damage to the plant life and, as a result, to the ecology and environment in the community.
- At this time (2006), the only effective tool to reduce the deer population is hunting.

Key Recommendations from the 2005 Report

The recommendations of note included:

- The town should establish a system of monitoring open spaces to determine the effect of reduced deer populations on vegetation. This would help determine the success of the proposed culling and/or hunting, and whether additional killing will be needed.

- The town should conduct an aerial survey to more accurately estimate deer densities in town, in order to help locate “hot spots,” and to help in assessing the effectiveness of culling efforts which will allow for a more focused and effective (hunting) program.
- Follow up with Yale University regarding the offer to identify areas of particularly high deer densities. In the event Yale University is unable to work with Ridgefield, such a survey should be pursued through other institutions. With information depicting areas with denser populations, the implementation committee could be more effective in educating residents and facilitating herd reduction in key locations.

1.2 The Deer Hunt Today

Over the last several years, there has been an increased interest on the part of the town as to the effectiveness and efficacy of the annual deer hunt to address the original set of deer-related problems that it was hoped would be remedied by implementing the hunt – auto accidents, ticks and Lyme disease, effects on open space understory, etc. Also, there is the key question of just many deer are in Ridgefield and what is a good number to maintain.

As stewards of the town’s open space, the commission feels that it is our responsibility to make certain, if we are to close open space and trails to the public for the purpose of hunting, that the original Deer Committee’s report findings/recommendations, along with the town ordinance, is being properly adhered to. Adhering to its central mission, the RCC has continued to advise the DMIC and informally monitor “understory” conditions in woodlands and open spaces.

Results of the 2017/18 Hunt

During an April 4, 2018, BOS meeting with the DMIC, Hunt Lead Stefano Zandri reported that the 2017/18 hunt resulted in lower counts than in years past, citing that 60 deer were taken, providing a breakdown of how and when deer were taken. The hunting season allows bows and guns, including muzzleloaders depending on the season.

Proposed 2018/19 Hunt

The RCC met with the DMIC at our regular meeting on Monday, May 21, 2018 to discuss the hunt for the 2018/19 season. The DMIC presented the commission with a proposed list of 15 properties (Table 2-1), the same properties as the prior year’s hunt. The only change was the addition of archery at Sarah Bishop. Of the 15 properties considered, the commission voted and agreed to the following:

- 13 properties were designated for hunting.
- Two were Parks and Recreation facilities, which we did not address as they are not under RCC’s jurisdiction.

Table 1-1
Approved Deer Hunt Open Spaces for 2018/19

1. Shadow Lake (archery, shotgun and muzzleloader) 40ac
2. Laurel Lane (archery, shotgun and muzzleloader) 50 ac
3. Linden Lane (archery) 26 ac.
4. Between Old Trolley and Shadow Lake (archery only) 20ac
5. Ridgefield Municipal Golf Course (archery with limited muzzleloader) 166ac
6. Keeler Court (archery only) 26ac
7. Ledges property {Archery & firearm) 26ac
8. Stonecrest (Archery, Shotgun) 34ac
9. Ridgebury Farms (Archery) 94ac
10. Silvermine Ridge (Archery only) 14ac
11. Sarah Bishop (Archery, Firearm) 39ac
12. Bobby's Court (Archery) 34ac
13. Colonial Heights (Archery) 19ac
14. Peaceable Refuge (Archery) 16ac
15. Turtle Ridge Court (Archery) 10 ac

2018/19 Hunting Seasons

Archery- October 15 - January 31, 2018

Firearms - November 14 - December 4

Muzzleloader - December 5 - December 31

However, the commission had several conditions related to these approvals:

1. Accurate signage is critical and the RCC needs to approve all signage on the properties for which the RCC is responsible. The RCC discussed this at the meeting, and the DMIC will send the commission several signs for our review. One of the commission's concerns is that they should look more official (e.g., including town logo and identifying the DMIC).
2. Adequate and timely notification of abutting and nearby neighbors before the hunting season opens is necessary.
3. Hunting stands and related structures need to be removed immediately after the hunt is concluded. Chief Roche, a member of DMIC at the time, indicated that he would take responsibility for notifying hunters if this did not occur promptly.
4. The DMIC will inform the RCC in the early weeks of the hunt if properties should be eliminated from the hunt because of poor hunting conditions. The RCC will work with the DMIC to develop a procedure to notify the public if any open spaces are reopened early.
5. It is important for us to demonstrate that the closures further our stewardship goals as well as the overall goals of the hunt. To this end, the RCC has undertaken an evaluation of the properties that have been hunted, for evidence of recovery in the vegetation. The DMIC can assist the commission in this evaluation by providing an accounting of deer harvested. This should be broken out by date, parcel, and time of day deer was taken, sex, weapon used and a tally of how many days each parcel was hunted, so we can evaluate correlations. The commission needs this information by the end of February 2019.

1.4 Natural Resource Inventory in 2010

In 2010 the RCC partnered with the Metropolitan Conservation Alliance, a program of the Cary Institute of Ecosystem Studies, to create a comprehensive *Natural Resource Inventory* of the Town of Ridgefield (NRI). Published in 2012, the NRI contains species-specific information derived from field surveys intended to be seen as a *living work* to be updated by observers of the flora and fauna of Ridgefield.

The NRI includes surveys of (but not limited to) wetland soils, surficial and bedrock geology, sub regional watersheds, vernal pools, breeding bird survey sites, and bog turtle habitats. The NRI, taken in tandem with the Town's Plan of Conservation and Development, provides a map for charting a more sustainable future for Ridgefield.

As part of the 2010 NRI, members of the RCC in collaboration with Highstead sectioned off areas of land in Ridgefield's open spaces and observed the understory. These specific areas were clearly marked and documented (showing locations and borders). Plants, seedlings, shrubs and trees were counted and data sheets were created.

1.5 Purpose of this Study

Of the number of outstanding issues regarding data to support the continuance, modification, or discontinuance of the deer hunt, the one that relates to the condition of the vegetative understory in the town's open spaces is one that the commission felt it was appropriate to tackle before the public can fully and fairly reconsider the overall issue of the conduct of the hunt.

Thus, the RCC decided to conduct a data-based study to ascertain whether more than a decade of hunting has impacted the white-tailed deer population in Ridgefield including the destruction of understory and related impacts on local flora and fauna.

To this end, the RCC has undertaken the task of reviewing the 2010 NRI data, focusing on seedling counts performed on specified plots of town open space land nearly a decade ago. RCC members visited the Bennett's Pond and Hemlock Hills open spaces and gathered new data (May – July 2018) to compare to the 2010 numbers.

Additionally, as stated above, the 2005 Deer Committee recommendation to the Board of Selectmen stated that “the town should establish a system of monitoring open spaces to determine the effect of reduced deer populations on vegetation. This would help determine the success of the proposed culling and/or hunting, and whether additional killing will be needed.”

The RCC takes its responsibility of maintaining and protecting Ridgefield's open spaces and trails very seriously. We understand that Ordinance Section 4-75 allows for a controlled hunt of deer on open space. However, because open space land is under the jurisdiction of the RCC, we want to make certain that if we are to close open space (and trails) to allow for hunting (essentially banning the public from enjoying open space and trails for a period of time), then there must be continued assessment of the efficacy of the hunt and also whether the focus of the hunt should be changed in light of the current reduction in the deer population toward maintenance rather than reduction of the numbers.

2.0 Site Evaluations

Trees provide shelter for animals (including birds) as well as food. Leaves, nuts, seeds, flowers, pollen, bark and roots are all food to one creature or another. A diverse forest supports a diversity of animal life.

The focus of this 2018 Understory Study was tree seedlings. Ridgefield has a good diversity of mature trees, so the number and diversity of tree seedlings is an important measure, because they hopefully will become our mature trees of the future. We wanted to determine whether these seedlings had changed in number and/or diversity compared to 2010 when a much larger investigation of plants and animals in Town Open Spaces was documented. The report of the 2010 study is available for download at the Ridgefield Conservation Commission website as the Natural Resources Inventory (NRI) of Ridgefield.

The Understory Study was undertaken to provide information for town discussions on the controlled deer hunt. For this reason we chose a site where hunting was permitted (Bennetts Pond State Park, designated BP) and a site where no hunting had been allowed for a good portion of the 8 intervening years (Hemlock Hills open space, or HH). At each of these sites we tried to include plots where there were tree seedlings counted in 2010 and we were able to see if the number of seedlings increased or decreased. The plots were all 20 x 20 meters, with one corner located by GPS coordinates.

There were seven forest plots examined in 2018 at the two town sites. Tree seedlings are defined as having a height of more than 1 foot, and a diameter of less than 1 inch. Mature trees were not counted or their diameters measured and were assumed to be the same as they were in the 2010 investigation. The mature tree count and description are included on the data sheets in this section of the report. The understory shrubs were noted in both 2018 & 2010 because they are a measure of forest health and can impact tree seedlings.

Maps of both the HH and BP sites showing the locations of the specific plots by number (HH2 for example) are presented on Figures 2-1 and 2-2. The data sheets included in this section of the report for each plot show the results for both the 2010 count and the 2018 count for easy comparison. These results are discussed below and presented in Tables 2-1 through 2-8.

2.1 Hemlock Hills Sites

Our observations for each of the Hemlock Hills sites are (Figure 2-2, Tables 2-1 to 2-5):

- **HH1** - In 2010 the tree seedling count was 10 with striped maple the predominant species. The 2018 seedling count was higher and more diverse in species. The mature trees in this plot are quite diverse and provide food and shelter for many animals. One disappointment was that the seedlings identified did not include all of the mature species. One would expect to find seedlings for many of the mature tree species in the plot and perhaps other species that were carried there by animals, wind, etc. When some tree species seedlings are not present, it could be due to animal browsing. However, shade-intolerant species like oaks, pines, and aspens often do not develop under a thick forest canopy even when mature individuals are growing in the canopy (and browsing is low).
- **HH2**- A fair variety of mature trees identified in 2010. Virtually no tree seedlings in 2010 or 2018. Low plot coverage of fern and skunk cabbage.

Figure 2-1

Hemlock Hills

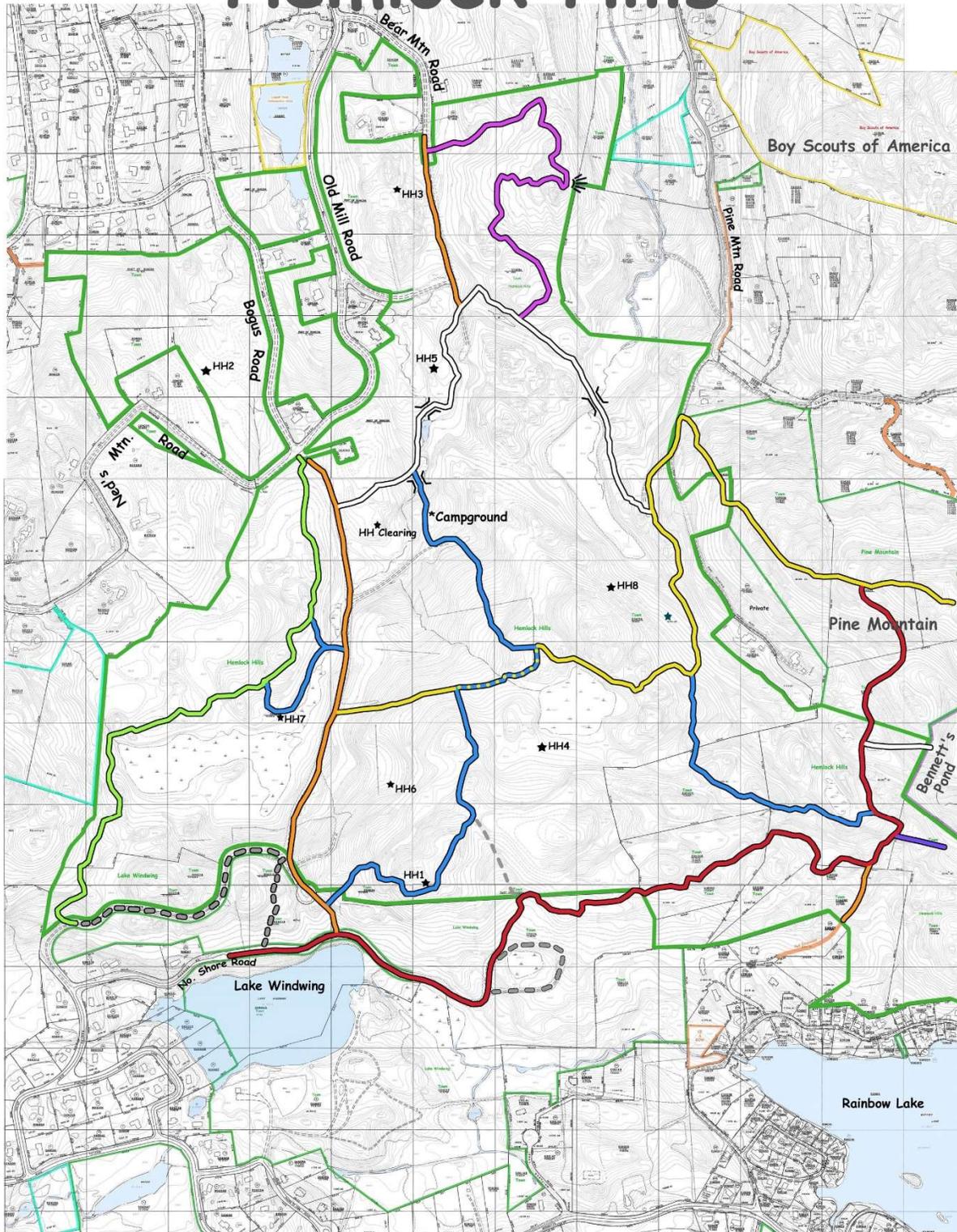


Table 2-1

HH1			
Forest Sampling 2010 (June 12, 2010)			June 30, 2018
GPS coordinates			
SW corner	624937, 4578190	UTM	
	41.3455, 73.5066	GPS	
Researchers			Researchers
Jim Tobin	Tom Venus		Jack Kace, Eric Beckenstein
Dave Cronin	Kitsey Snow		Dave Cronin
Cheryl Cook			Alan Pilch, Jim Tobin
Shrub Species			Shrub Species
Species	Cover Class		
None			None
Cover scale for shrub species			
1. <1%	4.	26-50%	
2. 1-4%	5.	51-74%	
3. 5-25%	6.	≥75%	
Tree Seedlings ≥1 foot<1 inch DBH)			Tree Seedlings ≥1 foot<1 inch DBH)
Species	Tally		
Hornbeam	2		
Striped Maple	7		There were greater than 20 seedlings. Chestnut Oaks were either very small (many small on the ground) or large -- none were in between.
Red Maple	1		Notable: While most of the plots exhibit trees up to 12", this location exhibited a relatively significant number of Striped, Sugar, and Red Maple Trees above browse height (10-20' high). Some Hickory and Black Cherry also above browse height.
Trees ≥1 inch DBH			Trees ≥1 inch DBH
Species	Tally	Diameter cm	
Striped Maple	3	2.4-8.1	Assumed the same as in 2010.
Sugar Maple	18	2.4-12.5	
Red Maple	22	4.9-18.6	
Pignut Hickory	1	24.3	
Shagbark Hickory	5	2.8-12.5	
Chestnut Oak	3	15.4-34.8	
Red Oak	4	34.8-42	
Hornbeam	5	7.7-15.4	
Black Cherry	1	15.4	
General Observations			General Observations
Ridgetop - well drained			The ridgetop was gently sloped (1-5%) while the sides of the ridgeline were medium (5-10%).
Mountain top with rock out-croppings and ledge			We encountered Black Cherry, Hickory, Trees, and many small Chestnut Oaks on the ground.
Striped maple and hornbeam were notable			
Sassafras tree nearby			

Table 2-2

HH2				
28-May-10				May 27, 2018
GPS Coordinates				
NW corner	624497, 4578190 UTM			
	41.3541, 73.5117 GPS			
Researchers			Researchers	
John Pinchbeck			Dave Cronin	
Jim Tobin			Jack Kace	
Donna Roscoe			Eric Beckenstein	
Kitsey Snow				
Shrub Species			Shrub Species	
Species	Cover Class			
None			Skunk Cabbage and Fern coverage (see notes below).	
			The only understory: significant skunk cabbage and fern growth comprising ~10% of the plot. Cover class is 3.	
Cover scale for shrub species				
1. <1%	4. 26-50%			
2. 1-4%	5. 51-74%			
3. 5-25%	6. ≥75%			
Tree Seedlings ≥1 foot<1 inch DBH)			Tree Seedlings ≥1 foot<1 inch DBH)	
Species	Tally			
			One striped maple, 18-inches high (see picture)	
			Virtually no understory or seedlings.	
Trees ≥1 inch DBH			Trees ≥1 inch DBH	
Species	Tally	Diameter cm		
Hemlock	15	3.6-30	Assumed the same as 2010.	
Beech	1	6.4		
Black Birch	3	27.9-50		
Yellow Birch	3	36.6-55.9		
Tulip Tree	1	62.5		
General Observations			General Observations	
Conifer -- well-drained, medium slope				
Well shaded with no undergrowth				
Ledge outcropping to the immediate west				
60-70 year old growth over marginal farmland				
Partially formed stonewalls in the area				
Large Tulip trees nearby				

Table 2-3

HH5			
June 13, 2010			April/May 17, 2018
GPS Coordinates			
NW Corner	624910, 4579160 UTM		
	41.3543, 73.5068 GPS		
Researchers			Researchers
Dave Cronin	Jim Tobin		Dave Cronin,
Tom Venus			Dan Levine
Alan Pilch			Jack Kace
Kitsey Snow			Eric Beckenstein
Shrub Species			Shrub Species
Species	Cover Class		
Spice Bush	#3		Variety of ferns, and significant skunk cabbage, collectively ~25%.
Witch Hazel	#2		One variety of fern not seen before, as per Dave. (Picture reveals ...)
Cover scale for shrub species			
1. <1%	4. 26-50%		
2. 1-4%	5. 51-74%		
3. 5-25%	6. ≥75%		
Tree Seedlings ≥1 foot<1 inch DBH)			Tree Seedlings ≥1 foot<1 inch DBH)
Species	Tally		
Beech	18		Beech trees (about 20). Heights: one-third each 15-18 ft, 9-11 ft, and 3-6 ft
Trees ≥1 inch DBH			Trees ≥1 inch DBH
Species	Tally	Diameter (cm)	
Beech	5	2.8-16.2	No birch trees. (The prior study reported Birch trees in error.)
Yellow Birch	10	7.3-34.8	The largest trees are Chestnut Oaks.
Red Maple	5	6.5-45.3	Otherwise, assumed the same as in 2010.
Hemlock	5	4.9-24.3	
Red Oak	3	40.4-63.1	
Black Oak	1	34.8	
Sugar Maple	2	9.7-17.8	
General Observations			General Observations
Marble bedrock, poorly drained			Quite healthy

Table 2-4

HH7				
			June 13, 2010	June 30, 2018
GPS Coordinates				
NW corner	624655, 4578502 UTM			
	41.3484, 73.5100 GPS			
Researchers			Researchers	
Alan Pilch			Jack Kace, Alan Pilch	
Tom Venus			Dave Cronin, Eric Beckenstein	
Dave Cronin			Jim Tobin	
Jim Tobin				
Shrub Species			Shrub Species	
Species	Cover Class			
Summer Sweet	2		Spicebush, Pepperbush, Witch Hazel - all three too overgrown and close to wetland to inspect closely	
Spicebush	2			
Witch Hazel (12)	3		Cinammon Ferns - 30% of plot 4	
			Significant number of Cinnamon Ferns situated in between mature trees, predominatly Hemlocks	
Cover scale for shrub species				
1. <1%	4. 26-50%			
2. 1-4%	5. 51-74%			
3. 5-25%	6. ≥75%			
Tree Seedlings ≥1 foot<1 inch DBH)			Tree Seedlings ≥1 foot<1 inch DBH)	
Species	Tally			
Ironwood	1		None	
Trees ≥1 inch DBH			Trees ≥1 inch DBH	
Species	Tally	Diameter (cm)		
Hemlock	10	8.9-42.0	Just outside the plot boundry line for HH7 Alan noted Sassafras, uncommon. (photo).	
White Oak	4	29.1-46.9		
Red Oak	2	4.0-63.1	Otherwise, assumed the same as in 2010.	
Red Maple	2	10.5-14.6		
Yellow Birch	1	27.5		
General Observations			General Observations	
Very poorly drained			Upland, low-sloped gentle (1-5%)	
			Comments: The clear progression as you walk down from trees toward wetland: Ferns and Witch Hazel, skunk cabbage, and wetlands. Several Oak Trees all 4-6" in height, strictly this years growth.	
			No understory tree growth, reflecting that the plot has remained the same since 2010.	
			"No disturbance features" in HH7	

Table 2-5

HH Clearing					
NA			August 12, 2018		
GPS Coordinates			Location		
			Near the intersection of the orange and white trails.		
Researchers			Researchers		
			Eric Beckinstein		
			Dave Cronin		
Shrub Species			Shrub Species		
Species	Cover Class		None		
Cover scale for shrub species					
1. <1%	4. 26-50%				
2. 1-4%	5. 51-74%				
3. 5-25%	6. ≥75%				
Tree Seedlings ≥1 foot<1 inch DBH)			Tree Seedlings ≥1 foot<1 inch DBH)		
Species	Tally				
			On top of the small hill, with a clearing above allowing sunlight to stream through, are numerous examples of recent growth including Beeches, Striped Maple, Red Oak and at least one Poplar tree - all seedlings above browse height 5-15 ft (see photographs).		
Trees ≥1 inch DBH			Trees ≥1 inch DBH		
Species	Tally	Diameter (cm)			
General Observations			General Observations		
			After Hurricane Sandy, several large trees fell leaving a distinct clearing in the forest. In sharp contrast with the surrounding woods (and the majority of the HH and BP sites observed this year) this area approximating 25' by 25' includes marked growth in various stages evidenced by seedlings and small trees.		
			The walk up to the space is marked by numerous small Beech, Red Oak, Striped Maple, and Chestnut Oak trees, all (3-9").		

- **HH5** - A fair variety of mature trees identified in 2010. Only birch tree seedlings (18-20) in both 2010 and 2018. Low coverage of spice bush and witch hazel in 2010, slightly higher coverage of ferns and skunk cabbage in 2018.
- **HH7** - Low variety of mature trees. Virtually no tree seedlings in 2010 or 2018. Spicebush and witch hazel in 2010 and 2018, more ferns in 2018.
- **HHClearing** - We observed a clearing where there was abundant sunlight reaching the forest floor. The plot was a square about 25 feet on each side. The clearing was caused by several large trees that fell down during Hurricane Sandy. Tree seedlings observed included beech, red oak, striped maple, and chestnut oak. No shrubs were noted.

HH General Observations

In general, there was no significant increase in tree seedlings in 2018 compared to 2010 in the Hemlock Hills plots. However, as discussed, the seedling growth in the HH Clearing was both significant and diverse. There was also a notable increase in the number and diversity of seedlings at HH1.

In general, tree regeneration is only important to a forest when a large canopy tree(s) falls, as observed at HHClearing. Under a full canopy, tree seedlings will remain limited in stature and abundance until a canopy gap appears. In this case, we observed significant growth in terms of the numbers and variety of tree seedlings. Because the tree seedling growth was able to respond as quickly as it did in this disturbed opening, it suggests that there is no regeneration issue at this location under current deer densities. (One caveat is that there was only one plot in one gap to make this conclusion).

The response of tree regeneration in the clearing is revealing and shows that the forest is actually quite a bit more resilient than it might appear from the lack of regeneration (above 1 foot) under the intact canopy.

2.2 Bennett's Pond Sites

Our observations for each of the Bennett's Pond sites are (Figure 2-1, Tables 2-6 to 2-8):

- **BP3** - There were 13 seedlings in 2010 and 70 in 2018 with much higher diversity. The appearance of oaks is also notable.
- **BP5** - An unusual mix of mature trees (many were planted, likely related to the site of an old inn). Virtually no tree seedlings in 2010 or 2018. Shrubs were some wineberries in 2010 and the entire plot was covered with invasive species in 2018. The invasives are barberry and multi-flora rose. The high invasive coverage probably precluded the growth of any tree seedlings.
- **BP6** - The tree seedling count was 11 in 2010 and 30 in 2018 with more diversity (including oaks). A variety of natural shrubs in both years. More ferns and skunk cabbage in 2018. A good diversity of mature trees.

Figure 2-2

Bennett's Pond

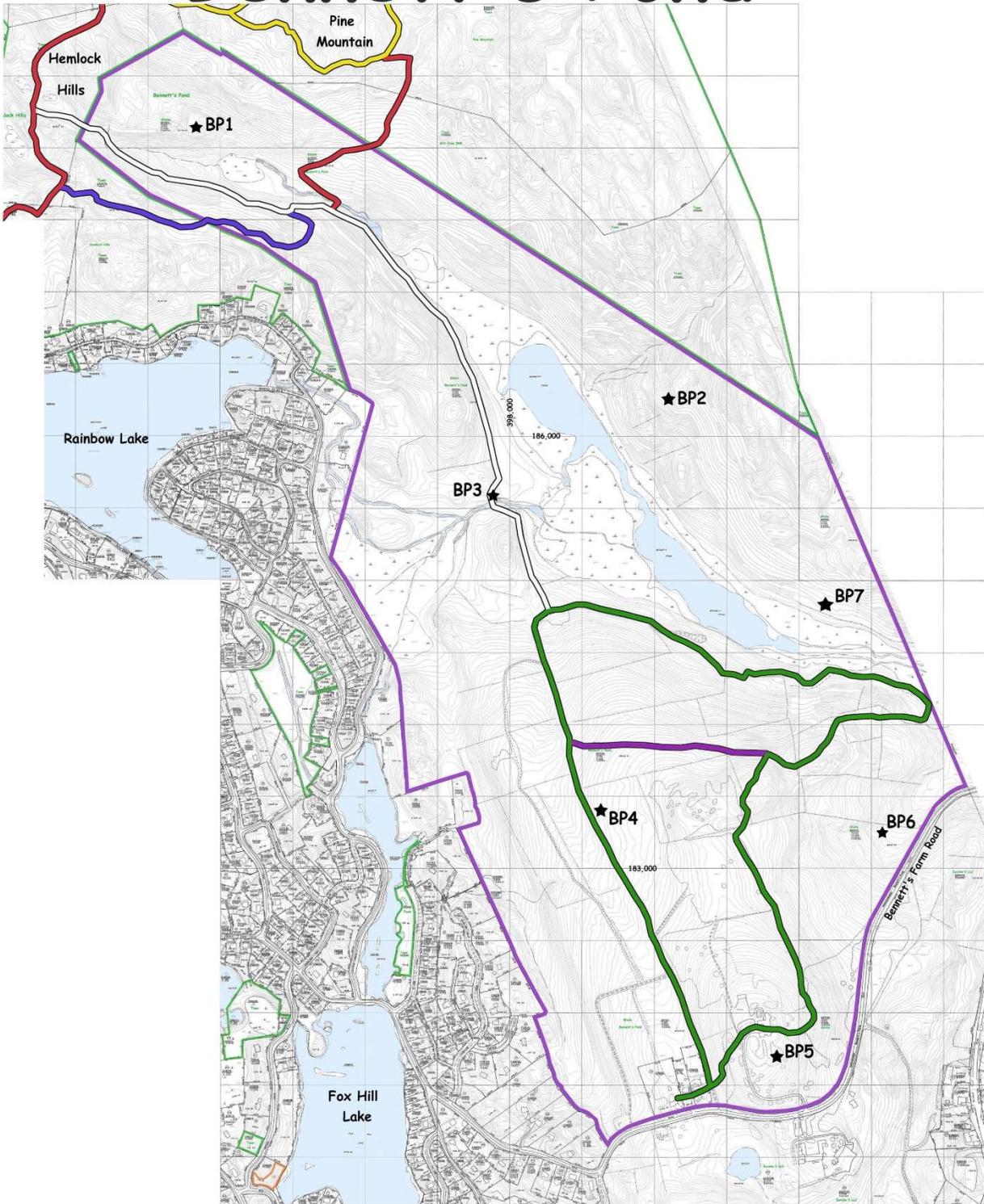


Table 2-6

BP3					
September 3, 2010			July 7, 2018		
GPS Coordinates					
SE corner	626704, 4577651 UTM				
	41.34039, 73.4856 GPS				
Researchers			Researchers		
S. Toiche	Jim Tobin		Susan Baker		
K. Snow			Daniel Levine		
C. Cook			Dave Cronin		
D. Cronin			Jack Kace, Ben Oko		
Shrub Species			Shrub Species		
Species	Cover Class				
Bluberry	1		Not tallied in the 2018 study.		
Cover scale for shrub species					
1. <1%	4. 26-50%				
2. 1-4%	5. 51-74%				
3. 5-25%	6. ≥75%				
Tree Seedlings ≥1 foot<1 inch DBH)			Tree Seedlings ≥1 foot<1 inch DBH)		
Species	Tally		Species	Tally	Height (ft)
Ironwood	2		Striped Maple	3	>1
Black Birch	10		Sugar Maple	4	1@20, 3@3
Red Maple	1		Red Maple	4	2@3, 2@1
			Red Oak	2	1-2
			White Oak	6	1-2
			Ironwood (looks like Black Birch?)	40	1-6
			Beech	5	3-5
			White Pine	6	2@4, 4@1-2
It appears that the 2010 data did not distinguish Ironwoods from Black Birch.					
Trees ≥1 inch DBH			Trees ≥1 inch DBH		
Species	Tally	Diameter (cm)	Not tallied in the 2018 study which reviewed understory species and not overstory canopy trees		
Ash	1	32.3	Assumed the same as in 2010.		
Shagbark Hickory	1	12.1			
White Oak	2	42.4-51.7			
Tulip Tree	1	62.7			
Ironwood	7	3.2-9.3			
Black Birch	8	7.7-55.8			
Black Oak	2	38.8-45.7			
Beech	2	9.7-15.0			
Sugar Maple	2	2.8-6.5			
General Observations			General Observations		
Adjacent to pond and along a stream			Significant understory relative to other plots.		
Stonewalls and old farmland, dry			Lots of Ferns		
Hiking trails traverse the site					
Does not appear to be "Very poorly drained"					

Ironwood leaf is similar to Black (or Sweet) Birch (Betula lenta), but since they are in different genera, their fruits and flowers are different and their bark is quite dissimilar (Sweet Birch is reddish brown with horizontal lighter color lines, Ironwood is gray, fluted and "muscular")

Table 2-7

BP5				
August 18, 2010			July 7, 2018	
GPS Coordinates				
NE corner	627336, 45764981 UTM			
	41.3298, 73.4783 GPS			
Researchers			Researchers	
Cheryl Cook	Jim Tobin		Susan Baker, Dan Levine	
Donna Roscoe			Dave Cronin, Jack Kace	
Allan Brown			Ben Oko	
Dave Cronin	Nelson Gelfman			
Shrub Species			Shrub Species	
Species	Cover Class			
Wineberries	3		Barberry and Multi-Flora Rose, two invasive varieties, with Cover Class 6	
Cover scale for shrub species				
1. <1%	4. 26-50%			
2. 1-4%	5. 51-74%			
3. 5-25%	6. ≥75%			
Tree Seedlings ≥1 foot<1 inch DBH)			Tree Seedlings ≥1 foot<1 inch DBH)	
Species	Tally			
Sugar Maple	1		None	
Trees ≥1 inch DBH			Trees ≥1 inch DBH	
Species	Tally	Diameter (cm)		
Basswood	3	16.7-44.9		
Magnolia	4	9.7-12.9	Not tallied in the 2018 study which reviewed	
Hemlock * (species unknown)	8	18.8-42.0	understory species and not overstory canopy trees	
Red Pine	1	56.6		
White Pine	1	37.6		
Norway Maple	1	20.2		
General Observations			General Observations	
Upper slope/hilltop			Dense coverage and wetland made much of this plot inaccessible for closer inspection. In combination with the absence of any seedlings, we did not study this plot.	
Hilltop at old inn site. --Trees are largely planted.				
Open meadows adjacent to site				

BP General Observations

There was a notable increase in both the number and the diversity of tree seedlings between 2010 and 2018 at two of the three plots at Bennetts Pond (except for one plot where a high level of invasive growth apparently stunted tree seedling growth). This result implies that there has been a large reduction in deer population and correspondingly, deer browsing of seedlings. Because this site is a State Park that is open to public hunting, the amount of hunting is likely to be quite high and the deer population correspondingly lower.

3.0 Conclusions

Based on the results of this limited study, the condition of tree seedlings in Ridgefield open space appears good. There appears to be more ferns, skunk cabbage, and bare spots on the forest floor and fewer bushes, but this observation was not quantified. Thus, there seems to be no strong rationale to either continue or stop the hunt based on this study alone.

However, the understory will need to be regularly monitored going forward because deer density will likely change and a myriad of other factors also impact forest health (e.g., tree diseases, insects, climate change, etc.). Studies of the impact of deer have shown other forest impacts like higher levels of invasive plants like barberry and stilt grass, but lower levels of multi-flora rose, bittersweet, honeysuckle and burning bush.

Deer browsing contributes to a more diverse herb layer (e.g., grasses, ferns, wildflowers, and other ground cover). Shrub and mid-canopy bird diversity is often reduced by heavy deer browsing, but these birds are generally replaced by canopy feeders, bark feeders, and species that like open ground, which maintains total bird diversity.

Foliage insect diversity may also decline with browsing, but ground-dwelling predators such as wolf spiders and ants, and in some cases salamanders and snakes, may increase with a more open forest floor from deer browsing. Ironically, deer like to browse oak seedlings (among others) but they are dependent on acorns for a part of their food supply.

Just because more tree seedlings were observed in a forest that has been hunted doesn't necessarily mean that the forest should then continue to be hunted or that the unhunted forest should be opened for hunting. That decision is outside of the realm of science, and rather a question of values that the people of Ridgefield should decide upon.

A number of people have complained about not being able to hike in the woods during the fall and winter because of the deer hunt. The value of being able to enjoy town open space in these seasons is just as important in our minds as the value of knowing that more tree seedlings are growing in the woods. Ultimately we cannot fully control the future to bend to our wishes. But we should continue to monitor the forest conditions and take reasonable actions when necessary to protect our open spaces.

3.1 Deer Population in Ridgefield

Probably the biggest outstanding question related to the deer hunt is just how many deer there are in Ridgefield. The 2005 Deer Committee report estimated 40-80 deer per square mile and recommended a goal of 20 deer per square mile. At a 2017 RCC/DMIC meeting, Howard Kilpatrick (CT Department of Energy and Environment, or DEEP) estimated that Ridgefield is probably very close to that number. At a subsequent meeting between the RCC and DMIC, Mr. Zandri stated that the number is likely lower than 20 per square mile at this point, stating that the hunters have done an excellent job.

Furthermore, we note that the 2005 Deer Committee recommendation to the BOS stated that “the town should conduct an aerial survey to more accurately estimate deer densities in town, in order to help locate ‘hot spots,’ and to help in assessing the effectiveness of culling efforts.”

3.2 Next Steps

With the hunt in its 13th year, and in the context of (1) fewer deer taken in the 2017/18 hunt (and some public reports of “fewer deer”) and (2) with growing concern about restricting public access to public open space, the BOS decided to hold a public hearing on the future of the hunt in the Spring 2019 timeframe.

There are several possible outcomes to this hearing:

- Keep the hunt essentially as it is today.
- Permanently stop the hunt.
- Continue the hunt but reduce its intensity (e.g., reducing the number of open space properties and /or the length of the hunting season).

Information related to answering the following questions is needed to determine the best way forward:

- What is the current estimated deer population per square mile? In other words, have we achieved the 2005 Deer Committee report goal of 20 deer per square mile?
- Are there any deer hot spot locations in town?
- How many deer are killed on a specific open space?
- What method of hunting is taking place and resulted in the kill?
- Can the length of the hunt at each open space be shortened and result in say 80% of the prior year’s result?
- Can we rotate which open spaces are to be closed and still reduce population?
- Are the majority of deer killed at the start of the hunt?

The analysis of these results should result in fewer closures of open spaces for shorter periods of time, allowing residents more time to enjoy use of our natural wonders. The results could be formulated into a short-term (say, 5-year) deer management plan for the town.