

Franklin Swamp Wildlife Management Area

Management Plan (2021 through 2030)

Adaptive Management

This plan is based on an adaptive management format. Natural resource management occurs in a dynamic landscape that is often affected by outside variables. The outcomes of the actions described in this plan will be monitored to determine if management objectives are being met. This will allow modifications to occur if conditions change, there are undesirable outcomes, or new information becomes available.

Recreation

The property is open to all types of hunting, fishing, and trapping. The public is encouraged to use the area in a manner that is compatible with sound natural resource management. While no formal trails are designated, existing old woods roads and maintained interior service roads provide the public with ample access. This plan will explore the possibility of developing a handicap accessible trail utilizing the existing service road system.

Current Habitat Conditions

Upland forest and wetlands account for approximately 85% of the habitat on the property. The remainder of the land is comprised of agricultural fields, waterbodies, grasslands/old fields, and a small developed area that houses an office complex for the Wildlife Division. There is currently very little age class diversity within the forested areas, as over 68% of the upland forest is in the sawtimber size class, while seedling/sapling habitat is nonexistent.

Resource Management Concerns

The primary resource management concerns are invasive vegetation and unauthorized trails stemming from illegal all-terrain and motor vehicle use. Invasive vegetation can threaten biodiversity, while illegal trails can impact insects, nesting birds, sensitive soils, and plant communities. This plan will address these concerns along with other issues such as illegal dumping, unleashed dogs, and encroachments from abutting landowners.

Wildlife Habitat

Wildlife management is the primary goal of habitat management on the property. This plan will focus on creating, enhancing, and maintaining a diversity of upland and wetland habitats utilizing a variety of habitat management prescriptions. These practices will help to provide valuable habitat for the American woodcock and over 50 other species of Greatest Conservation Need.

Climate Change

Forests play an important role in mitigating the effects of climate change. This plan provides the opportunity to store and sequester carbon through sustainable forest management and the subsequent production of value-added wood products.

Economic Benefits

Hunting opportunities on the property will contribute to the Department of Energy and Environmental Protection's hunter recruitment, retention, and reactivation strategy. Hunters provide an essential funding source for wildlife management in Connecticut. They also contribute to the local economy by creating and supporting jobs within the state. The 188 acres of silviculture treatments outlined in this plan will also provide jobs producing sustainably harvested Connecticut Grown forest products.



STATE OF CONNECTICUT
DEPARTMENT OF ENERGY
AND ENVIRONMENTAL PROTECTION



Bureau of Natural Resources
Wildlife Division

Wildlife Management Area Plan
2021 through 2030

Franklin Swamp Wildlife Management Area

772.54 acres
Franklin, CT

Approved By:



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Executive Summary

Franklin Swamp Wildlife Management Area is located in the town of Franklin, which is situated in northern New London County. The first parcels of land for the property were acquired in 1947. Fifteen parcels of land have been purchased throughout the years, with the most recent acquisition occurring in 2014. The property is currently 772.54 acres in size. An office complex for the Connecticut Department of Energy and Environmental Protection's Wildlife Division is located on an approximate three-acre portion of the property. This complex includes an office building with a classroom, a post and beam carriage barn with a lab, walk-in cooler, various storage buildings, and a shooting range for the Conservation Education/Firearms Safety Program.

Franklin Swamp Wildlife Management Area is open to all types of hunting, trapping, and fishing. The public is encouraged to use the property in a manner that is compatible with sound natural resource management. While no formal trails are designated on the area, existing old woods roads and maintained interior service roads provide the public with ample access to the property.

Upland forest and wetlands account for approximately 85% of the habitat cover on the property. The remainder of the land cover is comprised of agricultural fields, waterbodies, and grassland/old fields. Oak-hickory is the dominant forest type, as it covers over 60% of the upland forest. There is very little age class diversity within the upland forested areas of the property. Currently over 68% of the upland forest is in the sawtimber size class, while seedling/sapling size habitat is nonexistent.

This 10-year (2021 – 2030) management plan will focus on: 1) creating, enhancing, and maintaining a diversity of upland and wetland wildlife habitats utilizing herbiciding, moist-soil management, mowing, mulching, silviculture treatments, and modification of agricultural agreements, 2) supporting wildlife-based recreational opportunities by maintaining the property's current infrastructure, and 3) developing and maintaining a healthy forest comprised of a diversity of tree species and age classes. Silviculture treatments will be conducted on 188 acres, resulting in the creation of 60 acres of seedling/sapling habitat.

The Connecticut Department of Energy and Environmental Protection developed a State Wildlife Action Plan in 2005 to guide conservation efforts aimed at preventing fish and wildlife populations from declining, thus reducing the potential for species to be listed as endangered. This plan, including a list of species of Greatest Conservation Need, was updated in 2015. Species of Greatest Conservation Need have low and/or declining populations that require conservation action. The silviculture and habitat management practices outlined in the 10-year management plan for Franklin Swamp Wildlife Management Area will increase the sustainability of the forest resources, while providing valuable habitat for American woodcock and over 50 other species of Greatest Conservation Need.

Property History and Overview

Franklin Swamp Wildlife Management Area (FSWMA) is 772.54 acres in size and is located in the town of Franklin, New London County, State of Connecticut (CT) (Appendix A – Map 1). The first parcels of land for FSWMA were acquired in 1947 to serve as a location for a trout hatchery. Shortly after these parcels were acquired, water quantity on the property was deemed insufficient to accommodate the potential hatchery’s needs. The area was subsequently developed into a mallard production facility. After this program was discontinued in 1977, the facility was transformed into an office complex for CT Department of Energy and Environmental Protection’s (DEEP) Wildlife Division. Nine permanent employees, two Wildlife Management Institute (WMI) contractors, and eight seasonal resource assistants are currently assigned to the FSWMA facility.

A total of 15 parcels of land have been acquired over the years, with the most recent acquisition occurring in 2014 (Table 1). Over half of the acreage of FSWMA was acquired with Federal Aid in Wildlife Restoration (Federal Aid) funds, a program funded by excise taxes collected on firearms, ammunition, and archery equipment. These funds are administered by the United States Fish and Wildlife Service and are distributed to state wildlife agencies to support wildlife restoration (land acquisition, management, and research) and Conservation Education/Firearms Safety (CE/FS) programs. These same funds are used to maintain FSWMA’s property, which includes an office building with a classroom, a post and beam carriage barn with a lab, walk-in cooler, various storage buildings, and a shooting range for the CE/FS program. For a history of infrastructure, habitat, silviculture (Appendix A – Map 2), and other management activities on the property, see Appendix B.

Table 1. Franklin Swamp Wildlife Management Area parcel acquisition history, 1947 - 2014.

Date Acquired	Parcel Acres	Grantor	Funding Source
January 30, 1947	17.00	Christensen, John Alfred	
January 30, 1947	26.00	Davis, Howard G.	
February 26, 1947	23.33	Scahonchik, James	
April 14, 1947	4.00	Malachowski, Edward A.	
April 24, 1947	100.00	Zaniewski, Anna et al.	
May 5, 1947	26.60	Silverstein, Estate of Isaac	Federal Aid
May 10, 1947	60.00	Woodard, Estate of Sarah C.	Federal Aid
May 13, 1947	40.00	Woodard, Charles Guilford	Federal Aid
May 13, 1947	60.00	Woodard, Charles Guilford	Federal Aid
May 26, 1947	1.00	Siebert, George	
July 26, 1947	3.00	Audette, George I.	
February 28, 1967	150.80	Zaniewski, H. et al.	
June 14, 1985	175.37*	Zaniewski, Felix et al.	Federal Aid
February 5, 2001	-2.03**	CT DEEP	
April 23, 2008	40.29	Armstrong, George B. et al.	
August 17, 2014	47.18	Purtill, George & Sharon	Federal Aid
Total	772.54		

* = includes 2.3 acres that were retained by the grantor as life use, that provision expired in 2002

** = property transferred from the DEEP to the town of Franklin

Wildlife Division Mission/Purpose of Wildlife Management Areas

The mission of the CT DEEP Wildlife Division is to advance the conservation, use, and appreciation of CT’s wildlife resources. Acquiring and managing Wildlife Management Areas (WMAs) is one mechanism for accomplishing this goal. Wildlife Management Areas are properties of land and water that have a unique or outstanding wildlife quality. They are managed for the primary purpose of conserving and enhancing fish and wildlife habitat and to provide opportunities for fish and wildlife-based recreation.

The Wildlife Division is responsible for managing 110 WMAs that total approximately 34,000 acres. Over 7,500 acres have been acquired through the Federal Aid program and most management activities on WMAs are funded through this program. Wildlife Management Areas range in size from one acre to 2,495 acres and include a variety of habitats including grasslands, reverting fields, forests, coastal salt marshes, and freshwater marshes. Most WMAs are open to the public year-round for hiking, wildlife viewing, fishing, hunting, and trapping.

To support the mission of the Wildlife Division, the Habitat Management Program strives to maintain healthy and diverse wildlife populations on all suitable habitats across CT, in numbers compatible with habitat carrying capacity and existing land use practices. They work closely with the Forestry Division to manage these habitats for wildlife and to protect our natural resources from the effects of wildfire, insects, disease, and misuse. In addition, the Habitat Management Program provides technical assistance to municipalities, non-government entities, other state agencies, and private landowners throughout the state.

Current Conditions

Landscape Setting and Physical Attributes

Franklin Swamp WMA lies entirely within the town of Franklin. Franklin is a rural municipality, where agriculture and small business constitute the vast majority of the community's economic base. Franklin is one of 35 communities that make up of The Last Green Valley, a 35-town National Heritage Corridor in eastern CT and south-central Massachusetts (MA). Forests and farmland make up approximately 84% of the Last Green Valleys approximately 707,000 acres. Franklin Swamp WMA lies in close proximity (≤ 5 miles) to several DEEP-controlled properties, including Bear Hill WMA, Little River Water Access Area (WAA), Mohegan State Forest (SF), Mooween State Park (SP), Pease Brook WMA, Salt Rock SP, Shetucket River WAA, Talbot WMA, Yantic River Flood Control Area, and the Yantic River WAA. Franklin Swamp WMA also lies in close proximity (≤ 5 miles) to numerous other protected properties held in ownership by private, municipal, and non-government entities. Examples of these properties include, but are not limited to, The Nature Conservancy's Ayers Gap Preserve, the town of Sprague Land Preserve, and the Joshua's Trust Pappenheimer Preserve.

Franklin Swamp WMA lies within the Southern New England Coastal Plains and Hills ecoregion. This ecoregion covers much of CT, Rhode Island, and southeastern MA. The landforms of the ecoregion are irregular plains with low hills and some open high hills with relief of about 100 feet (ft.) to 400 ft. Bedrock types are mostly granites, schist, and gneiss, although some soft marble occurs in western CT. Surface materials are mostly glacial till, with some stratified deposits in valleys. Soil patterns are complex and heterogeneous where the numerous, small, till-covered bedrock hills rise above the valleys and general level of outwash. Coarse-loamy and sandy, mesic Inceptisols and some Entisols are typical. Historically, forests were dominated by a mix of oaks, American chestnut, hickories, other hardwoods, some hemlock, and eastern white pine. As with many other areas of New England, these forests were cleared, either for agriculture and grazing or for the production of charcoal. A variety of dry to mesic successional oak and oak-pine forests cover the region today, along with some elm, ash, and red maple that are typical of southern New England's forested wetlands.

The topography of FSWMA is varied. The properties highest elevation (>575 ft.) lies along its western boundary, while its lowest elevation (<150 ft.) occurs along Beaver Brook, close to the property's eastern boundary (Appendix A – Map 3).

Four named stream courses traverse FSWMA including Ayers Brook, Beaver Brook, McCarthys Brook, and Mountain Brook. Numerous small ponds, level ditches, and one nine-acre impoundment named Mahoney Pond are located on the property (Appendix A – Map 4).

A small historic cemetery is located on the property (Appendix A – Map 5).

Eighteen soil types are present at FSWMA (Table 2). Some of these soil types are classified as either prime farmland soils or farmland soils of statewide importance. Slopes range from 0%-45% (Appendix A – Map 6).

Table 2. Franklin Swamp Wildlife Management Area soil type characteristics, 2021.

Soil Name	Acres	Drainage Capacity	Soil Type
Hinckley gravelly sandy loam	233.12	Excessively drained	Upland
Catden and Freetown	152.28	Very poorly drained	Wetland
Canton and Charlton	72.90	Well drained	Upland
Merrimac sandy loam	67.61	Somewhat excessively drained	Upland
Charlton-Chatfield complex	54.20	Well drained	Upland
Timakwa and Natchaug	42.39	Very poorly drained	Wetland
Agawam fine sandy loam	44.40	Excessively drained	Upland
Ninigret and Tisbury	35.73	Moderately well drained	Upland
Hollis-Chatfield-Rock outcrop complex	35.35	Well drained	Upland
Rippowam fine sandy loam	8.71	Poorly drained	Wetland
Scarboro muck	5.60	Very poorly drained	Wetland
Walpole sandy loam	5.13	Poorly drained	Wetland
Udorthents-Urban land complex	3.26	Well drained	Disturbed
Udorthents-Pits complex, gravelly	2.90	Well drained	Disturbed
Woodbridge fine sandy loam	2.89	Moderately well drained	Upland
Sudbury sandy loam	2.27	Moderately well drained	Upland
Windsor loamy sand	2.02	Excessively drained	Upland
Rock outcrop-Hollis complex	1.78	Somewhat excessively drained	Upland
Total	772.54		

Access

Ten gates have been installed to control vehicular access to the 1.67 miles of service roads on the property. Use of the service road system by the public is limited to non-vehicular traffic. Three public parking lots are located at FSWMA. Two of these parking lots are located off of Plains Road, while the third is situated off of Under the Mountain Road (Appendix A – Map 7). The public is allowed access to the entire property year-round, except for the 2-acre range area when it is in use. The range is in use an average of 15 days each year. Currently no right of ways, easements, or deed restrictions exist for FSWMA.

Property Infrastructure

- Shooting range – (100-yard (yd.) range and 5-stand trap field)
- Structures on shooting range – 1 pavilion with 5 shooting benches, 3 shooting stations (2 towers and 1 boat), and 3 storage buildings
- Structures on office grounds – 1 office building, 1 barn/lab, 2 storage buildings, and 1 walk-in cooler
- Miles of boundary – 9.7
- Miles of service road – 1.67
- Parking lots – 3
- Shield signs – 1
- Other signs – 5
- Kiosks – 3
- Gates – 10
- Dams and water control structures – 1
- Culverts – 2
- Fences – 740 ft.

Recreational Uses

Franklin Swamp WMA is open to all types of hunting (firearms and archery deer, turkey, small game, and waterfowl), fishing, and trapping. Pheasants are stocked on the property during the small game hunting season in the fall. Licensing and permit requirements, season dates, and other regulations can be found in the [CT Hunting and Trapping Guide](#), as well as the [CT Angler's Guide, published annually by the DEEP \(available at town clerk offices and the DEEP's website\)](#). The public is encouraged to use and enjoy FSWMA in a manner that is compatible with sound natural resource management such as wildlife viewing, hiking, and nature photography. No formal trails are designated on the property. Developed, multi-use trails can conflict with the Wildlife Division's mission. Recreational trails have been shown to fragment and degrade habitat, cause erosion and sedimentation of streams, disrupt wildlife, and create avenues for non-native invasive plant infestations, thereby reducing biodiversity. Multi-use trails can also negatively impact those engaged in wildlife-based recreation, especially those seeking a more solitary outdoor experience. Maximizing the amount of undisturbed habitat on FSWMA and all WMAs is a critical objective, especially during the spring and summer breeding period. Existing old woods roads and maintained interior service roads (Appendix A – Map 7) provide the public with access to a representative sample of the major habitat types and other important features found on the property.

Resource Management Concerns

The primary resource management concerns at FSWMA are unauthorized trails stemming from illegal all-terrain and motor vehicle use and invasive vegetation. Illegal trails can impact nesting birds, insects, sensitive soils, and associated plants. Invasive vegetation can threaten biodiversity and involves mechanical and chemical treatments to control. Mechanical controls involve cutting, mowing, flaming, and pulling, whereas chemical control involves the use of herbicides in accordance with the manufacturers label instructions as required by law. Other concerns include unleashed dogs, dumping, and encroachments by abutting landowners. Known encroachment issues at FSWMA occur adjacent to three separate residential parcels. These parcels are located on Plains Road, Route 207 (Pond Road), and Under the Mountain Road. These encroachments will be addressed within the immediate future.

Special Uses

Scientific Collection Permits

A scientific collection permit from the CT DEEP is required for all activities that involve the collection, capture, handling, marking, or salvage of birds, mammals, reptiles, amphibians, invertebrate, or plant

species. In 2017, a request was made by the University of Connecticut (UCONN) Ecology and Evolutionary Biology Department to conduct caterpillar research on 21 DEEP properties, including FSWMA (Appendix A – Map 5). This research aimed to characterize *Lepidoptera* caterpillar communities and their habitats. This activity was approved by the DEEP and a scientific collection permit was issued. This permit was valid from 15 June 2017–30 September 2019. The results of this research project indicated that 17 species of caterpillar (55 total specimens) were collected within FSWMA. This number does not include gypsy moth caterpillars, which were collected to determine if they were being parasitized or infected by fungal or viral infections.

Forest Product Harvest Permits

Forest product harvest permits offer individuals an opportunity to enjoy state properties in a unique way by providing an opportunity to gather small quantities of natural resources, primarily for personal use. Permits have been issued in the past at FSWMA for maple taps and cordwood clean up from downed trees. Permits may be issued in the future in coordination with the Forestry Division to accomplish specific maintenance needs or habitat enhancement objectives at FSWMA. Records indicate that cordwood permits were issued at FSWMA to two individuals in 2002 (total of 12 cords) and one individual in 2003 (10 cords). A maple tap permit was issued to one individual in 2014 for 100 taps.

Agricultural License Agreements

The use of state-owned land for agricultural purposes is consistent with wildlife management practices and the desire to provide diverse habitats for a variety of wildlife species. The DEEP has long recognized the benefits and services provided through cooperative farming agreements. The goal of the DEEP's Agricultural Agreement Program is to improve and maintain wildlife habitat on designated department-owned lands through a cooperative effort with local agricultural producers. Agricultural license agreements consist of a license and land use plan that identifies the crops to be planted and the services and/or goods to be provided to benefit wildlife. The agreement also requires licensees to follow the implementation schedule of a conservation plan developed by the United States Department of Agriculture Natural Resources Conservation Service to ensure that soil and water quality are maintained. Areas are inspected annually by Wildlife Division staff to ensure compliance with the agreement terms. Currently the agricultural fields located at FSWMA (Appendix A – Map 8) are managed under license agreements with two separate licensees. In exchange for the use of FSWMA for crop production, the licensees maintain grassland/old field habitat through periodic mowing, plant sorghum for wildlife cover, and provide stone dust for maintenance of the CE/FS shooting range.

Other

In 2013, a request was made by the Saving our Shetucket River Trails Organization to hold an equestrian ride that traversed a portion of the FSWMA property. This event was approved by the Wildlife Division and a two-day special use license was issued.

In 2016, a request was made by the Asbel Woodward Museum Commission to hold an Ashbel Woodward Day event on a portion of the FSWMA property. This event was approved by the Wildlife Division and a two-day special use license was issued.

Wildlife Habitats

Although the habitat at FSWMA is dominated by upland forest and wetlands, other habitat types exist in varying acreages (Figure 1).

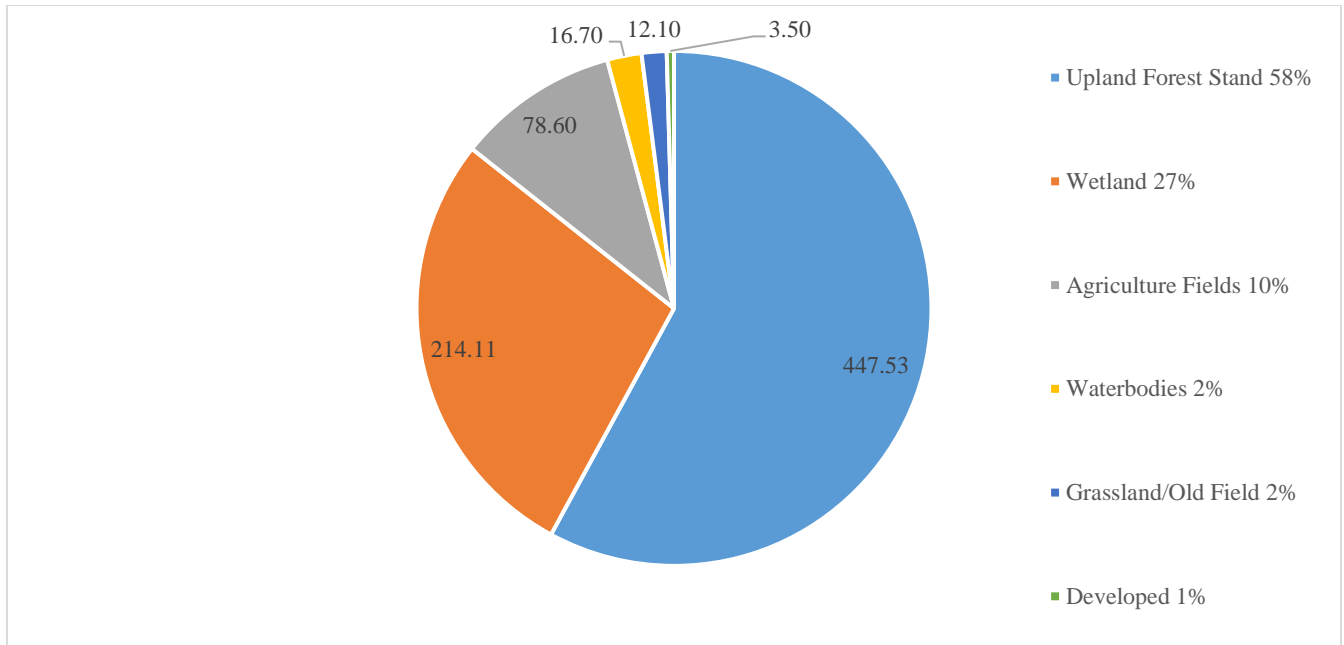


Figure 1. Franklin Swamp Wildlife Management Area land cover types by percent and acreage, 2021.

Upland Forest

Upland forest is the dominant cover type at FSWMA. Total upland forest acreage is 447.53 acres.

A comprehensive inventory of the forests at FSWMA was completed by staff from the Forestry and Wildlife Divisions in 2020. Seventy-three unique plots were sampled across the forested areas of the property. At each sample plot quantitative forestry measurements were taken to assess species composition, size class, timber quality, volume, and desirable regeneration. Additionally, qualitative estimates of competing vegetation, site suitability, and invasive species density were also recorded. Observations of vegetative changes were made while traversing the property. As a result of these observations, FSWMA was divided into 57 forest stands (Appendix A – Map 9) that are unique in species composition, age-class, structure, access, and past management history.

Approximately 26 acres of FSWMA are considered inaccessible, while nearly 282 acres are considered inoperable. Inaccessible areas lack sufficient road or vehicle access points needed by equipment for forest management activities. Inoperable areas may be accessible but are not actively managed due to limiting physical site features such as wetland soils or excessively steep, rocky slopes.

Forest Types

Various upland forest types are present at FSWMA (Figure 2). Oak-hickory is the dominant upland forest cover group represented on the property. Red maple dominated areas are prevalent in riparian corridors, along the slower moving drainages, and throughout the wetland areas at FSWMA. Acreage attributed to this community is mostly excluded from the upland forest acreage. Most of the white pine cover is in the northern section of the property, both east and west of Under the Mountain Road. There are two remnant pockets of pitch pine, supporting roughly a half-dozen individuals each. Other scarce forest types present on the property include quaking aspen, eastern red cedar, eastern hemlock, Atlantic white cedar, and northern hardwoods consisting of sugar maple, beech, and yellow birch.

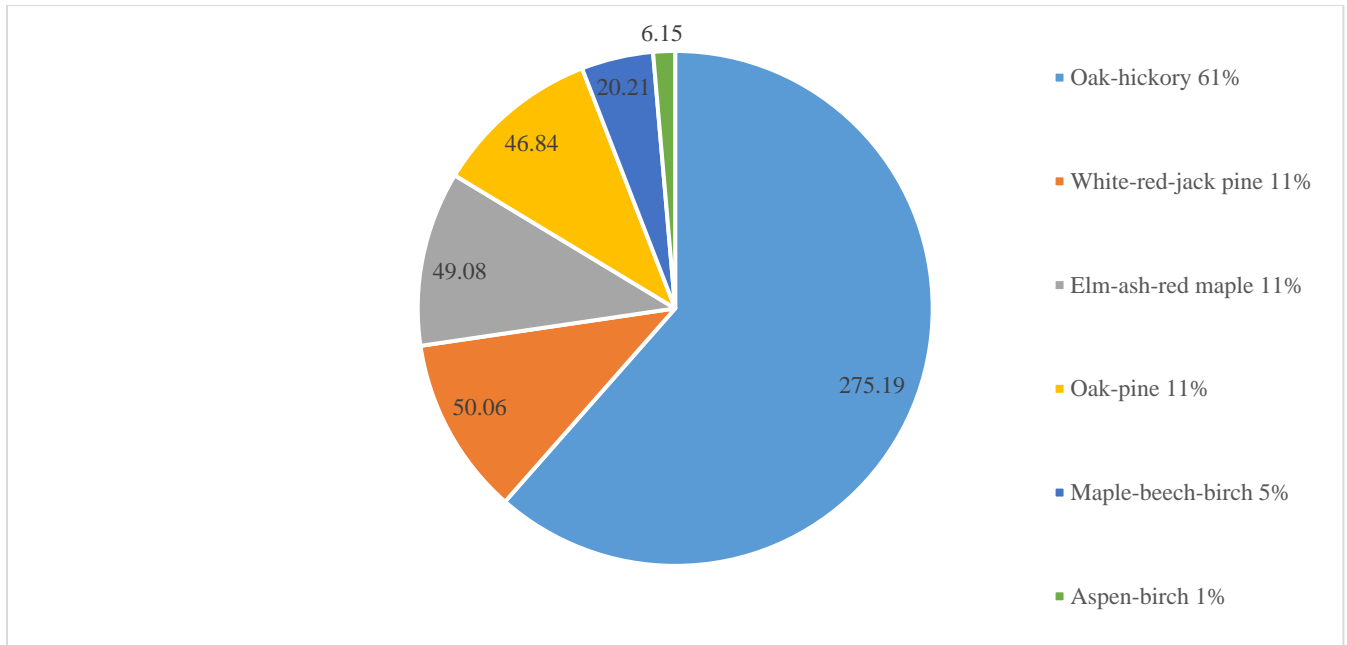


Figure 2. Franklin Swamp Wildlife Management Area upland forest types by percent and acreage, 2021.

Forest Size Classes

There is currently no seedling/sapling class present for any upland forest type at FSWMA. Much of the upland forest on the property is in the sawtimber size class (Table 3).

Table 3. Franklin Swamp Wildlife Management Area upland forest cover types by size class acres, 2021.

Upland Forest Cover Type	Size Class						Total Acres
	Seedling/Sapling	Pole	Sawtimber Pole	Sawtimber	Sawtimber Seedling/Sapling	All-Aged	
Aspen-birch	0	0	6.15	0	0	0	6.15
Maple-beech-birch	0	0	20.21	0	0	0	20.21
Oak-pine	0	1.04	0	45.80	0	0	46.84
Elm-ash-red maple	0	11.64	0	37.44	0	0	49.08
White-red-jack pine	0	0	2.09	47.97	0	0	50.06
Oak-hickory	0	35.25	65.58	174.36	0	0	275.19
Total	0	47.93	94.03	305.57	0	0	447.53

Forest Health

For management planning purposes, forest health is a condition or suite of collective conditions which support sustainable and productive forest ecosystems. Factors that may influence forest health include; collective tree health, the presence of invasive plants or invasive insects, native insect or disease outbreaks, or forest composition weighted too heavily towards one species, family, or age class. Current forest health at FSWMA is tenuous after the significant impact to oak forests by gypsy moth caterpillars, the proliferation of invasive plants, and ongoing regeneration and age class diversity debts.

Invasive plants are a concern for managers due to their ability to spread throughout the landscape, dominate the forest understory, preclude native tree and shrub growth, and harbor vectors for tick-borne

illnesses. Invasive plants take advantage of elongated growing seasons and are not subject to herbivory by most wildlife. Their presence can create monocultures that threaten desired seedling and shrub growth following habitat management practices. Control of invasive plants is costly and usually involves the use of herbicides. Despite this expense, invasive plant management should be a component of all habitat management activities which threaten to increase or spread invasive plants on the landscape. As time and resources allow, managers should be proactive and aim to decrease or eliminate invasive plants from the landscape.

Of the 73 sample plots inventoried at FSWMA, 57% of those plots (n = 42) supported some presence of invasive plants. Ten percent of the sample plots that contained invasive plants had a moderate-density population (n = 4), while 90% had a low-density population (n = 38). Areas of potential invasive plant eradication focus should include stands B-4, C-4, E-8, F-1, H-3, and compartment G.

Portions of FSWMA were subject to three consecutive years of moderate to severe defoliation by gypsy moth caterpillars. In 2016, there was very light to moderate defoliation on the ridges in the northwest portion of the property. Severe defoliation occurred during the spring of 2017, on the westside of Under the Mountain Road. Anecdotal evidence suggests defoliation was also high on the eastside of Under the Mountain Road, though this was unmapped by the CT Agricultural Experiment Station (CAES). In 2018, defoliation was lesser than the two previous years and was again concentrated on the northwestern slopes of the property. Multiyear defoliation, combined with persistent drought in 2016 and 2017 resulted in widespread, variable intensity oak mortality at FSWMA. During the forest inventory, oak mortality was classified into one of three categories; low (0-25% mortality), moderate (26-50% mortality), and severe (> 50% mortality). Severe oak mortality was recorded at 21% of the sample plots. Moderate oak mortality occurred at 30% of the sample plots, while 49% experienced low oak mortality. Most of the plots that were classified as having low oak mortality supported low to no oak basal area. Geographic areas most affected by oak mortality were compartments E and G, and those areas directly on or adjacent to Under the Mountain Road.

Emerald ash borer (EAB) was first detected in the town of Franklin by the CAES in 2017. The host trees for EAB are in the true ash family. Ash represents a very small percentage of the forest land at FSWMA, however there is a single high-density area of ash composition toward the southern extent of stand A-2.

Forests and Climate Change

Forests play an important role in mitigating the effects of climate change. Trees and green plants absorb carbon dioxide from the atmosphere for use in photosynthesis. They release oxygen and store carbon in trunks, roots, branches, and leaves. Snags store additional carbon which is transferred to the soil when they fall and gradually decompose. Meanwhile, the soil acts as its own carbon sink which on average stores over 30% of the combined carbon pool in regional forests.

In their importance to mitigating climate change, forests serve two significant functions; sequestering carbon dioxide and storing carbon. The forests ability to perform these functions is maximized at two different points during development. Sequestration potential is maximized by vigorously growing forests which are efficiently photosynthesizing and rapidly adding wood. Typically, this occurs when a forest is 30-70 years old but can extend longer on more productive sites. Carbon storage benefits peak in old forests which support large diameter trees and accumulations of dead and downed wood. These attributes are more common in forests over 200 years old.

The Forestry Division believes in pursuing a diversity of carbon management strategies to meet the demands of a changing climate, while also accomplishing traditional land and forest management objectives. Not only forests, but forest products play a critical role in mitigating climate change. Value-added wood products such as timbers and lumber from responsibly managed forests store carbon for

decades, while tree removals from sound forest management allocate growing space to rapidly growing trees. This improves sequestration and wood production rates, adds structural complexity, and improves wildlife habitat.

The Forestry Division uses a triad approach to forest management with its policy regarding “management status” designations applied in the forest stands database. Old forestland management sites are analogous to forest reserves which are intended to grow undisturbed for long periods of time and store large amounts of accumulated forest carbon. Areas designated as inoperable, inaccessible, and inactive similarly receive no active forest management and store large volumes of carbon. A portion of the actively managed landscape is managed on an uneven-aged basis, in which there are both high levels of carbon storage through mature trees, with balanced sequestration occurring through tree reproduction in the understory and within canopy gaps. Another portion of actively managed lands are managed to promote the persistence of species or communities of species which require young forests managed rotationally through periodic disturbance across the landscape. These stands managed with even-aged regeneration treatments will come to represent rapid carbon sequestration areas, while simultaneously providing the traditional wildlife habitat, rare plant community, and forest sustainability values of young forests.

Climate change will over time affect soil moisture, resulting in changes in regional species composition. In this region, it is expected that species at or near the southern extent of their range will be among the first impacted. Sugar maple, eastern white pine, aspens, eastern hemlock, gray birch, and paper birch may experience decline in this region to climate change. On the other hand, it is anticipated that growing conditions will improve for species towards the northern extent of their ranges. Scarlet oak, pitch pine, and black gum should fare well barring any impacts from other stressors like oak wilt or southern pine beetle. Forest management strategies will affect how well forests adapt to a changing climate. Some compositional changes may be initiated by changes in soil moisture. Forest management practices will strive to make appropriate decisions regarding species composition and site quality. Similarly, complex forest structure and reasonably diverse species mixtures will help promote climate resilience in both managed and unmanaged stands. Thinning in stands which are expected to be impacted by climate change may be a good strategy for prolonging health. Disfavoring maladapted future species on poorly suited sites will help build climate resilience into the residual forest. Similarly, fostering abrupt species transition through aggressive management action may be advisable in climate threatened forests.

Harvest Sustainability

Approximately 344 acres of the property have the potential to be managed for wildlife habitat using even-aged regeneration treatments. Of these 344 acres, 116 acres are unlikely to be managed with this type of silviculture treatment due to landscape position, topography, soil type, and other factors. This plan establishes a 45 acre short-rotation woodcock management area that is excluded from the sustainability analysis, thus leaving 183 acres of the property that can support even-aged forest regeneration treatments.

Applying a 100-year rotation to land intended to be managed with even-aged methods gives managers a framework for assessing long-term harvest sustainability. Assuming a desire to maintain FSWMA in a condition which supports at least 15% of the even-aged land base in young forest habitat, 18 acres can sustainably be regenerated per 10-year planning period, excluding short-rotation management.

Sustainability can also be assessed based on the regulation of harvest volumes over the planning period. This ensures that more timber isn't harvested than is grown on any property, at any time. Calculating allowable cut on a volume basis takes baseline knowledge of how much wood volume our forests are adding each year via annual growth. Using measurements documented in the Yale University Study titled “Estimating the Sustainable Yield of the State of Connecticut Division of Forestry’s Commercially Suitable Timberland” we can conservatively estimate annual growth at an average of 130 board feet (BF) per acre per year. One hundred thirty BF per acre per year (130 BF/Acre/Year) multiplied across the

long-term active forest management acreage of 299 acres suggests the upland forests on the property are growing 38,870 BF per year, or 388,700 BF over the 10-year plan period. Conventional multi-resource forest management guidance suggests harvesting no more than 75% of annual growth to ensure a constantly accumulating volume of wood across a given management area (Leak 2011). Using the 75% annual growth methodology, 291,525 BF can be sustainably harvested over 10-year planning period. The silviculture activities outlined in this plan may result in temporary increases in this harvest acreage or volume during this planning period due to; establishment of woodcock management areas, rehabilitation of degraded stands managed with non-commercial treatments, and rehabilitation of stands which have experienced recent severe overstory mortality.

Wetlands and Waterbodies

Wetlands are the second most dominant land cover type at FSWMA. Total wetland acreage is 214.11 acres. This includes a series of vernal pools located to the north and west of Mahoney Pond.

Approximately five acres of the invasive *Phragmites* (common reed grass) is located within these areas. Total waterbody acreage is 16.70 acres. This includes four named stream courses, Mahoney Pond, and the various other unnamed ponds that occur on the property (Appendix A – Map 4).

Agricultural Land

Total crop acreage is 78.60 acres. This includes 44.0 acres of silage corn and 34.6 acres in hay (Appendix A – Map 8).

Grassland/Old Field

The grassland/old fields are concentrated off Under the Mountain Road (Appendix A – Map 8). Total grassland/old field acreage is 12.10 acres. Small portions of these areas contain invasive species such as autumn olive, Japanese barberry, Japanese knotweed, oriental bittersweet, and winged euonymus.

Developed Land

Total developed land acreage is 3.50 acres. These developed areas include the office building, associated outbuildings, parking lots, and the CE/FS shooting range (Appendix A – Map 7).

Wildlife

General Wildlife Use

The variety of habitat types found within FSWMA provide habitat for a multitude of wildlife species.

Waterfowl species known to nest on the property include Canada goose, mallard, hooded merganser, and wood duck. Other waterfowl species use FSWMA during migration such as American black ducks, blue-winged teal, and green-winged teal.

Passerine bird species documented nesting on the property include American robin, eastern bluebird, eastern phoebe, European starling, house sparrow, and mourning dove. Numerous other passerine species have also been observed during migration at FSWMA.

Wild turkeys have been recorded nesting on the property and several great blue heron rookeries have also been documented at FSWMA. Woodcock have been observed during migration.

Raptors observed on the property include cooper's hawk, northern goshawk, northern harrier, turkey vulture, red-shouldered hawk, red-tailed hawk, and sharp-shinned hawk.

Various species of mammals have been documented on FSWMA including bobcat, coyote, eastern cottontail rabbit, eastern gray squirrel, fisher, gray fox, raccoon, red fox, and white-tailed deer.

The large wetland areas on the property provides habitat for several amphibian and reptile species such as the gray treefrog, northern water snake, and common snapping turtle.

State-Listed and Greatest Conservation Need Species

A review of the DEEP Natural Diversity Data Base (NDDB) indicates the presence of five known extant and historic populations of state listed species are found on or within the vicinity of FSWMA (Appendix A – Map 10); these include two critical habitats, two vascular plants, and one vertebrate animal. The NDDB Request for Review process is designed to assist in complying with the State Endangered Species Act. The NDDB program performs hundreds of environmental reviews each year to determine the impact of proposed activities on state-listed species and to help landowners conserve the state's biodiversity.

State funding for non-game wildlife research comes from the State Wildlife Grants program. Funding from this Federal program is used to provide conservation efforts aimed at preventing fish and wildlife populations from declining, reducing the potential for these species to be listed as endangered. In order to access these grant funds, CT is required to develop a [State Wildlife Action Plan](#) that identifies the Greatest Conservation Need (GCN) species in the state. The forested areas of FSWMA lack age class diversity; actively managing these areas for young forest habitat will help to restore numerous GCN species, such as the woodcock and ruffed grouse.

Fisheries Resources

No stream survey data is available for Ayers Brook. Based upon stream and watershed characteristics, this watercourse would be expected to support fluvial dependent species such as blacknose dace and white sucker. This watercourse may seasonally support wild brown trout and wild brook trout closer to its confluence with Beaver Brook.

Beaver Brook supports a high quality coldwater fishery and is annually stocked by the Fisheries Division with over 900 adult rainbow trout and brown trout. It is also known to support wild brown trout and wild brook trout populations, along with other fluvial species such as blacknose dace, fallfish, white sucker, tessellated darter, and the catadromous American eel.

McCarthys Brook does support a small population of wild brook trout and tessellated darter. The brook will support species such as bluegill, pumpkinseed sunfish, and chain pickerel as it flows through wetland areas.

Mountain Brook supports a fairly robust wild brook trout population upstream of Mahoney Pond.

Mahoney Pond will support typical warmwater fish species such as largemouth bass, yellow perch, chain pickerel, bluegill, pumpkinseed sunfish, golden shiner, and brown bullhead. Downstream of Mahoney Pond, the brook will be warmer and provide more favorable conditions for the survival of transient warmwater fish species that emigrate from the pond.

Wildlife Division Monitoring

In 2007, a mast survey was initiated statewide to evaluate acorn productivity. The purpose of this annual survey was to develop an acorn index on both a statewide and regional basis. This index helps to predict annual deer harvest and provides data to researchers who are examining how annual acorn abundance relates to rodent trends and their correlation to tick abundance. A survey was implemented in each of CT's 12 Deer and Turkey Management Zones. At 11 of the 12 sites, 25 trees in the red oak group and 25 trees in the white oak group were marked and annually surveyed. At one site, due to a lack of white oak trees, only 25 trees in the red oak group were sampled. A total of 575 trees are annually sampled with dead trees being replaced as required.

A total of 25 red oaks and 25 white oaks are permanently marked on the northern section of FSWMA (Appendix A – Map 5). The gypsy moth outbreak that occurred from 2016 - 2018 negatively impacted the mast survey trees at FSWMA, with 27 out of the initial 50 trees requiring replacement in 2019. Most of the surrounding oak trees in the area also experienced high mortality. Oak mast production among the survey trees crashed in the years of and following the gypsy moth outbreaks, producing the lowest numbers of acorns counted since the inception of the survey (Figure 3).

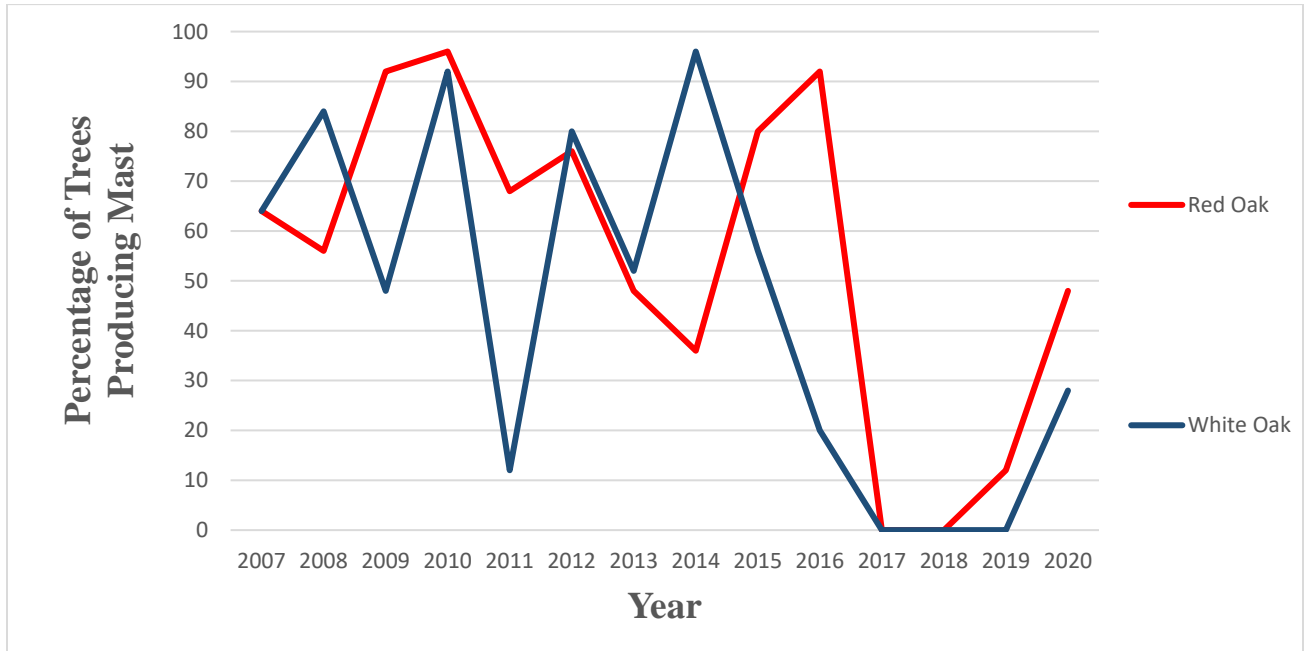


Figure 3. Percent of trees in the Franklin Swamp Wildlife Management Area survey plot that produced mast, 2007-2020.

Wood duck nest boxes have been installed, maintained, and monitored in CT by the Wildlife Division for over 50 years. Thirteen wood duck boxes are currently maintained at FSWMA (Appendix A – Map 5). Over the last 10 years, there has been an average of 10 wood duck boxes checked each year at FSWMA (Figure 4).

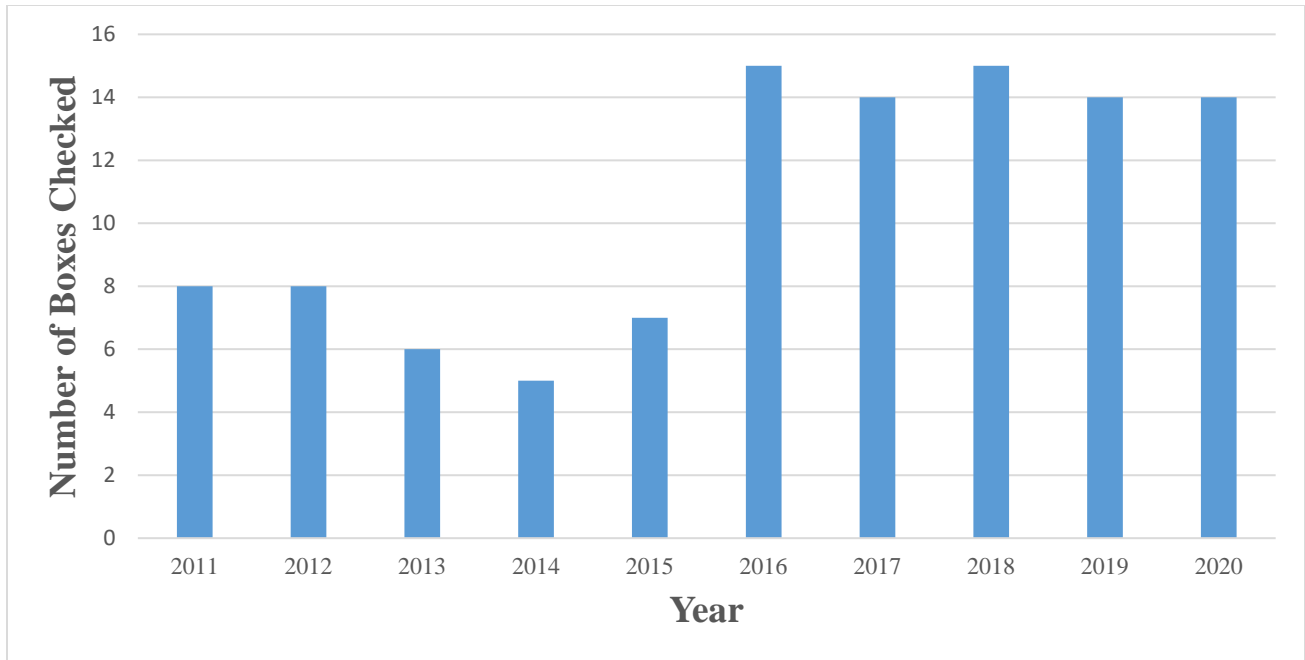


Figure 4. Number of wood duck nest boxes checked at Franklin Swamp Wildlife Management Area, 2011 - 2020.

In the last decade, total duck use of checked wood duck boxes at FSWMA has varied (Figure 5).

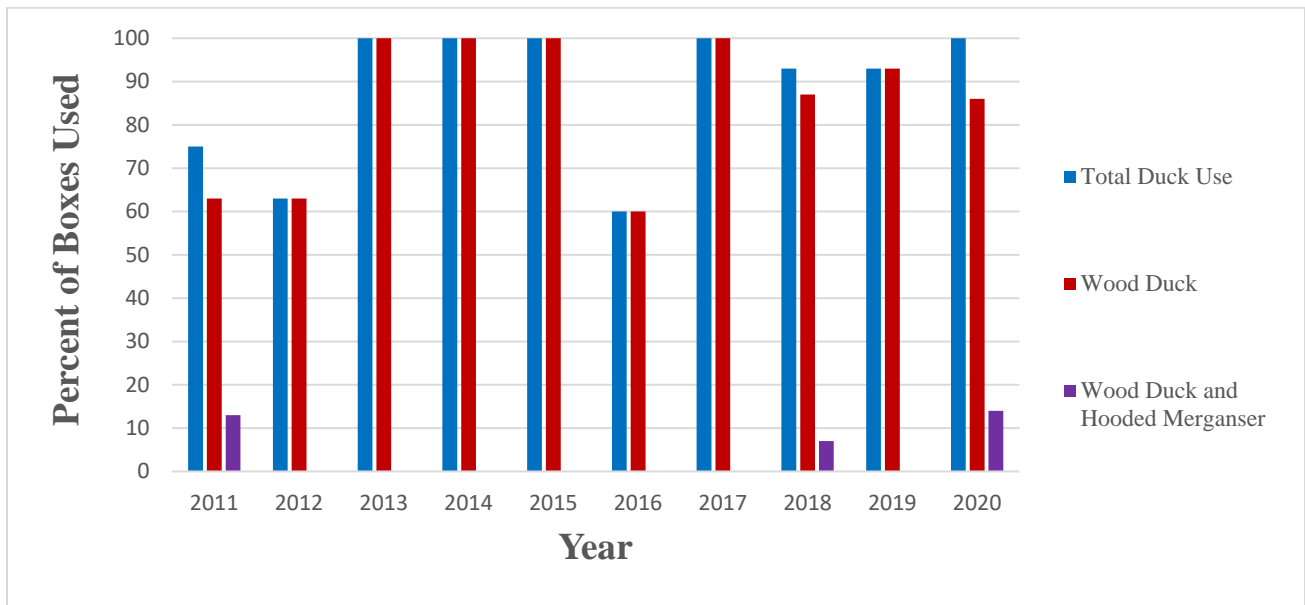


Figure 5. Percent of Franklin Swamp Wildlife Management Area wood duck nest boxes with duck use, 2011 – 2020.

Other wildlife monitoring efforts may be initiated at FSWMA during this planning period as time and resources allow.

Special Designations, Plans, and Initiatives

Young forest and the wildlife that depend on it have been decreasing throughout CT and the region for many years. Some of this habitat loss can be attributed to development, but many areas have simply

grown into mature forest. Franklin Swamp WMA is located in one of the three Woodcock Focus Areas (Appendix A – Map 11) as defined in the Management Plan for American Woodcock in Connecticut (MPWC). Woodcock Focus Areas occur in areas where there are significant amounts of DEEP-controlled properties. These Focus Areas contain mixed ownership, with either a WMA or SF as their core. Utilizing DEEP controlled properties as the core of these Focus Areas ensures that the habitat will be managed appropriately and ensure that a long-term commitment is made to the management of woodcock and other young forest obligate wildlife species.

Franklin Swamp WMA has good to excellent potential to provide ideal woodcock habitat based on soil type, topography, extensive wetlands, and the ability of the area to be managed for grassland/old field and new young forest habitats. The habitat needs of woodcock are complex. Woodcock require areas of young forest or shrubland for nesting cover and feeding. Soil conditions must support adequate populations of earthworms and other invertebrates which make up the woodcock diet. The soils within the planned final harvest areas in stands D and E at FSWMA are not heavily sloped, contain a loamy component, and border wetlands. These areas provide the conditions required for woodcock nesting, brood rearing, and feeding cover. Male woodcock display in open areas, such as old fields and clearings, in early spring to attract mates. Later in the season woodcock tend to move to meadows and fields for roosting. It is ideal to have displaying and roosting cover abutting feeding and nesting areas.

The woodcock is a popular gamebird throughout eastern North America. Woodcock populations have been declining within their range during the last 40 years (Cooper and Parker 2010). While environmental factors such as contaminants (Scheuhammer et al. 1999) may be limiting woodcock populations, their decline is most likely attributable to the loss of young forest habitat on both their breeding and wintering grounds. This loss of young forest habitat has been caused primarily by forest maturation and urbanization (Dwyer et al. 1983, Owen et al. 1977, Straw et al. 1994). As woodcock populations continue to decline, so do the recreational opportunities associated with their presence.

The goal of the MPWC is to increase woodcock populations on state-controlled lands and in Woodcock Focus Areas. Increasing levels of young forest habitat on these areas will ensure that an adequate habitat base exists to meet legal stewardship mandates for woodcock and other young forest dependent species. In order to accomplish this, it is estimated that over 380,000 acres of suitable habitat need to be provided in CT.

A portion of FSWMA along Route 32 (Stands A-1 through A-3 and B-6 through B-13) is located in the Lebanon Focus area for New England cottontail (NEC) (Appendix A – Map 11), one of twelve focus areas identified in CT as having good potential for both habitat and population restoration for NEC. The NEC is CT's only native cottontail and has declined by more than 85% throughout its range in the Northeast. The loss of habitat has been identified as the primary cause of this decline. New England cottontail require large patches (25 acres or more) of young forest or dense shrubland to maintain viable local populations. They succumb easily to predation if they need to leave dense cover to forage. In 2020, it was determined that the Lebanon NEC Focus Area probably no longer supported NEC and would not contribute to the recovery of this species. However, the modeling used in establishing NEC Focus Areas considered site characteristics that could support shrubland or young forest habitat. Forest management that results in large patches of regenerating forest, such as the final harvest planned in Stand D-7 and E-7 at FSWMA (located approximately 0.5 miles northeast of the focus area), will result in such habitat and benefit other shrubland-dependent species.

While NEC and woodcock are focal species for young forest habitat creation, over 50 other GCN species rely on young forest or shrubland. On that list are many songbirds such as eastern towhee, indigo bunting, prairie, chestnut-sided, and blue-winged warbler; reptiles such as box turtle, wood turtle, and smooth green snake; a number of small mammals; and many insects including pollinators (Chapter 4,

2015 Connecticut Wildlife Action Plan, https://www.ct.gov/deep/lib/deep/wildlife/pdf_files/nongame/ctwap/CTWAP-Chapter4.pdf). The final harvests and shelterwood cuts indicated in this plan will benefit many species in this suite of shrubland/young forest dependent wildlife.

Wildlife Habitat Goals, Objectives, and Strategies

Adaptive Management

This plan is based on an adaptive management format. Natural resource management occurs in a dynamic landscape that is often affected by outside variables. These variables may include insect and disease outbreaks, storm damage, climate change, and drought. With so many unknowns, outcomes can be uncertain, so the flexibility of adaptive management is especially valuable. Outcomes of management actions will be monitored and analyzed to provide data as to whether this plan is meeting its management objectives. This will allow changes to the plan if conditions change, there are undesirable outcomes, or new information becomes available. The adaptive management format follows the steps listed below:

- 1) Objective assessment.
- 2) Designing a management plan and monitoring program that will provide data about the effectiveness of the chosen actions.
- 3) Implementation of the plan.
- 4) Monitoring indicators to determine how effectively actions are meeting management objectives.
- 5) Evaluating and comparing outcomes to the future desired condition.
- 6) Adjusting the chosen actions if necessary.

Forest Management

A goal of this plan is to develop and maintain a healthy forest comprised of a diversity of tree species and age mosaics. A minimum of 15% of the even-aged forested habitat at FSWMA will be maintained in the seedling/sapling stage. Wildlife management is the primary goal of habitat management at FSWMA. Habitat management activities within the forest are guided by the principles of silviculture. Using traditional silviculture methods will result in an increased stem density at stand culmination, while facilitating the commercial viability of habitat management activities. In order to achieve the long-term habitat goals for FSWMA, a diverse suite of silviculture approaches will be utilized.

Final harvests are prescribed to quickly establish an area to young forest habitat, which is a deficient age class at the property. It is intended that these areas respond quickly to the influx of light and nutrients with rapid vegetative growth and high stem density. This condition can be sustained through periodic mowing, which can be considered regeneration via coppice sprouting. Final harvesting facilitated through commercial timber sale is prescribed in stands B-4, D-7, and E-6. Forestry mowing resulting in land which resembles a recent final harvest is prescribed in stands C-4 and E-8. Combined, these treatment account for 60 acres of the silviculture work plan.

Shelterwood harvesting is prescribed to increase the number of seedlings and saplings in the forest understory. Conducting a final harvest years after a shelterwood harvest will facilitate dense reproduction. Two shelterwood harvests totaling 43 acres are prescribed as part of this plan.

In forestry teaching, thinning is designed to accelerate the growth of the residual trees. It also facilitates the structural development of a stand and should be included in a balanced management approach for wildlife. Thinning improves crown development and mast production in hardwood trees and live-crown ratio and thermal cover in softwoods. The treatment also allocates light to the forest floor which benefits tolerant to intermediate-tolerance regeneration. Twenty-eight acres of mixed pine are prescribed thinning treatments.

Selection harvesting combines the principles of thinning and regeneration into one method which over time can help develop multi-aged stands. This practice may benefit forest interior wildlife which prefer more continuous high canopy. This treatment will be applied on over 38 acres to benefit structural forest conditions and interior songbird habitat.

Timber stand improvement is typically a tree-centric treatment intended to shift competition or benefit increased growth in a young stand. The term can also describe any cutting treatment designed to improve forest growth or health, but not intended to yield forest products of a commercial volume. This practice is advised in stands E-2 and G-6 to adjust growing conditions in light of recent severe oak mortality following gypsy moth defoliation and drought. Timber stand improvement in this application may include applying herbicide to control invasive vegetation, cutting trees intended to be left on the ground, or practicing targeted understory and middle-canopy mowing to disturb poor productivity trees, release desirable regeneration, and facilitate habitat improvement.

When possible, the Best Management Practices (BMPs) as defined in the MPWC for creating woodcock nesting habitat will be utilized. The BMPs used in identifying potential areas for creating suitable nesting habitat for woodcock are:

- Type of cut: final harvest
- Size of cut: >5 acres
- Soil type: loamy component
- Slope: <15%
- Water: presence of pond, stream, or wetland

Due to the specific habitat needs of woodcock and the limited number of sites where woodcock management is likely to succeed, it has been proposed that two stands will be managed on extremely short rotations in perpetuity to ensure that quality woodcock habitat is on the landscape at all times. Stands D-7 and E-6 account for approximately 45 acres and will be managed on a 15-20-year rotation using repeated brush mowing or tree mulching to maintain young forests habitat in these areas. These sites will initially be managed commercially with a final harvest in this planning cycle to establish the young forest habitat that can be maintained with non-commercial tree mulching intended to facilitate vegetative reproduction via sprouting and suckering. Commercial harvests will be staggered by seven years to attain the desired habitat and age class mosaic.

There are 10 individual forest stands at FSWMA that will be managed over the next 10 years via commercial timber sales. These characteristics of these stands are varied (Table 4 – Table 13). These forest stands are shown in Map 9, included in Appendix A.

Table 4. Franklin Swamp Wildlife Management Area forest stand B – 4 summary information, 2021.

Stand	Cover Type	Acres	Basal Area	Trees / Acre	Stocking	Size-class	BF / Acre Volume	Cords / Acre Volume
B-4	Aspen – Mixed Hardwood	7	80	120	Adequate	Sawtimber	3,500	20

Predominant Species: Aspen, red maple, black birch, oaks

Main Soil Types: Merrimac, Ninigret, Agawam (Glaciofluvial outwash)

Access: Excellent – Plains Road

Regeneration: Not applicable

Invasive Concerns: Invasive plant eradication required

Stand History: Disturbance, dumping, CT Department of Transportation (DOT) use

Notes: Access Road and gate. Old borrow pit.

Management Recommendation: Eradicate invasive plants via private contract. Patch cut upland forest to facilitate aspen suckering and propagate seven acres of aspen dominated young forest.

Table 5. Franklin Swamp Wildlife Management Area forest stand B – 5 summary information, 2021.

Stand	Cover Type	Acres	Basal Area	Trees / Acre	Stocking	Size-class	BF / Acre Volume	Cords / Acre Volume
B-5	Mixed Oak	20	120	99	Over	Sawtimber	9,400	31

Predominant Species: White oak, black oak, American beech, scarlet oak, red maple

Main Soil Types: Merrimac sandy loam, Hinckley gravelly sandy loam

Access: Excellent – Plains Road

Regeneration: Not applicable

Invasive Concerns: Low

Stand History:

Notes: Access road

Management Recommendation: Heavy thinning to improve growth rates and begin the process of stand regeneration. Thinning should be followed soon after with a shelterwood harvest to perpetuate any advanced regeneration established during the thinning.

Table 6. Franklin Swamp Wildlife Management Area forest stand C – 4 summary information, 2021.

Stand	Cover Type	Acres	Basal Area	Trees / Acre	Stocking	Size-class	BF / Acre Volume	Cords / Acre Volume
C-4	Mixed Upland Hardwood	3	60	130	Adequate	Pole	1,000	18

Predominant Species: Red maple, sweet birch, oaks

Main Soil Types: Udorthents – Disturbed

Access: Good – Plains Road

Regeneration: Invasive

Invasive Concerns: High

Stand History:

Notes: Mow understory, treat invasive re-sprout, mulch undesirable trees. Former material borrow.

Management Recommendation: Combined brush and tree mowing and invasive plant treatment.

Table 7. Franklin Swamp Wildlife Management Area forest stand D – 6 summary information, 2021.

Stand	Cover Type	Acres	Basal Area	Trees / Acre	Stocking	Size-class	BF / Acre Volume	Cords / Acre Volume
D-6	Eastern Red Cedar	3	83	176	Adequate	Pole – Sawtimber	1,200	16

Predominant Species: Eastern red cedar, red maple, black cherry, black birch, oaks, hickories

Main Soil Types: Agawam Fine Sandy Loam

Access: Fair – Off Under the Mountain Road

Regeneration: Invasive, greenbrier, adequate oak

Invasive Concerns: Moderate – Invasive treatment planned for 2021

Stand History: Old field

Notes: Managed as cedar glade

Management Recommendation: Control hardwood competition through periodic hardwood sanitation and invasive species treatments.

Table 8. Franklin Swamp Wildlife Management Area forest stand D – 7 summary information, 2021.

Stand	Cover Type	Acres	Basal Area	Trees / Acre	Stocking	Size-class	BF / Acre Volume	Cords / Acre Volume
D-7	Mixed Oak - Pine	24	130	255	Over	Sawtimber	6,230	29

Predominant Species: Black oak, red maple, white oak, white pine, scarlet oak, American beech

Main Soil Types: Merrimac, Agawam, Hinckley (Glaciofluvial outwash)

Access: Fair – Off Under the Mountain Road – DEEP Parking

Regeneration: Fair

Invasive Concerns: Eradication will occur prior to harvest

Stand History:

Notes:

Management Recommendation: Final shelterwood harvest to create a sizable patch of young forest habitat adjacent to fields and shrub wetland.

Table 9. Franklin Swamp Wildlife Management Area forest stand E – 2 summary information, 2021.

Stand	Cover Type	Acres	Basal Area	Trees / Acre	Stocking	Size-class	BF / Acre Volume	Cords / Acre Volume
E-2	Mixed Upland Hardwood	8	60	132	Under	Pole	3,200	17

Predominant Species: Red maple, black birch, white pine, black gum

Main Soil Types: Hinckley, Ninigret

Access: Fair – Off Under the Mountain Road

Regeneration: Adequate oak and pine in places

Invasive Concerns: Low

Stand History: Mixed oak – significant mortality in 2018 by gypsy moth

Notes: Stand rehabilitation & improvement

Management Recommendation: Remove undesirable trees non-commercially to facilitate the vigorous reproduction of desirable species.

Table 10. Franklin Swamp Wildlife Management Area forest stand E – 6 summary information, 2021.

Stand	Cover Type	Acres	Basal Area	Trees / Acre	Stocking	Size-class	BF / Acre Volume	Cords / Acre Volume
E-6	Mixed Oak	21	93	107	Over	Sawtimber	6,400	24

Predominant Species: White oak, scarlet oak, Northern red oak, white pine, sweet birch

Main Soil Types: Hinckley gravelly sandy loam

Access: Fair – Northeast service road off Under the Mountain Road. Internal trail access to stand.

Regeneration: Fair – Good oak regeneration in the southern end. Beech concerns throughout.

Invasive Concerns: Low

Stand History: Noticeable oak mortality impact from 2017-2018 gypsy moth defoliation

Notes:

Management Recommendation: Foresters prescribed first shelterwood. Considering advanced reproduction may manage for final harvest maintained on a 15-year rotation.

Table 11. Franklin Swamp Wildlife Management Area forest stand E – 8 summary information, 2021.

Stand	Cover Type	Acres	Basal Area	Trees / Acre	Stocking	Size-class	BF / Acre Volume	Cords / Acre Volume
E-8	Mixed Upland Hardwood	6	60	Unknown	Under	Pole	0	12

Predominant Species: Sweet birch, red maple, white pine, hickory

Main Soil Types: Hinckley gravelly sandy loam, Agawam

Access: Good – Old landing off Under the Mountain Road

Regeneration: Not applicable

Invasive Concerns: Heavy invasive population on roadside and emanating into the stand

Stand History: Sand and gravel borrow, degraded

Notes:

Management Recommendation: Fecon mow, tree mulching, and invasive plant eradication. Desired future condition would support an early successional forest regenerating free of invasive plants

Table 12. Franklin Swamp Wildlife Management Area forest stand F – 1 summary information, 2021.

Stand	Cover Type	Acres	Basal Area	Trees / Acre	Stocking	Size-class	BF / Acre Volume	Cords / Acre Volume
F-1	White Pine - Oak	28	128	155	Over	Sawtimber	10,460	32

Predominant Species: Eastern white pine, sweet birch, black oak, white oak, red maple

Main Soil Types: Hinckley gravelly sandy loam, Merrimac sandy loam

Access: Good – Service road to Mahoney Pond

Regeneration: Not applicable

Invasive Concerns: Along service road and along southern stand boundary with grassland

Stand History: Low-density harvesting evident over 20 years ago

Notes: Sandy outwash hills characterize the stand. These soils are highly erodible.

Management Recommendation: Thin to improve growth rates, introduce structural complexity, and begin to build reproduction.

Table 13. Franklin Swamp Wildlife Management Area forest stand H – 3 summary information, 2021.

Stand	Cover Type	Acres	Basal Area	Trees / Acre	Stocking	Size-class	BF / Acre Volume	Cords / Acre Volume
H-3	Oak - Hickory	37	120	187	Over	Sawtimber – Pole	7,230	27

Predominant Species: Hickory, sugar maple, northern red oak, sweet birch, black oak

Main Soil Types: Charlton – Chatfield

Access: Good – Access trail off Under the Mountain Road

Regeneration: Good in sapling and pole cohort

Invasive Concerns: Low-Moderate density invasive plant concerns throughout

Stand History: Thinning by DEEP in 2000

Notes: Locally steep, ledge-topography. Western slopes may be inoperable in sections. Hardwood dominated with hemlock in the mix

Management Recommendation: Single-tree & small-group selection harvest to reduce basal area, facilitate increased growth rates, and introduce gap-driven structural diversity for species like cerulean warbler.

Grassland/Old Field Management

A third of the existing grassland/old field acreage on Under the Mountain Road will be mowed annually by mowing strips 8 ft. wide in late summer after the bird nesting season (April 15 – August 15) has concluded. Mowing strips in hayfields and grasslands is an effective management tool for creating woodcock roosting habitat. Non-native invasive plant control treatments will occur within the field areas as necessary.

Wetlands and Waterbodies Management

This plan strives to maintain high quality wetland habitat within FSWMA that protects water quality, provides fish and wildlife habitat, stores floodwaters, and maintains surface flow during dry periods. Moist-soil management will continue to be implemented at Mahoney Pond by utilizing the water control structure to drawdown water levels during the growing season to promote germination of native vegetation on exposed mudflats. These areas will subsequently be reflooded and the vegetation will provide valuable food and cover for numerous wildlife species. To protect nests from dewatering, moist-soil management will not be implemented at Mahoney Pond until after the spawning season for warm-water fish species has been completed. Non-native invasive plant control will occur in the wetland areas. The integrity of the dam at Mahoney Pond will be maintained by yearly mowing. Wood duck boxes will continue to be annually maintained on the property.

Agricultural Agreements

Existing agricultural agreements will be modified to provide enhanced wildlife habitat and associated wildlife-based recreational activities. Approximately 20 acres of cropland will be taken out of production and managed as grassland/old field habitat. This includes 13 acres of hay and 7 acres of silage corn (Appendix A – Map 12).

Progress Towards Plans and Initiatives

The habitat goals set forth in the FSWMA plan will work towards the habitat goals set forth in the MPWC. A woodcock demonstration area as defined in the MPWC is planned for the FSWMA. Woodcock demonstration areas showcase young forest habitat management practices, provide an outdoor classroom for training sessions and workshops, and serve as science areas for monitoring and research. The goal of these demonstration areas is to use woodcock as a model species to foster public appreciation and understanding of how young forest management is beneficial to wildlife. A site-specific interpretative sign detailing the woodcock habitat work on the property will be developed and installed within the parking area on Under the Mountain Road and noted on the DEEP's website.

WMA Infrastructure Goals, Objectives, and Strategies

Maintenance

A variety of grounds, building and structure maintenance tasks associated with the office, CE/FS shooting range, and WMA access points will be performed regularly or seasonally at FSWMA. Examples of these tasks include general cleaning, maintenance of the septic system, well and electrical systems, lawn mowing, power washing, snow plowing, painting, staining, trash and bulky waste removal, sign posting, gate maintenance, and hazard tree removal. Any new facility enhancements that may be proposed during the planning period would be developed and implemented utilizing DEEP's project request review process.

Recreational Use

The potential for developing a handicap accessible trail utilizing the existing service road on the east side of Under the Mountain Road will be explored, taking advantage of the level topography, parking area, and habitat features already present.

Other Infrastructure

Boundary marking is scheduled to occur twice during this planning period (Table 16). Any plans to enhance or expand the CE/FS facilities at FSWMA will be covered under a separate operational plan.

Ten-year Work Plans

Forest Management Work Plan

The 10-year forest management work plan (Table 14) distributes the prescribed silviculture activities over the lifespan of this management plan. While the timing of certain treatments is important to enable the desired regeneration response and landscape level habitat rotation, some of the prescribed treatment activities can be applied as staffing and resources allow. Mowing and forest stand improvements will be initiated outside of the bird nesting season (April 15 – August 15).

Table 14. Franklin Swamp Wildlife Management Area silviculture work plan, 2021 – 2030.

Year	Stand	Acres	Treatment	Notes
2021	D-7	24	Final harvest	Remove all trees down to two-inch (in.) Diameter at Breast Height (DBH).
2021	D-6	3	Hardwood removal	Remove hardwood in cedar glade.
2022	C-4	3	Habitat mowing and invasive treatment	Mow invasive plants and undesirable trees. Treat invasive re-sprouts.
2022	E-8	6	Habitat mowing and invasive treatment	Mow invasive plants and undesirable trees. Treat invasive re-sprouts.
2023	F-1	28	Thinning with small group selection	White pine site with highly erodible soils.
2023	E-6	21	Shelterwood harvest	Facilitate dense reproduction upon planned release in 2027.
2024	G-6	11	Forest stand improvement	Treat invasive plants and rehabilitate stand affected by oak mortality.
2025	B-4	6	Final harvest	Clear cut aspen dominated stand to reproduce aspen via root suckering.
2025	B-5	20	Shelterwood harvest	Shelterwood oak stand to initiate regeneration.
2026	E-2	8	Forest stand improvement	Treat invasive plants and rehabilitate stands affected by oak mortality.
2027	H-3	TBD	Invasive treatment.	Herbicide invasive vegetation.
2028	E-6	21	Final harvest	Release regeneration established in 2022.
2029	H-3	37	Single-tree and small group selection	Increase structural complexity and facilitate regeneration with small to moderate-sized gaps.
2030	All stands	770	Inventory forest stands	Preparation to write a new management plan.

Wildlife Habitat Management Work Plan

The 10-year wildlife habitat management work plan (Table 15) distributes the prescribed habitat prescriptions over the lifespan of this management plan. Mowing will occur outside of the bird nesting season (April 15 – August 15).

Table 15. Franklin Swamp Wildlife Management Area wildlife habitat management work plan, 2021 – 2030.

Year	Stand	Acres	Treatment	Notes
2021	D-6	3	Habitat mowing	Mow red cedar glade
2021	D-4	3	Invasive treatment	Herbicide invasive vegetation.
2021	D-6	3	Invasive treatment	Herbicide invasive vegetation
2021	D-7	12	Invasive treatment	Herbicide invasive vegetation.
2021	E-11	9	Moist-soil management	Create enhanced wetland habitat.
2022	D-4	20	Modify agricultural agreements	Create enhanced wildlife habitat.
2022	D-4	16	Habitat mowing	Mow 1/3 of grassland/old fields.
2022	E-11	9	Moist-soil management	Create enhanced wetland habitat.
2023	D-4	16	Habitat mowing	Mow a 1/3 of grassland/old fields.
2023	D-6	3	Habitat mowing	Mow red cedar glade.
2023	E-11	9	Moist-soil management	Create enhanced wetland habitat.
2024	B-1	4	Invasive treatment	Herbicide invasive vegetation.
2024	C-1	1	Invasive treatment	Herbicide invasive vegetation.
2024	D-4	16	Habitat mowing	Mow 1/3 of grassland/old fields.
2024	E-11	9	Moist-soil management	Create enhanced wetland habitat.
2025	B-1	4	Follow up invasive treatment	Herbicide invasive vegetation.
2025	C-1	1	Follow up invasive treatment	Herbicide invasive vegetation.
2025	D-4	16	Habitat mowing	Mow 1/3 of grassland/old fields.
2025	D-6	3	Habitat mowing	Mow red cedar glade.
2025	E-11	9	Moist-soil management	Create enhanced wetland habitat.
2026	D-4	16	Habitat mowing	Mow 1/3 of grassland/old fields.
2026	E-11	9	Moist-soil management	Create enhanced wetland habitat.
2027	D-4	16	Habitat mowing	Mow 1/3 of grassland/old fields.
2027	D-6	3	Habitat mowing	Mow red cedar glade.
2027	E-11	9	Moist-soil management	Create enhanced wetland habitat.
2028	D-4	16	Habitat mowing	Mow 1/3 of grassland/old fields.
2028	E-11	9	Moist-soil management	Create enhanced wetland habitat.
2029	D-4	16	Habitat mowing	Mow 1/3 of grassland/old fields.
2029	D-6	3	Habitat mowing	Mow red cedar glade.
2029	E-11	9	Moist-soil management	Create enhanced wetland habitat.
2030	D-4	16	Habitat mowing	Mow 1/3 of grassland/old fields.
2030	E-11	9	Moist-soil management	Create enhanced wetland habitat.

Infrastructure Work Plan

In addition to the general maintenance tasks associated with the office, shooting range, and WMA access points to be performed regularly or seasonally (see page 26), the 10-year infrastructure work plan for impoundment and access control is shown in Table 16.

Table 16. Franklin Swamp Wildlife Management Area infrastructure work plan, 2021 – 2030.

Year	Location	Treatment	Notes
2021	Entire property	Mark boundaries	9.70 miles of boundaries.
2021	Entire property	Enforcement	Address encroachment issues.
2021	Mahoney Pond	Mowing	Mow dam.
2021	Service road	Tree removal	Remove 58 hazardous trees.
2021	Parking lot	Install fence/barrier	Control access.
2022	DOT site	Remove debris	Contact DOT about debris removal.
2022	Mahoney Pond	Mowing	Mow dam.
2022	Parking lot	Remove rear gate	Facilitate timber harvest.
2022	Service roads	Mowing and daylighting	1.67 miles of service roads.
2023	Parking lot	Signage	Woodcock demonstration area description.
2023	Mahoney Pond	Mowing	Mow dam.
2024	Mahoney Pond	Mowing	Mow dam.
2025	Mahoney Pond	Mowing	Mow dam.
2025	Service roads	Mowing and daylighting	1.67 miles of service road.
2026	Mahoney Pond	Mowing	Mow dam.
2027	Mahoney Pond	Mowing	Mow dam.
2028	Mahoney Pond	Mowing	Mow dam.
2028	Service roads	Mowing and daylighting	1.67 miles of service road.
2029	Mahoney Pond	Mowing	Mow dam.
2030	Entire property	Mark boundaries	9.70 miles of boundaries.
2030	Mahoney Pond	Mowing	Mow dam.
2030	Service roads	Mowing and daylighting	1.67 miles of service road.

Acquisition Objectives

The acquisition of nonresidential parcels adjacent to FSWMA should be considered high priority (Appendix A – Map 13). Acquisition of these adjacent undeveloped properties would increase access, protect against future encroachment, add to the diversity of habitats, and increase recreational opportunities for the general public.

Public Involvement

Public engagement is an integral component of DEEP’s management planning process as it is important to foster environmental awareness of and garner support for the management actions recommended to address the conservation needs of wildlife and forest resources on public lands. A draft copy of this plan was forwarded to the Franklin Agriculture and Conservation Commission for review and comment. Three DEEP wildlife biologists and one forester attended a virtual meeting of the Commission to answer questions pertaining to this plan (see Appendix D for comments received). Comments and questions regarding the plan are always encouraged, especially from adjacent landowners. The DEEP hopes that this management plan will serve as a resource for local municipalities and nonprofit organizations that are actively planning for open space protection.

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Paul Benjunas (CT DEEP Wildlife Biologist) – Infographic
Jack Berlanda (CT DEEP Seasonal Resource Assistant and Certified Forester) – Forest inventory
Megan Carroll (CT DEEP Seasonal Resource Assistant) – Geographic Information Systems Mapping
Michael Gregonis (CT DEEP Wildlife Biologist) – Technical input
Ann Kilpatrick (CT DEEP Wildlife Biologist) – Technical input
Brian Murphy (CT DEEP Fisheries Biologist) – Technical input
Tanner Steeves (CT DEEP Wildlife Biologist) – Technical input
Ana Toledo (CT DEEP Seasonal Resource Assistant) – Historical FSWMA file review
Lisa Wahle (WMI Wildlife Biologist) – Technical input

Appendices to Follow

Appendix A - Franklin Swamp WMA Maps 1 through 13

Appendix B - History of Management Activities at FSWMA, Franklin, CT

Appendix C - Definitions

Appendix D - Public Comments

Appendix A - Franklin Swamp WMA Maps 1-13

Map 1: Franklin Swamp Wildlife Management Area orthophoto map, 2021.

Map 2-: Franklin Swamp Wildlife Management Area historic silviculture locations map, 2021.

Map 3: Franklin Swamp Wildlife Management Area topographic map, 2021.

Map 4: Franklin Swamp Wildlife Management Area hydrology map, 2021.

Map 5: Franklin Swamp Wildlife Management Area special features map, 2021.

Map 6: Franklin Swamp Wildlife Management Area soil type map, 2021.

Map 7: Franklin Swamp Wildlife Management Area infrastructure map, 2021.

Map 8: Franklin Swamp Wildlife Management Area agricultural license agreement map, 2021.

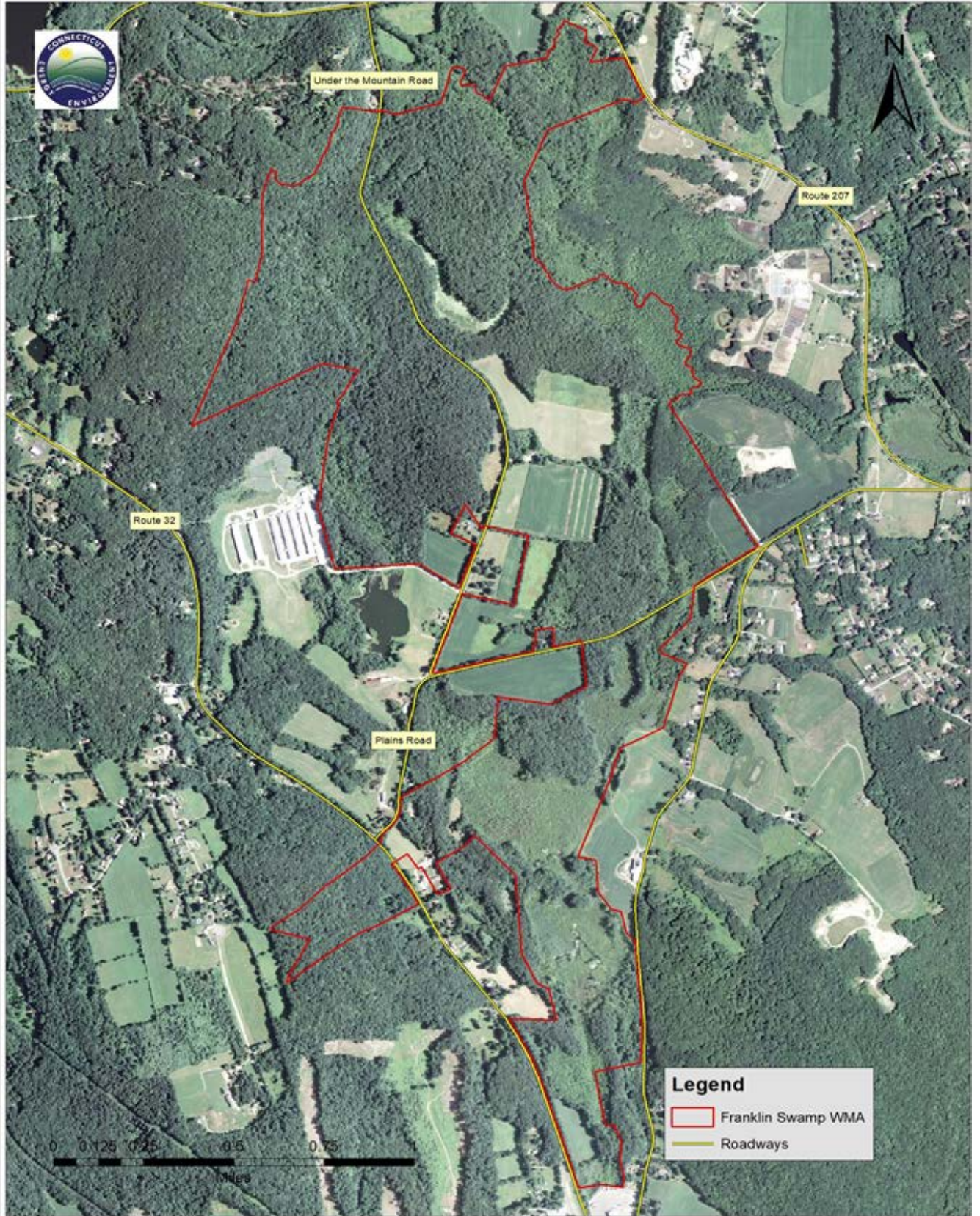
Map 9: Franklin Swamp Wildlife Management Area forest stands map, 2021.

Map 10: Franklin Swamp Wildlife Management Area Natural Diversity Data Base Areas map, 2021.

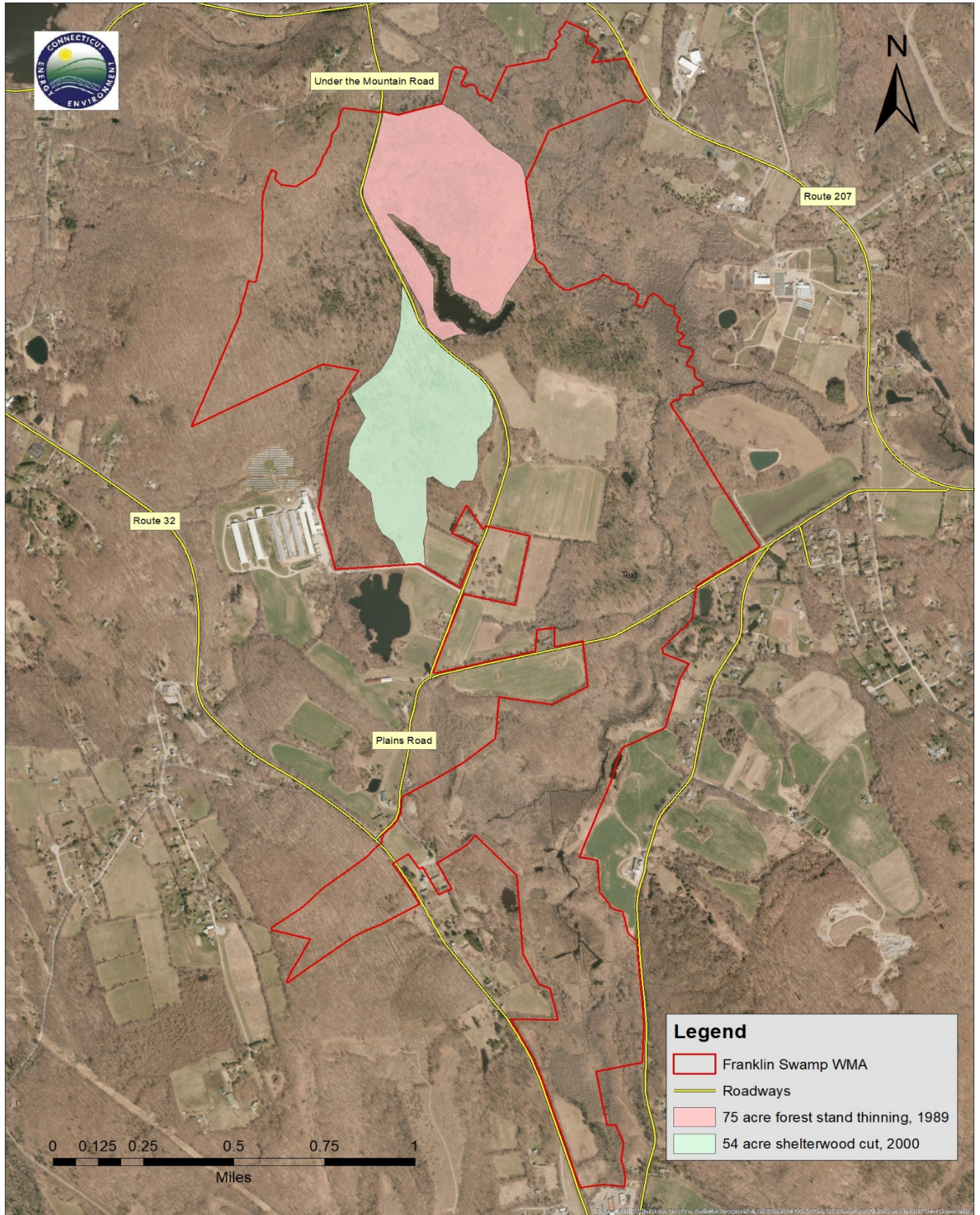
Map 11: American woodcock and New England cottontail focus areas map, 2021.

Map 12: Franklin Swamp Wildlife Management Area agricultural license agreement modifications map, 2021.

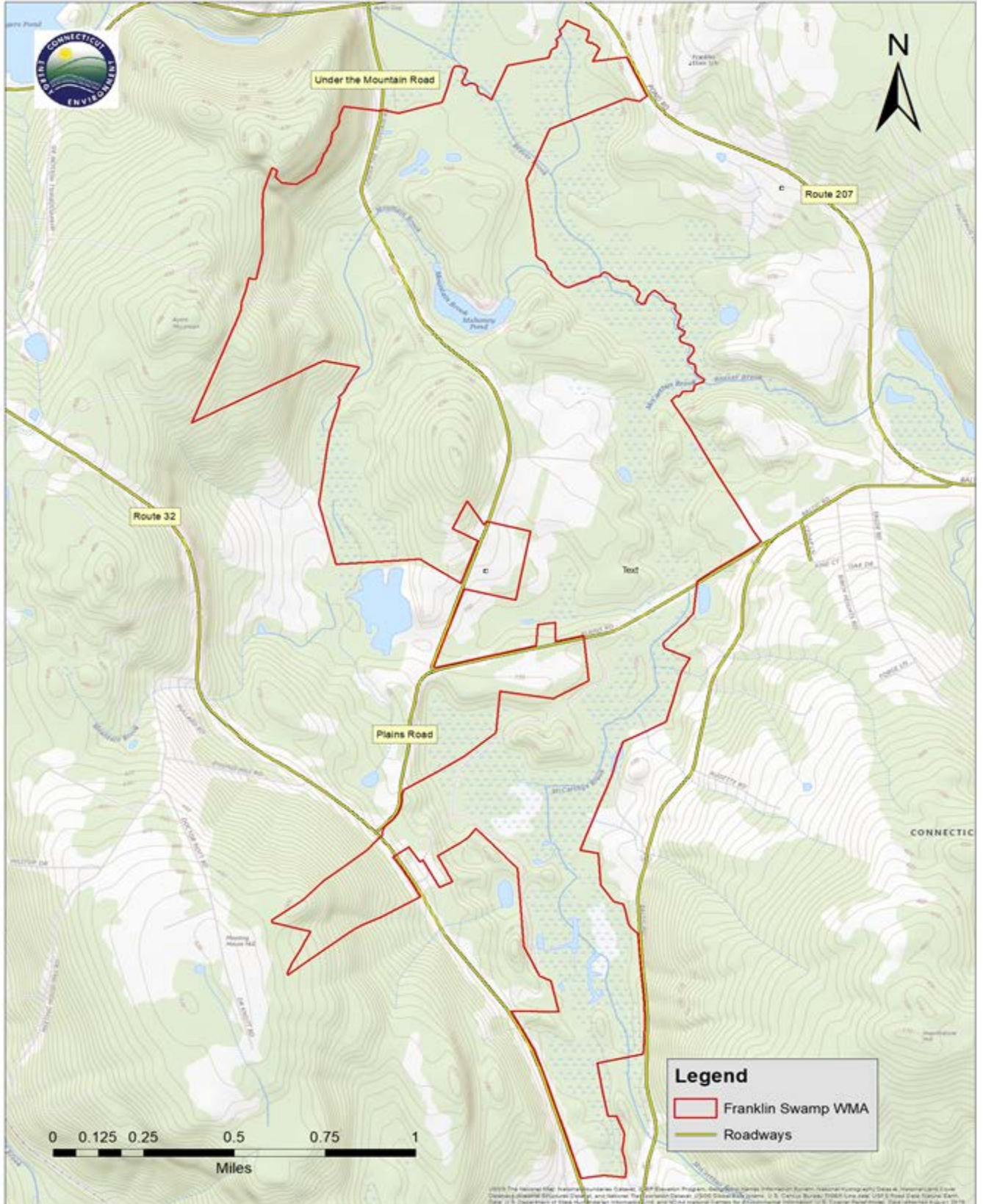
Map 13: Franklin Swamp Wildlife Management Area priority parcels for acquisitions map, 2021.



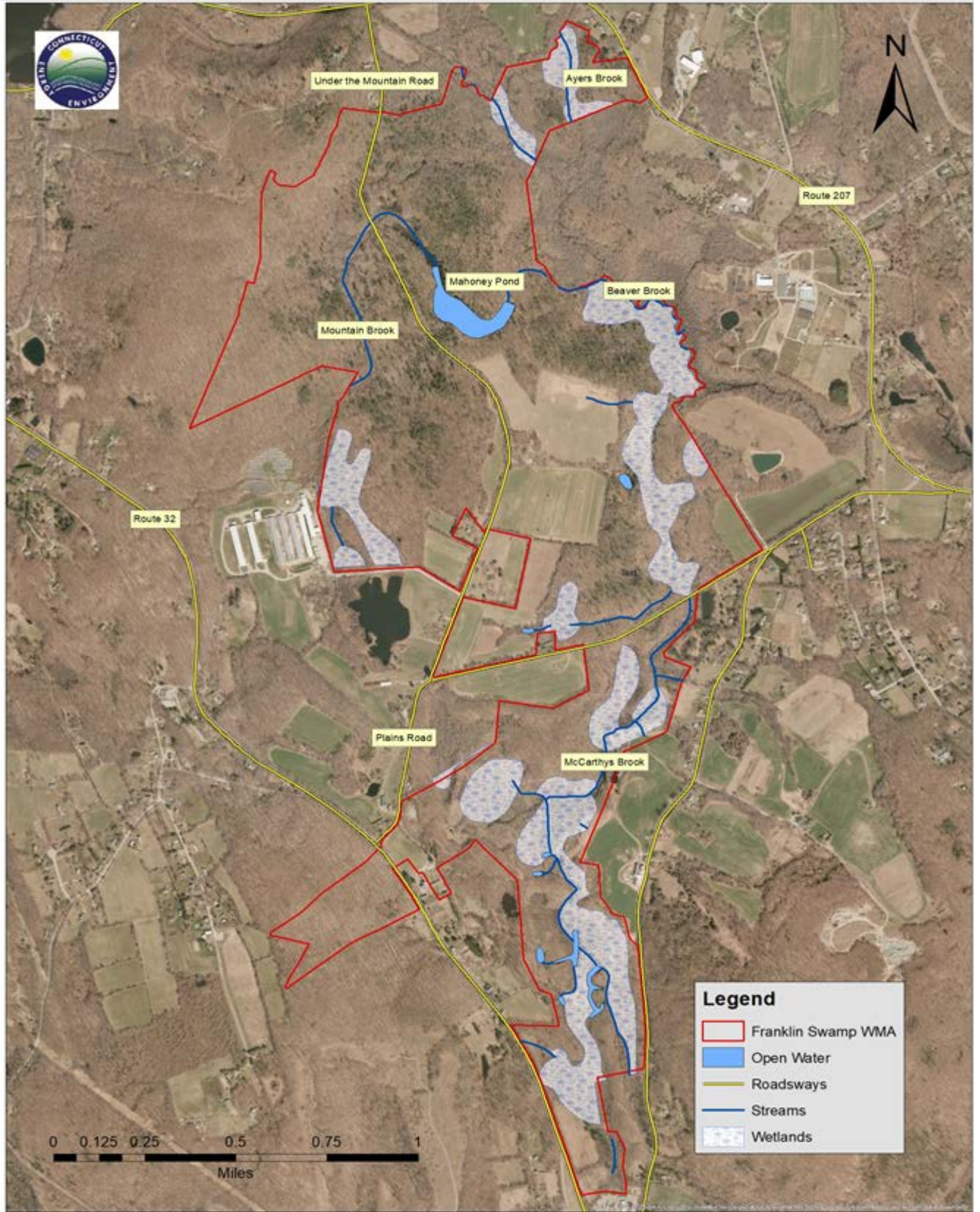
Map 1: Franklin Swamp Wildlife Management Area orthophoto map, 2021.
Prepared by Megan Carroll and Kelly Kubik.



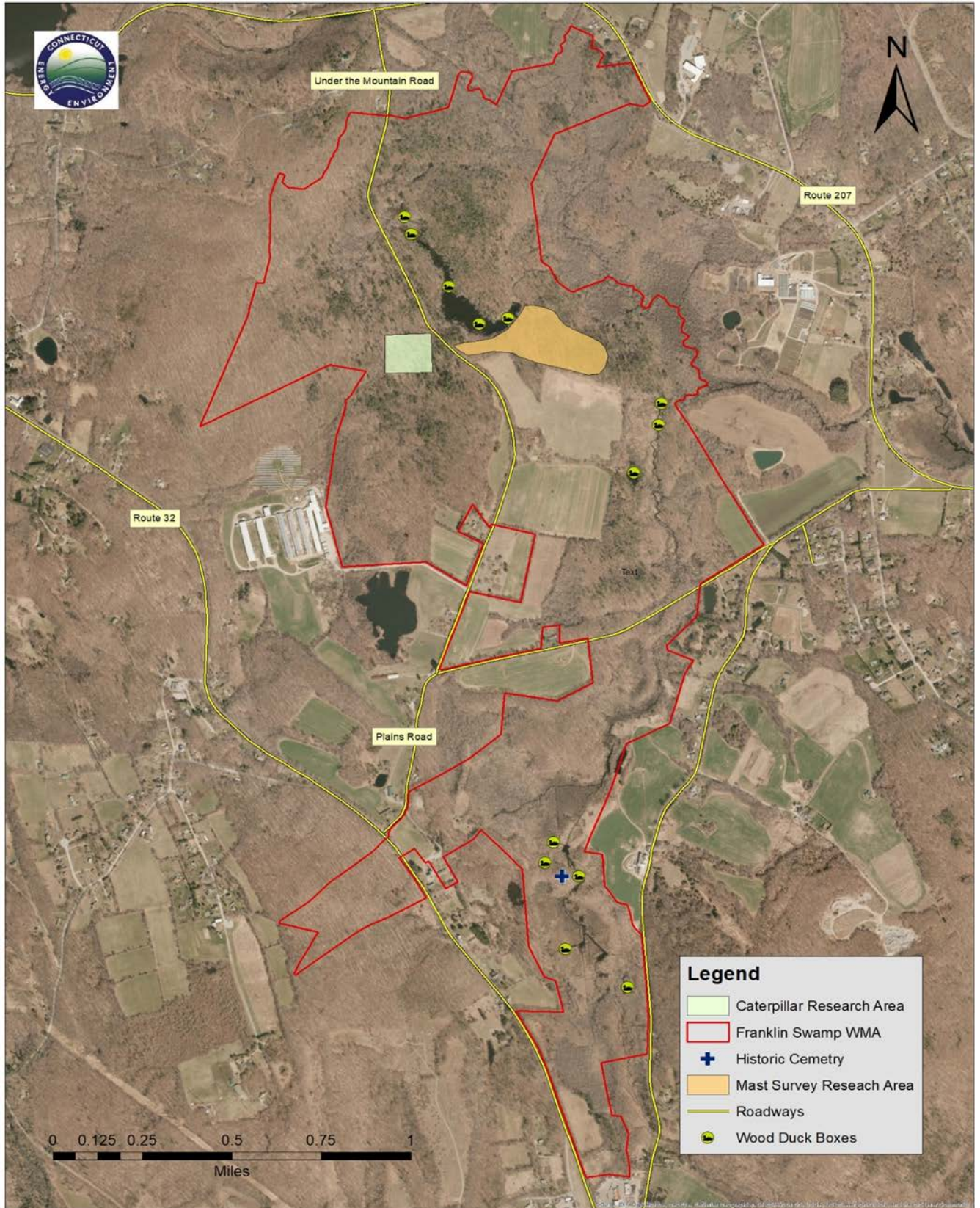
Map 2: Franklin Swamp Wildlife Management Area historic silviculture locations map, 2021.
Prepared by Megan Carroll and Kelly Kubik.



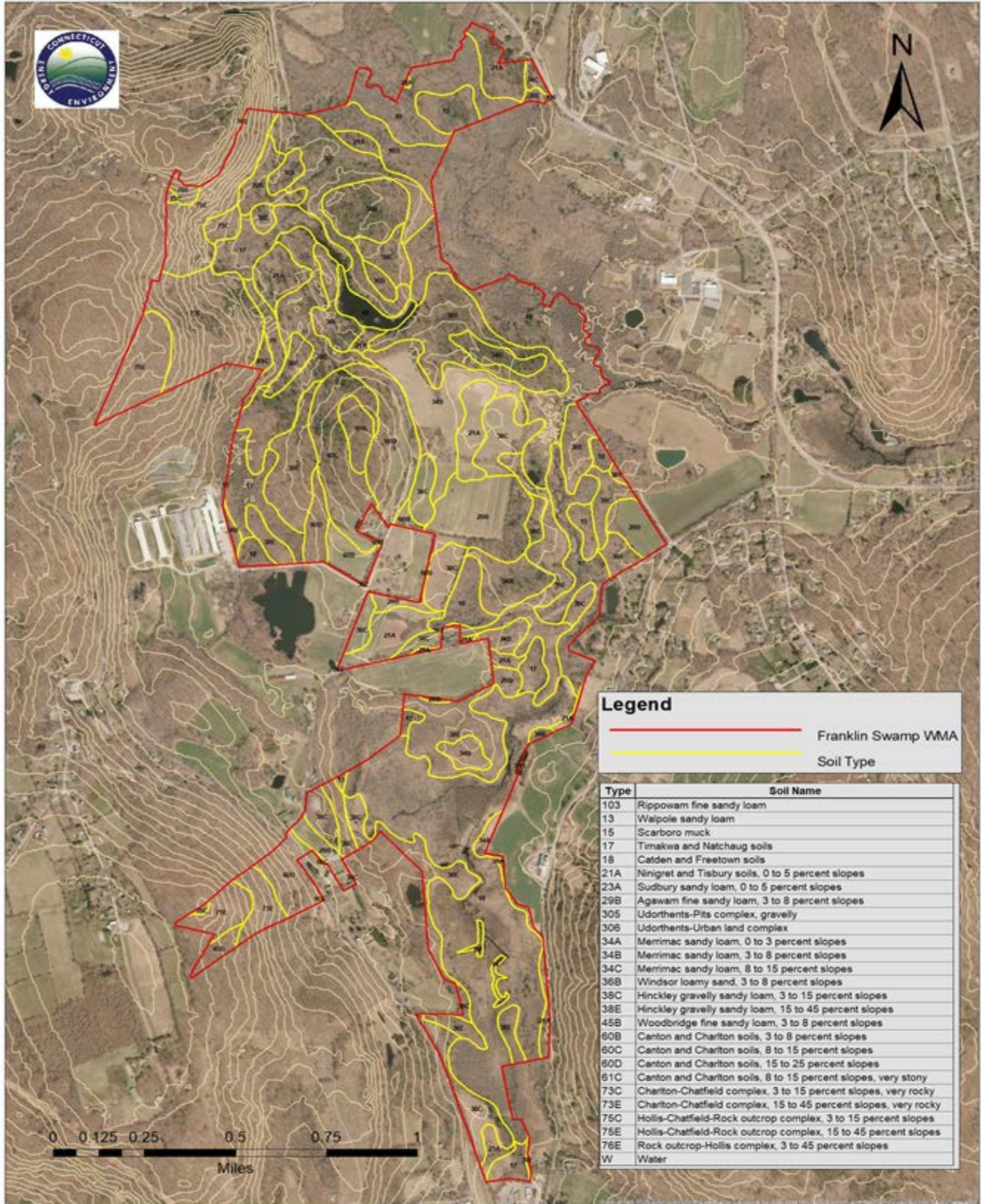
Map 3: Franklin Swamp Wildlife Management Area topographic map, 2021.
Prepared by Megan Carroll and Kelly Kubik.



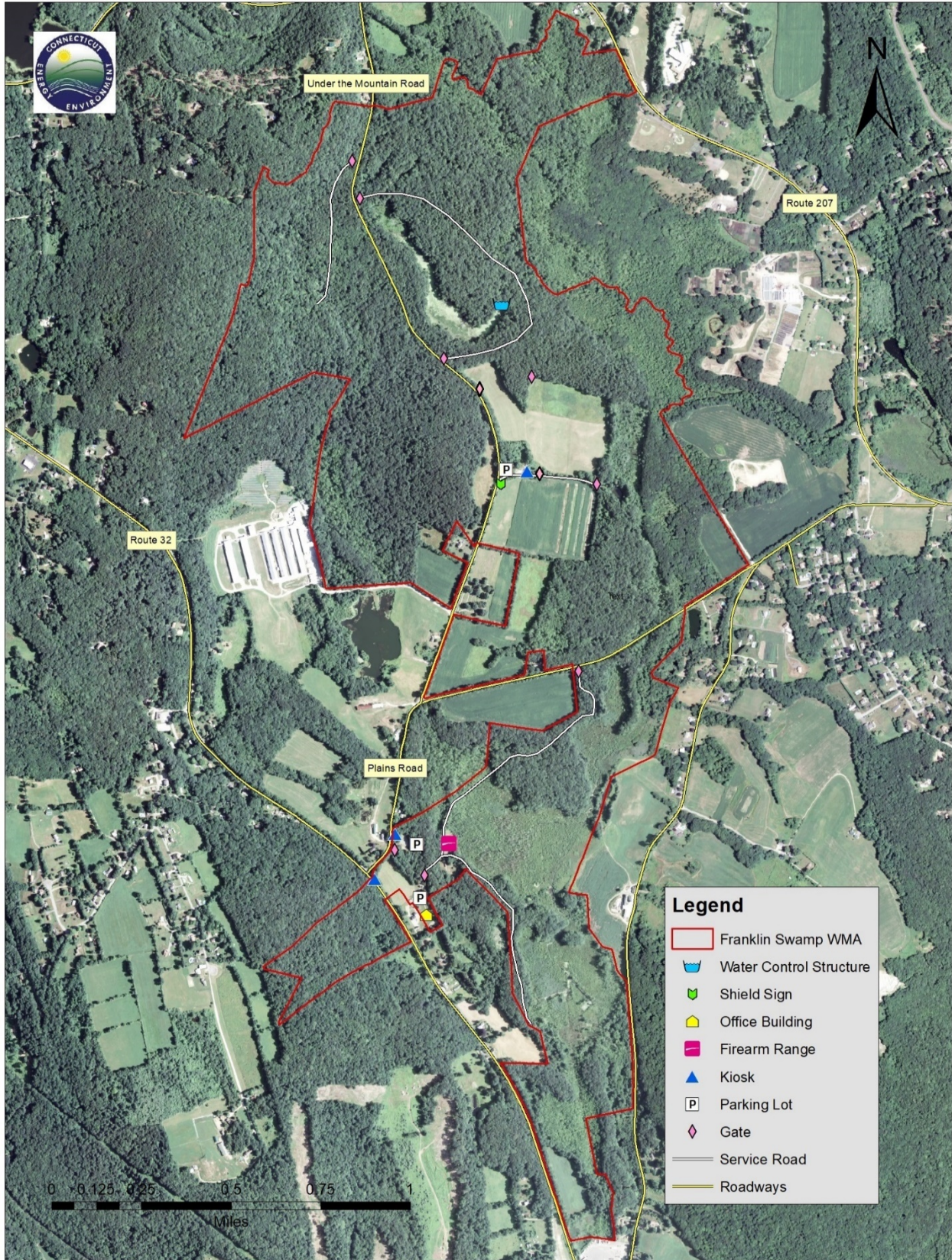
Map 4: Franklin Swamp Wildlife Management Area hydrology map, 2021.
Prepared by Megan Carroll and Kelly Kubik.



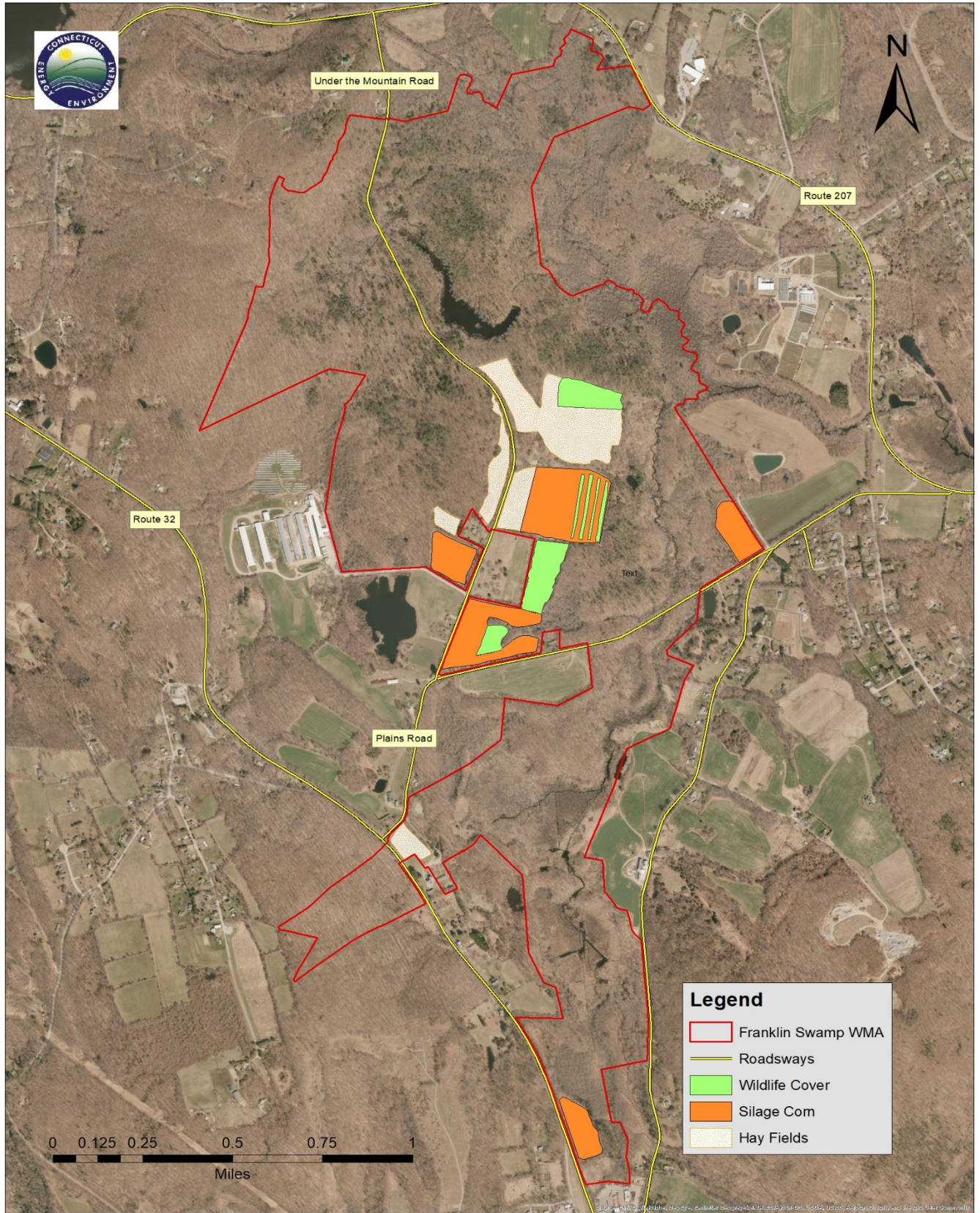
Map 5: Franklin Swamp Wildlife Management Area special features map, 2021.
Prepared by Megan Carroll and Kelly Kubik.



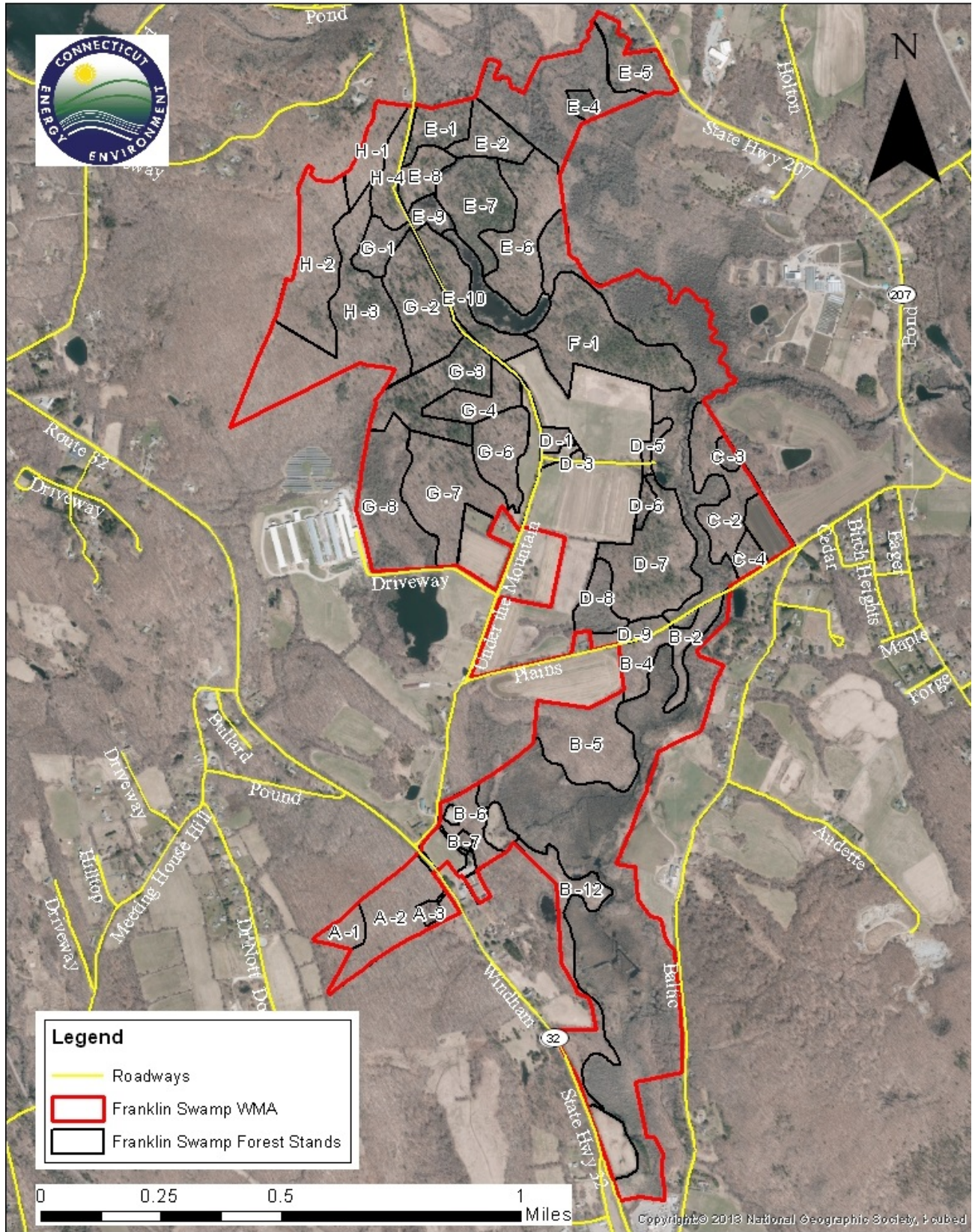
Map 6: Franklin Swamp Wildlife Management Area soil type map, 2021.
 Prepared by Megan Carroll and Kelly Kubik.



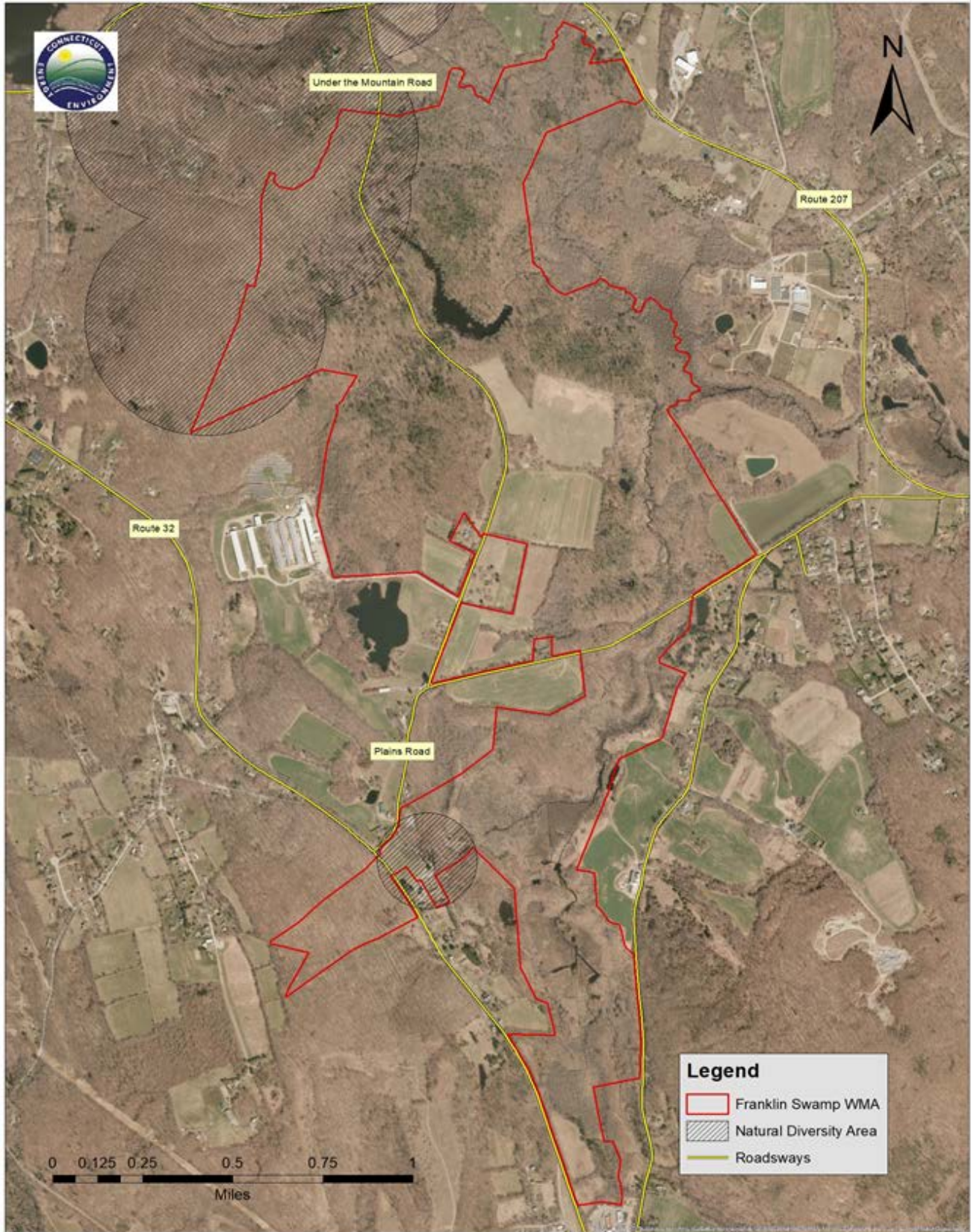
Map 7: Franklin Swamp Wildlife Management Area infrastructure map, 2021.
Prepared by Megan Carroll and Kelly Kubik.



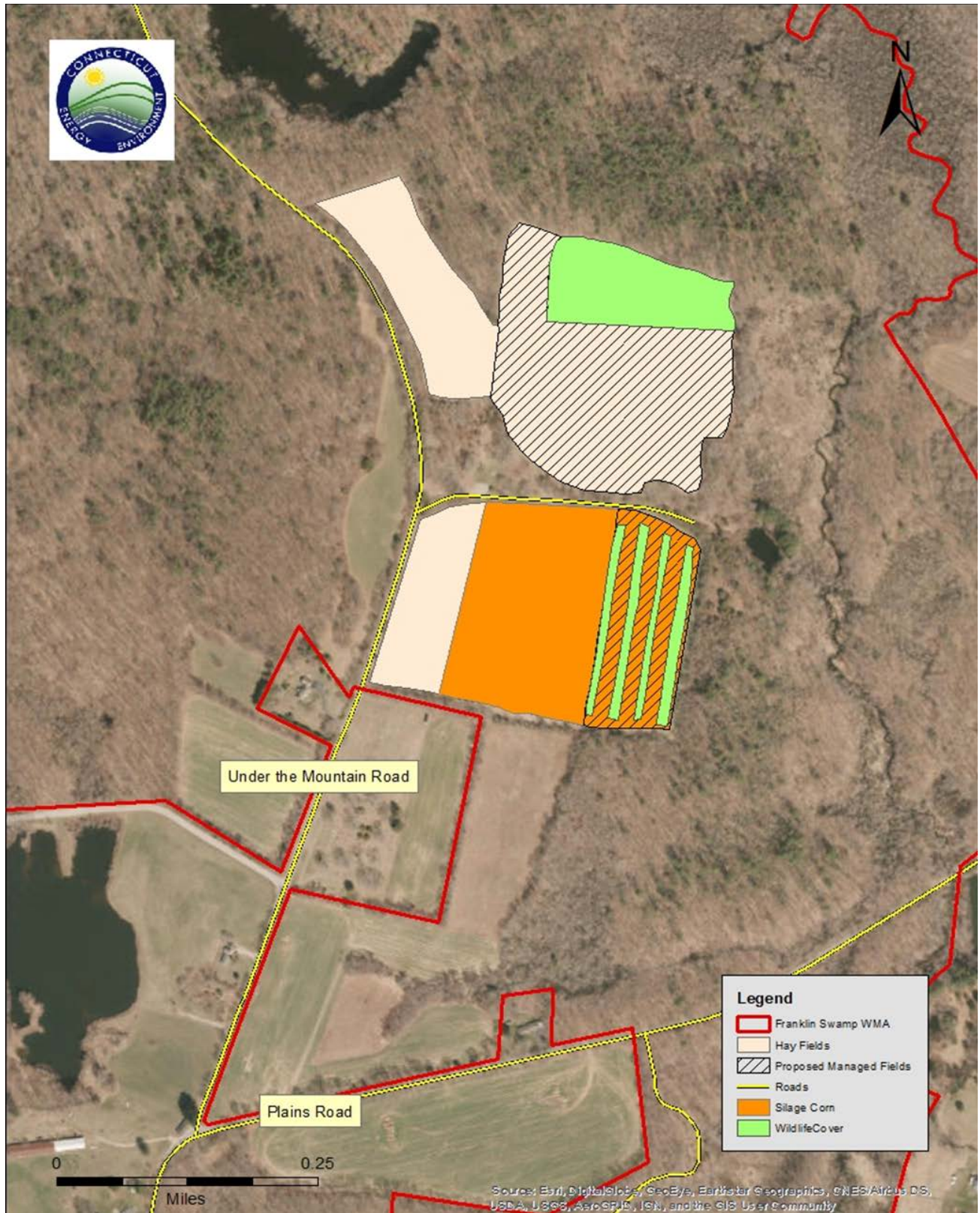
Map 8: Franklin Swamp Wildlife Management Area agricultural license agreement map, 2021.
Prepared by Megan Carroll and Kelly Kubik.



Map 9: Franklin Swamp Wildlife Management Area forest stands map, 2021.
 Prepared by Dan Evans.

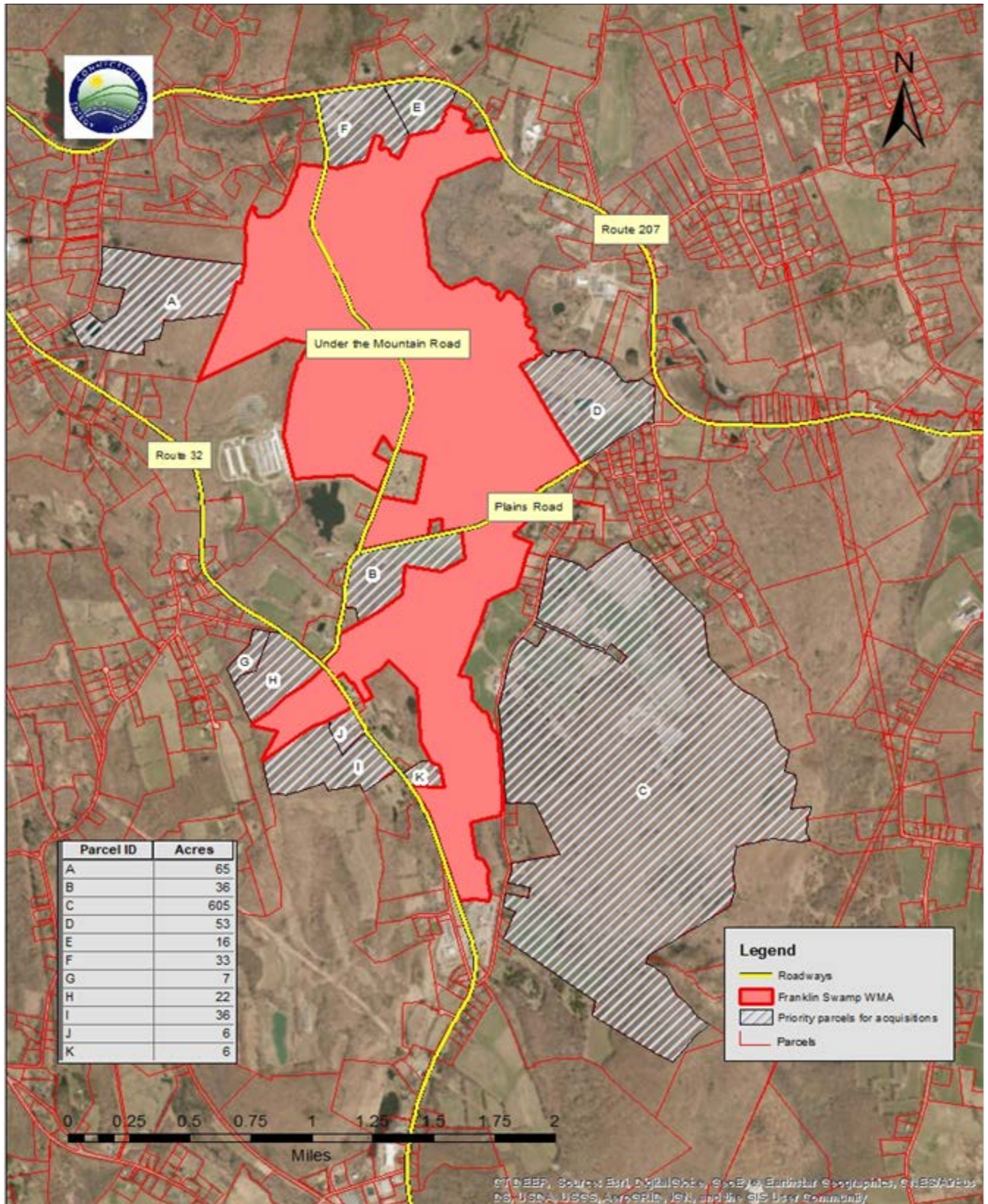


Map 10: Franklin Swamp Wildlife Management Area Natural Diversity Data Base Areas map, 2021.
Prepared by Megan Carroll and Kelly Kubik.



Map 12: Franklin Swamp Wildlife Management Area agricultural license agreement modifications map, 2021.

Prepared by Megan Carroll and Kelly Kubik.



Map 13: Franklin Swamp Wildlife Management Area priority parcels for acquisitions map, 2021.
 Prepared by Megan Carroll and Kelly Kubik.

APPENDIX B

History of Management Activities at Franklin Swamp Wildlife Management Area

In 1947, the first parcels of land were acquired for FSWMA.

In 1954, a mallard production program was established at FSWMA. The objective of this program was to establish mallards as a breeding waterfowl species in CT. Existing outbuildings on the property were utilized for incubation and brooding. From 1954 – 1964, the work at the facility was carried out by a single employee with the assistance of a small work crew from the Montville State Jail.

In 1964, it was decided to double the mallard production program to have a wider distribution of breeding mallards throughout CT. To accommodate this expanded effort, the mallard production program moved into a newly constructed multipurpose building. This building was designed by the Agricultural Engineering Department at UCONN and provided improved brooding and incubation facilities.

In 1967, the Franklin Field Archers Association made a request to construct a clubhouse on FSWMA property. To this plan's knowledge, this request was never approved.

In 1972, a management plan for FSWMA was completed. This plan indicated that food patches were maintained to accommodate yearly pheasant releases. While these food patches were maintained primarily as pheasant habitat, they helped to sustain a robust rabbit population. At the time the plan was written, the age of the hardwood trees and the topography of the property made any attempt to create sizable forest openings prohibitively expensive. It was thought that some small areas could be enhanced by selective thinning or releasing without excessive cost. It was noted that previously developed level ditches and ponds on the property had become so encroached upon by maples that their effectiveness as waterfowl habitat was reduced from their original value. It was proposed that these maple trees be removed, although it was thought that this would take considerable time and energy. It was also suggested that new ditches and ponds be created to improve waterfowl habitat. According to the plan, the work completed on the property included clearing 15 acres of land, releasing five acres of sedge swamp from woody vegetation, and maintaining 1.75 acres of food plots and 6,000 ft. of road. Two level ditches and six ponds were also maintained. The plan indicated that future work on the property included maintaining 1.5 acres of food plots, 3,000 ft. of access roads, and clearing 15 acres of land. Other future activities included edge cutting 2.5 acres of level ditches, creating 0.5 acres of new level ditches, and mowing the dam at Mahoney Pond.

In 1977, the mallard production program at FSWMA was discontinued.

In 1978, the Franklin Snowmobile Club proposed establishing a snowmobile route on the then northern portion of FSWMA. To this plan's knowledge, this route was never approved.

In 1983, a habitat inventory was completed on the property. A partial list of enhancement practices was formulated from this project.

In 1984, the CE/FS outdoor shooting range was completed. This range included a trap field, 25 yd., 50 yd., and 100 yd. shooting stations. A demonstration area was also established that allowed students to show their CE/FS instructors that they had learned the safe and proper methods for handling firearms.

In 1987, the forest resources at FSWMA were inventoried. Individual forest stand descriptions and recommendations were derived from this assessment. Of the total acreage of the property, only 249 acres were manageable from a forestry standpoint. During this time, a solid waste disposal site located at FSWMA, but operated by the CT DOT was ordered closed by the DEEP. A three-year wildlife species presence/absence inventory was initiated at FSWMA at this time. A landscaping and herbiciding project were also completed at the range.

In 1988, a five-year management plan for FSWMA was completed with the goal of being a beginning step in efforts to achieve the desired mosaic of habitat types for the property. Planned forestry management activities included a forest stand thinning and a shelterwood harvest. It was also noted in this plan that cordwood cutters should be utilized to thin back field edges. Issues relating to boundary marking, access problems, skid trails, and log landings were also addressed. During this time, a 30 ft. curtain drain was installed around the trap house at the range to alleviate flooding concerns.

In 1989, a 75-acre shelterwood cut was conducted at FSWMA. This operation was conducted on the east side of Under the Mountain Road. The stone water control structure at Mahoney Pond was replaced with an aluminum structure. Additional work at Mahoney Pond included adding fill and reseeding the dam and riprapping the emergency spillway.

In 1993, a letter was sent to the DEEP Director of Land Acquisition and Management to initiate discussions between the CT Department of Agriculture and the DEEP regarding the acquisition of the 660-acre Sachonchik property adjacent to FSWMA's eastern boundary. Ultimately, this parcel was not acquired by the DEEP. During this time, the fence along the eastern edge of the main office parking lot was replaced.

In 1994, the 25 yd. and 100 yd. shooting stations at the range were modified to become compliant with the Americans with Disabilities Act. Additional work conducted at the range included the installation of a parking area, development of stone dust parkways, and the sloping of fill adjacent to the 25 yd. shooting station. All wooden structures at the range were also stained.

In 1997, the stairs leading from the main office parking lot to the range were replaced. Cabinets were also installed in the classroom at the main office building to facilitate storage for the CE/FS program.

In 2000, a 54-acre forest stand thinning was conducted at FSWMA. This operation was conducted on the west side of Under the Mountain Road. During this time, a 24 ft. by 60 ft. post and beam carriage barn was constructed to the south of the main office building. This barn addressed the loss of storage at the facility due to the impending transfer of DEEP property to the town of Franklin. The decking at the 25 yd. station at the range was also replaced.

In 2001, 2.03 acres of property, including a house and associated outbuilding, were transferred from the DEEP to the Town of Franklin. During this time, multiple improvements were undertaken at the range that included the construction of a 12 ft. x 18 ft. storage shed and installation of a pressure-treated split rail fence.

In 2004, the plumbing within the main office building was renovated. This work included insulating and relocating water lines in the maintenance supply room and the public bathroom. Additional work conducted included replacing the furnace room door, installing a photocell for the outside lighting, and adding gutters. At the same time, a request was made to the CT Light and Power Company to discontinue

service and remove the meter from the former Zaniewski homestead on Under the Mountain Road in preparation for its subsequent demolition.

In 2005, the roof at the office building was replaced. In addition, the office building was re-sided with vertical board and batten vinyl, soffits were replaced and wrapped, and all exterior sills were repaired.

In 2006, the house and associated outbuildings at the former Zaniewski homestead were demolished. During this time, a 14 ft. by 17 ft. portion of the post and beam carriage barn was converted into a laboratory by adding electricity, heat, insulation, and running water. This laboratory was constructed to facilitate statewide Chronic Wasting Disease (CWD) surveillance. A new well for the main office and associated outbuildings was also completed.

In 2007, an 8 ft. by 8 ft. walk-in cooler was constructed to the west of the post and beam carriage barn. This cooler was purchased to further assist with statewide CWD surveillance. Both the 1,000 ft. driveway and the 10,000 square ft. parking area at the main office building were repaved at this time.

In 2008, a 13 ft. by 20 ft. garage shed was constructed to the west of the walk-in cooler. This garage shed was erected to further support statewide CWD surveillance.

In 2010, the aluminum water control structure at Mahoney Pond was replaced with an Agri Drain inline structure.

In 2011, a DEEP shield sign and kiosk was installed at the former Zaniewski homestead.

In 2012, the entrance to the former Zaniewski property was modified to create one large point of ingress and egress. This work included raising-up the entrance area, installing a paved apron, upgrading 200 ft. of road, and closing off the south entrance. A six-car gravel parking lot was constructed, and a wooden gate and fence were installed at the end of the access road to control illegal dumping.

In 2016, a 3.6-ton capacity hopper bin was erected at FSWMA to the east of the post and beam carriage barn. This hopper bin was purchased to store grain for various wildlife projects.

In 2017, the existing hopper bin at FSWMA was modified to increase its capacity to 5.5 tons. As a result of this work, the gravel footing was upgraded to a concrete pad to support the additional height and weight of the expansion.

In 2018, the two bituminous walkways leading to the main office and classroom were replaced with cast-in-place concrete walkways.

In 2020, 204 hazard trees, a large percentage of which succumbed to successive years of gypsy moth infestation and drought, were removed from FSWMA on both sides of Under the Mountain Road. In addition, two gates were installed to control illegal access and dumping. One gate was installed at the parking lot at the former Zaniewski homestead, while the other was installed along Under the Mountain Road, just south of the gated service road to Mahoney Pond. Additionally, a three-acre red cedar stand was mowed and mulched of all competing vegetation under 12 in. DBH.

Appendix C–Definitions

Acceptable Growing Stock: Saleable trees that are of good form, species and quality and would be satisfactory as crop trees.

Adaptive Management: A dynamic approach to forest management in which the effects of treatments and decisions are continually monitored and used to modify management on a continuing basis to ensure that objectives are being met (Helms et al, The Dictionary of Forestry, Society of American Foresters, 1998).

Aerial Photo: Photo taken from an elevated position like on an aircraft.

Age Class: A distinct aggregation of tree that originated at the same time, from a single natural event or regeneration activity or a grouping of trees (e.g. ten-year age class) as used in inventory or management. (Helms et al, The Dictionary of Forestry, Society of American Foresters, 1998).

Basal Area: The cross-sectional area of a tree, in square ft., at 4.5 ft. from the ground (at breast height). When the basal area of all the trees in a stand are added together, the result is expressed as square ft. of basal area per acre, which is a measure of a stand's density.

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 spatial scales that range from local through regional to global (Helms et al, The Dictionary of Forestry, Society of American Foresters, 1998).

Board Feet: A unit for measuring wood volumes. It is commonly used to express the amount of wood in a tree, sawlog, or individual piece of lumber. A piece of wood 1 ft. long, 1 ft. wide, and 1 in., thick (144 cubic in.).

Canopy: The continuous cover of branches and foliage formed collectively by the tops, or crowns of adjacent trees.

Carbon Sequestration: The incorporation of carbon dioxide into permanent plant tissue. (Helms et al, The Dictionary of Forestry, Society of American Foresters, 1998).

Clearcut:

1. A stand in which essentially all trees have been removed in one operation – note depending on management objectives, a clearcut may or may not have reserve trees left to attain goals other than regeneration.
2. A regeneration or harvest method that removes essentially all trees in a stand. (Helms et al, The Dictionary of Forestry, Society of American Foresters, 1998).

Contour Map: A map where each line represents a change in elevation.

Chronic Wasting Disease (CWD): Is a contagious neurological disease affecting deer, elk, and moose. It causes a characteristic spongy degeneration of the brains of infected animals resulting in emaciation, abnormal behavior, loss of bodily functions, and death.

Connecticut Endangered Species Act: This act was passed in 1989 and recognizes the importance of our state’s plant and animal populations and the need to protect them from threats that could lead to their extinction. The overall goal of the legislation is to conserve, restore, protect, and enhance any endangered or threatened species and their essential habitat. Species are listed according to their level of risk and their status is reviewed every five years.

Crop Tree: A tree identified to be grown to maturity for the final harvest cut, usually based on its location with respect to other trees and its timber quality.

Cutting Cycle: The time interval between harvesting operations when uneven-aged methods are employed using group or single tree selection.

Daylighting: Removing trees that are shading a road surface. This process spurs the growth of vegetation that may be beneficial to various wildlife species.

Desired Species: Those species of flora and fauna designated in the landowner’s management plan and not known to cause negative impacts on the local environment.

Diameter Breast Height (DBH): The diameter of a tree at 4.5 ft. above the ground.

Endangered Species: Any species of plant or animal defined through the Endangered Species Act of 1976 as being in danger of extinction throughout all or a significant portion of its range and published in the Federal Register. (Helms et al, The Dictionary of Forestry, Society of American Foresters, 1998).

Even-Aged Management: Forest management with periodic harvest of all trees on part of the forest at one time or over a short period to produce stands containing trees all the same or nearly the same age or size.

Forest Product: Any raw material yielded by a forest. Generally defined in Forest Acts or Ordinances, and subdivided conventionally into major forest products, i.e. timber and fuelwood, and minor forest products, i.e. all other products including leaves, fruit, grass, fungi, resins, gums, animal parts, water, soil, gravel, stone and other minerals on forest land (F. C. Ford –Robertson, Terminology of Forest Science Technology, Practice, and Products, Society of American Foresters, 1971).

Forest Stand Improvement: See timber stand improvement.

Forest Type: A category of forest usually defined by its trees, particularly its dominant tree species as based on percentage cover of trees, e.g. spruce fir, white pine, northern red oak.

Group Selection: Trees are removed, and new age classes are established in small groups. The width of groups is commonly approximately twice the height of the mature trees with smaller openings providing microenvironments suitable for tolerant regeneration and large openings providing conditions suitable for more intolerant regeneration. The management unit or stand in which regeneration, growth and yield are regulated consists of an aggregation of groups. (Helms et al, The Dictionary of Forestry, Society of American Foresters, 1998).

Harvesting: The felling skidding, on-site processing, and loading of trees or logs onto trucks. (Helms et al, The Dictionary of Forestry, Society of American Foresters, 1998).

Intermediate Cut: Removing immature trees from the forest sometime between establishment and stand harvest to improve the quality of the remaining forest stand. Contrast this technique with a harvest cut.

Invasive species: Non-native species whose introduction does or is likely to cause economic or environmental harm or harm to human health (Executive Order 13112 (Feb. 3, 1999)). An invasive species is a species that is 1) non-native (or alien) to the ecosystem under consideration and 2) whose introduction causes or is likely to cause economic or environmental harm or harm to human health. Invasive species can be plants, animals, and other organisms (e.g., insects, microbes, etc.). Human actions are the primary means of invasive species introductions. (Invasive Species Definition Clarification and Guidance White Paper Submitted by the Definitions Subcommittee of the Invasive Species Advisory Committee (ISAC), Approved by ISAC Apr 27, 2006.)

Landings: A cleared area in the forest to which logs are yarded or skidded for loading onto trucks for transport. (Helms et al, The Dictionary of Forestry, Society of American Foresters, 1998).

Landowner: Entity that holds title to the property for which the management plan is being written.

Management Plan: Documents that guide actions and that change in response to feedback and changed conditions, goals, objectives and policies. Management plans may incorporate several documents including, but not limited to, harvest plans, activity implementation schedules, permits and research.

Mast: Nuts of trees, such as oak, walnut, and hickory, that serve as food for many species of wildlife.

Mature Tree: A tree that has reached the desired size or age for its intended use.

MBF: Abbreviation for 1,000 board ft.

Moist-soil management: Moist-soil management is the drawdown of water to promote germination of native plants on exposed mudflats and the subsequent reflooding of the same areas. These native plants provide valuable food and cover for many wildlife species.

Nutrient Cycle: The exchange or transformation of elements among the living and nonliving components of the ecosystem. (Helms et al, The Dictionary of Forestry, Society of American Foresters, 1998).

Overstocked: A forest stand condition where too many trees are present for optimum tree growth.

Overstory: That portion of the trees in a stand forming the upper crown cover.

Overstory Removal: The cutting of trees constituting an upper canopy layer to release trees or other vegetation in an understory. (Helms et al, The Dictionary of Forestry, Society of American Foresters, 1998).

Pesticide: Pesticides include chemicals commonly known as herbicides and insecticides.

Pole Timber: Trees from 6 in. to 12 in. in DBH.

Qualified Natural Resource Professional: A person who by training and experience can make forest management recommendations. Examples include foresters, soil scientists, hydrologists, forest engineers, forest ecologists, fishery and wildlife biologists or technically trained specialists in such fields.

Rare species: A plant or animal or community that is vulnerable to extinction or elimination.

Reforestation: The reestablishment of forest cover either naturally (by natural seeding, coppice, or root suckers) or artificially (by direct seeding or planting) – note reforestation usually maintains the same forest type and is done promptly after the previous stand or forest was removed. (Helms et al, The Dictionary of Forestry, Society of American Foresters, 1998).

Regeneration: The number of seedlings or saplings existing in a stand. The process by which a forest is renewed by direct seeding, planting, or naturally by self-sown seeds and sprouts.

Regeneration Cut: Any removal of trees intended to assist regeneration already present or to make regeneration possible.

Release: To free trees from competition by cutting, removing, or killing nearby vegetation.

Riparian: Related to, living or located in conjunction with a wetland, on the bank of a river or stream but also at the edge of a lake or tidewater – note the riparian community significantly influences and is significantly influenced by, the neighboring body of water. (Helms et al, The Dictionary of Forestry, Society of American Foresters, 1998).

Riparian Corridor: The area adjacent to or on the bank of rivers and streams.

Rotation Age: The age at which a stand is considered ready for harvest under the adopted plan of management or the culmination of mean annual increment.

Sapling: Trees from 2 in. to 6 in. in DBH.

Sawtimber: Trees at least 12 in. in DBH from which a sawed product can be produced.

Scale: The extent of forest operations on the landscape/certified property.

Seedling: A young plant.

Seed-Tree Harvest: A harvest and regeneration method where nearly all trees are removed at one time except for scattered trees to provide seed for a new forest.

Selection Harvest: Harvesting trees to regenerate and maintain a multi-aged structure by removing some trees in all size classes either singly or in small groups.

Shelterwood Harvest: A harvesting and regeneration method that entails a series of partial cuttings over a period of years in the mature stand. Early cuttings improve the vigor and seed production of the remaining trees. The trees that are retained produce seed and shelter the young seedlings. Subsequent cuttings harvest shelterwood trees and allow the regeneration to develop as an even-aged stand.

Single Tree Selection: Individual trees of all size classes are removed uniformly throughout the stand, to promote growth of remaining trees and to provide space for regeneration. (Helms et al, The Dictionary of Forestry, Society of American Foresters, 1998).

Site Index: An expression of forest site quality based on the height of a free-growing dominant or co-dominant tree at age 50 (or age 100 in the western United States).

Skid:

1. To haul a log from the stump to a collection point (landing) by a skidder.
2. A load pulled by a skidder. (Helms et al, The Dictionary of Forestry, Society of American Foresters, 1998).

Skid Trail: A road or trail over which equipment or horses drag logs from the stump to a landing.

Skidding: Pulling logs from where they are cut to a landing or mill.

Slash: The residue, e.g., treetops and branches, left on the ground after logging or accumulating as a result of storm, fire, girdling, or delimiting. (Helms et al, The Dictionary of Forestry, Society of American Foresters, 1998).

Snag: A standing, generally un-merchantable dead tree from which the leaves and most of the branches have fallen – note for wildlife habitat purposes, a snag is sometimes regarded as being at least 10 in. in DBH and at least 6 ft. tall; a hard snag is composed primarily of sound wood, generally merchantable, and a soft snag is composed primarily of wood in advanced stages of decay and deterioration. (Helms et al, The Dictionary of Forestry, Society of American Foresters, 1998).

Soil Map: A map showing the distribution of soils or other soil map units in relation to prominent physical and cultural features of the earth's surface. (Helms et al, The Dictionary of Forestry, Society of American Foresters, 1998).

Special Sites: Those areas offering unique historical, archeological, cultural, geological, biological or ecological value. Special Sites include:

- A. Historical, archaeological, cultural and ceremonial sites or features of importance to the forest owner;
- B. Sites of importance to wildlife such as rookeries, refuges, fish spawning grounds, vernal ponds and shelters of hibernating animals;
- C. Unique ecological communities like relic old-growth, springs, glades, savannas, fens and bogs; and
- D. Geological features such as terminal moraines, cliffs and caves.

Stand: A group of trees with similar characteristics, such as species, age, or condition that can be distinguished from adjacent groups. A stand is usually treated as a single unit in a management plan.

Stand Density: A measure of the stocking of a stand of trees based on the number of trees per area and DBH of the tree of average basal area.

Stand Management Recommendations: The recommended management activities that should be done in that stand, based on the landowner's goals and objectives.

Stand Structure: The horizontal and vertical distribution of plants in the forest, including the height, diameter, crown layers, and stems of trees, shrubs, understory plants, snags and down woody debris. (Helms et al, The Dictionary of Forestry, Society of American Foresters, 1998).

State Forestry Best Management Practice(s) (BMPs): Forestry BMPs are generally accepted forest management guidelines that have been developed by state forestry agencies with broad public stakeholder input.

State Wildlife Action Plan: The State Wildlife Action Plan identifies species of greatest conservation need, their key habitats, and actions for managing their populations.

State Wildlife Grants Program: State Wildlife Grants support projects that prevent wildlife from declining to the point of being endangered. Projects supported by State Wildlife Grants restore degraded habitat, reintroduce native wildlife, develop partnerships with private landowners, and collect data to find out more about declining species.

Stocking: An indication of the number of trees in a stand in relation to the desirable number of trees for best growth and management.

Sustainability: The capacity of forests, ranging from stands to ecoregions, to maintain their health, productivity, diversity and overall integrity, in the long run, in the context of human activity (Helms et al, The Dictionary of Forestry, Society of American Foresters, 1998).

Sustainable Forest Management: The practice of meeting the forest resource needs and values of the present without compromising the similar capability of future generations (Helms et al, The Dictionary of Forestry, Society of American Foresters, 1998). Note – AFF’s Standards of Sustainability reflect criteria of sustainability based on the Montreal Process, 1993, and the PanEuropean Operational- Level Guidelines (PEOLGs).

Thinning: A cultural treatment made to reduce stand density of trees primarily to improve growth, enhance forest health, or recover potential mortality. Types of thinning include chemical, crown, free, low, mechanical, selection. (Helms et al, The Dictionary of Forestry, Society of American Foresters, 1998).

Threatened Species: A plant or animal species that is likely to become endangered throughout all or a significant portion of its range within the foreseeable future. A plant or animal identified and defined in the Federal Register in accordance with the Endangered Species Act of 1976. (Helms et al, The Dictionary of Forestry, Society of American Foresters, 1998).

Timber Stand Improvement (TSI): A thinning made in immature stands to improve the composition, structure, condition, health, and growth of the remaining trees.

Undesirable Growing Stock (UGS): Trees of low quality or less valuable species that should be removed in a thinning.

Understocked: Insufficiently stocked with trees.

Understory: All forest vegetation growing under an overstory. (Helms et al, The Dictionary of Forestry, Society of American Foresters, 1998).

Uneven-Aged Management or Stand: A stand of trees containing at least three age classes intermingled on the same area.

Volume: The amount of wood in a tree, stand of trees, or log according to some unit of measurement, such as board ft., cubic ft., etc.

Wetland: A transitional area between water and land that is inundated for periods long enough to produce wet soil and support plants adapted to that environment. (Helms et al, The Dictionary of Forestry, Society of American Foresters, 1998).

Appendix D–Public Comments
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TOWN OF FRANKLIN AGRICULTURE AND CONSERVATION COMMISSION [AG-CON]

**FRANKLIN TOWN HALL
7 Meetinghouse Hill Road
Franklin, CT 06254
(860)642-6976**

December 3, 2020

Franklin Swamp Wildlife Management Area
Eastern District Area Headquarters
Department of Environmental Protection
State of Connecticut
209 Hebron Road
Marlborough, CT 06447

To Whom It May Concern,

The Agriculture and Conservation Commission for the Town of Franklin, AgCon, is in receipt of the draft copy of the Wildlife Management Plan for the Franklin Swamp WMA. Our input and/or comments have been requested and follow.

General Comment and Observations...

The Franklin Agriculture and Conservation Commission supports the plan and looks forward to it being implemented.

The DEEP Wildlife Management Plan for Franklin Swamp is well thought-out and the report is well-written and provides much informative. AgCon is excited to read the emphasis on the American Woodcock and the plan for possible future land acquisitions. The report showed that staff has a good handle of the existing resources and the make-up of the property and the future plan takes into account a changing climate. Creating a forest with trees of varying ages and species should buffer extremes. Proposed monitoring and adaptive practices should help maintain a healthy ecosystem. The numerous maps included in the report were quite helpful to depict what and where modifications were going to take place. AgCon is in agreement with the public use objectives for Franklin Swamp. Overall, we applaud the State's work here. We also believe that due to Franklin Swamp's land diversity (forest, fields, wetlands, streams, uplands, etc) an array of wildlife thrives here. Of note.. are the other conservation efforts that AgCon members are directly involved in which are going on in the immediate surrounding area. The Wildlife Management Plan report names the State of CT lands and indirectly refers to others. However, AgCon believes these facts should be more prominent in the report considering that there is a nearly 3,000 acre wildlife corridor forming due to a cluster of already-protected lands (both sides of the Shetucket River) most abutting each other. AgCon has attached a map depicting this and again AgCon deems this important considering it exponentially increases the value of Franklin Swamp.

Specifics...

As mentioned, the report relays a good plan for management for these lands. However, some questions/comments were raised.

- 1)The report speaks of invasive plant control and the use of herbicides. Questions arose regarding what types of herbicides would be used and how would any eradication be executed? AgCon realizes the important of controlling invasives and for self-interest purposes wondered about the latest best practices for this type of activity.
- 2)Questions also arose about the Wildlife Management Institute Contractors (pg 7). Who are they (federal, state, private) and what type of activity do they perform or service/function do they provide?
- 3)One of the gun ranges allows bright orange clay ‘pigeons’/discs. On a recent walk behind that range, to discover an old trail, it was hard to miss the mess of shattered clay pieces in part of the swamp. Considering they are painted, one wouldn’t think this good for the environment. AgCon doesn’t have the answer since this range provides a public service, so it is needed. Perhaps some kind of backstop is in order or periodic clean up?
- 4)AgCon may have seen some recent efforts in boundary markers but there are areas that could benefit greatly from markers. For example, the western hillside (across from Rt 32) hosts some Franklin historical sites: a smallpox cemetery and “Rachel’s Hut” (a cave/overhang reported to be the home of a historic native American woman). Boundary markers to know if these lie on state land would be helpful.

Mutually Beneficial...

The Commission is quite familiar with the lands of Franklin Swamp having walked much of the area over the years. Franklin Swamp WMA has been a good neighbor and we believe that these wild lands enhance our town. Franklin townspeople appreciate cooperation from Franklin Swamp personal in allowing groups to visit sites on the property. We also believe that Franklin Swamp benefits from the town as well, for example, Franklin residents walk the abutting roads and inner lands picking up trash.

Again, the Franklin Agriculture and Conservation Commission supports the proposed plan and expresses gratitude for being included in this process. We look forward to a continued symbiotic relationship with Franklin Swamp WMA.

Respectfully,
Susan E. Allen

Susan E. Allen
Chairperson

Map: Emerging Wildlife Corridor Including Franklin Swamp WMA (depicts current acquisition project 'Peltier' property)

