Habitat Management Plan for
Conewango Swamp Wildlife Management Area
2020 – 2029

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Bureau of Wildlife

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SUMMARY

Conewango Swamp Wildlife Management Area (WMA) is 995.6 acres and exhibits a variety of habitat types. Forested wetland, wetland shrubland, and natural wetland dominate the area. The WMA is in the central western portion of Cattaraugus County in the Towns of Conewango and Randolph. This area, just north of the Village of Randolph, is eight miles northwest of Allegany State Park and fourteen miles east of Chautauqua Lake. Acquisition of the properties that make up Conewango Swamp began with a parcel transferred to New York State (NYS) from the United States Department of Agriculture (USDA) Farmers Home Administration (FHA) in the early 1990s. Funding to acquire the remaining portion of the property was through the Environmental Protection Fund (EPF).

The WMA was acquired to protect the wetland habitat surrounding Conewango and the Little Conewango Creeks. These wetland complexes (KE-8, KE-14, and RA-3 encompass a combined 2,444 acres) provide flood protection and quality wetland habitat utilized by waterfowl, shorebirds, and wading birds for breeding and/or resting during spring and fall migration. Approximately ninety percent of the WMA is freshwater wetland regulated by NYS and the Army Corps of Engineers.

A Conewango Creek Watershed Project was put together in 1977 to acquire and protect 14,000 acres of wetlands, wetland buffers, wildlife habitat, and marginal agricultural land in the Conewango Valley. Wildlife habitat enhancement, water quality, flood protection, and recreational opportunities were the driving forces behind this project. Partnerships with DEC, New York State Parks, County Soil and Water Conservation Districts, and local municipalities were to be formed to facilitate and implement this project. However, funding shortfalls from the 1972 Environmental Quality Bond Act halted its implementation.

Habitat management goals for Conewango Swamp WMA include:

- Increase young forest acreage to 3.5 acres (1.0% of the total forested acreage) to provide high stem density habitat for ruffed grouse and American woodcock;
- Manage 29.6% as shrubland habitat;
- Decrease intermediate and mature forest, including forested wetland, to 33.8% to provide habitat and hard mast for a variety of wildlife species including cavity nesters;
- Increase grasslands to approximately 7.7% of the WMA to provide habitat for grassland-dependent species and waterfowl nesting;
- Manage 22.1% as natural wetlands; and
- Manage 5.5% as open water to maintain water control structures, dikes, and berms on small marshes, ponds, and potholes; provide aquatic habitat for waterfowl, reptiles, and amphibians; and resting habitat for birds during spring and fall migration.

I. BACKGROUND AND INTRODUCTION

PURPOSE OF HABITAT MANAGEMENT PLANS

BACKGROUND

Active management of habitats to benefit wildlife populations is a fundamental concept of wildlife biology and has been an important component of wildlife management in New York for decades. Beginning in 2015, NYS Department of Environmental Conservation (DEC) Division of Fish and Wildlife (DFW) initiated a holistic planning process for wildlife habitat management projects. Habitat Management Plans (HMPs) are being developed for WMAs/MUAs 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/MUAs. These plans incorporate management recommendations from Unit Management Plans (UMPs), existing WMA/MUA habitat management guidelines, NY Natural Heritage Program's WMA/MUA Biodiversity Inventory Reports, Bird Conservation Area guidelines, and other documents available for individual WMAs/MUAs.

SCOPE AND INTENT

Primary purposes of this document:

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

Within the next 5 years, this HMP will be integrated into a comprehensive WMA/MUA 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

Conewango Swamp Wildlife Management Area is located in DEC Region 9, Towns of Conewango and Randolph, Cattaraugus County (Figure 1).

Total Area

995.6 acres

Habitat Inventory

A habitat inventory of the WMA was conducted in 2018 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 Conewango Swamp WMA.

Habitat Type	Current Conditions (as of 2019)			Desired Conditions	
	Acres	Percent of WMA	Miles	Acres	Percent of WMA
Forest [a]	339.8	34.1%		336.3	Decrease to 33.8%
Young forest	0.0	0.0%		3.5	Increase to 0.4%
Shrubland	286.8	28.8%		294.8	Increase to 29.6%
Grassland	69.0	6.9%		77.0	Increase to 7.7%
Agricultural land	16.0	1.6%		0.0	Decrease to 0.0%
Wetland (natural)[b]	220.2	22.1%		220.2	No change
Open water	54.8	5.5%		54.8	No change
Other (Parking lot)	0.6	0.1%		0.6	No change
Other (Utilities)	0.7	0.1%		0.7	No change
Roads	7.7	0.8%		7.7	No change
Rivers and streams			5.98		No change
Total Acres:	995.6	100%		995.6	

[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 Conewango Swamp WMA include species commonly found on the West Appalachian Plateau region of southwestern New York such as:

- White-tailed deer, red fox, eastern coyote
- Beaver, raccoon, otter, fisher, muskrat
- Ruffed grouse, American woodcock, wild turkey, American crow, osprey, blue jay, Northern harrier
- Wood duck, mallard, Canada goose
- Eastern American toad, spring peeper, wood frog
- Snapping turtle, wood turtle, painted turtle, Eastern 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 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 Conewango Swamp 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 black duck			HP
	American kestrel			x
	American woodcock			x
	Bald Eagle		T	x
	Black-billed cuckoo			x
	Black-throated blue warbler			x
	Blue-winged teal			x
	Blue-winged warbler			x
	Bobolink			HP
	Brown thrasher			HP
	Common goldeneye			x
	Common nighthawk			HP
	Eastern meadowlark			HP
	Great egret			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. Continued.

Species Group	Species	Federal Status	NY Status	NY SGCN Status
	Greater yellowlegs			x
	Lesser scaup			x
	Northern harrier		T	x
	Northern pintail			x
	Osprey		SC	
	Pied-billed grebe		T	x
	Ruffed grouse			x
	Rusty blackbird			HP
	Scarlet tanager			x
	Sedge wren			HP
	Semipalmated sandpiper			HP
	Wood thrush			x
Mammals	None known			
Amphibians and reptiles	Snapping turtle			x
Fish	None known			
Invertebrates	None known			
Plants	Big shellbark hickory		T	

Significant Ecological Communities:

There are 18 ecological communities present on Conewango Swamp WMA, including two significant natural communities 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] (Figure 2):

- **Silver maple-ash swamp (G4 S3):** a hardwood basin swamp that typically occurs in poorly-drained depressions or along the borders of large lakes, and less frequently in poorly drained soils along rivers. These sites are characterized by uniformly wet conditions with minimal seasonal fluctuations in water levels.

[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/29384.html.

- **Floodplain forest (G3G4 S2S3):** typically, a hardwood forest that occurs on mineral soils on low terraces of river floodplains and river deltas. These sites are characterized by their flood regime; low areas are annually flooded in spring and high areas are flooded irregularly. Some sites may be quite dry by late summer whereas other sites may be flooded again in late summer or early autumn (these floods are caused by heavy precipitation associated with tropical storms). This is a broadly defined community; floodplain forests are quite variable and may be very diverse.

Additional information about significant ecological communities is available in the Conewango Swamp WMA Biodiversity Inventory Final Report (1998) prepared by the NY Natural Heritage Program.

Soils:

The main soil series group of Conewango Swamp WMA is Palms-Edwards-Carlisle. These soils are very deep and have very poor drainage. They were formed from herbaceous, and sometimes woody, organic materials in depressions on lake plains, moraines, and outwash plains. The property also contains other soil series, Rhinebeck and Wayland. Rhinebeck is also very deep, but with somewhat poorly drained characteristics. They are formed from clay sediments in glacial lake plains. Wayland soils are very deep and very poorly drained. They are formed in alluvium in slack water areas of flood plains. Overall, the property has wet, poorly drained soils year-round.

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 Conewango Swamp WMA include:

- Several large Class I wetland complexes (KE-8, KE-14 and RA-3) regulated by Article 24 of the Environmental Conservation Law (Wetlands; Figure 3). The NWI maps show additional acreage around each of the state regulated wetlands due to a difference in mapping criteria. Each state-regulated wetland is protected by a buffer zone of 100 feet from the delineated wetland boundary, known as the 100-foot 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.
- Three streams (a watercourse entirely within the WMA) or segments of streams (a stream that meanders in and out of the WMA) and a flood control Dredge (ditch). Little Conewango Creek has a C Classification with a C(T) standard, Conewango Creek, Battle Creek, and the Dredge have a C Classification.[6] Classification C is for waters supporting fisheries and suitable for non - contact activities. A Standard of (T) indicates the creek may support a trout population.
- Vernal pools exist on the WMA. Management activities will follow SMZ rules established for WMAs.

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*

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

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

- Deciduous forest (33.9%)
- Pasture/Hay (22.8%)
- Cultivated crops (18.2%)
- Wetlands (includes emergent herbaceous and woody wetlands) (10.7%)
- Developed (6.4%)
- Evergreen forest (2.5%)
- Shrub/Scrub (1.7%)
- Mixed forest (1.5%)
- Grasslands (1.3%)
- Open water (0.8%)
- Barren land (0.1%)

Several properties managed by the DEC's Division of Lands and Forest are located within five miles of Conewango Swamp WMA and include:

- Harris Hill State Forest – 3,489 acres
- Pine Hill State Forest – 1,142 acres
- South Valley State Forest – 4,477 acres
- Bucktooth State Forest – 2,281 acres

The hardwood and softwood stands of these state forests are managed through a suite of silvicultural practices specifically applied with regard to existing conditions and desired outcomes. The conifer stands of pine and spruce were planted in old farm fields by the Civilian Conservation Corp to prevent soil erosion on abandoned farmland. They are usually managed by a series of partial harvest thinnings, which provide openings for sunlight to encourage natural regeneration of native hardwoods. The removal of the conifer overstory in the final harvest allows the hardwood seedlings to grow to maturity.

Hardwood stands are also thinned via selective cuts providing more growing space for residual trees, improving forest health, and creating openings for seed germination and seedling growth. When regeneration is determined to be adequate the remaining overstory trees are then

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

harvested. Removal of the overstory allows ample sunlight to reach the forest floor stimulating seedling growth.

Two additional Wildlife Management Areas are located six and eight miles respectively to the southwest and a third also eight miles south of Conewango Swamp include:

- Hartson Swamp WMA – 99.5 acres
- Clay Pond WMA – 180 acres
- Allegheny Reservoir WMA – 1,005 acres

HMP's for these three WMA's have not been completed. Habitat management of Hartson Swamp and Clay Pond WMA's will be similar to the management at Conewango Swamp. Allegheny Reservoir WMA, however, consists primarily of upland forest with smaller acreages of grasslands, shrubland, and wetlands. A much larger percentage of young forest acreage will be created with regards to the overall forested acreage.

Allegany State Park, located eight miles Southeast of Conewango Swamp WMA, encompasses 65,000 acres of mature forest, open fields, several lakes and is adjacent to the Kinzua Reservoir. Minimal habitat management occurs at the park. Forest management in general and specifically young forest management are not included in the current master plan for Allegany State Park.

The remaining property surrounding Conewango Swamp WMA is in private ownership. Private landowners generally follow a diameter-limit management or uneven aged management strategy that is primarily income driven. This achieves an immediate economic gain with the harvest but does not create young forest as described in DEC's *Young Forest Initiative Strategic Plan*.[8] The goal at Conewango Swamp is to create young forest habitat on the WMA using even-aged management (e.g., clearcuts) as the primary management technique to benefit the target species of the WMA. A minimum of 1.0% of the forested acreage on the WMA will be maintained in a young forest stage. This is a low percentage of the total forested acreage but represents the acreage that is accessible with regards to the wet conditions. The WMA receives considerable runoff from the Conewango Valley inundating most of the forested acreage. This severely restricts habitat management, specifically timber harvesting.

II. MANAGEMENT STRATEGIES BY HABITAT TYPE

DEC will continue active management of wildlife habitats on Conewango Swamp 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.

[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.

- Provide opportunities for wildlife-dependent recreation such as trapping, hunting, and bird watching compatible with the ongoing habitat management practices and species management considerations.
- Improve habitat quality by reducing invasive species, if present and identified for treatment.

FOREST

Forested acreage includes the following forest types:

Natural forest: naturally forested acres, including hardwoods and softwoods. Includes any upland forested acreage that is not young forest, i.e., pole stands, other intermediate forest age classes, mature forest, and old growth forest.
Plantation: planted forested acres, generally planted in rows dominated by one or two species.
Forested wetland: wetland acres where forest or shrub vegetation accounts for greater than 50% of hydrophytic vegetative cover and the soil or substrate is periodically saturated or covered with water.
Young forest: young or regenerating forested acres, which are typically aged 0-10 years since a disturbance or regeneration cut, depending upon the site conditions. May include both natural forest and plantations.
Young forest (forested wetland): young, regenerating forested wetland acres.

Photo 1: Natural forested wetland stand at Conewango Swamp WMA.
Photo: Greg Ecker, NYSDEC.

Forest management on Conewango Swamp WMA incorporates an approach to create and/or maintain the diversity of forest age classes that are required to support a diversity of wildlife. In 2015, DEC launched the Young Forest Initiative (YFI) to increase the amount of young forest on WMA/MUAs to benefit wildlife that require this transitional, disturbance-dependent habitat. [9]

Management Objectives

- Increase young forest acreage from an existing 0 acres to approximately 3.5 acres for habitat improvement of young forest target species, ruffed grouse and American woodcock.

Description of Existing Forest Habitat and Target Species

There are 339.8 forested acres on Conewango Swamp WMA (Figure 6). The most predominant forest type on the WMA is forested wetland, primarily characterized by swamp hardwood species. Most forested stands are in a sawtimber size class, however, stands that would otherwise be accessible are inundated nearly year round preventing forest management.

Conewango Swamp WMA consists of three separate tracts that have been purchased at different times throughout its history, therefore it has three compartments for management purposes. Table 3 provides a summary of the current and desired forest types for Conewango Swamp WMA.

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

Forest Type	Acres (as of 2019)	Desired Acres	Overstory species
Natural forest (mature/intermediate)	13.3	9.8	Silver maple, aspen, white ash
Plantation	0	0	
Forested wetland	326.5	326.5	Swamp white oak, silver maple, green ash
Young forest	0	3.5	
Young forest (forested wetland)	0	0	
Total Forested Acres:	339.8	339.8	

Target species for young forest habitat management include ruffed grouse and American woodcock. These species rely on areas of young forest adjacent to mature forest for nesting, foraging, and cover and will benefit from management that creates the following:

- **Ruffed Grouse Habitat Requirements:**
  - 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.[10]

- **American Woodcock Habitat Requirements:**
  - Singing/Peenting Ground – Open areas from 1 acre to over 100 acres usually in an abandoned field.
  - Daytime areas – Moist, rich soils with dense overhead cover of young alders, aspen, or birch.
  - Nesting – Young, open, second growth woodlands.
  - Brood rearing – Similar to nesting except there needs to be bare ground and dense ground cover.

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

- Roosting – Open fields (min. of 5 acres) or blueberry fields and reverting farm fields.[11]

Management History

No forest management has occurred on Conewango Swamp WMA and therefore no specific young forest habitat has been established.

Implementation Plan and Anticipated Schedule

The following management will result in roughly 3.5 acres of young forest habitat or approximately 1.0 % young forest cover of the total forested acres, within ten years:

- **Management planned for 2020-2024** (Table 4, Figure 6):
  - Patch clearcut an amoeba shaped opening in Compartment C Stand 4 (0.5 acres).

- **Management planned for 2025-2029** (Table 5, Figure 6):
  - Patch clearcut pioneer hardwoods in Compartment C Stand 5 (3.0 acres).

Table 4. Forest management schedule for the first five-year period of this HMP (2020-2024).

Stand	Acres	Size Class	Forest Type		Management Direction	Treatment Type
			Current	Future		
C-4	0.5	Poletimber	Pioneer Hardwoods	Young Forest	Wildlife	Patch clearcut

Table 5. Forest management schedule for the second five-year period of this HMP (2025-2029).

Stand	Acres	Size Class	Forest Type		Management Direction	Treatment Type
			Current	Future		
C-5	3.0	Poletimber	Pioneer Hardwoods	Young Forest	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 for each of these stands will include the following:

Management for 2020-2024 (0.5 acres):

Pioneer Hardwoods (0.5 acres)

Compartment C Stand 4

[11] Sepik, G. F. et al. 1981. A Landowner's Guide to Woodcock Management in the Northeast, Moosehorn National Wildlife Refuge, USFWS. 25 pp.

This is an early successional stand, of 3.4 acres, with a tree and shrub mix of thornapple, dogwood, and apple. It also contains inclusions of aspen clone thickets and scattered green ash. Management will focus on regenerating the aspen clones and releasing the apple trees. A patch clearcut will create a 0.5-acre amoeba shaped opening to establish new young forest habitat. Management will occur during the winter season to maximize aspen response.

Management for 2025-2029 (3.0 acres):

Pioneer Hardwoods (3.0 acres)

Compartment C Stand 5

This is a pioneer hardwood stand consisting of mostly aspen across 6.2 acres. A patch clearcut of 3.0 acres will establish new young forest habitat. Most trees exist as large saplings or poletimber, with a few silver maple, black cherry, or green ash sawtimber scattered throughout. Management will occur during the winter season to maximize aspen response.

Best Management Practices

Forest management on all WMA/MUAs 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 WMA/MUAs.

Resource	**Guidance Document** [12]
Soils	*Rutting Guidelines for Timber Harvesting on Wildlife Management Areas*
Water quality	*NYS Forestry Best Management Practices for Water Quality*
Wildlife	*Retention Guidance on Wildlife Management Areas*
Plantations	*Plantation Management Guidance on Wildlife Management Areas*

Wildlife Considerations:

General wildlife surveys of the project locations will be conducted prior to any forest management. Management activities will be limited to ensure impacts to sensitive species will be avoided or kept to a minimum. Projects will consider seasonal weather conditions, along with the breeding and nesting period of wildlife species found on the WMA.

A Northern long-eared bat survey has not yet been conducted following the U. S. Fish and Wildlife Service (USFWS) approved survey protocol. Forest management will not occur outside of Northern long-eared bat hibernation season, until a survey has been conducted and concludes probable absence.

Forest Health Considerations:

Forest health declines, from a loss of function and diversity, when it becomes infested with pests, pathogens, or interfering vegetation. This can lead to fewer wildlife species occupying an area successfully, accelerating health decline. When sound silvicultural practices are applied to forest management the resiliency of trees, stands, and forests can be bolstered. A more resilient forest

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

is less likely to succumb to the negative effects of injurious agents, such as pests or pathogens. This can lead to better-quality habitat for target wildlife and a healthier ecosystem.

Interfering vegetation, also referred to as undesirable vegetation, is any flora that is deemed to inhibit the successful establishment and growth of more desired vegetation. Ideal vegetation is selected based on either wildlife or timber attributes and helps dictate the silvicultural treatment. Undesirable vegetation can possess traits that allow it to easily outcompete desirable regeneration. Pre- and/or post-treatments are likely needed to ensure the successful regeneration of desirable species. Observed interfering or invasive vegetation includes European black alder, poison ivy, which dominates most areas of the property, as well as, honeysuckle, and multiflora rose.

White-tailed deer herbivory varies across Conewango Swamp WMA. In areas where deer browse could pose a threat to desirable regeneration deer enclosures (natural or artificial) may be constructed to protect regeneration.

Common forest pests, such as emerald ash borer (EAB), hemlock woolly adelgid (HWA), Asian longhorned beetle (ALB), and gypsy moth, have not been observed on the WMA. Conewango Swamp WMA is however located within an emerald ash borer quarantine zone, therefore additional regulations are currently applicable to all ash wood products.

Pre- and Post-Treatment Considerations:

Pre- and post-treatments occur at the stand level and aim to promote the regeneration of desired species. The establishment of desired regeneration is primarily achieved by reducing competing vegetation, exposing mineral soil, and improving the seedbed.[13] Additionally, deer browse also greatly impacts the success of desired regeneration. Treatment actions are typically carried out through mechanical and/or chemical means. It should be noted that certain ecological situations are best treated through a prescribed burning regimen.

Mechanical treatments will most commonly include the use of brush saws or chainsaws to cut out invasive or undesired species from the understory. Chemical treatments will involve the use of herbicides to reduce vegetative competition. Pre- and post-treatment actions will be addressed further in the silvicultural prescriptions.

[13] Nyland, R.D. 2007. Silviculture: Concepts and Applications 2nd ed. Waveland Press.

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 in the Young Forest Initiative Monitoring Plan. The Monitoring Plan establishes statewide standards for evaluating vegetation and target wildlife responses to forest management to determine if the outcome is as prescribed. Regeneration assessments will be conducted within one year of harvest completion, three, and five years after the harvest or until the forester determines adequate natural or artificial (i.e., planting) regeneration has been securely established. YFI wildlife target species selected for Conewango Swamp WMA, which may be assessed to determine response to management, include:

- American woodcock
- Ruffed grouse

Photo 2: Shrubland management using a forestry mower.

Photo: Greg Ecker, NYSDEC

There will be two types of vegetative response surveys conducted following young forest management, ocular regeneration assessment and photo point records.

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% cover of shrubs and <25% canopy cover of trees.

MANAGEMENT OBJECTIVES

- Manage approximately 294.8 acres as shrubland habitat (29.6% of the WMA), providing habitat for a variety of shrubland dependent species.
- Convert 8 acres of a stand that was formally in agriculture to upland shrubland acreage. Brush piles will be constructed from undesirable perimeter trees for cottontail rabbit habitat.
- Maintain selected shrubland stands/partial stands via a forestry mower every 3-5 years or as necessary.
- Invasive species monitoring will be conducted annually. Treatment of invasive species will occur as deemed necessary and as funding becomes available.
- Plantings of soft-mast shrubs will be considered.

DESCRIPTION OF EXISTING SHRUBLAND HABITAT AND TARGET SPECIES

Currently 286.8 acres of shrubland exist on Conewango Swamp WMA composed largely of wetland shrubland species such as alder, red osier dogwood, silky dogwood, elderberry, and winterberry. European black alder, which exhibits invasive characteristics, is on the WMA in compartment B stand 940. Management activities will be directed to control this species.

Species present in drier soil conditions include: crab apple, wild apple, honeysuckle, grey-stemmed dogwood, multi-flora rose, and sumac. These densely-stemmed habitats provide foraging and escape cover for both young of year and adults of numerous wildlife species, including the YFI target species:

- American woodcock
- Ruffed grouse

Other species benefitting from this habitat type:

- brown thrasher
- black-billed cuckoo
- cottontail rabbits.

MANAGEMENT HISTORY

Shrubland management on Conewango Swamp WMA has been very limited due to wet soil conditions and high maintenance costs. The WMA is part of the Conewango Valley drainage which receives a considerable amount of runoff from the surrounding area. Due to the flat topography, water recedes at a very slow rate inundating much of the habitat for long periods of time creating challenging growing conditions for plant species and habitat management techniques. In most winters, early snow cover limits ground freezing preventing stable soil conditions necessary to support equipment. Fortunately, continuing efforts to maintain this valuable cover type are included in this HMP and will be attempted when the environmental conditions are most favorable. Shrub management projects planned for the limited upland areas should not encounter any environmental obstacles.

IMPLEMENTATION PLAN AND ANTICIPATED SCHEDULE

- **Management planned for 2020-2029** (Figure 6):
    - **Compartment C Stand 3:** Hand felling utilizing a chainsaw will be used to remove individual trees within the stand. The shrubland will be maintained every 3-5 years or as deemed necessary with a forestry mower. Removed trees will be cut and stacked to form brush piles.
    - **Compartment C Stand 940:** Allow 8 acres to revert to shrubland and manage on a 3-5 year rotation or as deemed necessary with a forestry mower.

Habitat management will include the following:

- **Compartment C Stand 3:** This stand is roadside and is sparsely vegetated with staghorn sumac, apple, multiflora rose, and golden rod. Elimination of individual trees will remove avian predator perches and provide material for the establishment of brush piles. Woodcock will take advantage of the stand during singing-ground courtship displays and for foraging. The brush piles will provide cover for small mammals, but more

importantly cover for cottontail rabbits that exist within the stand. Future plantings of softmast shrubs and conifer thermal cover will be considered.

- **Compartment C Stand 940:** This 16-acre stand was part of a former agricultural agreement. Approximately 8 acres will be allowed to regenerate into shrubland species. Additional shrubs will be planted to expedite the conversion and assist in the establishment of a hedgerow initially separating the grassy portion of this stand. Conifer clumps will be planted to add winter thermal cover. Once established, the shrubland will be maintained every 3-5 years with a forestry mower. Brush piles will be constructed from undesirable perimeter trees for cottontail rabbit habitat.

Shrub plantings will occur to re-establish and complete hedgerows between stands 941, 942, 943, and 944. Several of these stands were in an agriculture agreement that expired within the last 10 years. Hedgerows had been removed forming one larger field better suited for modern farming practices. These re-established hedgerows will provide travel corridors from stand to stand and escape cover for a wide variety of wildlife species foraging in the open, grassy stands.

BEST MANAGEMENT PRACTICES

Timing of the management activities will be limited to ensure impacts to the habitat and wildlife are kept to a minimum. Projects will consider seasonal weather conditions, along with the breeding and nesting period of wildlife species found on the WMA.

MANAGEMENT EVALUATION

These stands will be included in the American woodcock singing ground survey and the ruffed grouse drumming survey routes established on the WMA. Point counts of bird species pre- and post- management may occur to document presence or probable absence of young forest species and species response to the proposed management. Details of the methodology and data collection can be found in the Young Forest Initiative Monitoring Plan. Periodic inspections will be conducted to ensure tree species do not recolonize the project areas. Winter track surveys will monitor wildlife activity in and surrounding these shrublands.

GRASSLAND AND OTHER OPEN SPACE

Grasslands are open, grassy areas with a minimal amount of shrub and tree cover (<35%) that are maintained, or could be maintained, without significant brush cutting. Grasslands may include areas where hay is harvested by late season mowing once per year.

MANAGEMENT OBJECTIVES

- Maintain 77.0 acres of grassland and open areas (7.7 % of the WMA) to provide nesting and brooding habitat for a variety of wildlife species including bobolinks, mallards, wild turkeys, and Eastern meadowlarks. These areas will also provide hunting opportunities during the fall pheasant hunting season from stocked pheasants.
- Convert 8 acres of fallow agricultural field to grassland habitat.
- Maintain grasslands and smaller fields annually to suppress encroachment of woody vegetation.
- Periodically lime and fertilize the grasslands to enhance annual growth.

- Re-seed grasslands/fields to re-establish desirable species.
- Construct brush piles periodically along the perimeter of the grassy openings.

DESCRIPTION OF EXISTING GRASSLAND HABITAT AND TARGET SPECIES

Currently, there are 6 grassland/grassy field stands totaling 69 acres on the WMA. Stand 940 in Compartment 2 was created as part of a mitigation project from the Chautauqua County Airport Runway expansion. This grassy opening surrounds two mitigation ponds and is the stand that contains European black alder.

The following stands are all within Compartment 3. Stand 940 contains 27.9 acres of reed canary grass and is seasonally flooded making management difficult in seasonally wet years. Stands 942 and 944 are fallow following the expiration of agricultural agreements. Stand 943 is mowed annually to suppress encroachment of woody vegetation. Stand 941 (8.5 acres) was recently planted with alsike, red, and ladino clover by Wildlife personnel.

The 16-acre stand in compartment 3 that will be divided into 8 acres of grass and 8 acres of shrubland has remained fallow. Planting of preferred grass species will be attempted in areas with the driest growing conditions when favorable environmental factors exist.

Species that benefit from grassland best management practices include:

- Eastern meadowlark
- Bobolink

MANAGEMENT HISTORY

Wet soil conditions are a challenge to managing this cover type, not only for new plantings but also for annual maintenance to suppress undesirable species. DEC Division of Operations maintains the grasslands following an annual mowing schedule provided by the Bureau of Wildlife. The fields are mowed annually to prevent encroachment of woody vegetation from surrounding stands. Stand 941 was plowed and disked by Operations and seeded by Wildlife personnel with three species of clover mentioned above.

IMPLEMENTATION PLAN AND ANTICIPATED SCHEDULE

- **Management planned for 2020-2029** (Figure 6):
    - Continue field maintenance following an annual mowing schedule.
    - Grassland fields determined to contain undesirable species will be reseeded to warm or cool season grasses.
    - Fields will be periodically limed and fertilized.
    - Construct brush piles periodically along the perimeter of the grassy openings.

BEST MANAGEMENT PRACTICES

The following sub-sections provide guidelines for grassland habitat management on all WMAs in NY. For more detailed information and recommendations see *A Plan for Conserving*

Grassland Birds in New York.[14] In particular, refer to the plan for species-specific habitat requirements and detailed recommendations regarding grassland management and restoration techniques.

General Management Recommendations

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

Timing of Management

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

[14] 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.

and nesting periods of other species should be considered (e.g., nesting waterfowl, American bittern, reptiles, and amphibians).

Additional Mowing Guidelines

- Frequency of mowing, size of area mowed, and mowing techniques should be based on species present and current and desired habitat conditions.
- Block or spot mowing is preferred, and strip mowing should be limited (especially in fields over 25 acres).
- Unmowed blocks should be in the shape of a square as opposed to long rectangles.
- When mowing, consider working from one side of the field to the other side or start in the center and mow outwards to avoid concentrating animals in the area yet to be mowed.
- In general, mow grass to a residual height of 6-12 inches.

MANAGEMENT EVALUATION

These stands will be included in the American woodcock singing ground survey and the ruffed grouse drumming survey routes established on the WMA. Point counts of bird species pre- and post-management may occur to document presence or absence of young forest and grassland species and species response to the proposed management. Periodic winter track surveys will monitor wildlife activity in and surrounding these grassy openings.

AGRICULTURAL LAND

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

DESCRIPTION OF EXISTING AGRICULTURAL LANDS AND TARGET SPECIES

Conewango Swamp WMA does not contain any stands that are currently managed as agricultural land. An agricultural agreement expired in 2017. Future management plans do not include adding agricultural fields to the existing habitat.

WETLANDS (NATURAL AND IMPOUNDED)

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

MANAGEMENT OBJECTIVES

- Maintain 220.2 acres of natural wetland as it currently exists.
- Maintain 280 acres of scrub-shrub wetlands; management objectives covered in the shrubland section of this HMP.
- Maintain natural hydrology and water quality on the WMA.

- Maintain water control structures and dikes on small ponds and impounded wetlands occurring on the WMA.
- Manage beaver and muskrat occupancy at levels that will not jeopardize the integrity of dikes and water control structures.
- Repair dikes, emergency spillways, and water control structures as needed.

DESCRIPTION OF EXISTING WETLAND HABITAT AND TARGET SPECIES

There are 220.2 acres of natural wetlands and 280 acres of scrub-shrub wetlands on Conewango Swamp WMA in addition to 326 acres of forested wetland identified in the **Forest** section. (Figure 6). The wetland acreage is a combination of small, shallow water areas, emergent aquatic vegetation, and scrub-shrub species.

The wetlands provide habitat for species such as:

- American woodcock
- Beaver, muskrat, mink, otter
- Migratory waterfowl, shorebirds
- Wood frog, spring peeper, bull frog
- Snapping turtle, painted turtle, northern water snake

MANAGEMENT HISTORY

Several projects have attempted to control and redirect water flow and create potholes on the WMA. Construction of an earthen berm and water control structure at the confluence of an east/west ditch and Little Conewango Creek was installed. This led to the improved ability to regulate water levels along the ditch and within a seasonally flooded/saturated shallow water marsh (~70 acres) and associated potholes. The potholes of various sizes within the dense reed canary grass enhanced the wetland habitat diversity. The project partially failed due to upstream

Photo 3: Increase in open water due to ditch plug breach on Swamp Road, Conewango Swamp WMA

Photo: Greg Ecker, NYSDEC.

hydrological changes off the WMA allowing a larger volume of water to flow into the ditch which subsequently washed out the ditch plug and water control structure.

During high water events partial flow from the Little Conewango Creek now enters the WMA from the ditch plug breech, compounding the inability to control water levels. An open water pool has steadily increased in size since the breech.

A second project consisted of wetland creation and enhancement as part of a remediation project from the Chautauqua County Airport runway expansion wetland encroachment. The project involved restoring wetland habitat by constructing a ditch plug with a side spillway to create approximately 25 acres of emergent marsh and open water habitat. Potholes with connecting level ditches were excavated, with the spoil being placed adjacent to the open water, creating low level berms. Also included was the construction of a parking lot and the installation of an Osprey nesting pole/platform.

Mowing of berms and dikes is completed annually by the Division of Operations following the WMA work plan.

Photo 4: Chautauqua County Airport wetland mitigation project consisting of potholes, level ditching, low level berms, and an Osprey nest platform at Conewango Swamp WMA.

Photo: Emilio Rende, NYSDEC.

IMPLEMENTATION PLAN AND ANTICIPATED SCHEDULE

- **Management planned for 2020-2029** (Figure 6):
    - Continue annual routine maintenance of dikes, berms, water control structures, and emergency spillways.
    - Continue routine inspection of dikes/berms for muskrat and beaver damage.
    - Reconstruct dikes/berms and replace water control devices as necessary and when funding is available.
    - Pursue acquisition of adjacent parcels to correct hydrologic issues.

BEST MANAGEMENT PRACTICES

Timing of the management activities will be limited to ensure impacts to habitat and wildlife are kept to a minimum. Projects will consider seasonal weather conditions, along with the breeding and nesting period of wildlife species found on the WMA. Date restrictions for water level management or equipment in wetlands will be followed to protect hibernating amphibians and reptiles (October 1st– March 31st).

MANAGEMENT EVALUATION

None.

OPEN WATER (WATERBODIES AND WATERCOURSES)

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

MANAGEMENT OBJECTIVES

- Maintain dikes, berms, water control structures, and emergency spillways on small ponds/potholes occurring on the WMA.
- Manage beaver and muskrat occupancy at levels that will not jeopardize the integrity of dikes, berms, and water control structures.
- Protect water quality on all streams and segments of stream as management activities are conducted.

DESCRIPTION OF EXISTING OPEN WATER HABITAT AND TARGET SPECIES

Small ponds/potholes have been constructed on the management area that have no water control structures. Potholes for waterfowl habitat were dug with tracked excavators and are interspersed throughout the wetland habitat on the WMA. Water control structures, earthen plugs, and emergency spillways were installed on several ditches within the WMA. These areas provide aquatic habitat utilized by a variety of migratory waterfowl, reptile, and amphibian species.

MANAGEMENT HISTORY

Open water pool formation and seasonal drawdowns to encourage aquatic vegetation establishment were the goals for the management activities. Unfortunately, environmental

conditions have contributed to failure of past habitat projects. Successful acquisition of adjacent properties will be key for rehabbing and remediating the factors contributing to the failures.

IMPLEMENTATION PLAN AND ANTICIPATED SCHEDULE

- **Management planned for** 2020-2029 (Figure 6):
    - Routine maintenance on all dikes, berms, and water control structures including yearly inspections, annual mowing of the dikes, berms, and monitoring of beaver and muskrat activity.
    - Initiate several dike/berm/control structure rehab projects as funding becomes available.

BEST MANAGEMENT PRACTICES

Timing of the management activities will be limited to ensure impacts to the habitat and wildlife are kept to a minimum. Projects will consider seasonal weather conditions, along with the breeding and nesting period of wildlife species found on the WMA.

MANAGEMENT EVALUATION

None.

HABITAT MANAGEMENT SUMMARY

In summary, Table 7 lists the habitat management actions planned for Conewango Swamp 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 Conewango Swamp WMA, 2020-2029. (Also see Figures 3 and 6.)

Habitat	Management Action	Acres	Timeframe
Forest	Patch clearcut an irregular shaped opening in Compartment C Stand 4.	0.5	2020-2024
Shrubland	Remove trees within Compartment C Stand 3 to maintain shrubland habitat and create brushpiles.	6.8	2020-2024
Shrubland	Allow portion of an old agriculture field to grow into shrubland.	8.0	2020-2024
Grassland	Convert portion of an old agriculture field to grassland.	8.0	2020-2024
Forest	Patch clearcut pioneer hardwoods in Compartment C Stand 5.	3.0	2025-2029
Shrubland	Stand maintenance every 3-5 years or as deemed necessary.	-	2020-2029
Grassland	Annual field maintenance.	-	2020-2029

III. FIGURES

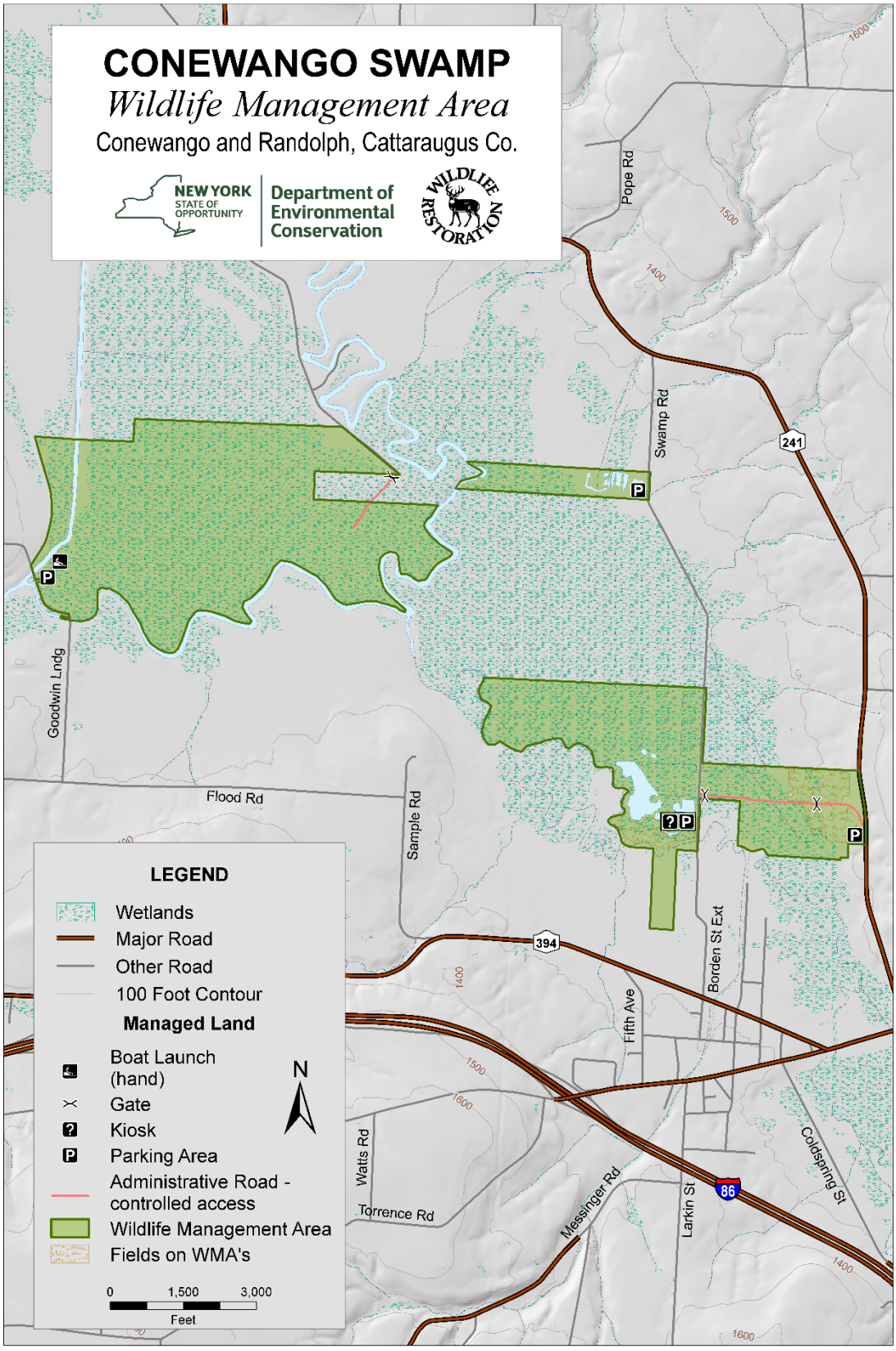

Figure 1. Location and access features at Conewango Swamp WMA.

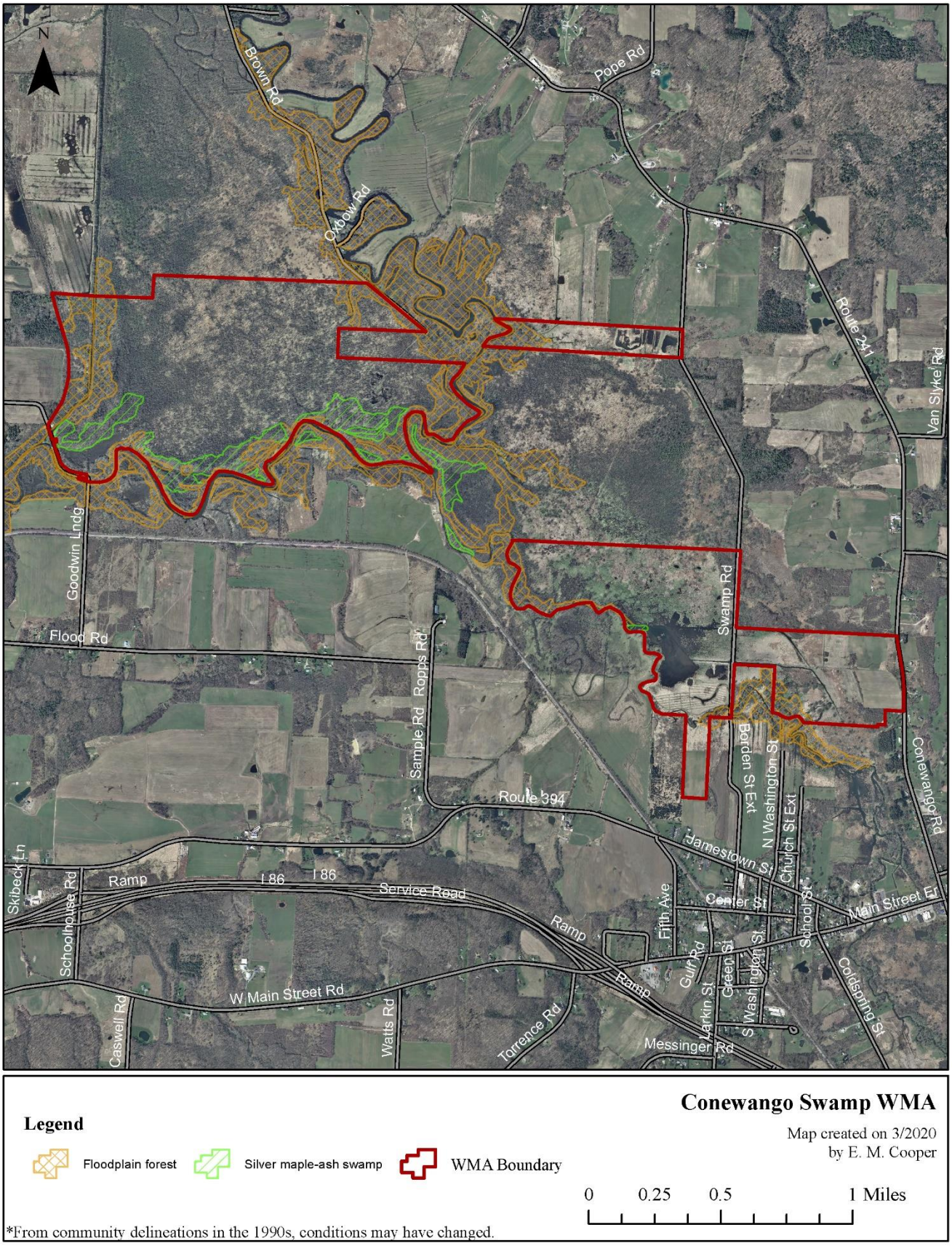

Figure 2. Significant ecological communities on Conewango Swamp WMA. Data from the NY Natural Heritage Program.

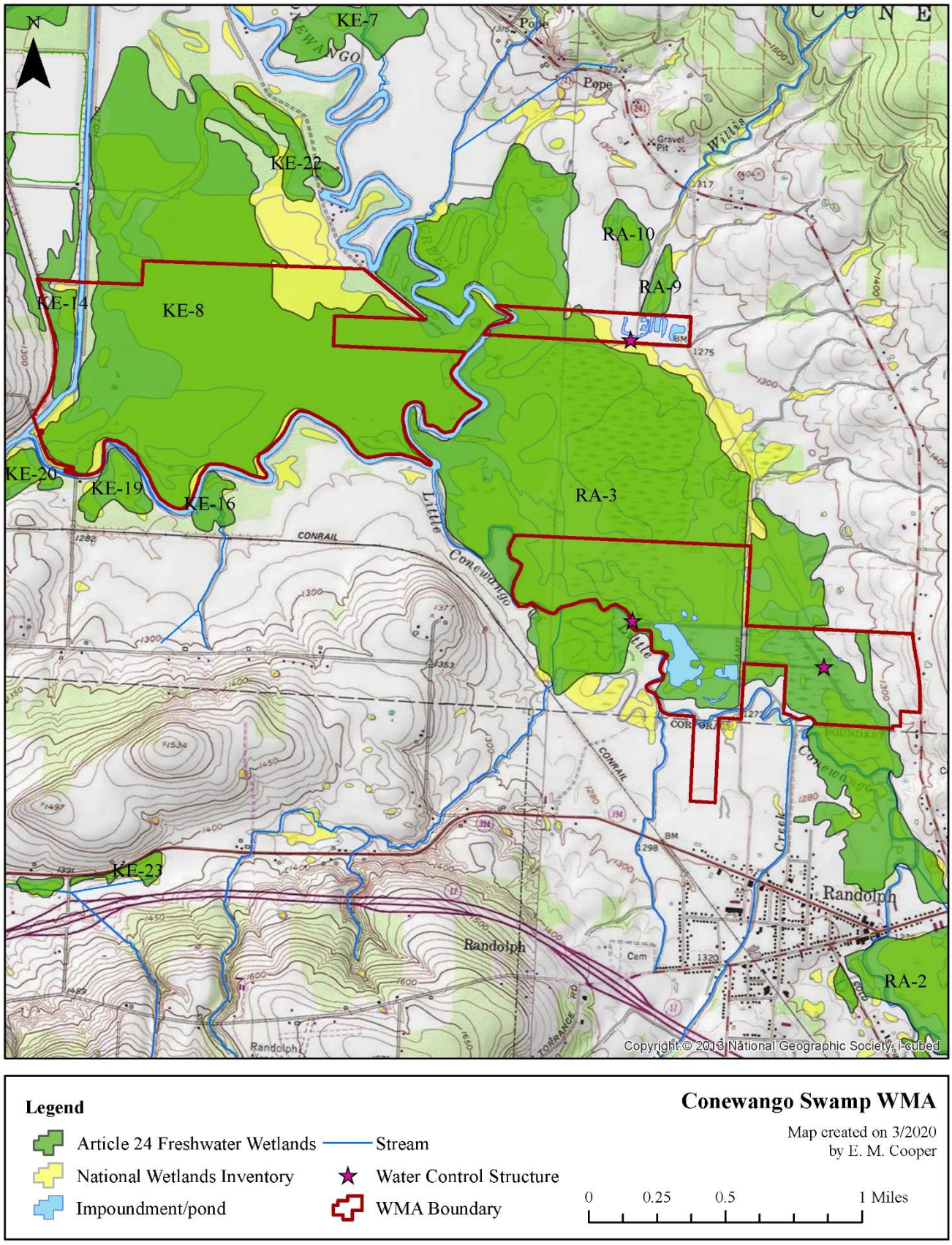

Figure 3. Wetlands, open water, and streams of Conewango Swamp WMA. Note: Wetland boundaries are not exact and may not be used for regulatory purposes without a current delineation.

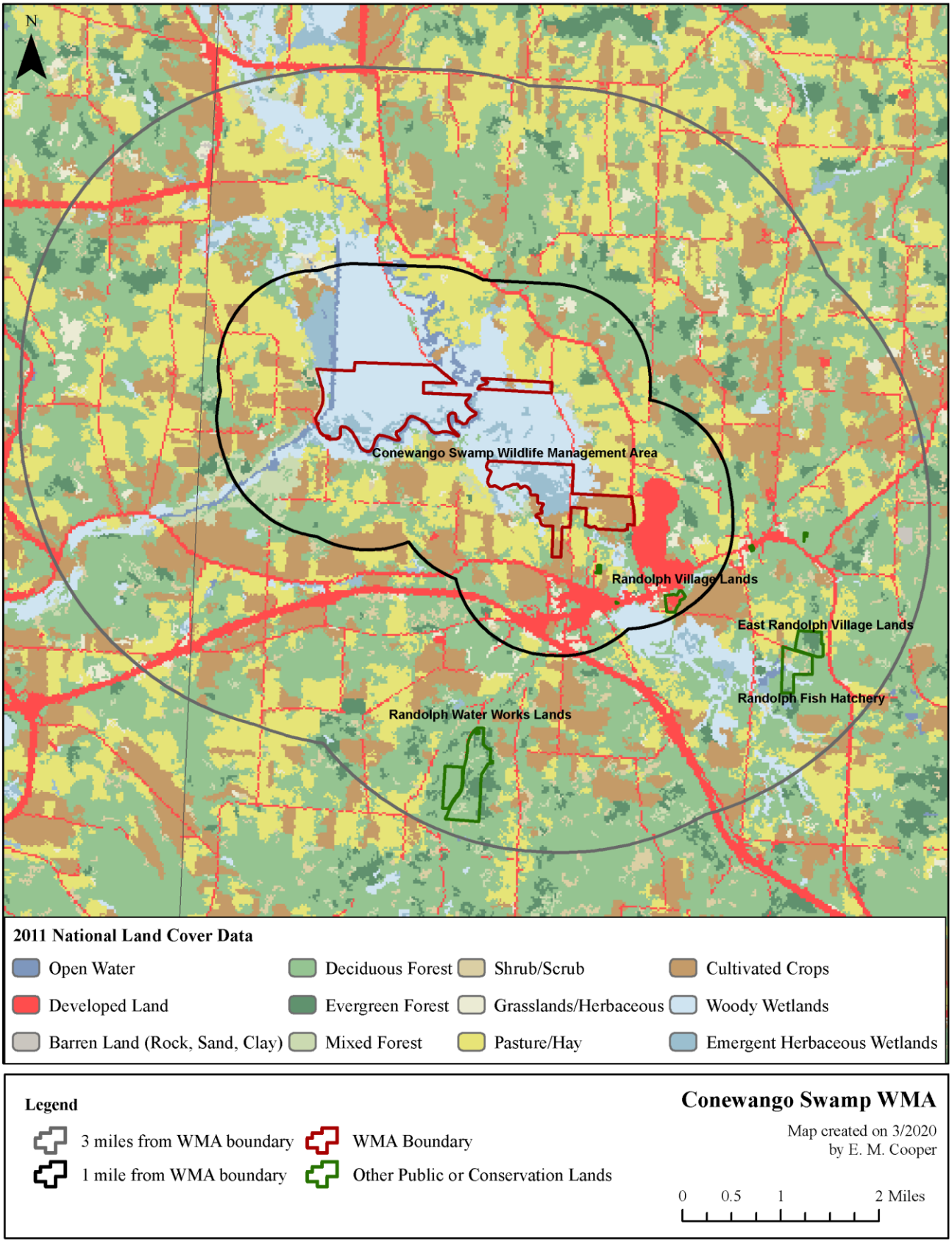

Figure 4. Land cover types and conservation lands in the landscape surrounding Conewango Swamp WMA.

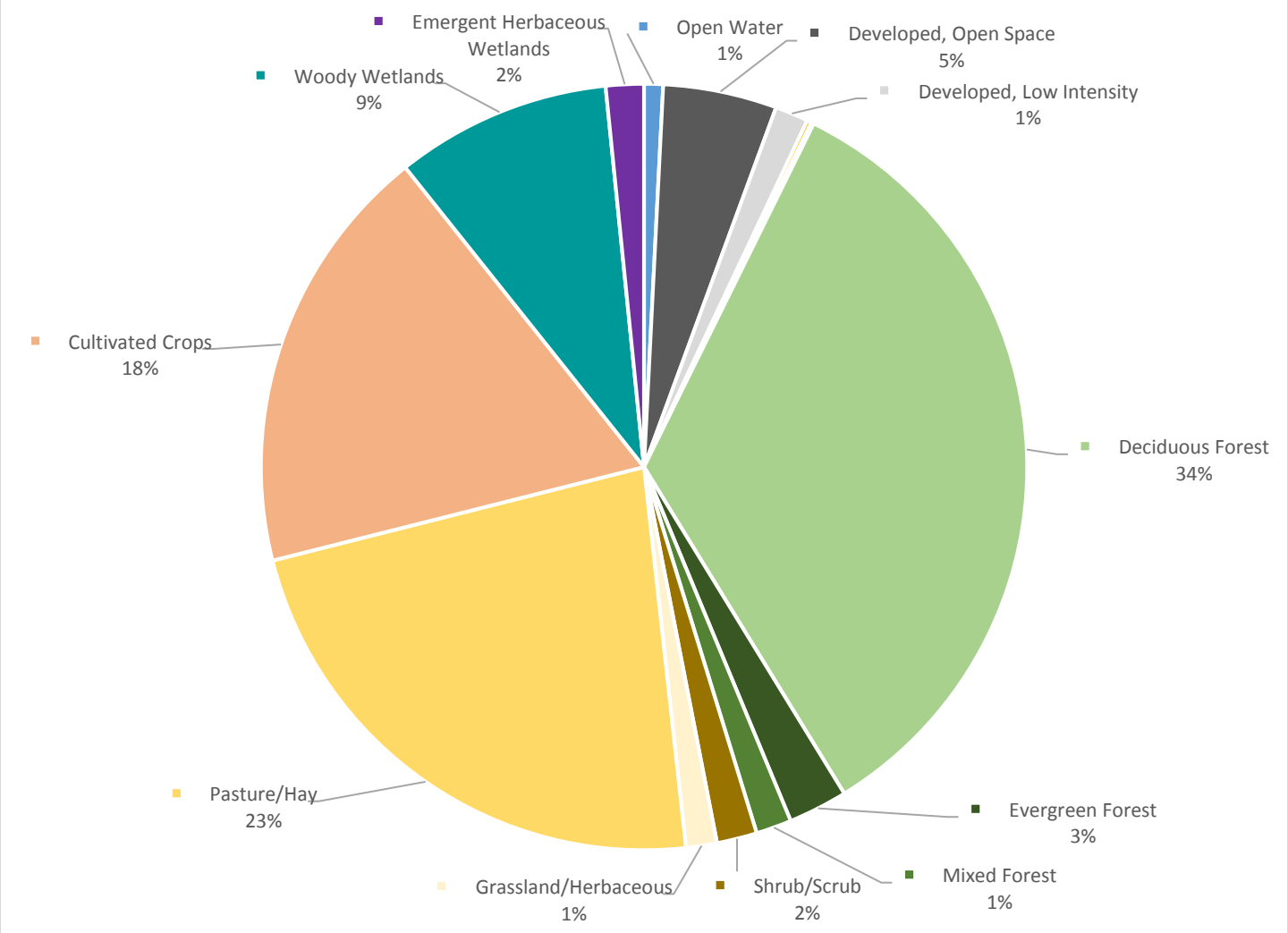

Figure 5. Percent cover of land cover types within three miles of Conewango Swamp WMA.

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 https://www.mrlc.gov/data/legends/national-land-cover-database-2011-nlcd2011-legend.

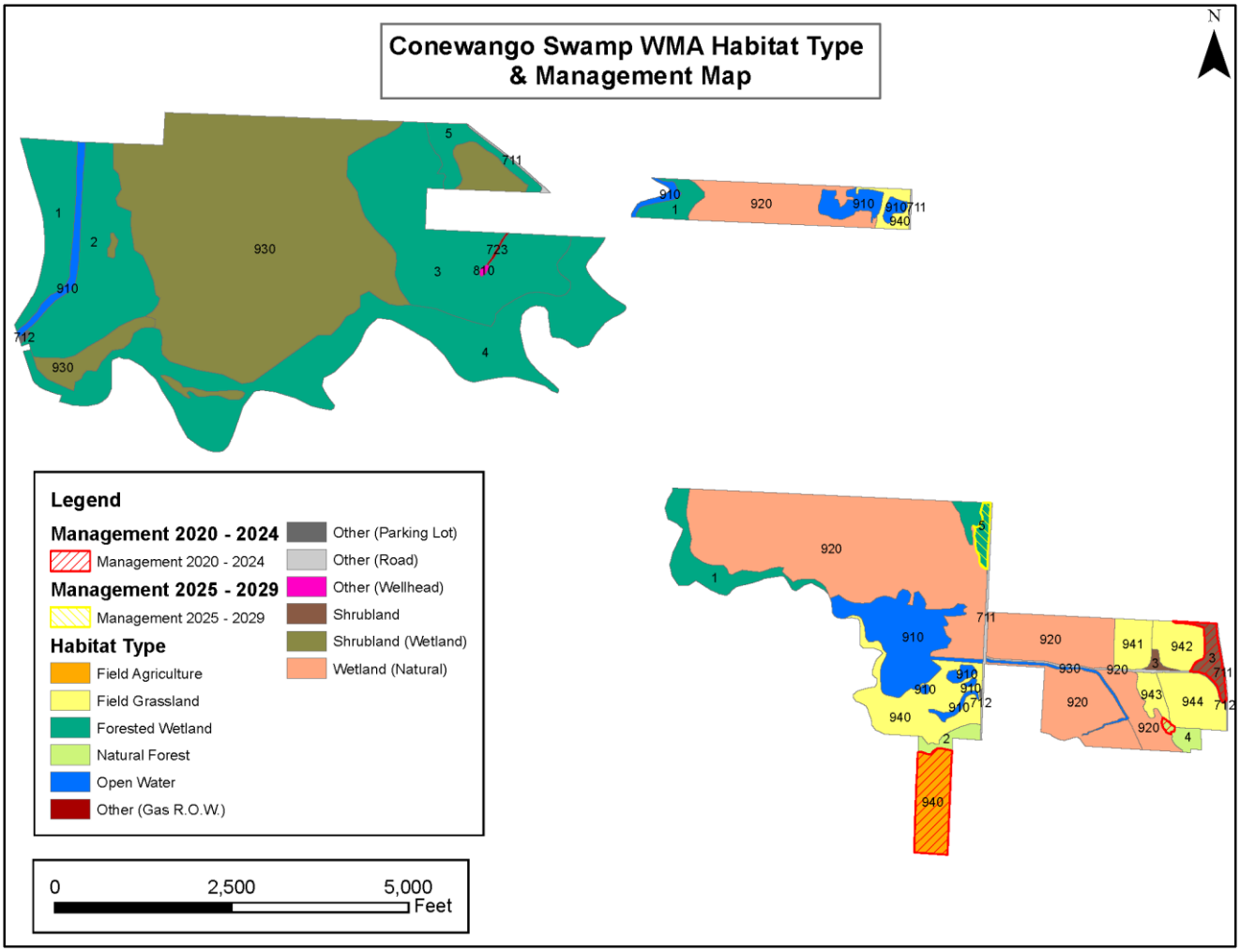

Figure 6. Habitat types and location(s) of proposed management on Conewango Swamp WMA. Numbers indicate the stand number from habitat inventory.

IV. APPENDICES

APPENDIX A: DEFINITIONS

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

State Rank of Significant Ecological Communities:

S1 = Typically 5 or fewer occurrences, very few remaining individuals, acres, or miles of stream, or some factor of its biology making it especially vulnerable in New York State.
S2 = Typically 6 to 20 occurrences, few remaining individuals, acres, or miles of stream, or factors demonstrably making it very vulnerable in New York State.
S3 = Typically 21 to 100 occurrences, limited acreage, or miles of stream in New York State.
S4 = Apparently secure in New York State.
S5 = Demonstrably secure in New York State.
SH = Historically known from New York State, but not seen in the past 15 years.
SX = Apparently extirpated from New York State.
SE = Exotic, not native to New York State.
SR = State report only, no verified specimens known from New York State.

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

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

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

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

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

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

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

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

(Refer to NYS Environmental Conservation Law, Article 24 § 24-0107 for full definition.)

Wildlife Management Area: Lands that were acquired by DEC primarily for the production and use of wildlife, including hunting and trapping. These areas provide and protect wildlife habitats that are particularly significant in their capacity to harbor rare, threatened or endangered species, host unusual concentrations of one or more wildlife species, provide an important resting and feeding area for migratory birds, provide important nesting or breeding area for one or more species of wildlife, or provide significant value for wildlife or human enjoyment of wildlife. (Public Use of Lands Managed by the Bureau of Wildlife)

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

APPENDIX B: COMPLIANCE WITH STATE ENVIRONMENTAL QUALITY REVIEW

This plan identifies habitat management activities to be conducted on the Wildlife Management Area. These activities were analyzed in the 1979 *Programmatic Environmental Impact Statement on Habitat Management Activities of the Department of Environmental Conservation; Division of Fish and Wildlife* (PEIS), as updated and amended in 2017 by the *Supplemental Final Environmental Impact Statement* (SFEIS).[15] Any activity that exceeds the thresholds of, or was not analyzed in the 1979 PEIS as amended in 2017, will require individual, site-specific environmental review. Environmental assessment forms prepared as a result of this review will be posted on the Environmental Notice Bulletin (ENB).[16]

The activities recommended in this plan:

- Will not adversely affect threatened or endangered plants or animals or their habitat.
    - Prior to implementation of any activity, staff review the NY Natural Heritage Program's "Natural Heritage Element Occurrence" database and perform field surveys when necessary. If a protected species is encountered in a project area, staff may establish buffer zones around the occurrence, move the project area, follow time-of-year restrictions, or cancel the project.
- Will not induce or accelerate significant change in land use.
    - All lands and waters within the WMA system are permanently protected as wildlife habitat.
- Will not induce significant change in ambient air, soil, or water quality.
    - Activities are designed to protect air, soil, and water quality through careful project planning, use of appropriate Best Management Practices, 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.
    - Activities will follow established plans or policies of other state and federal agencies, including all relevant U.S. Fish and Wildlife Service rules and regulations.
- Will not induce significant change in public attraction or use.
    - The WMA system 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. Proposed activities 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 an area or result in areas of significantly different character or ecological processes.
    - Activities will be conducted in a manner that maintains, enhances, or mitigates ecological processes and/or natural disturbances as appropriate for each WMA and habitat type. Some activities, such as even-aged forest management, intentionally result in areas of different character and ecological processes; however, they are not considered significant because they are ephemeral or transitional and will not permanently alter the landscape.
- Will not affect important known historical or archeological sites.
    - Activities that may result in ground disturbance are reviewed by DEC's State Historic Preservation Officer (SHPO) and/or the NYS Office of Parks, Recreation and Historic Preservation (OPRHP) to identify potential impacts to historical or archeological sites. Sensitive sites will be protected under the direction of DEC's SHPO and the OPRHP Archaeology Unit.
- Will not stimulate significant public controversy.
    - It is not anticipated that activities on WMAs will stimulate significant public controversy. A public comment period was held during development of both the PEIS and the SFEIS; no relevant comments in opposition of proposed management activities were received during the SFEIS public comment period. Staff also hold a public information session after completing each HMP, consider feedback from these sessions, and may adjust management as deemed appropriate. Kiosks, signs, webpages, articles, demonstration areas, and other outreach materials also raise awareness about habitat management activities.

[15] Available online at http://www.dec.ny.gov/regulations/28693.html.
[16] Available online at http://www.dec.ny.gov/enb/enb.html.

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.