

**Habitat Management Plan
for
Rattlesnake Hill Wildlife Management Area
2016 - 2025**



Photo: Mike Palermo

Division of Fish and Wildlife
Bureau of Wildlife
6274 East Avon-Lima Road, Avon, New York 14414

July 7, 2016



**Department of
Environmental
Conservation**

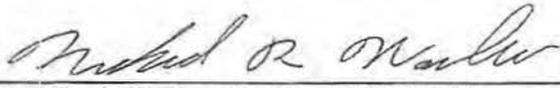
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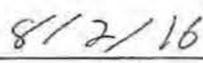
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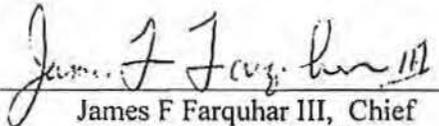
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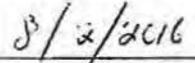
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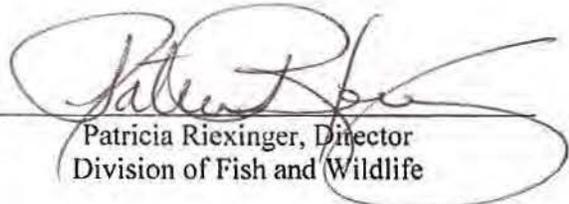
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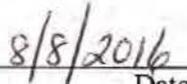
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Financial support for development of this Habitat Management Plan was provided by the Federal Aid in Wildlife and Sport Fish Restoration Program and non-federal funds administered by the New York State Department of Environmental Conservation including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

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SUMMARY

Rattlesnake Hill Wildlife Management Area (WMA) is a mostly forested upland tract, situated near the northern edge of the Allegheny Plateau. The property is atop a large hill and includes steep slopes, several streams, grassy openings, constructed ponds and marshes, and a portion of Canaseraga Creek wetlands. It is primarily managed to provide a diversity of forest habitats including mature natural forest, conifer plantations, and a range of age-classes including young forest. This plan elaborates upon habitat objectives described in the Livingston Unit Management Plan¹ and provides guidance for the revision of that document.

Key habitat management goals for Rattlesnake Hill WMA include:

- Managing approximately 10% as young forest to promote American woodcock and ruffed grouse;
- Managing approximately 81% as intermediate and mature forest;
- Maintaining approximately 5% as grasslands to provide diverse food and cover.
- Managing approximately 1% as early-successional shrublands; and
- Managing approximately 2% as wetlands and open water to provide breeding and migratory stopover habitat for waterfowl.

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

¹ NYSDEC Unit Management Plans are available online at <http://www.dec.ny.gov/lands/4979.html>

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.

Objectives described in this HMP will be integrated into the Livingston UMP which is currently being revised. Management provisions for facilitating compatible wildlife-dependent recreation, access, and facility development and maintenance will also be addressed in the updated UMP.

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 National Historic Preservation Act (NHPA), prior to implementation.

WMA OVERVIEW

LOCATION

Rattlesnake Hill Wildlife Management Area is located in DEC Region 8, Towns of Nunda and Ossian in Livingston County, and Town of Grove in Allegany County (Figure 1).

TOTAL AREA

5,160 acres

HABITAT INVENTORY

A habitat inventory of the WMA was conducted in 2011 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 Rattlesnake Hill WMA.

Habitat Type	Current Conditions (as of 2011)			Desired Conditions	
	Acres	Percent of WMA	Miles	Acres	Percent of WMA
Forest ^a	4,596	89%		4,200	Decrease to 81%
Young forest	195	4%		492	Increase to 10%
Shrubland	45	1%		45	No change
Grassland	159	3%		258	Increase to 5%
Agricultural lands	0	0%		0	No change
Wetlands (natural) ^b	30	<1%		30	No change
Wetlands (impounded) ^b	75	1%		75	No change
Open water	13	<1%		13	No change
Other (parking, buildings)	7	<1%		7	No change
Roads	40	<1%	13	40	No change
Rivers and streams			16		No change
Total Acres:	5,160	100%		5,160	

^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.

ECOLOGICAL RESOURCES

Wildlife Overview:

Wildlife present on Rattlesnake Hill WMA includes many species commonly found throughout western New York and the northern Allegheny Plateau. With large tracts of forest, mammals such as gray and red squirrel, white-tailed deer, raccoon, red and gray fox, coyote, opossum, and black bear are quite common. Historically, an occasional snowshoe hare could be observed adjacent to thick creek bottom brush or conifer plantation habitats. The WMA is appropriately named after the timber rattlesnake, which has historically been found in the more remote sections of the “Hill.”

A number of small marsh units have been developed and provide limited hunting for waterfowl. Some of the area’s furbearing species such as beaver, mink and otter may be occasionally viewed at these marsh units. Populations of both bobcat and fisher are increasing in western New York

and these species can once again be observed on the WMA. Numerous amphibian and reptile species are abundant on the WMA as well, including painted and snapping turtle, garter and milk snake, red-spotted newt, and vernal pool breeders such as wood frog and spotted salamander.

Wildlife and Plant Species of Conservation Concern:

There are no federally listed Endangered or Threatened species known to occur on the WMA. The following 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 2).² Species listed below have been documented on or within the vicinity of the WMA and are likely to occur in suitable habitat on the WMA. Other species of conservation concern may also be present on the WMA. Data sources include: the NY Natural Heritage Program, NY Breeding Bird Atlases,³ NY Reptile and Amphibian Atlas,⁴ DEC wildlife surveys and monitoring, and eBird.⁵

Table 2. Species of conservation concern that may be present on Rattlesnake Hill WMA, including state Endangered (E) and Threatened (T) species, Species of Special Concern (SC), High Priority SGCN (HP), and SGCN (x).

Species Group	Species	Federal Status	NY Status	NY SGCN Status
Birds	American woodcock			x
	Black-billed cuckoo			x
	Black-throated blue warbler			x
	Blue-winged warbler			x
	Brown thrasher			HP
	Canada warbler			HP
	Cerulean warbler		SC	x
	Cooper’s hawk		SC	
	Louisiana waterthrush			x
	Northern goshawk		SC	x
	Pied-billed grebe		T	x
	Red-shouldered hawk		SC	x
	Ruffed grouse			x
	Scarlet tanager			x
	Sharp-shinned hawk		SC	
	Wood thrush			x
Mammals	None known to occur			
Amphibians and reptiles	Eastern ribbonsnake			x
	Smooth greensnake			x
	Snapping turtle			x

² 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>.

³ Available online at <http://www.dec.ny.gov/animals/7312.html>.

⁴ Available online at <http://www.dec.ny.gov/animals/7140.html>.

⁵ Available online at <http://ebird.org/content/ebird/about/>. © Audubon and Cornell Lab of Ornithology.

Table 2. Continued

Species Group	Species	Federal Status	NY Status	NY SGCN
	Timber rattlesnake		T	HP
	Western chorus frog			x
Fish	Brook trout			x
Invertebrates	None known to occur			
Plants	None known to occur			

Significant Ecological Communities:

There are four small patches of a rare and significant natural community located on Rattlesnake Hill WMA. The state rank reflects the rarity within NY, ranging from S1, considered the rarest, to S5, considered stable; definitions are provided in Appendix A. The following significant ecological communities occur on the WMA; community descriptions are from *Ecological Communities of New York State, Second Edition*⁶ (Figures 3 and 4):

- **Rich hemlock-hardwood peat swamp (S2S3)** - a mixed swamp that occurs on organic soils (peat or muck) in central New York in depressions or concave slopes which receive groundwater discharge, typically in areas where the groundwater flows through calcareous gravels of glacial deposits. These swamps usually have a fairly open canopy (50 to 70% cover), scattered shrubs, and a diverse groundlayer with sedges, mosses, and forbs.

Additional information about significant ecological communities is available in the Rattlesnake Hill WMA Biodiversity Inventory Final Report (1997) prepared by the New York Natural Heritage Program.

Soils:

Most of the soils on Rattlesnake Hill WMA are of the Mardin-Volusia-Lordstown associations.⁷ The major soil limitation affecting management is the depth of the soil to the hardpan. Major soil associations here have shallow hardpans that create seasonal wetness and restrict depth of rooting. In some areas these soils create poor growing conditions resulting in slow tree growth. Proposed forest management actions consider these growing conditions to ensure long-term forest health.

⁶ 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>.

⁷ 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>.

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 Rattlesnake Hill WMA include:

- Three wetlands (CN-1, OS-1 and OS-3) regulated by Article 24 of the Environmental Conservation Law and several wetlands shown on the National Wetlands Inventory (NWI; Figures 5 and 6). Each state-regulated wetland is protected by a buffer zone of 100 feet from the delineated wetland boundary, known as the adjacent area. There may be forestry prescriptions associated with forested wetlands and adjacent areas, and each management prescription will be reviewed individually for determination of impacts.
- Approximately 16.4 miles of streams, composed of Canaseraga Creek, Hovey Brook, Sugar Creek, and their tributaries (Figures 5 and 6). Three miles of these streams are classified as trout waters and are regulated by Article 15 of the Environmental Conservation Law. Water quality standards will be adhered to on all streams.⁸
- Approximately 1,000 acres designated as protection management within the Livingston UMP (Figures 9 and 10). These stands are generally steep slopes, waterways, or wetlands and will be managed as special management zones to provide a connective corridor of late-stage mature forest on the WMA.

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*.⁹ 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.

LANDSCAPE CONTEXT

The goals of this HMP have been developed with consideration of surrounding landscape features and the availability of habitats and other conservation lands adjacent to Rattlesnake Hill WMA (Figures 7 and 8). The landscape within a three mile radius of the WMA is primarily privately-owned land including:

- Forest (58% combining deciduous, evergreen and mixed)
- Pasture/hay and grassland (17%)
- Early-successional shrubland (8%)
- Cultivated crops (12%)
- Developed (3%)
- Wetland (2% combining emergent and woody wetlands)
- Open water (<1%)

Although the surrounding landscape is heavily forested, these forests are generally not managed in an even-aged fashion and therefore do not produce large patches of young forest habitat. The

⁸ Information about stream classification is available online at <http://www.dec.ny.gov/permits/6042.html>.

⁹ Available online at http://www.dec.ny.gov/docs/wildlife_pdf/yfismzrules.pdf.

lack of young forests in the surrounding landscape makes creation on Rattlesnake Hill WMA even more important.

Rattlesnake Hill WMA is within the Rattlesnake Hill forest matrix block. Forest matrix blocks are large, unfragmented examples of the dominant forest communities throughout the state. The management of forest stands at Rattlesnake Hill WMA is important to regenerate and promote the persistence of these forest communities. More information regarding forest matrix blocks can be found within the *Strategic Plan for State Forest Management*.¹⁰

Several other conservation lands are nearby, however they comprise only 6% of the surrounding landscape (Figure 7). This includes:

- Ossian State Forest (1,303 acres) - multiple-use forest, mixed age-classes.
- Canaseraga State Forest (1,287 acres) - multiple-use forest, mixed age-classes.
- Allegany County lands (three parcels totaling 303 acres) - mature forest.
- Village of Nunda lands (66 acres) - Nunda Reservoir, Newville Creek and wetland.

II. MANAGEMENT STRATEGIES BY HABITAT TYPE

DEC will continue active management of wildlife habitats on Rattlesnake 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: 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.

¹⁰ The Strategic Plan for State Forest Management is available online at <http://www.dec.ny.gov/lands/64567.html>.

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 (Photo 1). May include both natural forest and plantations.

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



Photo 1: An abundance of oak regeneration following a recent seed tree harvest at Rattlesnake Hill WMA.

Photo: Mike Palermo, NYSDEC

Forest management on Rattlesnake 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 the Young Forest Initiative (YFI) to increase the amount of young forest on WMAs to benefit wildlife that require this transitional, disturbance-dependent habitat.¹¹

MANAGEMENT OBJECTIVES

1. *Create and maintain at least 10% (479 acres) of the forested acreage as young forest.* Currently, only 4% (195 acres) of Rattlesnake Hill WMA forested area is young forest.
2. *Retain a mature forest component that provides interior habitat.* Although mature forest is abundant on the WMA, forest management plans to increase young forest consider the need to retain large blocks of mature forest for associated species.
3. *Where possible, regenerate stands to retain oak/hickory as a dominant species.* Oak and hickory mast is a valuable food resource for many wildlife species. Without proper silvicultural techniques, oak/hickory stands can transition into other forest types.
4. *Convert 116 acres of conifer plantation stands to natural forest, reducing conifer plantations from 16% (780 acres) to 14% (664 acres) of forest acres.*
5. *Promote the continued presence and success of wild apple trees.* Apple trees exist on the WMA from historic planting and natural regeneration, and produce a valuable food resource.
6. *Identify and protect vernal pools and adjacent upland forest.* As a valuable water resource for upland wildlife and a critical breeding site for many upland amphibians, these pools are a vital component of a forest ecosystem.

DESCRIPTION OF EXISTING FOREST HABITAT AND TARGET SPECIES

There are 4,791 acres of forest on Rattlesnake Hill WMA (Figures 9 and 10). Table 3 provides a summary of the forested areas, including the most common tree species present in each.

A large portion of the forested area is reverted farm lands from the 1930s. These 80+ year old forested areas join other stands of trees that were never completely cleared. Existing forest habitat is dominated by intermediate and mature natural hardwoods interspersed with natural

¹¹ Additional information about DEC's Young Forest Initiative and the YFI Strategic Plan is available online at <http://www.dec.ny.gov/outdoor/104218.html>.

conifer stands and conifer plantations. Approximately 1,000 acres of this forested area is designated as protection management within the UMP to protect steep slopes and waterways and provide late-stage mature forest habitat. A small percentage of the WMA is young forest regenerating from previous forest management actions. These areas are generally small (< 10 acres) and scattered throughout the northern part of the WMA, with one large block (105 acres) near the southern boundary.

Many of the forest stands at Rattlesnake Hill WMA have reached maturity and are declining in productivity. Much of the oak/hickory dominated forest on Rattlesnake Hill WMA has reached the end of its natural cycle. These trees no longer have the vigor of their youth, produce less mast for wildlife, and are susceptible to insects, disease and drought. If left to continue aging naturally, declining trees will die and fall, providing openings for shade-tolerant species such as maples and beech to become dominant.

Table 3. Summary of the acreage and dominant overstory species for each forest type currently present on Rattlesnake Hill WMA.

Forest Type	Acres (as of 2011)	Desired Acres	Overstory species
Natural forest (mature/intermediate)	3,816	3,536	Oak, hickory, maple, ash, birch, white pine, hemlock
Plantation	780	664	Norway spruce, red pine
Forested wetland	0	0	Not present on the WMA
Young forest	195	492	Aspen, birch, oak, hickory, maple
Young forest (forested wetland)	0	0	Not present on the WMA
Total Forested Acres:	4,791	4,692^a	

^aLoss of total forested acreage reflects desire to increase grassland habitat on the WMA.

Young Forest Target Species:

Due to the predominance of intermediate and mature forest, and low proportion of young forest, there has been a decline of wildlife species dependent upon young forests. Target species for young forest habitat management at Rattlesnake Hill WMA are American woodcock and ruffed grouse. Both of these are Species of Greatest Conservation Need (SGCN), have declining populations, and are popular game species.

These species rely on areas of young forest adjacent to mature forest for nesting, foraging, and cover and will benefit from management that creates the following habitat conditions:

- American woodcock:
 - Singing/Peenting Ground – Open areas from 1 to >100 acres, usually in an abandoned field.



Photo 2: Ruffed grouse require the dense cover of young forest for drumming and courtship.

Photo: Art Kirsch, NYSDEC

- Foraging areas – Moist, rich soils with dense overhead cover of young trees.
- 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) or reverting farm fields.¹²
- Ruffed grouse:
 - Drumming areas – Downed trees surrounded by small diameter woody cover with high stem density (Photo 2).
 - Foraging areas – Open areas with dense overhead cover of young forest with good mast production and catkins.
 - Nesting – Young, open forest stands or second growth woodlands.
 - Brood rearing – Herbaceous ground cover with a high midstory stem density.^{13, 14}

Management actions to create young forest will also benefit several SGCN known to occur on the WMA, including blue-winged warbler, brown thrasher, and Canada warbler. Bobcat, white-tailed deer, and wild turkey are expected to benefit as well. Timber rattlesnake and snowshoe (varying) hare, both historically present, utilize young forests and may return to the WMA if source populations still exist nearby.

It is important to note that young forest habitat is important to many species typically associated with mature forest. The abundant and diverse food (berries, catkins, insects) present in young forests attract juvenile interior nesting bird species during critical growth periods as well as juveniles and adults during energy intensive migrations.

Mature Forest Target Species:

As the forests at Rattlesnake Hill WMA have aged, several stands of high-quality mature forest habitat have developed. Although there is currently an overabundance of mature forest on the WMA, important habitat areas should be retained.

The target species for mature forest habitat is the red-shouldered hawk. This woodland raptor is known to breed on the WMA and acts as an indicator of important mature forest habitat. Habitat managed for the red-shouldered hawk will also benefit other SGCN associated with mature forests likely to occur on the WMA, including black-throated blue warbler, cerulean warbler, scarlet tanager, and wood thrush. American fisher, Wehrle’s salamander, and West Virginia white, species uncommon in western New York, are expected to benefit from this mature forest habitat as well.

Vernal Pool Target Species:

Vernal pools are a valuable resource providing breeding sites for several upland amphibians and invertebrates, and water sources for wildlife during dry seasons. They are scattered across the

¹² US Department of Agriculture, Natural Resources Conservation Service. 2010. American Woodcock: Habitat Best Management Practices for the Northeast by Scot J. Williamson. Wildlife Insight. Washington, DC.

¹³ 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.

¹⁴ Jones, B. C. et al. Habitat Management for Pennsylvania Ruffed Grouse, Pennsylvania Game Commission. 10 pp.

WMA within upland forest stands and are typically isolated from surrounding wetlands. Target species for vernal pool habitat are spotted salamander and wood frog.

These species are known to inhabit the WMA, breeding in these pools and then spending the majority of their adult lives in the surrounding upland forest. These species are indicators of high-quality habitat and their continued presence illustrates the health of the larger ecosystem.

MANAGEMENT HISTORY

Rattlesnake Hill was first settled by timber operators who removed extensive stands of white pine and hemlock. Later, homesteaders settled on the more favorable sites and for many years harvested fine crops of grain. Intensive and careless use of the land eventually resulted in the loss of its fertility, and the once affluent farmers were gradually forced to leave their land, part of which reverted to public ownership through foreclosures.

Management of Rattlesnake Hill WMA began shortly after its purchase by the federal government in the early 1930s through the Federal Resettlement Administration's land acquisition program. The Civilian Conservation Corps accomplished a variety of conservation projects on the area, most notably the planting of numerous conifer plantations. The area was leased to the State of New York in 1941 and intensive management practices were initiated. Ownership of the tract was transferred to the State of New York in 1961.

Since the DEC began managing the area, numerous activities have been undertaken to improve its value as both a diverse habitat for indigenous species of the Alleghany Plateau and for the human users of the area, both consumptive and non-consumptive. Examples include timber management, construction of potholes and small marsh units, mowing of open areas to maintain grassy vegetation, planting of food and cover shrubs, development and improvement of access roads, release of snowshoe hares, creation of forest openings, and the construction of parking areas.

Efforts over the last 30 years have been to more equitably redistribute acreage in all stages of forest structure. Partnerships with both the National Wild Turkey Federation and the Ruffed Grouse Society have created many small clearcuts and grassy openings. Small sales of fuelwood have thinned stands and released apple trees. The largest harvests in the history of Rattlesnake Hill WMA occurred in the early 2000s and now provide excellent habitat for wildlife associated with intermediate forests.

Timber management actions within the past 5 years have created the existing 195 acres of young forest on the WMA (Figures 9 and 10). This includes a 105 acre seed tree harvest (Photo 3;



Photo 3: Aerial view of the 105 acre seed tree harvest completed in 2015 at Rattlesnake Hill WMA.

Photo: Garrett Koplun, NYSDEC

Stand H05) and 65 acres of overstory pine removal (Stands B5.1, D04, D10.1, E3.1, and F4.1). A 25 acre seed tree harvest is scheduled to be completed in 2016 (Stands A02 and A04), and for purposes of this plan is considered existing young forest because harvest (creation of young forest) is imminent. Additional recent timber management includes a 47 acre first harvest of a shelterwood treatment (Stands C08 and C09) and 6 acres of conifer plantation thinning (Stand B5.2).

IMPLEMENTATION PLAN AND ANTICIPATED SCHEDULE

The following forest management is proposed during the timeframe of this plan:

- **Management planned for 2016-2020** (Table 4, Figures 9 and 10):
 - Clearcut harvest of Stands D10, D28, D46, F05, F10, G04, H01, I08, I11, I26, and I27 (171 acres).
 - Shelterwood harvest of Stand E06 (60 acres).
 - Thinning harvest of Stands I22 and I28 (57 acres).
- **Management planned for 2021-2025** (Table 5, Figures 9 and 10):
 - Seed tree harvest of Stands G02 and G09 (191 acres).
 - Shelterwood harvest of Stands C08, C09, and E06 (147 acres).
 - Thinning harvest of Stands A01, A05, A10, B11, C04, C10, and D01 (246 acres).

Table 4. Forest management schedule for the first five-year period of this HMP (2016-2020).

Stand	Acres	Size Class	Forest Type		Management Direction	Treatment Type
			Current	Future		
D10	4	Small Saw Timber 12"-17" DBH	Plantation: Red Pine	Young Forest	Wildlife	Clearcut
D28	6.5	Small Saw Timber 12"-17" DBH	Plantation: Red Pine	Young Forest	Wildlife	Clearcut
D46	6.9	Small Saw Timber 12"-17" DBH	Plantation: Scotch Pine	Young Forest	Wildlife	Clearcut
E06	60	Small Saw Timber 12"-17" DBH	Northern Hardwood-Hemlock	Northern Hardwood-Hemlock	Wildlife	Shelterwood
F05	33.2	Small Saw Timber 12"-17" DBH	Northern Hardwood	Young Forest	Wildlife	Clearcut
F10	13.8	Small Saw Timber 12"-17" DBH	Plantation: Norway Spruce	Young Forest	Wildlife	Clearcut
G04	13	Pole Timber 6"-11" DBH	Plantation: Red Pine	Young Forest	Wildlife	Clearcut
H01	22.3	Small Saw Timber 12"-17" DBH	Plantation: Red Pine	Young Forest	Wildlife	Clearcut
I08	20.9	Small Saw Timber 12"-17" DBH	Plantation: Red Pine	Young Forest	Wildlife	Clearcut
I11	29	Pole Timber 6"-11" DBH	Plantation: Jack Pine	Young Forest	Wildlife	Clearcut
I22	46.6	Small Saw Timber 12"-17" DBH	Plantation: Norway Spruce	Plantation: Norway Spruce	Wildlife	Thinning

Table 4. Continued

Stand	Acres	Size Class	Forest Type		Management Direction	Treatment Type
			Current	Future		
I26	12.2	Small Saw Timber 12"-17" DBH	Pioneer Hardwood	Young Forest	Wildlife	Clearcut
I27	9.2	Pole Timber 6"-11" DBH	Pioneer Hardwood	Young Forest	Wildlife	Clearcut
I28	10.5	Small Saw Timber 12"-17" DBH	Plantation: Norway Spruce	Plantation: Norway Spruce	Wildlife	Thinning

Table 5. Forest management schedule for the second five-year period of this HMP (2021-2025).

Stand	Acres	Size Class	Forest Type		Management Direction	Treatment Type
			Current	Future		
A01	17.8	Small Saw Timber 12"-17" DBH	Plantation - Norway Spruce	Plantation - Norway Spruce	Wildlife	Thinning
A05	35.8	Small Saw Timber 12"-17" DBH	Plantation - Norway Spruce	Plantation - Norway Spruce	Wildlife	Thinning
A10	51.8	Small Saw Timber 12"-17" DBH	Plantation - Norway Spruce	Plantation - Norway Spruce	Wildlife	Thinning
B11	53.5	Small Saw Timber 12"-17" DBH	Plantation - Norway Spruce	Plantation - Norway Spruce	Wildlife	Thinning
C04	57.4	Small Saw Timber 12"-17" DBH	Plantation - Norway Spruce	Plantation - Norway Spruce	Wildlife	Thinning
C08	43.9	Small Saw Timber 12"-17" DBH	Northern Hardwood-Hemlock	Northern Hardwood-Hemlock	Wildlife	Shelterwood
C09	3.3	Pole Timber 6"-11" DBH	Northern Hardwood-White Pine	Northern Hardwood-White Pine	Wildlife	Shelterwood
C10	13.8	Small Saw Timber 12"-17" DBH	Plantation - Norway Spruce	Plantation - Norway Spruce	Wildlife	Thinning
D01	15.6	Small Saw Timber 12"-17" DBH	Plantation - Norway Spruce	Plantation - Norway Spruce	Wildlife	Thinning
E06	100	Small Saw Timber 12"-17" DBH	Northern Hardwood-Hemlock	Northern Hardwood-Hemlock	Wildlife	Shelterwood
G02	180.4	Medium Saw Timber 18"-23" DBH	Oak	Young Forest	Wildlife	Seed Tree
G09	10.6	Medium Saw Timber 18"-23" DBH	Oak	Young Forest	Wildlife	Seed Tree

Stand locations and planned management actions are also summarized in Figure 9 and 10. Specific forest stand descriptions and detailed management prescriptions will be prepared for each proposed forest management area prior to implementation (see template, Appendix C). Briefly, habitat management for each of these stands will include the following:

- **Stands D10, D28, D46, F10, G04, H01, I08, and I11:** Clearcut harvest of 116 acres to convert conifer plantations to naturally regenerated mixed forest stands and create young forest habitat. More information regarding conifer plantations is found below under Objective Four.
- **Stand F05, I26, and I27:** Clearcut harvest of 55 acres to regenerate stands and create young forest habitat.
- **Stands G02 and G09:** Seed tree harvest of 191 acres to regenerate stands and create young forest habitat. Seed trees may be retained to diversify habitat value of young forests.
- **Stand E06:** Initial shelterwood harvest of 160 acres to regenerate stand and prepare for future young forest habitat. A shelterwood harvest occurs in stages, with at least an establishment harvest and an overstory removal. The timeframe between initial harvest and overstory removal (creation of young forest) will vary by stand and is determined as understory regeneration progresses.
- **Stands C08 and C09:** Second harvest of a shelterwood system on 47 acres to regenerate stand and prepare for future young forest habitat (initial harvest was completed in 2013).
- **Stands A01, A05, A10, B11, C04, C10, D01, I22, and I28:** Thinning harvest of 303 acres to manage species composition and stocking levels of stand. Future even-aged management is anticipated for these stands.
- **All harvested stands:** Small grasslands (<1 to 3 acres) may be created opportunistically on harvest landings and in suitable areas with permanent access for maintenance.

Objective One - Create and maintain at least 10% of forested acreage as young forest:

The forest management objective will be met within the ten year span of this plan by creation of approximately 362 acres of young forest through the use of clearcut and seed tree harvests. While approximately 65 acres of the current 195 acres of young forest may age to intermediate forest within the timeframe of this plan, it is expected that when all planned harvests are complete there will be at least 492 acres (10% of forest area) of young forest on the WMA. Continued application of even-aged management throughout WMA forested stands will maintain at least 10% young forest in perpetuity. Planned shelterwood harvests provide necessary advanced regeneration in preparation for future management of these stands during the ten years following the time frame of this plan. The aging of young forests to intermediate then mature will ensure a diversity of forest age-classes in perpetuity.

Habitat values within a post-harvest stand are enhanced by retaining an abundance of coarse-woody debris, large downed logs, snags, and legacy trees. This structure has many habitat functions such as: refugia for salamanders and snakes, drumming logs for ruffed grouse, and denning sites for bobcat. Trees bearing cavity sites will also be left throughout the stands to provide nesting and resting sites for various species. Feathering of forest edges around harvest areas will be utilized where practicable to promote diverse habitats and reduce negative effects associated with hard edges.

Objective Two - Retain a mature forest component for associated species:

Mature forest is abundant on Rattlesnake Hill WMA and provides valuable habitat for associated species. Management planning to create young forests will consider the arrangement of high-quality mature forest stands on the WMA.

The Livingston UMP designated 20% of Rattlesnake Hill WMA (Stands B03, C05, D27, D39, D920, E05, E07, F09, F13, F14, F16, F17, G01, G07, G08, H04, I29, and J02) as protection management (Figures 9 and 10). These stands are generally steep slopes, wetlands, and waterways and are intended to provide an interspersion of late-stage mature forest throughout the WMA. By adhering to the protection of these stands, it ensures the persistence of this habitat.

Species associated with mature forests are desired to remain present on the WMA. The red-shouldered hawk is an indicator of productive mature forest habitat and its protection acts as an umbrella, benefiting several species that share similar habitat. A method to specifically promote the persistence of red-shouldered hawks is to identify and protect nesting territories. Special consideration will be given to management actions in areas where red-shouldered hawks (or other forest raptor species observed) are nesting to avoid or minimize impacts.

It is also important to consider that some mature forest species, such as the cerulean warbler, require large tracts of unbroken habitat. Planning for the management of diverse age-classes must consider that although forest fragmentation by the creation of young forest is temporary, much more time is required to develop core areas of late-stage mature forest. Management proposed within this plan provides core areas and future planning will ensure core areas persist.

However, due to the large forested area here (4,791 acres), the application of even-aged harvests throughout the WMA, maintaining at least 10% as young forest, is expected to provide an abundance of diverse forest age-classes in perpetuity, including areas of mature forest.

Objective Three - Regenerate stands to retain oak/hickory as a dominant species:

The oak/hickory forest type is dominant in many stands at Rattlesnake Hill WMA. The mast produced by these trees is a valuable food resource for wildlife and it is desired to promote the continued dominance of these species.

Silvicultural techniques will be used to promote the continuation of oak and hickory as significant components of forest stands. As is shown in Tables 4 and 5, clearcut and seed tree methods are proposed to regenerate oak/hickory type stands where there is sufficient advanced regeneration in the understory. Shelterwood treatment is proposed for stands lacking advanced regeneration, as it will provide enough sunlight and protection to allow oak/hickory seedlings to establish prior to the final removal of all or most of the canopy.

Objective Four - Convert conifer plantations to naturally regenerated stands:

In order to promote the reforestation of Rattlesnake Hill WMA during early management, conifer plantations were established. The species most commonly planted were Norway spruce and red pine, for their rapid growth and relative freedom from disease and pests.

Now, several decades later, these plantations have matured, and some are becoming overstocked, with reduced live crown and an associated decline in habitat value. Harvesting conifers from

these stands (selectively or entirely) to promote natural regeneration of conifers and hardwoods, will produce a stand of improved habitat value.

This HMP schedules the clearcut harvest of approximately 116 acres and thinning harvest of 303 acres of conifer plantations (Table 5 and Figures 9 and 10). Clearcut harvest of Stands D10, D28, D46, F10, G4, H01, I08, and I11 will provide natural regeneration of these stands and reduce conifer plantations on the WMA from 16% (780 acres) to 14% (664 acres) of forest acres. Thinning of Stands A01, A05, A10, B11, C04, C10, D01, I22, and I28 is necessary to manage species composition and stocking levels. This will promote stand health and improve habitat quality. These thinned stands may receive even-aged management in the future.

Even though the objective calls for reducing the overall acreage of plantations on the WMA over time, it is desired to retain the benefits of conifer species. White pine and eastern hemlock are native to the WMA, are currently present, and the regeneration of forest stands will promote their persistence. Plantation species, although generally not native, provide valuable coniferous habitat and will be retained when naturally regenerating.

Objective Five - Promote the continued presence and success of wild apple trees:

Wild apple trees exist on Rattlesnake Hill WMA. In areas where old fields have succeeded and are now forested, these apple trees are being dominated and shaded. In order to retain the high-quality wildlife food source that these apple trees produce, they will be rejuvenated and released from this competition by removing tree and shrub growth surrounding the apple tree to provide increased sun exposure. Apple tree release and pruning to stimulate growth and vigor will occur opportunistically as trees are identified and personnel time becomes available.

Objective Six - Identify and protect vernal pools and adjacent upland forest:

To ensure this critical habitat persists on Rattlesnake Hill WMA, a special management area of at least 100 feet wide will be established around vernal pools. Forest management within these areas will be limited to maintain at least 75% canopy cover and minimize disturbance to soil. Vernal pools will be mapped as observed to ensure continued protection. The maintenance of constructed potholes that function similarly to vernal pools and the creation of additional shallow ponds will be considered as funding and suitable areas are identified.

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 6).

Table 6. Best Management Practices for forest management on WMAs.

Resource	Guidance Document ¹⁵
Soils	<i>Rutting Guidance 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>

¹⁵ All guidance documents referenced here are available online at <http://www.dec.ny.gov/outdoor/104218.html>.

Wildlife Considerations:

Sensitive species known to be present on or near Rattlesnake Hill WMA that warrant special consideration include:

- *Cerulean warbler*. A point-count survey to detect presence may be utilized in suitable habitat prior to a timber harvest. If detected, the harvest may be conducted outside the breeding season or may avoid the occupied habitat. It is important to note that studies have shown initial shelterwood harvests to increase cerulean warbler presence.
- *Indiana, northern long-eared, and tri-colored bats*. There are no known occurrences of these species on or near the WMA. However, surveys will occur in suitable habitat prior to timber harvest activities to detect presence or probable absence, or harvests will take place in winter to avoid potential impacts.
- *Red-shouldered hawk*. Pre-timber harvest surveys will be conducted and if nesting is documented, harvest activities nearby may be adjusted to occur outside the breeding season and nest buffers may be established. Attempts will be made to identify red-shouldered hawk territories on the WMA to better understand habitat use. Impacts to territories should be avoided.
- *Timber rattlesnake*. Timber harvest actions on the WMA adjacent to known rattlesnake use-areas will be done in winter to avoid potential impacts. The creation of young forest is beneficial for rattlesnakes by providing basking sites and improving prey habitat.
- *Wehrle's salamander*. This salamander lays its eggs in damp logs, moss, cave crevices, and other protected sites. Efforts will be made to retain and reduce impacts to suitable habitat on the WMA.
- *West Virginia white*. This butterfly is dependent upon the presence of two-leaved toothwort, its larval host plant. In stands where toothwort exists, there will be special consideration to ensure its persistence. Efforts will also be made to control garlic mustard, a non-native invasive species, which adult butterflies may mistake for toothwort, but larvae cannot survive on.

Due to the sensitivity of endangered, threatened, and special concern species, and SGCN, cutting of trees may be conducted outside the breeding season if additional species become known to occur in or within close proximity to the forest stand to be harvested.

Forest Health Considerations:

Forest pests and invasive vegetation are an ongoing problem for habitat management. When pests attack forest stands in high numbers and cause decline and mortality, habitat values can shift to the detriment of many resident wildlife species. Likewise, as invasive plants overtake an area, outcompeting and dominating native vegetation, a lower diversity plant community is created. This decrease in habitat value means less wildlife may be able to utilize the area. All efforts to manage wildlife habitats on Rattlesnake Hill WMA must consider these forest pests and invasive species and ensure that measures are taken to control their presence or prevent their establishment.

Infestations of introduced insects such as emerald ash borer (EAB), gypsy moth, hemlock wooly adelgid (HWA), pear thrips and pine shoot beetle are of present concern and bear persistent monitoring. Gypsy moth and pear thrips densities fluctuate and occasionally can reach outbreak levels where complete defoliation of host trees can occur. Gypsy moth most commonly attacks

oak and aspen species while pear thrips favors sugar maple. EAB and HWA have not yet been detected on the WMA, however they are both present in Livingston County. EAB infests ash trees and HWA infests hemlock trees, and both cause mortality of host trees within a few years. Stands dominated by hemlock exist at Rattlesnake Hill WMA and although management actions to prevent or control HWA infestation are currently limited, they may be implemented should effective methods be developed.

Native insect species such as fall cankerworms are cyclic in population and may be expected to impact vegetation through defoliation at some time in the future as they have in the past. Cankerworms feed on a wide-range of species including: ash, basswood, beech, black cherry, maples and oaks.

Invasive plants that are known to be on or near the forested areas of the WMA include: autumn olive, buckthorn, garlic mustard, honeysuckle, Japanese barberry, Japanese knotweed, and multiflora rose. High levels of these species exist in some forest stands and are expected to provide management challenges to successful regeneration. Past invasive vegetation management actions, including the use of herbicide, have occurred on Rattlesnake Hill WMA and have effectively controlled their presence in treated stands.

Pre- and Post-treatment Considerations:

Regeneration of a forest stand requires suitable conditions to ensure that desired species will succeed. Non-native invasive vegetation and undesirable native trees (American beech, ironwood and striped maple) are present in the understory of many stands. Beech, once favored for mast production, is now of diminished value due to the beech bark disease. If released by an open canopy, these species can quickly outcompete desired tree seedling species. Where invasives and other undesirable species are significantly abundant, pre-treatment herbicide application may be necessary.

Deer herbivory is not expected to be a significant issue at Rattlesnake Hill WMA. However, if it is determined that herbivory is intense enough to prevent regeneration of desired tree species, fencing in of treatment areas may be necessary. Efforts to promote deer hunting on the WMA to maintain the local deer herd at desired levels will continue.

If it is determined 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 herbicidal control of undesirable species, removal of additional trees to increase available sunlight, scarification of 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 regeneration will be addressed in detail in the silvicultural prescriptions.

MANAGEMENT EVALUATION

In order to determine whether the desired forest regeneration and wildlife response(s) have been achieved by the management outlined above, pre- and post-management assessments will be

conducted in accord with guidelines established in the Young Forest Initiative Monitoring Plan.¹⁶ 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 Rattlesnake Hill WMA, which will be assessed to determine response to management, include:

- American woodcock
- Ruffed grouse

Monitoring of these species will include woodcock singing-ground surveys and ruffed grouse drumming surveys to determine habitat use and abundance in response to forest management. The establishment of periodic bird point counts and amphibian and reptile surveys in all forest types would be beneficial to better understand species diversity and habitat use.

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.

MANAGEMENT OBJECTIVES

- *Maintain current acreage of shrubland habitat (45 acres).*
- *Promote dominance of native shrub species to enhance habitat quality.*

DESCRIPTION OF EXISTING SHRUBLAND HABITAT AND TARGET SPECIES

There are 45 acres of shrubland on Rattlesnake Hill WMA (Figures 9 and 10). These shrublands originated from grasslands and old agricultural fields that were not maintained and naturally succeeded to a shrub-dominated community. These stands vary from sparse shrubs and grasses to extensive and dense shrub thickets with clumps of trees.

Since these shrublands were not planted, they were colonized naturally by nearby woody vegetation. This unfortunately included an abundance of non-native species, including: autumn olive, buckthorn, honeysuckle, and multiflora rose. Due to the invasive biology of these species, they quickly can establish in an unmaintained field and become dominant.

Although 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

¹⁶ Available online at <http://www.dec.ny.gov/outdoor/104218.html>.

forest and shrubland provide habitats for similar species, both are needed to provide for the full range of disturbance-dependent wildlife species.

Target species for shrubland management on Rattlesnake Hill WMA are:

- American woodcock
- Ruffed grouse

Maintaining shrubland habitat is also expected to benefit SGCN known to be present on the WMA, including black-billed cuckoo, blue-winged warbler, and brown thrasher.

MANAGEMENT HISTORY

DEC's management of Rattlesnake Hill WMA has included the planting of wildlife food and cover shrubs. These were planted along woodland edges to enhance the transition zone between habitat types. Once considered benign and beneficial, non-native species were sometimes included in these plantings. This was likely a significant source of some invasive shrub species that have become established here.

Very little management has occurred within shrublands on Rattlesnake Hill WMA. Many of these were established through a lack of management to maintain grassy openings and old agricultural fields. In some stands, mowing of small openings and around shrub clumps has occurred.

IMPLEMENTATION PLAN AND ANTICIPATED SCHEDULE

- **Management planned for 2016-2025** (Figures 9 and 10):
 - Throughout all shrubland stands, perform maintenance actions as needed.
 - Selective cutting to remove young trees that would eventually dominate.
 - Small stands of trees may be left as islands of second growth.
 - Stumps should be removed or cut low to facilitate future maintenance.
 - Brush cutting using a rotary mower or forestry cutter will be utilized to create and maintain an interspersion of openings and travel corridors.
 - When and where practicable prescribed fire may be utilized.
 - Throughout all shrubland stands, promote the dominance of native shrub species.
 - Control of invasive vegetation will be accomplished through mechanical removal, prescribed fire and/or herbicide application.
 - Habitat type conversion to grassland may be necessary to effectively control invasives. Either the converted stand or another area of grassland would then be planted or allowed to revert to a native shrubland to maintain acreage of each habitat type.

BEST MANAGEMENT PRACTICES

In order to minimize disturbance to shrubland wildlife species during management activities, brush-cutting and tree removal, if possible, should be done outside the bird nesting and brood rearing part of the year (April 15 to August 15). However, management may occur within this timeframe if the intent of management is to provide long term benefits to the habitat/wildlife (such as invasive species management).

MANAGEMENT EVALUATION

Current monitoring of shrubland habitat use at Rattlesnake Hill WMA is informal and data are often derived opportunistically, and will be continued. However, the establishment of periodic bird point counts would be beneficial to better understand species diversity and habitat use.

GRASSLAND

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.

MANAGEMENT OBJECTIVES

- *Maintain existing grasslands (159 acres).* Grasslands require continuous management to encourage favorable herbaceous species and prevent the establishment of woody plants.
- *Increase total grassland area to comprise 5% of WMA area (258 acres).* An interspersed of small grassland patches throughout a forested landscape provides valuable habitat diversity.

DESCRIPTION OF EXISTING GRASSLAND HABITAT AND TARGET SPECIES

There are 159 acres of grassland habitat on Rattlesnake Hill WMA (Figures 9 and 10). This is composed of numerous grassy openings throughout the forested area ranging in size from less than one acre up to 10 acres, often with irregular shapes and high edge-to-area ratios. Some of these grasslands are interspersed with islands of trees and several are along WMA roadsides and on maintained dikes. The western boundary clearing itself provides a grassland opening that is approximately 100 feet wide and 1.5 miles long.

The entire WMA is within the Western New York Grassland Focus Area.¹⁷ These focus areas are regions of the state that support key, residual populations of grassland birds and within them assistance is provided through the Landowner Incentive Program¹⁸ to selected private landowners to manage for grassland bird habitat. Grassland dependent bird species typically choose large patches of grassland with low edge-to-area ratios in an open landscape for breeding. Due to the small size and irregular shape of grassland patches at Rattlesnake Hill WMA, and the heavily forested landscape, these openings are unlikely to attract grassland bird species.

Small grassland openings in an unfragmented forested landscape however serve an important function for many wildlife, providing abundant food sources, nesting sites, and escape cover. For example, deer find high-quality forage in these openings and turkey strut to attract mates. Insects also thrive in these herbaceous openings and this provides an important high-protein food for grouse chicks, turkey poults and songbirds.

¹⁷ 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. Audubon New York, Ithaca, NY. Available online at <http://ny.audubon.org/conservation/grassland-bird-conservation-program>.

¹⁸ Additional information about the Landowner Incentive Program is available online at <http://www.dec.ny.gov/animals/32722.html>.

Another benefit derived from grasslands is that they provide habitat for various pollinator species. Pollination is critical to the reproduction of both wild and cultivated plants and ensuring habitat exists to sustain these populations is important both ecologically and economically.

Target species for grassland management at Rattlesnake Hill WMA include:

- White-tailed deer
- Wild turkey

MANAGEMENT HISTORY

Historically, management activities included the maintenance of old farm fields as grassland and the creation of additional grassy openings through periodic mowing and by clearing and seeding after timber harvests.

Since the mid-1980s, an average of 100 acres of grassland has been mowed annually. Field rehabilitation has occurred and included the spreading of soil amendments such as lime and ammonia sulfate in an attempt to promote more favorable grass growth. Reseeding activities have also taken place, with the objective of improving habitat value.

IMPLEMENTATION PLAN AND ANTICIPATED SCHEDULE

- **Management planned for 2016-2015** (Figures 9 and 10):
 - Throughout all grassland stands, routinely perform maintenance actions.
 - Mow fields every 1-3 years to prevent establishment of woody vegetation.
 - When resources are available, utilize prescribed fire.
 - Mowing or burning should occur on a three year rotation, however some areas may require more frequent mowing.
 - Control invasive vegetation mechanically and/or with herbicide.
 - As needed: lime, fertilize, disk, and reseed grasslands. Promote native herbaceous species where practical.
 - Create additional grasslands to increase total to 5% of WMA area (258 acres).
 - Seed future timber harvest landings with herbaceous species.
 - Opportunistically clear and seed small areas (<1 to 3 acres) within timber harvests where permanent maintenance access is expected.
 - Specific forest stands are discussed in the Forest section above.

BEST MANAGEMENT PRACTICES

Due to the small, fragmented nature of grasslands on Rattlesnake Hill WMA and the related lack of suitable grassland bird habitat, best management practices followed here intend to enhance habitat value for forest wildlife using grasslands. For more detailed information and recommendations see *A Plan for Conserving Grassland Birds in New York*.¹⁹

General Management Recommendations

- Conduct invasive species control (buckthorn, pale and black swallowwort, Canada thistle, Phragmites, etc.) to improve habitat quality.

¹⁹ 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 a variety of factors, such as the targeted wildlife 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 of any size (including all contiguous fields) with no history of listed species:
 - Mowing and other management actions should be avoided between April 23 and August 15.
 - Field can be managed/mowed within the period April 23 and August 15 if necessary to:
 - Control the growth of invasive vegetation in fields where grassland habitat value is degraded.
 - Ensure that suitable grass cover will be present to provide important winter habitat for wildlife.
 - If early management is proposed, then the habitat requirements and nesting periods of other species should be considered (e.g., nesting waterfowl, 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.
- 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

Current monitoring of grassland habitat use at Rattlesnake Hill WMA is informal and data are often derived opportunistically, and will be continued. However, the establishment of periodic bird point counts would be beneficial to better understand species diversity and habitat use.

AGRICULTURAL LANDS

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 is no acreage on Rattlesnake Hill WMA that is managed as agricultural land and no plan to develop such habitat. Although cooperative agreements can be useful tools for habitat management, the distance to local farms and the poor quality of soils on the WMA make agricultural activities less efficient.

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 acreage and quality of wetlands (105 acres).* Maintenance of impounding features and prevention and control of invasive vegetation is a priority on the WMA.
- *Enhance wetland habitat value.* Manipulations to a wetland, such as water-level adjustments, can be beneficial for target species.

DESCRIPTION OF EXISTING WETLAND HABITAT AND TARGET SPECIES

There are 30 acres of natural wetlands and 75 acres of impounded wetlands managed on Rattlesnake Hill WMA. Natural wetlands occurring on the WMA include beaver ponds and marshes along waterways and several small, isolated wetlands within forest stands. Impounded wetlands include 15 constructed marshes, of which several receive periodic water-level adjustment to improve waterfowl habitat. These marsh impoundments range from just a quarter of an acre in size to nearly 15 acres and provide a diversity of habitats including emergent, scrub-shrub, and open water. There are currently 14,000 feet of maintained dike and ten drop-inlet style water control structures on the WMA to regulate water levels. This length of maintained dike includes those that impound ponds on the WMA which are discussed below in the Open Water section.

There are three New York State regulated wetlands that overlap with the WMA (OS-1, OS-3, and CN-1) and 74 smaller wetlands mapped by the National Wetlands Inventory (NWI) (Figures 5 and 6). CN-1 is Swain Swamp (also called Bullhead Pond) along Canaseraga Creek, OS-1 is the marshes west of England Hill Road, and OS-3 is the marshes south of Ebert Road.

Target species for wetland management on Rattlesnake Hill WMA are:

- Waterfowl (mallard and wood duck)
- Furbearers (beaver, mink, muskrat, and otter)

Resident waterfowl include mallard and wood duck, with several wood duck nesting boxes maintained on the WMA. Beaver, mink, and muskrat are common on the WMA and are integral members of the ecosystem that provide a valuable furbearer resource. Beaver are important

engineers of natural wetland habitats, however persistent monitoring is required to control damage to impounded marshes and ponds. An otter reintroduction effort throughout western New York occurred in the late 1990s and otters have since been observed in waters on Rattlesnake Hill WMA.

Wetland management here may also benefit pied-billed grebe, a state threatened species with records on or near the WMA during migration and the breeding season, and will benefit several species of amphibians and reptiles using wetlands for all or part of their life cycles.

MANAGEMENT HISTORY

DEC management of Rattlesnake Hill WMA included the construction of numerous potholes, ponds, and small marsh units. Small potholes were established to provide upland water sources for wildlife during dry seasons and ponds and marsh units were created to provide waterfowl nesting and migratory habitat, as well as hunting opportunities. Most ponds and marsh units were created in the 1950s and 1960s with Federal Aid in Wildlife Restoration funding. Pothole construction began around the same time, through services associated with timber sale contracts, and the majority were developed by the mid-1980s. Ponds and potholes are further discussed in the Open Water section of this plan.

Recent management actions include the mowing and inspection of impoundment dikes, water-level adjustments in marsh units to promote dispersion of submerged vegetation, replacement of several water control structures, and control of beaver damage to impoundments. Natural wetlands on Rattlesnake Hill WMA receive little management other than the avoidance of negative impacts through the adherence to best management practices.

IMPLEMENTATION PLAN AND ANTICIPATED SCHEDULE

- **Management planned for 2016-2025** (Figures 9 and 10):
 - Maintain integrity of marsh impoundments.
 - Inspect dikes and water control structures annually and repair as needed, including the filling and compacting of animal burrows and clearing of beaver dams.
 - Mow dikes annually to suppress establishment of woody vegetation.
 - Marsh impoundment water levels will be drawn down as needed to encourage lush re-growth of preferred plants of target species (e.g. seed-producing annual plants).
 - Protect wetlands by monitoring for and controlling invasive vegetation, such as common reed and purple loosestrife, using biologic, mechanical and herbicide techniques.
 - Special projects to enhance or create wetlands will be considered as opportunities arise.

BEST MANAGEMENT PRACTICES

Management activities within wetlands will take into consideration the timing of fish and wildlife breeding seasons and when practicable these periods of time will be avoided. Habitat management activities within a wetland or adjacent area will obtain all necessary permits.

MANAGEMENT EVALUATION

Current monitoring of wetland habitat use at Rattlesnake Hill WMA is informal and data are often derived opportunistically and from hunter and trapper take, and will be continued. However, the establishment of periodic surveys for marshbird and waterfowl presence during the breeding season would be beneficial to better understand species diversity and habitat use.

Continued monitoring of invasive vegetation control efforts will be necessary to ensure success and prevent future spread.

OPEN WATER (WATERBODIES AND WATERCOURSES)

Open water is defined as a body of 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 impounded open water habitat (13 acres).* Constructed ponds require routine maintenance to ensure the integrity of impounding features.
- *Maintain the high-quality of waters found on the WMA, especially the trout streams.*

DESCRIPTION OF EXISTING OPEN WATER HABITAT AND TARGET SPECIES

There are 13 acres of open water on Rattlesnake Hill WMA, consisting of 18 small ponds and 13 potholes, ranging from less than one-tenth of an acre to 1.7 acres in size. All of these are man-made and the primary difference between ponds and potholes is that the ponds were constructed with an earthen dike to impound water whereas the potholes were only excavated.

There are 16.4 miles of streams on Rattlesnake Hill WMA, composed of Canaseraga Creek, Hovey Brook, Sugar Creek, and their tributaries. Among these streams, 3 miles are classified as trout waters, of which 0.6 miles are suitable for trout spawning.

This WMA is located within the Genesee River Basin, with all streams flowing into Canaseraga Creek en route to the Genesee. Hovey Brook contains wild brook trout and Sugar Creek contains wild brown trout. In an effort to promote fishing opportunities, Sugar Creek was previously stocked with brown trout, and since spring 2016 is stocked with brook trout instead. Two of the ponds on Dannack Hill Road are also stocked with brook trout.

Target species for open water management on Rattlesnake Hill WMA are:

- Breeding and migratory waterfowl
- Brook and brown trout

Common breeding waterfowl on the WMA are hooded merganser, mallard, and wood duck. Migratory waterfowl species often include: Canada goose, green-winged teal, bufflehead, and greater and lesser scaup. Managing open water habitat is also expected to benefit pied-billed grebe and several species of amphibians and reptiles. Maintaining the high-quality of streams on the WMA will also benefit species of salamanders dependent on streams for breeding and foraging.

MANAGEMENT HISTORY

Management history for impounded ponds on Rattlesnake Hill WMA are similar to that described previously in the wetlands section. These features share similar construction and maintenance, with the largest difference between the two water resources being the percentage of emergent vegetation currently present.

Recent management actions for the continued quality of streams on the WMA has been minimal aside from the avoidance of disturbance and negative impacts through the adherence to best management practices. In recent years, herbicide has been applied annually to Japanese knotweed along roadside drainages.

IMPLEMENTATION PLAN AND ANTICIPATED SCHEDULE

- **Management planned for 2016-2025** (Figures 9 and 10):
 - Maintain existing impounded open water habitat.
 - Inspect dikes annually and repair as needed, including the filling and compacting of animal burrows and clearing of beaver dams.
 - Mow dikes annually to suppress establishment of woody vegetation.
 - If sedimentation is a problem, excavate pond bottoms.
 - Maintain the high-quality of waters found on the WMA.
 - All habitat management activities on Rattlesnake Hill WMA will adhere to the Environmental Conservation Law and follow best management practices.

BEST MANAGEMENT PRACTICES

All activities will comply with the New York State Freshwater Wetlands Act (ECL Article 24) and Water Resources Law (ECL Article 15, Title 5).

MANAGEMENT EVALUATION

Current monitoring of wildlife use of open water habitat at Rattlesnake Hill WMA is informal and data are often derived opportunistically and from hunter take, and will be continued. However, the establishment of periodic surveys for waterfowl presence during the breeding and migratory seasons would be beneficial to better understand species diversity and habitat use.

Current monitoring of fish use of open water habitat at Rattlesnake Hill WMA is composed of periodic electroshocking of Hovey Brook and Sugar Creek, and will be continued. However, the establishment of periodic surveys of fish diversity and abundance in additional streams and within ponds would be beneficial.

HABITAT MANAGEMENT SUMMARY

In summary, Table 7 lists the habitat management actions planned for Rattlesnake Hill WMA over the next ten years. Any substantive changes will be appended to this HMP annually or as needed (Appendix D).

Table 7. Summary of habitat management actions recommended for Rattlesnake Hill WMA, 2016-2025. (Also see Figures 3 and 6.)

Habitat	Management Action	Acres	Timeframe
Forest	Clearcut harvest of Stands D10, D28, D46, F05, F10, G04, H01, I08, I11, I26 and I27	171	2016-2020
Forest	Shelterwood harvest of Stand E06	60	2016-2020
Forest	Thinning harvest of Stands I22 and I28	57	2016-2020
Forest	Seed tree harvest of Stands G02 and G09	191	2021-2025
Forest	Shelterwood harvest of Stands C08, C09 and E06	147	2021-2025
Forest	Thinning harvest of Stands A01, A05, A10, B11, C04, C10 and D01	246	2021-2025
Forest	Control invasive species		2016-2025, as needed
Forest	Release apple trees as identified		2016-2025, ongoing
Forest	Identify and protect vernal pools in timber harvest areas		2016-2025, ongoing
Shrubland	Maintain shrubland acreage by cutting trees, brush cutting and potentially prescribed fire	≤45	2016-2025, as needed
Shrubland	Promote dominance of native shrubs by controlling invasive shrub species	≤45	2016-2025, ongoing
Grassland	Maintain grassland acreage by mowing and potentially prescribed fire	159	Annual, biennial, or triennial
Grassland	Improve grassland quality (control invasives, lime, fertilizer, disk, reseed)	≤159	2016-2025, as needed

Table 7. Continued

Habitat	Management Action	Acres	Timeframe
Grassland	Create additional grassland openings	≤99	2016-2025, ongoing
Wetlands	Adjust marsh impoundment water levels	61	2016-2025, as needed
Wetlands	Monitor and control invasive species	≤105	2016-2025, ongoing
Wetlands / Open Water	Inspect and mow dikes	14,000ft	Annually
Wetlands / Open Water	Repair dikes	14,000ft	2016-2025, as needed
Open Water	Excavate pond bottoms	13	2016-2025, as needed

III. FIGURES

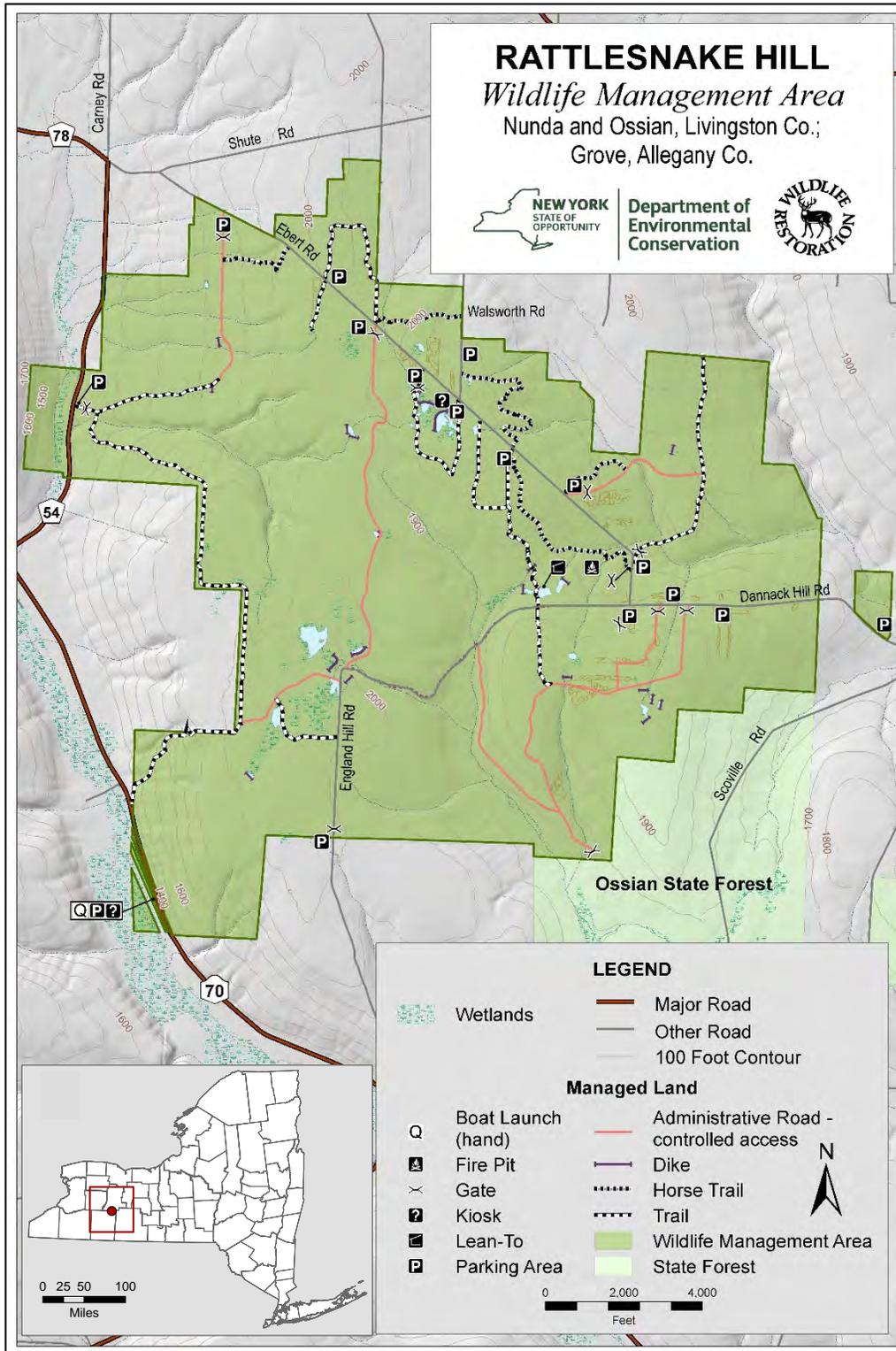


FIGURE 1. Location and access features at Rattlesnake Hill WMA.

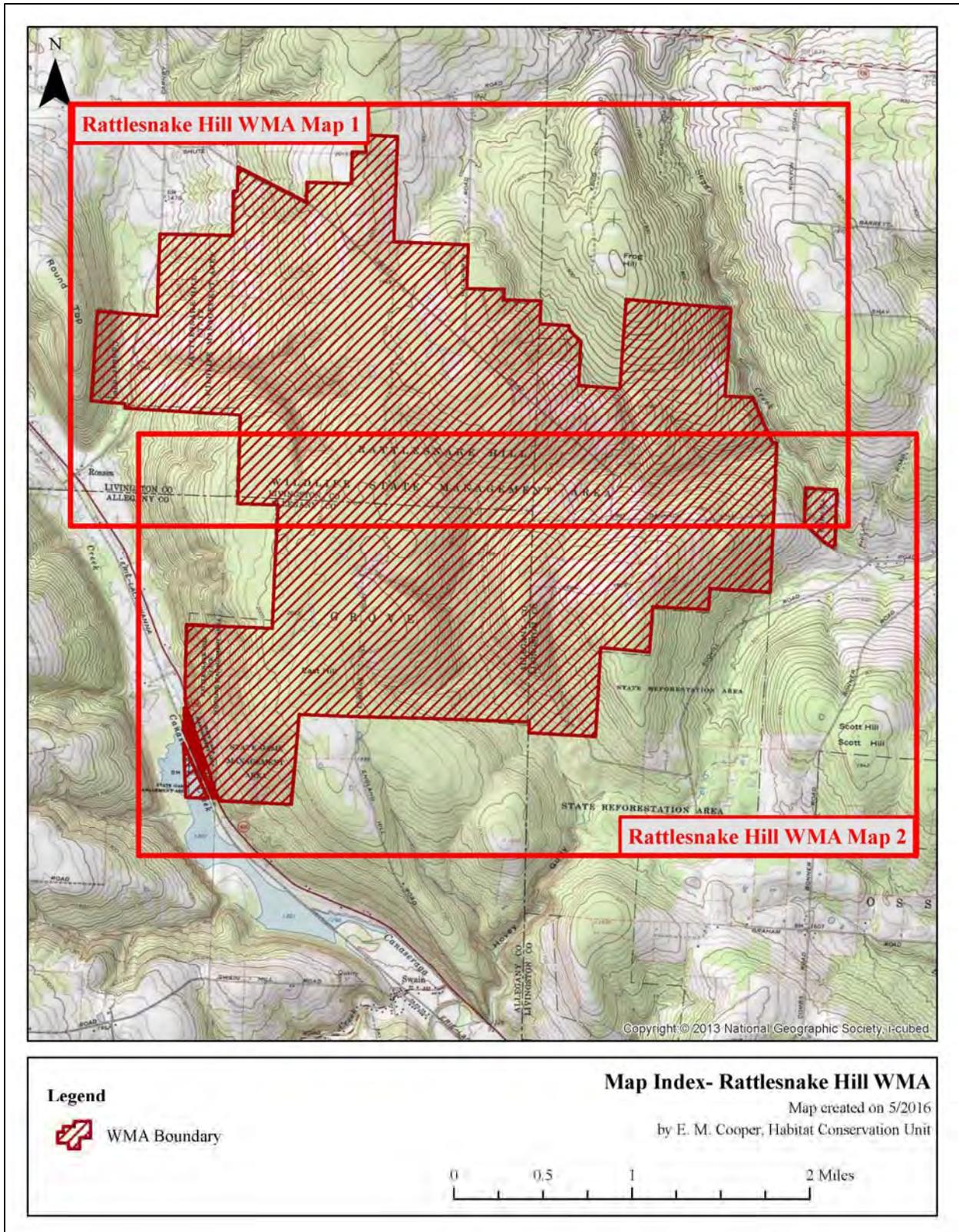


FIGURE 2. Rattlesnake Hill WMA divided into section maps to provide closer detail.

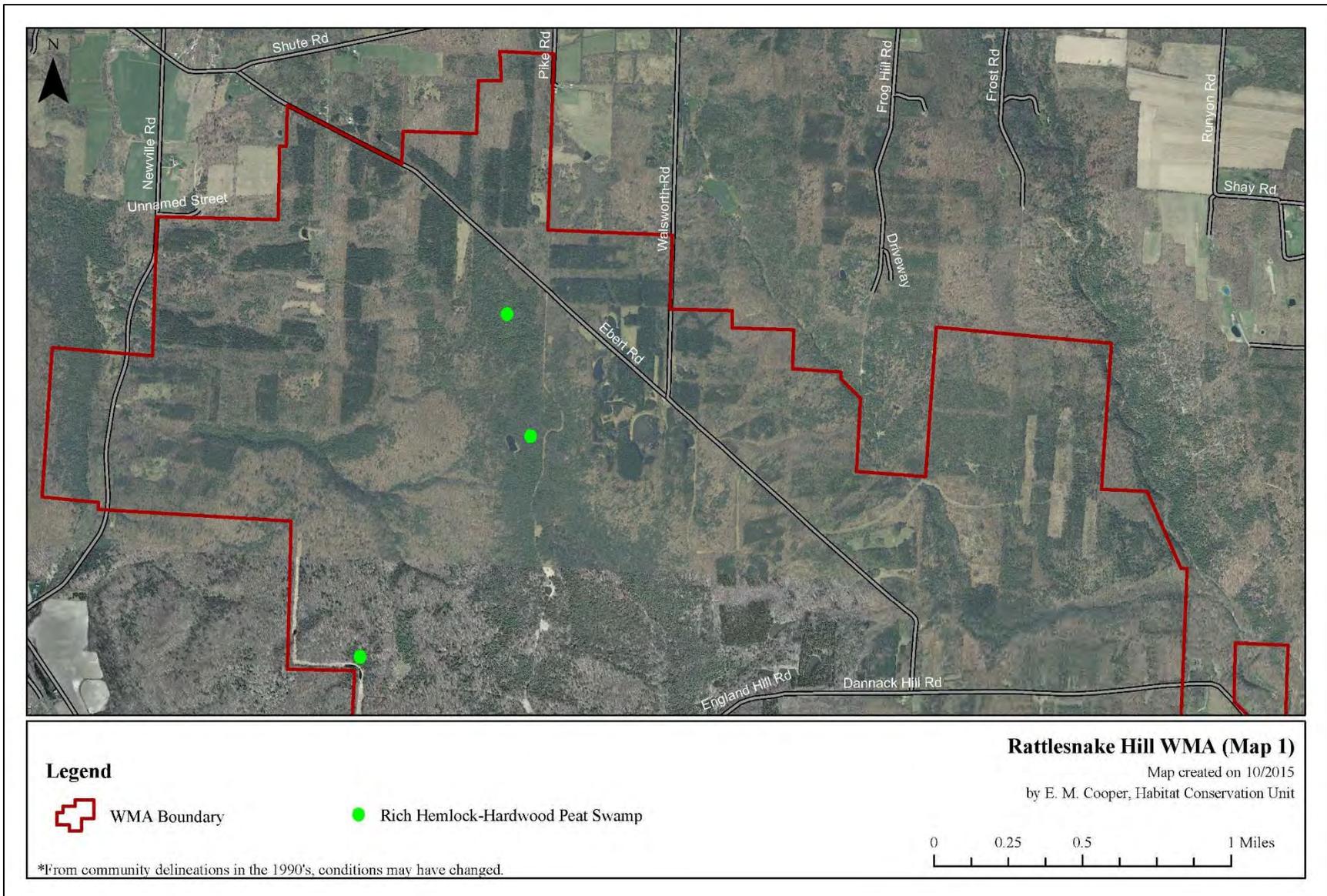


FIGURE 3. Significant ecological communities on Rattlesnake Hill WMA (Map 1). Data is from the NY Natural Heritage Program.

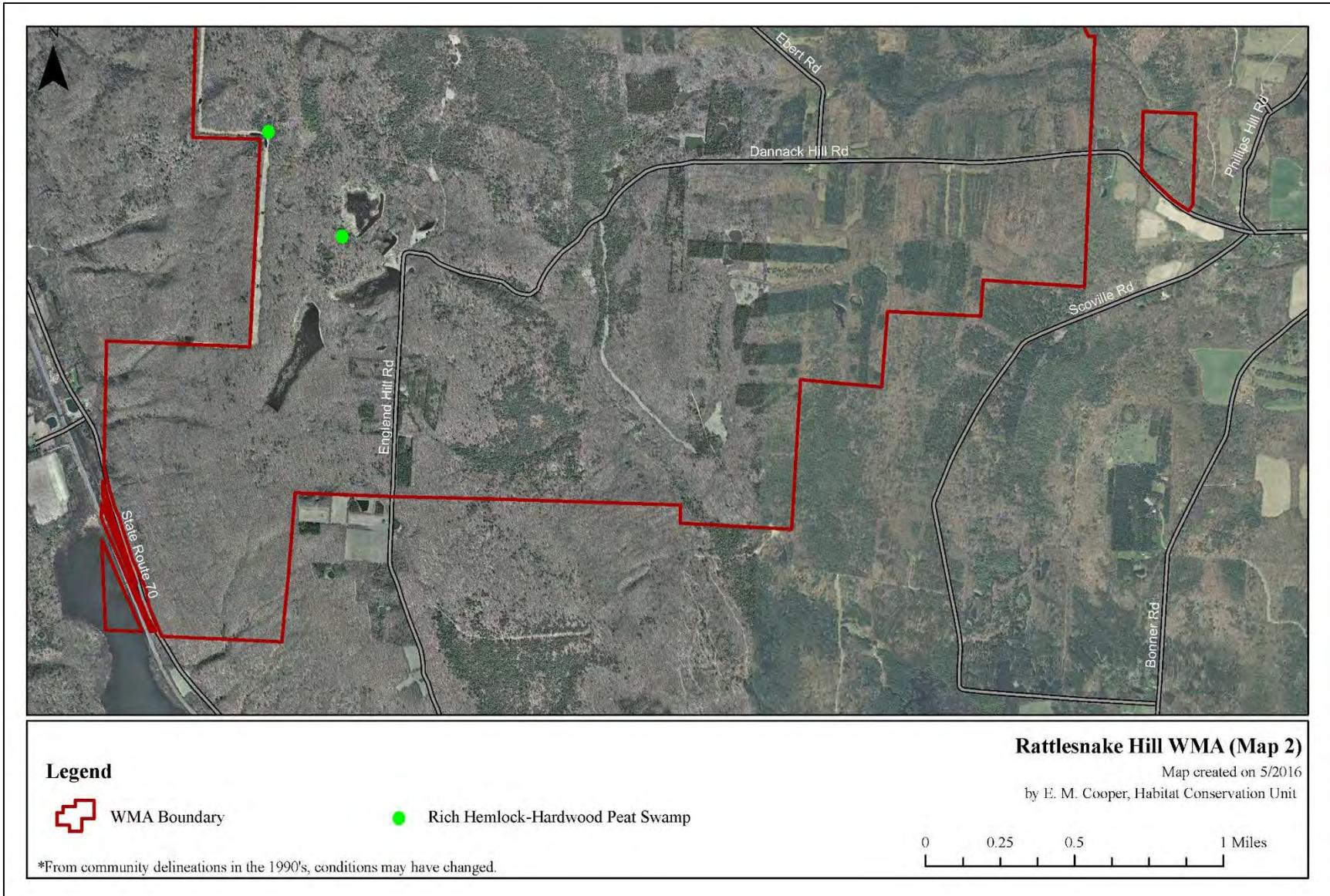


FIGURE 4. Significant ecological communities on Rattlesnake Hill WMA (Map 2). Data is from the NY Natural Heritage Program.

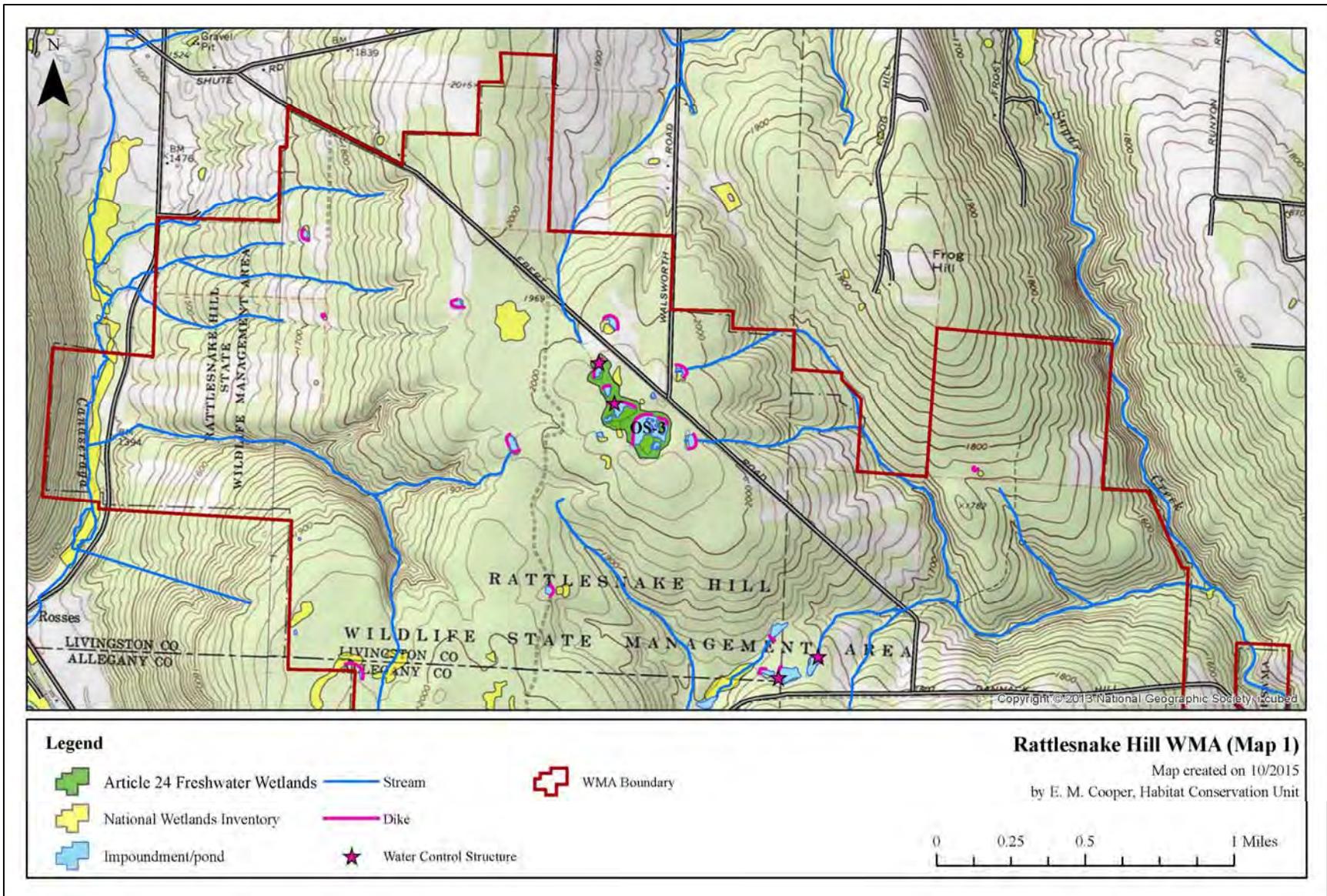


FIGURE 5. Wetlands, open water, and streams of Rattlesnake Hill WMA (Map 1). Note: Wetland boundaries are not exact and may not be used for regulatory purposes without a current delineation.

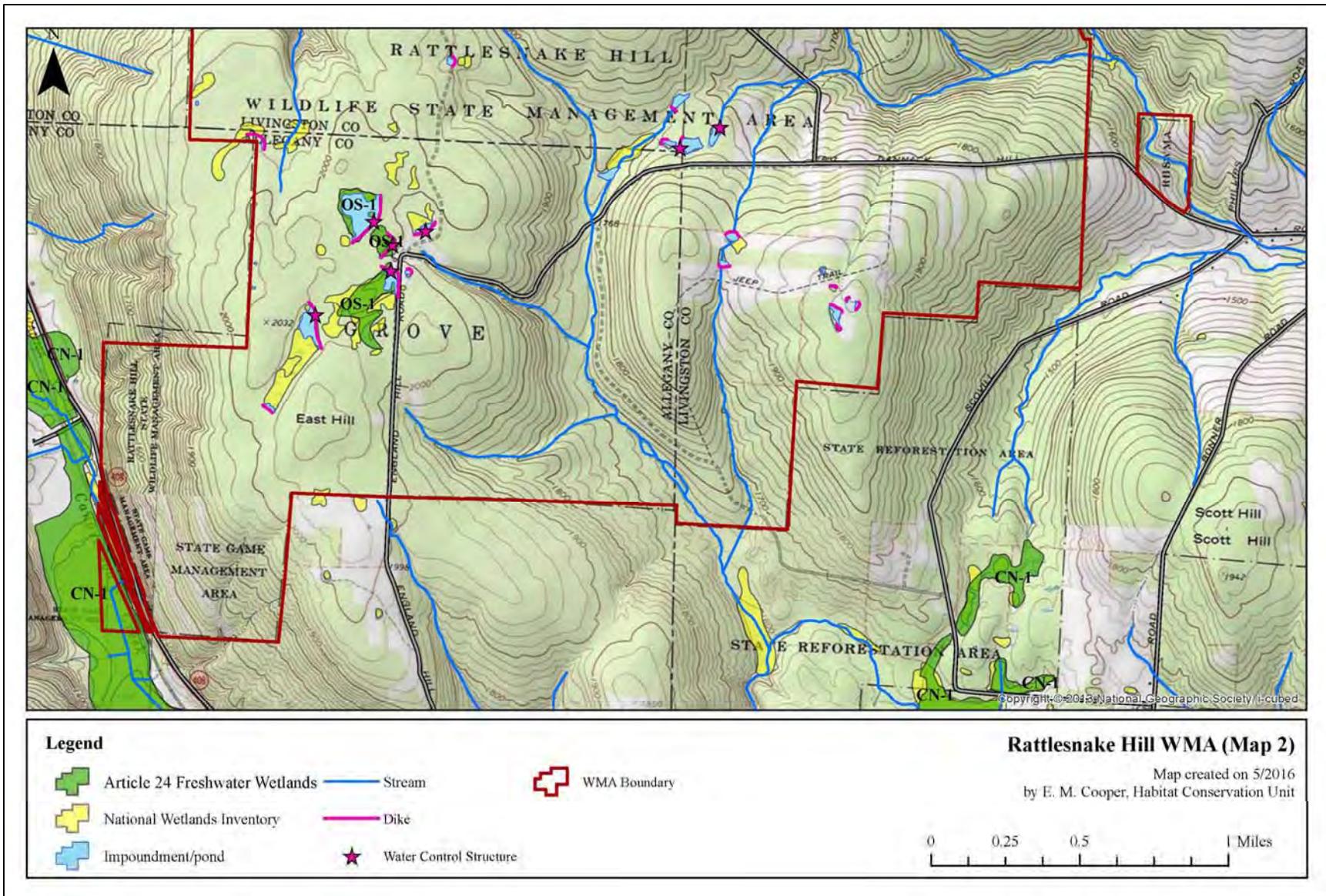


FIGURE 6. Wetlands, open water, and streams of Rattlesnake Hill WMA (Map 2). Note: Wetland boundaries are not exact and may not be used for regulatory purposes without a current delineation.

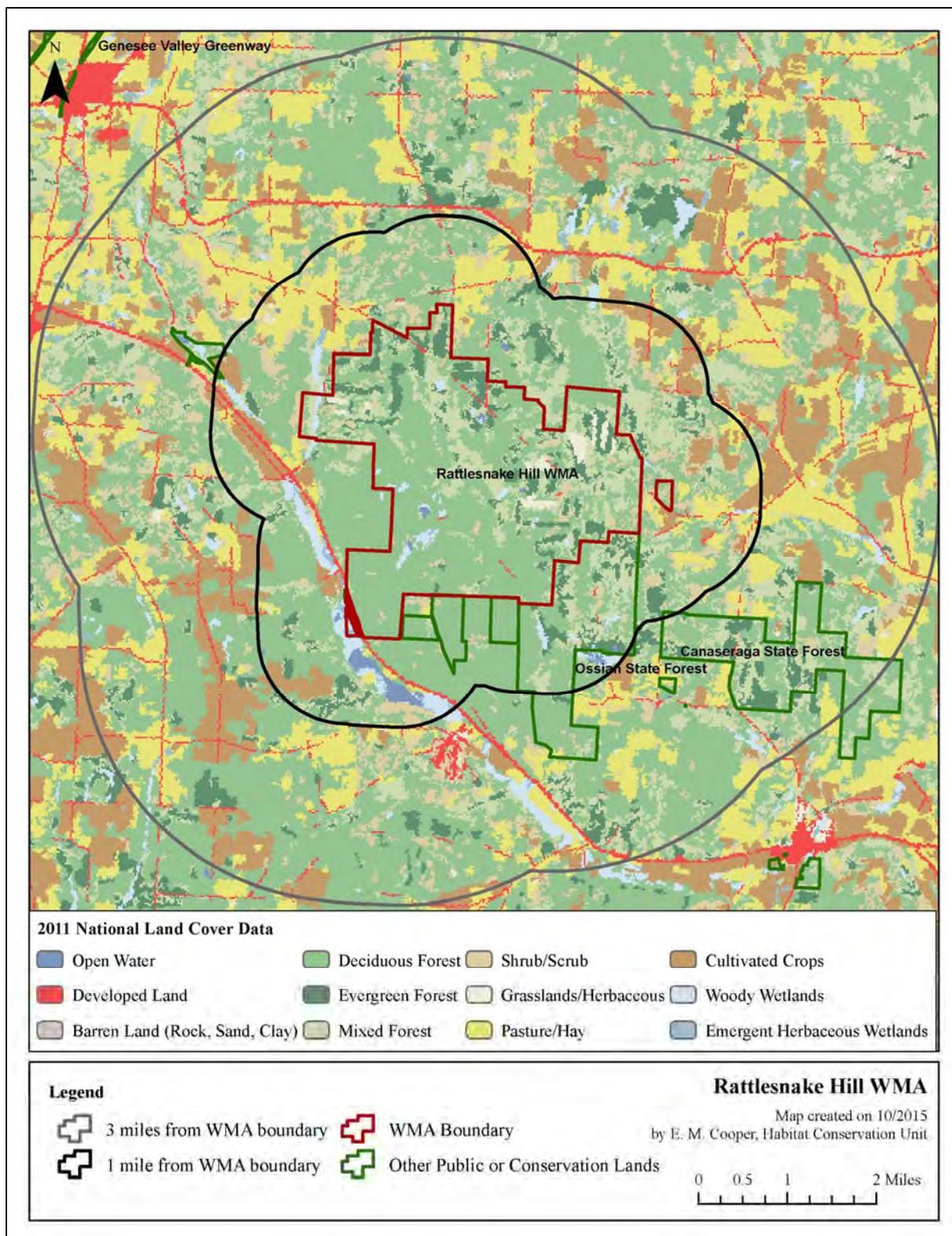


FIGURE 7. Land cover types and conservation lands in the landscape surrounding Rattlesnake Hill WMA. Conservation lands are from the NY Protected Areas Database. Land cover types are from the 2011 National Land Cover Data (NLCD) and differ from the habitat types used in the WMA habitat inventory. NLCD definitions are available from <<http://www.mrlc.gov/nlcd2011.php>>.

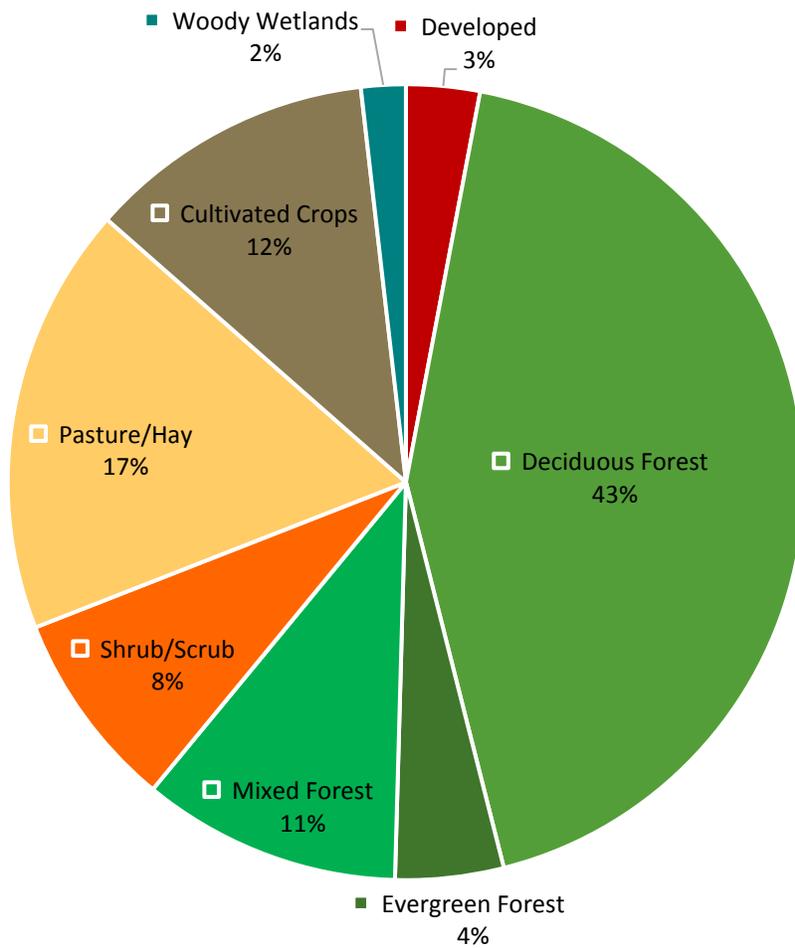


FIGURE 8. Percent cover of land cover types within 3 miles of Rattlesnake Hill WMA. Land cover types are from the 2011 National Land Cover Data (NLCD) and differ from the habitat types used in the WMA habitat inventory. NLCD definitions are available from <<http://www.mrlc.gov/nlcd2011.php>>.

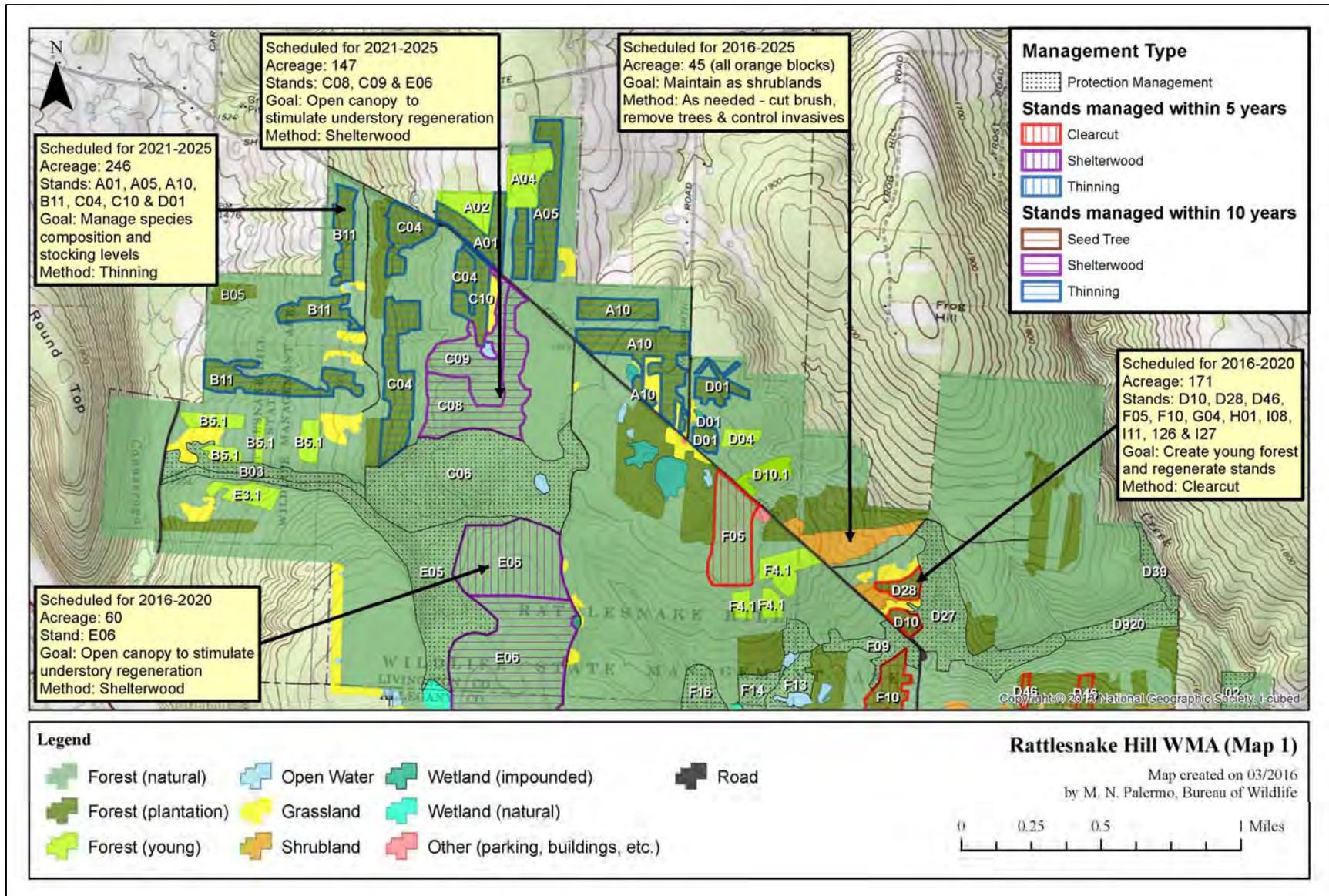


FIGURE 9. Habitat types and location(s) of proposed management on Rattlesnake Hill WMA (Map 1). Numbers indicate the stand number from habitat inventory.

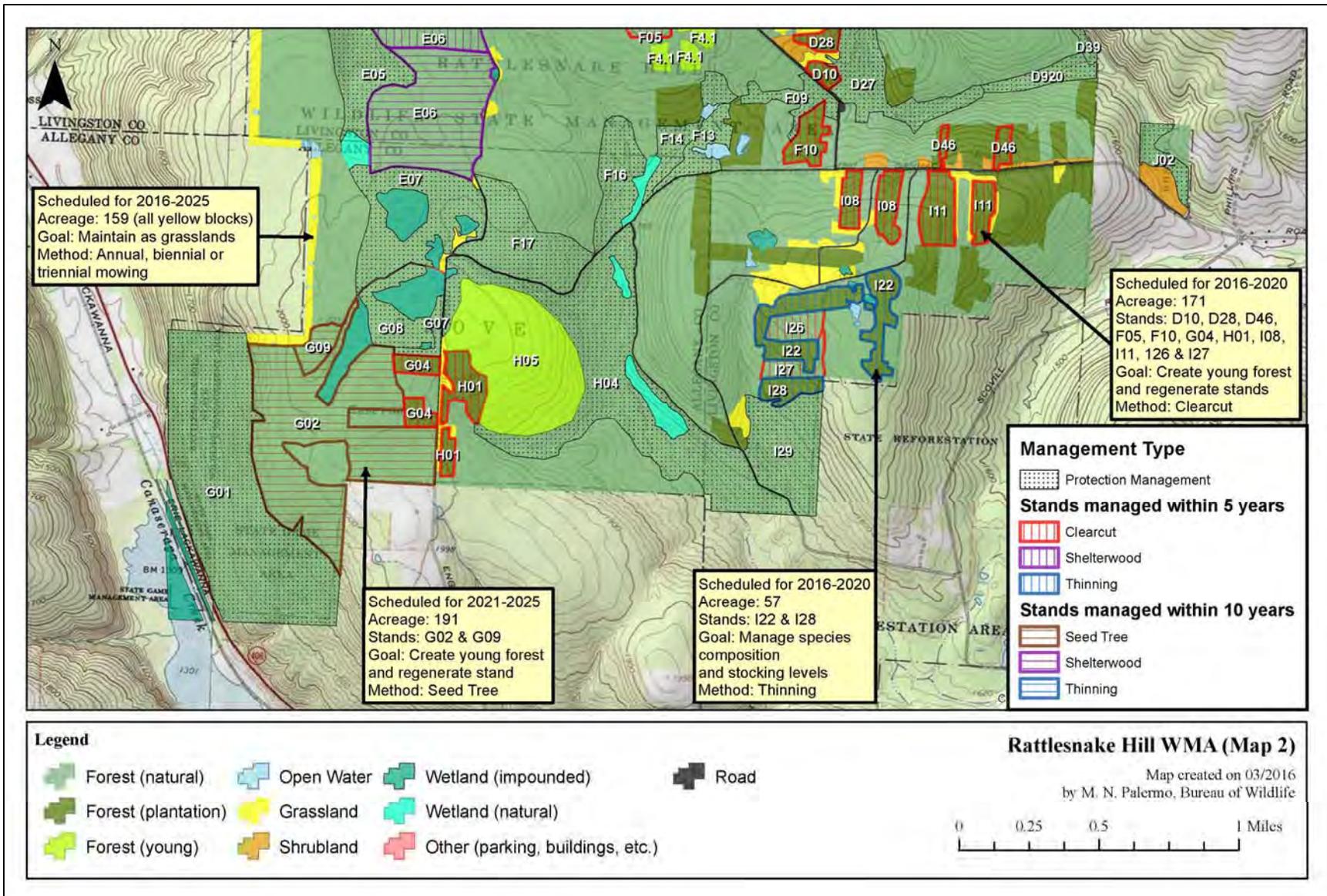


FIGURE 10. Habitat types and location(s) of proposed management on Rattlesnake Hill WMA (Map 2). Numbers indicate the stand number from habitat inventory

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)

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.

Forb: Any broad-leafed, 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.)

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.

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)

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 and by discussing further in Appendix B, Statement of Conformity with the State Environmental Quality Review Act. 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.

The overarching goal of the Young Forest Initiative (YFI) is to restore and maintain young forest habitat on DEC's Wildlife Management Areas (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 important 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.

PRESCRIPTIONS

Silvicultural prescriptions provide a detailed approach for each forest management area (See Appendix C). For additional information about the prescriptions listed below, please contact Emily Bonk, senior forester, at (607) 622-8281. The following prescriptions have been prepared for Rattlesnake Hill WMA.

Prescription approved October 2019:

- Stand E-6 (60 acres) will receive the first cut of a two cut shelterwood system. This cut is intended to reduce basal area by approximately 40%. This harvest will create openings in the canopy to establish desirable regeneration (oak, maple, aspen), by removing over-mature and poor quality trees. Ash, beech, and some hemlock will primarily be taken because of existing threats to their long-term survivability (emerald ash borer, beech bark disease, hemlock woolly adelgid). Any apparently disease-free beech will be left to encourage mast production and species diversity. This harvest, in conjunction with control of the understory should establish desirable regeneration within 5-7 years, at which time the final overstory removal can occur. Once this overstory removal is complete, the stand will provide valuable young forest habitat that benefits several associated species, including ruffed grouse and wild turkey.

- Stand F-5 (28 acres) will receive a seed tree cut intended to reduce the number of trees per acre (TPA) to approximately 15 widely dispersed seed trees. Seed trees should be those of desirable species (oak, maple, hickory, cherry, basswood), good quality and vigor. Due to the existing variability within the stand, both in the overstory and understory, the treatment will vary as well, with likely more than 12-15 TPA in the northern half of the stand, and less than 12-15 TPA in the southern half of the stand. This cut in conjunction with control of the understory should provide ideal conditions to establish desirable regeneration within 5-7 years. Re-entry into the stand to remove the seed trees will be decided upon once successful regeneration has established. This seed tree cut will establish young forest habitat beneficial to American woodcock and ruffed grouse.