Habitat Management Plan
for
Stid Hill Multiple Use Area
2017 - 2026

Photo: Mike Palermo

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SUMMARY

Stid Hill Multiple Use Area (MUA) consists of 837 acres in the Towns of Bristol and South Bristol, Ontario County. Although currently classified as a multiple use area, the property is managed as a wildlife management area, with the primary goal to enhance wildlife habitat and wildlife-dependent recreation. The MUA is composed of two sections that are approximately 0.7 miles apart and encompasses hilltop, hillside, valley bottom, and gully terrain. The property is mostly forested and provides habitat for most common wildlife species of the region, including deer, turkey, bear, squirrel, and many songbirds. The primary forest type is Appalachian oak-hickory forest, with northern hardwood and hemlock forest also present. Mud Creek flows through the west side of the property and the nearby lowland area contains several small fields and shrublands. This plan elaborates upon habitat objectives described in the Northern Finger Lakes Unit Management Plan (UMP).[1] Stid Hill MUA is primarily managed to provide diverse forest habitats to benefit wildlife and affords multiple recreational opportunities including hunting, trapping, and bird watching.

Habitat management goals for Stid Hill MUA include:

- Converting 8% of the MUA to young forest (10% of forest acreage) to improve stand quality and promote American woodcock, ruffed grouse, and other young forest wildlife;
- Maintaining approximately 74% as intermediate and mature forest to provide diverse forest habitats and promote forest interior species, such as scarlet tanager;
- Managing approximately 7% as shrubland to provide early successional habitat and promote associated wildlife;
- Managing approximately 5% as grasslands to provide diverse food and cover options to wildlife of the surrounding forest;
- Maintaining approximately 4% as natural wetlands to promote associated wildlife; and
- Maintaining approximately 2% as parking areas, roads, and other developed lands. This percentage includes an area of disputed ownership that contains residential development.

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 Wildlife Management

[1] Information of DEC Unit Management Plans is available online at http://www.dec.ny.gov/lands/4979.html

Areas (WMAs) and other properties administered by DFW Bureau of Wildlife (BOW), including select MUAs 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 properties administered by the BOW. These plans incorporate management recommendations from UMPs, existing WMA habitat management guidelines, NY Natural Heritage Program's Biodiversity Inventory Reports, Bird Conservation Area guidelines, and other documents available for individual BOW properties.

SCOPE AND INTENT

Primary purposes of this document:

- Provide the overall context of the habitat on the MUA and identify the target species for management;
- Identify habitat goals for MUA-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 MUA 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.

As of the writing of this HMP, the Northern Finger Lakes UMP has been drafted and is under review. The UMP addresses habitat objectives detailed in this HMP, as well as management provisions for facilitating compatible wildlife-dependent recreation, access, and facility development and maintenance.

Definitions are provided in Appendix A.

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

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

MUA OVERVIEW

LOCATION

Stid Hill Multiple Use Area is located in DEC Region 8, Towns of Bristol and South Bristol in Ontario County (Figure 1).

TOTAL AREA

837 acres

HABITAT INVENTORY

A habitat inventory of the MUA was conducted in 2012 and will 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 MUA, and conditions in the surrounding landscape (see Landscape Context section below).

Table 1. Summary of current and desired habitat acreage on Stid Hill MUA.

Habitat Type	**Current Conditions (as of 2012)**			**Desired Conditions**	
	Acres	**Percent of MUA**	**Miles**	**Acres**	**Percent of MUA**
Forest [a]	686	82%		622	Decrease to 74%
Young forest	0	0%		66	Increase to 8%
Shrubland	62	7%		58	<1% change
Grassland	39	5%		41	<1% change
Agricultural land	0	0%		0	No change
Wetland (natural)	35	4%		35	No change
Wetland (impounded)	0	0%		0	No change
Open water	0	0%		0	No change
Other (developed) [b]	12	1%		12	No change
Roads and parking	3	<1%	1	3	No change
Rivers and streams			2.7		No change
Total Acres:	837	100%		837	

[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] This parcel is of disputed ownership and currently contains residential development (see Figure 6).

ECOLOGICAL RESOURCES

Wildlife Overview:

Stid Hill MUA is located within the Bristol Hills and resident wildlife are associated with the mostly forested landscape. Very little wetland habitat is present and consequently the area is home to primarily upland wildlife species.

Excellent hunting opportunities exist for both small and big game. White-tailed deer are the primary big game species, although black bear are also hunted. Small game include cottontail rabbit, ruffed grouse, squirrels, wild turkey, and woodcock. Furbearer species are present, with raccoon, red and gray foxes, and coyote popular for hunting and trapping.

Numerous non-game species are important residents of Stid Hill MUA. Various songbird, hawk, and owl species can be found in the diverse habitats of forest, grassland, and shrubland. Common frog and turtle species occur in Mud Creek, woodland salamanders inhabit the mature forests, and several snake species can be found throughout the property.

Wildlife and Plant Species of Conservation Concern:

There are no federally listed Endangered or Threatened species known to occur on the MUA. 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 MUA (Table 2).[2] Species listed below have been documented on or within the vicinity of the MUA and are likely to occur in suitable habitat on the MUA. Other species of conservation concern may also be present on the MUA. 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 Stid Hill MUA, including state and federal Endangered (E) and Threatened (T) species, state Species of Special Concern (SC), High Priority SGCN (HP), and SGCN (x).

Species Group	Species	Federal Status	NY Status	NY SGCN Status
Birds	American kestrel			x
	American woodcock			x
	Black-billed cuckoo			x
	Blue-winged warbler			x
	Bobolink			HP
	Brown thrasher			HP
	Cerulean warbler		SC	x
	Cooper's hawk		SC	
	Eastern meadowlark			HP

[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
	Louisiana waterthrush			x
	Northern goshawk		SC	x
	Northern harrier		T	x
	Red-headed woodpecker		SC	HP
	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	Black rat snake			x
	Blue-spotted salamander		SC	HP
	Eastern ribbon snake			x
	Jefferson salamander		SC	
	Northern black racer			x
	Northern coal skink			x
	Smooth green snake			x
	Snapping turtle			x
Fish	None known to occur			
Invertebrates	Arrowhead spiketail			x
Plants	None known to occur			

Significant Ecological Communities:

There is one significant natural community located on Stid Hill MUA as identified by the NY Natural Heritage Program. 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 community occurs on the MUA; community description is from *Ecological Communities of New York State, Second Edition* [6] (Figure 2):

- **Appalachian oak-hickory forest** (S4) – a hardwood forest that occurs on well-drained sites, usually on ridgetops, upper slopes, or south and west facing slopes. The soils are usually loams or sandy loams. This is a broadly defined forest community with several regional and edaphic variants.

Additional information about ecological communities is available in the Stid Hill MUA Biodiversity Inventory Final Report (1997) prepared by the NY Natural Heritage Program.

[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.

Soils:

Most of the soils on Stid Hill MUA are of the Volusia-Mardin-Lordstown associations.[7] Soil types here are generally well-drained and provide moderate growing conditions. Slopes on the MUA range from gentle to steep, with some areas very steep. Management actions on steep terrain will generally be avoided.

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 Stid Hill MUA include:

- One wetland (BC-12) regulated by Article 24 of the Environmental Conservation Law and ten wetlands shown on the National Wetlands Inventory (NWI; Figure 3). 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 2.7 miles of streams, composed of Mud Creek and its tributaries (Figure 3). These streams are classified as C and therefore are not regulated by Article 15 of the Environmental Conservation Law; however, water quality standards will be adhered to. [8]

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, the availability of habitats, and other conservation lands adjacent to Stid Hill MUA (Figures 4 and 5). The landscape within a three mile radius of the MUA is primarily privately-owned land including:

- Forest (60% combining deciduous, evergreen, and mixed)
- Pasture/hay and grassland (13%)
- Cultivated crops (1%)
- Developed (5%)
- Early-successional shrubland (11%)
- Wetland (2% combining emergent and woody wetlands)
- Open water (8%)

[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.
[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/outdoor/104218.html.

The MUA sits within a predominantly forested landscape but the current forest age structure in the region provides only limited benefits to species requiring a young forest component. Thus a goal of this plan is to manage the MUA to afford a greater component of this limited habitat type while retaining the forested character of the greater landscape. Opportunities to acquire adjacent properties that would improve access or habitat conservation should be considered.

Three other conservation lands are near Stid Hill MUA; however, they comprise less than 5% of the surrounding landscape (Figures 4 and 5). This includes:

- Boy Scouts of America, Camp Cutler (1,194 acres) - Cleveland Hill, mixed age forest with recent timber harvests. Most of this property is more than 3 miles from the MUA.
- Onanda Park (73 acres) – Barnes Gully, mature forest, developed recreation facilities.
- Gannett Hill Park (370 acres) – mature forest, fields, developed recreation facilities.

II. MANAGEMENT STRATEGIES BY HABITAT TYPE

DEC will continue active management of wildlife habitats on Stid Hill MUA 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.
Young forest: young or regenerating forested acres, which are typically aged 0-10 years since a disturbance or regeneration cut, depending upon the site conditions. May include both natural forest and plantations.
Young forest (forested wetland): young, regenerating forested wetland acres.

Forest management on Stid Hill MUA 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 BOW properties to benefit wildlife that require this transitional, disturbance-dependent habitat. [10]

MANAGEMENT OBJECTIVES

- Increase young forest from zero to 66 acres (10% of MUA forested acreage) to provide habitat for young forest wildlife species. Future management should maintain at least 10% of MUA forested acreage as young forest in perpetuity.
- Maintain 620 acres of forest in intermediate or mature age classes to provide a diversity of forest habitats to benefit associated wildlife.
- Promote the persistence of oak-hickory forest type to maintain availability of abundant hard mast for wildlife.
- Maintain a coniferous component to provide diverse food and cover options for wildlife.

DESCRIPTION OF EXISTING FOREST HABITAT AND TARGET SPECIES

There are 686 acres of forest covering approximately 82% of Stid Hill MUA (Figure 6). Table 3 provides a summary of the forested areas, including the most common tree species present in each.

Forest cover on both sections of the MUA is largely unbroken and is connected between parcels by continuous private forest lands. Forest stands on the west side of the property, where the terrain begins to flatten into Bristol Valley, are often adjacent to or interspersed with grassland and shrubland stands.

Photo 1: The majority of Stid Hill MUA is forested and is contiguous with extensive private forest lands.

Photo: Michael Palermo, DEC

Oak is an important species here, dominant in nearly 70% of the MUA forest area, providing an abundant mast resource consumed by a wide range of wildlife, including blue jays, squirrels, white-tailed deer, and wild turkey. Nearly 25% of the MUA forest is a northern hardwood type, dominated by ash and maple, and has generally developed where old fields have reverted to forest. A minor conifer component is present, with hemlock concentrated along several gullies and white pine scattered throughout the rest of the property. Although minor, these hemlock dominated stands provide important insulating cover for wildlife, resulting in cooler summer and warmer winter temperatures. A small forested wetland is present

[10] 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.

on the hilltop of the northern parcel and is a vernal pool that provides breeding habitat to woodland salamanders and a reliable water source to many wildlife species during dry periods.

The majority of forest on the MUA is saw timber size (mature), with approximately 30% composed of pole timber (intermediate). This prevalence of mature forest provides very little diversity of forest structure. Current forest provides habitat for many species common to western New York but minimal habitat for those dependent upon young forest.

Table 3. Summary of the acreage and dominant overstory species for each forest type present on Stid Hill MUA.

Forest Type	**Acres (as of 2012)**	**Desired Acres**	**Overstory species**
Natural forest (mature/intermediate)	680	616	Oak, hickory, maple, ash, black cherry, hemlock
Forested wetland (mature/intermediate)	6	6	Swamp white oak, shagbark hickory, red maple
Young forest	0	66	Currently not present on MUA
Total Forested Acres:	686	688 [a]	

[a] Change in total forested acres is due to the planned reversion of shrubland to forest (4 acres) and conversion of forest to grassland (2 acres).

Target Species:
Due to the predominance of mature forest, and lack of young forest, there has been a decline of wildlife species dependent upon young forests. Target species for forest habitat management at Stid Hill MUA are American woodcock and ruffed grouse. Both are SGCN and popular game species.

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

Photo: Art Kirsch, DEC

These species rely on areas of young forest adjacent to mature forest for breeding, 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.
  - 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.[11]

[11] 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.

- 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.[12, 13]

Management actions to create young forest will also benefit several other SGCN known to occur on or near the MUA, including black-billed cuckoo, blue-winged warbler, brown thrasher, black racer, black rat snake, and smooth green snake. Bobcat, white-tailed deer, wild turkey, and a variety of pollinator species are expected to benefit as well. Pollination is critical to the reproduction of wild and cultivated plants and providing habitat to sustain these pollinator populations is important both ecologically and economically.

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

Mature forest on the MUA currently provides valuable habitat for associated species, such as red-shouldered hawk, scarlet tanager, and wood thrush. Over time, managing at least 10% of forest acreage as young forest, through the rotation of even-aged management throughout the MUA, will ensure a diversity of forest age classes in perpetuity, including the mature forest these species require. The abundance of mature forest in the surrounding landscape, and the likelihood of its persistence, also ensures the continued presence of this habitat for these species.

Even-aged forest management is also expected to promote the regeneration and perpetuation of the Appalachian oak-hickory forest that occurs on the MUA. The abundant hard mast produced by this forest type is an important food source to numerous wildlife species.

MANAGEMENT HISTORY

While in private ownership, the lands now comprising Stid Hill MUA were utilized for recreation, harvest of forest products, cultivation of crops, and pasture. The initial acquisition of the property was made in 1960 and the MUA was administered by the Division of Lands and Forests until it was transferred to the Division of Fish and Wildlife in 1984. An additional parcel of 100 acres was purchased by the National Wild Turkey Federation and donated to the state in 1996.

Forest management on the MUA has been minimal since acquisition. Small-scale fuelwood sales occurred during the mid-1970s to the early-1980s; however, no timber harvests have occurred since. Several small fields have been allowed to revert to forest, increasing forest acreage over the past few decades.

[12] 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.
[13] Jones, B. C. et al. Habitat Management for Pennsylvania Ruffed Grouse, Pennsylvania Game Commission. 10 pp.

IMPLEMENTATION PLAN AND ANTICIPATED SCHEDULE

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

- **Management planned for 2017-2021** (Table 4, Figure 6):
  - Shelterwood harvest of Stand A13 (18 acres)
  - Thinning harvest of Stand A14 (101 acres) possibly with small patch clear cuts
  - Seed tree harvest of Stand A15 (37 acres) and convert 2 acres to grassland.
- **Management planned for 2022-2026** (Table 5, Figure 6):
  - Seed tree harvest of Stands B04, B05, and B08 (31 acres).

Table 4. Forest management schedule for the first five-year period of this HMP (2017-2021).

Stand	Acres	Size Class	Forest Type		Management Direction	Treatment Type
			Current	Future		
A13	18	Small Saw Timber 12”-17” DBH	Oak / Northern Hardwoods	Oak / Northern Hardwoods	Wildlife	Shelterwood
A14	101	Small Saw Timber 12”-17” DBH	Oak	Oak	Wildlife	Thinning / patch clear cuts
A15	37	Pole Timber 6”-11” DBH	Northern Hardwoods - White Pine	Young Forest / Grassland	Wildlife	Seed Tree / convert 2 acres to grassland

Table 5. Forest management schedule for the second five-year period of this HMP (2022-2026).

Stand	Acres	Size Class	Forest Type		Management Direction	Treatment Type
			Current	Future		
B04	14	Pole Timber 6”-11” DBH	Pioneer Hardwoods	Young Forest	Wildlife	Seed Tree
B05	14	Pole Timber 6”-11” DBH	Pioneer Hardwoods	Young Forest	Wildlife	Seed Tree
B08	3	Pole Timber 6”-11” DBH	Pioneer Hardwoods	Young Forest	Wildlife	Seed Tree

Stand locations and planned management actions are also summarized in Figure 6. 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 will include the following:

- **Stand A13:** This stand is primarily composed of oak and northern hardwood species with hickory also present. An initial preperatory harvest is scheduled within the next five years to establish oak/hickory regeneration. Once sufficient regeneration is established, an overstory removal harvest will be scheduled, likely within the ten years following the

time frame of this plan. This shelterwood treatment is intended to regenerate the stand and establish future young forest habitat.

- **Stand A14:** This stand is a mixture of pole and saw timber sized oak with northern hardwoods and hickory also present. A thinning harvest is planned to reduce crowding to improve growth of oak and hickory and increase mast production. A few patch clear cuts (<1 acre each) may also occur to add diversity to stand structure.
- **Stand A15:** This stand is an abandoned field dominated by pole timber and shrubs. Ash is the dominant tree species with oak, hickory, maple, and white pine also present. The understory is dominated by both native and non-native shrubs. A seed tree harvest will remove existing ash and retain desired overstory trees. A forestry cutter and herbicide application will be used to control non-native invasive shrubs while retaining clumps of native shrubs. This treatment is intended to improve stand quality and establish young forest habitat. Two acres of this stand will be converted to grassland, expanding existing grassland Stand A943.
- **Stands B04, B05, and B08:** These stands are understocked and composed of mostly pioneer hardwoods (ash, cherry, and maple) with a dense understory of hawthorn and non-native invasive shrubs. A seed tree harvest will remove most of the overstory while retaining desirable trees as a seed source. A forestry cutter and herbicide application will be used to control non-native invasive shrubs. Some hawthorn and other native shrubs will be retained to provide soft mast for wildlife. This treatment is intended to improve stand quality and establish young forest habitat.

BEST MANAGEMENT PRACTICES

Forest management on all BOW properties 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 BOW properties.

Resource	**Guidance Document** [14]
Soils	*Rutting Guidelines for Timber Harvesting on Wildlife Management Areas*
Water quality	*NYS Forestry Best Management Practices for Water Quality*
Wildlife	*Retention Guidance on Wildlife Management Areas*
Plantations	*Plantation Management Guidance on Wildlife Management Areas*

Wildlife Considerations:

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

- *Forest raptors*. Surveys will be conducted prior to timber harvests and if nesting is documented, harvest activities nearby may be adjusted to occur outside the breeding season and nest buffers may be established.
- *Indiana, northern long-eared, and tri-colored bats*. There are no known occurrences of these species on the MUA. 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.

[14] All guidance documents referenced here are available online at http://www.dec.ny.gov/outdoor/104218.html.

- *Northern coal skink*. This species has been documented on the property and timber harvests will not occur in these areas.

Due to the sensitivity of endangered, threatened, and special concern species, and SGCN, special management guidelines may be implemented if additional species become known to occur in or within close proximity to a forest stand to be harvested.

Forest Health Considerations:

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

Infestations of non-native 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 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. HWA was recently detected on the MUA, and although EAB has not yet been detected here, it is present in Ontario 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 here 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 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.

Oak wilt is a fungal disease that can infect and kill oak trees. The disease was identified in the Town of Canandaigua in 2016 and could have significant impacts on the landscape if it spreads, as the forests in the Bristol Valley are predominantly oak. Oak wilt primarily spreads in two ways: 1) through root connections with adjacent trees, and 2) from beetles that spread spores to open wounds on other trees. Current recommendations for treating affected areas include removing infected trees and severing root connections to reduce the chance of spread. The MUA should be closely monitored over the next several years to spot any signs of oak wilt. To prevent spread to the MUA, seasonal timber harvest restrictions are likely needed to avoid creating wounds on oaks during the months when these beetles are active.

Invasive plants that are known to be in or near the forested areas of the MUA include: autumn olive, buckthorn, garlic mustard, honeysuckle, and multiflora rose.

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 (e.g., beech, hawthorn, ironwood, musclewood, and striped maple) are present in the understory of many stands here and have the potential to interfere with forest regeneration. Although these native species have many beneficial qualities, they are considered undesirable in this context because they have the potential to interfere with desirable forest regeneration. If invasives and undesirable species become significantly abundant, pre-treatment herbicide application may be necessary.

Deer herbivory has potential to be an issue at Stid Hill MUA. 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 MUA to manage the local deer herd at desired levels will continue.

If it is concluded post-treatment that desired tree species are not regenerating in a high enough frequency, or that undesirable species are dominating the area and suppressing regeneration, then the stand may be re-treated. This may include mechanical and/or 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.[15] The Monitoring Plan provides 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 Stid Hill MUA, which may be assessed to determine response to management, include:

- American woodcock
- Ruffed grouse

Monitoring of these species may 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 use.

[15] Available online at http://www.dec.ny.gov/outdoor/104218.html.

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 58 acres of shrubland habitat to provide early successional habitat and abundant soft mast to promote associated wildlife.
- Promote dominance of native shrub species to enhance habitat quality.
- Allow 4 acres of shrubland to revert to forest.

DESCRIPTION OF EXISTING SHRUBLAND HABITAT AND TARGET SPECIES

There are 62 acres of shrubland on Stid Hill MUA (Figure 6, Photo 3), all of which is located on the western part of the property, where the terrain flattens into Bristol Valley.

These shrublands originated from grasslands and old agricultural fields not being maintained and naturally succeeding to a shrub-dominated plant community. These stands vary from sparse shrubs and grasses to extensive and dense shrub thickets with scattered trees.

Native shrubs found in these areas include species of dogwood, hawthorn, sumac, and viburnum, which provide valuable dense cover and soft-mast for wildlife. Non-native invasive shrub species, such as autumn olive, buckthorn, honeysuckle, and multiflora rose are established in most of these shrublands and in some areas are dominant.

Shrubland stands at Stid Hill MUA generally border grassland fields and provide important cover to wildlife traveling between forest and grassland. Within the northern parcel of the MUA, Mud Creek and its associated scrub/shrub wetlands are contiguous with upland shrubland and provides a large area of early successional habitat.

Photo 3: The dense cover and abundant soft mast found in shrublands at Stid Hill MUA provide valuable habitat for several wildlife species.

Photo: Michael Palermo, DEC

Shrublands contain unique food and cover options that differ from young forest and can often persist longer as a habitat type due to shrub thicket exclusion of tree growth. Shrublands provide habitat for many wildlife species, including several that also use young forests. Although young forest and shrubland provide habitats for similar species, both are needed to provide for the full range of disturbance-dependent wildlife species.

Target species for shrubland management on Stid Hill MUA are:

- American woodcock
- Ruffed grouse

Maintaining shrubland habitat here is also expected to benefit other SGCN, including black-billed cuckoo, blue-winged warbler, brown thrasher, black racer, black rat snake, and smooth green snake.

MANAGEMENT HISTORY

Past DEC management of Stid Hill MUA 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 Stid Hill MUA. These shrublands were established through a lack of management to maintain grassland 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 2017-2026** (Figure 6):
    - Throughout shrubland stands, perform maintenance actions as needed.
        - Brush cutting using a rotary mower or forestry cutter should be utilized to stimulate dense shrub regrowth and to maintain an interspersion of openings and travel corridors.
        - Young trees that would eventually dominate and shade out shrubs should be selectively cut; stumps should be removed or cut low to facilitate future maintenance. Small stands of trees may be left as islands.
        - When and where practicable, prescribed fire may be utilized.
    - Throughout 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.
        - Native shrubs may be planted to replace invasives.
    - Allow shrubland Stand B950 to revert to forest.
        - This shrubland contains an abundance of trees that are expected to become dominant in the near future. Access to maintain this stand as shrubland would be difficult due to private property and crossing gully terrain.

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 it is to be done for long term benefits to the habitat/wildlife (such as invasive species management).

MANAGEMENT EVALUATION

Current monitoring of shrubland habitat use at Stid Hill MUA is informal and data are often derived opportunistically, and will be continued. Shrubland areas will be included in the ruffed grouse and American woodcock surveys previously discussed in the Forest section above. The establishment of periodic bird point counts, and other wildlife surveys, would also 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 grassland habitat (39 acres) to encourage favorable herbaceous species and prevent reversion to shrubland and forest.
- Convert approximately 2 acres of forest to grassland, increasing total grassland area to 41 acres, to benefit target species which utilize both forest and grassland.
- Identify and control invasive plant species to prevent their dominance in fields.

DESCRIPTION OF EXISTING GRASSLAND HABITAT AND TARGET SPECIES

There are 39 acres of grassland habitat on Stid Hill MUA (Figure 6, Photo 4) composed of several small fields (1 to 6 acres). The majority of these fields are located on the western part of the property, where the terrain flattens into Bristol Valley, with a 2 acre field and grassy laneway also present on the hilltop of the northern parcel.

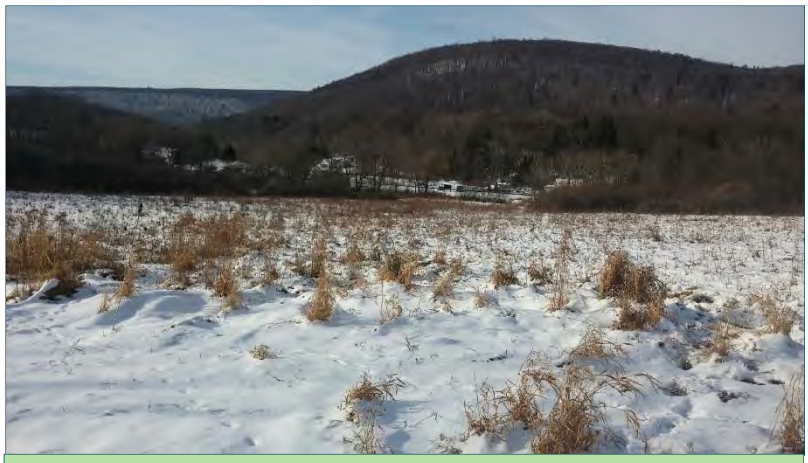

Photo 4: Grasslands at Stid Hill MUA provide important brood rearing habitat to wild turkey.

Photo: Mike Palermo, DEC

Grasslands on the MUA are composed mostly of cool season grasses and forbs, with patches of warm-season grasses and legumes from previous plantings. Most fields contain some growth of woody plants (e.g., autumn olive, gray dogwood, and multiflora rose) that should be controlled to prevent reversion to shrubland.

Maintenance of these fields as grassland is intended to benefit several wildlife species that inhabit the surrounding forest. For example, deer find high-quality forage in these openings and turkey strut to attract mates. Pollinators and various other insects also thrive in these herbaceous areas and provide an important high-protein food for grouse chicks, turkey poults, and songbirds.

Grasslands on the MUA are too small to provide significant breeding habitat for grassland dependent bird species (e.g., bobolink and meadowlark) which typically require large patches of grassland (> 25 acres) with low edge-to-area ratios in an open landscape.

Target species for grassland management at Stid Hill MUA include:

- White-tailed deer
- Wild turkey

MANAGEMENT HISTORY

Historically, much of the less steep areas of Stid Hill MUA were used for agriculture. Many of these old agricultural fields reverted to shrubland or forest after State acquisition, and existing grassland fields have persisted through routine mowing. In partnership with the National Wild Turkey Federation, approximately 12 acres of grassland were reseeded with warm-season grasses and legumes in 1992 to improve wild turkey brood rearing and foraging habitat.

IMPLEMENTATION PLAN AND ANTICIPATED SCHEDULE

- **Management planned for 2017-2026** (Figure 6):
    - Throughout all grasslands, routinely perform maintenance actions.
        - Mow fields every 1-3 years to prevent establishment of woody vegetation.
        - Incorporation of prescribed burning in these fields would be beneficial to promote warm season grasses with high food and cover value for target wildlife, and to control undesirable woody vegetation growth.
        - Mowing or burning should occur on a three year rotation, however habitat conditions may require a more frequent interval.
        - Control invasive vegetation mechanically and/or with herbicide.
        - As needed: lime, fertilize, disk, and reseed grasslands. Promote native herbaceous species where practical.
    - Expand grassland Stand A943.
        - A timber harvest is planned in Stand A15 to improve forest habitat, as this occurs, bulldoze and seed to grass 2 acres adjacent to Stand A943.

BEST MANAGEMENT PRACTICES

Due to the small, fragmented nature of grasslands on Stid Hill MUA 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*.[16]

General Management Recommendations

- Conduct invasive species control (autumn olive, buckthorn, Canada thistle, etc.) to improve habitat quality.
- 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),

[16] 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.

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.
    - Fields can be managed/mowed between 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 planned, then the habitat requirements and nesting periods of other species should be considered (e.g., nesting waterfowl and reptiles).

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 Stid Hill MUA is informal and data are often derived opportunistically, and will be continued. However, the establishment of periodic wildlife surveys would be beneficial to better understand species diversity and habitat use.

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

AGRICULTURAL LAND

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

DESCRIPTION OF EXISTING AGRICULTURAL LANDS AND TARGET SPECIES

There is no acreage on Stid Hill MUA that is managed as agricultural land and no plan to develop such habitat.

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 35 acres of natural emergent, scrub-shrub, and sedge meadow wetlands to benefit associated wildlife, such as American woodcock and eastern ribbon snake.
- Identify and control invasive vegetation.

DESCRIPTION OF EXISTING WETLAND HABITAT AND TARGET SPECIES

There are 35 acres of natural wetlands and 0 acres of impounded wetlands on Stid Hill MUA (Figures 3 and 6, Photo 5). This consists of two small patches of sedge meadow on the southern parcel, and emergent and scrub-shrub wetlands along Mud Creek on the northern parcel.

Photo 5: Mud Creek flows through Stid Hill MUA and is surrounded by saturated soil, inundated depressions, and small feeder streams.

Photo: Mike Palermo, DEC

The western edge of the MUA is generally flat and soils along Mud Creek and other drainages are seasonally saturated. The sedge meadow on the southern parcel provides habitat diversity to the surrounding upland fields and forest. The scrub-shrub wetland along Mud Creek contains the main channel with side channels and inundated depressions. Common shrub and tree species present include alder, boxelder, dogwood, and willow. Emergent wetland along Mud Creek is mostly wet meadow grasses and forbs with a minor component of cattails.

These wetlands provide valuable diversity to the mostly upland MUA and important habitat for numerous species, such as:

- American toad, bull frog, leopard frog, green frog, and spring peeper.
- Painted and snapping turtles.
- Common garter snake, eastern ribbon snake, and northern water snake.
- American woodcock, alder and willow flycatchers, and common yellowthroat.
- Beaver, mink, muskrat, and river otter.
- Dragonflies, damselflies, and mayflies.

MANAGEMENT HISTORY

There has been no DEC management of wetlands on Stid Hill MUA. Existing wetlands here have developed and persisted naturally. Much of the scrub-shrub wetland along Mud Creek was historically cleared and has reverted to shrubs since acquisition.

IMPLEMENTATION PLAN AND ANTICIPATED SCHEDULE

- **Management planned for 2017-2026** (Figure 6):
    - Maintain wetland types as they currently exist.
        - As needed, cut shrubs and trees in scrub-shrub wetlands to stimulate dense regrowth.
        - As needed, remove shrubs that would eventually dominate emergent marsh and sedge meadow areas, and remove trees that would eventually dominate and shade out scrub-shrub wetlands.
    - Monitor for invasive vegetation and control mechanically, biologically, and/or with herbicide (e.g., knotweed, Phragmites, purple loosestrife).

BEST MANAGEMENT PRACTICES

Management activities within wetlands will take into consideration the timing of wildlife breeding seasons and when practicable these periods of time will be avoided. Wetland management will follow guidelines established in the General Permit GP-0-16-003: Habitat Management by NYSDEC, and will obtain any necessary additional permits.

MANAGEMENT EVALUATION

Current monitoring of wetland habitat use on Stid Hill MUA is informal and data are often derived opportunistically, and will be continued. However, periodic surveys for amphibian, reptile, and bird presence would be beneficial to better understand species diversity and use.

OPEN WATER (WATERBODIES AND WATERCOURSES)

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

DESCRIPTION OF EXISTING OPEN WATER HABITAT AND TARGET SPECIES

Approximately 2.7 miles of perennial streams occur on Stid Hill MUA, composed of Mud Creek, a small piece of Randall Gully, and an unnamed gully on the southern parcel (Figure 3). Several intermittent streams also occur throughout the MUA, especially along the steep west slope of Stid Hill, which flow during spring snow melt and heavy precipitation events (Photo 6).

These streams are important water sources for upland wildlife and provide habitat for various fish, frogs, salamanders, and aquatic invertebrates. A self-sustaining population of brown trout occurs in Mud Creek from previous stocking, and other fish species known to occur include blacknose dace, common shiner, and white sucker. Recent surveys have detected seven species of freshwater mussels in Mud Creek, including creek heelsplitter, creeper, cylindrical papershell, eastern elliptio, fat mucket, fluted shell, and giant floater.

Beyond these streams, there is no other open water habitat (no named lakes or ponds) or any plan to develop such habitat on the MUA. Habitat management activities will adhere to best management practices to protect the water quality of these streams.

Photo 6: Unnamed intermittent stream flowing after heavy April rains on Stid Hill MUA.

Photo: Mike Palermo, DEC

HABITAT MANAGEMENT SUMMARY

In summary, Table 7 lists the habitat management actions planned for Stid Hill MUA 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 Stid Hill MUA, 2017-2026 (also see Figure 6).

Habitat	Management Action	Acres	Timeframe
Forest	Preparatory cut of a shelterwood system in Stand A13.	18	2017-2021
Forest	Thinning harvest of Stand A14.	101	2017-2021
Forest	Seed tree harvest of Stand A15. Convert 2 acres to grassland.	37	2017-2021
Forest	Seed tree harvest of Stands B04, B05, and B08.	31	2022-2026
Shrubland	Maintain shrubland acreage by cutting trees, brush cutting, and potentially prescribed fire.	≤ 58	2017-2026, as needed
Shrubland	Promote dominance of native shrubs by controlling invasive shrub species.	≤ 58	2017-2026, ongoing
Shrubland	Allow Stand B950 to revert to forest	4	2017-2026, ongoing
Grassland	Maintain grassland acreage by mowing and potentially prescribed fire.	≤ 41	Annual, biennial, or triennial
Grassland	Improve grassland quality (e.g., control invasives, lime, fertilize, disk, and reseed).	≤ 41	2017-2026, as needed
Wetlands	Maintain natural wetlands as they exist.	≤ 35	2017-2026, as needed
Wetlands	Monitor and control invasive species.	≤ 35	2017-2026, ongoing

III. FIGURES

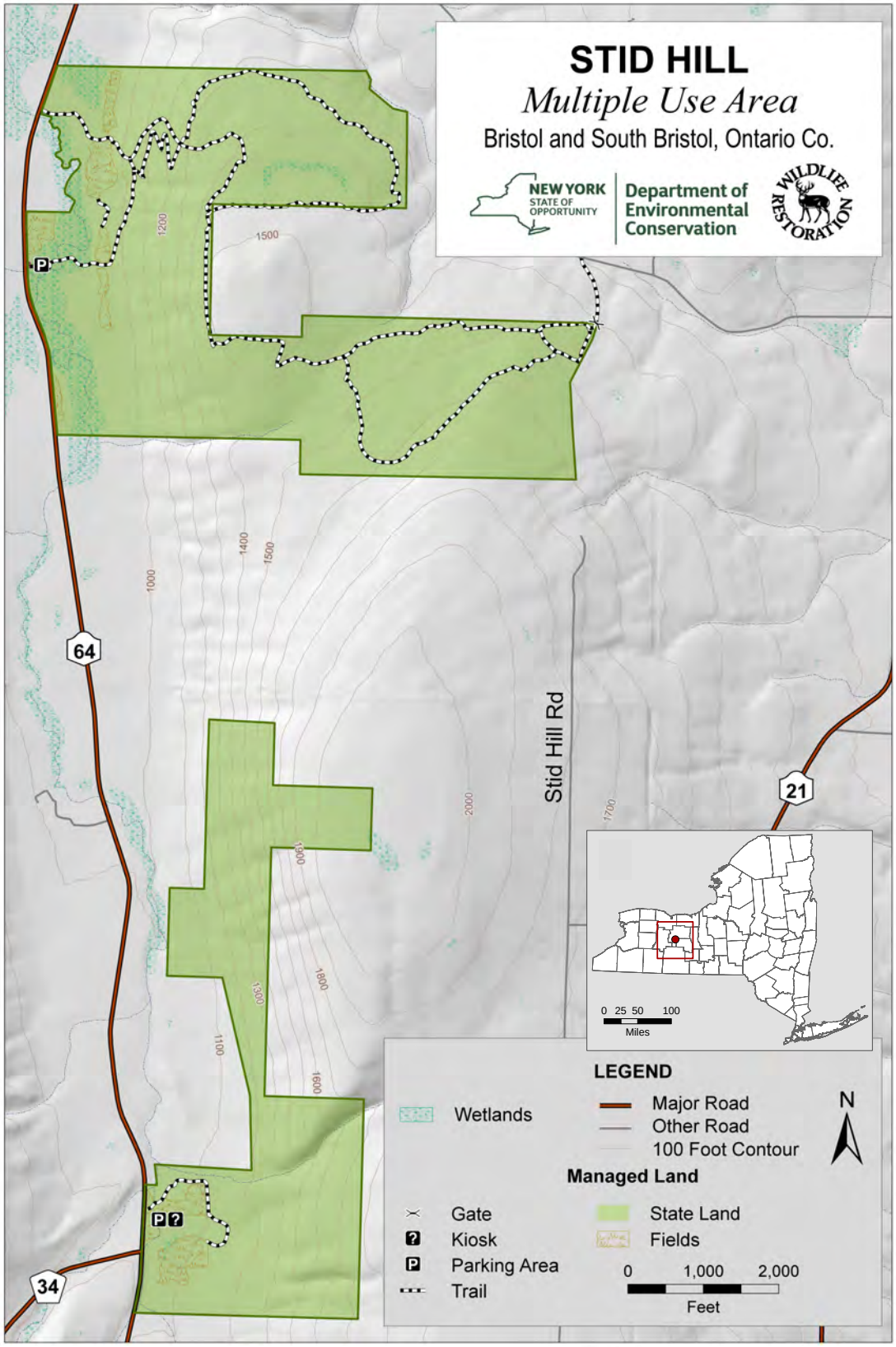

FIGURE 1. Location and access features at Stid Hill MUA.

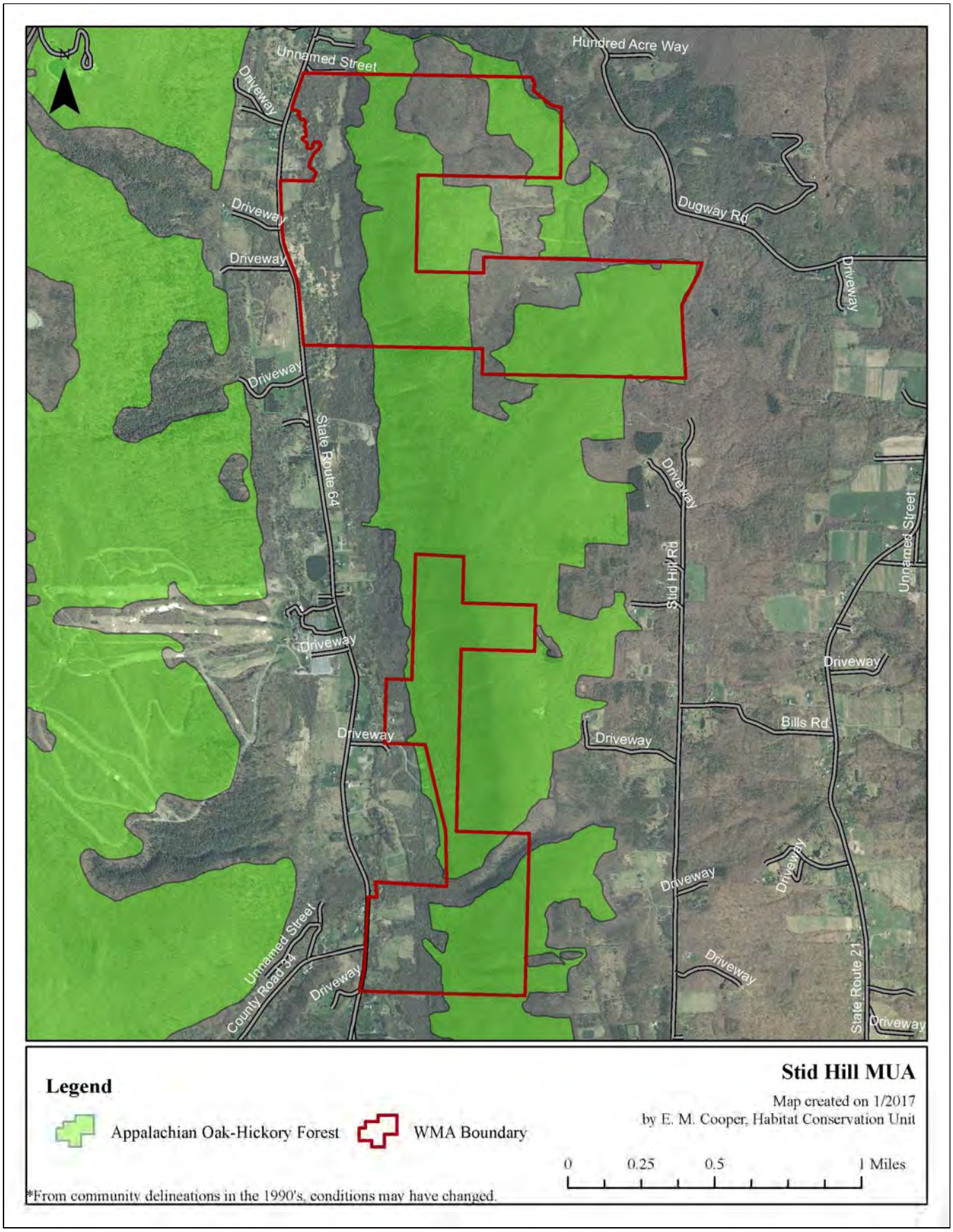

FIGURE 2. Significant ecological communities on Stid Hill MUA. Data from the NY Natural Heritage Program.

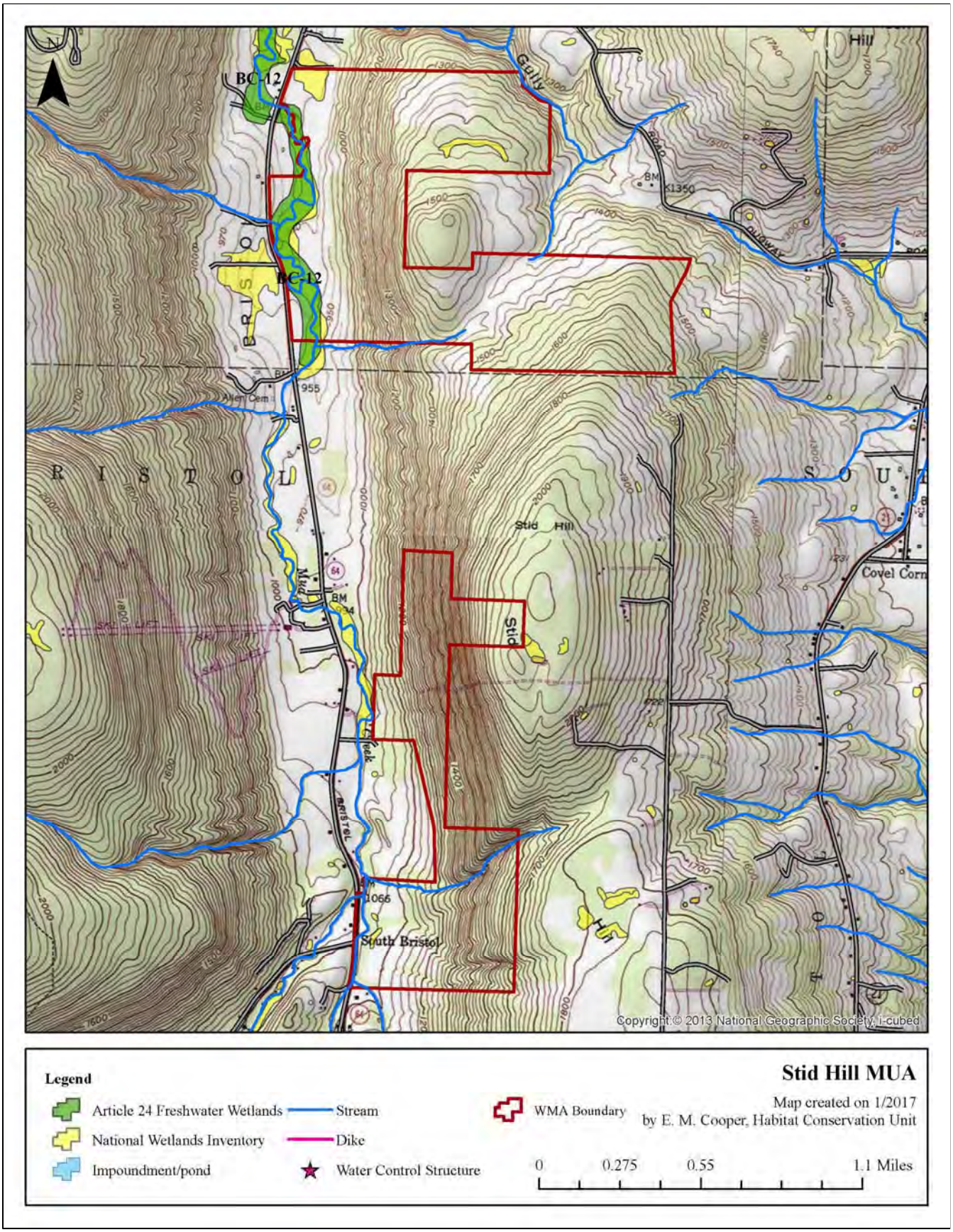

FIGURE 3. Wetlands, open water, and streams of Stid Hill MUA. Note: Wetland boundaries are not exact and may not be used for regulatory purposes without a current delineation.

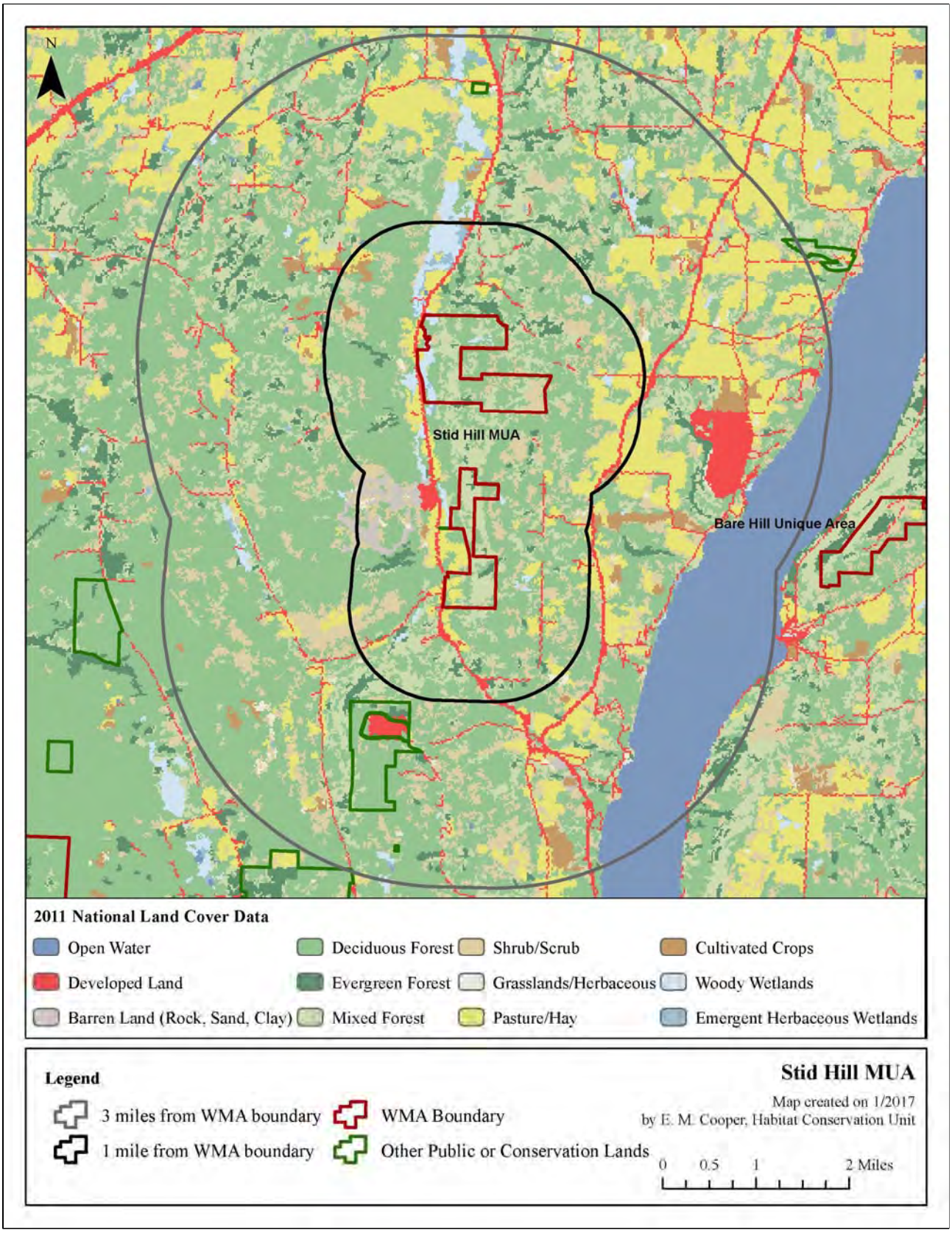

FIGURE 4. Land cover types and conservation lands in the landscape surrounding Stid Hill MUA. Conservation lands are from the NY Protected Areas Database available online at http://www.nypad.org/. Land cover types are from the 2011 National Land Cover Data (NLCD) and differ from the habitat types used in the MUA habitat inventory. NLCD definitions are available online at http://www.mrlc.gov/nlcd2011.php.

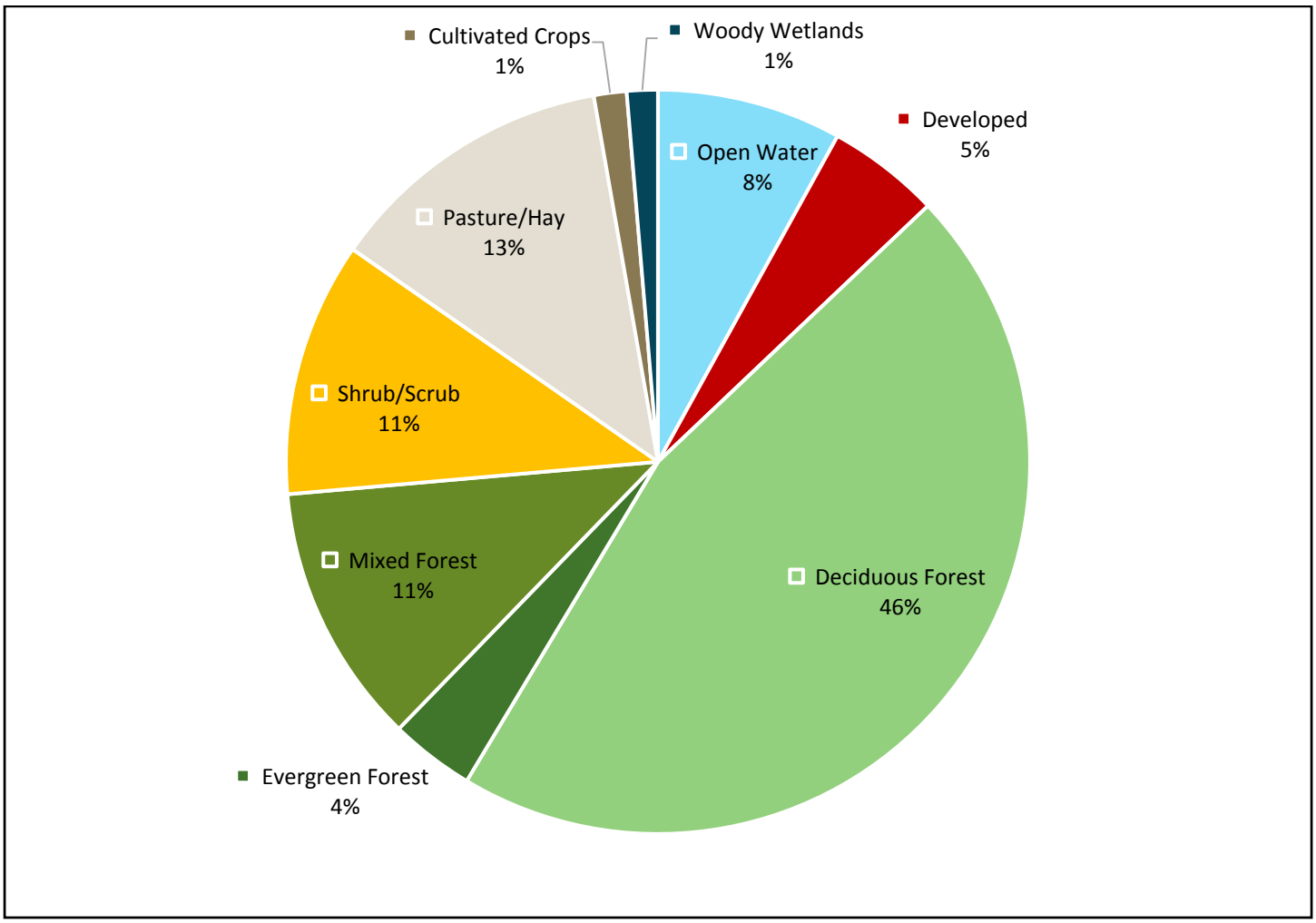

FIGURE 5. Percent cover of land cover types within three miles of Stid Hill MUA.

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

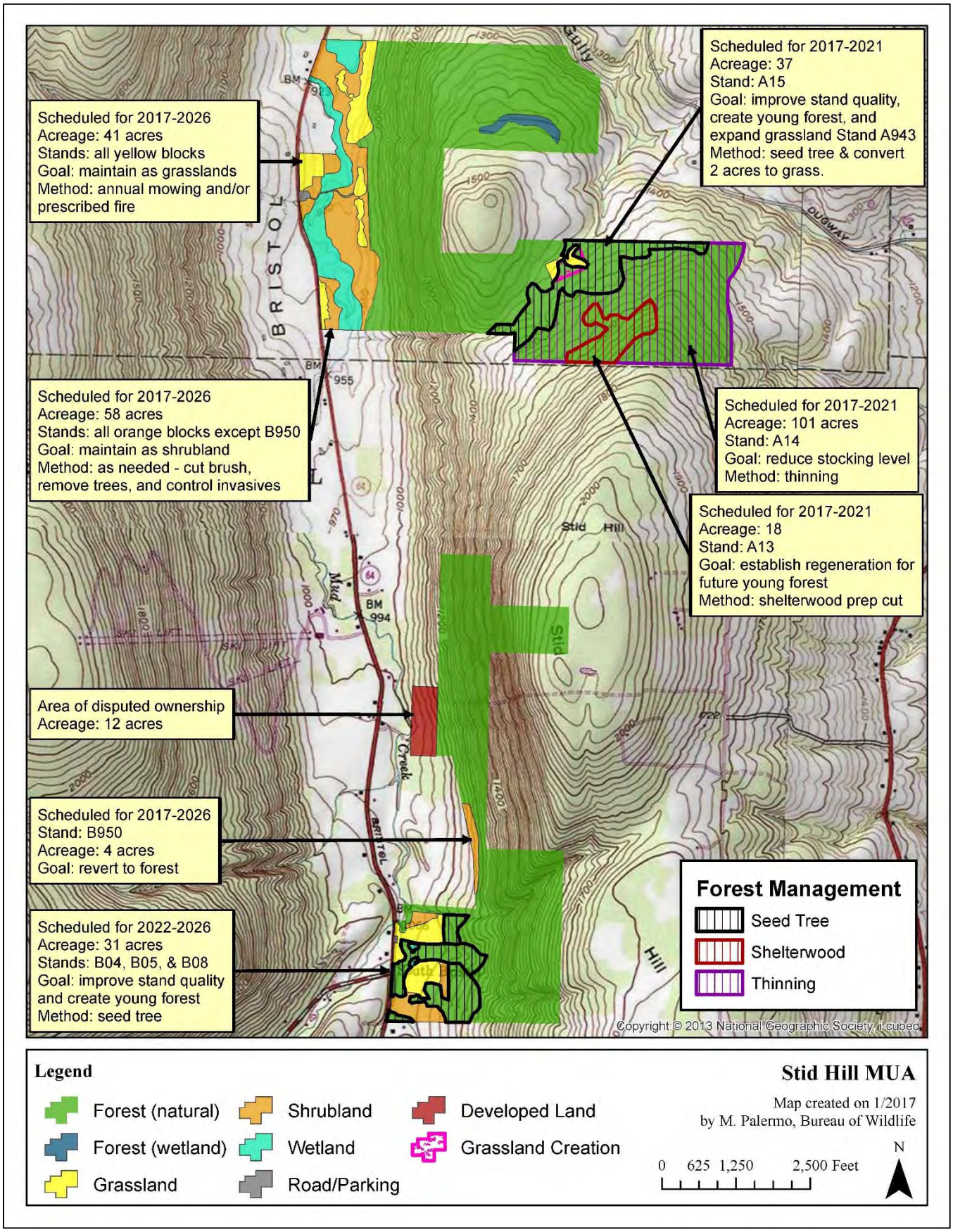

FIGURE 6. Habitat types and location(s) of proposed management on Stid Hill MUA.

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. For example, young forest target species at Stid Hill MUA include: American woodcock and ruffed grouse.

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 (EIS) and by discussing further in Appendix B, Statement of Conformity with the State Environmental Quality Review Act (SEQRA). Appendix B will be included in each plan, thereby satisfying overall compliance with 6 NYCRR Part 617, the State Environmental Quality Review. If any of these criteria are exceeded an additional site specific environmental review will be required.

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

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

    - Each YFI project will be reviewed by DEC's State Historic Preservation Officer (SHPO) as well as the Office of Parks, Recreation and Historic Preservation (OPRHP) to determine whether project sites may potentially affect any historical or archeological sites. In addition, thorough field review prior to management activities taking place allows field staff to assess the presence or absence of any apparent historical or archeological sites that may not be found during the review process. Should known important historical or archeological sites present themselves necessary actions will be taken to protect these resources under the direction of DEC's SHPO and the OPRHP Archaeology Unit staff.
- Will not involve the application of herbicides, pesticides or other such chemicals.
    - YFI projects may involve the judicious use of pesticides which may be necessary to control invasive species, to protect rare and endangered plants from competition, or to control vegetation interfering with forest regeneration. If projects do require the use of herbicides or pesticides an additional site-specific environmental review will be required.
- Will not stimulate significant public controversy.
    - It is not anticipated that YFI projects will stimulate significant public controversy. A significant amount of public outreach and notification will be conducted on an on-going basis as well as prior to projects being implemented on the ground including, but not limited to: public information sessions regarding the Habitat Management Plans for each WMA, signage installation at project sites informing the public of the scope and purpose of the project, establishment of one demonstration area in each region to showcase YFI management techniques to the public, periodic informational articles published in local media outlets and the development of a public YFI website. The YFI has one full time position dedicated to facilitating the program's public outreach and communication efforts.

APPENDIX C: FOREST MANAGEMENT PRESCRIPTIONS

PRESCRIPTION FOR WILDLIFE MANAGEMENT AREA TIMBER HARVEST

Region: **Wildlife Management Area:** **Stand number:** **Stand acreage:**

Species composition:

Basal area: **Trees per acre:** **Mean stand diameter:**

Stand inventory or analysis date:

Regeneration data:

Natural Heritage Element Occurrence layer review:

SMZ layer review:

Retention data:

Soil types and drainage:

Interfering vegetation:

Acres to be treated: **Target basal area:**

Technical guidance/stocking guide:

Treatment purpose:

Management Objective: Even aged or Uneven Aged

-If even aged, specify treatment (i.e. shelterwood, seed tree, clearcut)

Clearcut acreage and configuration: (if applicable)

Natural Heritage /MHDB considerations and mitigation: (if applicable)

Retention considerations and adjustments:

Treatment descriptions:

Name and Title of Preparer:

Central Office Lands and Forests Staff **Date**

Regional Wildlife Manager **Date**

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 "Hershiser-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.