

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



Entrance of Tug Hill WMA at the crossroads of Flat Rock Road and Running George Access Road.

Photo: NYSDEC

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## ***SUMMARY***

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Tug Hill Wildlife Management Area (WMA) was acquired in 1955, with additional parcels added in 1978 and 1979. In the 1920s, this area was primarily managed to supply wood for a distillation plant in Glenfield, New York. The land then went dormant until the market for hardwood logs developed after World War II. From 1946 to 1952, most of the merchantable hardwood logs were removed. Today, the primary habitat types of the WMA are northern hardwood forests, spruce-balsam fir-hardwood swamp forests, and open wetlands. Tug Hill WMA is currently a popular destination for deer hunters seeking a wilderness-like experience as well as upland game bird hunters in search of grouse and woodcock. Trappers also travel to this area each fall, primarily to pursue species uncommon in other areas of the state such as otter, fisher, and bobcat.

Habitat management goals for Tug Hill WMA include:

- Managing approximately 9% of the WMA (10% of the forested acres) as young forest (0-10 years old) to promote American woodcock, ruffed grouse, and varying (snowshoe) hare;
- Maintaining approximately 76% as intermediate and mature forest to support forest birds in the Tug Hill Region;
- Creating approximately 1% of forest opening habitat in an area with very little habitat of this type; and
- Maintaining approximately 14% as non-forested wetlands to provide waterfowl breeding and migratory stopover habitat and sustainable hunting and trapping opportunities.

## ***I. BACKGROUND AND INTRODUCTION***

### **PURPOSE OF HABITAT MANAGEMENT PLANS**

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#### **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 (HMP) 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 (UMP), existing WMA habitat management guidelines, NY Natural Heritage Program's WMA Biodiversity Inventory Reports, Bird Conservation Area guidelines, and other documents available for individual WMAs.

### **SCOPE AND INTENT**

Primary purposes of this document:

- Provide the overall context of the habitat on the WMA and identify the target species for management;
- Identify habitat goals for WMA-specific target species, contemplating juxtaposition of all habitat types to guide the conservation and management of sensitive or unique species or ecological communities;
- Identify acreage-specific habitat goals for the WMA to guide management actions;
- Provide specific habitat management prescriptions that incorporate accepted best management practices;
- Establish a forest management plan to meet and maintain acreage goals for various forest successional stages;
- Address management limitations such as access challenges (e.g., topography); and
- Provide the foundation for evaluating the effectiveness of habitat management.

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

Definitions are provided in Appendix A.

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

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

## WMA OVERVIEW

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### LOCATION

Tug Hill WMA is located in DEC Region 6, Town of Montague, Lewis County (Figure 1). It is approximately 10 miles west of Lowville, New York and 27 miles east of Lake Ontario. Elevations range from 1,840 feet to 1,980 feet above sea level.

### TOTAL AREA

5,110 acres

### HABITAT INVENTORY

A habitat inventory of the WMA was completed in 2011 and should be conducted 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 Tug Hill WMA.

Habitat Type	Current Conditions (as of 2011)			Desired Conditions	
	Acres	Percent of WMA	Miles	Acres	Percent of WMA
Forest <sup>a</sup>	4,354	85%		3,899	Decrease to 76%
Young forest	0	0%		455	Increase to 9%
Shrubland	0	0%		0	No change
Grassland	0	0%		0	No change
Agricultural land	0	0%		0	No change
Wetland (natural) <sup>b</sup>	651	13%		651	No change
Wetland (impounded) <sup>b</sup>	76	1%		76	No change
Open water	0	0%		0	No change
Other (road edge habitat)	17	< 1%		17	No change
Roads	12	< 1%	8	13	Increase to < 1%
Rivers and streams			13		No change
<b>Total Acres:</b>	5,110	100%		5,110	

<sup>a</sup> 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.

<sup>b</sup> Wetland acreage does not include forested wetlands, since they are included in the Forest category.

## **ECOLOGICAL RESOURCES**

### ***Wildlife Overview:***

Wildlife species present on Tug Hill WMA are the typical species found throughout Northern New York and the Tug Hill Plateau, such as:

- Beaver, porcupine, muskrat, mink, otter, white-tailed deer, varying (snowshoe) hare
- White-throated sparrow, Swainson's thrush, northern goshawk, red-shouldered hawk, sharp-shinned hawk, wild turkey, ruffed grouse
- Painted turtle, snapping turtle
- Bullfrog, northern leopard frog, green frog, eastern American toad, spring peeper

### ***Wildlife and Plant Species of Conservation Concern:***

The following federal or state listed Endangered (E), Threatened (T), or Special Concern (SC) species and/or Species of Greatest Conservation Need (SGCN) may occur on the WMA (Table 2).<sup>1</sup> SGCN listed below include species that have been documented on or within the vicinity of the WMA and are likely to occur in suitable habitat on the WMA. Other SGCN may also be present on the WMA. Data sources include: the NY Natural Heritage Program, NY Breeding Bird Atlases,<sup>2</sup> NY Reptile and Amphibian Atlas,<sup>3</sup> DEC wildlife surveys and monitoring, and eBird.<sup>4</sup>

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

<b>Species Group</b>	<b>Species</b>	<b>Federal Status</b>	<b>NY Status</b>	<b>NY SGCN Status</b>
Birds	American bittern		SC	x
	American black duck			HP
	American woodcock			x
	Bald eagle		T	x
	Black-billed cuckoo			x
	Blue-winged teal			x
	Brown thrasher			HP
	Canada warbler			HP
	Northern goshawk		SC	x
	Olive-sided flycatcher			HP
	Red-shouldered hawk		SC	x
	Ruffed grouse			x
	Sharp-shinned hawk		SC	
	Whip-poor-will		SC	HP
	Wood thrush			x
Mammals	None known			

<sup>1</sup> 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>.

<sup>2</sup> Available online at <http://www.dec.ny.gov/animals/7312.html>.

<sup>3</sup> Available online at <http://www.dec.ny.gov/animals/7140.html>.

<sup>4</sup> Available online at <http://ebird.org/content/ebird/about/>. © Audubon and Cornell Lab of Ornithology.



Table 2 cont.				
Species Group	Species	Federal Status	NY Status	NY SGCN Status
Amphibians and reptiles	Blue-spotted salamander		SC	HP
	Eastern ribbon snake			x
	Smooth green snake			x
	Snapping turtle			x
	Wood turtle		SC	HP
Fish	Eastern sand darter		T	x
Invertebrates	None known			
Plants	Wild sweet-william		E	

### ***Significant Ecological Communities:***

There are four noteworthy natural communities located on Tug Hill WMA 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 noteworthy ecological communities occur on the WMA; community descriptions are from *Ecological Communities of New York State, Second Edition*<sup>5</sup> (Figure 2):

- **Spruce-Fir swamp (S3)** - a conifer or sometimes mixed swamp that occurs on acidic muck to shallow peat. This community typically occurs in a drainage basin, in some cases filling the basin, but also can occur at the edge of a lake or pond, or along gentle slopes of islands where there is some nutrient input from groundwater discharge or subsurface flow. In the Adirondacks and the Tug Hill these swamps are often found in drainage basins occasionally flooded by beaver (*Castor canadensis*).
- **Shrub swamp (S5)** - a mostly inland wetland dominated by tall shrubs that occurs along the shore of a lake or river, in a wet depression or valley not associated with lakes, or as a transition zone between a marsh, fen, or bog and a swamp or upland community. The substrate is usually mineral soil or muck. A few examples may have a shallow layer of sphagnum peat. This is a very broadly defined type that includes several distinct communities and many intermediates. Shrub swamps are very common and quite variable. They may be codominated by a mixture of species, or have a single dominant shrub species.
- **Rocky headwater stream (S4)** - the aquatic community of a small- to medium-sized perennial rocky stream typically with a moderate to steep gradient, and cold water that flows over eroded bedrock, boulders, and/or cobbles in the area where a stream system originates. These streams usually have poorly defined meanders (*i.e.*, low sinuosity) and occur in confined landscapes. These streams are typically shallow, narrow, have a relatively small low flow discharge, and usually represent a network of mostly 1<sup>st</sup> and 2<sup>nd</sup> order stream segments (*sensu* Strahler 1957), although larger rocky headwater streams may be 3<sup>rd</sup> order. These streams typically include alternating riffle and pool sections.

<sup>5</sup> 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>.



Most of the erosion is headward, and deposition is minimal. Waterfalls, chutes, flumes, and cascades are typically present; these are treated here as features of the more broadly defined community. The predominant source of food energy to the stream biota is terrestrial leaf litter or organic matter from the surrounding forest (*i.e.*, these are allochthonous streams); trees shading the stream reduce primary productivity. These streams have high water clarity and are well oxygenated. They are typically surrounded by upland forests and situated in a confined valley. Stream segments can alternate between rocky and marsh headwater streams.

- **Beech-Maple Mesic Forest (S4)** - a northern hardwood forest with sugar maple (*Acer saccharum*) and American beech (*Fagus grandifolia*) codominant. This is a broadly defined community type with several regional and edaphic variants. These forests occur on moist, well-drained, usually acid soils. Common associates are yellow birch (*Betula alleghaniensis*), white ash (*Fraxinus americana*), hop hornbeam (*Ostrya virginiana*), and red maple (*Acer rubrum*).

Additional information about significant ecological communities is available in the Tug Hill WMA Biodiversity Inventory Final Report (1995) prepared by the NY Natural Heritage Program. The biodiversity report from 1995 indicated one significant ecological community, balsam flat and is not currently listed on the current GIS database.

### ***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 Tug Hill WMA include:

- 24 wetlands regulated by Article 24 of the Environmental Conservation Law (ECL) and several additional 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.
- 17 streams (a watercourse entirely within the WMA) or segments of streams (a stream that meanders in and out of the WMA). The highest stream classification is Class C(ts), therefore some streams are regulated by Article 15 of the ECL. The (ts) standard indicates trout spawning observed within the stream. State agencies are exempt from the provisions of Article 15, but all water quality standards will be adhered to.<sup>6</sup>

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*.<sup>7</sup> 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.

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<sup>6</sup> Information about stream classification is available online at <http://www.dec.ny.gov/permits/6042.html>.

<sup>7</sup> Available online at <http://www.dec.ny.gov/outdoor/104218.html>.

## LANDSCAPE CONTEXT

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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 Tug Hill WMA (Figures 4 and 5). The surrounding landscape within a three mile radius of the WMA is composed of the following land cover types:

- Deciduous forest (55%)
- Wetlands (27% combining open water, emergent, and woody wetlands)
- Evergreen forest (12%)
- Early successional shrubland (3%)
- Mixed forest (2%)
- Grassland (1%)

Nearby conservation lands, which account for a significant portion of the surrounding landscape, include East Branch Fish Creek Conservation Area (14,500 acres) managed by The Nature Conservancy (TNC), which borders the southern portion of Tug Hill WMA. Multiple state forests surround the WMA, including:

- Cobb Creek State Forest (2,185 acres)
- Gould's Corners State Forest (2,045 acres)
- Granger State Forest (734 acres)
- Grant Powell State Forest (8,077 acres)
- Lookout State Forest (3,915 acres)
- Pinckney State Forest (2,091 acres)
- Sears Pond State Forest (5,648 acres)
- Tug Hill State Forest (12,242 acres)

Management goals for these state forests are provided in the Tug Hill North UMP.<sup>8</sup>

The predominant land use in the surrounding landscape is timber production in intermediate/mature forests (Figures 4 and 5).

Tug Hill WMA is located in the heart of the Tug Hill Plateau, a region in northern New York that covers more than 2,000 square miles between Lake Ontario and the Adirondacks. The core of the Tug Hill region consists of 800 square miles of mostly undeveloped, heavily forested land. It is the third largest contiguous forested area in New York, after the Adirondacks and Catskills. The region may be best known for its heavy snowfalls, often receiving more than 200 inches of snow per year. The headwaters to five major watersheds are located in the Tug Hill region (Salmon River, Sandy Creek, Mohawk River, Oneida Lake, and Black River).

Similar to the rest of the Tug Hill region, Tug Hill WMA is a mix of forest and wetland habitat. Currently, the forested landscape on the WMA includes no young forest habitat, in contrast to DFW's Young Forest Initiative (YFI) goal of managing at least 10% of the forested landscape on

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<sup>8</sup> Available online at <http://www.dec.ny.gov/lands/74515.html>.

most WMAs as young forest.<sup>9</sup> Considering the limited amount of young forest on both the WMA and surrounding landscape, creating additional young forest habitat is desirable. The created young forest will provide cover, forage, and nesting habitat for a wide variety of species in an area that lacks disturbance dependent habitat. The added diversity of habitat will also increase species richness.

## ***II. MANAGEMENT STRATEGIES BY HABITAT TYPE***

DEC will continue active management of wildlife habitats on Tug 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**

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

***Young forest:*** young or regenerating forested acres, which are typically 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.

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<sup>9</sup> 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>.

Forest management on Tug 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 YFI to increase the amount of young forest on WMAs to benefit wildlife that require this transitional, disturbance-dependent habitat.



**Tug Hill WMA mature hardwood forests with an old road drainage area.**

Photo: NYSDEC

### **MANAGEMENT OBJECTIVES**

- Increase young forest habitat from 0 acres to 455 acres (10% of the total forested area), with high stem densities to provide cover for ruffed grouse and American woodcock, and food and cover resources for varying hare.
- Provide small patches (<5 acres) of softwoods as shelter for ruffed grouse and varying hare by planting parts of the patch clearcuts with red spruce or other native softwoods.
- Create forest openings (20 acres) for American woodcock by maintaining small open areas in the patch clearcuts.
- Encourage/seed/plant aspen where necessary with a five year inspection to confirm growth. Once the aspen reaches 20 feet tall, harvest the area to promote root sprouts.

### **DESCRIPTION OF EXISTING FOREST HABITAT AND TARGET SPECIES**

Tug Hill WMA exhibits large quantities of forested habitat ranging from small pole-timber to mature sawtimber; dominant species include red maple, sugar maple, American beech, black cherry, and yellow birch. Balsam fir, red spruce, and black spruce can be found on parts of the WMA, primarily in the forested wetlands. In many of the mature forest stands, ferns and witch hobble cover the forest floor. Yellow birch, beech, red maple, and black cherry make up most of the understory regeneration in the stands that have been harvested in the past 20 years. None of the forested habitat is young forest under 10 years old; and the preferred stem densities, cover, and food sources of young forest dependent species are currently not available in high quantities. Beech and black cherry are the primary mast producing trees since oaks and hickories are uncommon in the Tug Hill region.

As of the 2011 inventory, there are 4,354 forested acres on Tug Hill WMA, including 910 acres of forested wetlands and 1 acre of plantations (Figure 6). Table 3 provides a summary of the forested areas, including the most common species found in each.

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

Forest Type	Acres (as of 2011)	Desired Acres	Overstory species
Natural forest (mature/intermediate)	3,443	3,013	maple, cherry, beech, yellow birch
Plantation	1	1	white spruce, white pine
Forested wetland	910	885	maple, spruce, balsam fir
Young forest	0	430	
Young forest (forested wetland)	0	25	
<b>Total Forested Acres:</b>	4,354	4,354	

Soil groups on Tug Hill WMA include Empeyville and Worth loams, as well as peat and muck, on the majority of the WMA.<sup>10</sup>

Target species for young forest include American woodcock, ruffed grouse, and varying (snowshoe) hare. These species rely on forest and young forest areas for nesting, foraging, and cover and will benefit from management that creates the following habitat requirements:

- American woodcock:
  - Singing/peenting grounds – Open areas from 1 to >100 acres, usually in an abandoned field.
  - Foraging – Moist, rich soils with dense overhead cover of young alders, aspen or birch.
  - Nesting – Young, open, second growth woodlands.
  - Brood rearing – Similar to nesting except also including bare ground and dense ground cover.
  - Roosting – Open fields (minimum of 5 acres) or blueberry fields and reverting farm fields.<sup>11</sup>
- Ruffed grouse:
  - Drumming areas – Downed trees surrounded by small diameter woody cover.
  - Foraging – Open areas with dense overhead cover of young forest with good mast production.
  - Nesting – Young, open forest stands or second growth woodlands.
  - Brood rearing – Herbaceous ground cover with a high midstory stem density.<sup>12</sup>

<sup>10</sup> 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>.

<sup>11</sup> 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.

<sup>12</sup> 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.



- Varying (snowshoe) hare:
  - Protective cover – Dense woody understory, covered fields and thickets. Ideally, dense stands of young conifer for daytime sanctuary
  - Foraging – Herbaceous vegetation in dense cover during summer, while woody browse is critical during winter.<sup>13</sup>

### **MANAGEMENT HISTORY**

DEC has conducted numerous commercial timber harvests on the Tug Hill WMA to improve the WMA's habitat and infrastructure. From 1995 to present, nine forestry prescriptions were implemented on 719 acres. Seven prescriptions were selection cuts; two were seed tree/shelterwood cuts (Table 4). No forest management has occurred since 2004.



**Tug Hill WMA 12 year seed tree regeneration cut at the end of Beech Street.**

Photo: NYSDEC

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<sup>13</sup> Gilbert, Meghan. 2012. *Under Cover: Wildlife of Shrublands and Young Forest*. Wildlife Management Institute. Cabot VT. 87 pages.

Table 4. Summary of past forest management previously conducted on Tug Hill WMA.

Year Cut	Contract #	Acres	Stands	Treatment
1995	R197205	35.4	L-91, A-17	Selection
1997	X197382	66.2	L-91, B-28,29	Selection
2000	R197799	74.1	L-91, C-15	Seed Tree Cut
2000	X197898	59.4	L-91, E-1,4	Seed Tree/Shelterwood
2001	X198045	54.7	L-91, D-2	Selection
2002	X198132	101.7	L-91, A-11	Selection
2004	X005118	55.8	L-91, E-6	Selection
2004	X198457	153.4	L-91, C-13, 15.1, 15.2, 17.1	Selection
2004	X198221	118.3	L-91, B-28,29	Selection

#### **IMPLEMENTATION PLAN AND ANTICIPATED SCHEDULE**

The following management is proposed for the next ten years in order to reach the young forest goal of 455 acres:

- **Management planned for 2016-2020** (Table 5, Figure 6):
  - **Stand C-4** – a 27 acre seed tree cut will be completed in the mature hardwood stand dominated by beech, black cherry, and sugar maple.
  - **Five stands (A-11, B-29, C-15.2, C-17.1, and D-2)** - Patch clearcuts will range in size from 2 to 10 acres, with roughly a quarter of each stand cut every five years. 177 acres will be cut from 2016-2020.
- **Management planned for 2021-2025** (Table 6, Figure 6):
  - **Five stands (A-11, B-29, C-15.2, C-17.1, and D-2)** - see above. An additional 176 acres in these stands will be cut from 2021-2025 for a total of 353 acres after 10 years.
  - **Stand B-18** – patch clearcut approximately 11 acres along the border of the forested wetland (Stand B-9).
  - **Stand B-19** – a 39 acre seed tree harvest will be completed in the mature hardwood stand consisting of red maple, sugar maple, beech, and yellow birch.
  - **Stands (A-12, B-9, B-30, and C-19)** - 25 acres of forested wetlands will be converted to young forested wetlands by creating 2-5 acre openings in the forested wetland that border the previously mentioned treatment areas.



Table 5. 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		
C-4	27	Medium Saw Timber 18"-23" DBH	Northern Hardwood	Seedling- Sapling- Natural	Wildlife	Seed Tree
A-11	43	Pole Timber 6"-11" DBH	Northern Hardwood	Seedling- Sapling- Natural	Wildlife	Patch Clearcut
B-29	36	Small Saw Timber 12"-17" DBH	Northern Hardwood	Seedling- Sapling- Natural	Wildlife	Patch Clearcut
C-15.2	54	Pole Timber 6"-11" DBH	Northern Hardwood	Seedling- Sapling- Natural	Wildlife	Patch Clearcut
C-17.1	30	Small Saw Timber 12"-17" DBH	Northern Hardwood	Seedling- Sapling- Natural	Wildlife	Patch Clearcut
D-2	14	Pole Timber 6"-11" DBH	Northern Hardwood	Seedling- Sapling- Natural	Wildlife	Patch Clearcut

Table 6. 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		
A-11	44	Pole Timber 6"-11" DBH	Northern Hardwood	Seedling- Sapling- Natural	Wildlife	Patch Clearcut
B-29	36	Small Saw Timber 12"-17" DBH	Northern Hardwood	Seedling- Sapling- Natural	Wildlife	Patch Clearcut
C-15.2	53	Pole Timber 6"-11" DBH	Northern Hardwood	Seedling- Sapling- Natural	Wildlife	Patch Clearcut
C-17.1	30	Small Saw Timber 12"-17" DBH	Northern Hardwood	Seedling- Sapling- Natural	Wildlife	Patch Clearcut
D-2	13	Pole Timber 6"-11" DBH	Northern Hardwood	Seedling- Sapling- Natural	Wildlife	Patch Clearcut
B-18	11	Seedling/Sapling <5" DBH	Northern Hardwood	Seedling- Sapling- Natural	Wildlife	Patch Clearcut
B-19	39	Pole Timber 6"-11" DBH	Northern Hardwood	Seedling- Sapling- Natural	Wildlife	Seed Tree
A-12	5	Pole Timber 6"-11" DBH	Forested Wetland	Seedling- Sapling- Natural	Wildlife	Patch Clearcut

Table 6 cont.

Stand	Acres	Size Class	Forest Type		Management Direction	Treatment Type
			Current	Future		
B-9	9	Pole Timber 6"-11" DBH	Forested Wetland	Seedling- Sapling- Natural	Wildlife	Patch Clearcut
B-30	4	Pole Timber 6"-11" DBH	Forested Wetland	Seedling- Sapling- Natural	Wildlife	Patch Clearcut
C-19	7	Pole Timber 6"-11" DBH	Forested Wetland	Seedling- Sapling- Natural	Wildlife	Patch Clearcut

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 C-4** – a 27 acre seed tree cut will be completed in the mature hardwood stand dominated by beech, black cherry, and sugar maple. The residual trees will primarily be cavity trees for wildlife, mast producing trees such as black cherry, and softwood species including red spruce and balsam fir. Hardwoods will most likely make up the majority of the regeneration, but care will be taken to encourage softwood regeneration. This will be accomplished by retaining patches of softwoods and larger individual softwood trees where possible.
- **Five stands (A-11, B-29, C-15.2, C-17.1, and D-2)** will be cut over a 20 year period. Patch clearcuts will range in size from 2 to 10 acres, with roughly a quarter of each stand cut every five years. 177 acres will be cut from 2016-2020 and the patch cuts will total roughly 350 acres after 10 years. These five stands vary in size class, species composition, and management history.
- **Management planned for 2021-2025** (Table 6, Figure 6):
  - **Five stands (A-11, B-29, C-15.2, C-17.1, and D-2)** - see above. An additional 176 acres in these stands will be cut from 2021-2025 for a total of 353 acres after 10 years.
  - **Stand B-18** – patch clearcut approximately 11 acres along the border of the forested wetland (Stand B-9), when Stand B-19 is treated. The purpose of the clearcuts in Stand B-18 is to create young forest habitat in the moist soils along the edge of the forested wetland, which will provide foraging habitat for American woodcock. Herbicide may be necessary to control beech regeneration.
  - **Stand B-19** – a 39 acre seed tree harvest will be completed in the mature hardwood stand consisting of red maple, sugar maple, beech, and yellow birch. The understory is primarily beech, with patches of very small sugar maples. The ferns, witch hobble, and beech in the understory may have to be treated with herbicide in order to encourage maple and yellow birch regeneration.
  - As conditions allow, roughly 25 acres of forested wetlands will be converted to young forested wetlands by creating 2-5 acre openings in the forested wetland **stands (A-12,**

- B-9, B-30, and C-19)** that border the previously mentioned treatment areas. These cuts will typically coincide with the treatment of the adjacent forested stands.
- **Management planned for beyond 2026** (Table 6, Figure 6):
    - **Stands (A-11, B-29, C-15.2, C-17.1, and D-2)** – 20-year patch clearcut rotations, which will begin in 2016, should be completed by 2035 and will total roughly 700 acres after 20 years.
    - As additional young forest acres are needed, consider patch clearcuts in **Stand E-4** or seed tree/shelterwood cuts in **Stands E-12, B-13, or B-23**.

### **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 7).

Table 7. Best Management Practices for forest management on WMAs.

<b>Resource</b>	<b>Guidance Document</b> <sup>14</sup>
Soils	<i>Rutting Guidelines for Timber Harvesting on Wildlife Management Areas</i>
Water quality	<i>NYS Forestry Best Management Practices for Water Quality</i>
Wildlife	<i>Retention Guidance on Wildlife Management Areas</i>
Plantations	<i>Plantation Management Guidance on Wildlife Management Areas</i>

#### ***Wildlife Considerations:***

Treatments should be designed to minimize impacts to sharp-shinned hawks, northern goshawks, and red-shouldered hawks. Boreal bird surveys were conducted in 2015 and no boreal birds were found at that time. Endangered and threatened bat species are of limited concern on this WMA as the current distribution of protected bat species does not extend to the elevations of Tug Hill WMA.

#### ***Forest Health Considerations:***

Fern cover and beech regeneration may limit the regeneration of other species. The use of herbicide will be considered in areas where beech and fern may be a problem.

Invasive species do not appear to be a significant problem on Tug Hill WMA at this time. Precautions such as inspections of equipment, plant/debris removal, or equipment cleaning may be implemented to prevent the spread of invasive species.

The mature forest stands are in moderate health. A significant number of the trees have low timber quality due to poor form and dieback. Severe forest tent caterpillar infestations in the summers of 2005-2008, followed by dry conditions, led to crown dieback and mortality in the maples. Beech bark disease is prevalent across much of the WMA. The overstory in many of the stands that were cut heavily in the 1990s and 2000s is in poor health, but the regeneration is doing well.

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

Tug Hill forests grow slower than forests in other parts of the state where the growing conditions are more favorable. The regeneration from a seed tree/shelterwood treatment that was completed over 10 years ago is still primarily a sapling stand. This indicates that the young forest classification potentially could be extended to regenerating stands that are 15-20 years old to account for the slower growth on Tug Hill. This should be re-evaluated when planning future management. If regeneration is found to be older than 10 years and serving as young forest or having young forest attributes, then this plan needs to be amended to extend beyond the current 10 year plan.

### ***Pre- and Post-treatment Considerations:***

Post-treatment herbicide spraying may be necessary to control beech and fern in order to allow regeneration of other species, particularly in Stands B-18, B-19, and C-4, where the fern cover is thicker.

Patches of softwoods will be planted in several of the stands after treatment. Red spruce will be the first choice, but other native softwoods may be considered. The plantings will increase species diversity in the primarily hardwood stands and will provide cover for wildlife. Planting locations and acreage goals will be outlined in the prescriptions.

Aspen regeneration will be encouraged when possible. Seeding and/or planting aspen in several of the patch clearcuts will be considered if it is determined that there is inadequate natural aspen regeneration.

Small patches, roughly 2 to 5 acres each, may be seeded with a blend of native grasses and forbs after treatment to create forest openings on landings and in Stands A-11, B-29, C-15.2, C-17.1, and D-2.

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 the guidelines established in the *Young Forest Initiative Monitoring Plan: 2016-2025*.<sup>15</sup> 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 target species selected for Tug Hill WMA, which may be assessed to determine response to management, include:

- American woodcock
- Ruffed grouse
- Varying (snowshoe) hare

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<sup>15</sup> Available online at <http://www.dec.ny.gov/outdoor/104218.html>.

## SHRUBLAND

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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. Typically characterized by > 50% canopy cover of shrubs and < 25% canopy cover of trees.

### **DESCRIPTION OF EXISTING SHRUBLAND HABITAT AND TARGET SPECIES**

There is no shrubland habitat on the WMA or any plan to develop such habitat.

## GRASSLAND

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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.

### **DESCRIPTION OF EXISTING GRASSLAND HABITAT AND TARGET SPECIES**

There is no managed grassland habitat on the WMA. The only grassland-like habitat currently found on Tug Hill WMA are roadside areas (17 acres). Roadsides are mowed on an annual/biannual schedule to discourage the growth of woody vegetation and maintain the conditions of the existing roads. These areas do provide minimal grassland-like edge habitat for some wildlife.

## AGRICULTURAL LAND

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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 HABITAT**

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

## WETLANDS (NATURAL AND IMPOUNDED)

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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 726 acres of emergent, scrub-shrub, and open water wetlands as they currently exist.
- Maintain 885 acres of forested wetlands as they currently exist.
- Create 25 acres of young forested wetlands to increase stem densities to assist in improving varying hare and American woodcock populations (see Forest section).
- Draw down the 65 acre impoundment in early fall to a maximum of 3 feet to encourage the growth of emergent aquatic vegetation and to provide foraging for American woodcock.
- Allow beavers to maintain the active beaver meadows and flooded areas.
- Prevent woody vegetation from growing on the impoundment dikes.
- Maintain control structures as needed for water level management.

### **DESCRIPTION OF EXISTING WETLAND HABITAT AND TARGET SPECIES**

Tug Hill WMA currently has 1637 acres of wetlands (32% of WMA), including 910 acres of forested wetlands (Figure 3). The wetlands are diverse and provide habitat for species such as:

- American woodcock, ruffed grouse
- Beaver, muskrat, varying (snowshoe) hare
- Snapping and painted turtle
- Bullfrog, green frog, Eastern American toad, spring peeper
- Migratory waterfowl

### **MANAGEMENT HISTORY**

Previous wetland management has not occurred other than the impounded wetland management, which includes dike maintenance and drawdowns to prevent the road from flooding. The impounded wetland was created in the 1970s when Running George Access Road was extended. Commercial sales on the WMA historically have been designed to avoid and buffer the wetlands.

### **IMPLEMENTATION PLAN AND ANTICIPATED SCHEDULE**

- **Management planned for 2016-2026:**
  - Continue routine maintenance on dikes and control structures so that they function to impound water (i.e., mowing dikes, beaver debris removal).
  - Perform biennial or triennial drawdowns for hydrophytic vegetation growth and/or road protection.
  - Convert 25 acres of mature forested wetland habitat to young forested wetlands by creating multiple 2-5 acre openings in the wetland stands bordering the other stands that are being treated, as conditions allow. The forested wetland stands to be treated are Stands A-12, B-9, B-30, and C-19. See the Forest section above for management details.

### **BEST MANAGEMENT PRACTICES**

Limit drawdowns of impounded wetlands after October 1<sup>st</sup> to protect hibernating amphibians.

### **MANAGEMENT EVALUATION**

DEC will perform regeneration assessments in the 25 acres of young forest created in forested wetlands. (See Forest section above for management evaluation details.)

## **OPEN WATER (WATERBODIES AND WATERCOURSES)**

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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**

There are 17 streams (a watercourse entirely within the WMA) or segments of streams (a stream that meanders in and out of the WMA). Beyond these streams, there is no other open water (no named lakes or ponds) or any plan to develop such habitat. Trout fishing was a management goal in 1969 and should continue to be incorporated into current management practices. The trout streams should be adequately buffered to promote better water quality and to provide suitable habitat by leaving woody debris within streams when encountered. Crossing of the



streams for logging activity will follow BMPs for Water Quality on WMAs to ensure no adverse impacts.



**Tug Hill WMA impounded wetland created by the Running George Access Road dike.**

Photo: NYSDEC

## HABITAT MANAGEMENT SUMMARY

In summary, Table 8 lists the habitat management actions planned for Tug Hill WMA over the next ten years. Any substantive changes will be appended to this HMP annually or as needed (Appendix D).

Table 8. Summary of habitat management actions recommended for Tug Hill WMA, 2016-2025. (Also see Figures 3 and 6.)

Habitat	Management Action	Acres	Timeframe
Forest	Seed tree cut in Stand C-4 with possible red spruce plantings.	27	2016-2021
Forest	Patch clearcut Stand A-11	87	2016-2025
Forest	Patch clearcut Stand B-29	72	2016-2025
Forest	Patch clearcut Stand C-15.2	107	2016-2025
Forest	Patch clearcut Stand C-17.1	60	2016-2025
Forest	Patch clearcut Stand D-2	27	2016-2025
Forest	Patch clearcut Stand B-18	11	2021-2025
Forest	Seed tree cut Stand B-19	39	2021-2025
Forested Wetland	Patch clearcut Stands (A-12, B-9, B-30, and C-19)	25	2021-2025
Grassland*	Maintain roadside edge habitats	17	Annual
Wetland	Continue routine maintenance on dikes and control structures so that they function to impound water (i.e., mowing dikes, beaver debris removal).	< 1	Annual
Wetland	Manage water levels in impoundments.	65	As required

\*Grassland-like habitat is the mowed roadside areas within the WMA.

### III. FIGURES

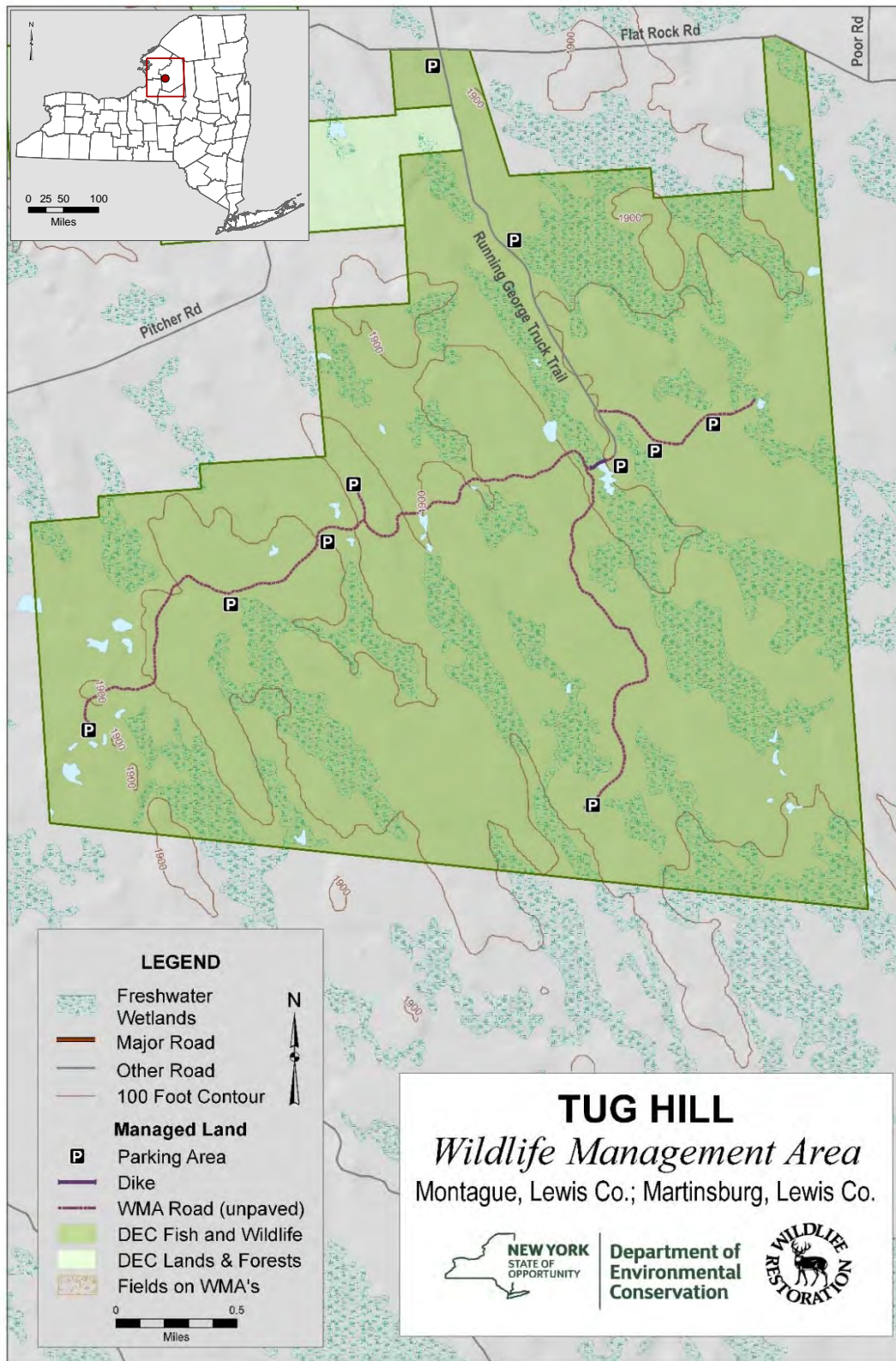


FIGURE 1. Location and access features at Tug Hill WMA.



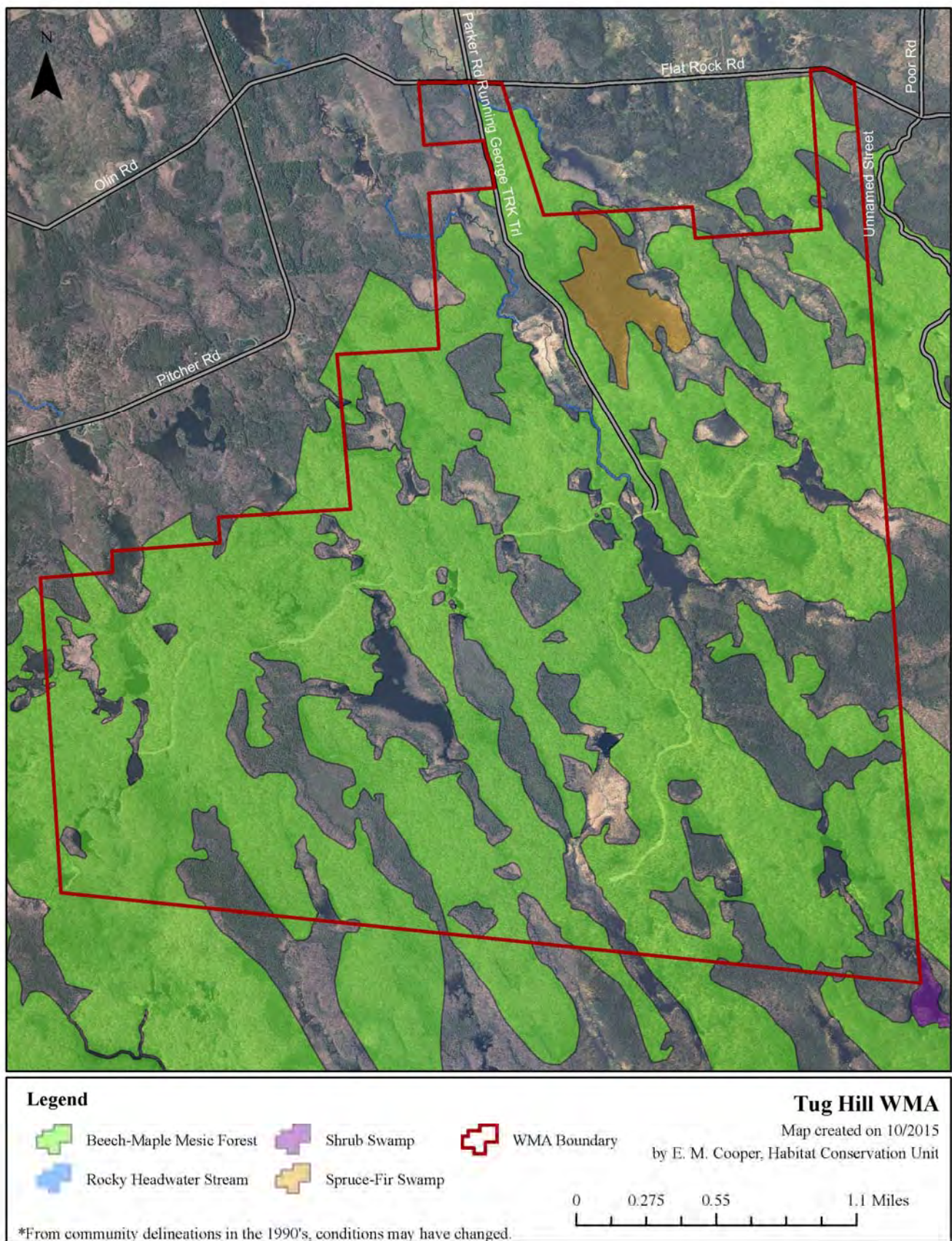


FIGURE 2. Significant ecological communities on Tug Hill WMA. Data from the NY Natural Heritage Program.



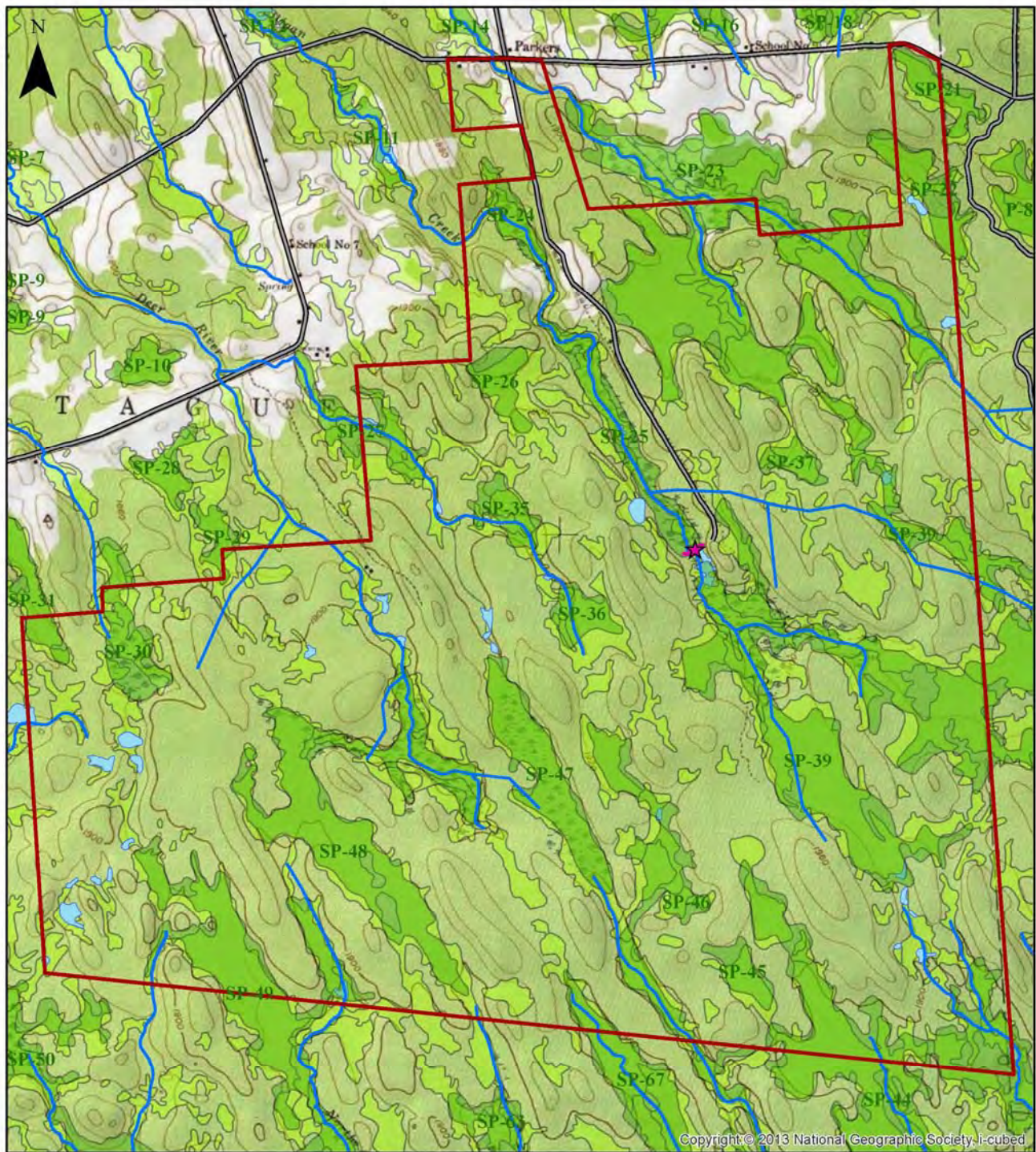


FIGURE 3. Wetlands, open water, and streams of Tug Hill WMA. Note: Wetland boundaries are not exact and may not be used for regulatory purposes without a current delineation.



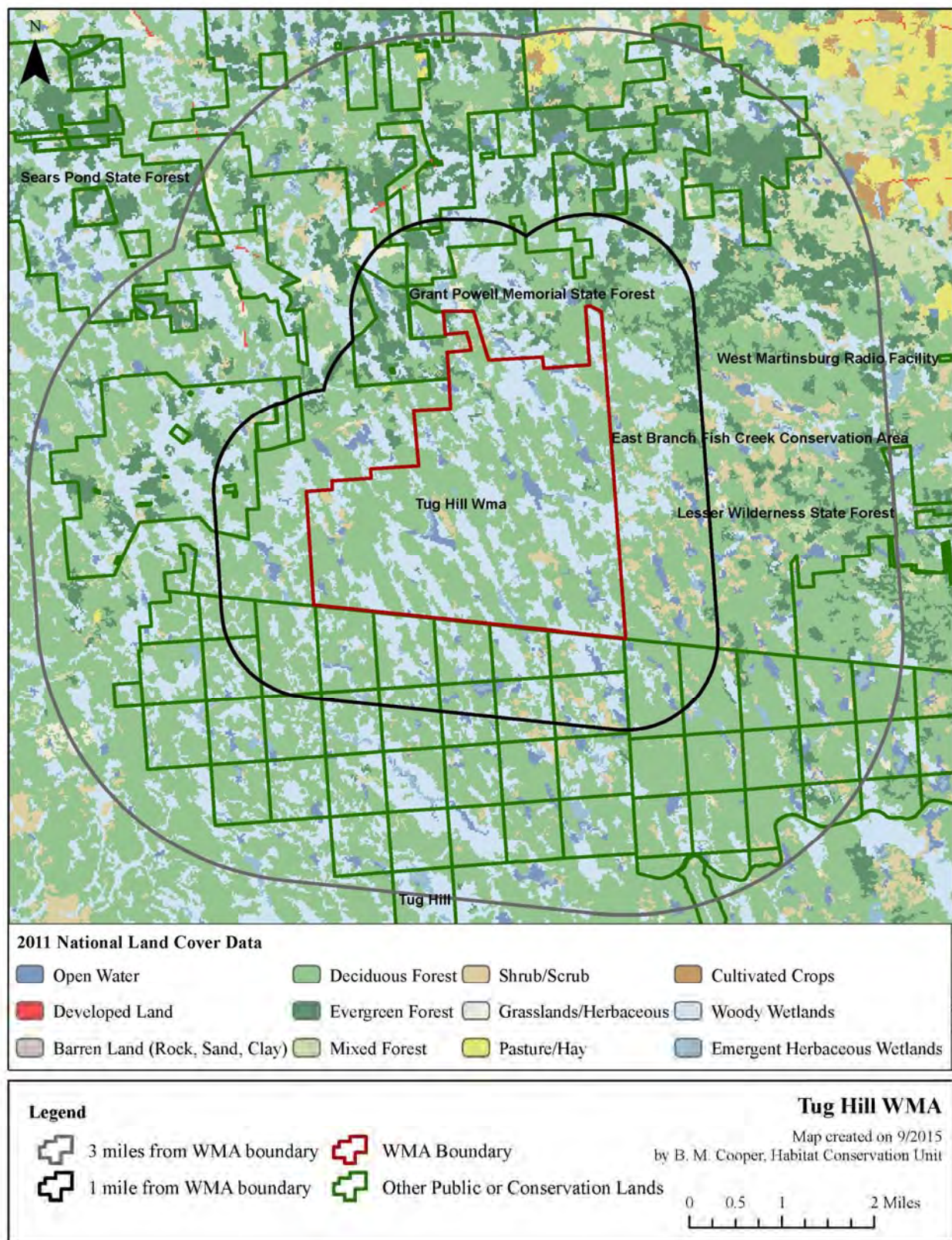


FIGURE 4. Land cover types and conservation lands in the landscape surrounding Tug Hill WMA. Conservation lands are from the NY Protected Areas Database available online at <http://www.nypad.org/>. Land cover types are from the 2011 National Land Cover Data (NLCD) and differ from the habitat types used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

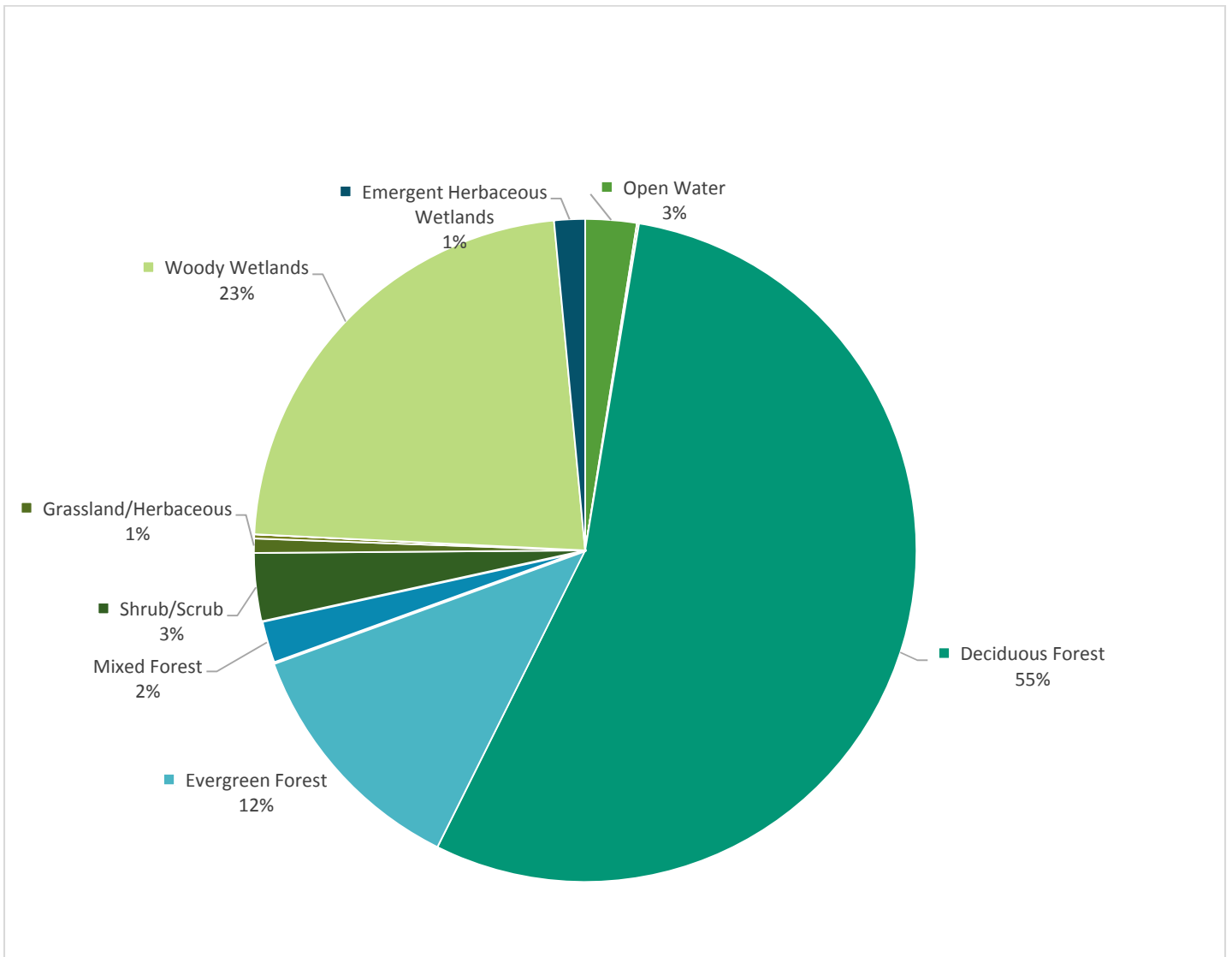


FIGURE 5. Percent cover of land cover types within three miles of Tug Hill WMA.

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



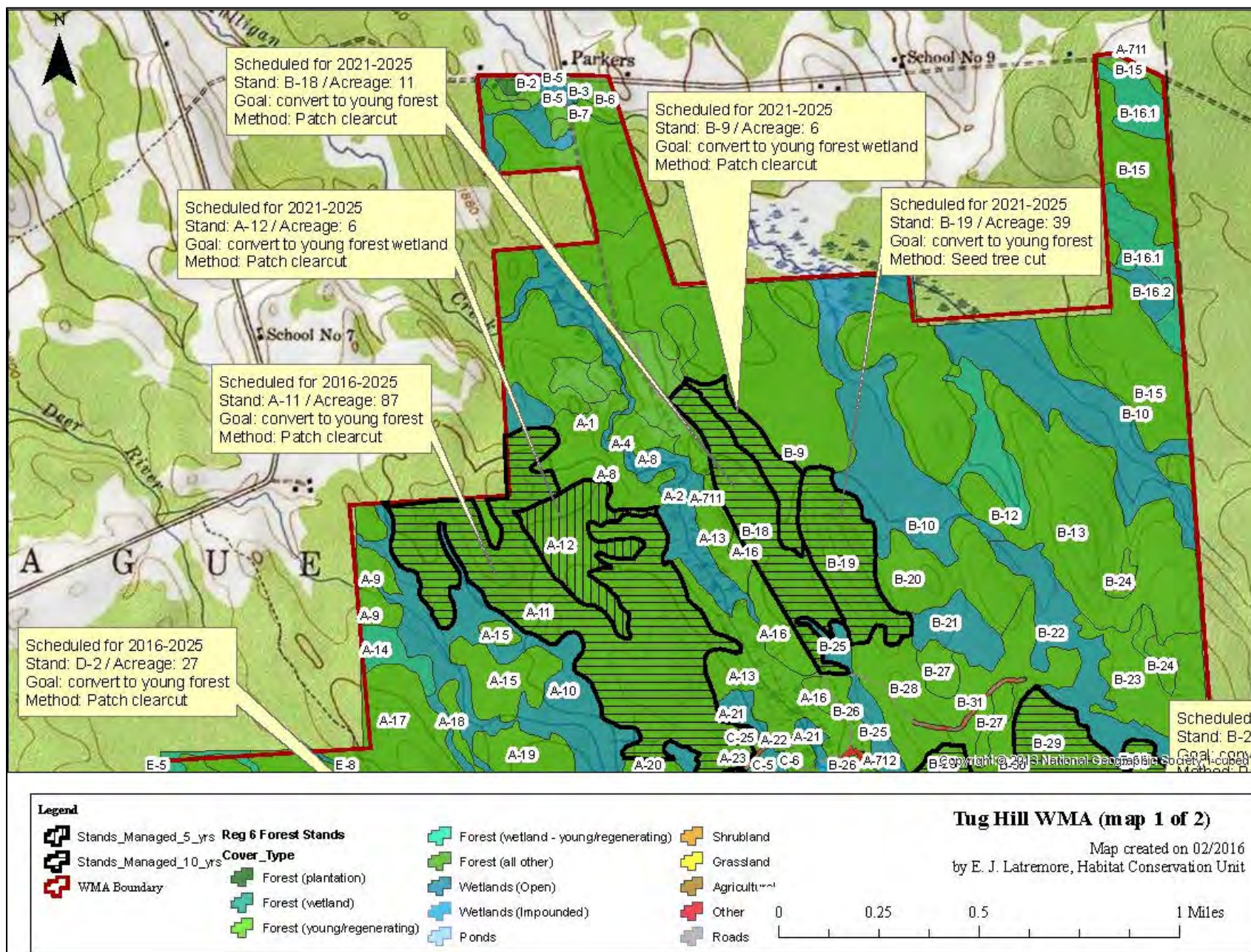


FIGURE 6A. Habitat types and location(s) of proposed management on Tug Hill WMA. Numbers indicate the stand number from habitat inventory.



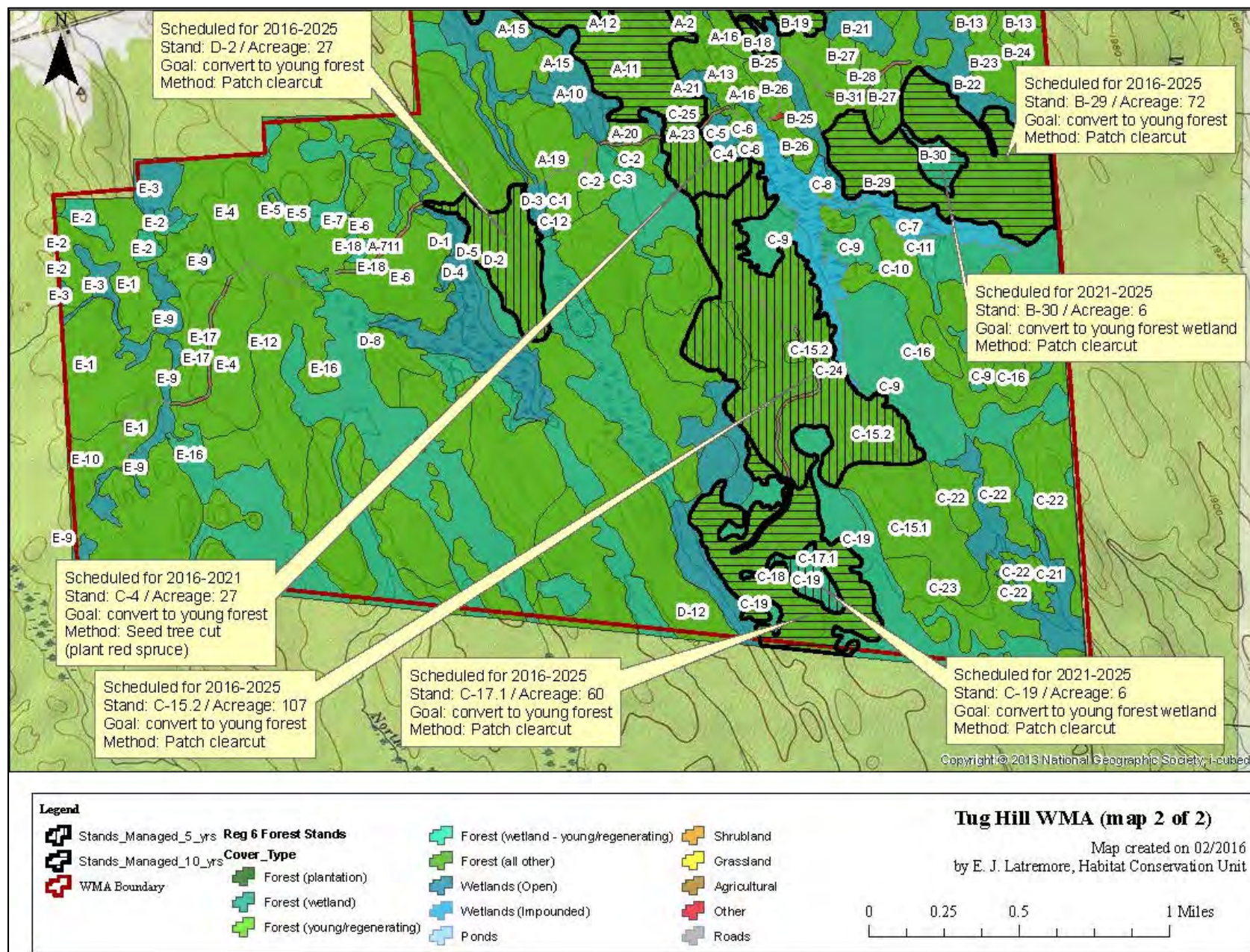


FIGURE 6B. Habitat types and location(s) of proposed management on Tug Hill WMA. Numbers indicate the stand number from habitat inventory.

## IV. APPENDICES

### APPENDIX A: DEFINITIONS

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The following key words were used in the development of this Habitat Management Plan. Definitions are adapted 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 (including technological, economical, and institutional considerations) 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-leaved, herbaceous plant other than those in the Poaceae (Gramineae), Cyperaceae, and Juncaceae families (i.e., not grass-like).

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

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

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

**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.

**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 Tug Hill WMA include: American woodcock, ruffed grouse, and varying (snowshoe) hare.

**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 (ECL 51-0703.4). 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](http://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

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

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

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

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

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



## APPENDIX C: FOREST MANAGEMENT PRESCRIPTIONS

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### 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:**

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**Central Office Lands and Forests Staff**

**Date**

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**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 “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

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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.

**FY 16-17 (4/1/16 - 3/31/17)**