

# **FOREST STEWARDSHIP PLAN**

**PREPARED FOR**

Trustees of Smith College

## **The Smith College Ada & Archibald MacLeish Field Station**

249.16 Acres

Whately and Conway, Massachusetts

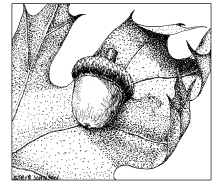


Prepared February, 2020 by Colin Mettey and Lincoln Fish, Bay State Forestry Service



# FOREST MANAGEMENT PLAN

Submitted to: Massachusetts Department of Conservation and Recreation  
For enrollment in CH61/61A/61B and/or Forest Stewardship Program



<b>CHECK-OFFS</b>					<b>Administrative Box</b>		
CH61 cert. <input type="checkbox"/>	CH61A cert. <input type="checkbox"/>	CH61B cert. <input type="checkbox"/>	STWSHP new <input checked="" type="checkbox"/>	C-S EEA <input checked="" type="checkbox"/>	Case No. _____	Orig. Case No. _____	
recert. <input type="checkbox"/>	recert. <input type="checkbox"/>	recert. <input type="checkbox"/>	renew <input type="checkbox"/>	Other <input type="checkbox"/>	Owner ID _____	Add. Case No. _____	
amend <input type="checkbox"/>	amend <input type="checkbox"/>	amend <input type="checkbox"/>	FSC <input type="checkbox"/>	Birds <input checked="" type="checkbox"/>	Date Rec'd _____	Ecoregion _____	
Plan Change: _____ to _____			Conservation Rest. <input checked="" type="checkbox"/>		Plan Period _____	Topo Name _____	<b>Whately</b>
			CR Holder <u>Kestrel Trust</u>		Rare Spp. Hab. _____	River Basin _____	<b>CT</b>

## OWNER, PROPERTY, and PREPARER INFORMATION

Property Owner(s): Trustees of Smith College c/o Paul Wetzel, CEEDS, Wright Hall  
 Mailing Address: 5 Chapin Dr., Smith College; Northampton, MA 01063 Phone: (413) 585-2646  
 Email Address: Pwetzel@smith.edu

Property Location: Town(s): Whately & Conway Road(s): Poplar Hill Road

Plan Preparer: Colin Mettey and Lincoln Fish Mass. Forester License #: 69  
 Mailing Address: 115 Nash Hill Road, Haydenville, MA 01039 Phone: (413) 575 - 9790

## RECORDS

Assessor's Map No.	Lot/Parcel No.	Deed Book	Deed Page	Total Acres	Ch61/61A 61B Excluded Acres	Ch61/61A 61B Certified Acres	Stewshp Excluded Acres	Stewshp Acres
418	11	1449	154	29.64	0.00	0.00	0.00	26.64
418	12	1449	154	9.85	0.00	0.00	0.00	9.85
29	02	1449	154	11.99	0.00	0.00	0.00	11.99
29	01	06803	63	16.99	0.00	0.00	0.00	16.99
29	05	1449	154	106.5	0.00	0.00	3.50	103.00
29	04	06803	63	74.19	0.00	0.00	0.00	74.19
<b>TOTALS</b>				<b>249.16</b>	<b>0.00</b>	<b>0.00</b>	<b>3.50</b>	<b>245.66</b>

## Excluded Area Description(s) (if additional space needed, continue on separate paper)

The areas to be excluded surround the Bechtel Environmental Classroom and the Observatory, Tower and Parking Lot. From the end of Poplar Hill at the gate head N88E for 320', then head N3W for 460', then N89W for 320', then S5E for 460'. From Bechtel Classroom head N88E for 400', then N7W for 480', then S87W for 400', then S3E for 480'.

**HISTORY** Year acquired 1976 Year management began 2020

Are boundaries marked: Yes  blazed/painted/flagged/signs posted (circle all that apply)? No  Partially

What treatments have been prescribed, but not carried out (last 10 years if plan is a recert.)?

stand no. \_\_\_\_\_ treatment \_\_\_\_\_ reason \_\_\_\_\_

(if additional space needed, continue on separate page)

## Previous Management Practices (last 10 years)

Stand #	Cutting Plan #	Treatment	Yield	Acres	Date
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

Remarks: (if additional space needed, continue on separate page)

### Landowner Goals

Please **check** the column that best reflects the importance of the following goals:

Goal	Importance to Me			
	High	Medium	Low	Don't Know
Enhance the Quality/Quantity of Timber Products*			✓	
Generate Immediate Income			✓	
Generate Long Term Income			✓	
Produce Firewood			✓	
Defer or Defray Taxes			✓	
Promote Biological Diversity	✓			
Enhance Habitat for Birds	✓			
Enhance Habitat for Small Animals	✓			
Enhance Habitat for Large Animals	✓			
Improve Access for Walking/Skiing/Recreation		✓		
Maintain or Enhance Privacy			✓	
Improve Hunting or Fishing			✓	
Preserve or Improve Scenic Beauty	✓			
Protect Water Quality	✓			
Protect Unique/Special/ Cultural Areas	✓			
Attain Green Certification				
Other: Enhance educational experiences	✓			

\*This goal must be checked "HIGH" if you are interested in classifying your land under Chapter 61/61A.

In your own words, describe your goals for the property:

The mission of the MacLeish Field Station is the integration of science & the arts in the outdoors. We try to manage the land in the most sustainable manner possible.

#### Stewardship Purpose

By enrolling in the Forest Stewardship Program and following a Stewardship Plan, I understand that I will be joining with many other landowners across the state in a program that promotes ecologically responsible resource management through the following actions and values:

1. Managing sustainably for long-term forest health, productivity, diversity, and quality.
2. Conserving or enhancing water quality, wetlands, soil productivity, carbon sequestration, biodiversity, cultural, historical and aesthetic resources.
3. Following a strategy guided by well-founded silvicultural principles to improve timber quality and quantity when wood products are a goal.
4. Setting high standards for foresters, loggers and other operators as practices are implemented; and minimizing negative impacts.
5. Learning how woodlands benefit and affect surrounding communities, and cooperation with neighboring owners to accomplish mutual goals when practical.

Signature(s):

*Paul R. Wetzel for  
Smith College Board of Trustees*

Date: 20 Dec 2019

Owner(s) (print)

*Paul R. Wetzel for  
Smith College Board of Trustees*

(This page will be included with the completed plan.)



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## Property Overview, Regional Significance, and Management Summary

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The Ada and Archibald MacLeish Field Station owned by the Trustees of Smith College occupies a total of approximately 250-acres of diverse terrain, ranging from early successional grassland habitats to dense mature forests in the upper northwestern portion of Whately, MA and lower southeastern portion of Conway, MA. The MacLeish Field Station has been owned and managed by Smith College for well over half a century. The MacLeish Field Station lies approximately 10-miles to the northwest of Smith College campus and less than 4-miles from Conway center. This property offers a place for students and faculty to conduct environmental research, outdoor education, art demonstration, or to simply enjoy a hike in the woods. Not only is this property extremely valuable to humans who benefit from its beauty, it offers vital habitat and connectedness for wildlife. The MacLeish Field Station plays a part in the creation of a contiguous block of forest identified by the Nature Conservancy as a “resilient” landscape: an area that has the potential to support a wide diversity of plants and wildlife as they adapt to climate change in the future. Adjacent lands protected by the Northampton Watershed Department, Massachusetts Department of Fish and Game, Conway State Forest, and Franklin Land Trust create a large block of protected forest totaling over 5,000 acres. In 2013, Smith College donated a conservation restriction on 190-acres of their 250-acres to Kestrel Land Trust, ensuring that those uses will continue, while protecting wildlife habitat for the future.

The Field Station sits between Conway Road and Jimmy Nolan Brook. Within these perimeters lies a diverse landscape of rolling hills sculpted by glaciers thousands of years before. Large rocky ledges of schist and rock walls are scattered through the property alluding to the landscapes glacial and agricultural history. Currently second-growth forests cover most of the property ranging in species composition, size and structure. The southern-most portion of the property contains open grassland habitats that are intermittently used as grazing pasture and areas of early successional habitat. Within the center of the property lies the Bechtel Environmental classroom, which was designed for Smith by Coldham and Hartman Architects to meet the Living Building Challenge, the highest standard for ecological design in the world. The two fields on the east and west of the classroom contain American chestnut orchards, permanent weather stations, and natural art demonstrations. Mature hardwood, softwood and mixed wood forests can be found to the north, east and west. Within these stands lies a complex network of trail systems constructed by Smith college students, volunteers and faculty. In addition, several research experiments, archery ranges and ropes courses are scattered throughout the property.

The soil series within this property are primarily made up of one type with small areas containing separate series. Chatfield-Hollis complex covers much of this property with varying slopes and rocky outcrops dependent on topography. This series is a glacial till soil, formed by glacial scouring of bedrock, it consists of gently sloping soils on upland. The very deep, well drained Chatfield soils are found in the in low pockets, while the shallow, excessively drained Hollis soil is on the tops of hills and ridges or near rock outcrops. In many areas stones and boulders can be found on

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Owner(s) Trustees of Smith College

Town(s) Whately & Conway

the surface of the ground. Typically, this series is about 47% Chatfield, 18% Hollis, 10% Rock outcrop, and 25% other soils. Management concerns are shallow depth to bedrock and low available water capacity. Most areas of Chatfield-Hollis are located within woodlands. Major tree species include white and northern red oaks, sugar maple, beech, eastern hemlock, eastern white pine, and shagbark hickory. The second series found within this property sits under the grassland habitat. The Chatfield-Charlton complex is very similar to Chatfield-Hollis soils except for the lack of rocky outcroppings. This series also contains very deep, well drained soils on nearly level to very steep terrain. The third series found on this property is located on the northwestern edge adjacent to Conway road. Hinckley sandy loam is a very deep, excessively drained glacial outwash soil, formed from water-borne sediments deposited by glacier-generated streams and ponds. They are nearly level through very steep soils on outwash terraces, deltas, kames, kame terraces, and eskers.

Forest productivity and health within the property are moderately good. The soils provide enough nutrients to grow a diverse and resilient canopy. However, several forest health issues are present, but the degree of threat between them differs significantly. While walking through the woods it is evident that humans have sculpted this landscape. Several areas contain rock walls, old foundations, well holes and what appears to be old pasturelands. Additionally, the species composition, structure and age differ throughout. The eastern portion of the property contains a Birch, Beech, Maple forest, commonly known as a true northern hardwood type. However, over the past century, Beech Bark Disease (BBD) and heavy deer browsing have pushed the stand to contain higher composition of low-quality trees and infected beech stems. In addition to BBD, maple borer damage and necrotic canker on black birch are present within this stand and throughout much of the property.

The most concerning forest health issue is the heavy population of invasive species. Within the forested stands 3,4,5, populations of Asiatic bittersweet, Japanese barberry, and multiflora rose are present, sometimes in high densities. Heavy infestations of exotic plants can block the natural process of plant succession and prevent forests from regenerating. These populations can be managed using a mix of cut stump and targeted spraying techniques. The epicenter of the invasive plant infestation stems from the stands 7 and 8. These stands contain a mixture of young early successional seedlings and saplings, now engulfed by the non-native invasive plants listed above plus shrub honeysuckle. Although some species of native forest birds successfully use these shrubby, woody plant species as nesting sites and eat their fruits, the fruits generally have low nutritional value and the invasive plants reduce the diversity of other nesting and foraging options in forest bird habitats in our region. Especially problematic for nesting birds is the lack of native insect herbivores on exotic plants, hence the lack of caterpillars to feed hungry nestlings.

An important part of this forest plan is an assessment of bird habitat on the property. Overall, Massachusetts is extremely important breeding territory for birds, both resident and migratory. Massachusetts lies within two vital breeding ecoregions known as the Northern Forest Region the Eastern Deciduous Forest Region, and is therefore utilized by a wide variety of bird species. For some of these species, as much as 90% of their population is breeding here. However, many of these birds are showing a decline in numbers \* (See Massachusetts Audubon's State of the Birds report [https://www.massaudubon.org/content/download/21633/304821/file/mass-audubon\\_state-of-the-birds-2017-report.pdf](https://www.massaudubon.org/content/download/21633/304821/file/mass-audubon_state-of-the-birds-2017-report.pdf) ).

Obviously not all birds can utilize the same type of habitat. Knowing how to recognize and modify forest habitat structure can sometimes meet critical needs for species in decline. The

Massachusetts Audubon/ Mass DCR Foresters for the Birds (FFTB) program provides valuable information to assist foresters in evaluating habitat and ways in which to manipulate habitat through silviculture. To encourage a broad range of habitat types across the landscape, the MA FFTB Program has chosen Focal Birds that have a variety of habitat requirements (e.g. old vs young forest, coniferous vs hardwood, closed canopy vs open canopy). The particular birds in this group (Focal Birds) were chosen because they: 1.) are a conservation priority statewide; 2.) are relatively simple to identify by sight or sound; 3.) collectively use a wide range of forest types and habitat conditions; and 4.) are likely to respond positively to some common silviculture practices. Providing suitable habitat for any of the Focal Birds is likely to also provide habitat for several more bird species that utilize similar habitat.

Birds have tremendous value on their own, but providing habitat for a wide variety of birds does much more. Diverse habitat will also provide for other species, including mammals, amphibians, invertebrates, and pollinators and plants. It is important to realize that we can use the Focal Birds as a proxy for other bird species, other wildlife species, and larger forest values that are desirable for ecosystem health such as forest diversity, complexity and especially resilience, that ability to adapt to environmental change while still retaining the capacity to function as an ecosystem. In fact, many of the principles and techniques of managing habitat for bird diversity: favoring a variety of tree species and age classes, controlling invasive species, limiting deer browse, are the same techniques recommended for creating a resilient forest, one that is more likely to continue functioning in the face of climate and other potential changes on the horizon. For landowner reference, the brochures “Birds with Silviculture in Mind” and “Managing Forests for Trees and Birds” published by Massachusetts Audubon and DCR for the FFTB Program as well as the brochure entitled “Increasing Forest Resiliency for an Uncertain Future” by Catanzaro, D’Amato and Huff are included at the end of this report.

The Ada and Archibald MacLeish Field Station sits within both the Northern Forest and Eastern Deciduous Regions of breeding bird habitat. Due past land use, this property contains a wide range of habitats, which allow its use by a wide variety of different bird and wildlife species. Because the basic elements of diverse bird habitat are already present, it will take a relatively minor amount of work to improve and maintain the habitat value and biodiversity of this impressive property. Please refer to the Management Practices section of this report for specific management recommendations. Tables within the Stand Description section of this document provide references to the 17 “Focal Birds” and their relationship to the silvicultural recommendations for each stand.

Habitat strengths observed on this property include many large cavity trees, especially in areas where over mature sugar maple lines old roads or homesteads. These trees provide valuable habitat for the 40 plus wildlife species that use cavity trees in the northeast. For example, both the Northern Flicker and Yellow-bellied Sapsucker from the Focal Birds list utilize tree cavities. In general, large cavity/standing dead trees are more valuable than small. In addition, fallen logs and tree branches of various sizes on the forest floor provide cover and harbor insects that are food for many birds, reptiles, amphibians and small mammals. These creatures in turn provide food for larger carnivores and birds of prey. This material also provides nutrients for healthy soil and future growth in the forest. Fallen logs are valuable for male ruffed grouse who rely on “drumming” logs for mating display sites during early spring.

This property and most of the surrounding landscape provide dense forest conditions for forest interior dwelling bird species like Black-and-White Warbler, Black-throated Green Warbler, Scarlet Tanager, Blackburnian Warbler and Wood Thrush. Mammals such as black bear, fox, bobcat, fisher, and many other wildlife species depend upon large expanses of forest for their welfare. Within these stands there are also two vernal pools. These areas often contain a greater variety of vegetation at various height levels, providing cover and diverse nesting and feeding opportunities for wildlife. The isolated nature of these wetland sites allows amphibians to carry out breeding and feeding in an area of reduced predation.

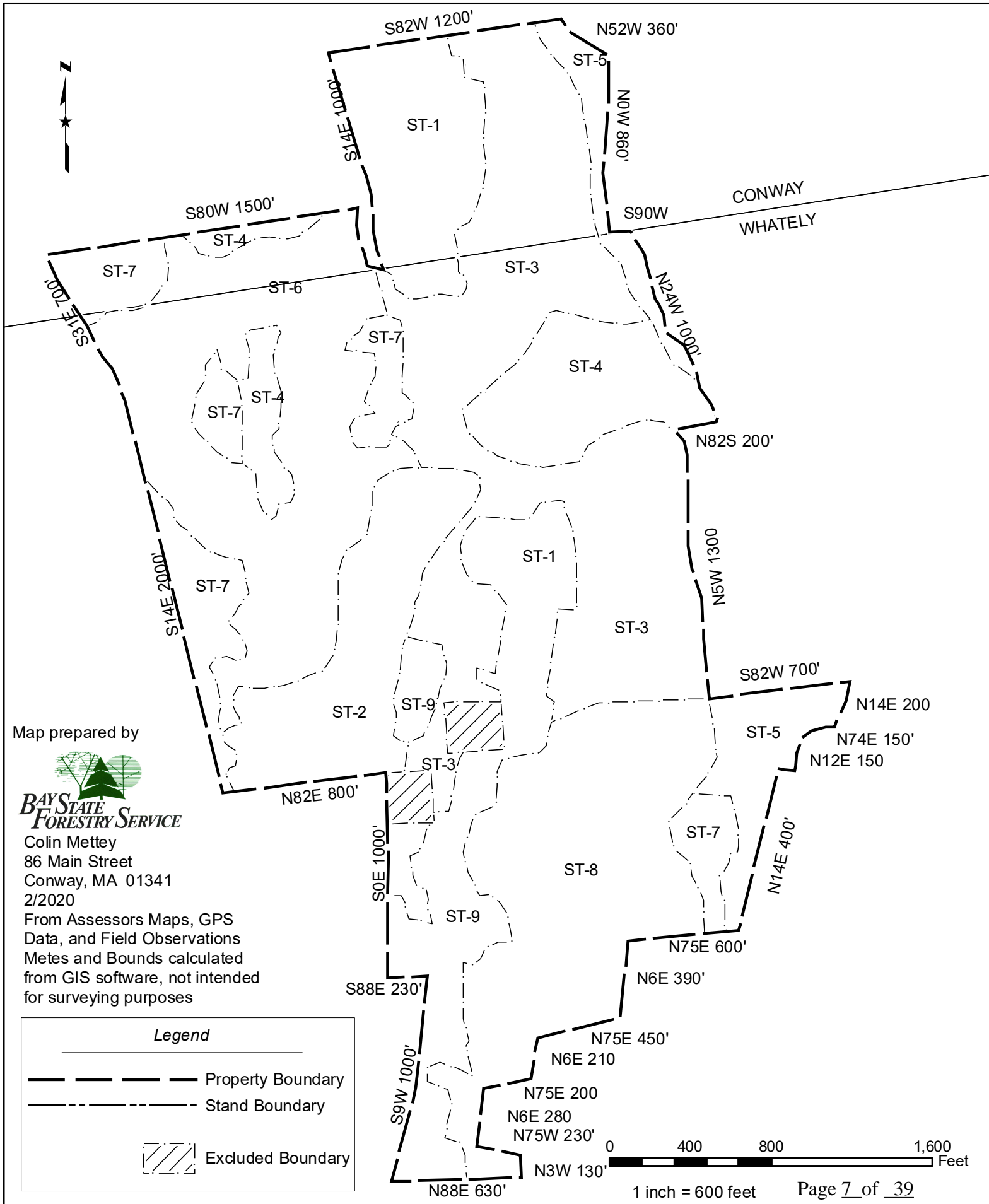
Habitat features that are generally lacking, both on this property and the surrounding landscape, include areas of dense understory (0-5' in height) under a forest canopy and large areas of young forest (thick brushy habitat). In old growth forests, canopy gaps occur regularly due to tree mortality. However, our relatively young, second-growth forests are at least 100 years away from this condition. Some forest birds that have been declining due to lack of complexity (lack of understory growth and woody debris on the ground) include Wood Thrush and Canada Warbler. These conditions can be somewhat alleviated by the practice of restoring old growth characteristics in our existing forest, thereby providing adequate nesting habitat for these two species. Other birds that have been declining utilize brushy young forest habitat, including Brown Thrasher, Eastern Towhee, and Woodcock. As our abandoned pastures have grown into mature forest, our brushy habitat has shrunk to below 3% of our landscape. Research shows that a range of 5-15% of the landscape in young forest and roughly the same percentage in old, over-mature forest would be near the ideal in providing for the full range of forest bird and wildlife species. See DeGraaf and Rudis, New England Wildlife: Habitat, Natural History and Distribution; USDA Forest Service 1986.

The surrounding 2,500 + landscape is predominantly wooded (~ 88±%) and unfragmented by development (85±%), especially to the north of this property. This forested landscape is nearly all (83±%) mature, closed canopy forest with some younger forests and scattered remaining open fields on gradual terrain southeast of the property. These grassy and brushy habitats are in decline within this region along with the species that depend on them. Wildlife habitat values can be enhanced by: 1.) the creation of small brushy openings, which will also be used for regeneration of desirable tree species that are not readily regenerating at present (including American chestnut) 2.) control of non-native plant species within the abandoned field and surrounding stands; 3.) new opportunities for research and teaching; 4.) creation/maintenance of an area of early successional habitat in the abandoned field, which can be routinely mowed and treated for invasive plant control using integrated management; 5.) protection of large diameter legacy trees ( $\geq 30''$  DBH); 6.) maintenance of areas of undisturbed refugia for wildlife and aesthetics.

Management objectives include enhancement of the forest environment for wildlife habitat and plant diversity; promotion and restoration of native forest vegetation; improvement of overall forest health and resilience; creation of research and teaching opportunities; and the removal of all invasive species. These values will be considered before engaging in any specific treatment.

# Stewardship Boundary and Forest Stand Map

Property of Trustees Of Smith College  
Located off of Poplar Hill Road, Whately, Massachusetts





# Stewardship Boundary and Cultural Map

Property of Trustees Of Smith College  
Located off of Poplar Hill Road, Whately, Massachusetts

Map prepared by



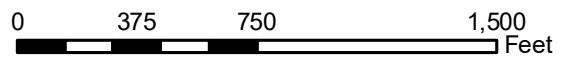
**BAY STATE FORESTRY SERVICE**

Colin Mettey  
86 Main Street  
Conway, MA 01341  
1/2020

CONWAY  
WHATELY



Legend	
	Property Boundary
	Wetland
	Perennial Stream
	Intermittent Stream
	Stonewall
	Trail
	Woods Road
	Invasive Plants
	Building

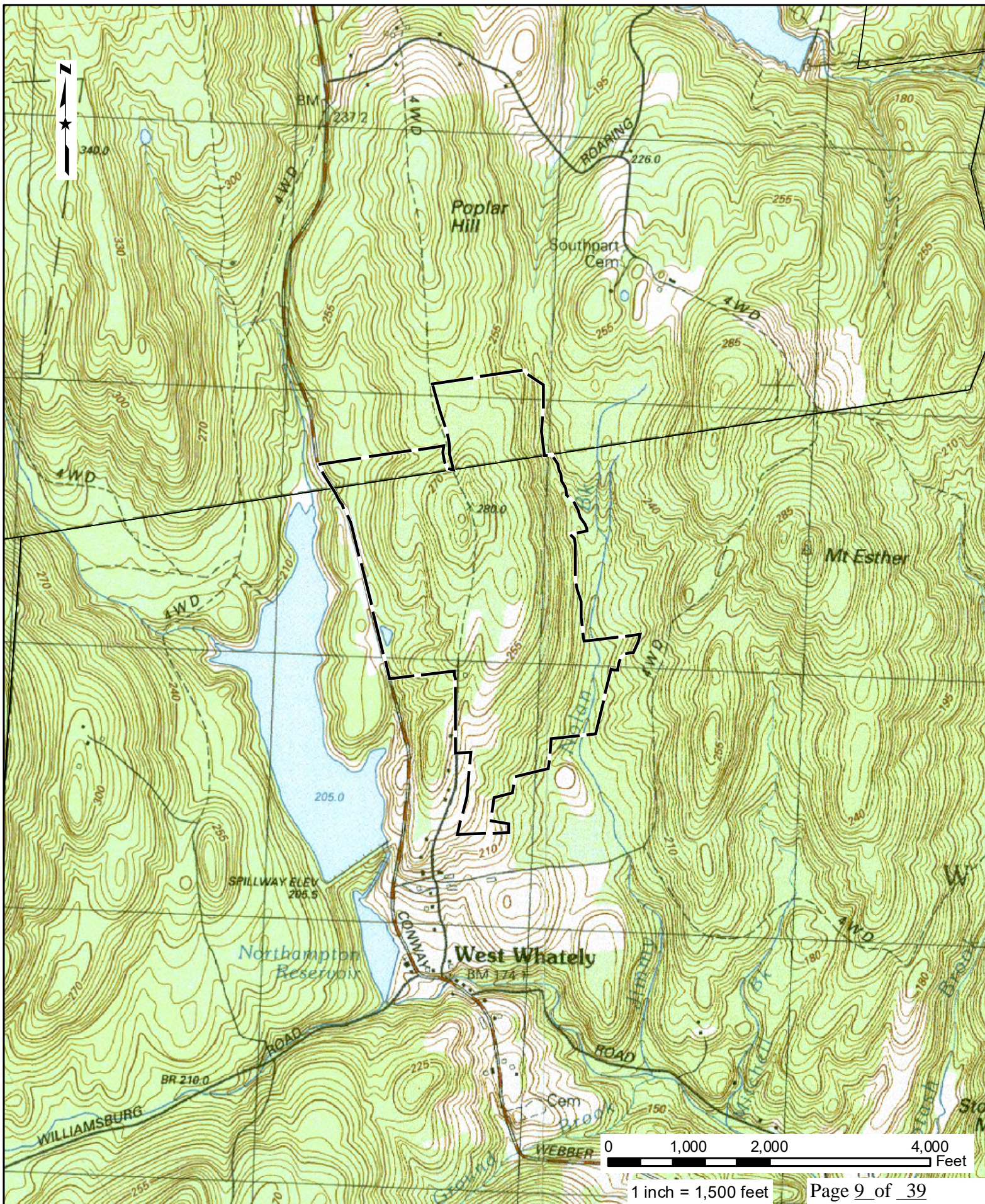


1 inch = 600 feet



# Locus Map

Property of Trustees Of Smith College  
Located off of Poplar Hill Road, Whately, Massachusetts



0 1,000 2,000 4,000 Feet

1 inch = 1,500 feet Page 9 of 39



# Forest Stands

For the purposes of this report a forest stand is an easily defined area that is relatively uniform in composition, and structure, *and supports a particular suite of birds.*

## Summary of the Forest Stands on your property

Stand	Forest/Habitat Type	Approx. Size (acres)	Notes
1	WH	21.58	White Pine dominates this stand with associated hardwoods such as sugar maple, red oak, red maple, black birch, yellow birch and hemlock. In addition, there are areas of scattered aspen, black cherry and beech. Dense canopy with medium density in mid-story and medium diversity in understory.
2	OH	24.10	Mixed forested type with hardwoods and large pines in overstory and dense hemlock layer occupying mid-story. Associated hardwoods such as red maple, Am. beech and black birch occur to a lesser degree. Understory contains low density and diversity.
3	BB1	51.00	Past management is very evident due to size, structure and composition of trees. Dominant overstory species are black birch with scattered red oak. Associated trees such as red maple, white pine, black cherry and Am. beech occur to a lesser degree. The mid-story and understory contain high stocking levels of Am. beech sprouts.

<p style="text-align: center;"><b>4</b></p>	<p style="text-align: center;">BB2</p>	<p style="text-align: center;">16.87</p>	<p>This stand contains very productive, rich soils that are well suited to tree growth, especially for sugar maple. Sugar maple dominate the overstory with associated white ash, bitternut hickory, yellow birch, red oak, hemlock and black birch. The mid-story and understory contain high stocking levels and diversity.</p>
<p style="text-align: center;"><b>5</b></p>	<p style="text-align: center;">HH1</p>	<p style="text-align: center;">17.40</p>	<p>Dense stand of hemlock with beech, birch, red maple, sugar maple, black cherry, ash and scattered white pine along Jimmy Nolan Brook. The mid-story contains medium stocking levels of hemlock and shade tolerant hardwoods. Understory contains low density and diversity due to heavy shade.</p>
<p style="text-align: center;"><b>6</b></p>	<p style="text-align: center;">HH2</p>	<p style="text-align: center;">38.01</p>	<p>Hemlock dominates the stand with large white pine and red oak. Associated hardwoods such as with black birch, red maple, white ash and Am. beech occur at lesser degree. The Mid-story contains low to mediums stocking levels except in canopy gaps. Understory levels are also low due to heavy shade.</p>

7	WP	16.06	White pine dominates this stand, with no other associated trees in the overstory. The quality of these trees is fair to good. The mid-story and understory contain medium stocking of Am. beech, red maple, red oak, and striped maple. A vernal pool is present with good diversity of shrubs.
8	AF	36.35	This stand contains a mixture of young early successional seedlings and saplings (grey birch, staghorn sumac, aspen, white pine) and high densities of shrub and vine non-native plant species (bush honeysuckle, multiflora rose, Japanese barberry, Asiatic bittersweet).
9	GR	27.79	Sedges, grasses, asters and goldenrods dominate this grassy open habitat. Land manager maintains by mowing and grazing livestock. In addition, this area is used for educational, and recreational purposes. Invasive plant populations are densely established on edges and vegetation islands.

**STAND DESCRIPTIONS**

OBJ	STDNO	TYPE	AC	MSD OR SIZE-CLASS	BA/AC	VOL/AC	SITE INDEX
STEW	1	WH	21.58	16.7	140	12.5 MBF 7.4 CDS	WP- 67

Stand 1 is a White Pine/Hardwood forest type located throughout the property. The terrain is typically flat to gentle with very little sloping. This stand sits atop a Chatfield-Hollis complex. The moderately deep, well drained and productive Chatfield soils are generally found on more flat areas of the stand between rock outcrops. The shallow and rather droughty Hollis soils are found more on upper slopes.

This stand contains somewhat varying conditions throughout the property. Generally, species such as white pine, red oak, red maple, sugar maple, black birch and scattered eastern hemlock make up the overstory. The sizes of the trees within this stand is relatively uniform, however the quality of trees in this stand is variable. This stand contains good quality large white pine saw timber, and medium to large sugar maple, red oak, and black birch timber. However, within the same stand contains low-quality at-risk individuals.

The understory of this stand contains medium stocking levels of tree regeneration. Common tree species include beech, sugar maple, black birch, and red maple. In addition, several patchy areas of native shrubs and herbaceous plants such as low bush blueberry, striped maple and Canada mayflower are present. A large vernal pool is also present in this stand. The pool sits in the northern portion of this property on the eastern side of the old town road. Several native

shrubs are present such as winterberry, red osier dogwood and witch hazel.



The overall health of this stand is fair, however there are signs of deer herbivory and heavy areas of American beech stump sprouts, especially in the northeastern portion. Areas which have received management within the last 30 years contain sections of dense beech sucker sprouts that have become very thick and are interfering with desirable regeneration. Deer can also have an impact on

regeneration success of desirable species. For example, due to the high lignin content in beech leaves, deer prefer red oak, sugar maple and yellow birch. This will inevitably steer the future forest to contain higher amounts of beech. No signs of invasive plants were observed within this

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OBJECTIVE CODE: CH61 = stands classified under CH61/61A/61B    STEW= stands not classified under CH61/61A/61B  
 STD= stand    AC= acre    MSD= mean stand diameter    MBF= thousand board feet    BA= basal area    VOL= volume

Owner(s) Trustees of Smith College

Towns(s) Whately & Conway

**STAND DESCRIPTIONS**

OBJ	STDNO	TYPE	AC	MSD OR SIZE-CLASS	BA/AC	VOL/AC	SITE INDEX
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stand at this time.

This stand provides valuable habitat to a diverse array of wildlife species. The areas with closed canopies provide important cover for wildlife and protection from the elements during winter months. In addition, a variety of wildlife species utilize white pine. Squirrels, chipmunks, hares, cottontails, and mice feed on the seeds and soft needles, and deer browse the twigs. Rabbits and other mammals will occasionally eat the bark of younger trees, and porcupines favor the inner bark during the winter. The seeds are eaten by a variety of birds including blue jays, crossbills and pine siskins. The large vernal pool and wetland complex within this stand is also extremely valuable. These low-lying depressions provide conditions that are vital for portions of the life cycles of many species. The isolated nature of these wetland sites allow amphibians to carry out breeding and feeding in an area of reduced predation. This is one of the ways in which these pools contribute to biodiversity. The desired future condition of this stand is to manage passively to protect local soil and water quality, and to maintain good wildlife habitat conditions, overall forest health and interesting destinations along the hiking trail system.

**Stand 1 – Current Habitat Conditions:**

- Tree Canopy*     Height: >60 ft.  
                          Closure/gaps: 30-80%
- Midstory*        Density: Medium  
                          Species present: white pine, sugar maple, yellow birch, white ash, Am. beech, black birch
- Understory*     Density: Low  
                          Species present: white pine, Am. beech, mountain laurel
- Coarse and Fine Woody Material*  
                          Coarse woody material density: Medium  
                          Drumming logs: Present  
                          Fine woody material density: Medium
- Leaf Litter*     Lacking/Abundant: Adequate
- Soft Mast*        Density: Low  
                          Species present: Black cherry
- Hard Mast*       Density: Medium  
                          Species present: Am. beech, red oak, white pine
- Streams and Wetlands*  
                          Present/Absent: Present

**Desired Stand Conditions (Focal Birds noted with \*)**

Condition	Action	Responsibility birds that may benefit
Interior forest condition	No action or small gap creation	Black-and-White Warbler*, Wood Thrush*, Black-Throated Blue Warbler*, Scarlet tanager, Eastern Wood Pewee*
Maintain softwood component	None	White-throated Sparrow*, Black-throated Green Warbler *, Blackburnian warbler and blue-headed vireo
Maintain native species	Remove exotic-invasive species	All birds that utilize native insect and berries for food

OBJECTIVE CODE: CH61 = stands classified under CH61/61A/61B     STEW= stands not classified under CH61/61A/61B  
 STD= stand   AC= acre   MSD= mean stand diameter   MBF= thousand board feet   BA= basal area   VOL= volume

Owner(s) Trustees of Smith College

Towns(s) Whately & Conway

**STAND DESCRIPTIONS**

OBJ	STDNO	TYPE	AC	MSD OR SIZE-CLASS	BA/AC	VOL/AC	SITE INDEX
<b>STEW</b>	<b>2</b>	<b>OH</b>	<b>24.10</b>	<b>16.5</b>	<b>116</b>	<b>9 MBF 5.2 CDS</b>	<b>RO-66</b>

Stand 2 is an Oak/Hardwood forest located on the western portion of this property. This stand sits atop a Chatfield-Hollis complex with varied slopes. The moderately deep, well drained and productive Chatfield soils are generally found on more flat areas of the stand between rock outcrops. The shallow and rather droughty Hollis soils are found more on upper slopes. The site conditions in this stand are good for growth of oak and pine, and fair for eastern hemlock and black birch.

This stand is a mixed forest type with hardwoods and large pine in the overstory and hemlock in the mid-story. Associated hardwoods such as red maple, American beech, and black birch are present in lesser degrees. The understory contains medium to low stocking levels of tree regeneration due to the heavy shade cast by the mid-story hemlock. Species observed in the understory include eastern hemlock, Am. beech, black birch, red maple, and occasional red oak and white pine. In addition, there are areas of mountain laurel appearing in patchy distribution.



Overall the health of this stand is fair, however in areas that received past management or disturbance display signs of moderate to heavy infestation of beech stump sprouts. In addition, within these openings dense black birch has grown spindly and poor formed. The hemlock within this stand has the potential to decline in the future due to insect pests. The hemlock woolly adelgid, an exotic forest pest, has been expanding throughout the region in recent years. It is

not known whether the hemlock in this stand will succumb to his insect, but the area should be monitored for its presence. Additionally, during the inventory hemlock samples displayed a small infestation of elongated hemlock scale. This insect pest is believed to have been unintentionally introduced from Japan during the early 1900s. It attacks the lower surface of needles where it removes fluids through piercing sucking mouthparts. First instar nymphs, also called crawlers, begin to emerge in the spring and can be spread by wind or birds to establish

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Owner(s) Trustees of Smith College

Towns(s) Whately & Conway



**STAND DESCRIPTIONS**

OBJ	STDNO	TYPE	AC	MSD OR SIZE-CLASS	BA/AC	VOL/AC	SITE INDEX
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new infestations. The life stages of this insect broadly overlap and can be seen together as brown, yellow or white spots from .1 to 2mm long on the underside of needles. Outbreaks of this insect usually intensify after trees become weakened by other factors that have caused stress. Needles will turn yellow and drop prematurely and limbs will begin to die off from the bottom of the tree and progress upward. Trees can die within ten years or linger in a weakened state with only a sparse amount of live crown toward the very top.

This stand provides valuable habitat to a diverse array of wildlife species. The areas with closed canopies provide important cover for wildlife and protection from the elements during winter months. The tree species mix in this stand provides a variety of food sources for wildlife with the seed that is produced. Nuts such as those from red oak trees are highly valuable for a variety of mammals and insects. Additionally, hemlock seed is a preferred source of food for chickadees, goldfinches, juncos and ruffed grouse. The twigs are browsed by porcupine, deer, moose, red squirrel, snowshoe hare and cottontail rabbit. The areas that have been opened from past management and disturbance provide valuable light for regenerating tree seedlings and saplings which in part provide valuable protection, nesting and foraging sites for a suite of forest birds, such as the chestnut sided warblers. In addition, this flush of young tender growth provides valuable carbohydrates for large browsing mammals like moose and deer. The desired future condition of this stand is to manage passively to protect local soil and water quality, and to maintain good wildlife habitat conditions, overall forest health and interesting destinations along the hiking trail system.

**Stand 2 – Current Habitat Conditions:**

- Tree Canopy*      Height: > 60 ft.  
                                Closure/gaps: 30 – 80%
- Midstory*          Density: High  
                                Species present: white pine, hemlock, black birch, Am. beech, red maple, mountain laurel
- Understory*        Density: Medium  
                                Species present: mountain laurel, Am. beech
- Coarse and Fine Woody Material*  
                                Coarse woody material density: Low  
                                Drumming logs: Sparse  
                                Fine woody material density: Low
- Leaf Litter*        Lacking/Abundant: Abundant
- Soft Mast*          Density: Absent  
                                Species present: N/A
- Hard Mast*         Density: High  
                                Species present: Red oak, white pine, Am. beech
- Streams and Wetlands*  
                                Present/Absent: Absent

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**STAND DESCRIPTIONS**

OBJ	STDNO	TYPE	AC	MSD OR SIZE-CLASS	BA/AC	VOL/AC	SITE INDEX
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**Desired Stand Conditions (Focal Birds noted with \*)**

Condition	Action	Responsibility birds that may benefit
Interior forest condition	None	Black-and-White Warbler*, Wood Thrush*, Scarlet tanager, blackburnian and black-throated blue warbler*
Maintain softwood component	None	White-throated Sparrow*, Black-throated Green Warbler *, Blackburnian warbler and blue-headed vireo
Maintain large, limby trees and cavity trees	None	Northern Flicker*, Yellow-bellied Sapsucker*, Owls, woodland hawks, nuthatches

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**STAND DESCRIPTIONS**

OBJ	STDNO	TYPE	AC	MSD OR SIZE-CLASS	BA/AC	VOL/AC	SITE INDEX
STEW	3	BB1	51.00	14.7	144	8.4 MBF 11 CDS	RO – 66

Stand 3 is a northern hardwoods forest type located in the eastern region of the property. This stand sites atop a Chatfield-Hollis complex with varied slopes. The moderately deep, well drained and productive Chatfield soils are generally found on more flat areas of the stand between rock outcrops. The shallow and rather droughty Hollis soils are found more on upper slopes.

This area contains somewhat varying overstory conditions. Past management is very evident in this stand due to the size, structure and composition of the trees. Generally, the dominant species within the overstory is black birch with scattered areas of red oak. Associated hardwoods such as red maple, white pine, black cherry and American beech can be found in lesser numbers. The size and quality of these trees varies drastically throughout, from seedlings and poles, to poor firewood, small sawtimber, and even large mature and over mature individuals. The mid-story and understory of this stand contains high stocking levels of American beech and Am. beech stump sprouts. This high density of trees has resulted in a dense thicket which interferes with desirable regeneration and limits biodiversity and wildlife habitat.

Overall the health of this stand is poor and lacking plant diversity. There are a few reasons why this stand is unhealthy. The first is the result of the disease complex known as Beech Bark Disease (BBD). This disease slowly kills overstory trees and causes root sprouts to emerge. This life history trait has led to an increase in densities of advance beech regeneration within the sub-canopy. Additionally, American beech is incredibly shade tolerant and restricts other less shade tolerant species from establishing. The second is the result of intense herbivory. From high deer populations. Where deer densities exceed carrying capacities, regeneration of desirable hardwood trees (sugar maple and red oak) are restricted. Throughout this stand there are also high numbers of invasive plant populations. Areas that have recently experienced disturbance such as canopy openings without invasive management contains high densities of Asiatic bittersweet. In



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**STAND DESCRIPTIONS**

OBJ	STDNO	TYPE	AC	MSD OR SIZE-CLASS	BA/AC	VOL/AC	SITE INDEX
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addition, many areas of the understory contain populations of scattered Japanese barberry and multiflora rose. These populations are beginning to have adverse effects on the forest and habitat.

While this stand lacks plant diversity in all levels of the forest, it contains a good number of cavity trees and standing dead wood. Due to the level of declining mature and over mature trees within this stand there is a decent number of cavities and standing dead trees. These trees not only provide excellent habitat for wildlife; they also act as carbon sinks and add to the overall structural complexity of the forest. The presence of this woody material is an important part of a healthy forest ecosystem. More than 30 species of birds and 20 mammals utilize cull trees such as these for feeding, nesting, or denning. Fallen logs and tree branches of various sizes on the forest floor provide cover and harbor insects that are food for many birds, reptiles, amphibians and small mammals. These creatures in turn provide food for larger carnivores and birds of prey. This material also plays an important role in the life cycle of many amphibious creatures and provides nutrients for healthy soil and future growth in the forest. The desired future conditions of this stand are to 1.) control invasive plant populations and maintain native species; 2.) create a mosaic of age classes to provide structure, habitat and forest resiliency; 3.) create areas to facilitate growth of planted mixed oak and Am. Chestnut seedlings; 4.) maintain overall forest structure and aesthetics for recreational purposes.

**Stand 3 – Current Habitat Conditions:**

- Tree Canopy*    Height: <60 ft.  
                          Closure/gaps: 30–80%
- Midstory*        Density: High  
                          Species present: Am. beech, black birch, hemlock
- Understory*     Density: Low  
                          Species present: Am. beech
- Coarse and Fine Woody Material*  
                          Coarse woody material density: Medium  
                          Drumming logs: Low  
                          Fine woody material density: Low
- Leaf Litter*      Lacking/Abundant: Abundant
- Soft Mast*        Density: Low  
                          Species present: Black cherry
- Hard Mast*       Density: Medium  
                          Species present: Red oak, Am. beech
- Streams and Wetlands*  
                          Present/Absent: Absent

**Desired Stand Conditions (Focal Birds noted with \*)**

Condition	Action	Responsibility birds that may benefit
Create canopy gaps, increase density of understory and mid-story	Harvest tree groups of 0.25 to 0.50 acre in size	Pewee*, chestnut-sided* & black-throated blue warblers*, white-throated sparrow*, blue-headed vireo, veery, wood thrush, ruffed

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**STAND DESCRIPTIONS**

OBJ	STDNO	TYPE	AC	MSD OR SIZE-CLASS	BA/AC	VOL/AC	SITE INDEX
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							grouse*
Create areas within gaps for mixed oak and American Chestnuts plantings				Within newly cleared gaps clear any existing interfering vegetation			Pewee*, chestnut-sided* & black-throated blue warblers*, white-throated sparrow*, blue-headed vireo, veery, wood thrush, ruffed grouse*
Maintain/increase tree species diversity				Selective practices to regenerate all currently present native tree species			All birds and general forest health
Interior forest condition				No action or light thinning			Black-and-White Warbler*, Wood Thrush*, Scarlet tanager, blackburnian and black-throated green warbler*
Maintain softwood component				None			White-throated Sparrow*, Black-throated Green Warbler *, Blackburnian warbler and blue-headed vireo
Maintain large, limby trees and cavity trees				None			Northern Flicker*, Yellow-bellied Sapsucker*, Owls, woodland hawks, nuthatches
Maintain native species				Remove exotic-invasive species			All birds that utilize native insects for food
Maintain/increase tree species diversity				Selective practices to regenerate all currently present native tree species			All birds and general forest health

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**STAND DESCRIPTIONS**

OBJ	STDNO	TYPE	AC	MSD OR SIZE-CLASS	BA/AC	VOL/AC	SITE INDEX
STEW	4	BB2	16.87	16.3	101	8.5 MBF 5CDS	SM-65

Stand 4 is a northern hardwoods forest type located in the eastern region of the property. This stand sites atop a Chatfield-Hollis complex with varied slopes. The moderately deep, well drained and productive Chatfield soils are generally found on more flat areas of the stand between rock outcrops. The shallow and rather droughty Hollis soils are found more on upper slopes. Unlike the other stands this stand contains very productive, rich soils that are well suited to tree growth, especially for sugar maple. The soils here hold significant moisture and are damp during moist times of the year.



This stand contains somewhat varying overstory condition, structure and composition. Generally, this stand is dominated by sugar maple with associated hardwood trees such as white ash, bitternut hickory, yellow birch, red oak, hemlock and black birch. The size of these trees varies drastically, from seedlings and poles, to small sawtimber, and even large mature and over mature individuals. The understory of this stand contains medium to high stocking

levels of desirable species, including sugar maple, white ash, red maple, hemlock and black birch. Understory herbaceous species include Christmas fern, cinnamon fern and scattered mountain laurel. Due to heavy snow cover other rich indicator herbaceous species are undetectable.

Overall the health of this stand is fair to good, with excellent tree diversity and healthy numbers of regeneration and spacing of desirable species. Although the overall stand is healthy, there are some issues that should be considered. Within this stand there is some patches of heavy invasive plant populations. Japanese barberry and Asiatic bittersweet can be found throughout the property where any disturbance in the overstory has occurred. Due to the rich soils within this stand these non-native plants thrive. These plants are very thick in some areas and are beginning to cause harm to the native shrubs and trees by outcompeting and in some instances engulfing.

This stand provides valuable habitat to a diverse array of wildlife species. The areas with closed canopies provide important cover for wildlife and protection from the elements during

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**STAND DESCRIPTIONS**

OBJ	STDNO	TYPE	AC	MSD OR SIZE-CLASS	BA/AC	VOL/AC	SITE INDEX
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winter months. Additionally, the increased plant diversity within this stand provides a greater variety of vegetation at various height levels supplying cover and diverse nesting and feeding opportunities for wildlife. The desired future condition of this stand is to 1.) control invasive plant populations and maintain native species; 2.) passively protect local soil and water quality, and to maintain good wildlife habitat conditions, overall forest health and interesting destinations along the hiking trail system.

**Stand 4 – Current Habitat Conditions:**

*Tree Canopy* Height: >60 ft.  
 Closure/gaps: >80%

*Midstory* Density: Medium  
Species present: sugar maple, White ash, Am. beech, hemlock, red maple, black birch

*Understory* Density: Low  
Species present: Am. beech, sugar maple, Japanese barberry\*

*Coarse and Fine Woody Material*  
 Coarse woody material density: Low  
 Drumming logs: Sparse  
 Fine woody material density: Medium

*Leaf Litter* Lacking/Abundant: Abundant

*Soft Mast* Density: Low  
Species present: black cherry

*Hard Mast* Density: Medium  
Species present: red oak, Am. beech

*Streams and Wetlands*  
 Present/Absent: Present

**Desired Stand Conditions (Focal Birds noted with \*)**

Condition	Action	Responsibility birds that may benefit
Interior forest condition	No action or small gaps	Black-and-White Warbler*, Wood Thrush*, Scarlet tanager, Black-throated Blue Warbler*
Maintain softwood component	None	White-throated Sparrow*, Black-throated Green Warbler *, Blackburnian warbler and blue-headed vireo
Maintain large, limby trees and cavity trees	None	Northern Flicker*, Yellow-bellied Sapsucker*, Owls, woodland hawks, nuthatches
Maintain native species	Remove exotic-invasive species	All birds that utilize native insects for food

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OBJ	STDNO	TYPE	AC	MSD OR SIZE-CLASS	BA/AC	VOL/AC	SITE INDEX
STEW	5	HH1	17.40	13.5	148	9.5 MBF 10.5 CDS	HK - 60

Stand 5 is a hemlock forest type located in the northeastern portion of the property along Jimmy Nolan Brook and a small portion in the northwestern portion of the property. The terrain is diverse, especially in the northern areas along the brook. In these areas the slope is very steep and contains areas of rock outcrops and exposed ledges. This stand sites atop a Chatfield-Hollis complex with varied slopes. The moderately deep, well drained and productive Chatfield soils are generally found on more flat areas of the stand between rock outcrops. The shallow and rather droughty Hollis soils are found more on upper slopes. Rock outcrops, stones and boulders are common with these soils.

This stand is dominated by hemlock, with scattered associated hardwood species such as white pine, yellow birch, red maple, sugar maple, hickory and American beech. Generally, the timber is of good quality here currently. The hemlock displays straight boles with little stem scaring and full crowns. The mid-story of this stand contains medium stocking levels of tree regeneration due to the heavy shade cast by the dense overstory. In these dense areas, only shade tolerant trees like beech and eastern hemlock grow. In areas that have experienced a gap in the canopy, trees such as beech, yellow birch and black birch, red maple, red oak and paper birch are present. Additionally, shrubs like witch hazel and striped maple occur within this stand and

herbaceous plants like Canada mayflower.



The overall health of this stand is fair, however the hemlock trees have the potential to decline in the future due to insect pests. The hemlock woolly adelgid, an exotic forest pest, has been expanding throughout the region in recent years. It is not known whether the hemlock in this stand will succumb to his insect, but the area should be monitored for its presence. Small populations of non-native plant species are noted within this stand.

Areas of Japanese barberry and multiflora rose are likely due to invading spread by birds and small mammals.

This stand provides dense forest conditions favoring habitat for forest interior dwelling wildlife species. Neotropical migratory birds and animals such as great horned owl, black bear, bobcat, fisher, and many other wildlife species depend upon large unbroken expanses of forest

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**STAND DESCRIPTIONS**

OBJ	STDNO	TYPE	AC	MSD OR SIZE-CLASS	BA/AC	VOL/AC	SITE INDEX
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for their welfare. Dense hemlock stands perform an important function in providing good cover for wildlife and protection from the elements during winter months. The relatively warm east facing slopes here make this area especially attractive as a winter deer yard. Hemlock seed is a preferred source of food for chickadees and goldfinches and ruffed grouse will eat both seeds and needles. The twigs are browsed by porcupine, deer, red squirrel, snowshoe hare and cottontail rabbit. The desired future condition of this stand is to 1.) control invasive plant populations and maintain native species; 2.) passively protect local soil and water quality, and to maintain good wildlife habitat conditions, overall forest health and interesting destinations along the hiking trail system.

**Stand 5– Current Habitat Conditions:**

*Tree Canopy* Height: > 60 ft.  
Closure/gaps: >80%

*Midstory* Density: High  
Species present: Am. beech, hop hornbeam, sugar maple, hemlock, yellow birch, witch hazel, mountain laurel

*Understory* Density: Low/Medium  
Species present: American beech, yellow birch, cinnamon fern, Japanese barberry\*, bittersweet\*

*Coarse and Fine Woody Material*  
Coarse woody material density: Low  
Drumming logs: Sparse  
Fine woody material density: Low

*Leaf Litter* Lacking/Abundant: Lacking

*Soft Mast* Density: Absent  
Species present: N/A

*Hard Mast* Density: Medium  
Species present: Hickory, red oak

*Streams and Wetlands*  
Present/Absent: Present

**Desired Stand Conditions (Focal Birds noted with \*)**

Condition	Action	Responsibility birds that may benefit
Interior forest condition	No action or small gaps	Black-and-White Warbler*, Wood Thrush*, Scarlet tanager, Black-throated Blue Warbler*, Canada Warbler
Maintain softwood component	None	White-throated Sparrow*, Black-throated Green Warbler *, Blackburnian warbler and blue-headed vireo
Maintain large, limby trees and cavity trees	None	Northern Flicker*, Yellow-bellied Sapsucker*, Owls, woodland hawks, nuthatches

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OBJ	STDNO	TYPE	AC	MSD OR SIZE-CLASS	BA/AC	VOL/AC	SITE INDEX
STEW	6	HH2	38.01	14.9	159	8.8 MBF 12.1 CDS	HK-60

Stand 6 is also a Hemlock forest type located on the western side of the property. The terrain is moderate to steep sloping westerly toward Whately Road. This stand sites atop a Chatfield-Hollis complex with varied slopes. The moderately deep, well drained and productive Chatfield soils are generally found on more flat areas of the stand between rock outcrops. The shallow and rather droughty Hollis soils are found more on upper slopes. Rock outcrops, stones and boulders are common with these soils.

This stand is dominated by hemlock but shares the overstory with equal stocking of red oak and large white pine. Associated hardwoods such as black birch, yellow birch, red maple and white ash occur to a lesser degree. The timber within this stand is of good quality and contains good diversity of tree species. The mid-story contains low to medium stocking levels of tree regeneration, due to the heavy cover of hemlock. However, in areas that have experienced a gap in the canopy, trees such as beech, black birch, red maple are present. The understory contains limited diversity with only Canada mayflower and scattered populations of mountain laurel observed.

The overall health of this stand is fair, however the hemlock trees have the potential to decline in the future due to insect pests. The hemlock woolly adelgid, an exotic forest pest, has been expanding throughout the region in recent years. It is not known whether the hemlock in this stand will succumb to his insect, but the area should be monitored for its presence.



Additionally, during the inventory hemlock samples displayed a small infestation of elongated hemlock scale. This insect pest is believed to have been unintentionally introduced from Japan during the early 1900s. It attacks the lower surface of needles where it removes fluids through piercing sucking mouthparts. First instar nymphs, also called crawlers, begin to emerge in the spring and can be spread by wind or birds to establish new infestations. The life stages of this insect broadly

overlap and can be seen together as brown, yellow or white spots from .1 to 2mm long on the underside of needles. Outbreaks of this insect usually intensify after trees become weakened by other factors that have caused stress. Needles will turn yellow and drop prematurely and limbs will begin to die off from the bottom of the tree and progress upward. Trees can die within ten

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**STAND DESCRIPTIONS**

OBJ	STDNO	TYPE	AC	MSD OR SIZE-CLASS	BA/AC	VOL/AC	SITE INDEX
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years or linger in a weakened state with only a sparse amount of live crown toward the very top.

This stand provides dense forest conditions favoring habitat for forest interior dwelling wildlife species. Neotropical migratory birds and animals such as great horned owl, black bear, bobcat, fisher, and many other wildlife species depend upon large unbroken expanses of forest for their welfare. Dense hemlock stands perform an important function in providing good cover for wildlife and protection from the elements during winter months. The tree species mix in this stand provides a variety of food sources for wildlife with the seed that is produced. Nuts such as those from red oak trees are highly valuable for a variety of mammals and insects. Additionally, hemlock seed is a preferred source of food for chickadees, goldfinches, juncos and ruffed grouse. While the seed from white pine is preferred by blue jays, crossbills and pine siskins. The desired future condition of this stand is to manage passively to protect local soil and water quality, and to maintain good wildlife habitat conditions, overall forest health and interesting destinations along the hiking trail system.

**Stand 6 – Current Habitat Conditions:**

- Tree Canopy*      Height: ≤ 60 ft.  
                                 Closure/gaps: >80%
- Midstory*            Density: Medium  
                                 Species present: black birch, eastern hemlock, Am. beech, white pine
- Understory*        Density: Low  
                                 Species present: black birch, eastern hemlock, Am. beech
- Coarse and Fine Woody Material*  
                                 Coarse woody material density: Low  
                                 Drumming logs: Sparse  
                                 Fine woody material density: Low
- Leaf Litter*        Lacking/Abundant: Adequate
- Soft Mast*            Density: Absent  
                                 Species present: N/A
- Hard Mast*          Density: Medium  
                                 Species present: red oak, white pine
- Streams and Wetlands*  
                                 Present/Absent: Absent

**Desired Stand Conditions (Focal Birds noted with \*)**

Condition	Action	Responsibility birds that may benefit
Interior forest condition	No action or light thinning	Black-and-White Warbler*, Wood Thrush*, Scarlet tanager, blackburnian and black-throated green warbler*
Maintain softwood component	None	White-throated Sparrow*, Black-throated Green Warbler *, Blackburnian warbler and blue-headed vireo
Maintain large, limby trees and cavity trees	None	Northern Flicker*, Yellow-bellied Sapsucker*, Owls, woodland hawks, nuthatches

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**STAND DESCRIPTIONS**

OBJ	STDNO	TYPE	AC	MSD OR SIZE-CLASS	BA/AC	VOL/AC	SITE INDEX
STEW	7	WP	16.06	16.8	170	16.5 MBF 6.6 CDS	WP-67

Stand 7 is a white pine forest located in the southeastern part of the property. The terrain is diverse depending on the location within the property. Generally, the terrain is flat with a gentle slope, however some areas can be found atop a small knoll or plateau. The soils found atop the knolls and plateaus throughout the property are Chatfield-Hollis soils. The moderately deep, well drained and productive Chatfield soils are generally found on more flat areas of the stand between rock outcrops. The shallow and rather droughty Hollis soils are found more on upper slopes. The soils found on the flat ground adjacent to Whately Road are Hinckley sandy loam soils. This sandy loam soil has a low moisture holding capacity, is rapidly permeable and droughty. It is also prone to erosion on sloping ground.



This stand is dominated by white pine, with some hardwood species such as red oak, American beech, black birch, and red maple regenerating within the mid- and understory. In many parts of this stand, the quality of the white pine is generally fair to good with tall straight boles and full crowns. Only a few individuals display multiple branches due to past weevil damage and upheaved roots mounds from extreme wind. The understory of this stand contains medium stocking levels of tree regeneration, including Am. beech, red maple, black birch, red oak and striped maple. Additionally, a few native shrubs and herbaceous plants are noted, such as high bush, low bush blueberry and mountain laurel. A large vernal pool was also present in this stand. The pool sits in the southwestern portion of this property. Several native shrubs are present such as winterberry, red osier dogwood and witch hazel. The overall health of this

stand is good with good growth and diversity of advance regeneration within the mid- and understory. However, there are populations of non-native plant species scattered throughout the understory due to proximity of the infested Abandoned Field stand. Asiatic bittersweet, Japanese barberry and multiflora rose are observed in dense patches.

A variety of wildlife species utilize white pine. Squirrels, chipmunks, hares, cottontails, and mice feed on the seeds and soft needles, and deer browse the twigs. Rabbits and other mammals

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Owner(s) Trustees of Smith College

Towns(s) Whately & Conway

## STAND DESCRIPTIONS

OBJ	STDNO	TYPE	AC	MSD OR SIZE-CLASS	BA/AC	VOL/AC	SITE INDEX
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will occasionally eat the bark of younger trees, and porcupines favor the inner bark during the winter. The seeds are eaten by a variety of birds including blue jays, crossbills, pine siskins. In addition, pine warbler feeds mostly on insects but will only nest in pines. The large vernal pool and wetland complex within this stand is also extremely valuable. These low-lying depressions provide conditions that are vital for portions of the life cycles of many species. The isolated nature of these wetland sites allow amphibians to carry out breeding and feeding in an area of reduced predation. This is one of the ways in which these pools contribute to biodiversity. The desired future condition of this stand is to 1.) control invasive plant populations and maintain native species; 2.) passively protect local soil and water quality, and to maintain good wildlife habitat conditions, overall forest health and interesting destinations along the hiking trail system.

### Stand 7 – Current Habitat Conditions:

*Tree Canopy* Height: > 60 ft.

Closure/gaps: >80%

*Midstory* Density: Medium

Species present: black birch, hemlock, Am. beech, red maple, red oak, white pine

*Understory* Density: Low

Species present: Am beech, low bush blue berry

*Coarse and Fine Woody Material*

Coarse woody material density: Low

Drumming logs: Sparse

Fine woody material density: Low

*Leaf Litter* Lacking/Abundant: Lacking

*Soft Mast* Density: Absent

Species present: N/A

*Hard Mast* Density: Medium

Species present: White pine

*Streams and Wetlands*

Present/Absent: Present

### Desired Stand Conditions (Focal Birds noted with \*)

Condition	Action	Responsibility birds that may benefit
Interior forest condition	No action or light thinning	Black-and-White Warbler*, Pine warbler, Wood Thrush*, Scarlet tanager, blackburnian and black-throated green warbler*
Maintain softwood component	None	White-throated Sparrow*, Black-throated Green Warbler *, Blackburnian warbler and blue-headed vireo
Maintain large, limby trees and cavity trees	None	Northern Flicker*, Yellow-bellied Sapsucker*, Owls, woodland hawks, nuthatches
Maintain native species	Remove exotic-invasive species	All birds that utilize native insects for food

**STEW      8      AF      36.35      N/A      N/A      N/A      N/A**

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**STAND DESCRIPTIONS**

OBJ	STDNO	TYPE	AC	MSD OR SIZE-CLASS	BA/AC	VOL/AC	SITE INDEX
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Stand 8 is an Abandoned Field type, this area was open pasture within the past 30 years. This stand is relatively flat, gently sloping easterly towards Jimmy Nolan Brook. This stand sits atop a Chatfield-Hollis complex like much of this property. The moderately deep, well drained and productive Chatfield soils are generally found on more flat areas of the stand between rock



outcrops. The shallow and rather droughty Hollis soils are found more on upper slopes.

This area of the property now contains a mixture of young early successional seedlings and saplings (grey birch, staghorn sumac, aspen, white pine). Although these native species are present, they are beginning to become engulfed by non-native invasive plants. Asiatic bittersweet, multiflora rose, shrub honeysuckle and Japanese barberry have completely

infested the stand and nearby stands along its boundaries. These non-native exotic plant species are very thick in some areas and are beginning to cause harm to the native shrubs and trees by outcompeting and in some instances engulfing. Although some species of native forest birds successfully use these shrubby, woody plant species as nesting sites and eat their fruits, the fruits generally have low nutritional value and the invasive plants reduce the diversity of other nesting and foraging options in forest bird habitats in our region. The desired future condition of this stand is to 1.) control invasive plant populations and maintain native species; and 2.) create an early successional habitat which will increase overall biodiversity of the property and provide valuable foraging and nesting sites, and refugia for various wildlife species.

**Stand 8 – Current Habitat Conditions:**

*Tree Canopy* Height: ≤ 20 ft.  
Closure/gap:

*Midstory* Density: High

Species present: grey birch, staghorn sumac, white pine, aspen, multiflora rose\*, shrub honeysuckle\*

*Understory* Density: High

Species present: Rubus spp, Japanese barberry\*, Asiatic bittersweet\*, multiflora rose\*

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Towns(s) Whately & Conway

**STAND DESCRIPTIONS**

OBJ	STDNO	TYPE	AC	MSD OR SIZE-CLASS	BA/AC	VOL/AC	SITE INDEX
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*Coarse and Fine Woody Material*

Coarse woody material density: Absent

Drumming logs: Absent

Fine woody material density: Low

*Leaf Litter* Lacking/Abundant: Lacking

*Soft Mast* Density: Low

Species present: Rubus spp

*Hard Mast* Density: Absent

Species present: N/A

*Streams and Wetlands*

Present/Absent: Absent

**Desired Stand Conditions (Focal Birds noted with \*)**

Condition	Action	Responsibility birds that may benefit
Create early successional habitat	Routinely mow tree species to maintain habitat	American woodcock*, chestnut-sided warbler*, white-throated sparrow*, Eastern Towhee*, Brown Thrasher*, ruffed grouse*, veery*
Maintain native species	Remove exotic-invasive species	All birds that utilize native insect and berries for food
Increase light for berry and nut producing species	Release native berry producing species from competition	All birds that utilize berries and nuts for food
Maintain softwood component	Release good quality pine from competition	Magnolia Warbler, whippoorwill
Create structures for wildlife nesting sites	Place small and large nesting boxes for cavity nesting birds	Eastern bluebird and American Kestrel

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**STAND DESCRIPTIONS**

OBJ	STDNO	TYPE	AC	MSD OR SIZE-CLASS	BA/AC	VOL/AC	SITE INDEX
STEW	9	GR	27.79	N/A	N/A	N/A	N/A

Stand 9 is a grassland habitat covering much of the southwestern portion of the property running north halfway up to the center of the property. The terrain is generally flat, gently sloping southeast. This stand sits atop Chatfield-Charlton complex. Both soil series are productive, moderately deep and well drained, generally located on the flatter portions of slopes in between rock outcrops.

Currently, this stand is maintained as open grassy habitat for a variety of uses. The lower sections of the stand containing approximately 12-acres are intermittently used as open agricultural fields for grazing cattle, while the upper areas of this stand are used for educational and artistic purposes. Within the upper fields, visiting artists display natural art and studios and students conduct research and cultivate American chestnuts for future breeding purposes.



and students conduct research and cultivate American chestnuts for future breeding purposes.

Many parts of this stand contain areas that play an integral role in the New England landscape. This vegetative cover type provides food, shelter and nesting habitat to some 144 wildlife species found in this region. Over 22 percent of New England wildlife species rely on early successional habitat at some point in their life span. Old fields, where shrubs and small trees occupy the site,

have wildlife communities that differ from that of regenerating forested stands. The vegetative difference is in the dense herbaceous cover provided by old fields. This herbaceous cover will help to maintain this condition longer than that of the regenerating forest habitat. Some species that rely heavily on this habitat are: Cooper’s hawks, cardinals, indigo buntings, catbirds, cottontail rabbits, foxes, kestrels, field sparrows, bobolinks, northern orioles, black bear and white-tailed deer. Although much of this stand is maintained as grassy open land, small areas that mowers are unable to venture contain both native and non-native plant species. within these hard to get places, bush honeysuckle, multiflora rose and even bittersweet thrive. Although some species of native forest birds successfully use these shrubby, woody plant species as nesting sites and eat their fruits, the fruits generally have low nutritional value and the invasive plants reduce the diversity of other nesting and foraging options in forest bird habitats in our region. The desired future condition of this stand is 1.) control invasive plant populations; and 2.) maintain as an open grassy meadow habitat and improve wildlife habitat conditions, recreational views and

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Towns(s) Whately & Conway



**STAND DESCRIPTIONS**

OBJ	STDNO	TYPE	AC	MSD OR SIZE-CLASS	BA/AC	VOL/AC	SITE INDEX
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overall forest health

**Desired Stand Conditions (Focal Birds noted with \*)**

Condition	Action	Responsibility birds that may benefit
Maintain open grassy habitat	Routinely mow tree species to maintain habitat	American woodcock*, chestnut-sided warbler*, white-throated sparrow*, flicker*, woodland hawk species
Maintain native species	Remove exotic nonnative species	All bird species that utilize native insects and berries for food
Increase light for berry and nut producing species	Release native berry producing species from competition	All birds that utilize berries and nuts for food
Create structures for wildlife nesting sites	Place small and large nesting boxes for cavity nesting birds	Eastern bluebird and American Kestrel

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## Management Recommendations

For the purposes of this report management practices with an object code of *CH61* are required to be accomplished as a commitment to the Massachusetts Current Use Program. Practices with object codes of *STEW* are voluntary and are provided as suggestions of activities that can help you achieve your woodland objectives.

### Summary of the Management Recommendations for your property

Stand	Object Code	Recommendation	Value/Cost/ Cost Sharing opportunities	Acres	Timing
3	STEW	Creation of 6 small 0.25-0.50-acre Gaps with Intermediate Thinning done in conjunction with tree planting	Small cost from felling/girdling treatment	5	2020-2022
3,4,5	STEW	Creation of 6 small 0.25-0.50 -acre canopy gaps to restore old growth characteristics	Small cost from felling/girdling	5	2020-2022
8	STEW	Creation of Early Successional Habitat in AF type	NRCS Grant for early-successional habitat	35	2023-2030
9	STEW	Place small and large bird nesting boxes for cavity nesting bird species like eastern bluebird and American Kestrels	NRCS Grant for Structures for Wildlife	10	2020-2030
3,4,5,7,8,9	STEW	Control invasive plant population within AF and adjacent forest stands	NRCS Grant for Brush Management	75	2020-2022

<b>ALL</b>	STEW	Boundary Maintenance	Out of pocket cost, or student volunteers	ALL	2020-2022
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**MANAGEMENT PRACTICES**  
*to be done within next 10 years*

OBJ	STD NO	TYPE	SILVICULTURAL PRESCRIPTION	AC	TO BE REMOVED		TIMING
					BA/AC	TOT VOL	
STEW	3	BB1	Gap Creation with Intermediate Thinning with Tree Planting	5	50-80	10M 30Cds	2020-2023

The creation of a six selectively placed canopy gaps of 0.25-0.50-acres in size will not only enable a robust understory and mid-story to develop, but also provide enough light for tree and shrub plantings to establish and develop. Adequate levels of advance regeneration of desirable species (sugar maple, red oak, white oak, white pine) are lacking within this property due to dense overstory conditions. This effect is compounded within this stand with the high-density of American beech occupying the mid-story and understory. While sugar maple, red oak, and white pine persist in the canopies of this stand, these species are not regenerating due, in part, to the dense interference of sub-canopy beech. As the forest ages and non-beech canopy trees begin to senesce, smaller gaps are almost always filled by either adjacent beech seedlings, root suckers or stump sprouts. Not only will this practice allow for enrichment planting of hard to regenerate species like oak, it is a way to reintroduce a species that was lost in our forests, the American Chestnut. Planting a mix of species will make it more likely that some desirable species survive to become canopy trees. To protect from deer browsing on these plantings, they should be protected by tree shelters or by dropping surrounding trees over the newly planted seedlings to serve as browse barriers. At a time 5-10 years after planting, the planted areas should be re-visited to remove overtopping, competing vegetation.

Additionally, the openings created from this practice will allow sunlight to reach the forest floor and initiate development of a robust understory, not only enhancing the habitat for a variety wildlife species but also enhancing the overall health and diversity of the forest. For efficient land use, these openings to be planted should be located where low quality and diseased/at-risk individuals are dominant. Trees to be left should be those that are more valuable as wildlife habitat and for biodiversity. Favored species should include red oak, sugar maple and white pine along with species that are not well represented in the stand such as yellow birch. Healthy beech and hemlock with vigorous live crowns should be retained along with trees that exhibit good cavities, or potential cavities, as nesting and den sites for birds and small mammals. Areas between gaps may be thinned or not depending on tree quality and habitat value of the existing trees. This will not only enhance the overall health and habitat of the forest, but it will also maintain and protect the variety of sites and destinations along the enjoyable trail systems created by Smith College students and volunteers.

Any trees cut and or girdled during this treatment can either be left for future use as firewood, art projects, or left indefinitely as research sites and/or provide structure, habitat and carbon sequestration. A step further would be to create brush piles from any trees cut to provide a refugia and structure for many wildlife species or to use felled trees to provide a browse barrier to protect planted seedlings.

Conducting any form of vegetation manipulation during frozen ground conditions will reduce soil disruption, potential erosion and sedimentation into streams within these stands. "MA Best Forestry Management Practices" should be utilized in conjunction with this activity to maintain water quality in the area. In addition, before any manipulation of the overstory occurs, the control of invasive plant species should be completed.

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**MANAGEMENT PRACTICES**  
*to be done within next 10 years*

OBJ	STD NO	TYPE	SILVICULTURAL PRESCRIPTION	AC	TO BE REMOVED		TIMING
					BA/AC	TOT VOL	

NRCS: Forest Stand Improvement:

- Wildlife Thinning and Forest Health: 5-acres
- Tree/Shrub Planting: 1.5-3-acres

<b>STEW</b>	<b>3,4,5</b>	<b>BB1,BB2, HH1</b>	<b>Gap Creation for Restoration of Old Growth Characteristics</b>	<b>5</b>	<b>50-80</b>	<b>10 M, 30 Cds</b>	<b>2020-2023</b>
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Another reason to create gaps in the canopy of dense stands is to create (or restore) some of the ecological characteristics of old growth forest. True old growth is very rare in Massachusetts but re-creating some of its characteristics can be done in the second growth forests we presently have. Characteristics that are more abundant in old-growth forests include large diameter (greater than 30” diameter) trees; trees containing cavities and standing dead trees; large downed logs; gaps in the canopy. Gaps of variable size can be created for this purpose if the surrounding largest trees are retained, cavity trees and those likely to develop cavities are retained, standing dead trees can be retained or snags can be recruited by girdling existing trees, and large diameter woody debris is left onsite.

Outstanding opportunity to enhance bird habitat exists in doing this practice. Many ground-nesting forest birds lack adequate nesting cover in much of our closed canopy, over-browsed woods. These openings will lead to the development of a robust understory. Birds like wood thrush, hermit thrush and black and white warbler may find enough cover to nest here. Adding snags, tipped over trees and downed logs will contribute to the complexity and habitat value. Canada Warbler, a Species of Greatest Conservation Need, could be added to the list of nesting birds if openings are made in wetter areas.

This practice is very similar to the Gap Creation with Planting prescribed for Stand 3 and the two practices could be combined if desired. Old growth characteristics can be created with or without enrichment planting and with or without using harvested material as fuelwood and building material. The value for both practices is to diversify the forest ecosystem for bird habitat and by doing that, make the forest more complex and resilient. For landowner reference, a brochure, “Restoring Old Growth Characteristics” by Catanzaro and D’Amato is included at the end of this report.

NRCS: Forest Stand Improvement:

Thinning for Wildlife and Forest Health: 5-acres

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Towns(s) Whately & Conway

**MANAGEMENT PRACTICES**  
*to be done within next 10 years*

OBJ	STD NO	TYPE	SILVICULTURAL PRESCRIPTION	AC	TO BE REMOVED		TIMING
					BA/AC	TOT VOL	
<b>STEW</b>	<b>8</b>	<b>AF</b>	<b>Creation of Early Successional Habitat</b>	<b>35</b>	<b>N/A</b>	<b>N/A</b>	<b>2023-2030</b>

The creation of the early successional habitat will provide low, brushy habitat with occasional larger stems. Periodic cutting is necessary to prevent shady forest conditions from eliminating brushy habitat and the wildlife species that are dependent on these conditions. This practice will maintain biological diversity on the property and create wildlife habitat conditions that are not widely found in the area. After this treatment, mowing of these open areas every three- five years will allow for the herb-grass-brush stage (early successional habitat conditions) to be perpetuated on these sites. This type of condition provides benefits to many birds and animals, many of which are declining due to the regional disappearance of brushy habitat.

This practice should be contingent upon first successfully completing invasive plant control in this stand. Otherwise, invasive plants will be stimulated by the additional sunlight to increase their seed production and vigor. It is recommended that the need for early successional habitat cutting be re-evaluated in 2023, or three years after invasive plant seed production has been shut off by invasive plant control.

When early successional habitat cutting is carried out, a brontosaurus or some other large mowing equipment should be utilized to remove sapling trees and brush from these areas. Some larger trees may need to be felled with a chainsaw. Brush from some cut material can be piled to create cover for birds and small mammals. Some individual trees or small groups of trees should remain uncut within these areas in order to provide wildlife cover. These residual trees should be of food producing species (black cherry, apple, aspen) if possible and should be identified in the field prior to cutting so that they are not mistakenly damaged or removed.

NRCS: Early-Successional Habitat

- Early successional habitat: 35-acres

<b>STEW</b>	<b>9</b>	<b>GR</b>	<b>Structures for Wildlife - placement of nesting boxes</b>	<b>10</b>	<b>N/A</b>	<b>N/A</b>	<b>2020-2030</b>
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Placement of nesting boxes within the field and on its edges will increase bird diversity, especially those who utilize open habitats and early successional habitat and require cavities for nesting, i.e. eastern bluebirds and American Kestrels.

NRCS: Structures for Wildlife

- Mix of small and large nesting box with pole and without pole: 10 acres

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**MANAGEMENT PRACTICES**  
*to be done within next 10 years*

OBJ	STD NO	TYPE	SILVICULTURAL PRESCRIPTION	AC	TO BE REMOVED		TIMING
					BA/AC	TOT VOL	

<b>STEW</b>	<b>3,4,5,7,8</b>	<b>Mult.</b>	<b>Invasive Plant Control</b>	<b>75</b>	<b>N/A</b>	<b>N/A</b>	<b>2020-2022</b>
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Invasive plants occur on the property in several areas. Much of the property does not contain a substantial component of invasive plants, but in some areas, these undesired species are becoming more abundant. Before any practices for habitat enhancement are conducted, invasive plant control should be completed throughout the property. Asiatic bittersweet, multiflora rose, bush honeysuckle and Japanese barberry can be found within much of the southeastern area of the property, especially in the abandoned field and adjacent stands. For greatest success with minimum impact to native plants, an Integrated Vegetation Management (IVM) approach is recommended using a strategic combination of mechanical and chemical control methods. Within Stand 8 it is recommended to use a large mower to improve access prior to foliar treatment. Prior mowing of all large invasives or at least mowing lanes for access through the multiflora rose will increase overall success and efficiency for future treatments. For the remaining areas of the property, large plants can be controlled by chainsaw cutting near the base of the plant and treating the stump with herbicide to prevent re-sprouting. Smaller plants can be controlled with selective foliar application using small backpack equipment to target individual plants. The reason for the use of herbicide is simply to kill the root systems of invasives in order to prevent the aggressive re-sprouting that would require an unsustainable amount of work to control. After the initial treatments are completed, long-term success is generally only feasible with a monitoring program that consists of patrolling treatment areas and hand-pulling or treating new plants that are observed. Cost-sharing may be available from NRCS to complete this work.

NRCS: Brush Management:

- Chemical Difficult: 40-acres
- Chemical Moderate 35-acres

<b>STEW</b>	<b>ALL</b>	<b>ALL</b>	<b>Boundary Maintenance</b>	<b>ALL</b>	<b>N/A</b>	<b>N/A</b>	<b>2020-2022</b>
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It is recommended that all the property boundaries be visibly marked. The boundaries on this property are not well marked and before any treatment takes place must be identified. Well-marked boundaries help to prevent trespass issues and allow for more efficient implementation of management activities. It is recommended that any boundary lines be marked near areas where treatment has been recommended in this plan, prior to conducting such work.

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**Signature Page** Please check each box that applies. \_\_\_\_\_

**CH. 61/61A Management Plan** I attest that I am familiar with and will be bound by all applicable Federal, State, and Local environmental laws and /or rules and regulations of the Department of Conservation and Recreation. I further understand that in the event that I convey all or any portion of this land during the period of classification, I am under obligation to notify the grantee(s) of all obligations of this plan which become his/hers to perform and will notify the Department of Conservation and Recreation of said change of ownership.

**Forest Stewardship Plan.** When undertaking management activities, I pledge to abide by the management provisions of this Stewardship Management Plan during the ten year period following approval. I understand that in the event that I convey all or a portion of the land described in this plan during the period of the plan, I will notify the Department of Conservation and Recreation of this change in ownership.

**Green Certification.** I pledge to abide by the FSC-US Forest Management Standard and MA Private Lands Group Certification for a period of five years. To be eligible for Green Certification you must also check the box below.

**Tax considerations.** I attest that I am the registered owner of this property and have paid any and all applicable taxes, including outstanding balances, on this property.

Signed under the pains of perjury:

Owner(s) \_\_\_\_\_ Date \_\_\_\_\_

Owner(s) \_\_\_\_\_ Date \_\_\_\_\_

I attest that I have prepared this plan in good faith to reflect the landowner's interest.

Plan Preparer Colin Mettey and Lincoln Fish \_\_\_\_\_ Date \_\_\_\_\_

I attest that the plan satisfactorily meets the requirements of CH61/61A and/or the Forest Stewardship Program.

Approved, Service Forester \_\_\_\_\_ Date \_\_\_\_\_

Approved, Regional Supervisor \_\_\_\_\_ Date \_\_\_\_\_

**In the event of a change of ownership of all or part of the property, the new owner must file an amended Ch. 61/61A plan within 90 days from the transfer of title to insure continuation of Ch. 61/61A classification.**

Owner(s) Trustees of Smith College \_\_\_\_\_ Town(s) Whately and Conway \_\_\_\_\_