

**Habitat Management Plan
for
Connecticut Hill Wildlife Management Area
2017 – 2026**



Division of Fish and Wildlife
Bureau of Wildlife

1285 Fisher Ave
Cortland, NY 13045

July 5, 2017



**Department of
Environmental
Conservation**

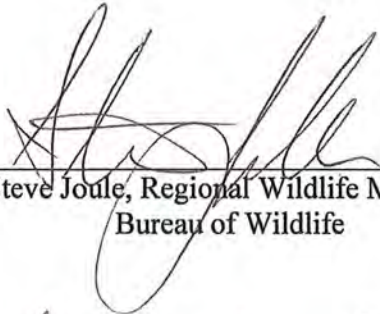
This plan was updated on March 25, 2024. Changes are listed in Appendix D.

Prepared by:

Tom Cunningham, Wildlife Technician
Mike Putnam, Wildlife Biologist
Land Management and Habitat Conservation Team

Andrew Drake, Forester
Adam Perry, Wildlife Biologist
Adam Robedee, Forest Technician
Young Forest Initiative

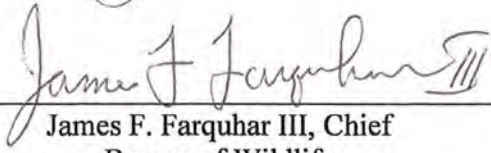
Reviewed and approved by:



Steve Joule, Regional Wildlife Manager
Bureau of Wildlife

July 13, 2017

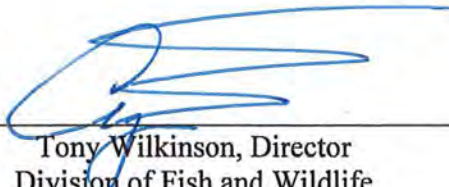
Date



James F. Farquhar III, Chief
Bureau of Wildlife

July 26, 2017

Date



Tony Wilkinson, Director
Division of Fish and Wildlife

7/24/17

Date



Financial support for development of this Habitat Management Plan was provided by the Federal Aid in Wildlife and Sport Fish Restoration Program and non-federal funds administered by the New York State Department of Environmental Conservation including Habitat & Access Stamp funds.

TABLE OF CONTENTS

<i>SUMMARY</i>	4
<i>I. BACKGROUND AND INTRODUCTION</i>	5
PURPOSE OF HABITAT MANAGEMENT PLANS	5
WMA OVERVIEW	6
LANDSCAPE CONTEXT	11
<i>II. MANAGEMENT STRATEGIES BY HABITAT TYPE</i>	12
FOREST	12
SHRUBLAND.....	32
GRASSLAND AND OTHER OPEN SPACE.....	36
AGRICULTURAL LAND	39
WETLANDS (NATURAL AND IMPOUNDED)	39
OPEN WATER (WATERBODIES AND WATERCOURSES)	41
HABITAT MANAGEMENT SUMMARY	42
<i>III. FIGURES</i>	44
<i>IV. APPENDICES</i>	58
APPENDIX A: DEFINITIONS	58
APPENDIX B. STATEMENT OF CONFORMITY WITH SEQRA.....	62
APPENDIX C: FOREST MANAGEMENT PRESCRIPTIONS	64
APPENDIX D: AMENDMENTS.....	67

LIST OF FIGURES

FIGURE 1. Location and access features at Connecticut Hill WMA.	44
FIGURE 2. There are no significant ecological communities on Connecticut Hill WMA.....	45
FIGURE 3. Wetlands, open water, and streams of Connecticut Hill WMA (Map 1 of 3).....	46
FIGURE 4. Wetlands, open water, and streams of Connecticut Hill WMA (Map 2 of 3).....	47
FIGURE 5. Wetlands, open water, and streams of Connecticut Hill WMA (Map 3 of 3).....	48
FIGURE 6. Land cover types and conservation lands in the landscape surrounding Connecticut Hill WMA.	49
FIGURE 7. Percent cover of land cover types within three miles of Connecticut Hill WMA.	50

FIGURE 8. Habitat types and locations of proposed management on Connecticut Hill WMA (Map 1 of 7)..... 51

FIGURE 9. Habitat types and locations of proposed management on Connecticut Hill WMA (Map 2 of 7)..... 52

FIGURE 10. Habitat types and locations of proposed management on Connecticut Hill WMA (Map 3 of 7). 53

FIGURE 11. Habitat types and locations of proposed management on Connecticut Hill WMA (Map 4 of 7). 54

FIGURE 12. Habitat types and locations of proposed management on Connecticut Hill WMA (Map 5 of 7). 55

FIGURE 13. Habitat types and locations of proposed management on Connecticut Hill WMA (Map 6 of 7). 56

FIGURE 14. Habitat types and locations of proposed management on Connecticut Hill WMA (Map 7 of 7). 57

SUMMARY

The area that Connecticut Hill Wildlife Management Area (WMA) occupies was first settled by Europeans around 1795. By 1840, approximately two-thirds of the area was cleared for farming with the peak of farming activity occurring around 1880. In the higher elevations of Connecticut Hill, the harsh climatic and shallow soil conditions were not conducive to successful farming and from 1900 on, farming on Connecticut Hill was steadily abandoned.

Connecticut Hill WMA as we know it today first started to take shape in 1928 with an initial purchase of 3,765 acres in what is now the eastern side of the WMA, south of Boylan Road and east of Connecticut Hill Road (or Ridge Road) and Swan Hill Road.¹ In those early days the property was called Connecticut Hill Refuge. The initial goal for this land was to increase the populations of grouse, cottontail rabbits, white-tailed deer, and pheasants which also involved prohibiting hunting and fishing on parts of the property to provide a safe haven for wildlife.² In the 1930s, additional lands were purchased and added to the refuge. During the same time period, the Civilian Conservation Corps (CCC) conducted significant tree and shrub plantings on the refuge. Around 1941, the name of the property was changed to Connecticut Hill Game Management Area as a result of a change in management attitudes, moving away from the prior ideas of a refuge and the prohibition of hunting and fishing on parts of the property.

The Federal Resettlement Administration purchased 7,229 acres from 1935-1938 then leased that land to the State until 1961 when they deeded ownership to the State.³ Since 1961, smaller acquisitions have been added to the property, resulting in the current total of 11,237 acres.

Connecticut Hill WMA has also long been associated with research projects (both past and present) spanning subject areas such as land utilization, habitat succession, plantings, and wildlife. Most notable was a study of ruffed grouse management from 1932-45.⁴ Much of the research has been done by Cornell University graduate students. The WMA has most recently been managed for both game and non-game species through routine maintenance of existing habitats.

Habitat management goals for Connecticut Hill WMA include:

- Maintain the WMA's intermediate and mature forested acreage at approximately 84% (9,377 acres) to continue to provide habitat diversity for forest species.
- Manage approximately 10% of the WMA as young forest (11% of the total forested area) within the next 10 years to improve American woodcock, ruffed grouse, and wild turkey habitat.
- Increase grassland habitat to <3% to provide habitat for grassland obligate species.

¹ Dukelow, W.J. and J.C. Proud. Connecticut Hill Wildlife Management Area, Description, History, Public Use and Management. NYS DEC Cortland Sub-Office, 1285 Fisher Ave, Cortland, NY. 25pp.

² Bradley, B.O. 1967. The Connecticut Hill Story. Senior Wildlife Biologist, Cortland, NY. 4pp.

³ Connecticut Hill Wildlife Management Area Source Book, NYS DEC Cortland Sub-Office, 1285 Fisher Ave, Cortland, NY.

⁴ Bump, G., R.W. Darrow, F.C. Edminster and W.F. Crissy. 1947. The Ruffed Grouse, life history, propagation, management. NY State Conservation Department. 915pp.

- Increase shrubland habitat to <2% to provide habitat for shrubland obligate species.
- Maintain the remaining >2% of the WMA as wetlands, open water, and roads.
- Provide habitat for a variety of wildlife species and permit wildlife-dependent recreational uses compatible with wildlife.
- Establish a demonstration area to show types of forest and habitat management practices that are planned to be used on the WMA.

I. BACKGROUND AND INTRODUCTION

PURPOSE OF HABITAT MANAGEMENT PLANS

BACKGROUND

Active management of habitats to benefit wildlife populations is a fundamental concept of wildlife biology, and has been an important component of wildlife management in New York for decades. Beginning in 2015, NYS Department of Environmental Conservation (DEC) Division of Fish and Wildlife (DFW) initiated a holistic planning process for wildlife habitat management projects. Habitat Management Plans (HMPs) are being developed for WMAs and other properties administered by DFW Bureau of Wildlife, including select Multiple Use and Unique Areas. The goal of HMPs is to guide habitat management decision-making on those areas to benefit wildlife and facilitate wildlife-dependent recreation. HMPs guide management for a ten year time period, after which the plans and progress on implementation will be assessed and HMPs will be modified as needed.

HMPs serve as the overarching guidance for habitat management on WMAs. These plans incorporate management recommendations from Unit Management Plans (UMPs), existing WMA habitat management guidelines, NY Natural Heritage Program's WMA Biodiversity Inventory Reports, Bird Conservation Area guidelines, and other documents available for individual WMAs.

SCOPE AND INTENT

Primary purposes of this document:

- Provide the overall context of the habitat on the WMA and identify the target species for management;
- Identify habitat goals for WMA-specific target species, contemplating juxtaposition of all habitat types to guide the conservation and management of sensitive or unique species or ecological communities;
- Identify acreage-specific habitat goals for the WMA to guide management actions;
- Provide specific habitat management prescriptions that incorporate accepted best management practices;
- Establish a forest management plan to meet and maintain acreage goals for various forest successional stages;

- Address management limitations such as access challenges (e.g., topography); and
- Provide the foundation for evaluating the effectiveness of habitat management.

Within the next five years, this HMP will be integrated into a comprehensive WMA Management Plan that will include management provisions for facilitating compatible wildlife-dependent recreation, access, and facility development and maintenance.

Definitions are provided in Appendix A.

The effects of climate change and the need to facilitate wildlife adaptation under expected future conditions will be incorporated into the habitat management planning process and will be included in any actions that are recommended in the HMPs. For example, these may include concerns about invasive species, anticipated changes in stream hydrology, and the desirability for maintaining connectedness on and permeability of the landscape for species range adjustments.

This plan and the habitat management it recommends will be in compliance with the State Environmental Quality Review Act (SEQRA), 6NYCRR Part 617. See Appendix B. The recommended habitat management also requires review and authorization under the Endangered Species Act (ESA), National Environmental Policy Act (NEPA), and State Historic Preservation Act (SHPA), prior to implementation.

WMA OVERVIEW

LOCATION

Connecticut Hill WMA is located in DEC Region 7, Towns of Catharine, Cayuta and Hector, Schuyler County, and Towns of Enfield and Newfield, Tompkins County (Figure 1).

TOTAL AREA

11,237 acres

HABITAT INVENTORY

A habitat inventory of the WMA was completed in 2017 and is proposed to be updated every ten to fifteen years to document the existing acreage of each habitat type and to help determine the location and extent of future management actions. Table 1 summarizes the current acreage by habitat type and the desired acreage after management. Desired conditions were determined with consideration of habitat requirements of targeted wildlife, current conditions on the WMA, and conditions in the surrounding landscape (see Landscape Context section below).

Table 1. Summary of current and desired habitat acreage on Connecticut Hill WMA.

Habitat Type	Current Conditions			Desired Conditions ^c	
	Acres	Percent of WMA	Miles	Acres	Percent of WMA
Forest ^a	10,620	95%		9,427	Decrease to 84%
Young forest	154	1%		1,147	Increase to 10%
Shrubland	28	<1%		187	Increase to <2%
Grassland	257	2%		298	Increase to <3%
Agricultural lands	0	0%		0	No change
Wetlands (natural) ^b	21	<1%		21	No change
Wetlands (impounded) ^b	0	0%		0	No change
Open water	28	<1%		28	No change
Other (utility line)	9	<1%		9	No change
Roads	120	1%	27.3	120	No change
Rivers and streams			22.6		No change
Total Acres:	11,237	100%		11,237	

^a Forest acreage includes all mature and intermediate age classes of natural forest, plantations, and forested wetlands. Young forest is reported separately. Definitions are provided in the Forest section of this plan.

^b Wetland acreage does not include forested wetlands, since they are included in the Forest category.

^c Desired conditions represents long-term goals for the WMA. Work to be done in the next 10 years toward this goal is described in the body of this plan.

Interestingly, past conditions were documented in a management plan written for Connecticut Hill in 1984, providing insight into habitat changes over nearly a century (Table 2). The habitat conditions from 1920 were derived from a study done in 1950 that looked at the general area of Connecticut Hill.⁵

Table 2. Summary of past habitat acreage on Connecticut Hill WMA c.1920 and c.1970.

Habitat Type	Conditions c.1920		Conditions c.1970	
	Acres	Percent of WMA	Acres	Percent of WMA
Forest ^a	3,259	32%	7,142	65%
Young forest ^b	n/a	n/a	1,411	13%
Field, brushy field	7,055	68%	2,266	21%
Swamp alder, miscellaneous ^c	n/a	n/a	133	1%
Total Acres:	10,314	100%	10,952	100%

^a Forest acreage includes natural and plantation forest. Forested wetlands were not listed as a separate category but it is assumed they were included as natural forest.

^b While unable to determine if these acres were actually young forest as defined in this plan, these acres in 1970 were classified as seedling/sapling size class, so for the purposes of comparison it is assumed this is indeed young forest. The 1920 data does not include a breakdown of the forest by size class hence the 'n/a.'

^c The 1920 data does not have a 'Swamp alder, miscellaneous' category hence the 'n/a.'

⁵ Bump, G. 1950. Wildlife Habitat Changes on the Connecticut Hill Game Management Area. Cornell University Agr. Exp. Sta. Memoir 289: 74pp.

While the habitat types listed in Tables 1 and 2 differ slightly, they do illustrate the history of the abandonment of farmland and subsequent growth of forest – a classic example of natural succession. Grassland and shrubland habitats on Connecticut Hill WMA are now a small fraction of what they used to be, and agricultural lands no longer exist. Forests are now composed of predominantly intermediate and mature age classes.

Consequently, the management goals identified in this plan focus on reestablishing early successional habitats to restore some diversity to the WMA. Land managers decided to prioritize creating young forest, returning the acreage in this age class approximately to levels that existed in the 1970s. This plan also provides for the creation of a limited amount of new grassland and shrubland habitat, however, it is not the main focus of the plan since the WMA is not part of a Grassland Bird Focus Area.⁶

ECOLOGICAL RESOURCES

Wildlife Overview:

Connecticut Hill WMA is dominated by mature, natural hardwood forests with scattered small openings, small ponds, and a few deep gullies. The property also contains a significant amount of mature softwood plantations. Wildlife present on the WMA is typical of central New York mature forest and includes:

- White-tailed deer, beaver
- Broad-winged hawk, great horned owl
- Coal skink, Eastern ratsnake, spotted salamander
- Scarlet tanager, red-eyed vireo, black-throated green warbler

Wildlife and Plant Species of Conservation Concern:

The following federal or state listed Endangered (E), Threatened (T), or Special Concern (SC) species and/or Species of Greatest Conservation Need (SGCN) may occur on the WMA (Table 3).⁷ SGCN listed below include species that have been documented on or within the vicinity of the WMA that are likely to occur in suitable habitat on the WMA. Other SGCN may also be present on the WMA. Data sources include: the NY Natural Heritage Program, NY Breeding Bird Atlases,⁸ NY Reptile and Amphibian Atlas,⁹ DEC wildlife surveys and monitoring, and eBird.¹⁰

⁶ Additional information about DEC's Grassland Bird Focus Areas and the LIP program is available online at <http://www.dec.ny.gov/pubs/32891.html>.

⁷ The 2015 New York State Wildlife Action Plan identifies 366 Species of Greatest Conservation Need (SGCN) including 167 High Priority SGCN. Available online at <http://www.dec.ny.gov/animals/7179.html>.

⁸ Available online at <http://www.dec.ny.gov/animals/7312.html>.

⁹ Available online at <http://www.dec.ny.gov/animals/7140.html>.

¹⁰ Available online at <http://ebird.org/content/ebird/about/>. © Audubon and Cornell Lab of Ornithology.

Table 3. Species of conservation concern that may be present on Connecticut Hill WMA, including state and federal Endangered (E) and Threatened (T) species, state Species of Special Concern (SC), High Priority SGCN (HP), and SGCN (X).

Species Group	Species	Federal Status	NY Status	NY SGCN
Birds ¹¹	American kestrel			X
	American woodcock			X
	Bay-breasted warbler			HP
	Black-billed cuckoo			X
	Black-throated blue warbler			X
	Blue-winged warbler			X
	Brown thrasher			HP
	Canada warbler			HP
	Cerulean warbler		SC	
	Common nighthawk		SC	
	Cooper's hawk		SC	
	Golden-winged warbler		SC	HP
	Louisiana waterthrush			X
	Northern goshawk		SC	X
	Prairie warbler			X
	Prothonotary warbler			HP
	Red-headed woodpecker		SC	HP
	Red-shouldered hawk		SC	X
	Ruffed grouse			X
	Scarlet tanager			X
Sharp-shinned hawk		SC		
Vesper sparrow		SC	HP	
Whip-poor-will		SC	HP	
Yellow-breasted chat		SC	HP	
Mammals	Eastern red bat			X
	Hoary bat			X
	Little brown bat			HP
	Northern long-eared bat	T	T	HP
	Silver-haired bat			X
	Small-footed bat		SC	X
	Tri-colored bat			HP
Amphibians and reptiles	Coal skink			X
	Eastern ratsnake			X
	Eastern snapping turtle			X
	Ribbonsnake			X
	Smooth greensnake			X
	Wood turtle			HP

¹¹ Several listed bird species only utilize this WMA as migratory habitat and are considered as such in management plans.

Table 3. Continued

Species Group	Species	Federal Status	NY Status	NY SGCN
Fish	None known			
Invertebrates	Green floater		T	HP
	Grey petaltail			HP
Plants	Hooker's orchid		E	

Significant Ecological Communities:

There are no significant natural communities located on Connecticut Hill WMA as identified by the NY Natural Heritage Program (Figure 2). Information about significant ecological communities is available in *Ecological Communities of New York State, Second Edition*.¹²

Special Management Zones:

Special Management Zones (SMZs) are areas adjacent to wetlands, perennial and intermittent streams, vernal pool depressions, spring seeps, ponds and lakes, recreational trails, and other land features requiring special consideration. SMZs on Connecticut Hill WMA include:

- 62 wetlands shown on the National Wetlands Inventory (NWI; Figures 3-5). There are no wetlands regulated by Article 24 of the Environmental Conservation Law located on the WMA. There may be forestry prescriptions associated with forested wetlands and each management prescription will be reviewed individually for determination of impacts.
- 7 streams (a watercourse entirely within the WMA) or segments of stream (a stream that meanders in and out of the WMA). The highest stream classification is C(T), therefore some streams are regulated by Article 15 of the Environmental Conservation Law (ECL). The T standard indicates a stream that may support a trout population. Water quality standards will be adhered to on all streams.¹³

Guidelines for habitat management projects within these areas are outlined in the Division of Lands and Forests *Rules for Establishment of Special Management Zones on State Forests and Wildlife Management Areas*.¹⁴ Some habitat management activities may either be prohibited or restricted in order to protect these features. Any deviations from these guidelines will be addressed in the individual stand prescriptions.

¹² Edinger, G. J., D. J. Evans, S. Gebauer, T. G. Howard, D. M. Hunt, and A. M. Olivero. 2014. Ecological Communities of New York State, Second Edition. New York Natural Heritage Program, NYS Department of Environmental Conservation, Albany, NY. Available online at <http://www.dec.ny.gov/animals/97703.html>.

¹³ Information about stream classification is available online at <http://www.dec.ny.gov/permits/6042.html>.

¹⁴ Available online at <http://www.dec.ny.gov/outdoor/104218.html>.

LANDSCAPE CONTEXT

The goals of this HMP have been developed with consideration of surrounding landscape features, the availability of habitats, and other conservation lands adjacent to Connecticut Hill WMA (Figures 6 and 7). The landscape within a three-mile radius of the WMA is primarily privately-owned land including:

- Forest (53%)
- Agriculture (7% combining cultivated crops and hay)
- Early successional (30% combining grasslands and shrublands)
- Wetlands (6% combining open water, emergent and woody wetlands)
- Developed areas (4%)

A large portion of the surrounding landscape, like the WMA, is forest. Although some of the early successional lands surrounding the WMA may be considered young forest, they are likely not managed and maintained as young forest. As part of DFW's Young Forest Initiative (YFI) on WMAs, future habitat management for Connecticut Hill WMA will enhance young forest habitat across the landscape. The YFI goal of creating and maintaining 10% of the forested area as young forest will provide managed and maintained young forest habitat that is lacking both within the WMA and the surrounding landscape in perpetuity.

Within the surrounding area of Connecticut Hill WMA are several government-owned properties including Texas Hollow State Forest (937 acres), Cliffside State Forest (977 acres), Newfield State Forest (1,552 acres), Robert Treman State Park (1,110 acres), and Cayuta Lake Boat Launch (76 acres). State parks and boat launches are managed for recreation and likely contain little or no young forest. State Forests may have occasional areas of young forest, but they are managed for multiple uses including water quality protection, recreation, wildlife habitat protection, and the production of forest products. WMAs differ in that they are managed in a sustainable manner to provide quality wildlife habitat and populations by promoting ecosystem health, enhancing landscape biodiversity, and protecting soil productivity and water quality. The production of



Connecticut Hill WMA

Photo: Kyle Olson, NYSDEC

forest products on WMAs is generally a byproduct of management activities related to the creation and improvement of wildlife habitat. Due to the temporary nature of young forest habitat, it is important for wildlife species that a percentage of the landscape be maintained in such an age class

in perpetuity, which is not often the case on State Forests, but is a targeted goal on Connecticut Hill WMA.

In addition, this plan provides for the creation of a smaller amount of non-forested areas, such as grasslands and shrublands, distributed throughout the WMA. The increase of these two habitat types will enhance overall species diversity. Further details on management of each habitat type can be found in the next section of this plan.

II. MANAGEMENT STRATEGIES BY HABITAT TYPE

DEC will continue active management of wildlife habitats on Connecticut Hill WMA to provide the following benefits:

- Maintain habitat characteristics that will benefit wildlife abundance and diversity within the New York landscape.
- Promote Best Management Practices for targeted wildlife and habitats.
- Provide opportunities for wildlife-dependent recreation such as trapping, hunting, and bird watching compatible with the ongoing habitat management practices and species management considerations.
- Improve habitat quality by reducing invasive species, if present and identified for treatment.

FOREST

Forested acreage includes the following forest types:

Natural forest: naturally forested acres, including hardwoods and softwoods. Includes any upland forested acreage that is not young forest, i.e., pole stands, other intermediate forest age classes, mature forest, and old growth forest.

Plantation: planted forested acres, generally planted in rows dominated by one or two species.

Forested wetland: acres where forest or shrub vegetation accounts for greater than 50% of hydrophytic vegetative cover and the soil or substrate is periodically saturated or covered with water.

Young forest: young or regenerating forested acres, which are typically aged 0-10 years since a disturbance or regeneration cut, depending upon the site conditions. May include both natural forest and plantations.

Young forest (forested wetland): young, regenerating forested wetland acres.

Forest management on Connecticut Hill WMA incorporates an approach to create and/or maintain the diversity of forest age classes that are required to support a diversity of wildlife. In 2015, DEC launched YFI to increase the amount of young forest on WMAs to benefit wildlife that require this transitional, disturbance-dependent habitat.¹⁵ One of the goals of the program is

¹⁵ Additional information about DEC's YFI is available online at <http://www.dec.ny.gov/outdoor/104218.html>.

to create a minimum of 10% of the WMA's forested habitat as young forest habitat and maintain that level in perpetuity on each WMA included in the YFI program.

MANAGEMENT OBJECTIVES

- Maintain the WMA's intermediate and mature forested acreage at approximately 84% (9,427 acres) to continue to provide habitat diversity for forest species.
- Convert approximately 41 acres of existing forest into grassland habitats within the next ten years for the benefit of wildlife species that require open space and thick grassy cover for nesting and/or raising young.
- Convert approximately 158 acres of forest into shrubland within the next ten years for the benefit of shrubland obligate species.
- Increase young forest cover from 154 acres (1% of total forested area) to 1,147 acres (11% of total forested area, 10% of the WMA) over the next 10 years to improve habitat for young forest-dependent wildlife.

The long-term management direction for Connecticut Hill WMA is to substantially increase the early successional forest habitats on the property to improve habitat for American woodcock, ruffed grouse and wild turkey. Most of the proposed new young forest (approximately two-thirds) will be created through the conversion of mature softwood plantations that were originally planted in the 1930s and '40s. These plantations currently provide limited habitat benefits for wildlife. The rest of the new young forest will be created by the treatment of natural hardwood stands. Approximately one-third of the acres proposed will target aspen regeneration as the main component of the young forest. Young aspen stands provide much needed habitat for early successional species, particularly ruffed grouse. While focusing on three young forest target species, a host of other species were also taken into consideration when deciding on the size and arrangement of forest treatments. Proposed young forest will mostly be created in patches distributed over the entire WMA. Combined with retained and healthy mature forest stands, distributed through the property, many species of songbird, upland game bird, large and small mammals, reptiles and amphibians will all be able to utilize the WMA and surrounding landscape to a greater extent.

DESCRIPTION OF EXISTING FOREST HABITAT AND TARGET SPECIES

Tables 1 and 2 provide a rough snapshot of the habitat conditions on the WMA for nearly the past 100 years. While the total number of acres comprising the property has increased (923 ac or about 9%), land managers can still make some fairly accurate comparisons. For example, if the WMA had the same amount of forest today as it did back in 1920, the forest would comprise 29% of the property or approximately one third, just as it did back in 1920.

While 100 years may seem like a long period of time for a person, it is not so long for a forest, especially when you consider that the definition of old growth forest requires the trees to be a minimum of 180-200



American woodcock
Photo: Tom Bell, NYSDEC

years of age. Relatively speaking, most of the forest on the WMA is less than 100 years old. Between 1920 and the present, the percentage of forest has steadily increased by roughly 30% every 50 years as young forest, fields, and brushy fields have naturally developed into intermediate/mature aged forest. The management goals and projects identified in this plan would return the acreage of young forest habitat closer to levels that existed around 1970, although this is by coincidence and not by design.

As shown in Table 1, 96% of the total area of Connecticut Hill WMA is forested (10,774 acres). Of this, approximately 98% is composed of natural or plantation forest (10,596 acres), <1% is forested wetlands (24 acres), and 1% is young forest (154 acres). Compared to the surrounding landscape, Connecticut Hill WMA has more forest habitat but less early successional or wetland habitat (Figures 6 and 7). Table 4 provides a more detailed description of the types of forest found on Connecticut Hill WMA and the most common types of trees found in each.

Table 4. Summary of the acreage and dominant overstory species for each forest type present on Connecticut Hill WMA.

Forest Type	Acres (as of 2017)	Desired Acres	Overstory species
Natural forest (mature/intermediate)	8,395	7,949	Red maple, white ash, eastern hemlock
Plantation	2,201	1,454	Red pine, Norway spruce, white pine
Forested wetland	24	24	Red maple, white ash, eastern hemlock
Young forest	154	1,147	
Young forest (forested wetland)	0	0	
Total Forested Acres:	10,774	10,574*	

*The total desired forested acres decreases due to proposed conversion of forest to grassland and shrubland.

The soils on Connecticut Hill WMA are of the Volusia-Mardin-Lordstown group with a small section in the northeast corner that also includes Mardin-Lordstown-Bath group. Soils in these groups are typically shallow to semi-deep, infertile and somewhat poorly drained to well drained.¹⁶

Target Species:

Target species for young forest include American woodcock, ruffed grouse and wild turkey. These species rely on a mixture of mature and young forest habitats and by providing such variety through timber management, we can create a landscape that meets the following requirements:

- Ruffed grouse
 - Drumming areas – Downed trees surrounded by small diameter woody cover.
 - Foraging areas – Open areas with dense overhead cover of young forest with good mast production.

¹⁶ Soil classification information available from: US Department of Agriculture, Natural Resources Conservation Service. Available online at <http://www.nrcs.usda.gov/wps/portal/nrcs/surveylist/soils/survey/state/?stateId=NY>.

- Nesting – Young, open forest stands or second growth woodlands.
- Brood rearing – Herbaceous ground cover with high midstory stem density.^{17, 18}
- Wild turkey
 - Foraging areas – Mast producing hardwood stands and open areas.
 - Nesting – Hardwood or mixed-forest, brushy areas, old fields, downed trees.
 - Roosting – Large stands of open-crowed, mature timber.
 - Brood rearing – Open riparian areas, forest openings, herbaceous cover.¹⁹
- American woodcock:
 - Singing/peenting ground – Open areas from 1 to >100 acres, usually in an abandoned field.
 - Daytime areas – Moist, rich soils with dense overhead cover of young alders, aspen or birch.
 - Nesting – Young, open, second growth woodlands.
 - Brood rearing – Similar to nesting except also including bare ground and dense ground cover.
 - Roosting – Open fields (minimum of 5 acres) and reverting farm fields.²⁰

MANAGEMENT HISTORY

By 1885, most of what is now Connecticut Hill WMA was devoid of trees due to farming practices of the day. In 1928, the State began purchasing properties to create Connecticut Hill. In general, the forests on those properties were in poor condition with much of the good quality sawtimber already cut and removed prior to the land being sold to the State.

Massive efforts were undertaken to restore the abandoned farmland to healthy forests through tree plantings. Most of the planting was done from 1930-1940, with over 3.7 million seedlings planted by State and Federal agencies, and limited plantings occurred as recently as 1960.²¹ Many tree species were tried on Connecticut Hill, including 42,000 red oak, but mainly softwoods were planted, such as white and red pine and, to a lesser degree, Norway spruce, jack pine and cedar.²¹

Numerous studies on forest regeneration and successional forest wildlife were undertaken on the WMA throughout the 1950s. The WMA was home to multiple ruffed grouse research projects in conjunction with the long-standing history of forest products sold from the WMA. The earliest records of timber sales date back to 1946 (Tables 5 and 6). The types of forest treatments used over the years are mostly the same types of treatments that are proposed in this plan. Some differences are that this plan includes treatments such as apple tree release and shrubland maintenance to manage multiple habitat types (in addition to forest).

¹⁷ Dessecker, D.R, G.W. Norman, and S.J. Williamson. 2006. Ruffed Grouse Conservation Plan. Association of Fish & Wildlife Agencies: Resident Game Bird Working Group. 94 pp.

¹⁸ Jones, B.C. et al. Habitat Management of Pennsylvania Ruffed Grouse. Pennsylvania Game Commission. 10 pp.

¹⁹ US Department of Agriculture, Natural Resources Conservation Service. 1999. Wild Turkey. Wildlife Habitat Management Institute. 12 pp.

²⁰ US Department of Agriculture, Natural Resources Conservation Service. 2010. American Woodcock: Habitat Best Management Practices for the Northeast by S.J. Williamson. Wildlife Insight. Washington, DC.

²¹ Demeree, R.L. 1967. Maintaining Wildlife Habitat Through Forest Management on Connecticut Hill. Forester, Cortland, NY. 4pp.

Table 5. Summary of forest management previously conducted on Connecticut Hill WMA.

Date of Sale	# of Sales	Acres Treated	Treatment
1946-59	43	20	Not recorded prior to 1960
1960-69	3	175	Selection
1970-79	537	234	Selection, Clearcut
1980-89	246	331	Selection, Salvage, Seed Tree, Thinning
1990-99	42	203	Selection, Salvage, Thinning
2000-09	9	150	Clearcut, Thinning
2010-17	5	180	Clearcut, Shelterwood, Thinning
Total:	885	1,293	

The acres treated column in Table 5 does not reflect the acreage from most of the smaller scale timber sales (generally sales valued at <\$10,000) due to the fact that acres were not recorded for those sales. Likely that is due to a combination of record keeping practices at the time, those sales treated small portions of larger forest stands, and most of the smaller timber sales involved small volumes of forest products. A more in-depth discussion of the forest products sold from Connecticut Hill WMA follows in Table 6.

While the actual number of acres treated on Connecticut Hill WMA is unknown, land managers made an estimate with the following assumptions. Out of the total number of sales in Table 5, 21 of those were larger timber sales and account for the total number of acres treated shown in Table 5 (1,293ac). Since the remaining 864 sales involved small quantities of forest products they likely treated a smaller corresponding area. Assuming each small sale treated an average area of 1-5ac, that would result in an additional 864 to 4,320ac treated, which would mean the actual number of acres treated likely falls in the range of 2,157 to 5,613ac total, or an average of about 30 to 80ac treated each year from 1946-2017.

In this plan, land managers propose treating 1,781ac (1,763ac of forest and 19ac of shrubland) which is an average of 178ac each year. This degree of forest management is needed to reach the YFI goal of converting 10% of the forested acres of Connecticut Hill WMA to young forest within a 10 year time period.

Table 6. Summary of forest products sold from Connecticut Hill WMA.

Date of Sale	Christmas Trees	Maple Taps	Firewood (cords)	Fence Posts	Pulpwood (tons)	Cabin Logs/Red Pine Poles	Sawtimber, Thousands of Board Feet (MBF)	Value (\$) ^a
1946-59	12,663		34				552	21,157
1960-69	125						569	15,355
1970-79		75	3,993		1,500	15,231	763	54,590
1980-89			4,928	150	1,784	3,511	787	150,199
1990-99			1,051		2,536	10	347	76,022
2000-09			605		163		1,456	109,326
2010-17			758		2,769		1,699	160,053
Totals	12,788	75	11,369	150	8,752	18,752	6,173	586,702

^a Value has not been adjusted to reflect inflation.

Timber management from 1946-1960 was relatively light and focused on thinning both hardwood and the recently planted softwood stands to sell firewood, Christmas trees, and sawtimber. Then, in the 1960s, there was a lull in timber management, the sale of Christmas trees tapered off, and there were only two sales of sawtimber. Most likely the decline in Christmas tree sales was due to those trees having grown too large to be useful as Christmas trees since they were initially planted in the 1930s-40s.

Beginning in the 1970s and continuing through the 1980s there was a surge in the total number of sales with firewood, pulpwood, cabin logs/red pine poles and sawtimber being the primary products sold. The large amount of cabin logs/red pine poles being sold was likely due to the softwood trees that were not cut as Christmas trees had grown to the ideal size to be sold as logs and poles. The majority of the firewood was sold to individuals and small logging businesses. On average, each small sale involved an average of 10-50 cords of firewood, 100-200 cabin logs/red pine poles, or 1-5 MBF of sawtimber.

Starting in the 1990s the characteristics of timber sales started to change again. Unlike the previous 20 years, the number of small sales started to drop dramatically, which resulted in less firewood sold. For unknown reasons, the sale of cabin logs/red pine poles came to an end during that time as well. Since then softwood (such as pine and spruce) has been sold as either sawtimber or pulpwood.

The trend of fewer sales continued from the 1990s up to the present, however each sale treated more acres and harvested higher amounts of sawtimber than had been previously seen on the property. The increase in sawtimber being harvested is likely a result of the continuing trend of an increase in both the acreage of forested habitat and an increase in the age of the trees. As Tables 1 and 2 showed, in the past 100 years there has been a steady increase in the amount of forested habitat on Connecticut Hill WMA. In that time, both softwood plantations that were initially planted in the 1930s-40s and hardwood that naturally colonized abandoned farm fields have become mature stands with a majority of the trees of sufficient size and quality to be sold as sawtimber.

IMPLEMENTATION PLAN AND ANTICIPATED SCHEDULE

The following management is proposed to reach the goal of 1,147 acres of young forest, 187 acres of shrubland, and 298 acres of grassland within ten years. As part of these goals, 78 acres of shrubland will be created through apple tree release and 398 acres of young forest will be created to specifically regenerate aspen. In addition, 566 acres are also identified for uneven aged (thinning) treatments. Achieving this proposed level of management is subject to: changing timber markets, concerns over rare, threatened or endangered species, cultural/historical features on the property, wet ground conditions, or changes in level of staff and funding support.

- **Management planned for 2017-2021** (Table 7, Figures 8-14):
 - **Stands A6, B34, B43, I31 and I50.1:** These stands are red pine plantations that will be treated via clearcut to convert the stand to young forest (81 acres).
 - **Stands B2, C5, C13, D8, E5, E6, E7, E40, H27, J3.1, M27, M40, M45.1 and R1:** These stands are old apple orchards where the apple trees are becoming overtopped by other trees and brush. An apple tree release treatment will be

conducted by cutting the brush and trees immediately adjacent to each apple tree to provide them with more sunlight so they can continue to produce apples for wildlife forage. When the apple tree releases are done, those parts of the stands will be maintained as shrubland (74 acres).

- **Stand B18:** This is a pioneer hardwood stand with a mix of red maple, white ash and black cherry. Part of the stand will be patch clearcut to create shrubland. The other parts of the stand will remain untreated at this time (4 acres patch clearcut).
- **Stands B19 and B65:** These are oak-northern hardwood stands with a mix of red maple, red oak and white ash. Part of the stands will be patch clearcut to create young forest and the remainder of the stands will be thinned to remove the low quality trees in order to give the higher quality trees more room to grow. The thinning will maintain those parts of the stand as intermediate-mature aged forest (30 acres patch clearcut, 64 acres thinned).
- **Stand B23:** This is a northern hardwood stand with a mix of red maple, red oak and aspen. Part of the stand will be patch clearcut to create young forest and the remainder of the stand will be left untreated at this time (3 acres patch clearcut).
- **Stand B39.2:** This is a pioneer hardwood stand of mostly white ash that will be clearcut to create young forest (4 acres).
- **Stand B49.1:** This is a northern hardwood stand with a mix of red maple, white ash and white pine where part of the stand will be patch clearcut to create shrubland. The remainder of the stand will be left untreated at this time (5 acres patch clearcut).
- **Stands B49.2 and H25:** These are northern hardwood stands with a mix of black birch, aspen and red maple that will be clearcut to create young forest (10 acres).
- **Stand B53:** This is a northern hardwood-white pine stand with a mix of red maple, red oak and white pine. Part of the stand will be patch clearcut to create young forest. The remainder of the stand will be thinned to create shrubland and to remove the low quality trees in order to give the higher quality trees more room to grow (1 acre patch clearcut, 16 acres shrubland, 20 acres thinned).
- **Stands B55, H10, I11, I14, J51 and L41:** These are pioneer hardwood stands with a mix of red maple, white ash and aspen that will be clearcut to create young forest and to encourage the regeneration of aspen (68 acres).
- **Stands B62, D2.1 and K26:** These are a mix of aspen, white ash and red oak where parts of the stands will be patch clearcut to create young forest and to encourage the regeneration of aspen. The remaining parts of those stands will remain untreated at this time (57 acres patch clearcut).
- **Stand C13:** This stand is a mix of black cherry, white ash and red maple where part of the stand will be patch clearcut to create young forest (4 acres).
- **Stand C14:** This stand is a black locust plantation that will be clearcut to create young forest (5 acres).
- **Stand E41:** This is a softwood plantation of Scotch pine and Norway spruce that will be clearcut to create shrubland (11 acres).
- **Stand F8:** This is an oak-northern hardwood stand with a mix of red oak, black locust and black cherry. A thinning will be used to remove the black locust and other low quality trees in order to give the higher quality trees more room to grow. The thinning will maintain the stand as intermediate-mature aged forest

- (18 acres).
- **Stand F21:** This is a natural hardwood-white pine stand that will be clearcut to encourage the regeneration of aspen (10 acres).
 - **Stand G27:** This is a white pine plantation that will be thinned to remove Table Mountain pine and low quality trees in order to give the higher quality trees, (focusing on white pine) more room to grow. The thinning will maintain the stand as intermediate-mature aged forest (23 acres).
 - **Stand G46:** This is a red pine-white pine plantation that will be thinned to remove red pine, Norway spruce, jack pine and low quality trees in order to give the higher quality trees more room to grow. The thinning will maintain the stand as intermediate-mature aged forest (12 acres).
 - **Stand H9:** This is a natural hardwood-eastern hemlock stand where part of the stand will be patch clearcut to create young forest. The remainder of the stand will be thinned to remove the low quality trees in order to give the higher quality trees more room to grow. The thinning will maintain that part of the stand as intermediate-mature aged forest (23 acres patch clearcut, 142 acres thinned).
 - **Stand H15:** This is a white pine plantation that will be clearcut to create young forest (5 acres).
 - **Stands H16, I39, J4 and O25:** These stands have recently been clearcut and over the next 5 years will be converted into grassland (41 acres).
 - **Stand H22:** This is an oak stand with a mix of red maple, red oak and American beech that will be thinned to remove most of the red maple, American beech and low quality trees in order to give the higher quality red oak more room to grow. The thinning will maintain the stand as intermediate-mature aged forest (11 acres).
 - **Stand H24:** This is a white pine plantation that will be treated with a seed tree cut to remove the majority of the trees and create shrubland (11 acres).
 - **Stands H29 and K41:** These stands are a mix of red maple, white pine and white ash with patches of black locust. These stands will be thinned to remove the black locust and low quality trees in order to give the higher quality trees more room to grow. The thinning will maintain the stands as intermediate-mature aged forest (52 acres).
 - **Stand K42:** This stand is a mix of red maple, white pine and white ash with patches of black locust. This stand will be treated with a seed tree cut to create young forest by removing all of the black locust and most of the low quality trees in order to give the higher quality trees more room to grow (11 acres).
 - **Stands I22, I26, I36, I43 and I53:** These are Norway spruce plantations that will be clearcut to create young forest (32 acres).
 - **Stand I23:** This is a mix of red pine, white pine and red maple that will be treated with a seed tree cut to create young forest by removing the majority of the trees and leaving a few of the best quality trees (mainly white pine) scattered throughout the stand to provide a seed source for the next generation of trees (11 acres).
 - **Stand I24:** This stand is a mix of red maple, red oak and white oak. A crop tree release treatment will be conducted in this stand for enhancing future sawtimber and mast production for wildlife (14 acres).

- **Stand I27:** This is a Norway spruce plantation that will be treated with a seed tree cut to create young forest by removing the majority of the trees. However, most of the aspen trees will be left as a source of seed to encourage the regeneration of aspen (13 acres).
- **Stands I42 and I48:** These are Norway spruce and red pine plantations that will be clearcut to create shrubland (7 acres).
- **Stands J39 and J46:** These stands are a mix of red maple, white ash and white pine where parts of the stands will be patch clearcut to create young forest and to specifically encourage the regeneration of aspen. The remainder of the stands will be thinned to remove the low quality trees in order to give the higher quality trees more room to grow. The thinning will maintain those parts of the stands as intermediate-mature aged forest (17 acre patch clearcut, 22 acres thinned).
- **Stand J54:** This is a white pine plantation where part of the stand will be patch clearcut to create young forest and to encourage the regeneration of aspen (19 acres).
- **Stand J56:** This is an oak stand with a mix of red oak, red maple and American basswood where part of the stand will be patch clearcut to create young forest to specifically encourage the regeneration of aspen (13 acres).
- **Stand J68:** This is a mix of red maple, aspen and red oak that will be clearcut to create young forest and to encourage the regeneration of aspen (8 acres).
- **Stand K45:** This is a mix of red maple, aspen and black locust that will be treated with a seed tree cut to remove the majority of the trees to create shrubland (16 acres).
- **Stand N24:** This is a black locust plantation that will be treated with a seed tree cut to create young forest. All of the black locust and the majority of the other trees will be removed. A few of the best quality trees (mainly hard maple) will be left scattered throughout the stand to provide a seed source for the next generation of trees (2 acres).
- **Stand N26:** This is a mix of red maple, red oak and white pine. Part of the stand will be treated with a seed tree cut to remove the majority of the trees to create shrubland and young forest. The rest of the stand will be left untreated at this time (3 acres young forest, 4 acres shrubland).
- **Management planned for 2022-2026** (Table 8, Figures 8-14):
 - **Stands D6, D10 and D13:** These stands are a mix of red oak, red maple and hard maple that will be thinned, focusing on removing most of the red maple and the low quality trees in order to give the red oak and higher quality trees more room to grow. The thinning will maintain the stand as intermediate-mature aged forest (49 acres).
 - **Stand D9:** This is a mix of eastern hemlock, hard maple, and red oak that will be thinned, focusing on removing some of the hard maple, red oak and the low quality trees in order to give the eastern hemlock and higher quality trees more room to grow. The thinning will maintain the stand as intermediate-mature aged forest (52 acres).
 - **Stand D11:** This is a mix of red maple, white pine and aspen that will be treated with a seed tree cut to create young forest. The majority of the trees will be removed but most of the aspen trees will be left as a source of seed to encourage

- regeneration (19 acres).
- **Stands D12, D14, K19, L7 and L35:** These are pioneer hardwood stands with a mix of aspen, white ash, and red oak that will be clearcut to create young forest and to encourage the regeneration of aspen (28 acres).
 - **Stands E7, E8, E16, E19, F14, I77, K20, M18, M36, M37 and M44:** These stands are red pine plantations that will be clearcut to create young forest (187 acres).
 - **Stand F20:** This is a red pine-white pine plantation that will be clearcut to create young forest (10 acres).
 - **Stands G6, G10, K18.1, K18.2, M21, M28, O35, O39 and P12:** These are Norway spruce plantations that will be clearcut to create young forest (64 acres).
 - **Stand G12:** This is a European larch plantation that will be clearcut to create young forest (4 acres).
 - **Stands G13 and G17:** These stands are a mix of Table Mountain pine, red maple and white ash that will be clearcut to create young forest (24 acres).
 - **Stands G20, G22, G32.2 and P2:** These are Norway spruce plantations that will be clearcut to create young forest, however some aspen will be left as a seed source to try and encourage the regeneration of aspen (44 acres).
 - **Stand G28:** This is a mix of red maple, white ash, and black locust that will be thinned to remove all of the black locust and some of the low quality trees to give the higher quality trees more room to grow. Snags will be retained where possible for the benefit of wildlife. The thinning will maintain the stand as intermediate-mature aged forest (12 acres).
 - **Stands G29 and I19:** This is a mix of Norway spruce and Table Mountain pine that will be clearcut to create young forest (22 acres).
 - **Stand G30:** This is a mix of Norway spruce, Table Mountain pine, and red maple that will be treated with a seed tree cut to create young forest by removing all of the Norway spruce, Table Mountain pine, and some of the red maple (7 acres).
 - **Stand G32.1:** This is a mix of red pine, red maple and Norway spruce with lesser amounts of Table Mountain pine, white pine and white ash. This stand will be treated with a seed tree cut to create young forest by removing all of the red pine, Norway spruce and Table Mountain pine along with most of the red maple and white ash. Most of the white pine and some of the red maple will be left as a seed source for the next generation of trees (19 acres).
 - **Stand I4:** This is a Norway spruce plantation that will be treated with a seed tree cut to create young forest by removing the majority of the trees. Most of the aspen trees will be left as a source of seed to encourage the regeneration of aspen (33 acres).
 - **Stand I37:** This is a mix of white pine, jack pine and red maple that will be treated with a seed tree treatment cut to create young forest by removing the majority of the trees. Some of the white pine and red maple will be left as a source of seed for the next generation of trees (7 acres).
 - **Stands J32 and J66:** These stands are old apple orchards where the apple trees are becoming overtopped by other trees and brush. An apple tree release treatment will be conducted by cutting the brush and trees immediately adjacent to each apple tree to provide them with more sunlight so they can continue to

- produce apples for wildlife forage. When the apple tree releases are done, those parts of the stands will be maintained as shrubland (4 acres).
- **Stand L48:** This is a mix of red maple, white pine and aspen. Most of the stand will be thinned and maintained as mature forest by removing most of the red maple and the low quality trees to give the white pine and higher quality trees more room to grow. Part of the stand will be patch clearcut to create young forest by laying out multiple patch clearcuts 3-8 acres in size (50 acres thinned, 15 acres clearcut).
 - **Stand M12:** This is a mix of Norway spruce, white pine and red maple that will be clearcut to create young forest (5 acres).
 - **Stands M33, Q31 and Q44:** These are red pine and white pine plantations that will be treated with a seed tree cut to create young forest by removing the majority of the trees. Most of the aspen will be left as a source of seed to encourage the regeneration of aspen (31 acres).
 - **Stands O40 and P28:** These are red pine plantations where part of the stand will be patch clearcut to create young forest and the rest of the stand will remain untreated at this time (27 acres).
 - **Stand P11:** This is a mix of red pine, Norway spruce and red maple that will be clearcut to create young forest (6 acres).
 - **Stand P22:** This is a red pine plantation where all of the red pine and most of the low quality trees will be removed. Part of the stand will be clearcut and most of the aspen will be left in the treated area as a source of seed to encourage the regeneration of aspen. The rest of the stand will be thinned, with part of the stand left as intermediate aged northern hardwood forest, and another part will be converted to shrubland. The intention is to create a wide variety of habitat in the same area for the benefit of wildlife (5 acres shrubland, 25 acres patch clearcut, 25 acres thinning).

Table 7. Forest management schedule for the first five-year period of this HMP (2017-2021).

Stand	Acres	Size Class	Forest Type		Management Direction	Treatment Type
			Current	Future		
A6	38	Pole Timber 6"-11" DBH	Plantation: Red Pine	Natural Forest: Seedling/ Sapling	Even Aged	Clearcut
B2	18	Pole Timber 6"-11" DBH	Natural Forest: Other	Non Forest: Shrubland	Even Aged	Apple Tree Release
B18	4	Pole Timber 6"-11" DBH	Natural Forest: Pioneer Hardwood	Natural Forest: Pioneer Hardwood and Non Forest: Shrubland	Even Aged	Patch Clearcut
B19	41	Pole Timber 6"-11" DBH	Natural Forest: Oak- Northern Hardwood	Natural Forest: Oak- Northern Hardwood and Natural Forest: Seedling/ Sapling	Even and Uneven Aged	Patch Clearcut and Thinning
B23	3	Pole Timber 6"-11" DBH	Natural Forest: Northern Hardwood	Natural Forest: Northern Hardwood and Natural Forest: Seedling/ Sapling	Even Aged	Patch Clearcut

Table 7. Continued

Stand	Acres	Size Class	Forest Type		Management Direction	Treatment Type
			Current	Future		
B34	26	Pole Timber 6"-11" DBH	Plantation: Red Pine	Natural Forest: Seedling/ Sapling	Even Aged	Clearcut
B39.2	4	Pole Timber 6"-11" DBH	Natural Forest: Pioneer Hardwood	Natural Forest: Seedling/ Sapling	Even Aged	Clearcut
B43	7	Pole Timber 6"-11" DBH	Plantation: Red Pine	Natural Forest: Seedling/ Sapling	Even Aged	Clearcut
B49.1	5	Pole Timber 6"-11" DBH	Natural Forest: Northern Hardwood	Natural Forest: Northern Hardwood and Natural Forest: Seedling/ Sapling	Even Aged	Patch Clearcut
B49.2	2	Pole Timber 6"-11" DBH	Natural Forest: Northern Hardwood	Natural Forest: Seedling/ Sapling	Even Aged	Clearcut
B53	37	Pole Timber 6"-11" DBH	Natural Forest: Northern Hardwood- White Pine	Natural Forest: Northern Hardwood- White Pine and Non Forest: Shrubland	Even Aged	Patch Clearcut and Thinning
B55	14	Pole Timber 6"-11" DBH	Natural Forest: Pioneer Hardwood	Natural Forest: Seedling/ Sapling	Even Aged	Clearcut
B62	15	Pole Timber 6"-11" DBH	Natural Forest: Northern Hardwood	Natural Forest: Northern Hardwood and Natural Forest: Seedling/ Sapling	Even Aged	Patch Clearcut
B65	53	Pole Timber 6"-11" DBH	Natural Forest: Oak-Northern Hardwood	Natural Forest: Oak-Northern Hardwood and Natural Forest: Seedling/ Sapling	Even and Uneven Aged	Patch Clearcut and Thinning
C5	1	Small Sawtimber 12"-18" DBH	Plantation: Red Pine-Norway Spruce	Plantation: Red Pine- Norway Spruce and Non Forest: Shrubland	Even Aged	Apple Tree Release
C13	8	Pole Timber 6"-11" DBH	Natural Forest: Pioneer Hardwood	Natural Forest: Seedling/ Sapling and Non Forest: Shrubland	Even Aged	Apple Tree Release and Patch Clearcut
C14	5	Pole Timber 6"-11" DBH	Plantation: Black Locust	Natural Forest: Seedling/ Sapling	Even Aged	Clearcut
D2.1	15	Pole Timber 6"-11" DBH	Natural Forest: Pioneer Hardwood	Natural Forest: Seedling/ Sapling	Even Aged	Patch Clearcut
D8	3	Pole Timber 6"-11" DBH	Plantation: Miscellaneous Species	Non Forest: Shrubland	Even Aged	Apple Tree Release
E5	2	Pole Timber 6"-11" DBH	Natural Forest: Pioneer Hardwood	Natural Forest: Pioneer Hardwood and Non Forest: Shrubland	Even Aged	Apple Tree Release
E6	3	Pole Timber 6"-11" DBH	Natural Forest: Pioneer Hardwood	Non Forest: Shrubland	Even Aged	Apple Tree Release

Table 7. Continued

Stand	Acres	Size Class	Forest Type		Management Direction	Treatment Type
			Current	Future		
E7	1	Pole Timber 6"-11" DBH	Plantation: Red Pine	Plantation: Red Pine and Non Forest: Shrubland	Even Aged	Apple Tree Release
E40	12	Pole Timber 6"-11" DBH	Natural Forest: Pioneer Hardwood	Non Forest: Shrubland	Even Aged	Apple Tree Release
E41	11	Pole Timber 6"-11" DBH	Plantation: Scotch Pine	Non Forest: Shrubland	Even Aged	Clearcut
F8	18	Small Sawtimber 12"-18" DBH	Natural Forest: Oak- Northern Hardwood	Natural Forest: Oak- Northern Hardwood	Uneven Aged	Thinning
F21	10	Pole Timber 6"-11" DBH	Natural Forest: Northern Hardwood- White Pine	Natural Forest: Seedling/ Sapling	Even Aged	Clearcut
G27	23	Small Sawtimber 12"-18" DBH	Plantation: White Pine	Plantation: White Pine	Uneven Aged	Thinning
G46	12	Small Sawtimber 12"-18" DBH	Plantation: Red Pine- White Pine	Plantation: White Pine	Uneven Aged	Thinning
H9	165	Small Sawtimber 12"-18" DBH	Natural Forest: Northern Hardwood- Eastern Hemlock	Natural Forest: Northern Hardwood- Eastern Hemlock and Natural Forest: Seedling/ Sapling	Even Aged and Uneven Aged	Patch Clearcut and Thinning
H10	7	Pole Timber 6"-11" DBH	Natural Forest: Pioneer Hardwood	Natural Forest: Seedling/ Sapling	Even Aged	Clearcut
H15	5	Pole Timber 6"-11" DBH	Plantation: White Pine	Natural Forest: Seedling/ Sapling	Even Aged	Clearcut
H16	10	Small Sawtimber 12"-18" DBH	Plantation: Red Pine	Non Forest: Grassland	Even Aged	Grassland Conversion
H22	11	Small Sawtimber 12"-18" DBH	Natural Forest: Oak	Natural Forest: Oak	Uneven Aged	Thinning
H24	11	Pole Timber 6"-11" DBH	Plantation: White Pine	Non Forest: Shrubland	Even Aged	Seed Tree
H25	8	Pole Timber 6"-11" DBH	Natural Forest: Northern Hardwood	Natural Forest: Seedling/ Sapling	Even Aged	Clearcut
H27	5	Pole Timber 6"-11" DBH	Natural Forest: Pioneer Hardwood	Non Forest: Shrubland	Even Aged	Apple Tree Release
H29	45	Pole Timber 6"-11" DBH	Natural Forest: Northern Hardwood- White Pine	Natural Forest: Northern Hardwood- White Pine	Uneven Aged	Thinning
I11	4	Pole Timber 6"-11" DBH	Natural Forest: Pioneer Hardwood	Natural Forest: Seedling/ Sapling	Even Aged	Clearcut
I14	19	Small Sawtimber 12"-18" DBH	Natural Forest: Pioneer Hardwood	Natural Forest: Seedling/ Sapling	Even Aged	Clearcut

Table 7. Continued

Stand	Acres	Size Class	Forest Type		Management Direction	Treatment Type
			Current	Future		
I22	7	Small Sawtimber 12"-18" DBH	Plantation: Norway Spruce	Natural Forest: Seedling/ Sapling	Even Aged	Clearcut
I23	11	Pole Timber 6"-11" DBH	Plantation: Bucket Mix	Natural Forest: Seedling/ Sapling	Even Aged	Seed Tree
I24	14	Pole Timber 6"-11" DBH	Natural Forest: Oak-Northern Hardwood	Natural Forest: Oak-Northern Hardwood	Uneven Aged	Crop Tree Release
I26	6	Small Sawtimber 12"-18" DBH	Plantation: Norway Spruce	Natural Forest: Seedling/ Sapling	Even Aged	Clearcut
I27	13	Small Sawtimber 12"-18" DBH	Plantation: Norway Spruce	Natural Forest: Seedling/ Sapling	Even Aged	Seed Tree
I31	3	Small Sawtimber 12"-18" DBH	Plantation: Red Pine	Natural Forest: Seedling/ Sapling	Even Aged	Clearcut
I36	3	Pole Timber 6"-11" DBH	Plantation: Norway Spruce	Natural Forest: Seedling/ Sapling	Even Aged	Clearcut
I39	5	Seedling/Sapling 0"-5" DBH	Natural Forest: Seedling/ Sapling	Non-Forest: Grassland	Even Aged	Grassland Conversion
I42	5	Pole Timber 6"-11" DBH	Plantation: Norway Spruce	Non-Forest: Shrubland	Even Aged	Clearcut
I43	9	Pole Timber 6"-11" DBH	Plantation: Norway Spruce	Natural Forest: Seedling/ Sapling	Even Aged	Clearcut
I48	2	Pole Timber 6"-11" DBH	Plantation: Red Pine-Spruce	Non-Forest: Shrubland	Even Aged	Clearcut
I50.1	7	Small Sawtimber 12"-18" DBH	Plantation: Red Pine	Natural Forest: Seedling/ Sapling	Even Aged	Clearcut
I53	7	Small Sawtimber 12"-18" DBH	Plantation: Norway Spruce	Natural Forest: Seedling/ Sapling	Even Aged	Clearcut
J3.1	5	Pole Timber 6"-11" DBH	Natural Forest: Pioneer Hardwood	Non-Forest: Shrubland	Even Aged	Apple Tree Release
J4	10	Seedling/Sapling 0"-5" DBH	Natural Forest: Seedling/ Sapling	Non-Forest: Grassland	Even Aged	Grassland Conversion
J39	22	Pole Timber 6"-11" DBH	Natural Forest: Northern Hardwood-White Pine	Natural Forest: Northern Hardwood- White Pine and Natural Forest: Seedling/ Sapling	Even Aged and Uneven Aged	Patch Clearcut and Thinning
J46	17	Pole Timber 6"-11" DBH	Natural Forest: Northern Hardwood-White Pine	Natural Forest: Northern Hardwood- White Pine and Natural Forest: Seedling/ Sapling	Even Aged and Uneven Aged	Patch Clearcut and Thinning

Table 7. Continued

Stand	Acres	Size Class	Forest Type		Management Direction	Treatment Type
			Current	Future		
J51	12	Pole Timber 6"-11" DBH	Natural Forest: Pioneer Hardwood	Natural Forest: Seedling/ Sapling	Even Aged	Clearcut
J54	19	Pole Timber 6"-11" DBH	Plantation: White Pine	Plantation: White Pine and Natural Forest: Seedling/ Sapling	Even Aged	Patch Clearcut
J56	13	Pole Timber 6"-11" DBH	Natural Forest: Oak	Natural Forest: Oak and Natural Forest: Seedling/ Sapling	Even Aged	Patch Clearcut
J68	8	Pole Timber 6"-11" DBH	Natural Forest: Oak- Northern Hardwood	Natural Forest: Seedling/ Sapling	Even Aged	Clearcut
K26	27	Small Sawtimber 12"-18" DBH	Natural Forest: Northern Hardwood	Natural Forest: Northern Hardwood and Natural Forest: Seedling/ Sapling	Even Aged	Patch Clearcut
K41	7	Small Sawtimber 12"-18" DBH	Natural Forest: Other	Natural Forest: Pioneer Hardwood	Uneven Aged	Thinning
K42	11	Small Sawtimber 12"-18" DBH	Natural Forest: Black Locust	Natural Forest: Seedling/ Sapling	Even Aged	Seed Tree
K45	16	Pole Timber 6"-11" DBH	Natural Forest: Pioneer Hardwood	Non Forest: Shrubland	Even Aged	Seed Tree
L41	12	Pole Timber 6"-11" DBH	Natural Forest: Pioneer Hardwood	Natural Forest: Seedling/ Sapling	Even Aged	Clearcut
M27	2	Pole Timber 6"-11" DBH	Natural Forest: Other	Non Forest: Shrubland	Even Aged	Apple Tree Release
M40	3	Pole Timber 6"-11" DBH	Natural Forest: Northern Hardwood	Non Forest: Shrubland	Even Aged	Apple Tree Release
M45.1	6	Pole Timber 6"-11" DBH	Natural Forest: Northern Hardwood	Non Forest: Shrubland	Even Aged	Apple Tree Release
N24	2	Pole Timber 6"-11" DBH	Plantation: Black Locust	Natural Forest: Seedling/ Sapling	Even Aged	Seed Tree
N26	7	Pole Timber 6"-11" DBH	Natural Forest: Northern Hardwood- White Pine	Natural Forest: Northern Hardwood- White Pine and Natural Forest: Seedling/ Sapling and Non Forest: Shrubland	Even Aged	Seed Tree
O25	16	Small Sawtimber 12"-18" DBH	Plantation: Norway Spruce	Non Forest: Grassland	Even Aged	Grassland Conversion
R1	9	Small Sawtimber 12"-18" DBH	Natural Forest: Northern Hardwood- Eastern Hemlock	Natural Forest: Northern Hardwood- Eastern Hemlock and Non Forest: Shrubland	Even Aged	Apple Tree Release

Table 8. Forest management schedule for the second five-year period of this HMP (2022-2026).

Stand	Acres	Size Class	Forest Type		Management Direction	Treatment Type
			Current	Future		
D6	25	Small Sawtimber 12"-18" DBH	Natural Forest: Oak	Natural Forest: Oak	Uneven Aged	Thinning
D9	52	Small Sawtimber 12"-18" DBH	Natural Forest: Northern Hardwood-Eastern Hemlock	Natural Forest: Northern Hardwood-Eastern Hemlock	Uneven Aged	Thinning
D10	8	Small Sawtimber 12"-18" DBH	Natural Forest: Oak	Natural Forest: Oak	Uneven Aged	Thinning
D11	19	Pole Timber 6"-11" DBH	Natural Forest: Pioneer Hardwood	Natural Forest: Seedling/ Sapling	Even Aged	Seed Tree
D12	2	Pole Timber 6"-11" DBH	Natural Forest: Pioneer Hardwood	Natural Forest: Seedling/ Sapling	Even Aged	Clearcut
D13	16	Small Sawtimber 12"-18" DBH	Natural Forest: Oak	Natural Forest: Oak	Uneven Aged	Thinning
D14	8	Pole Timber 6"-11" DBH	Natural Forest: Pioneer Hardwood	Natural Forest: Seedling/ Sapling	Even Aged	Clearcut
E7	13	Pole Timber 6"-11" DBH	Plantation: Red Pine	Non Forest: Shrubland and Natural Forest: Seedling/ Sapling	Even Aged	Clearcut
E8	9	Pole Timber 6"-11" DBH	Plantation: Red Pine	Natural Forest: Seedling/ Sapling	Even Aged	Clearcut
E16	18	Pole Timber 6"-11" DBH	Plantation: Red Pine	Natural Forest: Seedling/ Sapling	Even Aged	Clearcut
E19	9	Pole Timber 6"-11" DBH	Plantation: Red Pine	Natural Forest: Seedling/ Sapling	Even Aged	Clearcut
F14	21	Pole Timber 6"-11" DBH	Plantation: Red Pine	Natural Forest: Seedling/ Sapling	Even Aged	Clearcut
F20	10	Small Sawtimber 12"-18" DBH	Plantation: Red Pine-White Pine	Natural Forest: Seedling/ Sapling	Even Aged	Clearcut
G6	6	Small Sawtimber 12"-18" DBH	Plantation: Norway Spruce	Natural Forest: Seedling/ Sapling	Even Aged	Clearcut
G10	11	Small Sawtimber 12"-18" DBH	Plantation: Norway Spruce	Natural Forest: Seedling/ Sapling	Even Aged	Clearcut
G12	4	Pole Timber 6"-11" DBH	Plantation: European Larch	Natural Forest: Seedling/ Sapling	Even Aged	Clearcut
G13	7	Pole Timber 6"-11" DBH	Plantation: Pine-Natural Species	Natural Forest: Seedling/ Sapling	Even Aged	Clearcut
G17	17	Small Sawtimber 12"-18" DBH	Plantation: Pine-Natural Species	Natural Forest: Seedling/ Sapling	Even Aged	Clearcut
G20	7	Small Sawtimber 12"-18" DBH	Plantation: Norway Spruce	Natural Forest: Seedling/ Sapling	Even Aged	Clearcut

Table 8. Continued

Stand	Acres	Size Class	Forest Type		Management Direction	Treatment Type
			Current	Future		
G22	11	Small Sawtimber 12"-18" DBH	Plantation: Norway Spruce	Natural Forest: Seedling/ Sapling	Even Aged	Clearcut
G28	12	Pole Timber 6"-11" DBH	Plantation: Black Locust	Natural Forest: Northern Hardwood	Uneven Aged	Thinning
G29	15	Small Sawtimber 12"-18" DBH	Plantation: Bucket Mix	Natural Forest: Seedling/ Sapling	Even Aged	Clearcut
G30	7	Pole Timber 6"-11" DBH	Plantation: Bucket Mix	Natural Forest: Seedling/ Sapling	Even Aged	Seed Tree
G32.1	19	Pole Timber 6"-11" DBH	Plantation: Bucket Mix	Natural Forest: Seedling/ Sapling	Even Aged	Seed Tree
G32.2	12	Small Sawtimber 12"-18" DBH	Plantation: Norway Spruce	Natural Forest: Seedling/ Sapling	Even Aged	Seed Tree
I4	33	Small Sawtimber 12"-18" DBH	Plantation: Norway Spruce	Natural Forest: Seedling/ Sapling	Even Aged	Seed Tree
I19	7	Small Sawtimber 12"-18" DBH	Plantation: Norway Spruce	Natural Forest: Seedling/ Sapling	Even Aged	Clearcut
I37	7	Pole Timber 6"-11" DBH	Plantation: Pine-Natural Species	Natural Forest: Seedling/ Sapling	Even Aged	Seed Tree
I77	2	Pole Timber 6"-11" DBH	Plantation: Red Pine	Natural Forest: Seedling/ Sapling	Even Aged	Clearcut
J32	2	Small Sawtimber 12"-18" DBH	Natural Forest: Northern Hardwood-Eastern Hemlock	Natural Forest: Northern Hardwood-Eastern Hemlock and Non-Forest: Shrubland	Even Aged	Apple Tree Release
J66	2	Pole Timber 6"-11" DBH	Natural Forest: Other	Natural Forest: Other and Non-Forest: Shrubland	Even Aged	Apple Tree Release
K18.1	11	Pole Timber 6"-11" DBH	Plantation: Norway Spruce	Natural Forest: Seedling/ Sapling	Even Aged	Clearcut
K18.2	3	Pole Timber 6"-11" DBH	Plantation: Norway Spruce	Natural Forest: Seedling/ Sapling	Even Aged	Clearcut
K19	2	Pole Timber 6"-11" DBH	Natural Forest: Pioneer Hardwood	Natural Forest: Seedling/ Sapling	Even Aged	Clearcut
K20	37	Small Sawtimber 12"-18" DBH	Plantation: Red Pine	Natural Forest: Seedling/ Sapling	Even Aged	Clearcut
L7	9	Small Sawtimber 12"-18" DBH	Natural Forest: Pioneer Hardwood	Natural Forest: Seedling/ Sapling	Even Aged	Clearcut
L35	7	Pole Timber 6"-11" DBH	Natural Forest: Pioneer Hardwood	Natural Forest: Seedling/ Sapling	Even Aged	Clearcut

Table 8. Continued

Stand	Acres	Size Class	Forest Type		Management Direction	Treatment Type
			Current	Future		
L48	65	Pole Timber 6"-11" DBH	Natural Forest: Northern Hardwood- White Pine	Natural Forest: Northern Hardwood- White Pine and Natural Forest: Seedling/ Sapling	Even Aged	Thinning and Patch Clearcut
M12	5	Small Sawtimber 12"-18" DBH	Natural Forest: Other	Natural Forest: Seedling/ Sapling	Even Aged	Clearcut
M18	30	Small Sawtimber 12"-18" DBH	Plantation: Red Pine	Natural Forest: Seedling/ Sapling	Even Aged	Clearcut
M21	5	Small Sawtimber 12"-18" DBH	Plantation: Norway Spruce	Natural Forest: Seedling/ Sapling	Even Aged	Clearcut
M28	2	Small Sawtimber 12"-18" DBH	Plantation: Norway Spruce	Natural Forest: Seedling/ Sapling	Even Aged	Clearcut
M33	7	Small Sawtimber 12"-18" DBH	Plantation: Red Pine- White Pine	Natural Forest: Seedling/ Sapling	Even Aged	Seed Tree
M36	17	Small Sawtimber 12"-18" DBH	Plantation: Red Pine	Natural Forest: Seedling/ Sapling	Even Aged	Clearcut
M37	29	Small Sawtimber 12"-18" DBH	Plantation: Red Pine	Natural Forest: Seedling/ Sapling	Even Aged	Clearcut
M44	2	Pole Timber 6"-11" DBH	Plantation: Red Pine	Natural Forest: Seedling/ Sapling	Even Aged	Clearcut
O35	6	Small Sawtimber 12"-18" DBH	Plantation: Norway Spruce	Natural Forest: Seedling/ Sapling	Even Aged	Clearcut
O39	7	Small Sawtimber 12"-18" DBH	Plantation: Norway Spruce	Natural Forest: Seedling/ Sapling	Even Aged	Clearcut
O40	4	Small Sawtimber 12"-18" DBH	Plantation: Red Pine	Plantation: Red Pine and Natural Forest: Seedling/ Sapling	Even Aged	Patch Clearcut
P2	14	Small Sawtimber 12"-18" DBH	Plantation: Norway Spruce	Natural Forest: Seedling/ Sapling	Even Aged	Clearcut
P11	6	Small Sawtimber 12"-18" DBH	Plantation: Red Pine- Spruce	Natural Forest: Seedling/ Sapling	Even Aged	Clearcut
P12	13	Pole Timber 6"-11" DBH	Plantation: Norway Spruce	Natural Forest: Seedling/ Sapling	Even Aged	Clearcut

Table 8. Continued

Stand	Acres	Size Class	Forest Type		Management Direction	Treatment Type
			Current	Future		
P22	55	Pole Timber 6"-11" DBH	Plantation: Red Pine	Natural Forest: Northern Hardwood and Natural Forest: Seedling/ Sapling and Non Forest: Shrubland	Even Aged and Uneven Aged	Patch Clearcut and Thinning
P28	23	Pole Timber 6"-11" DBH	Plantation: Red Pine	Plantation: Red Pine and Natural Forest: Seedling/ Sapling	Even Aged	Patch Clearcut
Q31	14	Small Sawtimber 12"-18" DBH	Plantation: Red Pine	Natural Forest: Seedling/ Sapling	Even Aged	Seed Tree
Q44	10	Pole Timber 6"-11" DBH	Plantation: Red Pine	Natural Forest: Seedling/ Sapling	Even Aged	Seed Tree

Stand locations and planned management actions are also summarized in Figures 8-14. Specific forest stand descriptions and detailed management prescriptions will be prepared for each proposed forest management area prior to implementation (see template, Appendix C).

BEST MANAGEMENT PRACTICES

Forest management on all WMAs follows Best Management Practices to protect soil and water resources, promote quality wildlife habitat, and establish healthy forests (Table 9).

Table 9. Best Management Practices for forest management on WMAs.

Resource	Guidance Document ²²
Soils	<i>Rutting Guidelines for Timber Harvesting on Wildlife Management Areas</i>
Water quality	<i>NYS Forestry Best Management Practices for Water Quality</i>
Wildlife	<i>Retention Guidance on Wildlife Management Areas</i>
Plantations	<i>Plantation Management Guidance on Wildlife Management Areas</i>

Wildlife Considerations:

Adjacent to the WMA is a historical location for green floater, a State threatened freshwater mussel. The location is considered historical as no individuals have been located since 1859. Any work on Connecticut Hill WMA would be in upland, forested sites and have no negative impact on the stream where these mussels were historically found.

Northern long-eared bats may occur on the WMA in summer forest ranges. Now identified as both state and federally threatened, acoustic surveys will be conducted for forest treatments that will, or could potentially, involve the cutting of trees greater than 3" diameter at breast height (DBH) from April 1st through September 30th. If no individuals are detected, forest management during the summer is an option available. If rare bats are detected within the treatment area, management actions will be limited to the winter months to prevent inadvertent negative effects

²² All guidance documents referenced here are available online at <http://www.dec.ny.gov/outdoor/104218.html>.

to northern long-eared bat populations. If forest nesting raptors are located during an active project, nests can be buffered or work postponed until the young are fledged. Coal skink have also been known in the past to occur in isolated pockets within the WMA. Forest areas for treatment adjacent to likely areas for coal skink will be treated in the winter months. Also, skinks would directly benefit from even-aged forest management as removal of overstory trees would increase sunlight on the forest floor, which they rely on.

In general, forest management from April-July will be kept to a minimum to avoid bark-slip season in the forest, avoid what are typically wet ground conditions, and minimize negative impacts to a host of forest-dwelling wildlife that is breeding and rearing young during those months. However, some areas of Connecticut Hill may be managed during the summer and fall due to inaccessibility during the winter due to the seasonal nature of the roads. Given that large parts of the property are accessible only by using miles of seasonal roads, logging and contractor access to the core areas of the property may only be an option during summer and fall months.

Forest Health Considerations:

In stands where native and non-native vegetation has been identified as interfering with desirable regeneration, additional treatment of that interfering vegetation may be required to promote desired regeneration. Currently, major insect pests such as Asian Longhorned Beetle (ALB) or Emerald Ash Borer (EAB) are not known to occur on Connecticut Hill WMA. However EAB is well established in New York State and its population continues to expand. The closest known populations of EAB are in parts of Schuyler and Chemung counties. It is highly likely that EAB will eventually become established on Connecticut Hill WMA. When that occurs, the plan will be amended to reflect that new development and any additional amendments (such as changing the implementation plan and anticipated schedule) will depend on the scope and severity of the infestation. Currently, managers do take into consideration the high likelihood of an EAB infestation when preparing a timber sale and generally tend to mark for cutting most, if not all of the ash trees in the sale area when possible.

One major insect pest, Hemlock Woolly Adelgid (HWA) was found this past year in one location on the WMA. HWA is fairly widespread in NYS, especially in the Hudson River valley, the Finger Lakes area and the cities of Buffalo and Rochester. HWA has been in the immediate vicinity of Connecticut Hill WMA since at least 2011 and perhaps as far back as the late 1990s. Since HWA has been in the general area for over 10-15+ years there is no chance of keeping it out of the WMA. The current infestation on Connecticut Hill WMA is in an area with steep slopes and difficult access by either vehicle or on foot. At this point there are no plans to use a timber harvest, pesticides, or other treatments to try and address the known infestation on Connecticut Hill WMA. The infestation will continue to be monitored and the plan will be amended if a course of treatment is designated.

Pre- and Post-treatment Considerations:

Where invasive and other undesirable plant species are significantly abundant, pre-treatment mechanical cutting or herbicide application may be necessary. If it is determined that deer browse is intense enough to prevent regeneration of desired tree species, fencing in of treatment areas may be necessary. Also, if it is concluded post-treatment that desired tree species are not

regenerating in a high enough frequency, or that undesirable species are dominating the area and suppressing regeneration, then the stand may be re-treated. This may include mechanical and/or chemical control of undesirable species, removal of additional trees to increase available sunlight, scarification of the forest floor to stimulate seedling establishment, and/or the direct seeding of desired tree species. Pre- and post-treatment actions to promote the desired forest or shrubland regeneration will be addressed in detail in the silvicultural prescriptions. In order to successfully establish new shrubland after the initial tree harvesting is done, planting native shrub species and additional mechanical or chemical treatments of trees or non-native/invasive shrubs may be required.

Pre- and post-treatment actions to promote the desired forest regeneration will be addressed in detail in the silvicultural prescriptions.

MANAGEMENT EVALUATION

In order to determine whether the desired forest regeneration and wildlife responses have been achieved by the management outlined above, pre- and post-management assessments will be conducted in accord with guidelines in the *Young Forest Initiative Monitoring Plan, 2016-2025*.²³ The Monitoring Plan establishes statewide standards for evaluating vegetation and target wildlife responses to forest management to determine if the outcome is as prescribed.

Regeneration assessments will be conducted within one year of harvest completion, three, and five years after the harvest or until the forester determines adequate natural or artificial (i.e., planting) regeneration has been securely established. YFI wildlife target species selected for Connecticut Hill WMA, which may be assessed to determine response to management, include:

- Ruffed grouse
- American woodcock
- Wild turkey

Seasonal songbird monitoring via point counts will also be used on select sites to better evaluate and understand the songbird response to forest management. Acoustic bat surveys may be used to determine any presence of at-risk bats and then management actions can be tailored to mitigate any potential disturbance to those species. Non-YFI target species of forest and young forest habitats and of interest on Connecticut Hill WMA may include:

- Northern long-eared bat, Tri-colored bat
- Wood thrush, olive-sided flycatcher, brown thrasher
- Red-shouldered hawk, broad-winged hawk
- Coal skink, woodland salamanders

SHRUBLAND

Shrublands are early successional habitats dominated by woody plants typically less than ten feet tall with scattered open patches of grasses and forbs that provide floristic diversity. Shrublands are typically characterized by >50% cover of shrubs and <25% canopy cover of trees.

²³ The Young Forest Initiative Monitoring Plan is available online at <http://www.dec.ny.gov/outdoor/104218.html>.

MANAGEMENT OBJECTIVES

- Increase the amount of shrubland habitat on the property from 28 acres (<1% of the WMA) to 187 acres (<2% of the WMA) through a combination of timber management and shrub plantings to benefit upland game birds and breeding songbirds.
- Protect longevity of apple orchards with routine apple releases to prevent apple trees from being shaded out by competing shrubs and trees.
- Monitor for invasive species and treat as necessary with mechanical or, when appropriate, chemical means.
- Establish native, food-producing shrubland species in buffer areas around wetlands and new and existing fields.
- Create a “soft-edge effect” around select new and existing fields.

DESCRIPTION OF EXISTING SHRUBLAND HABITAT AND TARGET SPECIES

Currently, there are 28 acres of shrubland on Connecticut Hill WMA split between 10 different stands scattered throughout the property ranging from 1-9 acres in size. These shrublands originated from grasslands and old agricultural fields not being maintained and either naturally succeeded into a shrub-dominated community or the shrubs were planted. These stands are mostly dense shrub thickets with clumps of trees.

Due to a lack of management, over time an abundance of non-native species have become established in the shrubland habitat, including autumn olive, buckthorn, honeysuckle and multiflora rose. Due to the invasive biology of these species, they can quickly establish in an unmaintained field and become dominant. Although these invasive species are dominant in most of these shrublands, native shrubs are present. Species of hawthorn, dogwood and viburnum can be found and provide a valuable soft mast resource for wildlife. Shrublands contain unique food and cover options that differ from young forest and can often persist longer as a habitat type due to shrub thicket exclusion of tree growth. Shrublands provide habitat for many wildlife species, including several that also use young forests. Although young forest and shrubland provide habitat for similar species, both are needed to provide for the full range of disturbance-dependent wildlife species.

The creation of shrubland habitats will benefit species such as:

- Ruffed grouse, wild turkey, American woodcock
- Cottontail rabbit
- Numerous songbird species

MANAGEMENT HISTORY

In the past, prescribed burning has been used on Connecticut Hill WMA in both research and regular management of shrubland and grassland habitats (Table 10). From 1970-72 the prescribed burning done was part of Cornell University student David Euler’s doctorate thesis which looked at the use of prescribed fire as a tool for management of wildlife habitat in the vicinity of Ithaca and on Connecticut Hill WMA.²⁴ The sites he selected were old agricultural fields in various stages of succession into shrubland and young forest. He evaluated the effect fire had on the presence of vegetation, birds, mammals, insects, soil temperature, and air conditions before and after a prescribed fire. His study found that fire can be used to maintain grassland and shrubland, (i.e., prevent them from changing into forest) and improve those

habitats for ruffed grouse, white-tailed deer, and several species of songbirds such as prairie warbler and chestnut-sided warbler.²⁴

The prescribed burning from 1975 through 1982 was conducted by DEC staff and probably focused on treating old agricultural fields to maintain them as shrubland and grassland. No other records were found detailing exactly where on Connecticut Hill WMA those burns occurred. The most recent record of prescribed burning was in 1989 and occurred in stand B942 which is currently grassland. That stand was originally part of a larger shrubland until 1983 when bulldozers were used to clear the trees and shrubs and it was converted to grassland. There are no records to indicate that any prescribed burning has occurred on the WMA since 1989. Grassland and shrubland are currently being maintained through mowing. At this point there are no plans to use prescribed burning on Connecticut Hill WMA, but that may change at some point in the future.

Table 10. Summary of prescribed burning conducted on Connecticut Hill WMA.

Year	Acres Treated
1970-71	2
1971-72	12
1972-73*	16
1975-76	47
1976-77	30
1977-78	95
1978-79	15
1979-80	56
1980-81	82
1981-82*	18
1989-90	11
Total:	384

*No records were found of prescribed burning occurring from 1973-1975 or from 1982-1989.

IMPLEMENTATION PLAN AND ANTICIPATED SCHEDULE

- **Management planned for 2017-2021** (Figures 8-14):
 - **Stands C950, I950, Q950:** Conduct a shrub maintenance treatment (e.g., brush hogging) on these stands to maintain shrubland (19 acres).
 - **Stands B2, C5, C13, D8, E5, E6, E7, E40, H27, J3.1, M27, M40, M45.1 and R1:** These stands are old apple orchards where the apple trees are becoming overtopped by other trees and brush. An apple tree release treatment will be conducted by cutting the brush and trees immediately adjacent to each apple tree to provide them with more sunlight so they can continue to produce apples for wildlife forage. When the apple tree releases are done, those parts of the stands will be maintained as shrubland (74 acres).
 - **Stand B18:** This is a pioneer hardwood stand with a mix of red maple, white ash and black cherry. Part of the stand will be patch clearcut to create shrubland. The

²⁴ Euler, David L. 1973. The ecology of fire in upstate New York. DR Thesis. Cornell University. 94pp.

- other parts of the stand will remain untreated at this time (4 acres patch clearcut).
- **Stand B49.1:** This is a northern hardwood stand with a mix of red maple, white ash and white pine where part of the stand will be patch clearcut to create shrubland. The remainder of the stand will be left untreated at this time (5 acres patch clearcut).
- **Stand B53:** This is a northern hardwood-white pine stand with a mix of red maple, red oak and white pine. Part of the stand will be patch clearcut to create young forest. The remainder of the stand will be thinned to create shrubland and to remove the low quality trees in order to give the higher quality trees more room to grow (1 acre patch clearcut, 16 acres shrubland, 20 acres thinned).
- **Stand E41:** This is a softwood plantation of Scotch pine and Norway spruce that will be clearcut to create shrubland (11 acres).
- **Stand H24:** This is a white pine plantation that will be treated with a seed tree cut to remove the majority of the trees and create shrubland (11 acres).
- **Stands I42 and I48:** These are Norway spruce and red pine plantations that will be clearcut to create shrubland (7 acres).
- **Stand K45:** This is a mix of red maple, aspen and black locust that will be treated with a seed tree cut to remove the majority of the trees to create shrubland (16 acres).
- **Stand N26:** This is a mix of red maple, red oak and white pine. Part of the stand will be treated with a seed tree cut to remove the majority of the trees to create shrubland and young forest. The rest of the stand will be left untreated at this time (3 acres young forest, 4 acres shrubland).
- Monitor for invasive species.
- Evaluate the need for supplemental shrub planting.
- Evaluate the need to reset shrublands with brush mower or forestry mower to maintain proper species and structure.
- **Management planned for 2022-2026 (Figures 8-14):**
 - **Stands J32 and J66:** These stands are old apple orchards where the apple trees are becoming overtopped by other trees and brush. An apple tree release treatment will be conducted by cutting the brush and trees immediately adjacent to each apple tree to provide them with more sunlight so they can continue to produce apples for wildlife forage. When the apple tree releases are done, those parts of the stands will be maintained as shrubland (4 acres).
 - **Stand P22:** This is a red pine plantation where all of the red pine and most of the low quality trees will be removed. Part of the stand will be clearcut and most of the aspen will be left in that area as a source of seed to encourage the regeneration of aspen. The rest of the stand will be thinned, with part of the stand left as intermediate aged northern hardwood forest and another part will be converted to shrubland. This will create a wide variety of habitat in the same area for the benefit of wildlife (5 acres shrubland, 25 acres patch clearcut, 25 acres thinning).
 - Monitor for invasive species.
 - Evaluate the need for supplemental shrub planting.
 - Evaluate the need to reset shrublands with brush mower or forestry mower to maintain proper species and structure.

BEST MANAGEMENT PRACTICES

Before any cutting of trees or brush with greater than three inch DBH, between the months of April 1st and September 30th, pre-treatment acoustic surveys for forest dwelling bats, specifically northern long-eared bats, will be conducted. If it is determined there are sensitive bat species present on a site, management will be restricted to October 1st –March 31st to prevent negative impacts.

MANAGEMENT EVALUATION

Created shrublands can be assessed through routine inspection to prevent colonization by mature forest species. Evaluation will be based on success of newly established shrub species and the wildlife response to those areas. Surveys for American woodcock, ruffed grouse, wild turkey and breeding songbirds will be used to monitor continued use and response from wildlife to shrublands, and other habitats, on the WMA.

GRASSLAND AND OTHER OPEN SPACE

Grasslands are open, grassy areas with a minimal amount of shrub and tree cover (<35%) that are maintained, or could be maintained, without significant brush cutting. In general, grassland management will restore and maintain habitat that will be used by migratory birds as well as contribute to the goal of building self-sustaining grassland bird populations. However, in the case of Connecticut Hill WMA, open areas typically do not meet the standards in size or composition to benefit grassland-dependent species. Areas on the WMA that are described in this section are designed to create forest openings and edge habitat for species that benefit from habitat diversity.

MANAGEMENT OBJECTIVES

- Maintain and improve the existing 257 acres of grassland habitat through rotational mowing and other grassland improvement projects.
- Monitor for invasive plant species.
- Convert currently forested areas to achieve the 10-year goal of 298 acres of grassland.

DESCRIPTION OF EXISTING GRASSLAND HABITAT AND TARGET SPECIES

There are currently 257 acres of grassland/open space habitat split between 50 different stands scattered throughout the property ranging from 1-17 acres in size. Most of the grassland areas are relatively small (<5ac) and are designed and maintained as habitat for wild turkey poults, white-tailed deer, and other species that benefit from forest openings.

Species that benefit from grassland best management practices include:

- American woodcock, wild turkey
- Bobolink, Eastern meadowlark, vesper sparrow
- White-tailed deer, black bear

MANAGEMENT HISTORY

In the early years of Connecticut Hill, abandoned farmlands were reforested through extensive

forest planting efforts. More modern management has been to maintain openings through prescribed burns, and most recently, routine mowing and occasional land-clearing contracts. Open areas are maintained to provide habitat diversity and edge habitat.

IMPLEMENTATION PLAN AND ANTICIPATED SCHEDULE

- **Management planned for 2017-2021** (Figures 8-14):
 - **Stands H16, I39, J4 and O25:** These stands have recently been clearcut and over the next 5 years will be converted into grassland (41 acres).
 - Continue rotational mowing of approximately 50% of existing fields annually and expand to new fields as they are created.
 - Remove tree stumps, grade and seed newly established fields as they are completed.
- **Management planned for 2022-2026** (Figures 8-14):
 - Continue rotational mowing of approximately 50% of existing fields annually and expand to new fields as they are created.
 - Remove tree stumps, grade and seed newly established fields as they are completed.

BEST MANAGEMENT PRACTICES

The following sub-sections provide guidelines for grassland habitat management on all WMAs in NY. For more detailed information and recommendations see *A Plan for Conserving Grassland Birds in New York*.²⁵ In particular, refer to the plan for species-specific habitat requirements and detailed recommendations regarding grassland management and restoration techniques.

General Management Recommendations

- Target management for grassland bird species known to be in the vicinity, and consider the needs of both breeding and wintering grassland bird species.



Typical grassland area on Connecticut Hill WMA.
Photo: Adam Perry, NYS DEC

²⁵ Morgan, M. and M. Burger. 2008. *A Plan for Conserving Grassland Birds in New York: Final Report to the New York State Department of Environmental Conservation under Contract #C005137*. Audubon New York, Ithaca, NY.

- Consider the surrounding landscape when making management decisions.
- Conduct baseline grassland bird surveys on newly acquired fields or fields targeted for management changes to determine species present.
- Increase field size by hedgerow removal, removing trees, etc. to benefit species that require large fields.
- Conduct invasive species control (glossy buckthorn, pale and black swallowwort, Canada thistle, Phragmites, etc.) to improve habitat quality.
- Consider a variety of factors, such as the targeted grassland bird species, pollinators, seed mix (warm versus cool season grasses, forbs, wildflower mixes, grass height and density), timing of planting, existing conditions, and vegetation removal techniques (including herbicide and intensive disking) in developing grassland planting or restoration projects.
- Utilize mowing, haying, burning, and grazing for maintaining grassland habitat, after evaluating the appropriateness of these methods relative to site conditions and management objectives. In particular, burning cool season grasses is not advisable in most situations in New York.

Timing of Management

- Fields over 25 acres (including all contiguous fields) or fields with a history of listed (federally listed and/or state E/T or SC) grassland bird species within the last 10 years, including fields of any size AND contiguous fields. Can also include nearby fields if deemed necessary:
 - Mowing or other management should be avoided between April 23 and August 15 unless at least one of the following criteria are met and the fields are assessed or surveyed to confirm there is no active nesting by E/T/SC grassland birds:
 - Management is to be done for long term benefits to the habitat/wildlife (such as invasive species management).
 - The fields are assessed or surveyed and there is no active nesting by E/T/SC grassland birds.
 - Nesting locations can be avoided, such as using spot treatment for invasive species, reducing any negative impact to the species of concern.
- Fields under 25 acres (including all contiguous fields) with no history of listed species:
 - Field can be managed/mowed within the period April 23 and August 15 if necessary to accomplish other goals and priorities that benefit other species that use the habitat. If early management is proposed, then the habitat requirements and nesting periods of other species should be considered (e.g., nesting waterfowl, American bittern, reptiles and amphibians).

Additional Mowing Guidelines

- Frequency of mowing, size of area mowed, and mowing techniques should be based on species present and current and desired habitat conditions.
- Block or spot mowing is preferred and strip mowing should be limited (especially in fields over 25 acres).
- Unmowed blocks should be in the shape of a square as opposed to long rectangles.

- When mowing, consider mowing from one side of the field to the other side or start in the center and mow outwards to avoid concentrating animals in the area yet to be mowed.
- In general, mow grass to a residual height of 6-12 inches.

MANAGEMENT EVALUATION

Grasslands are not specifically monitored on the WMA as grassland-dependent species are unlikely at this time.

AGRICULTURAL LAND

Agricultural lands on WMAs include any acreage on which crops are grown, primarily areas that are under cooperative agreements or farming contracts, but also including wildlife food plots.

DESCRIPTION OF EXISTING AGRICULTURAL LANDS AND TARGET SPECIES

There are no managed agricultural lands on Connecticut Hill WMA at this time. Future agricultural agreements may be evaluated or considered on a case-by-case basis to assist in the creation or improvement of grassland/open space habitats on the WMA.

WETLANDS (NATURAL AND IMPOUNDED)

Natural wetlands are areas where the soil or substrate is periodically saturated or covered with water, including emergent (perennial herbaceous vegetation accounts for >50% of hydrophytic vegetative cover) and scrub-shrub wetlands (woody vegetation under 20 feet tall accounts for >50% of hydrophytic vegetative cover). Impounded wetlands are areas similar to natural wetlands, but where water is held back by a berm, road, or other structure. Forested wetlands are addressed in the Forest section above.

MANAGEMENT OBJECTIVES

- Maintain the current acreage and quality of wetlands (21 acres).
- Maintain existing wetland infrastructure (e.g., dikes and water control structures).
- Maintain the quality of existing vernal pools and construct new vernal pools as opportunities arise.
- Maintain wetland habitat to provide habitat for species such as wood ducks, beaver, and amphibians.
- Monitor and treat for invasive aquatic vegetation.

DESCRIPTION OF EXISTING WETLAND HABITAT AND TARGET SPECIES

Wetland habitats on Connecticut Hill WMA are limited to a series of vernal pools and natural wetlands totaling 21 acres (Figures 3-5). There are no NYS regulated wetlands, however there are 62 wetlands mapped by the NWI. Wetlands classified as freshwater ponds, lacustrine and riverine are considered open water habitat types in this plan and are further discussed in that section.

The wetlands provide habitat for species such as:

- Wood duck, mallard, Canada goose
- Beaver, muskrat
- Wood frog, green frog, spring peeper

MANAGEMENT HISTORY

Most of the vernal pools were created artificially in the past by a logging contractor as part of a timber sale contract. Several vernal pools have also been created through coordination with wetland restoration/improvement projects. In the summers of 2013 and 2016, Upper Susquehanna Coalition created a series of vernal pools on the WMA to provide increased opportunity for breeding amphibians and other wildlife.

IMPLEMENTATION PLAN AND ANTICIPATED SCHEDULE

- **Management planned for 2017-2026** (Figures 8-14):
 - Maintain the current acreage and quality of wetlands (21 acres).
 - Construct new vernal pools as opportunities arise and maintain existing pools.
 - Monitor for future invasive plant occurrences.

BEST MANAGEMENT PRACTICES

- Protect pools from runoff and sedimentation.
- To the extent possible, avoid use of pesticides in surrounding areas.
- Maintain upland habitat buffer for non-breeding habitat.
- Avoid human disturbance during watered periods.²⁶



Vernal pool constructed in 2013.

Photo: NYSDEC

²⁶ Mitchell, J.C., A.R. Breisch, and K.A. Buhlmann. 2006. Habitat Management Guidelines for Amphibians and Reptiles of the Northeastern United State. Partners in Amphibian and Reptile Conservation, Technical Publication HMG-3, Montgomery, AL. 108pp.

Habitat management activities will be conducted in accordance with the NYSDEC General Permit (GP-0-16-003), the New York State Freshwater Wetlands Act (ECL Article 24), and Water Resources Law (ECL Article 15, Title 5).

MANAGEMENT EVALUATION

DEC staff will conduct routine monitoring to ensure habitats are stable and infrastructure sound.

OPEN WATER (WATERBODIES AND WATERCOURSES)

Open water is defined as any area of open water, generally with less than 25% cover of vegetation or soil and typically named (e.g., Perch Lake, South Colwell Pond).

MANAGEMENT OBJECTIVES

- Maintain existing pond infrastructure (e.g., dikes, water control structures).
- Maintain the current acreage and quality of open water (28 acres).
- Monitor and control invasive plants as needed.
- Conduct periodic drawdowns to encourage emergent vegetation growth.

DESCRIPTION OF EXISTING OPEN WATER HABITAT AND TARGET SPECIES

Cayuta Creek runs along the western boundary of the WMA and Carter Creek originates within the WMA and passes out along the southeastern border. In addition, there are multiple areas (stands) of open water consisting of both manmade and natural ponds, totaling 28 acres. These areas are managed to provide habitat and associated emergent vegetation for species such as:

- Wood duck, hooded merganser, Canada goose
- Green frog, bullfrog, snapping turtle
- Beaver, muskrat, mink

MANAGEMENT HISTORY

Some of the ponds on Connecticut Hill WMA are manmade.²⁷ Stand I910 was the earliest on record, being built in 1936. Stands E910, H912 and J910 were constructed in 1953-54 with stands Q910, Q911, O910 and O911 being constructed sometime in the 1950s (the exact dates are not on record). Stands B910, H911 and P910 were constructed in 1964. Stand E910 had maintenance work done in 1980 and 2016.

Stands O910, Q910, K910 and H912 were dredged to clean out vegetation and sediment in 1995 as part of work done under a timber sale contract.

IMPLEMENTATION PLAN AND ANTICIPATED SCHEDULE

- **Management planned for 2017-2026** (Figures 3-5):
 - Maintain the current acreage and quality of ponds (28 acres).
 - Continue routine mowing of dikes, periodic operation of water control structures,

²⁷ Connecticut Hill Wildlife Management Area Source Book, NYS DEC Cortland Sub-Office, 1285 Fisher Ave, Cortland, NY.

- and as needed, repair pond infrastructure (e.g., dikes, water control structures).
- Conduct occasional drawdowns to encourage vegetation growth.

BEST MANAGEMENT PRACTICES

Habitat management activities will be conducted in accordance with the NYSDEC General Permit (GP-0-16-003), the New York State Freshwater Wetlands Act (ECL Article 24), and Water Resources Law (ECL Article 15, Title 5).

MANAGEMENT EVALUATION

Water bodies on Connecticut Hill WMA are not regularly surveyed. Fisheries surveys are planned for 2017 to determine if any significant species are present that may require an adjustment to the treatment schedule.

HABITAT MANAGEMENT SUMMARY

In summary, Table 11 lists the habitat management actions planned for Connecticut Hill WMA over the next ten years. Any substantive changes will be appended to this HMP annually or as needed (Appendix D).

Table 11. Summary of habitat management actions recommended for Connecticut Hill WMA, 2017-2026. (Also see Figures 8-14.)

Habitat	Management Action	Acres	Timeframe
Forest	Clearcut stands A6, B34, B39.2, B43, B49.2, B55, C14, F21, H10, H15, H25, I11, I14, I22, I26, I31, I36, I43, I50.1, I53, J51, J68 and L41	223	2017-2021
Forest	Patch clearcut and thin stands B19 and B65, H9, J39 and J46	278	2017-2021
Forest	Patch clearcut stands B23, B62, C13, D2.1, J54, J56 and K26	96	2017-2021
Forest	Thin stands F8, G27, G46, H22, H29 and K41	116	2017-2021
Forest	Seed tree cut stands I23, I27, K42 and N24	37	2017-2021
Forest	Crop tree release stand I24	14	2017-2021
Forest/Shrubland	Patch clearcut and thin stand B53	37	2017-2021
Forest/Shrubland	Seed tree cut stand N26	7	2017-2021
Shrubland	Shrub maintenance stands C950, I950 and Q950	19	2017-2021

Table 11. Continued

Habitat	Management Action	Acres	Timeframe
Shrubland	Apple tree release stands B2, C5, C13, D8, E5, E6, E7, E40, H27, J3.1, M27, M40, M45.1 and R1	74	2017-2021
Shrubland	Patch clearcut stands B18 and B49.1	9	2017-2021
Shrubland	Clearcut stands E41, I42 and I48	18	2017-2021
Shrubland	Seed tree cut stands H24 and K45	27	2017-2021
Grassland	Remove tree stumps, grade and seed stands H16, I39, J4 and O25	41	2017-2021
Forest	Thin stands D6, D9, D10, D13 and G28	113	2022-2026
Forest	Seed tree cut stands D11, G30, G32.1, I4, I37, M33, Q31 and Q44	116	2022-2026
Forest	Clearcut stands D12, D14, E7, E8, E16, E19, F14, F20, G6, G10, G12, G13, G17, G20, G22, G29, G32.2, I19, I77, K18.1, K18.2, K19, K20, L7, L35, M12, M18, M21, M28, M36, M37, M44, O35, O39, P2, P11 and P12	394	2022-2026
Forest	Patch clearcut and thin stand L48	65	2022-2026
Forest	Patch clearcut O24 and P28	27	2022-2026
Forest/Shrubland	Clearcut and thin stand P22	55	2022-2026
Shrubland	Apple tree release stands J32 and J66	4	2022-2026
Shrubland	Reset shrublands with brush mower or forestry mower to maintain proper species and structure.		2017-2026 as needed
Shrubland	Evaluate the need for supplemental shrub planting.		2017-2026 as needed
Grassland	Rotationally mow a portion of the grasslands each year, monitor and treat invasive species, and apply soil amendments/seed as needed.	Variable	2017-2026
Wetland	Construct new vernal pools as opportunities arise and maintain existing pools.		2017-2026
Wetland/Open Water	Routinely mow dikes, periodically operate water control structures, and as needed, repair wetland infrastructure (e.g., dikes, water control structures).		2017-2026 as needed

III. FIGURES

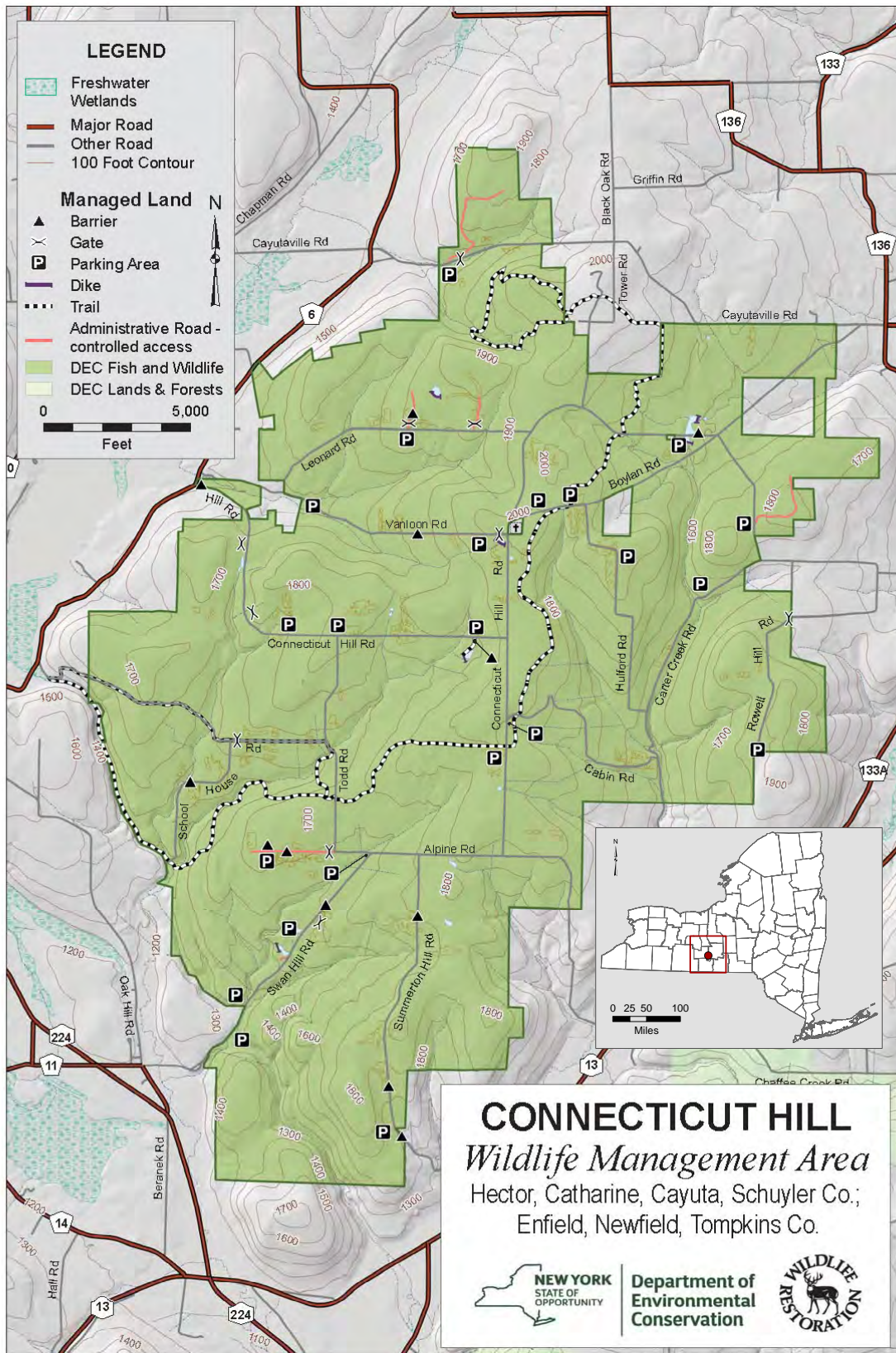


FIGURE 1. Location and access features at Connecticut Hill WMA.

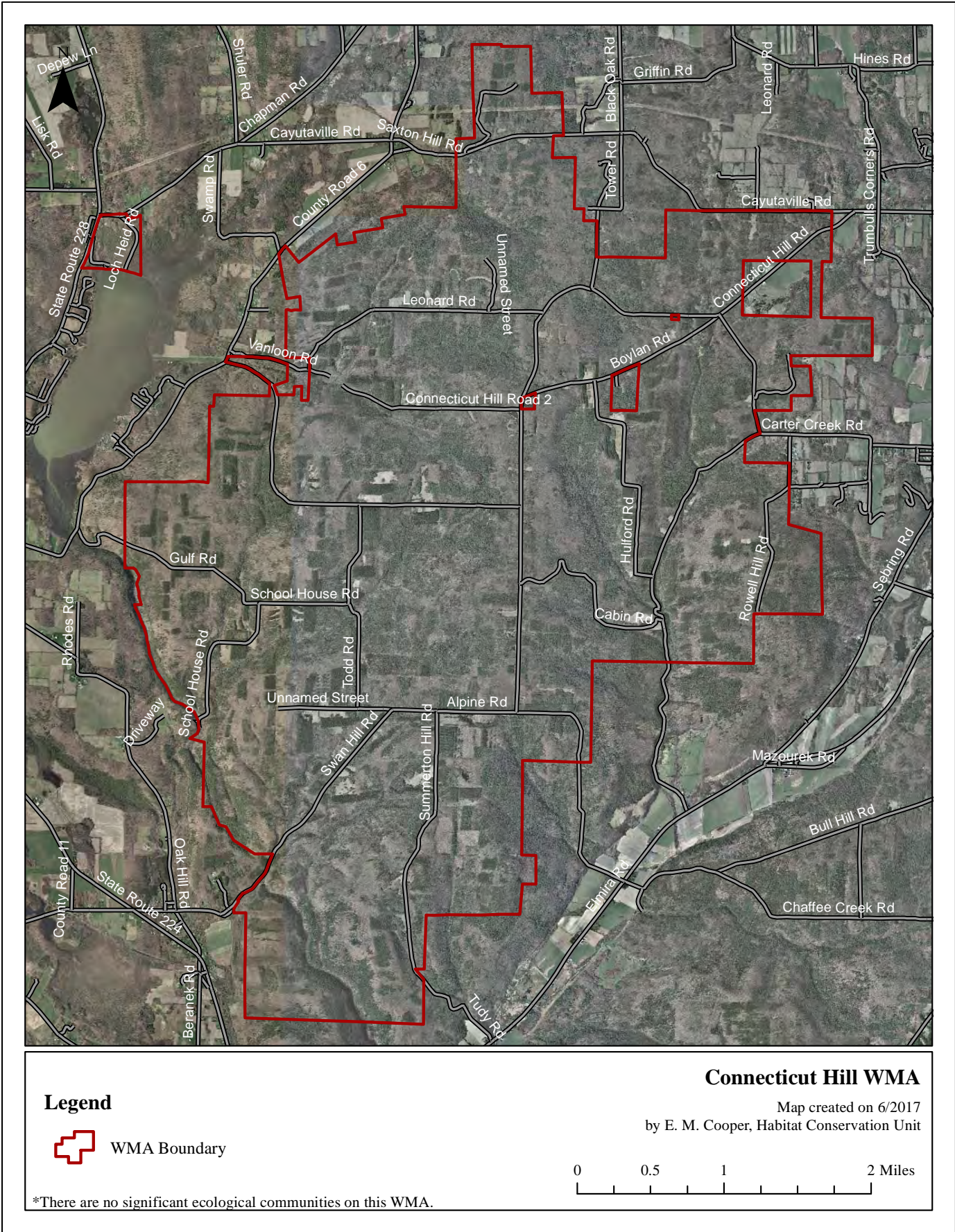


FIGURE 2. There are no significant ecological communities on Connecticut Hill WMA.

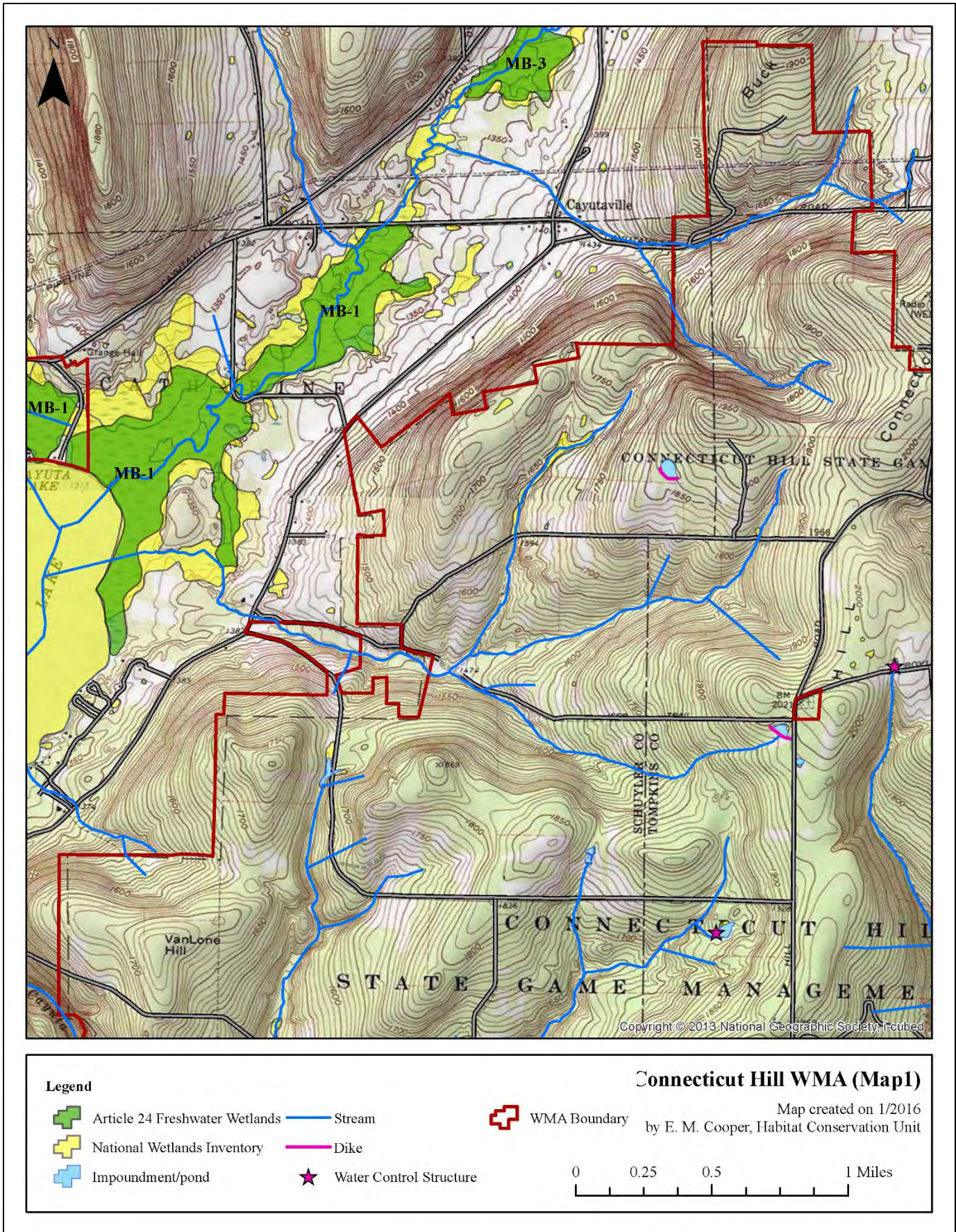


FIGURE 3. Wetlands, open water, and streams of Connecticut Hill WMA (Map 1 of 3). Note: Wetland boundaries are not exact and may not be used for regulatory purposes without a current delineation.

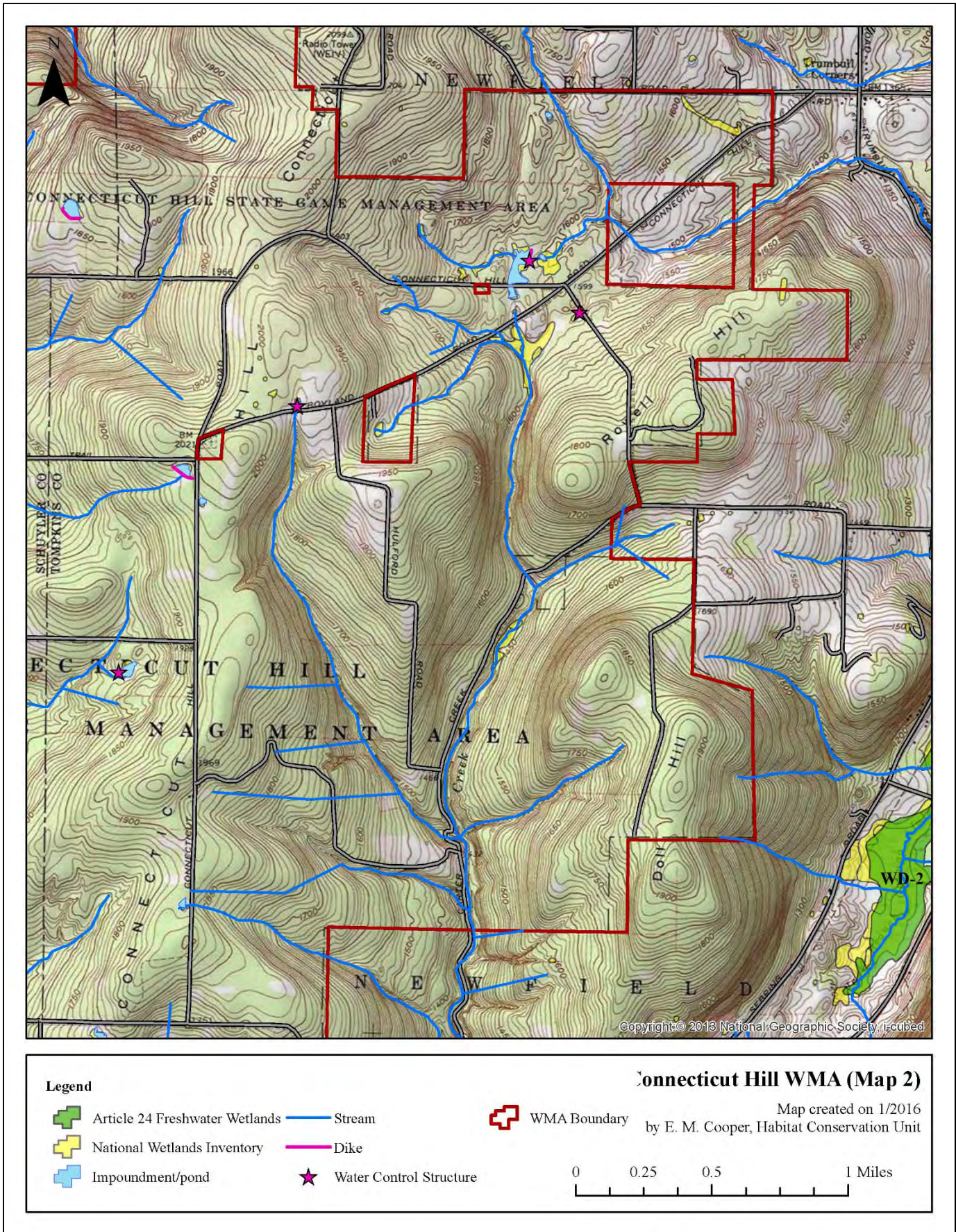


FIGURE 4. Wetlands, open water, and streams of Connecticut Hill WMA (Map 2 of 3). Note: Wetland boundaries are not exact and may not be used for regulatory purposes without a current delineation.

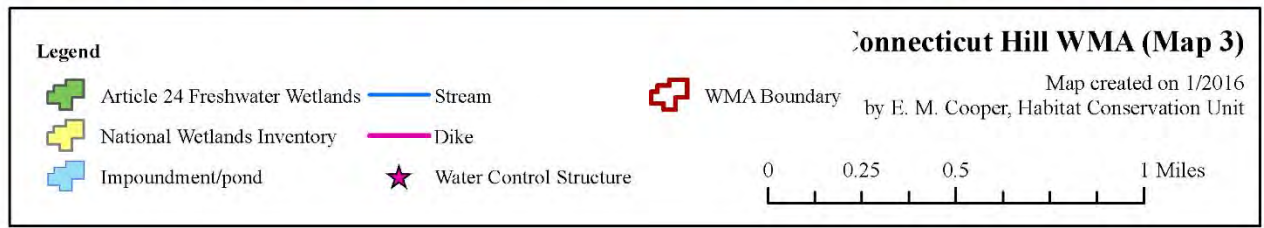
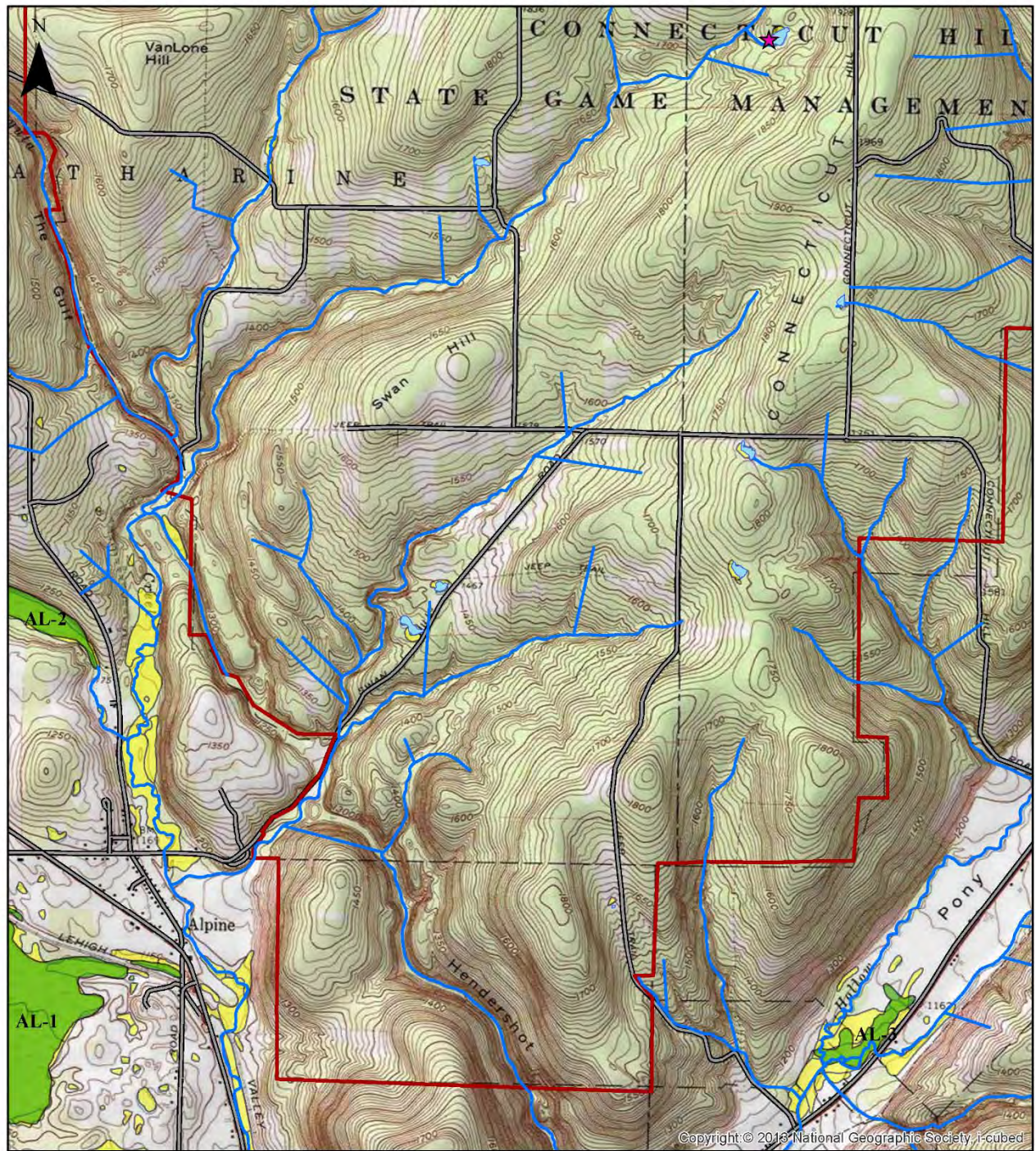


FIGURE 5. Wetlands, open water, and streams of Connecticut Hill WMA (Map 3 of 3). Note: Wetland boundaries are not exact and may not be used for regulatory purposes without a current delineation.

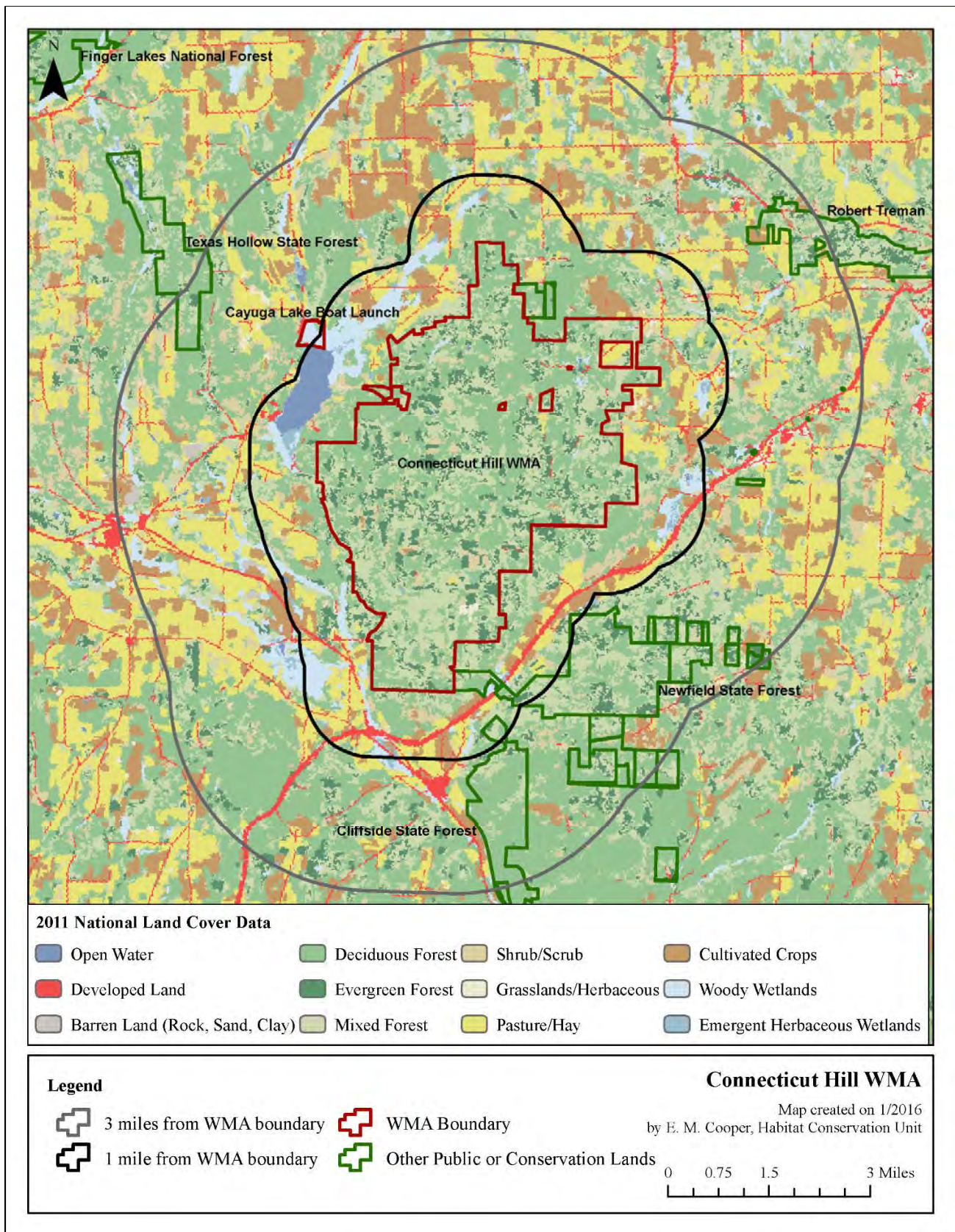


FIGURE 6. Land cover types and conservation lands in the landscape surrounding Connecticut Hill WMA. Conservation lands are from the NY Protected Areas Database available online at <http://www.nypad.org/>. Land cover types are from the 2011 National Land Cover Data (NLCD) and differ from the habitat types used in the WMA habitat inventory. NLCD definitions are available online at <http://www.mrlc.gov/nlcd2011.php>.

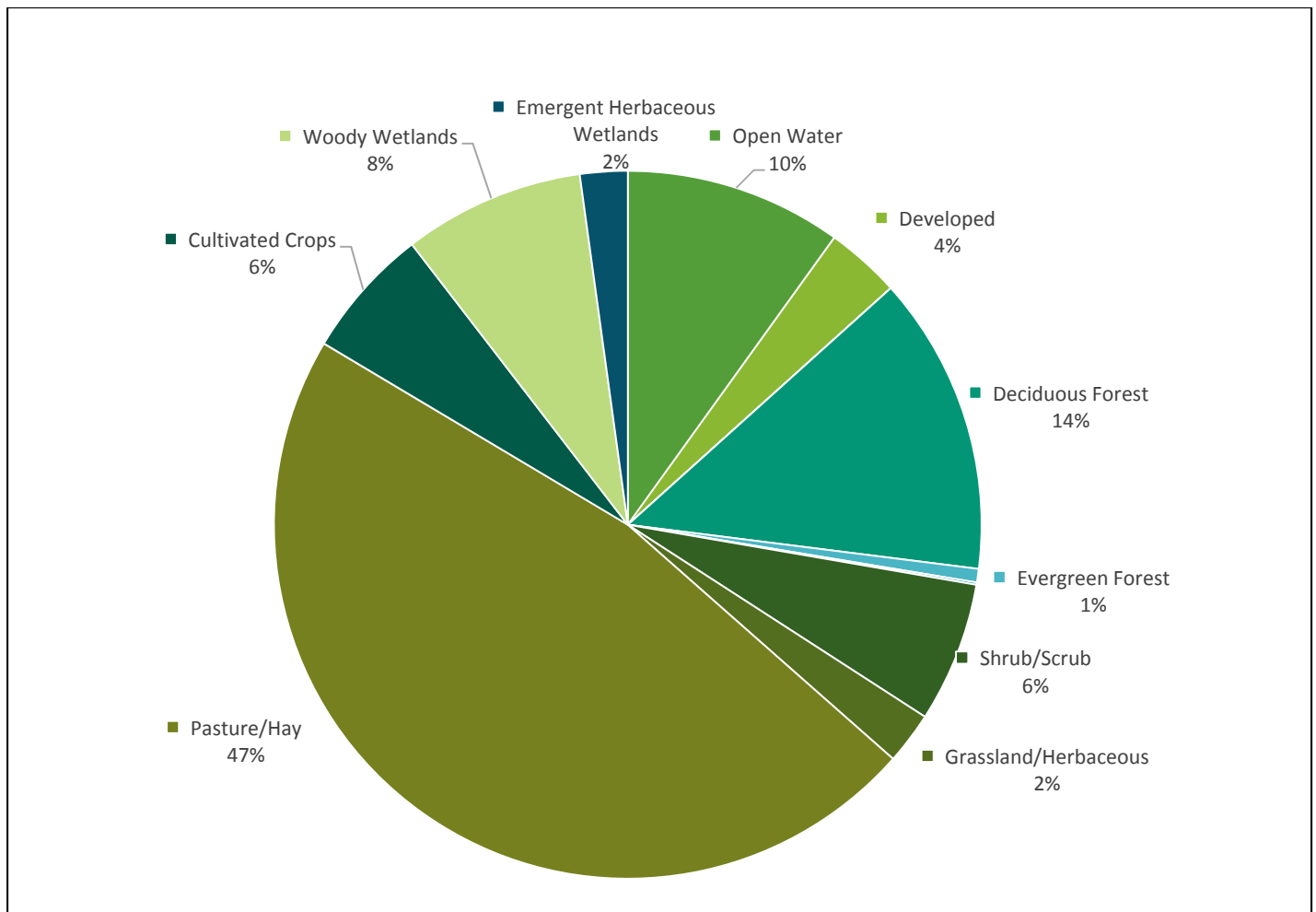


FIGURE 7. Percent cover of land cover types within three miles of Connecticut Hill WMA.

Land cover types are from the 2011 National Land Cover Data (NLCD) and differ from the habitat types used in the WMA habitat inventory. NLCD definitions are available online at <http://www.mrlc.gov/nlcd2011.php>.

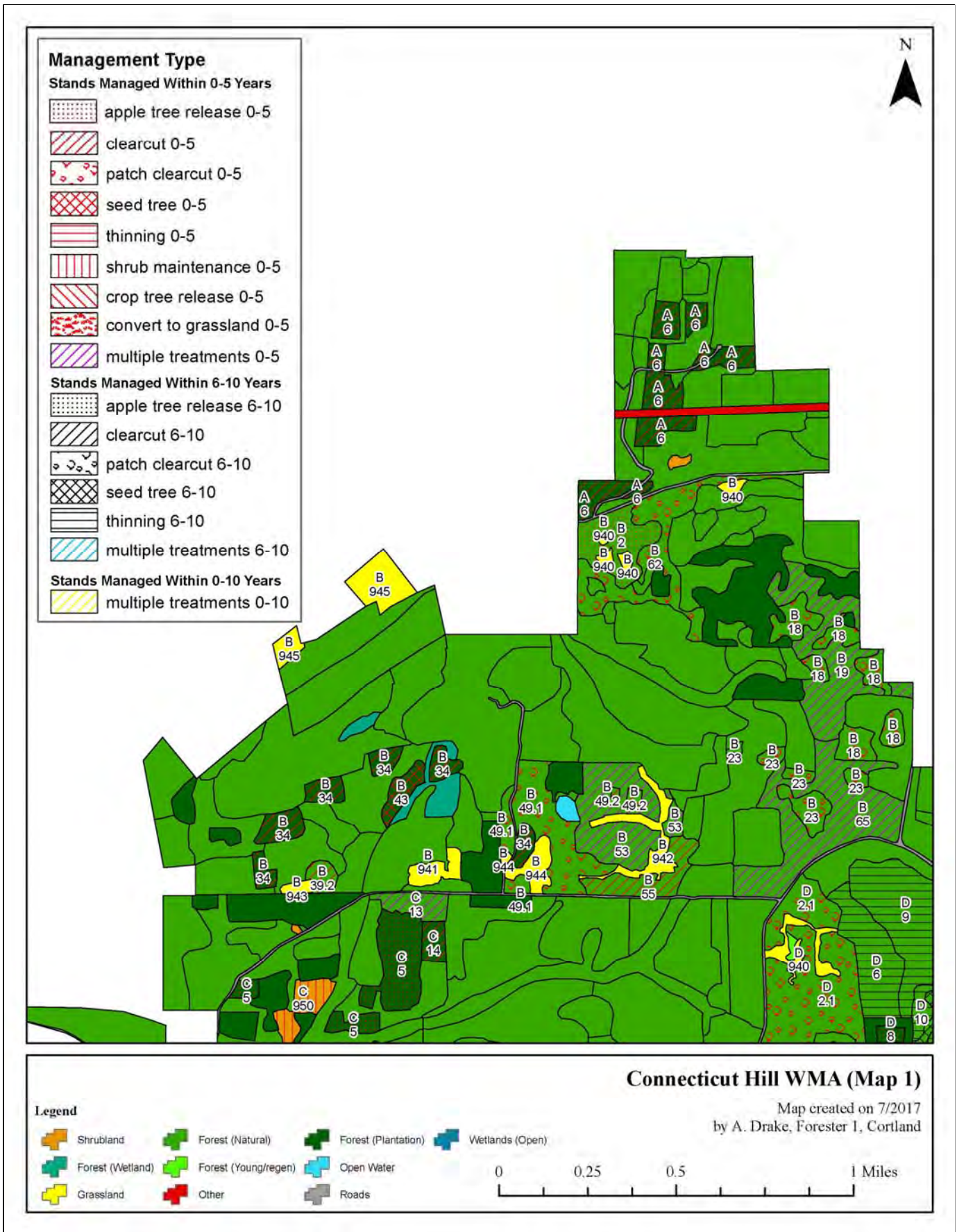


FIGURE 8. Habitat types and locations of proposed management on Connecticut Hill WMA (Map 1 of 7). Numbers indicate the stand number from habitat inventory.

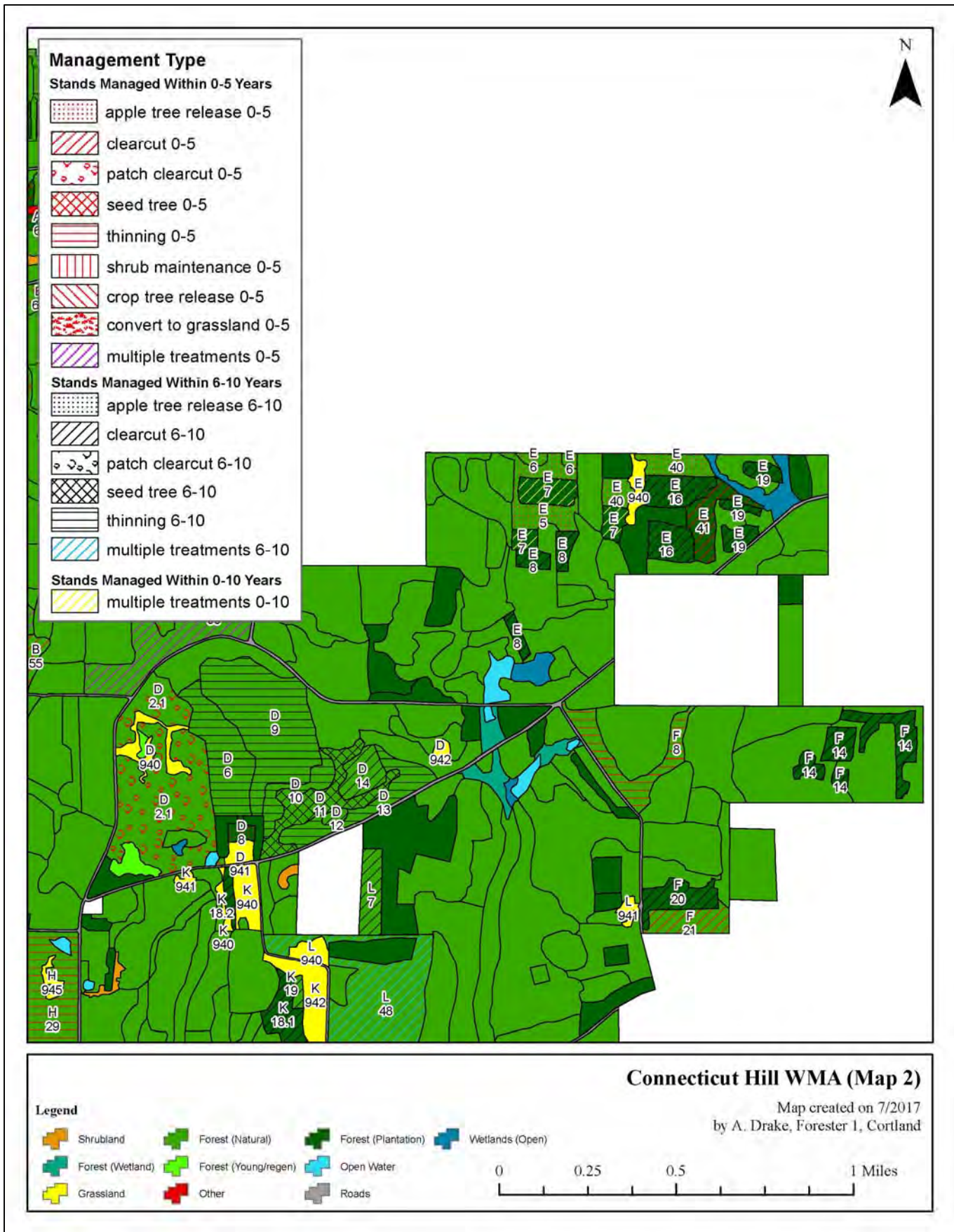


FIGURE 9. Habitat types and locations of proposed management on Connecticut Hill WMA (Map 2 of 7). Numbers indicate the stand number from habitat inventory.

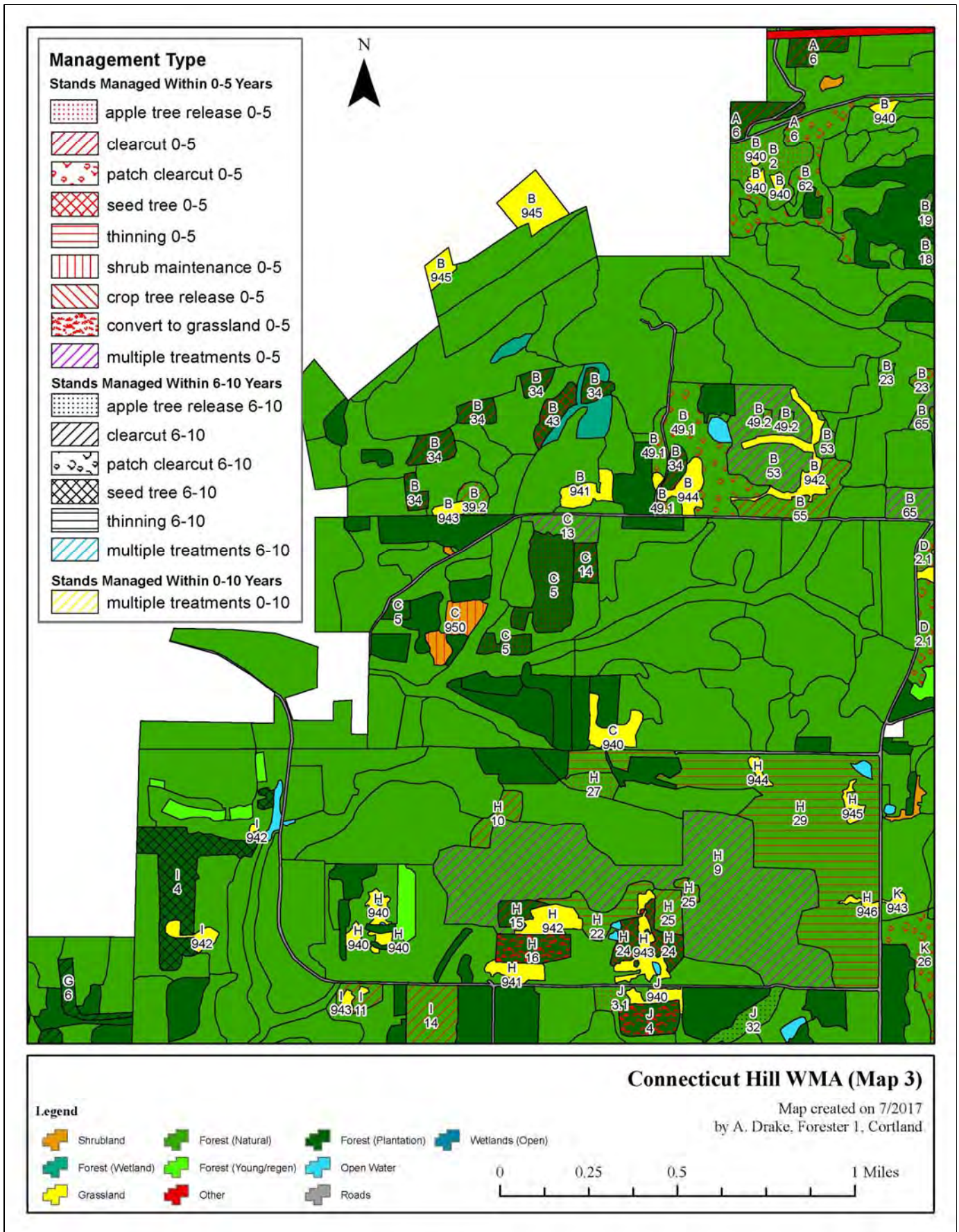


FIGURE 10. Habitat types and locations of proposed management on Connecticut Hill WMA (Map 3 of 7). Numbers indicate the stand number from habitat inventory.

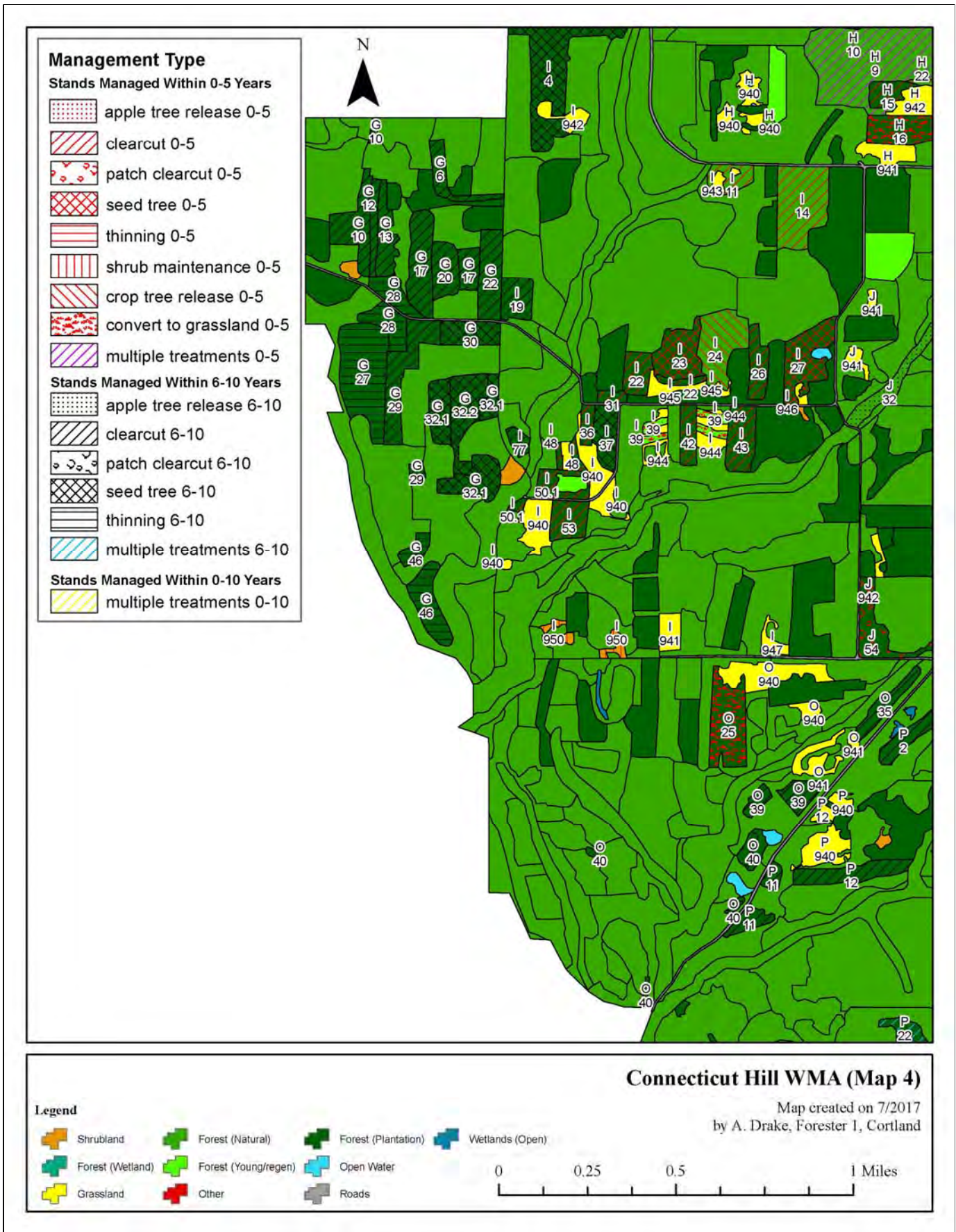


FIGURE 11. Habitat types and locations of proposed management on Connecticut Hill WMA (Map 4 of 7). Numbers indicate the stand number from habitat inventory.

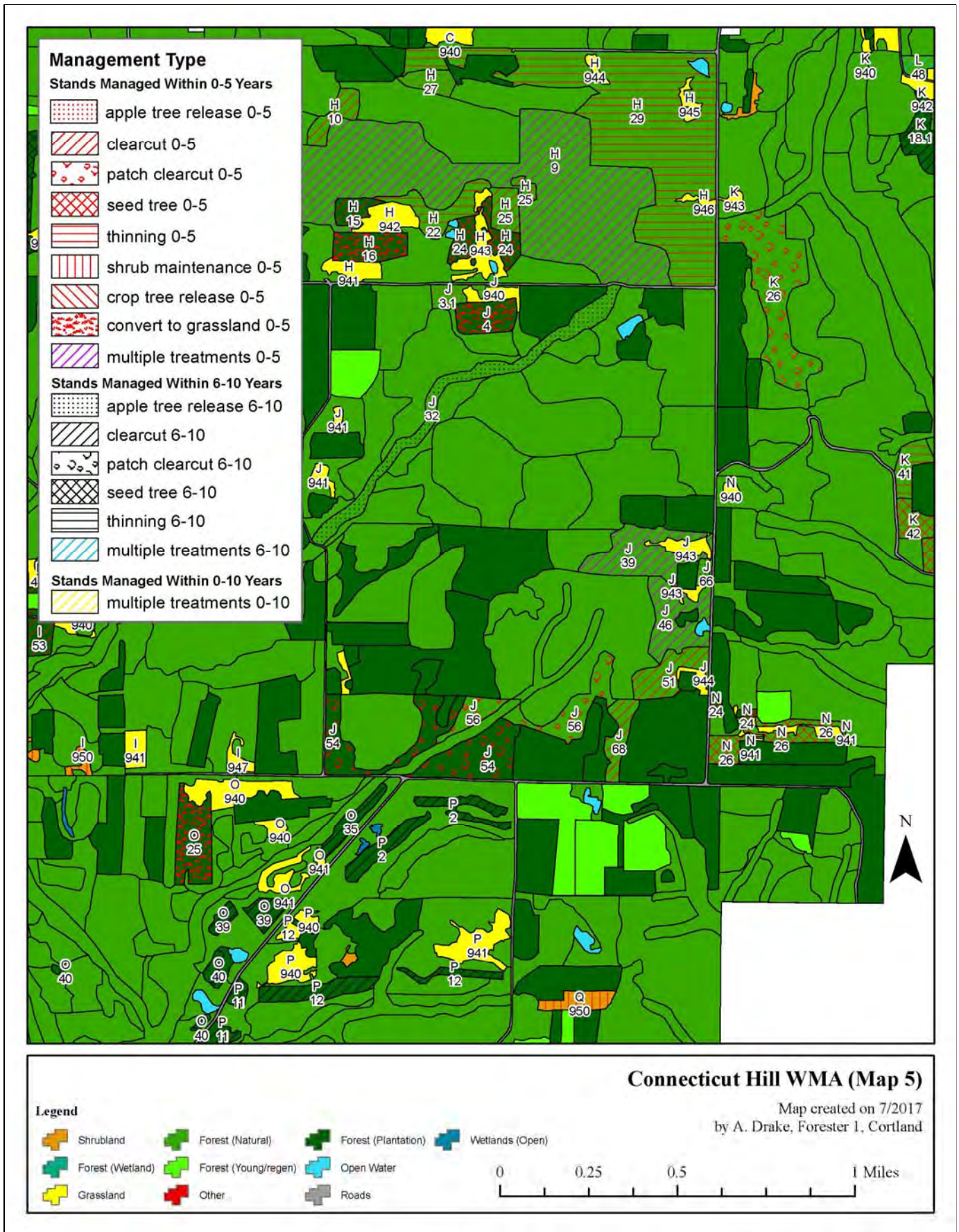


FIGURE 12. Habitat types and locations of proposed management on Connecticut Hill WMA (Map 5 of 7). Numbers indicate the stand number from habitat inventory.

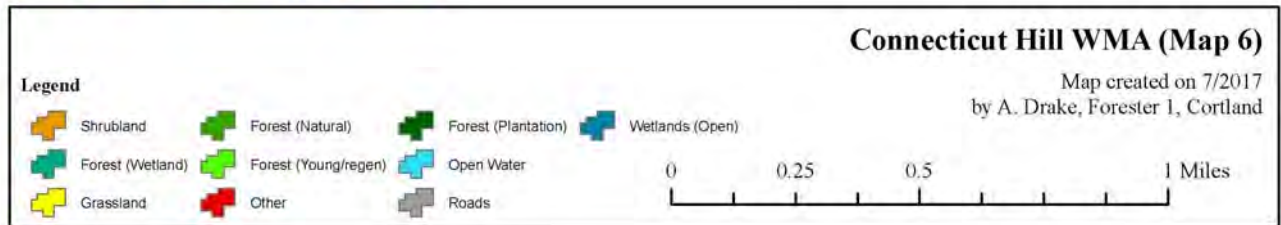
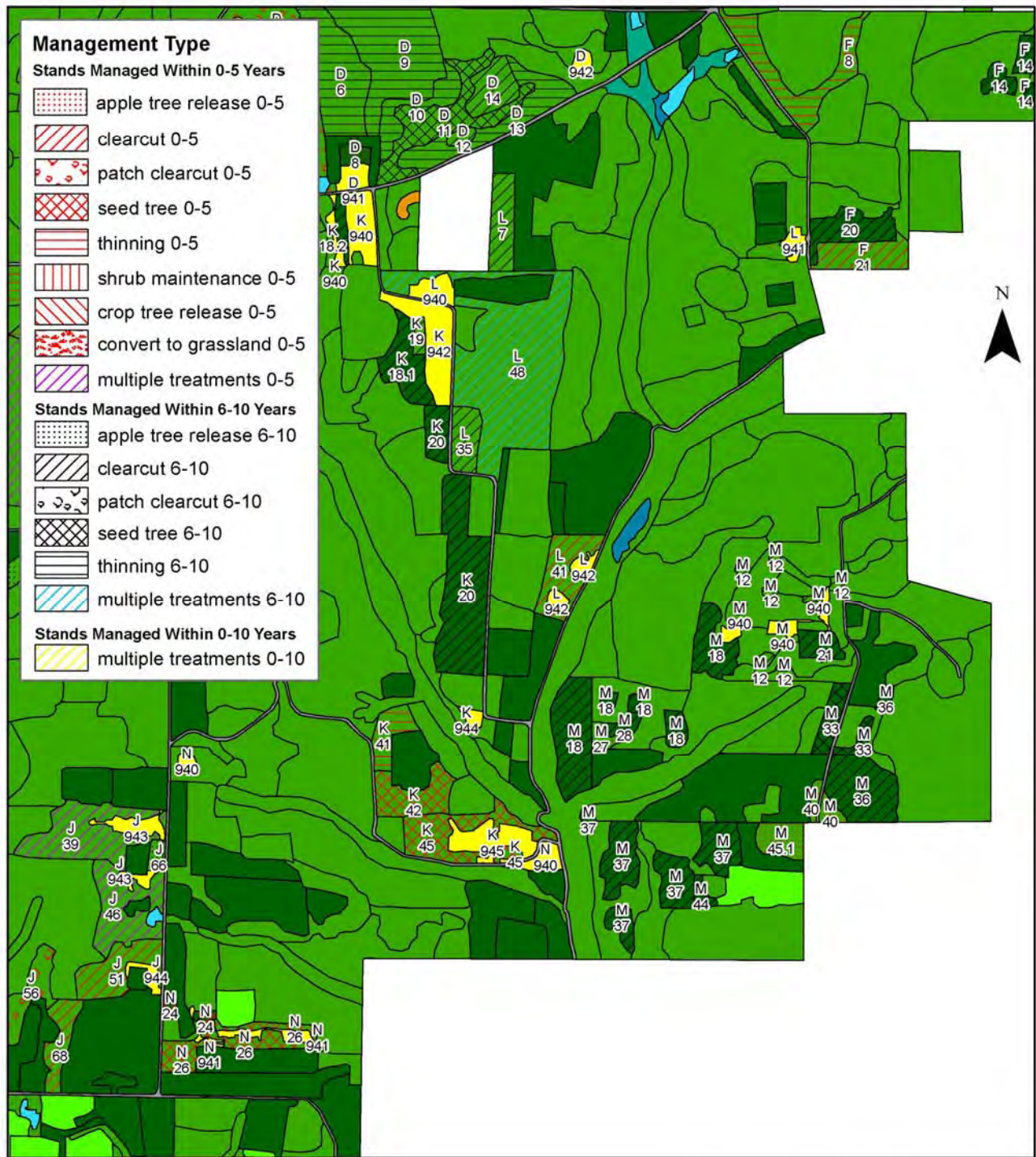


FIGURE 13. Habitat types and locations of proposed management on Connecticut Hill WMA (Map 6 of 7). Numbers indicate the stand number from habitat inventory.

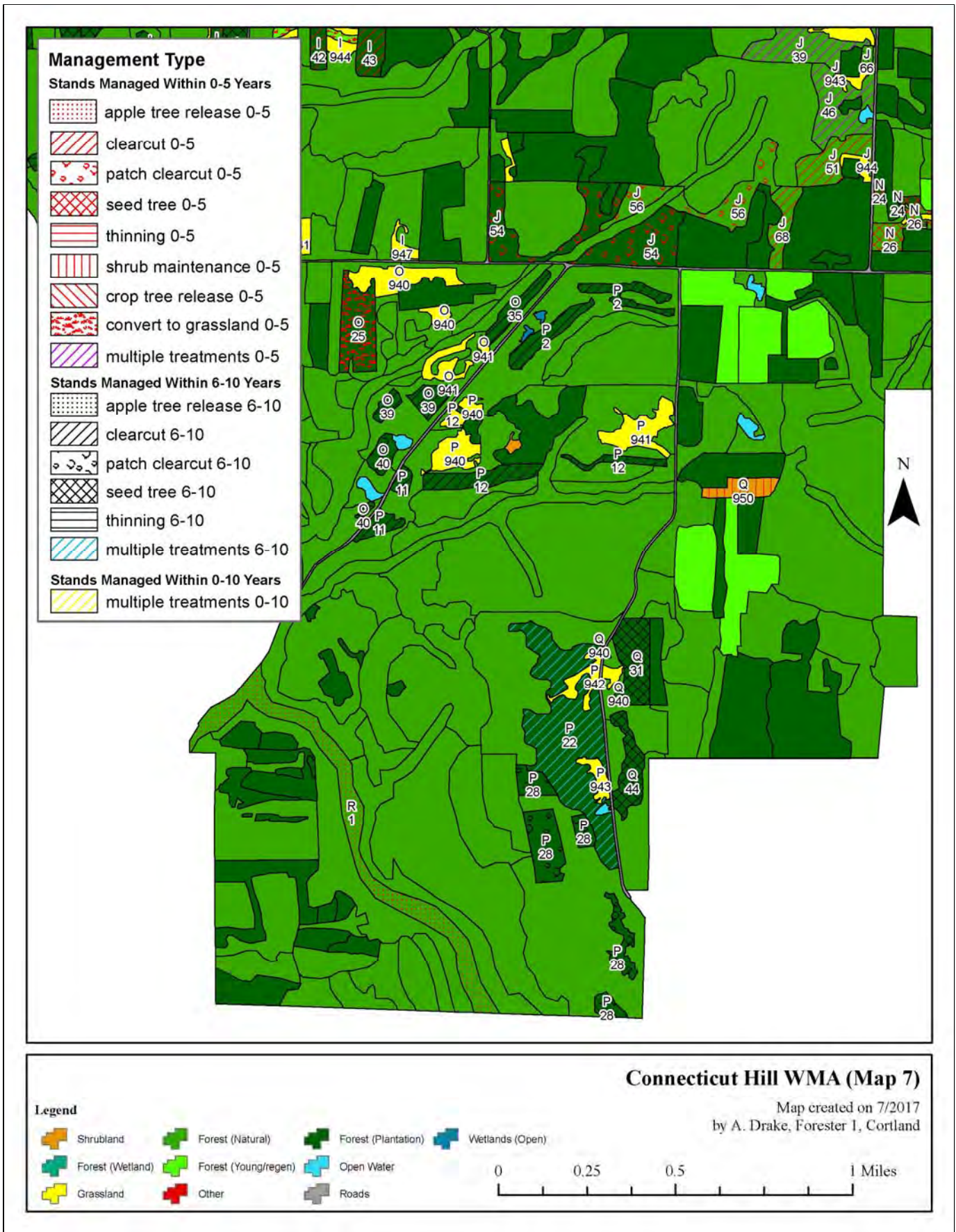


FIGURE 14. Habitat types and locations of proposed management on Connecticut Hill WMA (Map 7 of 7). Numbers indicate the stand number from habitat inventory.

IV. APPENDICES

APPENDIX A: DEFINITIONS

The following key words were used in the development of this Habitat Management Plan. Definitions are from The Dictionary of Forestry, Society of American Foresters, J. A. Helms, Editor, unless otherwise noted.

Best Management Practices: (BMP) A practice or combination of practices that are determined to be the most effective and practicable means of avoiding negative impacts of habitat management.

Biodiversity: The variety and abundance of life forms, processes, functions, and structures of plants, animals, and other living organisms, including the relative complexity of species, communities, gene pools, and ecosystems at multiple spatial scales.

Clearcut: A forest regeneration or harvest method that entails the cutting of essentially all trees, producing a fully exposed microclimate for the development of a new age class. Depending on management objectives, a clearcut may or may not have reserve trees left to attain goals other than regeneration.

Community: An assemblage of plants and animals interacting with one another, occupying a habitat, and often modifying the habitat; a variable assemblage of plant and animal populations sharing a common environment and occurring repeatedly in the landscape. (NY Natural Heritage Program)

Crop Tree Release: The selection and release of desirable trees by removing adjacent competing trees. This thinning technique is meant to increase the health and present value of a stand and also enhance the stand's future value by concentrating growth on the most desirable trees.

Endangered Species: Any species listed on the current state or federal endangered species list as being in danger of extinction throughout all or a significant portion of its range.

Even Age: A stand of trees composed of a single age class in which the range of tree ages is usually +/- 20% of rotation (see *Rotation*).

Forb: Any broad-leaved, herbaceous plant other than those in the Poaceae (Gramineae), Cyperaceae, and Juncaceae families (i.e., not grass-like).

Forest: An ecosystem characterized by a dense and extensive tree cover, often consisting of stands varying in characteristics such as species composition, structure, age class, and associated processes, and commonly including meadows, streams, fish, and wildlife.

Forest Health: The condition of a forest derived from concerns about such factors as its age, structure, composition, function, vigor, presence of unusual levels of insects or disease, and resilience to disturbance.

Grassland Focus Area: Regions of NY that support key, residual populations of grassland birds. There are currently eight focus areas, within which there is a concentrated conservation effort for these species. (A Plan for Conserving Grassland Birds in New York, Audubon NY.)

Group Selection: Trees are removed and new age classes are established in small groups.

Habitat: A place that provides seasonal or year round food, water, shelter, or other environmental conditions for an organism, community, or population of plants or animals.

Hardwood: A broad leaved, flowering tree belonging to the botanical group Angiospermae, such as red maple, yellow birch, American beech, black cherry, etc.

Impoundment: A pond caused by a dam across a stream and used for purposes such as water supply, water power, or wildlife habitat. (Edinger et al. 2002. Ecological Communities of New York State, Appendix B)

Landscape: A spatial mosaic of several ecosystems, landforms, and plant communities across a defined area irrespective of ownership or other artificial boundaries and repeated in similar form throughout.

Mast: The fruit of trees considered as food for wildlife. Hard mast is the fruits or nuts of trees such as oak, beech, walnut, and hickories. Soft mast is the fruits and berries from plants such as dogwood, viburnum, elderberry, huckleberry, hawthorn, grape, raspberry, and blackberry.

Multiple Use Area: Lands that were acquired by DEC to provide outdoor recreation and wherever possible the conservation and development of natural resources. As their name suggests, they are to be managed for a broader range of public use. (Public Use of Lands Managed by the Bureau of Wildlife)

Native: A plant or animal indigenous to a particular locality.

Old Growth Forest: Forest with an abundance of late successional tree species, at least 180 - 200 years of age in a contiguous forested landscape that has evolved and reproduced itself naturally, with the capacity for self-perpetuation, arranged in a stratified forest structure consisting of multiple growth layers throughout the canopy and forest floor, featuring canopy gaps formed by natural disturbances creating an uneven canopy, and a conspicuous absence of multiple stemmed trees. (Adapted from the NYS Strategic Plan for State Forest Management)

Pole: A tree of a size between a sapling (1" to 5" diameter at breast height) and a mature tree.

Regeneration Cut: A cutting procedure by which a new forest age class is created; the major methods are clearcutting, seed tree, shelterwood, selection, and coppice. The Young Forest Initiative includes these silvicultural treatments: clearcuts, seed tree cuts, and shelterwood cuts. Salvage (following a natural disturbance) will be considered based on the size and scope of the disturbance.

Rotation: The period of time, (usually measured in years) between regeneration establishment and final cutting.

Seed Tree Method: A forest regeneration or harvest method that entails cutting of all trees except for a small number of widely dispersed trees retained for seed production and to produce a new age class in fully exposed microenvironment.

Shelterwood Method: A forest regeneration or harvest method that entails the cutting of most trees, leaving those needed to produce sufficient shade to produce a new age class in a moderated microenvironment.

Shrubland: A community dominated by woody plants typically less than ten feet tall with scattered open patches of grasses and forbs that provide floristic diversity. Typically characterized by >50% cover of shrubs and <25% canopy cover of trees. (Adapted from Edinger et al. 2002. Ecological Communities of New York State, Appendix B)

Softwood: A coniferous tree belonging to the botanical group Gymnospermae, such as white pine, Eastern hemlock, balsam fir, red spruce, etc.

Special Management Zone: A vegetation strip or management zone extending from wetland boundaries, high-water marks on perennial and intermittent streams, vernal pool depression, spring seeps, ponds and lakes, and other land features requiring special consideration. (Adapted from DEC Division of Lands and Forests Management Rules for Establishment of Special Management Zones on State Forests)

State Rank of Significant Ecological Communities:

S1 = Typically 5 or fewer occurrences, very few remaining individuals, acres, or miles of stream, or some factor of its biology making it especially vulnerable in New York State.

S2 = Typically 6 to 20 occurrences, few remaining individuals, acres, or miles of stream, or factors demonstrably making it very vulnerable in New York State.

S3 = Typically 21 to 100 occurrences, limited acreage, or miles of stream in New York State.

S4 = Apparently secure in New York State.

S5 = Demonstrably secure in New York State.

SH = Historically known from New York State, but not seen in the past 15 years.

SX = Apparently extirpated from New York State.

SE = Exotic, not native to New York State.

SR = State report only, no verified specimens known from New York State.

SU = Status unknown.

(Edinger et al. 2002. Ecological Communities of New York State, Appendix A)

Stand: In forestry, a contiguous group of trees sufficiently uniform in age-class distribution, composition, and structure, and growing on a site of sufficiently uniform quality, to be a distinguishable and manageable unit. In this HMP, the term “stand” is also applied to other habitat types (e.g., grassland, shrubland) to describe an area composed of similar vegetation composition and structure, as delineated during the habitat inventory.

Stand Prescription: A planned series of treatments designed to change current stand structure to one that meets management goals. Note: the prescription normally considers ecological, economic, and societal constraints.

Target Species: A suite of high priority wildlife species of conservation interest that are being targeted to benefit from management of a particular habitat type.

Unique Area: Lands that were acquired by DEC for their special natural beauty, wilderness character, geological, ecological, or historical significance for inclusion in the state nature and historical preserve. The primary purpose of these lands is to protect the feature of significance that led to the land being acquired by the state. (Public Use of Lands Managed by the Bureau of Wildlife)

Upland: Sites with well-drained soils that are dry to mesic (never hydric). (Edinger et al. 2002. Ecological Communities of New York State, Appendix B)

Uneven Age: A stand with trees of three or more distinct age classes, either intimately mixed or in small groups.

Wetland: “Freshwater wetlands means lands and waters of the state as shown on the freshwater wetlands map which contain any or all of the following:

- (a) lands and submerged lands commonly called marshes, swamps, sloughs, bogs, and flats supporting aquatic or semi-aquatic vegetation of the following types: wetland trees, wetland shrubs, emergent vegetation, rooted, floating-leaved vegetation, free-floating vegetation, wet meadow vegetation, bog mat vegetation, and submergent vegetation;
 - (b) lands and submerged lands containing remnants of any vegetation that is not aquatic or semi-aquatic that has died because of wet conditions over a sufficiently long period, provided that such wet conditions do not exceed a maximum seasonal water depth of six feet and provided further that such conditions can be expected to persist indefinitely, barring human intervention;
 - (c) lands and waters substantially enclosed by aquatic or semi-aquatic vegetation as set forth in paragraph (a) or by dead vegetation as set forth in paragraph (b) the regulation of which is necessary to protect and preserve the aquatic and semi-aquatic vegetation as set forth in paragraph (a) or by dead vegetation as set forth in paragraph (b) the regulation of which is necessary to protect and preserve the aquatic and semi-aquatic vegetation; and
 - (d) the waters overlying the areas set forth in (a) and (b) and the lands underlying.”
- (Refer to NYS Environmental Conservation Law, Article 24 § 24-0107 for full definition.)

Wildlife Management Area: Lands that were acquired by DEC primarily for the production and use of wildlife, including hunting and trapping. These areas provide and protect wildlife habitats that are particularly significant in

their capacity to harbor rare, threatened or endangered species, host unusual concentrations of one or more wildlife species, provide an important resting and feeding area for migratory birds, provide important nesting or breeding area for one or more species of wildlife, or provide significant value for wildlife or human enjoyment of wildlife. (Public Use of Lands Managed by the Bureau of Wildlife)

Young Forest: Forests that result from a regeneration cut, typically having a dense understory where tree seedlings, saplings, woody vines, shrubs, and herbaceous vegetation grow together. Young forests are typically 0-10 years old. (Adapted from www.youngforest.org). It is acknowledged that “young forests” will differ in their character in different ecological areas of the state and that 0-10 years is a continuum into more mature forest types. (Refer to: A DEC Strategic Plan for Implementing the Young Forest Initiative on Wildlife Management Areas 2015-2020)

APPENDIX B. STATEMENT OF CONFORMITY WITH SEQRA

Habitat Management Plans will be in compliance with the 1979 *Programmatic Environmental Impact Statement on Habitat Management Activities of the Department of Environmental Conservation; Division of Fish and Wildlife* by following the criteria for site specific assessments included in this Programmatic Environmental Impact Statement (EIS) and by discussing further in Appendix B, Statement of Conformity with the State Environmental Quality Review Act (SEQRA). Appendix B will be included in each plan, thereby satisfying overall compliance with 6 NYCRR Part 617, the State Environmental Quality Review. If any of these criteria are exceeded an additional site specific environmental review will be required.

Most activities recommended in this HMP are a continuation of habitat management that DEC routinely conducts under the Programmatic EIS. Beginning in 2015, DEC's Young Forest Initiative (YFI) will considerably increase forest management on Wildlife Management Areas (WMA); YFI's conformity with SEQRA is specifically addressed below. The overarching goal of the YFI is to restore and maintain young forest habitat on WMAs in order to address the declining amount of young forest habitat in the state and provide habitat for key species of conservation interest, including both at-risk and game species. The habitat management activities to be carried out under the YFI are in compliance with the above referenced document and these management activities:

- Will not adversely affect threatened or endangered plants or animals or their habitat.
 - Careful review of the NY Natural Heritage Program's "Natural Heritage Element Occurrence" database in conjunction with a field survey when necessary prior to management activities taking place allows field staff to assess the presence or absence of threatened and endangered species. Appropriate actions will be taken if a threatened or endangered plant or animal is encountered in the project area including, but not limited to: establishing adequate buffer zones around known occurrences, moving the project area, or aborting the project altogether.
- Will not induce or accelerate significant change in land use.
 - The forestland affected by the YFI will be regenerated and remain forested land, therefore no land use change will take place.
- Will not induce significant change in ambient air, soil, or water quality.
 - All projects carried out under the YFI will protect air, soil and water quality through careful project planning, use of appropriate NYS Best Management Practices for Water Quality, and establishment of Special Management Zones around sensitive land and water features requiring special consideration.
- Will not conflict with established plans or policies of other state or federal agencies.
 - YFI projects will follow established plans or policies of other state and federal agencies. Additionally, all YFI projects will be in compliance with all relevant US Fish and Wildlife Service rules and regulations.
- Will not induce significant change in public attraction or use.
 - The WMA program is part of a long term effort to establish permanent access to lands in New York State for the protection and promotion of its fish and wildlife resources. Projects carried out under the YFI will continue to protect, promote and maintain public access to WMAs and their wildlife resources.
- Will not significantly deviate from effects of natural processes which formed or maintain area.
 - Habitat management projects under the YFI will be carried out primarily through even-aged forest management. Even-aged silvicultural systems are designed to mimic natural disturbances, such as flooding, wildfire, insect and disease outbreaks and storm damage often found in nature.
- Will not result in areas of significantly different character or ecological processes.
 - The even-aged silvicultural techniques that will be employed for habitat management projects under the YFI intentionally result in areas of different character and ecological processes. However, they are not considered significant as they are ephemeral or transitional and will not permanently alter the landscape.
- Will not affect important known historical or archeological sites.
 - Each YFI project will be reviewed by DEC's State Historic Preservation Officer (SHPO) as well as the Office of Parks, Recreation and Historic Preservation (OPRHP) to determine whether

project sites may potentially affect any historical or archeological sites. In addition, thorough field review prior to management activities taking place allows field staff to assess the presence or absence of any apparent historical or archeological sites that may not be found during the review process. Should known important historical or archeological sites present themselves necessary actions will be taken to protect these resources under the direction of DEC's SHPO and the OPRHP Archaeology Unit staff.

- Will not involve the application of herbicides, pesticides or other such chemicals.
 - YFI projects may involve the judicious use of pesticides which may be necessary to control invasive species, to protect rare and endangered plants from competition, or to control vegetation interfering with forest regeneration. If projects do require the use of herbicides or pesticides an additional site-specific environmental review will be required.
- Will not stimulate significant public controversy.
 - It is not anticipated that YFI projects will stimulate significant public controversy. A significant amount of public outreach and notification will be conducted on an on-going basis as well as prior to projects being implemented on the ground including, but not limited to: public information sessions regarding the Habitat Management Plans for each WMA, signage installation at project sites informing the public of the scope and purpose of the project, establishment of one demonstration area in each region to showcase YFI management techniques to the public, periodic informational articles published in local media outlets and the development of a public YFI website. The YFI has one full time position dedicated to facilitating the program's public outreach and communication efforts.

PRESCRIPTION NOTES

Species Composition: At a minimum, the three most common species found in the overstory should be included, assuming at least three species comprise the stand. Species that individually constitute less than 5% of the stand may be lumped together as “Other” or “Miscellaneous.” For instance, if beech, hemlock and yellow birch each make up 3% of the stand, they may be lumped together as “Other – 9%.”

Natural Heritage Element Occurrence layer review: List those species that the Natural Heritage Element Occurrence (EO) data layer indicates are or were known to be present in the stand, or could be affected by treatments to the stand. For instance, if a rare fish was indicated in a water body that is a short distance downstream of a creek that flows through the stand, it should be listed in the prescription.

SMZ layer review: The SMZ data layer includes Special Management Zones around all streams and wetlands, as well as vernal pools, spring seeps and recreation areas that staff have mapped and digitized. If any of these features are mapped incorrectly or are missing from current data layers, staff can correct their locations by editing their office layers.

Retention data: Include numbers of existing snags, cavity trees, Coarse Woody Material, Fine Woody Material, and legacy trees. Ocular estimates are acceptable.

Soil types and drainage: Specifically named soil types are useful, but not necessarily required. “Flat, sandy, well-drained hilltop” or “Steep, gravelly, moderately well-drained mid-slope” may be just as useful as “Hershisier-Koufax Sandy Silt Loam” in describing the soil conditions as they relate to management decisions. The important point is to note those characteristics that may limit equipment operation or establishment of regeneration. Soil type data is available for some counties on the Data Selector.

Interfering vegetation: Indicate the existing amount of interfering vegetation such as beech, striped maple, fern, etc. This may be quantified using mil-acre plots or by ocular estimate.

Technical guidance used: This may include stocking guides, articles found in technical journals, textbooks or other silviculture-related publications. Other sources of guidance may be acceptable as well.

Treatment purpose: As used here, “treatment purpose” and “management objective” (see below) are two different things. Also, “treatment purpose” is not what is to be done (i.e., “reduce basal area by 25%” or “remove every third row”), but rather is an explanation of why it is being done (i.e., “stimulate regeneration and increase growth of residual stand” or “regenerate current stand and convert to young forest”).

Management objective: As used here, the term “management objective” is somewhat general. At a minimum, the prescription should indicate the desired future age structure and stand type. An entry as general as “Even aged hardwood” is acceptable, but regional staff may be more specific if they so choose. The management objective for a stand may be specified in the Habitat Management Plan (HMP) for the Wildlife Management Area in question. If the existing HMP does not specify the management objective regional staff should choose the management objective when the prescription is written.

Clearcut acreage and configuration: If the harvest involves one single clearcut, indicate the total contiguous area, in acres. If the harvest comprises more than one clearcut, indicate the total combined area of clearcuts, as well as the area of the largest clearcut.

Natural Heritage/MHDB considerations: Indicate what measures will be taken to protect those elements or features that were found in the review of the Natural Heritage Element Occurrence and Special Management Zone (not applicable yet) layers.

Retention considerations: Indicate whether or not existing levels meet the standards set forth in the Division’s policy on Retention on State Forests, or whether they are expected to do so as a result of the proposed treatment. Also indicate if or how the treatment was adjusted in order to improve compliance with the policy standards.

Treatment description: The intended treatment should be clearly described. The amount of information necessary to accomplish this will vary greatly. For instance, in a row thinning of a pole timber sized plantation that had no SMZs or other special features, it may be sufficient to simply indicate “Remove two out of every six rows, taking two adjacent rows and leaving four rows between successive pairs being removed.” An intermediate thinning in a sawtimber sized hardwood stand with a recreational trail, two streams and a known occurrence of an endangered plant community would require significantly more detail. One rule of thumb that could be used is to describe the treatment so that a qualified forestry professional could use it to assist in marking the harvest.

Additionally, since we are focused on creating young forests you should also address the presence/absence of advanced regeneration. If you are planning on clearcutting without advanced regeneration, address how you are going to mitigate that. For example, “This aspen stand will be clearcut and it is anticipated that future regeneration will be established through aspen root sprouting”. Or, “This stand will be clearcut and replanted with Norway spruce to establish conifer cover.”

Furthermore, if you are planning on conducting a shelterwood or seed tree cut, please indicate when you are planning on returning to the stand to conduct the final harvest (overstory removal).

APPENDIX D: AMENDMENTS

Any substantive changes to the habitat management described in this plan will be amended to the plan annually or as needed. Such changes may include: land acquisition, unforeseen natural disturbance, or any other change that alters the need for or the scope, method, or timing of management.

Revisions made March 2024:

Stands B15, H6, H23, I35.2, I38, I47, I52, I54, I57, P9 and P21 were not originally included in the HMP approved in 2017. These stands, or the identified portions of those stands, are adjacent to maintained grasslands. These areas have now been identified as needing management to create a broad “soft-edge” of shrubland and transitional forest around the fields to improve nesting cover in proximity to those areas now being improved for better brood rearing cover.

Stands M31, M35, M39, M48 were also not included in the original HMP. Surveys and in-field assessments have identified the general area of these stands as a known location of a stable grouse population. Given the need for improved habitat for this species and the known location of this population, these additional stands will allow further intensive management within this area to expand current young forest habitat.

- Page 20: Under *Management planned for 2022-2026* add the following lines:
 - **Stand B15:** This is predominantly an eastern hemlock stand with red oak and red maple intermixed.
The portion of this larger stand adjacent to **B942** will be thinned to promote a broader transition zone of young forest and shrubland between field and forest. (3 acres)
 - **Stand H6 and H23:** These stands are composed of red maple, white ash and scattered white pine. The portions of these larger stands adjacent to **H941** will be thinned to promote a broader transition zone of young forest and shrubland between field and forest. (10 acres)
 - **Stand I35.2:** This stand is dominated by eastern hemlock with sugar maple and some scattered red oak present. The portion of this stand adjacent to **I940** will be thinned to promote a broader transition zone of young forest and shrubland along the field edge. (2 acres)
 - **Stand I38:** This stand is composed of red maple, sugar maple and red oak. A portion of this stand will be thinned to promote a broader transition zone of young forest and shrubland along the field edge. (4 acres)
 - **Stand I47:** This stand is composed of red maple, white pine and some white oak. This stand will be thinned to promote a broader transition zone of young forest near the field edge and adjacent softwood stands scheduled for future harvest. (1 acre)
 - **Stand I52:** This stand is composed of white pine, red maple and red oak. The portion of this stand adjacent to **I940** will be thinned to promote young forest and shrubland near the field edge. (3 acres)
 - **Stand I54:** This stand is dominated by white ash suffering from EAB infection with sugar maple and occasional Norway spruce intermixed. The portion of this stand adjacent to **I940** will be thinned to promote young forest and shrubland near the field edge. (3 acres)
 - **Stand I57:** This stand is composed of white pine, red maple and aspen. The portion of this stand nearest to **I940** will be thinned and clearcut to promote aspen regeneration and creating young forest and shrubland. (2 acres)

- **Stand M13:** This stand is composed of maple, aspen and red oak. This stand will be patch clear-cut mainly for ruffed grouse portions at a time in rotation to create aspen regeneration. (16 acres)
- **Stand M31:** This stand is a mixture of red oak, white ash and red maple, with the white ash degraded from EAB. Patches within the larger stand will be cut to create patches of young forest. (9 acres)
- **Stand M35:** This stand is a mixture of red oak, red maple and eastern hemlock. Patches within the larger stand will be cut to create patches of young forest within a mature stand. (18 acres)
- **Stand M39:** This stand is a mixture of aspen, red maple and white pine. Some patches will be clear cut within this stand to create patches of young forest, targeting specifically aspen regeneration. (18 acres)
- **Stand M48:** This stand is a mixture of hemlock, red maple and oak. Some patches will be clear cut within this stand to create patches of young forest within more mature stand. (10 acres)
- **Stand P9:** This stand is a combination of white pine, red maple and white ash with spots heavy with aspen. The portions of this stand adjacent to **P941** will be thinned and clearcut to create soft-edge effect along the field and a broad transition zone of young forest and shrubland between forest and field. (8 acres)
- **Stand P21:** This stand is a mixture of red maple, aspen and black birch. The portion of this larger stand adjacent to **P942** will be thinned and clearcut to promote young forest, especially aspen, and shrubland along the field for increased nesting and brood rearing cover. (4 acres)

- Page 27: The following stands are being added to *Table 8. Forest management schedule for the second five-year period of this HMP (2023-2027)*.

Table 7. Forest management schedule for the second five-year period of this HMP (2022-2026).

Stand	Acres	Size Class	Current Forest Type	Future Forest Type	Management Direction	Treatment Type
B15	3	Small Sawtimber 12-18" DBH	Natural Forest: Eastern Hemlock/ Oak	Hemlock/ Oak and shrubland	Uneven aged/ shrubland	Thinning/Clearcut
H6	5	Pole Timber 6-11" DBH	Natural Forest: Northern Hardwoods	Northern Hardwood and shrubland	Uneven aged/ shrubland	Thinning/Clearcut
H23	5	Pole Timber 6-11" DBH	Natural Forest: Northern Hardwoods/ White Pine	Northern hardwood/ White pine and shrubland	Uneven aged/ shrubland	Thinning/Clearcut

I35.2	2	Small Sawtimber 12-18" DBH	Natural Forest: Northern Hardwood/ Hemlock	Northern Hardwood/ Hemlock and shrubland	Uneven aged/ shrubland	Thinning/Clearcut
I38	4	Pole Timber 6-11" DBH	Natural Forest: Pioneer Hardwood	Northern Hardwood and shrubland	Uneven aged/ shrubland	Thinning/Clearcut
I47	1	Small Sawtimber 12-18" DBH	Natural Forest: Northern Hardwood/ White Pine	Northern Hardwood/ White pine and shrubland	Uneven aged/ shrubland	Thinning/Clearcut
I52	3	Pole Timber 6-11" DBH	Natural Forest: Northern Hardwood/ White Pine	Northern Hardwood/ White pine and shrubland	Uneven aged/ shrubland	Thinning/Clearcut
I54	3	Small Sawtimber 12-18" DBH	Northern Hardwood	Northern Hardwood/ Shrubland	Uneven aged/ shrubland	Thinning/Clearcut
I57	2	Small Sawtimber 12-18" DBH	Natural Forest: Northern Hardwood/ White Pine	Aspen/ White pine and Shrubland	Uneven aged/ shrubland	Thinning/Clearcut
M13	17	Seed/Sapling <6" DBH	Natural Forest: Pioneer Hardwood	Natural Forest: Seedling/ Sapling	Even aged	Clearcut
M31	9	Small Sawtimber 12-18" DBH	Natural Forest: Northern Hardwoods	Natural Forest: Seedling/ Sapling	Even aged	Clearcut
M35	18	Mature Sawtimber 18"+ DBH	Natural Forest: Northern Hardwood/ Hemlock	Natural Forest: Seedling/ Sapling	Even aged	Clearcut
M39	18	Small Sawtimber 12-18" DBH	Plantation: White Pine	Natural Forest: Seedling/ Sapling	Even aged	Clearcut
M48	10	Small Sawtimber 12-18" DBH	Natural Forest: Northern Hardwood/ Hemlock	Natural Forest: Seedling/ Sapling	Even aged	Clearcut
P9	8	Small Sawtimber 12-18" DBH	Natural Forest: Northern Hardwood/ White Pine	Aspen/ White pine and Shrubland	Uneven aged/ shrubland	Thinning/Clearcut
P21	4	Pole Timber 6-11" DBH	Natural Forest: Pioneer Hardwood	Aspen/ Shrubland	Even aged/ Shrubland	Thinning/Clearcut