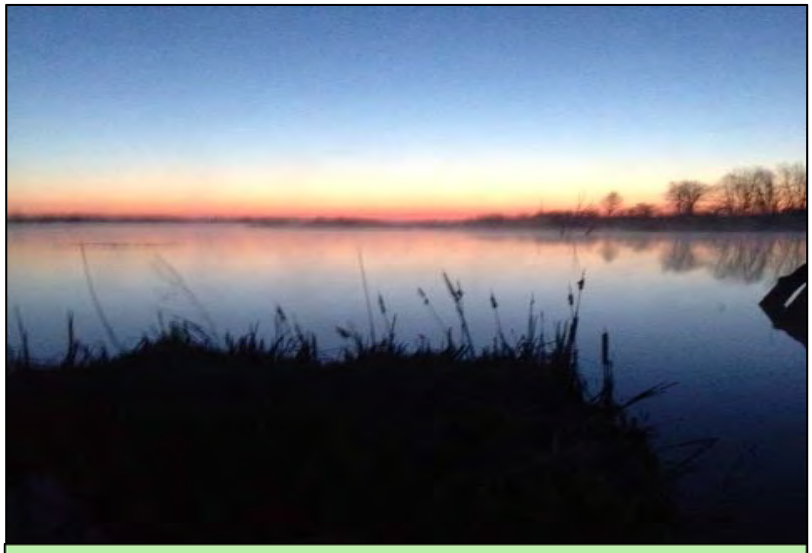
Habitat Management Plan
for
Upper and Lower Lakes Wildlife Management Area
2016 - 2025



Sunrise at Upper and Lower Lakes WMA.

Photo: Blanche Town, NYSDEC

Division of Fish and Wildlife
Bureau of Wildlife

317 Washington Street, Watertown, New York 13601

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Prepared by:

Erik Latremore, Biologist 1 (Wildlife), Rachel Hillegas, Forester 1
and James Canevari, Forestry Technician 2
Young Forest Initiative

Blanche Town, Fish and Wildlife Technician 3
Land Manager

Reviewed and approved by:

Regional Wildlife Manager Bureau of Wildlife	Date
Jim Farquhar, Chief Bureau of Wildlife	August 16, 2016 Date
Doug Stang, Acting Director Division of Fish and Wildlife Resources	August 16, 2016 Date

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SUMMARY

Upper and Lower Lakes Wildlife Management Area (WMA) was purchased between 1963 and 2006 with funds from the Park and Recreation Land Acquisition Bond Act and the Conservation Fund. Roughly half of this WMA is made up of a large wetland complex consisting of multiple wetland cover types. The wetlands are among the most extensive in St. Lawrence County and provide important habitat for marsh birds, waterfowl, and aquatic furbearers. The area is located on an important waterfowl migration route between eastern Canada and the Atlantic Coast. The upland portion of the WMA consists of woodland, small blocks of conifers, shrubland, grassland, and agricultural land. Recreational activities available on the area include bird watching, wildlife observation, trapping, fishing, and hunting.

The Indian Creek Nature Center, a non-profit organization, operates on the area under an agreement with New York State. The nature center provides 300 acres of habitat and trails to facilitate wildlife viewing.

Upper and Lower Lakes WMA is managed for both upland and wetland habitats. Key habitat management goals include:

- Maintaining 50% of WMA as wetland and open water to provide habitat for migratory waterfowl, marsh birds, amphibians, reptiles, and aquatic furbearers;
- Maintaining 32% as mature forest to provide habitat for woodland raptors and other forest dependent species;
- Managing 10% as grassland/shrubland habitat through cooperative agreements to provide diversity of habitats within the WMA;
- Managing 4% of the WMA (11% of the forested acres) as young forest (0-10 years) to promote habitat for a suite of species including golden-winged warbler, ruffed grouse, wild turkey, and American woodcock;
- Maintaining 2% of the WMA as roads and easements;
- Continuing the current agreement with the Indian Creek Nature Center, and;
- Maintaining 273 acres of the WMA as wildlife refuge habitat.

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 (HMP) are being developed for Wildlife Management

Areas (WMA) and other properties administered by DFW, Bureau of Wildlife, including select Multiple Use and Unique Areas. The goal of HMPs is to guide habitat management decision-making on those areas to benefit wildlife and facilitate wildlife-dependent recreation. HMPs guide management for a ten year time period, after which the plans and progress on implementation will be assessed and HMPs will be modified as needed.

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

SCOPE AND INTENT

Primary purposes of this document:

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

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

Definitions are provided in Appendix A.

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

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

WMA Overview

Location

Upper and Lower Lakes WMA is located in DEC Region 6, Towns of Canton and DeKalb, St. Lawrence County (Figure 1). This WMA is located 1.5 miles northwest of Canton and is adjacent to the hamlets of Rensselaer Falls and Woodbridge Corners. Upper and Lower Lakes WMA ranges between 300 and 380 feet above sea level.

Total Area

8,727 acres

Habitat Inventory

A habitat inventory of the WMA was conducted in 2014 and is proposed to be updated every ten to fifteen years to document the existing acreage of each habitat type and to help determine the location and extent of future management actions. Table 1 summarizes the current acreage by habitat type and the desired acreage after management. Desired conditions were determined with consideration of habitat requirements of targeted wildlife, current conditions on the WMA, and conditions in the surrounding landscape (see Landscape Context section below).

Table 1. Summary of current and desired habitat acreage on Upper and Lower Lakes WMA.

Habitat Type	Current Conditions (as of 2014)			Desired Conditions	
	Acres	Percent of WMA	Miles	Acres	Percent of WMA
Forest [a]	2,964	34%		2,804	Decrease to 32%
Young forest	198	2%		358	Increase to 4%
Shrubland	717	8%		717	No change
Grassland	210	2%		210	No change
Agricultural land	192	2%		192	No change
Wetland (natural) [b]	524	6%		524	No change
Wetland (impounded) [b]	2,413	28%		2,413	No change
Open water	1,407	16%		1,407	No change
Other (easements)	34	< 1%		34	No change
Roads	68	< 1%	19	68	No change
Rivers and streams			19		No change
Total Acres:	8,727	100%		8,727	

[a] Forest acreage includes all mature and intermediate age classes of natural forest, plantations, and forested wetlands. Young forest is reported separately. Definitions are provided in the Forest section of this plan.
[b] Wetland acreage does not include forested wetlands, since they are included in the Forest category.

ECOLOGICAL RESOURCES

Wildlife Overview:

Wildlife present on Upper and Lower Lakes WMA includes many species commonly found throughout northern New York and the St. Lawrence River Valley, such as:

- Beaver, muskrat, river otter
- American woodcock, ruffed grouse, marsh birds, waterfowl, golden-winged warbler
- White-tailed deer, varying (snowshoe) hare, cottontail rabbit, wild turkey
- Midland painted turtle, snapping turtle, wood turtle, Blanding's turtle
- Bullfrog, northern leopard frog, green frog, eastern American toad, spring peeper
- Northern water snake, garter snake

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).[1] SGCN listed below include species that have been documented on or within the vicinity of the WMA that are likely to occur in suitable habitat on the WMA. Other SGCN may also be present on the WMA. Data sources include: the NY Natural Heritage Program, NY Breeding Bird Atlases,[2] NY Reptile and Amphibian Atlas,[3] DEC wildlife surveys and monitoring, and eBird.[4]

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

Species Group	Species	Federal Status	NY Status	NY SGCN Status
Birds	American bittern		SC	x
	American black duck			HP
	American kestrel			x
	American woodcock			x
	Bald eagle		T	x
	Black-billed cuckoo			x
	Black tern		E	HP
	Blue-winged teal			x
	Blue-winged warbler			x
	Brown thrasher			HP
	Canada warbler			x
	Caspian tern			x
	Common loon		SC	x
	Common tern		T	x
	Golden-winged warbler		SC	HP
	Least bittern		T	x

[1] 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.
[2] Available online at http://www.dec.ny.gov/animals/7312.html.
[3] Available online at http://www.dec.ny.gov/animals/7140.html.
[4] 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**
Birds	Northern harrier		T	x
	Pied-billed grebe		T	x
	Ruffed grouse			x
	Sedge wren		T	HP
	Wood thrush			x
	Yellow-breasted chat		SC	x
	Whip-poor-will		SC	HP
	Wood thrush			x
Mammals	Indiana myotis	E	E	HP
	Little brown myotis (little brown bat)			HP
	Northern myotis (long-eared bat)	T	T	HP
Amphibians and reptiles	Blanding's turtle		T	HP
	Blue-spotted salamander			HP
	Smooth green snake			x
	Snapping turtle			x
	Wood turtle		SC	HP
Fish	Eastern sand darter		T	x
Invertebrates	Nine-spotted lady beetle			x
	Northern metalmark			HP
Plants	Mock-pennyroyal		T	

Significant Ecological Communities:

There are four significant natural communities located on Upper and Lower Lakes 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 significant ecological communities occur on the WMA; community descriptions are from *Ecological Communities of New York State, Second Edition* [5] (Figures 2 and 3):

- **Shallow emergent marsh** (S5) - a marsh meadow community that occurs on mineral soil or deep muck soils (rather than true peat), that are permanently saturated and seasonally flooded. This marsh is better drained than a deep emergent marsh; water depths may range from 15 cm to 1 m (6 in to 3.3 ft) during flood stages, but the water level usually drops by mid to late summer and the substrate is exposed during an average year. This is a very broadly defined type that includes several distinct variants and many intermediates. Shallow emergent marshes are very common and quite variable. They may be co-dominated by a mixture of species, or have a single dominant species.

[5] 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.

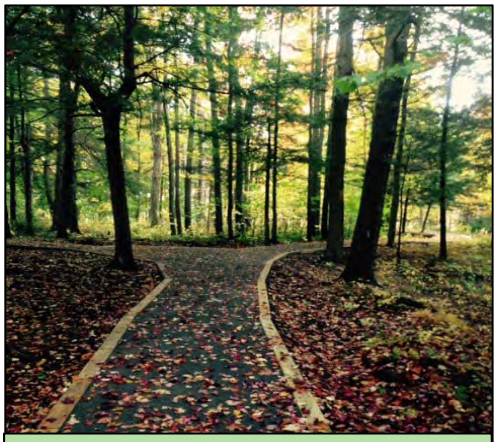
- **Northern white cedar swamp** (S2S3) - a conifer or mixed swamp that occurs on organic soils in cool, poorly drained depressions in central and northern New York, and along lakes and streams in the northern half of the state. These swamps are often spring fed or enriched by seepage of cold, minerotrophic groundwater, resulting in a stable water table and continually saturated soils. Soils are often rich in calcium. At some sites these soils have developed above a marl substrate.
- **Deep emergent marsh** (S5) - a marsh community that occurs on mineral soils or fine-grained organic soils (muck or well-decomposed peat); the substrate is flooded by waters that are not subject to violent wave action. Water depths can range from 15 cm to 2 m (6 in to 6.6 ft); water levels may fluctuate seasonally, but the substrate is rarely dry, and there is usually standing water in the fall. This is a somewhat broadly defined type that includes several variants based on the dominant plants. Deep emergent marshes are quite variable. They may be co-dominated by a mixture of species, or have a single dominant species.
- **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 sphagnous 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 co-dominated by a mixture of species, or have a single dominant shrub species.

Additional information about significant ecological communities is available in the Upper and Lower Lakes WMA Biodiversity Inventory Final Report (1996) prepared by the New York Natural Heritage Program.

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 Upper and Lower Lakes WMA include:

- Three wetlands regulated by Article 24 of the Environmental Conservation Law and several additional wetlands shown on the National Wetlands Inventory (NWI; Figures 4 and 5). 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 to determine impacts.



New access trail at Upper and Lower Lakes WMA.

Photo: Blanche Town, NYSDEC

- 29 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 therefore no streams are regulated by Article 15 of the Environmental Conservation Law, but water quality standards will be adhered to. [6]
- A 273 acre wildlife refuge to the west-southwest of the nature center and east-northeast of St. Lawrence County Route 15.
- The majority of the WMA is under special regulations, a lesser amount is open year round with statewide regulations in effect. Regulations are posted at parking lots and are available online or in hard copy from the Potsdam DEC office. Review of the regulations is recommended before visiting the area.

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.*[7] Some habitat management activities may either be prohibited or restricted in order to protect these features. Any deviations from these guidelines will be addressed in the individual stand prescriptions.

LANDSCAPE CONTEXT

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

- Deciduous forest (27%)
- Wetlands (27% combining open water, emergent, and woody wetlands)
- Pasture/hay and grasslands (27%)
- Cultivated crops (6%)
- Development (6%)
- Evergreen forest (4%)
- Early successional shrubland (2%)

Currently, the forested landscape on Upper and Lower Lakes WMA includes 6% young forest, slightly under DFW's Young Forest Initiative (YFI) goal of managing at least 10% of the forested landscape on most WMAs as young forest.[8] The remaining habitat types on the WMA consists of:

- Forest (34%)
- Wetland (34%)
- Open water (16%)
- Shrubland/grassland (11%)

[6] Information about stream classification is available online at http://www.dec.ny.gov/permits/6042.html.
[7] Available online at http://www.dec.ny.gov/outdoor/104218.html.
[8] 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.

The forest management proposed in this plan aims to replace poor quality forest, promote regeneration of native species, and establish a healthy mature forest for the future. This will benefit wildlife and provide recreational opportunities.

II. MANAGEMENT STRATEGIES BY HABITAT TYPE

DEC will continue active management of wildlife habitats on Upper and Lower Lakes WMA to provide the following benefits:

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

FOREST

Forested acreage includes the following forest types:

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

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

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

Creating young forest at Upper and Lower Lakes WMA in 2014.

Photo: Blanche Town, NYSDEC

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 Upper and Lower Lakes 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.

MANAGEMENT OBJECTIVES

- Increase young forest from 198 to 358 acres (11% of the forested area) to improve habitat for young forest-dependent wildlife, targeting golden-winged warbler, American woodcock, ruffed grouse, wild turkey and varying (snowshoe) hare.
    - Increase three tiered (vertical) edge habitat and clumped resting trees within a thinned mature forest edge for golden-winged warblers (5 acres).
    - Improve American woodcock foraging, nesting, and peenting habitat by patch clearcutting 100 acres.
    - Increase ruffed grouse foraging, nesting, and drumming habitat by utilizing seed tree cuts totaling 35 acres.
    - Improve varying (snowshoe) hare habitat through a 20 acre shelterwood cut.

DESCRIPTION OF EXISTING FOREST HABITAT AND TARGET SPECIES

Upper and Lower Lakes WMA upland forests consist of black cherry, ash, oak, aspen, maple, birch, bitternut hickory, American beech, elm, white pine, and eastern hemlock. The WMA also has a small number of white spruce, Japanese larch, Scotch pine, and red pine plantations (Table 3). There are pockets of white cedar stands that provide forage and cover for white-tailed deer. Several invasive species are found on the WMA, including buckthorn, Japanese knotweed, and honeysuckle. An overview of the habitat types can be found in Figures 8 and 9. 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 Upper and Lower Lakes WMA.

Forest Type	Acres (as of 2014)	Desired Acres	Overstory species
Natural forest (mature/intermediate)	2,319	2,159	maple, cherry, ash, aspen
Plantation	80	80	white spruce, pine, larch
Forested wetland	565	565	red maple, green ash, elm
Young forest	198	358	ash, maple
Young forest (forested wetland)	0	0	
Total Forested Acres:	3,162	3,162	

The soil across much of Upper and Lower Lakes WMA is shallow and often poorly to moderately drained. Soil groups include Borosaprists and Fluvaquents on the majority of the WMA, and a combination of multiple fine sand loams with rock outcrops on the remaining area of the WMA.[9] Due to these soil types and depth, tree growth is slow and poor in some areas,

[9] 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.

while trees are significantly healthier in other areas.

Target species for young forest include golden-winged warbler, American woodcock, ruffed grouse, wild turkey, and varying (snowshoe) hare. Other species that would benefit include brown thrasher, Canada warbler, yellow-breasted chat, nine-spotted lady beetle, and northern metalmark. 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:

- Golden-winged Warbler:
  - Singing ground – Open patches from 5 to 25 acres, usually in a patch with maple, oak, or hickory trees to perch on in the opening.
  - Nesting – Fields or patches from 5 to 25 acres that are heavily vegetated with herbaceous cover with a moderate density of shrubs near a mature forest edge.
  - Brood rearing – Similar to nesting except also including clumps of younger trees.
  - Foraging – Open areas with herbaceous vegetation that supports insects and spiders.[10] Males use mature forest during the breeding season.[11]
  - Post-fledging – Mature forest.[12]
- American Woodcock:
  - Singing/Peenting Ground – Open areas from 1 acre to over 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 but also including bare ground and dense ground cover.
  - Roosting – Open fields (minimum of 5 acres) or blueberry fields and reverting farm fields.[13]
- 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. [14, 15]
- Wild Turkey (in Northern Hardwood Forests):
  - Strutting areas – Open fields with short vegetation, <12 inches preferred, and mature hardwoods.

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[10] Golden-winged Warbler Working Group. 2013. Best Management Practices for Golden-winged Warbler Habitats in the Great Lakes Region. www.gwwa.org.
[11] Streby, H. M., J. P. Loegering, and D. E. Andersen. 2012. Spot mapping underestimates territory size and use of mature forest by breeding male Golden-winged Warblers. Wildlife Society Bulletin 36:40–46.
[12] Streby, H. M., S. M. Peterson, G. R. Kramer, and D. E. Andersen. 2015. Post-independence fledgling ecology in a migratory songbird: implications for breeding-grounds conservation. Animal Conservation. 18:228-235
[13] Sepik, G. F. et al. 1981. A Landowner's Guide to Woodcock Management in the Northeast, Moosehorn National Wildlife Refuge, USFWS. 25 pp.
[14] 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.
[15] Jones, B. C. et al. Habitat Management for Pennsylvania Ruffed Grouse, Pennsylvania Game Commission. 10 pp.

- Nesting cover – Blowdowns and the bases of trees and stumps in open hardwoods and brushy cover in early successional habitats and field edges.
- Brood rearing – Best brooding cover are fields with herbaceous vegetation from 12-18 inches preferred.
- Foraging – The habitat required ranges from open old-field areas to mature forests:
  - Spring diet – Tubers and invertebrates.
  - Summer diet – Poult diets consist primarily of invertebrates. Adult diets consist of invertebrates and tubers, switching over to herbaceous vegetation and soft mast as summer progresses.
  - Fall diet – Hard and soft mast, seeds, and invertebrates.
  - Winter diet – Hard and soft mast, seeds (birch if available) and hardwood buds.
- Winter cover – Mature conifer stands.
- Roosting – Mature hardwoods and softwoods. Adults with poults tend to roost on the ground under large trees with a dense understory of young trees, shrubs, downed trees, rock outcrops, or brushy fields. [16, 17]

- 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.[18]

MANAGEMENT HISTORY

Golden-winged warbler management is ongoing on WMA. Two 5-acre patches are currently being cut to improve golden-winged warbler habitat. This work should be completed in 2016. The cutting plan was created collaboratively between the Audubon Society of New York and DEC.

Additional golden-winged warbler habitat creation has been implemented across the WMA in recent years. Trees and brush have been removed from parts of Stands A-21.2 and A-92.1 to open the canopy. Shrubs and trees have been planted to advance succession in some abandoned fields. Mowing has been reduced in parts of Stands A-24.1, A-73, A-86, A-89.1, and A-91.1 to allow patches of shrubs and small trees to grow.

A hedgerow splits the northwestern section of Stand A-16.1. The area to the southwest of this hedgerow is being allowed to convert to a brushy field for golden-winged warbler habitat. The northern and eastern parts of the stand are scheduled to be mowed once per year to encourage grassland habitat (Figures 8 and 9).

IMPLEMENTATION PLAN AND ANTICIPATED SCHEDULE

Unfinished work outlined in the current golden-winged warbler habitat plans should be completed in 2016. Plans include the creation of two 5-acre openings (totaling 10 acres), the 14

[16] USDA – NRCS. 1999. Wild Turkey (*Meleagris gallopavo*) Fish and Wildlife Habitat Management Leaflet. 12 pp.
[17] Dickson, J. G. 1992. The Wild Turkey: Biology and Management. National Wild Turkey Federation and USDA Forest Service. Stackpole Books, PA. 480 pp.
[18] Gilbart, Meghan. 2012. *Under Cover: Wildlife of Shrublands and Young Forest.* Wildlife Management Institute. Cabot VT. 87 pages.

acre thinning and planting along Middle Access Road, and the 6 acre thinning along Irish Settlement Road. A portion of the area managed to enhance golden-winged warbler habitat will serve as a demonstration area for land managers from other locations to observe practices intended to support this species.

The following management is proposed for the next 10 years with a young forest acreage goal of reaching approximately 358 acres:

- **Management planned for 2016-2020** (Table 4, Figures 8 and 9):
    - **Stands A-51.1 and A-79** - Patch clearcut 50 acres of hardwoods, beginning a 20-year cutting rotation to regenerate aspen.
    - **Stand A-67.1** and eastern area of **Stand A-74** - Complete 35 acres of seed tree harvests.
- **Management planned for 2021-2025** (Table 5, Figures 8 and 9):
    - **Stands A-51.1 and A-79** - Continue patch clearcut rotation (50 acres).
    - Northern section of **Stand A-92.1** - Complete an initial 20 acre shelterwood cut.
    - **Stand A-79** - Thin the edges (5 acres) where it borders Stand A-76.2 to soften the transition from field to forest.

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

Stand	Acres	Size Class	Forest Type		Management Direction	Treatment Type
			Current	Future		
A-51.1	25	Small Saw Timber 12”-17” DBH	Other Natural Stands	Seedling-Sapling-Natural	Wildlife	Clearcut
A-67.1	23	Pole Timber 6”-11” DBH	Other Natural Stands	Seedling-Sapling-Natural	Wildlife	Seed Tree
A-74	12	Pole Timber 6”-11” DBH	Other Natural Stands	Seedling-Sapling-Natural	Wildlife	Seed Tree
A-79	25	Pole Timber 6”-11” DBH	Other Natural Stands	Seedling-Sapling-Natural	Wildlife	Clearcut

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

Stand	Acres	Size Class	Forest Type		Management Direction	Treatment Type
			Current	Future		
A-51.1	25	Small Saw Timber 12”-17” DBH	Other Natural Stands	Seedling-Sapling-Natural	Wildlife	Clearcut
A-79	5	Pole Timber 6”-11” DBH	Other Natural Stands	Seedling-Sapling-Natural	Wildlife	Thinning

Table 5. Continued

A-79	25	Pole Timber 6”-11” DBH	Other Natural Stands	Seedling-Sapling-Natural	Wildlife	Clearcut
A-92.1	20	Pole Timber 6”-11” DBH	Northern Hardwood	Seedling-Sapling-Natural	Wildlife	Shelterwood

Stand locations and planned management actions are also summarized in Figures 8 and 9. Specific forest stand descriptions and detailed management prescriptions will be prepared for each proposed forest management area prior to implementation (see template, Appendix C). Briefly, habitat management for each of these stands will include the following:

- Approximately 70 acres in **Stand A-51.1** (109 acres) and approximately 100 acres in the southern section of **Stand A-79** (221 acres), will be cut over a 20 year period. Patch clearcuts will range in size from 2 to 10 acres, with approximately 25% of the acreage cut every five years. The patch cuts will total roughly 100 acres in the first 10 years. Both stands have a significant aspen component which is beginning to reach the end of its life cycle. Cutting the stands will encourage dense aspen regeneration, which will create habitat for young forest species while ensuring aspen remains a significant part of the stands. Brush clearing and chemical treatments may be necessary in Stand A-79 due to thick dogwood and buckthorn in parts of the stand.
- Seed tree cuts will be completed in all of **Stand A-67.1** (23 acres) and on 12 acres in the eastern part of **Stand A-74** (22 acres). Both stands have an aging aspen component which may decrease or be lost if the stands are not managed. Cavity trees will be retained and mass producing species such as oaks and cherries will be kept as seed trees.
- Approximately 5 acres in **Stand A-79** that border **Stand A-76.2** (grassland) will be thinned to soften the forest edge within 100-150 feet of the boundary. Taller trees will be left closer to the forest and shorter trees closer to the field to create a tiered, stadium effect.
- A shelterwood harvest is proposed for 20 acres in the northern part of **Stand A-92.1** (99 acres). Softwoods and mast producing trees will be favored as the residual trees.

BEST MANAGEMENT PRACTICES

Forest management on all WMAs follows Best Management Practices to protect soil and water resources, promote quality wildlife habitat, and establish healthy forests (Table 6).

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

Resource	**Guidance Document** [19]
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*

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

Wildlife Considerations:

- Maintain buffers according to the Conservation Plan for Bald Eagles in New York State to prevent disturbance of Bald Eagles
- Limit cutting to winter where applicable to protect Indiana and northern long-eared bats.
- Retain mast producing trees for foraging species while removing elm, ash, and conifers in the golden-winged warbler management areas. Wildlife trees will be retained for migratory waterfowl, particularly in areas with flooded timber.
- Limit management actions to protect golden-winged warblers during their breeding season.
- Protect woodland nesting raptors, interior forest birds, and other mature forest species by avoiding harvests during critical nesting times of these species. Protection of these species will be evaluated on a case-by-case basis.

Forest Health Considerations:

Poorly drained soils across much of Upper and Lower Lakes WMA may limit habitat management and stand regeneration. Preferably, the prescribed treatments in stands with poor drainage would be completed when the ground is dry or frozen to limit adverse impacts to soil and water quality. While most of the WMA is fairly level there are occasional rock outcrops, especially along the southeastern side of the property, which may limit management activities.

Several northern white cedar stands can be found across Upper and Lower Lakes WMA. These uncommon and sensitive stands will not be managed and will be maintained since they offer valuable habitat for many species.

Pre- and Post-treatment Considerations:

Mechanical or chemical methods may be used to treat and control invasive species and interfering brush in the managed stands, as directed by the YFI team, WMA land manager, or regional wildlife manager.

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 (in prep). The Monitoring Plan will establish 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 Upper and Lower Lakes WMA, which may be assessed to determine response to management, include:

- American woodcock
- Golden-winged warbler

- Ruffed grouse
- Varying (snowshoe) hare

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

MANAGEMENT OBJECTIVES

- Maintain 717 acres of shrubland habitat for shrubland obligate species and other wildlife including pheasants, which are stocked on the area in the fall.
- Reduce mowing in several stands to allow patches of shrubs and small trees to grow, which will benefit golden-winged warblers.

DESCRIPTION OF EXISTING SHRUBLAND HABITAT AND TARGET SPECIES

There are 717 acres of shrublands on Upper and Lower Lakes WMA that consist of grey-stemmed dogwood, red-osier dogwood, buckthorn, honeysuckle, and willow. Incorporating early successional shrublands contiguous to open areas will benefit a suite of wildlife including several of the YFI target species:

- Golden-winged warbler
- American woodcock
- Ruffed grouse
- Wild turkey

MANAGEMENT HISTORY

In past years, emphasis was placed on the maintenance of shrubland habitat through mechanical mowing/brush-hogging. Mowing normally occurs during August to avoid interference with nesting.

IMPLEMENTATION PLAN AND ANTICIPATED SCHEDULE

- **Management planned for 2016-2021** (Figures 8 and 9, Table 7):
    - Reduce mowing of Stands A-24.1, A-73, A-86, A-89.1, and A-91.1 to allow patches of shrubs and small trees to grow.
    - Remove or thin several stands of heavy shrubs or brush, as needed.
- **Management planned for 2021- 2026** (Figures 8 and 9,Table 7):
    - Reduce mowing of Stands A-24.1, A-73, A-86, A-89.1, and A-91.1 to allow patches of shrubs and small trees to grow.
    - Remove thick brush and control invasive species in stands where necessary to meet objectives and improve golden-winged warbler habitat.

BEST MANAGEMENT PRACTICES

Consideration should be given to help increase the vertical composition of the shrublands to

benefit golden-winged warblers. "Feathering" of the shrublands should be implemented where possible.

- Northern harrier – Management of fields to occur after mid-August to prevent impacts to nesting.

MANAGEMENT EVALUATION

Future surveys may include golden-winged warbler point counts and woodcock surveys (pre- and post- treatment) to document any response to recent habitat management for shrublands and young forest.

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

- Create and maintain a three tiered edge from the early successional habitats to the mature forest areas to benefit golden-winged warblers, American woodcock, and ruffed grouse.
- Maintain and enhance the existing 210 acres of grassland fields by mowing annually. Avoid strip mowing to provide quality grassland bird habitat for breeding, nesting, and wintering species.
- Provide nesting habitat and cover for waterfowl.
- Monitor fields for invasive species and eradicate where feasible.

DESCRIPTION OF EXISTING GRASSLAND HABITAT AND TARGET SPECIES

There are 210 acres of grasslands within Upper and Lower Lakes WMA. Grasslands adjacent to wetlands provide important habitat for waterfowl and marsh bird nesting and foraging and larger grasslands are managed to benefit grassland nesting songbirds. Grasslands also provide suitable habitat for pheasants, which are stocked on the area in the fall and provide an additional gamebird hunting opportunity for sportsmen on the WMA. Many of the edges of the grasslands are considered hard edges and may need to be feathered to promote more golden-winged warbler habitat (Figures 8 and 9). Grassland management will restore and maintain habitat that will be used by migratory birds for nesting, roosting, forage, and cover. Grassland management may also improve habitat for pollinators (insects).

Species that benefit from grassland best management practices include:

- Golden-winged warbler
- American woodcock
- Ruffed grouse
- Wild turkey
- Northern harrier
- Ring-necked pheasant

MANAGEMENT HISTORY

Past management focused on the maintenance of grassland habitat through cooperative agreements and mechanical mowing/brush-hogging. Mowing normally occurs during August to avoid interference with nesting.

An Adopt a Natural Resource Agreement (AANR) was established in 2009 with the St Lawrence County Snowmobile Club along the highway/powerline corridor along the north and west boundaries of the area. It expired in 2014 and was renewed as a Volunteer Stewardship Agreement in effect from 2015 to May 31, 2018. The corridor is maintained by the public utility and/or the club and serves as a connector between Woodbridge Corners, Rensselaer Falls, and the McAdoo Road (St. Lawrence County Route 16).

Portions of Stands A-1.2, A-16.1, and A-57 are currently under a cooperative agreement for harvesting hay (Figures 8 and 9).

IMPLEMENTATION PLAN AND ANTICIPATED SCHEDULE

- **Management planned for 2016-2026** (Figures 8 and 9):
  - Continue mowing 210 acres of grassland fields (Stands A-1.2, A-16.1, and A-57) on an annual rotation as required to provide suitable habitat and access.
  - Continue management through the use of annual cooperative agreements and mechanical mowing/brush-hogging.

BEST MANAGEMENT PRACTICES

For more detailed information and recommendations see *A Plan for Conserving Grassland Birds in New York*.[20] In particular, refer to the plan for species-specific habitat requirements and detailed recommendations regarding grassland management and restoration techniques.

General Management Recommendations

- Northern harrier– Management of fields to occur after mid-August to prevent impacts to nesting.

MANAGEMENT EVALUATION

Future surveys may include golden-winged warbler point counts (pre- and post- treatment) to document any response to recent habitat management for grasslands and shrublands.

AGRICULTURAL LAND

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

[20] 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.

MANAGEMENT OBJECTIVES

- Maintain field/grassland habitat through cooperative agreements for American woodcock, ruffed grouse, wild turkey, golden-winged warblers, and pheasants.
- Prevent open areas from succeeding into shrublands.
- Continue current agricultural agreements on 192 acres to provide forage, cover, and nesting areas for wildlife.

DESCRIPTION OF EXISTING AGRICULTURAL LANDS HABITAT

Upper and Lower Lakes WMA currently has 257 acres in cooperative agreements for agricultural purposes. Row crops include 192 acres while hay crops include 65 acres, which are covered under the grassland section. Cropland is in rotation between corn and hay. Post-harvest of the row crops offers foraging opportunities to northern harriers, Canada geese, and wild turkey. White-tailed deer also benefit from the crops as a foraging area (Figures 8 and 9).

Species that benefit from agricultural habitats include:

- White-tailed deer
- Northern harrier
- Canada goose
- Wild turkey

MANAGEMENT HISTORY

There are 5 cooperative agreements in effect with local farmers involving row crops or the cutting of hay on the WMA. Additional agreements may be exercised in the future, if management plans and local interest support implementation.

Stands A-36.1, A-94.4, A-97.1, A-108.1, and A-110 are farmed with a 5 year cycle (1st year hay, 2nd & 3rd year corn, 4th & 5th year hay)

IMPLEMENTATION PLAN AND ANTICIPATED SCHEDULE

Continue management practices through leases and cooperators. Adjust agreements as necessary and according to the YFI team, land manager, and regional wildlife manager.

BEST MANAGEMENT PRACTICES

Continue to follow the rotation of 1st year hay, 2nd & 3rd year corn, and 4th & 5th year hay.

MANAGEMENT EVALUATION

None.

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 2,937 acres of emergent, scrub-shrub, and open water wetlands as they currently exist.
- Maintain 565 acres of forested wetlands as they currently exist.
- Provide habitat for wetland-dependent wildlife such as waterfowl, black tern, muskrat, and beaver by manipulating water levels at the impoundments.
- 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

There are 2,937 acres of wetlands within Upper and Lower Lakes WMA. There are also 565 acres of forested wetlands; please see the Forest section. The wetlands are among the most extensive in St. Lawrence County and provide important habitat for many wildlife species. The main wetland is impounded with two water control structures to benefit a wide range of wetland dependent species including waterfowl, marsh birds, shorebirds, ospreys, bald eagles, furbearers, reptiles, and amphibians (Figures 4 and 5). The wetlands are diverse and provide habitat for species such as:

- Least bittern, black tern, pied-billed grebe, sedge wren, northern harrier, osprey, bald eagle, swamp sparrow, marsh wren, common moorhen, sora, Virginia rail
- Beaver, muskrat
- Blanding's turtle, midland painted turtle
- Chorus frog, bullfrog, northern leopard frog, eastern American toad, spring peeper
- Migratory waterfowl

Emergent wetland at Upper and Lower Lakes WMA.

Photo: Blanche Town, NYSDEC

MANAGEMENT HISTORY

Fluctuating water levels are kept to a minimum with a target elevation of 306.5 – 307.0 feet, following date restrictions to protect various species. This allows stable pool levels. Drawdowns have been used to manage the wetland habitat on an as needed basis.

IMPLEMENTATION PLAN AND ANTICIPATED SCHEDULE

- **Management planned for 2016-2025:**
  - Continue routine maintenance on dikes and control structures so that they function to impound water (i.e., mowing dikes, beaver debris removal).
  - Conduct drawdowns every 5 to 10 years for vegetation growth.

BEST MANAGEMENT PRACTICES

Date restrictions for water level management or equipment in wetlands will be followed to protect species such as black terns and pied-billed grebes (May 1st – July 31st) and Blanding's turtle (October 1st – March 31st). Protect the shallow emergent marshes, to benefit least bitterns, by not allowing mechanical access to these areas.

MANAGEMENT EVALUATION

Monitor black terns as part of the Black Tern Statewide Survey and as part of the water level management of the wetlands. Surveys occur in mid- to late June during the peak breeding season. Counts of active nests and/or breeding adults are completed twice at each site within the survey period. Annual marsh bird surveys are also conducted on the area to monitor species such as least bittern, pied-billed grebe, sedge wren, swamp sparrow, marsh wren, common moorhen, sora and Virginia rail.

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., Upper Lake, Lower Lake).

MANAGEMENT OBJECTIVES

- Maintain 1,407 acres of open water as currently exists.
- Increase submerged aquatic vegetation habitat and encourage sedges, rushes, and other aquatic plants to germinate along the shoreline.

DESCRIPTION OF EXISTING OPEN WATER HABITAT

There are currently 1,407 acres of open water habitat within Upper and Lower Lakes WMA (Figures 4 and 5). The area has been used as a release site for purple loosestrife biocontrol agents, and has long been used as a site for experiments and monitoring for a variety of research undertaken by local universities. Recently the WMA has experienced a large growth of wild rice within the open water system that tends to choke out other native emergent vegetation. Maintaining higher water levels throughout the summer has been shown to somewhat control the height and density of the wild rice.

MANAGEMENT HISTORY

The impoundment that created most of the open water was constructed on the area in 1974 to allow for water level management. Fluctuating water levels are kept to a minimum with a target elevation of 306.5 – 307.0 feet. Drawdowns have been used to manage the wetlands to benefit a wide range of wetland dependent species including waterfowl, marsh birds, shorebirds, ospreys, bald eagles, furbearers, amphibians and reptiles.

IMPLEMENTATION PLAN AND ANTICIPATED SCHEDULE

Continue with current operating procedures and/or schedules and adjust according to habitat response, YFI team, Upper and Lower Lakes WMA land manager, and regional wildlife manger.

BEST MANAGEMENT PRACTICES

Water level drawdowns are necessary for vegetation management in marsh areas. Drawdowns help control vegetation and maintain an interspersion of marsh vegetation and open water needed by many marsh species and waterfowl. Drawdowns during the marsh bird nesting season will be avoided when possible, but drawdowns during this season will periodically be needed to provide effective vegetative control. Fluctuating water levels will be minimized to the extent possible, given the limitations of water fluctuation control, especially during drawdowns.

- Eastern sand darter (T) – limit in-water work where the darters are found.

MANAGEMENT EVALUATION

None.

HABITAT MANAGEMENT SUMMARY

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

Table 7. Summary of habitat management actions recommended for Upper and Lower Lakes WMA, 2016-2026. (Also see Figures 8 and 9.)

Habitat	Management Action	Acres	Timeframe
Forest	Rotational patch clearcut Stand A-51.1 (25 acres in each of the first two 5-year cuts)	50	2016-2025
Forest	Rotational patch clearcut Stand A-79 (25 acres every 5 years; total of 100 acres within 20 years)	50	2016-2025
Forest	Seed tree cut Stand A-67.1	23	2016-2020
Forest	Seed tree cut Stand A-74	12	2016-2020
Forest	Shelterwood cut Stand A-92.1	20	2021-2025
Forest	Thinning in Stand A-79 along the border of Stand A-76.2	5	2021-2025
Shrubland	Reduce mowing of Stands A-24.1, A-73, A-86, A-89.1, and A-91.1 to allow patches of shrubs and small trees to grow.	80	Annual
Shrubland	Add, remove and/or thin several stands of heavy shrubs or brush.		2016-2025, as needed
Grassland	Continue mowing grassland fields on an annual rotation.	± 210	Annual
Agricultural	Continue agricultural agreements (Stands A-36.1, A-94.2, A-94.4, A-97.1, A-108.1 and A-110) with a 5 year cycle of 1st year hay, 2nd & 3rd year corn, 4th & 5th year hay.	± 192	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.	2,937	Every 5 to 10 years
Open Water	Mange water levels to control wild rice.	1,407	Annual

III. FIGURES

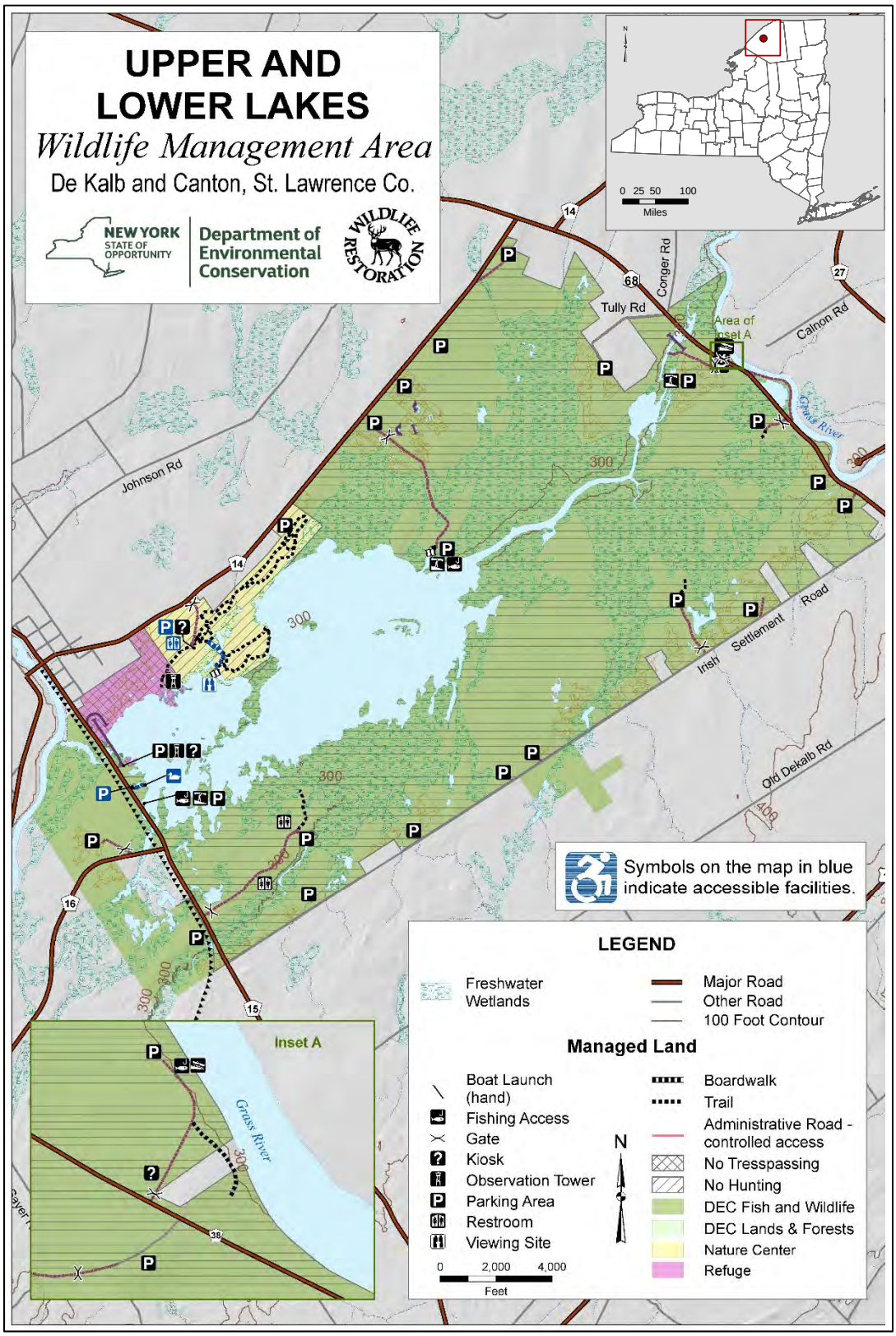

FIGURE 1. Location and access features at Upper and Lower Lakes WMA.

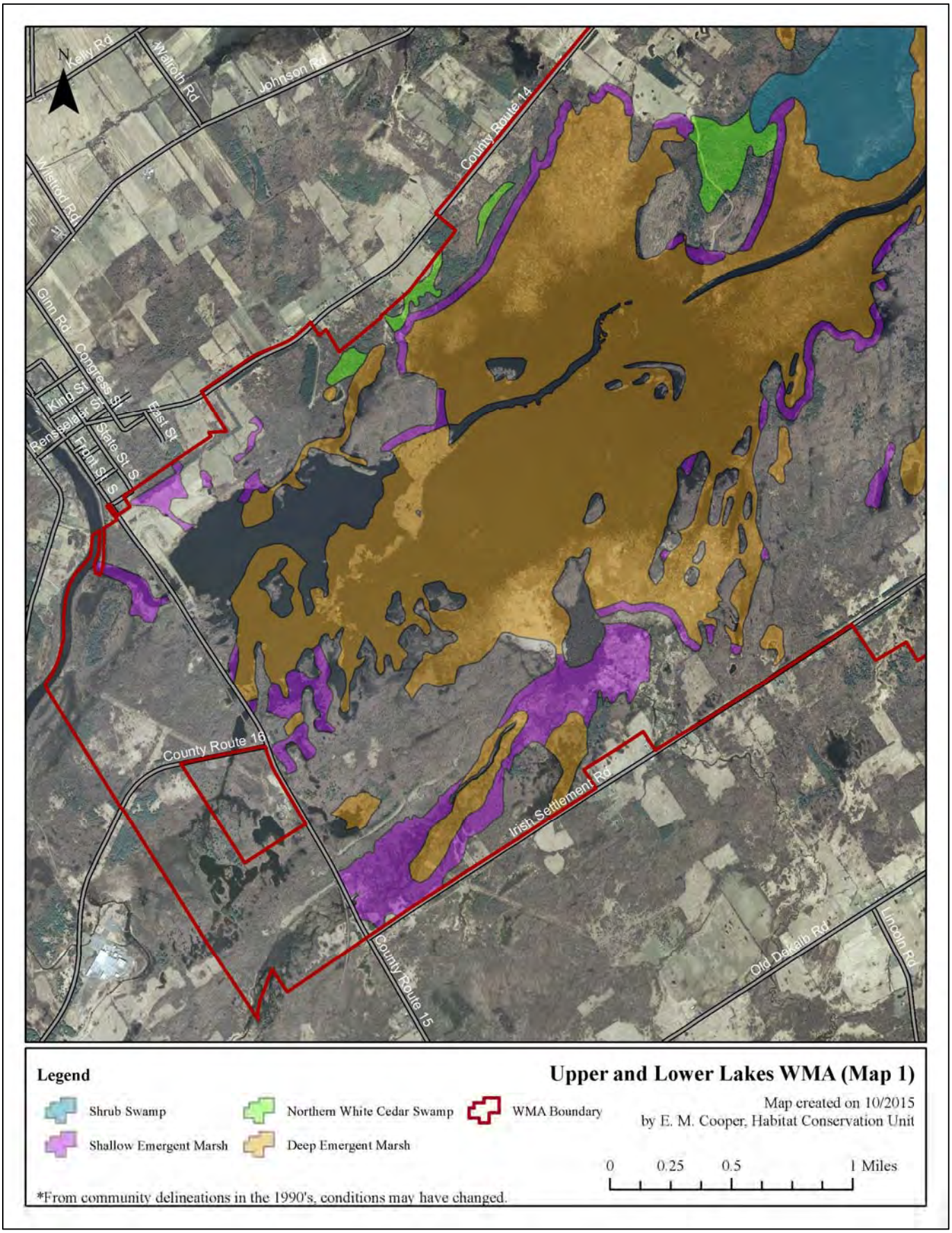

FIGURE 2. Significant ecological communities on Upper and Lower Lakes WMA. Data from the NY Natural Heritage Program.

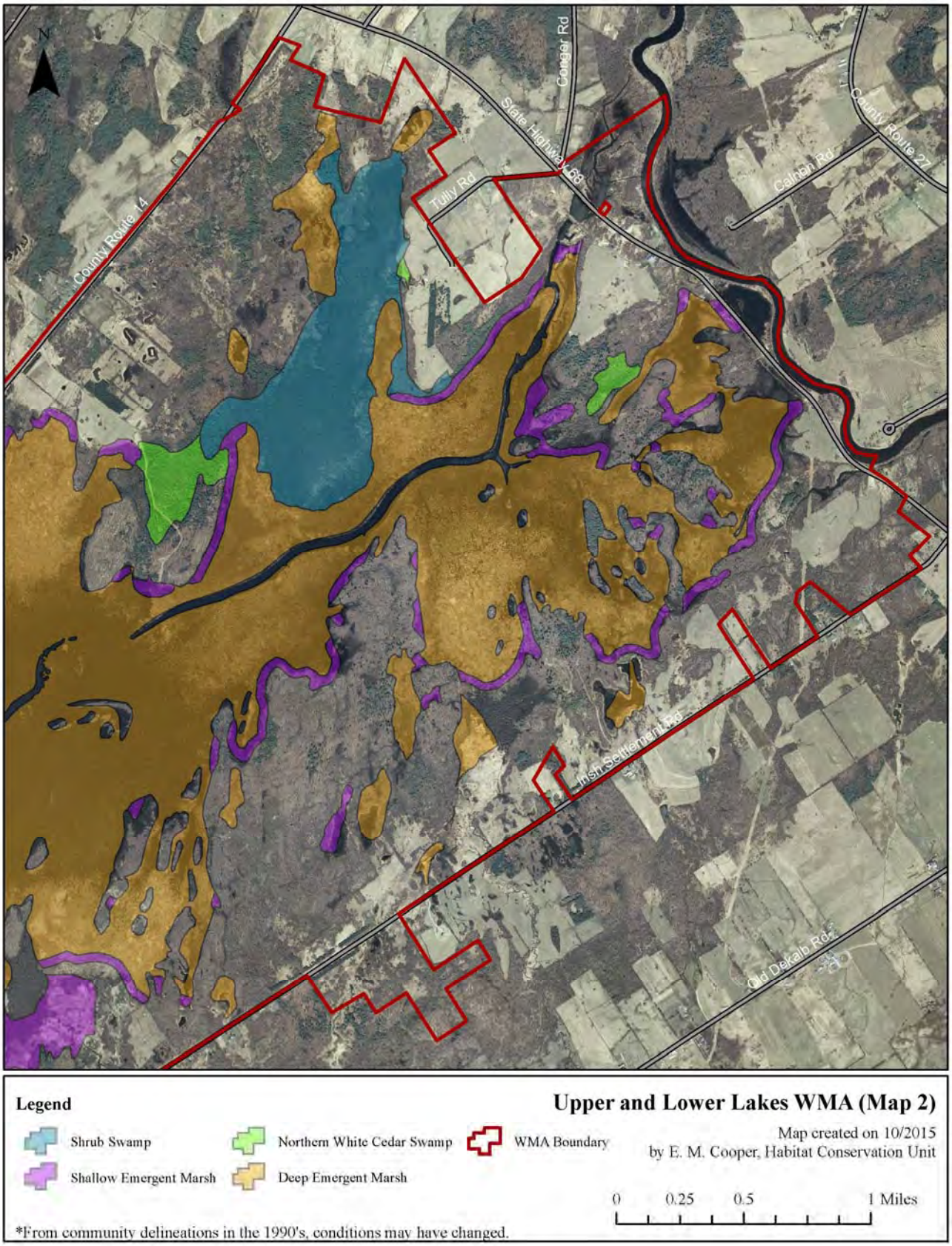

FIGURE 3. Significant ecological communities on Upper and Lower Lakes WMA. Data from the NY Natural Heritage Program.

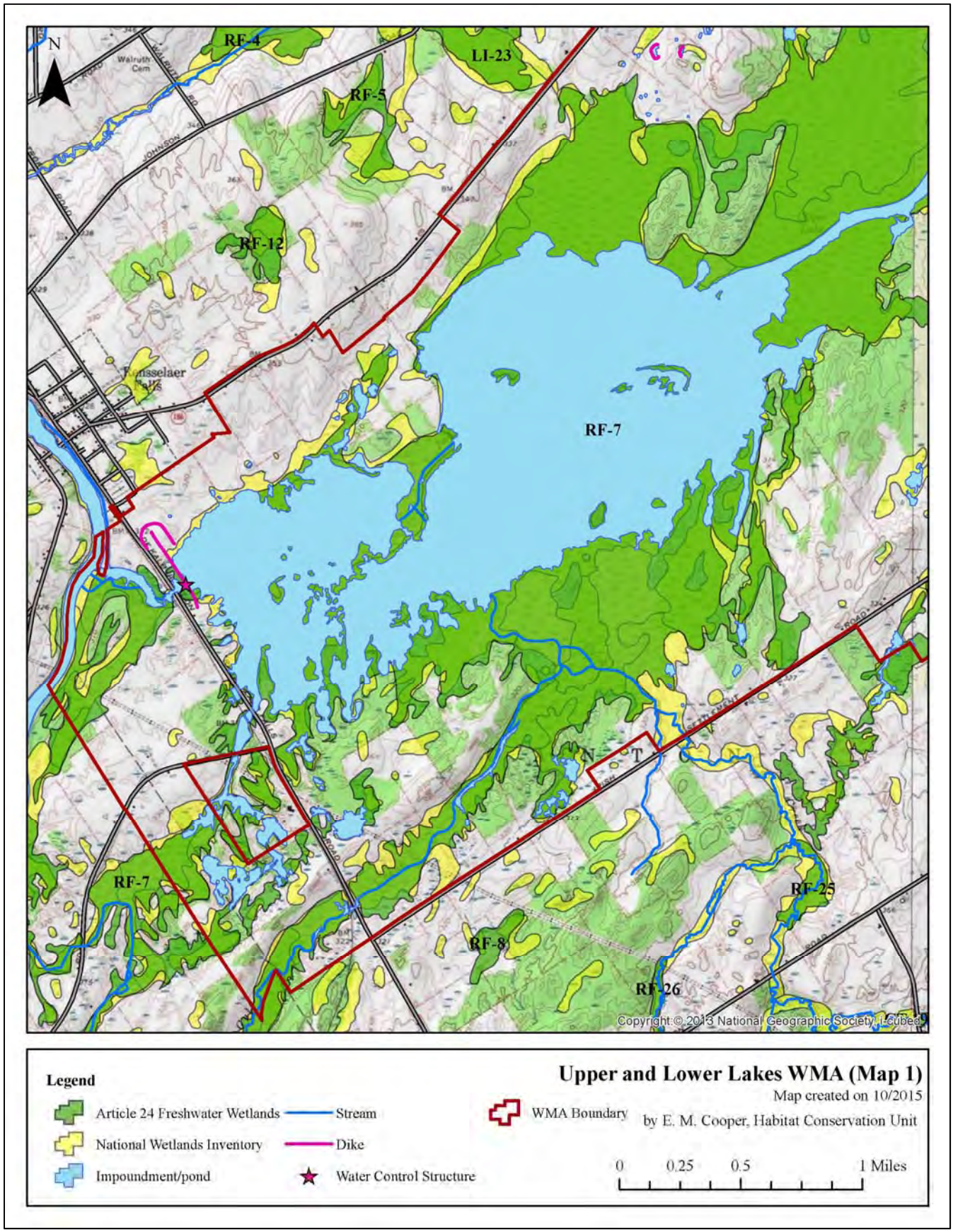

FIGURE 4. Wetlands, open water, and streams of Upper and Lower Lakes WMA. Note: Wetland boundaries are not exact and may not be used for regulatory purposes without a current delineation.

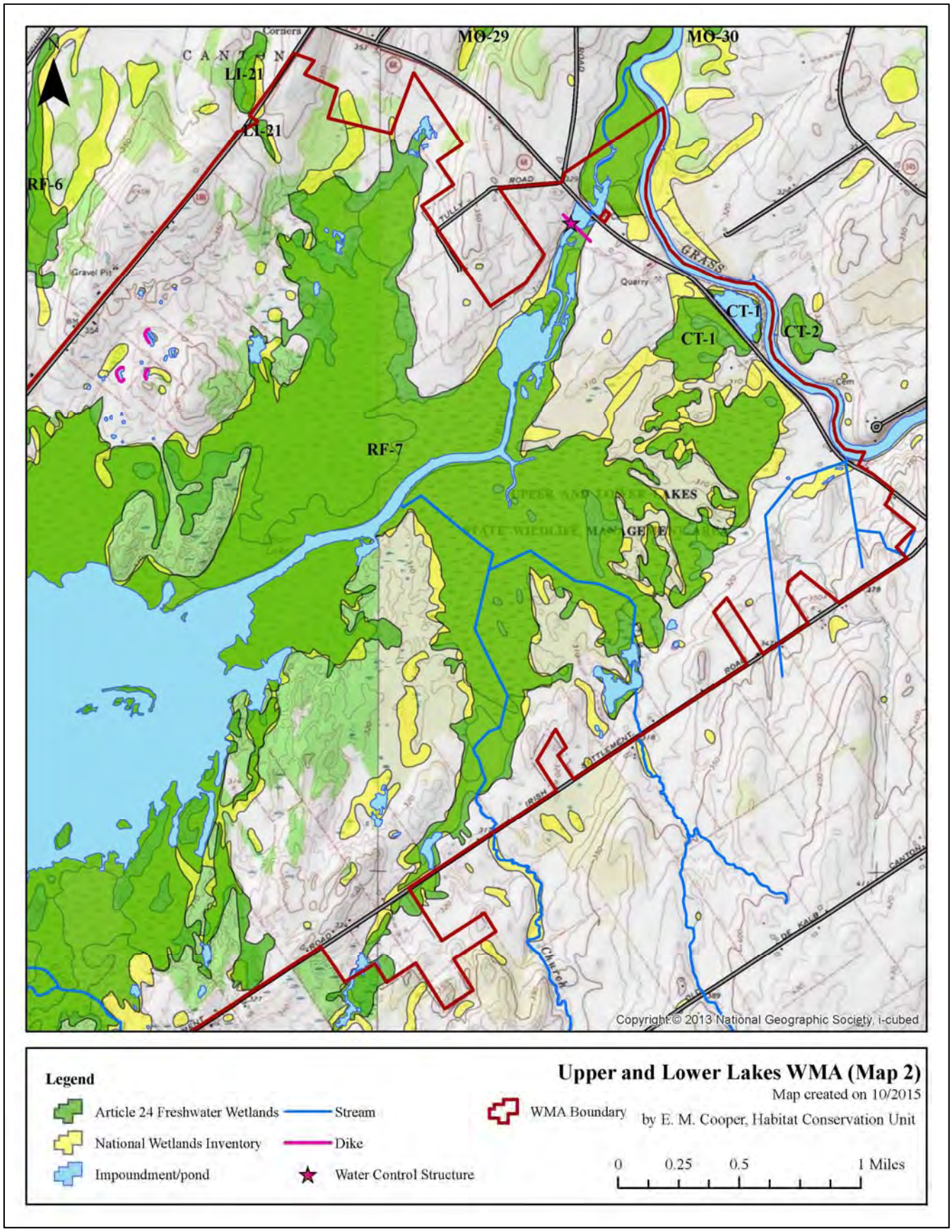

FIGURE 5. Wetlands, open water, and streams of Upper and Lower Lakes WMA. Note: Wetland boundaries are not exact and may not be used for regulatory purposes without a current delineation.

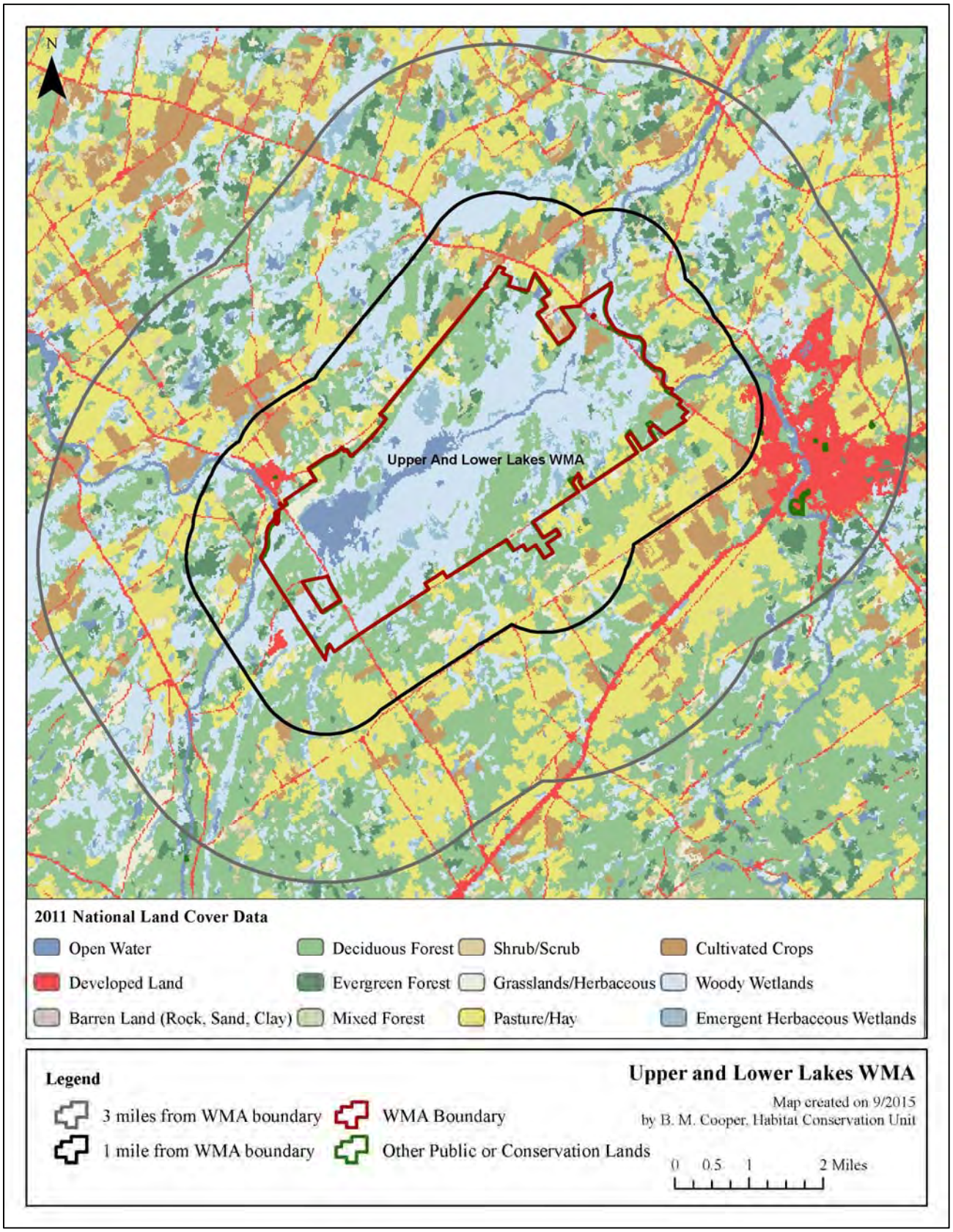

FIGURE 6. Land cover types and conservation lands in the landscape surrounding Upper and Lower Lakes WMA. Conservation lands are from the NY Protected Areas Database available online at http://www.nypad.org/. Land cover types are from the 2011 National Land Cover Data (NLCD) and differ from the habitat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

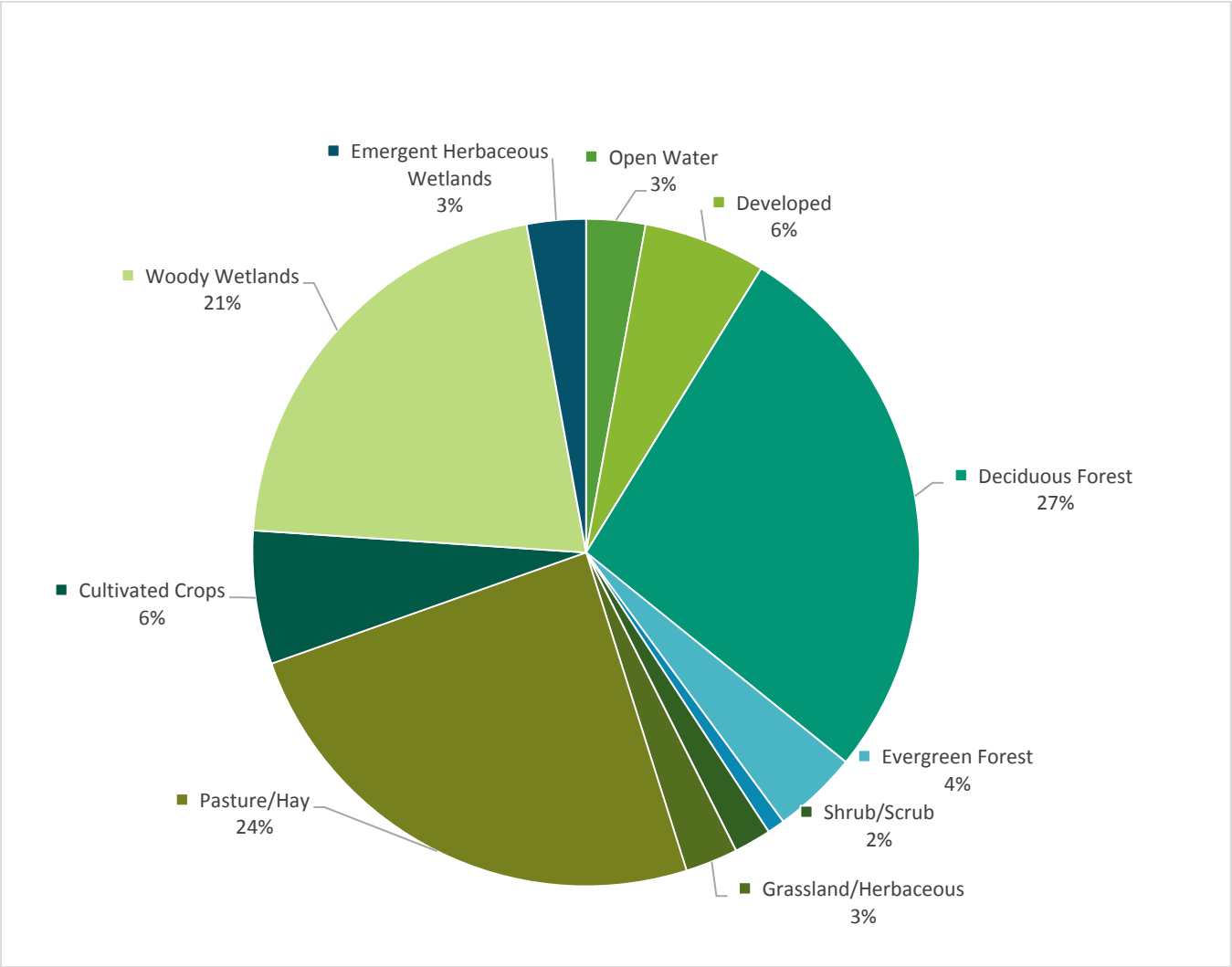

FIGURE 7. Percent cover of land cover types within three miles of Upper and Lower Lakes WMA.

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

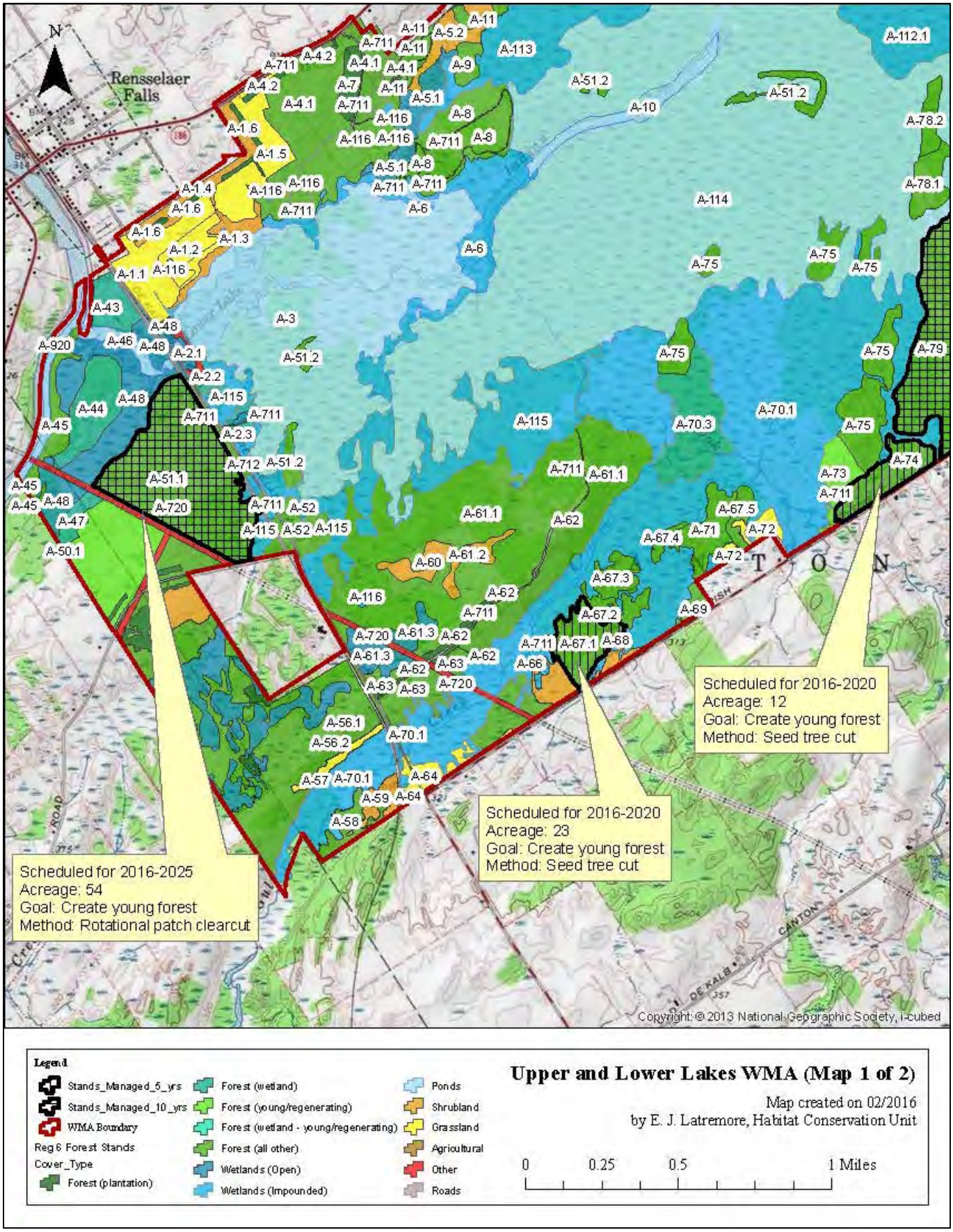

FIGURE 8. Habitat types and location(s) of proposed management on Upper and Lower Lakes WMA. Numbers indicate the stand number from habitat inventory.

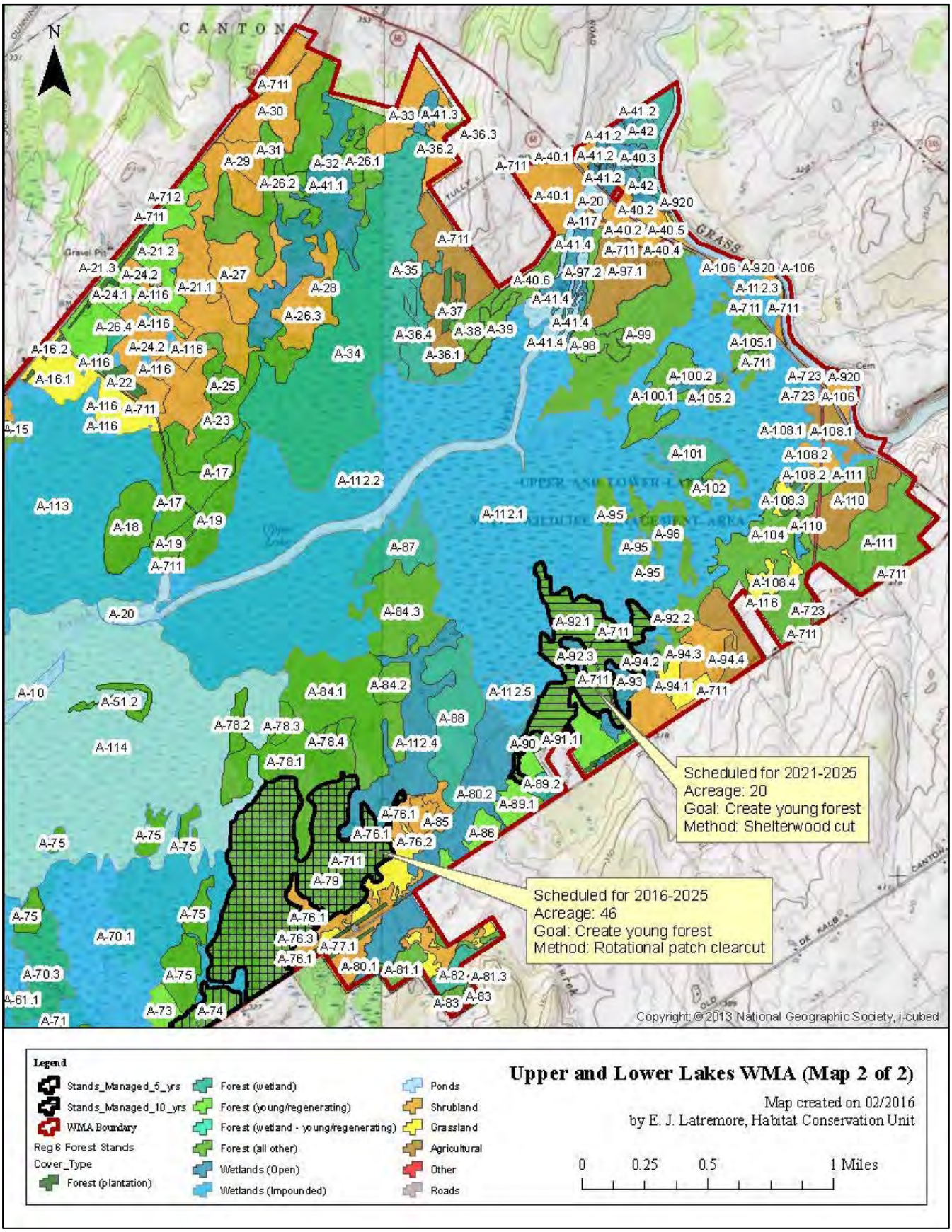

FIGURE 9. Habitat types and location(s) of proposed management on Upper and Lower Lakes WMA. Numbers indicate the stand number from habitat inventory.

IV. APPENDICES

APPENDIX A: DEFINITIONS

The following key words were used in the development of this Habitat Management Plan. Definitions are 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-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 Upper and Lower Lakes WMA include: American woodcock, golden-winged warbler, wild turkey, 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 (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). It is acknowledged that "young forests" will differ in their character in different ecological areas of the state and that 0-10 years is a continuum into more mature forest types. (Refer to: A DEC Strategic Plan for Implementing the Young Forest Initiative on Wildlife Management Areas 2015-2020)

APPENDIX B. STATEMENT OF CONFORMITY WITH SEQRA

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

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

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

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

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

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.

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

None.