Meshomasic State Forest

Mountain Block Management Plan

Connecticut Department of Energy & Environmental Protection
FORESTRY DIVISION

Forest Health and Diversity

The Mountain Block contains healthy and diverse forest ecosystems of oak/hickory ridges, red maple bottomlands and mountain laurel thickets that provide highly functional, valuable, and resilient habitats for plants and animals.

Climate Change Mitigation

The management of the Mountain Block will promote carbon sequestration and storage. Sustainable forest management can maintain or enhance forest carbon sinks by storing carbon in wood products, replacing less environmentally friendly materials such as concrete and steel. Climate resiliency initiatives, such as the Stormwise project, are using silvicultural practices to create storm resilient forests while reducing utility infrastructure damage.

Economic Benefits

This plan outlines timber harvesting on 825 acres, 13 % of the Mountain Block. These sustainably harvested forest products provide jobs and raw material for a locally sourced, forest-based, green economy.

Forest Protection

The Meshomasic Mountain Block management plan addresses threats such as wildfire, extreme weather events, invasive plants and insects, and unauthorized use. Management strategies are outlined for each of these threats to protect this valuable public forestland asset. The plan recognizes that forests are dynamic and that weather events, insect or disease outbreaks, or other unforeseen conditions may require changes in the management recommendations.

Wildlife Habitat

The Mountain Block provides high quality forested habitat with limited fragmentation. This forest is considered an Important Bird Area (IBA) because it's a large intact area of forestland that provides important habitat features for a variety of bird species.

Recreational/Health Benefits

The Blue-Blazed Trail provides eight miles of scenic trail, traversing Meshomasic State Forest, providing recreational opportunities and a place to explore in a healthy and active way.

Encouraging Mature Forest Growth

22%, 1,396 acres of the Mountain Block are set-aside under the Old Forestland Management Site (OFMS) classification, ensuring the most remote and sensitive areas of the forest will remain wild and unaltered by humans. This will encourage mature forest growth within this block of forestland.

STATE OF CONNECTICUT

DEPARTMENT OF ENERGY AND ENVIRONMENTAL PROTECTION

Bureau of Natural Resources

Division of Forestry

Meshomasic State Forest: Mountain Block
Forest Management Plan
2025 - 2035
6,393 Acres
Author: Nathan Piché

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Introduction

Connecticut is the 14th most forested state in the United States with approximately 60% forested cover. It is also the 4th most-densely populated state in the country. These two factors create a unique and challenging environment to develop meaningful and effective resource management strategies that will meet the needs of its citizens while protecting and enhancing its natural and ecological resources.

The 2025 – 2035 Meshomasic State Forest, Mountain Block Management Plan incorporates priorities and specific strategies developed for Connecticut's forests within the 2020 Connecticut Forest Action Plan, an implementation guide for broad statewide forest management strategies based on three national priorities;

1. Conserve and manage working forest landscapes for multiple values and uses;
2. Protecting forests from threats; and
3. Enhancing public benefits from trees and forests.

The following objectives were considered in the development of the Meshomasic State Forest, Mountain Block Management Plan with considerable site-specific input provided by DEEP, DEEP partners, and various user groups.

Forest Health and Diversity – The Mountain Block contains healthy and diverse forest ecosystems of oak/hickory ridges, red maple bottomlands, and mountain laurel thickets that provide highly functional, valuable, and resilient habitats for plants and animals.

Wildlife Habitat – The Mountain Block provides high quality forested habitat with limited fragmentation. This forest is considered an Important Bird Area (IBA) because it's a large intact area of forestland that provides important habitat features for a variety of bird species.

Climate Change Mitigation – The management of the Mountain Block will promote carbon sequestration and storage. Sustainable forest management can maintain or enhance forest carbon sinks by storing carbon in wood products, replacing less environmentally friendly materials such as concrete and steel. Climate resiliency initiatives, such as the Stormwise project, are using silvicultural practices to create storm resilient forests while reducing utility infrastructure damage.

Encouraging Mature Forest Growth – 22 %, 1,396 acres of the Mountain Block are set-aside under the Old Forestland Management Site (OFMS) classification, ensuring the most remote and sensitive areas of the forest will remain wild and unaltered by humans. This will encourage mature forest growth within this block of forestland.

Recreational/Health Benefits – The Blue-Blazed Trail provides eight miles of scenic trail, traversing Meshomasic State Forest, providing recreational opportunities and a place to explore in a healthy and active way.

Economic Benefits – The plan outlines silvicultural projects on 825 acres, 13 % of the total block acreage. Sustainably managed forests provide jobs and raw material for a locally sourced, forest-based, green economy.

Forest Protection – The Meshomasic Mountain Block management plan addresses threats such as wildfire, extreme weather events, invasive plants and insects, and unauthorized use. Management strategies are outlined for each of these threats to protect this valuable public forestland asset. The plan recognizes that forests are dynamic and that weather events, insect or disease outbreaks, or other unforeseen conditions may require changes in the management recommendations.

DEEP welcomes questions and comments regarding the management of state forest lands and encourages public engaging in the management of state resources. The Division of Forestry may be contacted by email at deep.forestry@ct.gov or by phone at 860-424-3630.

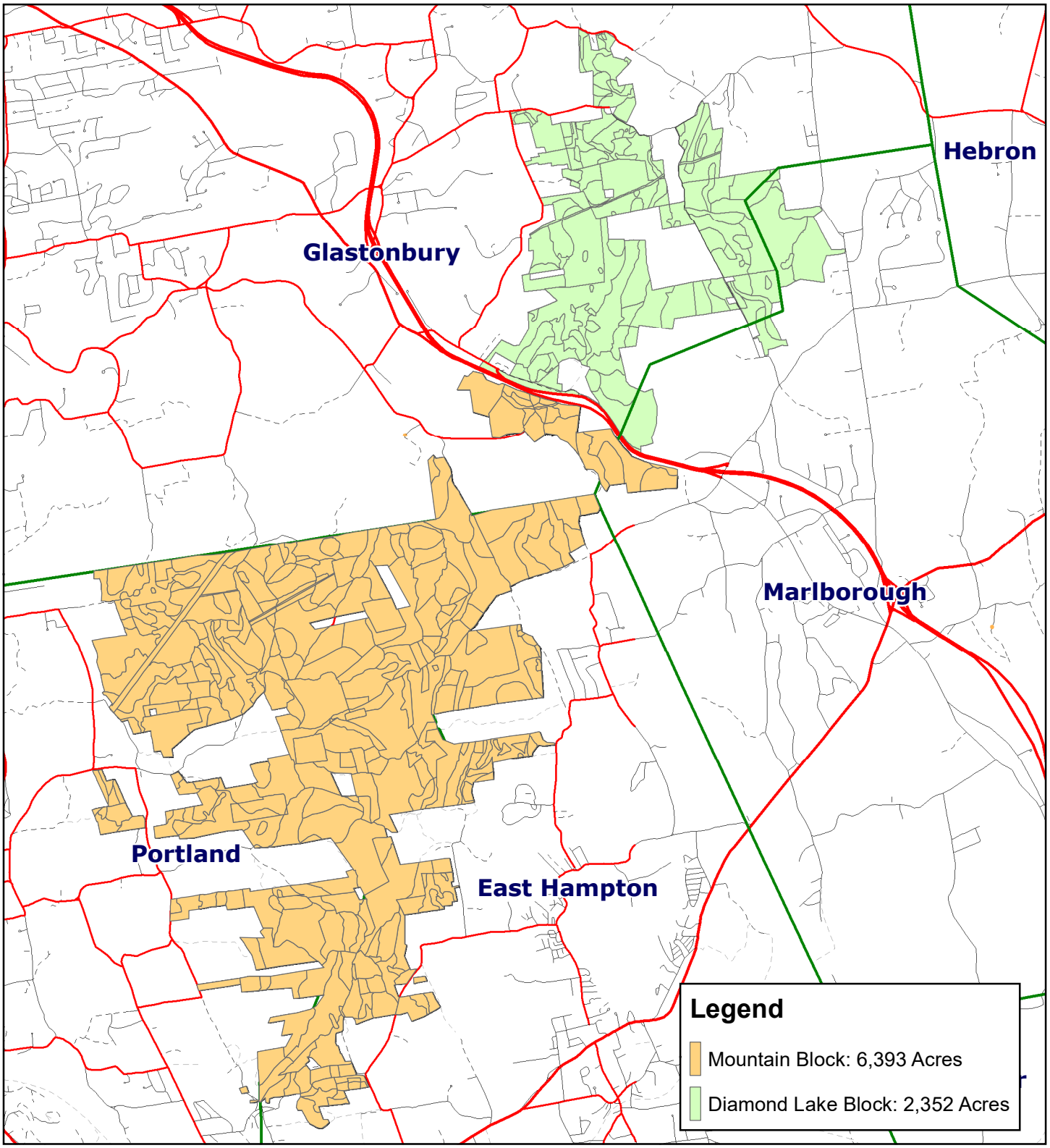
Meshomasic State Forest

Location & Division of Forest Blocks

October 18, 2024
Map prepared by: Nathan Piché

0 3,000 6,000 12,000 Feet

Map Scale: 1 inch = 6,000 feet



Coordinate System: NAD 1983 State Plane Connecticut FIPS 0600 Feet

B. Executive Summary

The Mountain Block

The Mountain Block is one of two blocks that make up Meshomasic State Forest. Connecticut Route 2 divides Meshomasic State Forest, with the Mountain Block being located south of this highway and the Diamond Lake Block being located north of this highway.

The Mountain Block, 6,393 acres located in the towns of Portland, East Hampton, Glastonbury, and Marlborough, within Hartford and Middlesex Counties, is divided into 40 separate compartments. Compartment separations are determined by access and are numbered in a chronological order based on when that section of the forest was acquired. Each compartment is further divided into stands, or individual management units of similar forest composition or site quality, to aid in management making decisions.

The last forest management plan for the Mountain Block of Meshomasic was written in 2011. Silvicultural activity prescribed in the last plan has been carried out over the past ten years, with the last remaining prescribed activities being completed in 2021. Several additional parcels of land have been purchased and incorporated into the Mountain Block in the last ten years as well. Therefore, this plan aims to re-inventory and re-evaluate the forest resources within this block to assemble a plan for the continuation of the important silvicultural and habitat work that has been ongoing in Meshomasic State Forest for over a century.

This management plan will focus on both short- and long-term objectives aimed at improving access to the forest for forest management purposes, maintaining and diversifying wildlife habitat, supporting recreational activities, ensuring the long-term health and productivity of the forest, and the continued protection of state-listed threatened and endangered species. These objectives will be achieved by implementing the following actions:

- Silvicultural practices on 825 acres to increase the growth rate of residual trees, regenerate a new cohort of trees, and to diversify habitat type and structure.
- Maintaining 1,396 acres as Old Forestland Management Site (OFMS) to allow for the natural processes of forest stand development to occur without the influence of active forest management.
- Eradication of invasive plants on 146 acres to protect interior forests from being populated with invasive plants and to promote the growth of native herbaceous plants.
- Maintaining grassland and shrubland areas to retain early successional and edge habitats.
- Marking property boundary lines to protect the forest from unauthorized use.
- Adopt adaptive management principles to make sound management decisions in the event of future unforeseen impacts to the forest.

C. History

Defining Meshomasic

The name of the forest comes from Meshomasic Mountain, located southeast of Del Reeves Road within the Mountain Block, standing at 897 feet in elevation, one of the highest points within the forest. This mountain is part of a range of hills that run north/south through the forest. It is believed that "Meshomasic" was a Native American term for "a place of many snakes." The timber rattlesnake is on the State of Connecticut Endangered Species List and forest management practices across Meshomasic State Forest have been influenced by the conservation of this species.

Photo 1.0. Photo of a timber rattlesnake.

Cultural History

Even though considerable portions of the forest contain exposed ledge and boulder deposits from the last glacial period, much of it was cleared for agricultural purposes during the colonial era. Old cellar holes, stone walls and stone piles remain as evidence of the work done by early settlers. As these fields and pastures were abandoned the land gradually reverted to forest, sprouting an abundance of oak, birch, maple, hickory, and tulip trees throughout. These forests were cut repeatedly by the valley farmers who owned them. At the time when land purchases were first made by the State, much of the area was covered with a remarkable amount of chestnut, birch, hickory, tulip, and oak sprouts.

State of Connecticut Land Acquisition

" The State Forest Acquisition program began in 1903 when Walter Mulford, Experiment Station Forester and ex-officio State Forester, acting under the authority granted by Chapter 175 of the Public Acts of 1901 purchased 627 acres of land in the town of Portland at a cost of $ 964.16" (Martin, 1943). The decision to buy land in Portland was made because of its central position in the state and because it was well stocked with young chestnut growth, the most valuable tree species at that time (Hawes, 1952-1957). The tract of state land was named the Portland State Forest. The acquisition was intended for the growing of timber as well as for providing public hunting and fishing opportunities (Martin, 1943). Over the next several decades more land was acquired by the state, beyond the town of Portland boundaries. A policy regarding naming state forests with local Native American names was adopted circa 1921. As a result, the expanding Portland State Forest was renaming Meshomasic. Through these series of events Meshomasic State Forest became the first of 33 state forests established in Connecticut and the first established in New England.

Reason For Acquisition & Funding Sources

In the last 25 years, the forest has seen a surge in land acquisition. Purchases were funded largely through the Recreation and Natural Heritage Trust Fund, DEEP's primary program for acquiring land to expand the state's system of parks, forests, wildlife management areas, and other natural open spaces. A property exchange between the State of Connecticut and the Town of Portland was completed in 1995. Portland acquired 63 acres of forestland for the protection of the Portland Reservoir. In exchange, the State added 378 acres to the forest, most of the land being interior parcels, which filled in gaps, creating a larger contiguous block of state land.

Development of Resources Prior & After Acquisition

Under the direction of the first forest warden in Meshomasic, John Cordella "Del" Reeves, silvicultural work began in the forest around 1905. The focus was on thinning stands for cordwood, which was then sold to charcoal burners, an active industry at the turn of the 20th century.

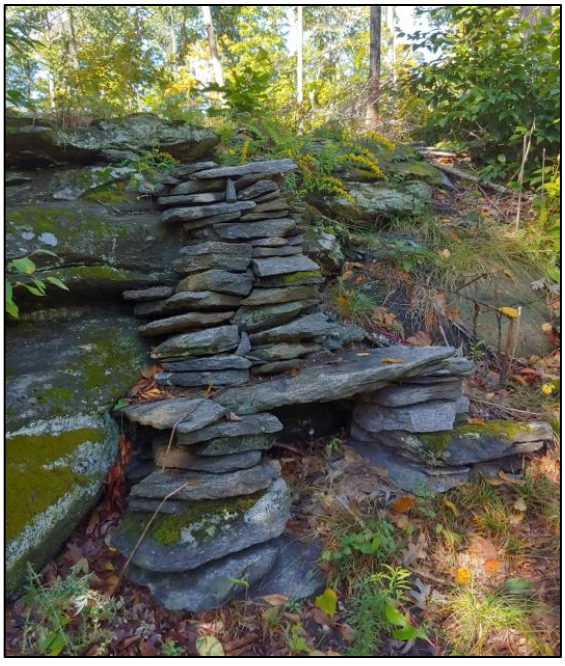


Photo 1.1. Photo of a stone wood stove, the remnants of a collier's hut. Colliers were charcoal makers. Colliers would cut trees into four-foot lengths and pile them into mounds as large as 25 feet in diameter and 15 feet tall. The mounds were covered in wet leaves, ferns, and sod while the wood inside was set on fire to burn slowly. This charcoal making process required the colliers to monitor the mounds around the clock. As a result, evidence of their shelters and mounds can be found throughout the forest today.

In the Mountain Block there was only an occasional natural group of coniferous tree species. The planting program implemented was concentrated on pines and spruces to increase the percentage of softwood species in the forest. The earliest softwood plantation was established in 1906, known as the “Big Pines” plantation (Compartment 8 Stand 4), when 5,000 white pine and 3,000 Norway spruce were planted. In 1908 the white pine was destroyed by fire while land was being cleared for additional plantings. That same year of the fire, the burned area was replanted, adding additional acreage to the softwood plantations. Between 1983 and 1987, 193 acres of softwood plantations were harvested to salvage dying red pines due to an insect infestation of Red Pine Scale (See section F. Forest Ecosystem Health and Diversity for additional details). Approximately 920,000 board feet of red pine was removed, and the stands were converted to mixed hardwoods that naturally regenerated in the salvaged areas. Hardwood ingrowth contributed to the loss of the other plantations. Today there are only 417 acres of conifers within the forest. Plantations are approximately 0.4 percent (27 acres) of the total forest cover.

Photo 1.2. Photo of a white pine plantation taken in 1934 from the bridge over Buck Brook at the intersection of Del Reeves Road, Mulford Road, and North Mulford Road. This stand was planted in 1908. The pine was thinned in 1991 and today the stand features some of the largest and tallest trees in Meshomasic State Forest.

Photo 1.3. Photo of a plantation of red pine and Norway spruce after planting in 1933, located on South Road in the Town of Portland, Meshomasic State Forest: Mountain Block.

Numerous small wildland fires have occurred in the forest over the past century. However, there has been only one significant fire in the Mountain Block. Between May 4th and 6th, 1930, 2,300 acres of forest burned in Marlborough and East Hampton. This fire later became known as the Ten Curves Fire. Damage from the fire is still evident in trees that are harvested from the burned over area.

In 1933, President Roosevelt created the Civilian Conservation Corp (CCC) to relieve the poverty and unemployment of the depression. The US Army supervised the camps which contained between 200 and 250 men each (Podskoch, 2016). Two camps were created in what is now Meshomasic State Forest, Camp Jenkins (1933-1936) in Cobalt, and Camp Buck (1935-1941) in Portland (Podskoch, 2016). In these years, new plantations were established, older plantations were weeded, thinned, and pruned, and acres upon acres of forest stands were tended through improvement cutting operations. The CCC also surveyed, marked, and brushed out the forest boundary lines. The forest was cruised, type mapped, and waterholes were constructed for fire control. New roads were built, a fire lookout tower was constructed, insect pest control work was carried out, and recreational areas were developed. Remnants of Camp Jenkins are still found today within the forest, north of Gadpouch Road. The Department of Energy and Environmental Protection (DEEP) Portland Complex, which includes the agencies only remaining operational sawmill, on Great Hill Road in Portland occupy the site of the former Camp Buck.

Photo 1.4. Photo of Del Reeves Road while under construction by the CCC in 1933.

In the 1950's Meshomasic was briefly home to a Department of Defense Nike Hercules Missile site. During this period, significant improvements were made to the forest roads and drainage system. Today, remnants of the launch pad can be seen off North Mulford Road and remnants of the enlisted quarters can be found off Del Reeves Road. For a short period in the 1960's the abandoned enlisted barracks was used by the Connecticut Department of Corrections, then again in the 1970's by the Young Adult Conservation Corp.

In 1999 the Federal Aviation Administration (FAA) acquired a special use license from DEEP to remove trees and brush within a 400-foot radius on a section of high ground north of the abandoned barracks off Del Reeves Road. A Vortac Antenna was installed at the center of this clearing and is maintained to this day. This antenna is a navigational aid for aircraft pilots. Since Meshomasic is located close to Bradley Airport in Windsor Locks, this antenna in an important infrastructure element for the FAA, and helps pilots navigate to and from the airport. The FAA renewed their special use license from DEEP in 2021 for the continued use of this site. The FAA also requested permission from DEEP for the expansion of the site from its current 400-foot radius clearing to a 500-foot radius clearing, citing that trees on the edge of the clearing were disrupting the Vortac Antenna signal. The additional clearing work was granted by DEEP with special terms and conditions outlined for how and when work was to be completed to minimize site impacts and potential impacts to threatened, endangered, and/or of special concern species. The work was completed in the winter of 2025.

Since the exit of the CCC and because of the scarcity of help brought on by the second world war, up until 1974 forestry work in Meshomasic consisted of upkeeping of the improvements made by the CCC. This upkeep included tending to older plantations and continuing the planting program on a smaller scale. In 1974 the forest was placed under a management program by DEEP. Since then, approximately 5,000 acres have been harvested by thinning's, shelterwoods, and clear cuts making for a forest with a great diversity of age class structure.

Changes in the Last 10 Years

Management efforts in the last 10 years have been to continue implementing sound, science based silvicultural practices, acquire additional land adjacent to the existing forest when feasible, and to maintain and improve the forests infrastructure. The most recent land acquisitions were made in 2016 when the State purchased 103 acres in Portland adjacent to the forest in the northwestern corner of the block and an additional 23 acres in East Hampton on the northeastern side of the block. Property boundary lines were marked in 2013/2014 and again in 2019/2020. The primary access roads were re-graded and additional gravel was added where necessary in 2019. A culvert pipe on Del Reeves Road at the Del Reeves Marsh was replaced in 2021 to handle high water flows and minimize road flooding. The culvert that carries Mott Hill Brook under Del Reeves Road was replaced in 2022 with a concrete box culvert, allowing for higher water flows during extreme weather events while maintaining a natural stream substrate to allow native brook trout passage. Silvicultural activity has been carried out on approximately 500 acres. These activities have included thinning's and shelterwood harvests aimed at fostering the best quality growing stock already established in the forest as well as to regenerate the next cohort of growing stock that will grow into the forest of the next generation.

Rotations & Cutting Cycles

The Mountain Block is made up of upland, rolling terrain that has course textured, rocky soils. As a result, the primary tree species that occupy this block of forestland are oaks, hickories, and northern hardwoods. In this forest type un-even aged management typically results in the regeneration of undesirable, shade tolerant species, most notably American beech which suffers from beech bark disease and beech leaf disease (See section F. Forest Ecosystem Health and Diversity for additional details). Therefore, even aged silvicultural treatments will be the primary focus of the management activities prescribed for this block. Even aged management will use a rotation age of 100-years. During this plan period 825 acres of the forest will be scheduled to receive even aged silvicultural treatments.

Photo 1.5. Photo of a shelterwood harvest, an even aged silvicultural treatment, within the Mountain Block of Meshomasic State Forest in the winter of 2022.

D. Assessment of Resources and Infrastructure

Acres

The Mountain Block is made up of 6,393 acres. These acres are divided into one to nine different classifications which are active forest, old forest management site, natural area preserves, inaccessible areas, inoperable areas, recreational areas, areas managed for wildlife, wetlands, and open/non-forested areas.

Table 1.0. Acres of land that fall into each land classification category within the Mountain Block, Meshomasic State Forest.

Land Classification	Acres	Percent of Total Acreage
Active Forest	3725	58
Old Forest Management Site	1396	22
Natural Area Preserve	124	2
Inaccessible Areas	151	2
Inoperable Areas	834	13
Recreational Areas	4	0
Areas Managed for Wildlife	0	0
Wetlands	47	1
Open/Non-Forested	112	2
Total	**6393**	**100**

Although there are nine different land classification categories that each acre of land falls into, these categories are not necessarily mutually exclusive. For example, land classified as “old forest management site” may have just as much wildlife benefit as land classified as an “area managed for wildlife.” Land is divided into these categories by close analysis of their current physical condition and is done so to aid in management making decisions.

Active forestland is land which is capable of being actively managed using contemporary techniques and equipment. Not all active forestland is prescribed to receive a management treatment in this management plan, such as a silvicultural or invasive treatment. However, this plan does prescribe management treatments to occur on 825 acres of active forestland, with the remaining acres of active forestland being left to grow and further develop. Old forest management site is a land classification that has been enacted to set aside a portion of land to allow for the natural processes of forest stand development to occur without the influence of active forest management. Natural Area Preserves are state lands designated by the Governor as “natural areas.” A natural area is defined in the Connecticut State Statutes as “…an area of land or water, or land and water containing or potentially containing plant or animal life or features of biological, scientific, educational, geological, paleontological or scenic value worthy of preservation in their natural condition.” The Mountain Block contains three Natural Area Preserves (See section E. Special Use Areas for additional details). Inaccessible areas are areas that cannot be accessed due to the deterioration of access roads or due to being landlocked behind un-crossable geographical features such as wetlands, rivers, or steep terrain. Inoperable areas are lands that contain physical features such as steep slopes and excessively rocky terrain that prevents active management from taking place.

Recreational Areas are areas within the forest that contain features that are of significant recreational value and are managed to maintain those recreational opportunities. The Mountain Block has two small areas designated as Recreational Areas, both of which are parcels of land that provide public access to Great Hill Pond in Portland for canoeing and kayaking. The Bureau of Outdoor Recreation, Parks Division, is primarily responsible for the management and maintenance of designated recreational areas. Areas managed for wildlife are designated lands where the primary objective of any active management activity will be for the benefit of wildlife. The Bureau of Natural Resources, Wildlife Division, is responsible for the management and maintenance of designated areas managed for wildlife. Wetlands consist of any of the soil types designated as poorly drained, very poorly drained, alluvial, and floodplain by the National Cooperative Soil Survey (Connecticut General Statutes Section 22a-38 15). Lastly, open, or non-forested areas are old fields, recently abandoned from agricultural use, where forest succession has not advanced to the point at which the area can be considered forested at this time or a utility right-of-way that is maintained as open/non-forested for the purpose of maintaining the right-of-way. These open or non-forested areas are often maintained to benefit wildlife that depend on early successional stage habitat such as grassland or shrubland. Within the Mountain Block, Eversource maintained electric transmission lines and the Enbridge maintained Algonquin Gas Pipeline right-of-way's make up a large proportion of the open/non-forested lands.

Access

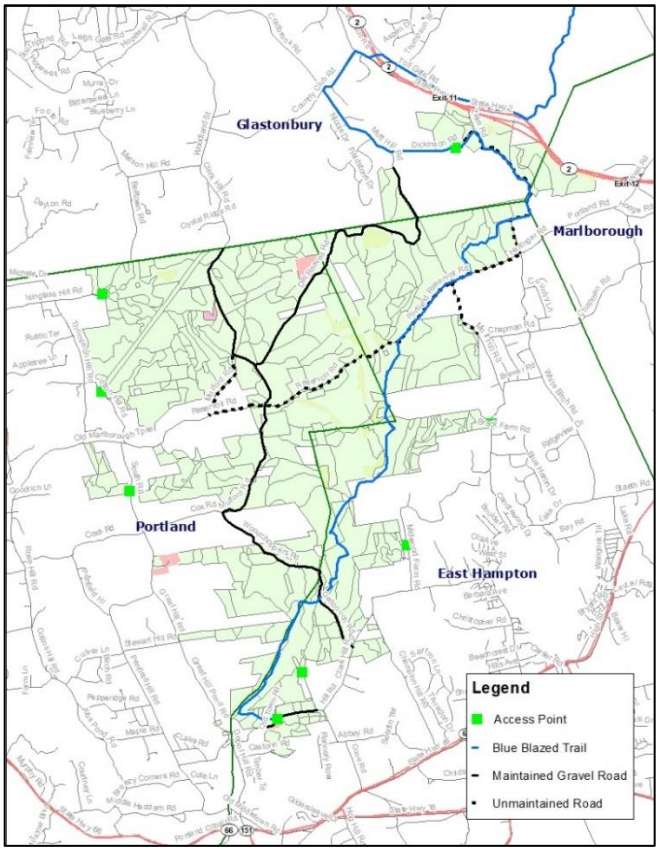


Figure 1.0. Map showing the various access points, maintained forest roads, unmaintained forest roads, and the Blue Blazed Shenipsit Trail within the Mountain Block of Meshomasic State Forest.

There are various motorized and non-motorized access points throughout the Mountain Block. Motorized vehicles may access the forest from the network of maintained gravel roads such as Woodchoppers Road in East Hampton, Gadpouch Road in East Hampton, Mott Hill Road in Glastonbury leading to Del Reeves Road, Clark Hill Road in Glastonbury leading to North Mulford Road, and Cox Road in Portland leading to Mulford Road. There are several unmaintained gravel roads that can be used for access purposes; however, these roads are restricted to foot traffic only. These unmaintained gravel roads include Reservoir Road in Portland, Portland Reservoir Road in East Hampton, Dickinson Road and Zeke Road in Glastonbury, and Mott Hill Road and White Birch Road in East Hampton. The Blue Blazed Shenipsit Trail, foot traffic only, can also be used to access the forest. Access points for this trail are located on Gadpouch Road in East Hampton, Woodchoppers Road in East Hampton as well as Dickinson Road in Glastonbury. Other access points to the forest are primarily small pull off areas on the side of town roads where one could park and hike into the forest. Locations such as these are located on Mott Hill Road in East Hampton, Midwood Farm Road in East Hampton, Cobalt Road in East Hampton, South Road in Portland, East Cotton Hill Road in Portland, as well as Isinglass Hill Road in Portland.

The forest roads are maintained by the Bureau of Outdoor Recreation, Parks Division, with support from the Bureau of Central Services, Field Support Services, and the Bureau of Natural Resources, Forestry Division, State Lands Management Program. The maintained gravel roads are open to the public most times of the year and posted closed from January 1st to March 31st. DEEP does not maintain the roads during the winter months. Road closure periods are to protect the roads when they are most vulnerable due to wet conditions and for public safety as emergency access on unmaintained roads is not always possible. General maintenance such as culvert or sediment box clean out and road re-grading is completed as needed and as resources are available.

Access for forest management purposes has been lost from White Birch Road, Dickinson Road, Zeke Road, Isinglass Hill Road, Reservoir Road, and Portland Reservoir Road due to lack of funding and allocation of labor resources to maintain the road surface and water drainage features. Unauthorized use of these roads by ATV's, motorcycles and 4 x 4 trucks has exacerbated the lack of maintenance by damaging water drainage features that were installed in these roads. This has resulted in severe erosion issues. This plan will propose the recovery of two of these roads: Dickinson Road and Isinglass Hill Road. These two roads are currently not gated. After improvements are made to these roads, they will be gated to discourage unauthorized use.

Inaccessible Areas

Approximately two percent of the Mountain Block, comprised of 150 acres, is classified as inaccessible. These acres, located within Compartments 16, 24, 25, and 32, are all designated as such for their steep terrain, flanked by wetlands or streams, along with the closest access point being in poor condition.

Right-of-Way's (ROW)

There is one ROW within the Mountain Block that traverses the northwest corner of the block. Two entities utilize this ROW, Eversource and Enbridge. Eversource maintains a high voltage power line that runs overhead through the ROW and Enbridge maintains the Algonquin gas transmission pipeline that runs underneath the ground through the ROW. This ROW is a critical aspect of the State's infrastructure. As a result, land managers will maintain communications with Eversource and Enbridge to stay informed of any ROW maintenance that is being done as well as to minimize negative impacts to the ROW during forest management activities on the adjacent State forestlands. Due to the ROW being comprised of open, non-forested land that is occupied by young herbaceous growth, the corridor adds wildlife habitat diversity to an otherwise densely forested landscape. The Divisions of Forestry and Wildlife will work with Eversource and Enbridge, whenever possible, to maintain and enhance the ROW value for wildlife habitat.

Boundary Conditions, Issues & Total Miles to Maintain

There is a total of 40 miles of boundary lines in the Mountain Block of Meshomasic State Forest. Maintenance was completed on these property lines in 2013/2014 as well as 2019/2020. Maintenance included re-painting boundary trees, replacing old state land signs where necessary and collecting GPS data on all points and features along each boundary line. Therefore, boundary lines in this block of forestland are in good condition, easily located and well-marked. There are two boundary line issues within this block. The first is in the northern most segment of the block, town of Glastonbury, within the property that lies between Dickinson Road and Route 2. On the western most side of this property there is little to no boundary line evidence. As a result, the boundary has not been marked along an approximately 1,900-foot segment of boundary line. The second issue is located northwest of Midwood Farm Road, town of East Hampton, where it was found that one boundary corner pin, pipe, and/or marker is missing. As a result, the boundary has not been marked along an approximately 500-foot segment of boundary line. Both these issues will be resolved through additional survey work within the timeframe of this management plan. No other boundary issues are known currently.

Acquisition Goals

Future acquisition efforts should be prioritized by the following three guidelines:

1. All interior parcels should be acquired if made available to the state. This will reduce boundary line maintenance as well as strengthen DEEP forest use policies.
2. Any parcel which currently abuts the forest on two or three sides. Acquisition of properties such as these would allow the forest to expand along its bounds, reducing maintenance issues, strengthening DEEP forest use policies and will create a larger protected forest corridor.
3. Any parcel which may provide improved access to existing town roads should be acquired for management and emergency access purposes.

E. Special Use Areas

Lakes & Ponds

There are two waterbodies located within the Mountain Block of Meshomasic State Forest: Great Hill Pond and Del Reeves Marsh.

Great Hill Pond is a 76-acre pond located in Portland. Public access is by car-top/carry in only. There is minimal parking along Great Hill Pond Road and boats must be carried approximately 30 yards to access the water. Species that are found in the pond include largemouth bass, chain pickerel, yellow pickerel, calico bass, sunfish, brown bullhead, and white catfish. Motors of 6 hp or less are permitted and there is a 12-mph speed limit.

Del Reeves Marsh is a wetland impoundment created in 1972. It covers a 30-acre area and is approximately half open water and half emergent vegetation to benefit waterfowl and other wildlife that use emergent marsh habitat. The shallow water system provides recreational opportunities to forest users who frequently use the area for hunting, fishing, and bird watching. Beavers often inhabit the area, damming the inlet and outlet structures of the marsh, thus requiring annual maintenance for public safety and habitat quality reasons. A new inlet culvert pipe was installed on Del Reeves Road, where it crosses the northwestern edge of the marsh, in 2021. This new culvert has a greater water capacity and includes a “beaver deceiver” on the culvert intake which prevents debris from clogging the pipe. The project also included the building of a water overflow, over Del Reeves Road, where vehicles could safely ford through water during periods of high water while reducing erosion and sedimentation issues associated with road flooding. These improvements have reduced maintenance and the potential for future road flooding during periods of high precipitation.

Photo 1.6. Aerial photo of the Del Reeves Marsh.

Rivers & Streams

The Mountain Block is a large upland forested area that contains the headwaters of many streams that flow out of it. The Dark Hollow Brook, whose headwaters are north of the Mountain Block in the adjacent Diamond Lake Block, flows through the northern most portion of the Mountain Block just south of CT Route 2. Mott Hill Brook flows out of the forest, feeding Cold Brook and ultimately Cold Brook Reservoir. The Fawn Hill Brook originates from the eastern edge of the forest and flows south toward Lake Pocotopaug in East Hampton. Buck Brook begins in an upland area east of North Mulford Road, eventually flowing out to the Portland Reservoir. Reservoir Brook also flows out of the Mountain Block and into the Portland Reservoir. The Rattlesnake Brook originates within the southwestern corner of the block and flows out to Great Hill Pond. Carr Brook flows westerly out of the forest, feeding Kelsey Pond. Mine Brook flows out of the southernmost portion of the forest and continues on southward to the Connecticut River. The extensive network of forested wetlands, intermittent streams and brooks that flow out of this block make the Mountain Block a vital piece of forestland in the context of watershed protection and management.

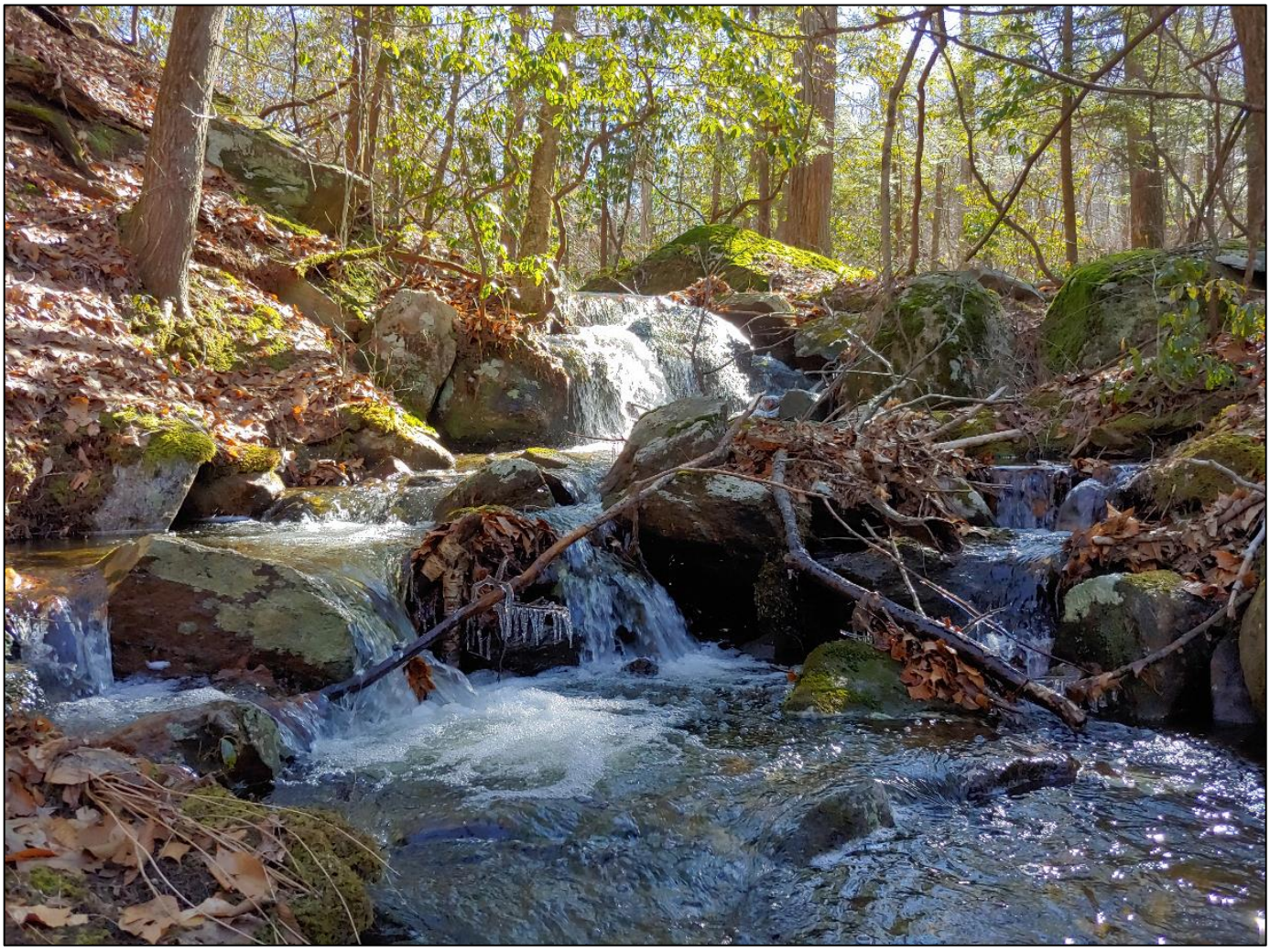


Photo 1.7. Photo of the headwaters of the Carr Brook, flowing out of the hills within the Mountain Block of Meshomasic State Forest.

Cultural Sites

Meshomasic State Forest is the only eastern Connecticut state forest known to have had mining operations conducted within it. The first mining started in 1772 when Dr. John Sabastion Stephauney began mining with a crew of German laborers around Great Hill. In 1818 Seth Hunt followed, and in 1850-1855 Edward Brown and associate also attempted mining operations. All were trying to commercially produce ore, without success. The Cobalt mines are located south of Gadpouch Road in East Hampton and a mica quarry is located east of Woodchoppers Road, also in East Hampton. Another mica quarry, called the Case Berry Quarry is located north of East Cotton Hill Road in Portland. All these areas have slag piles that are still visible reminders of the land use history. Today, the sites serve as popular destinations for local schools and minerals clubs. Special Use Licenses are required to visit the sites with organized groups, and as standard policy for all property owned by the State, no materials may be removed unless written permission has been obtained. Additional information on special use licenses can be found on the CT Parks webpage; http://ctparks.com/special-use-licenses.

Remnants of the Cobalt mines south of Gadpouch Road include two mine shafts measuring approximately 20 feet in diameter. Depth of these mine shafts are unknown. Out of concern for public safety around these open mine shafts, chain link fencing was installed around the perimeter of each of these open shafts.

Other sites of cultural or historical value include numerous charcoal mounds located throughout the forest, the CCC Camp Jenkins and Camp Buck, an abandoned military Nike Hercules Missile silo site, an abandoned military enlisted headquarters, the concrete foundation remains of a former wooden fire lookout tower that was built by the CCC located northwest of Midwood Farm Road in East Hampton, and the remnants of a creosote plant south of the Portland Reservoir.

There are no National Heritage sites within the State Forest, however, the Cobalt Mines are considered a local heritage site within the communities of Portland and East Hampton.

Recreation & Scenic Sites – Trails & Signs

The Connecticut Blue-Blazed Shenipsit Trail runs through the Mountain Block, starting on Gadpouch Road in East Hampton before meandering through the forest eventually coming out on Dickinson Road in Glastonbury. This is the only recognized public use trail in the forest. It is maintained by the Connecticut Forest and Park Association (CFPA). Information regarding the Connecticut Blue-Blazed Trail system can be obtained by contacting CFPA; http://www.ctwoodlands.org.

There are numerous other trails located throughout the forest which are used for recreation such as hiking and mountain biking. However, these trails are not authorized and therefore are not maintained for recreation. Some of these unmaintained trails, as well as the Blue-Blazed Trail, are used illegally with motorcycles and All-Terrain Vehicles (ATV's). Motorcycles and ATV's are not permitted in the state forest unless registered with the Department of Motor Vehicle (DMV) and, even if registered with DMV, are only permitted on forest roads open to all motor vehicles. If illegal activity is observed by the public, they are encouraged to report the incident to ENCON at (860) 424-3333.

Natural Area Preserves

The forest contains three Natural Areas, designated by the State: Reeves Natural Area, Cox Natural Area, and the Cabin Lot. These three areas total 123 acres and are left in an unmanaged condition by administrative edict for research purposes. The Connecticut Agricultural Experimental Station (CAES) located in New Haven, established permanent research plots on these sites in 1926 and 1927 to study the relationship between soil type and forest composition. These plots have been inventoried every decade except the 1940's and is established as one of the oldest and largest set of permanent plots in eastern hardwood forests. No harvesting is permitted in these natural areas or within a two chain (132 feet) buffer. Management plans specific to Natural Area Preserves are often drafted to describe all aspects of their condition, use, and management goals and objectives. These aspects are not covered under the scope of the Mountain Block management plan. Information regarding the changes tracked in these forest stands can be obtained by contacting the CAES by using the following link: http://www.ct.gov/caes.

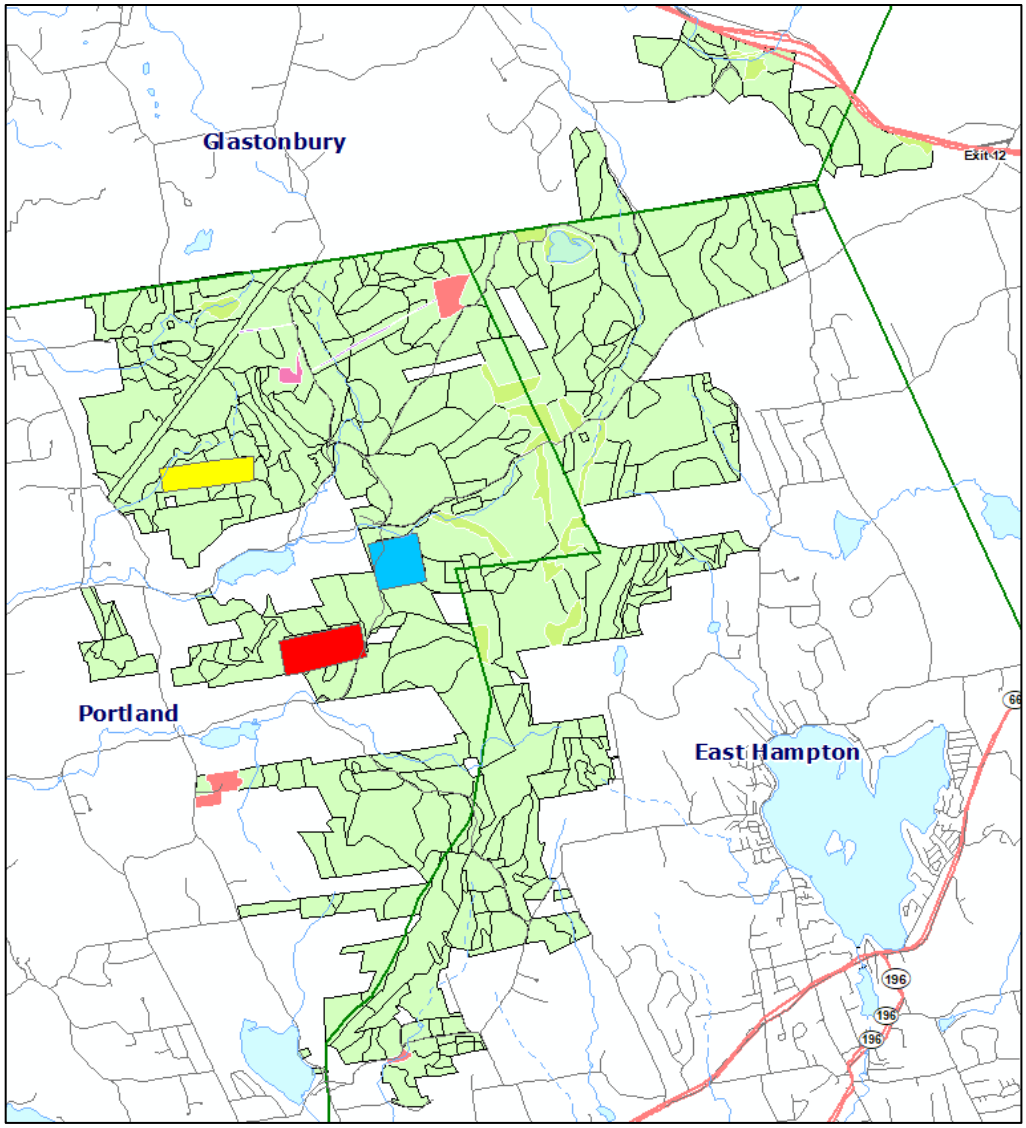


Figure 1.1. Map showing the location of the three Natural Areas within the Mountain Block of Meshomasic State Forest. Reeves Natural Area is show in yellow, Cox Natural Area shown in red, Cabin Natural Area shown in blue.

Old Forestland Management Sites

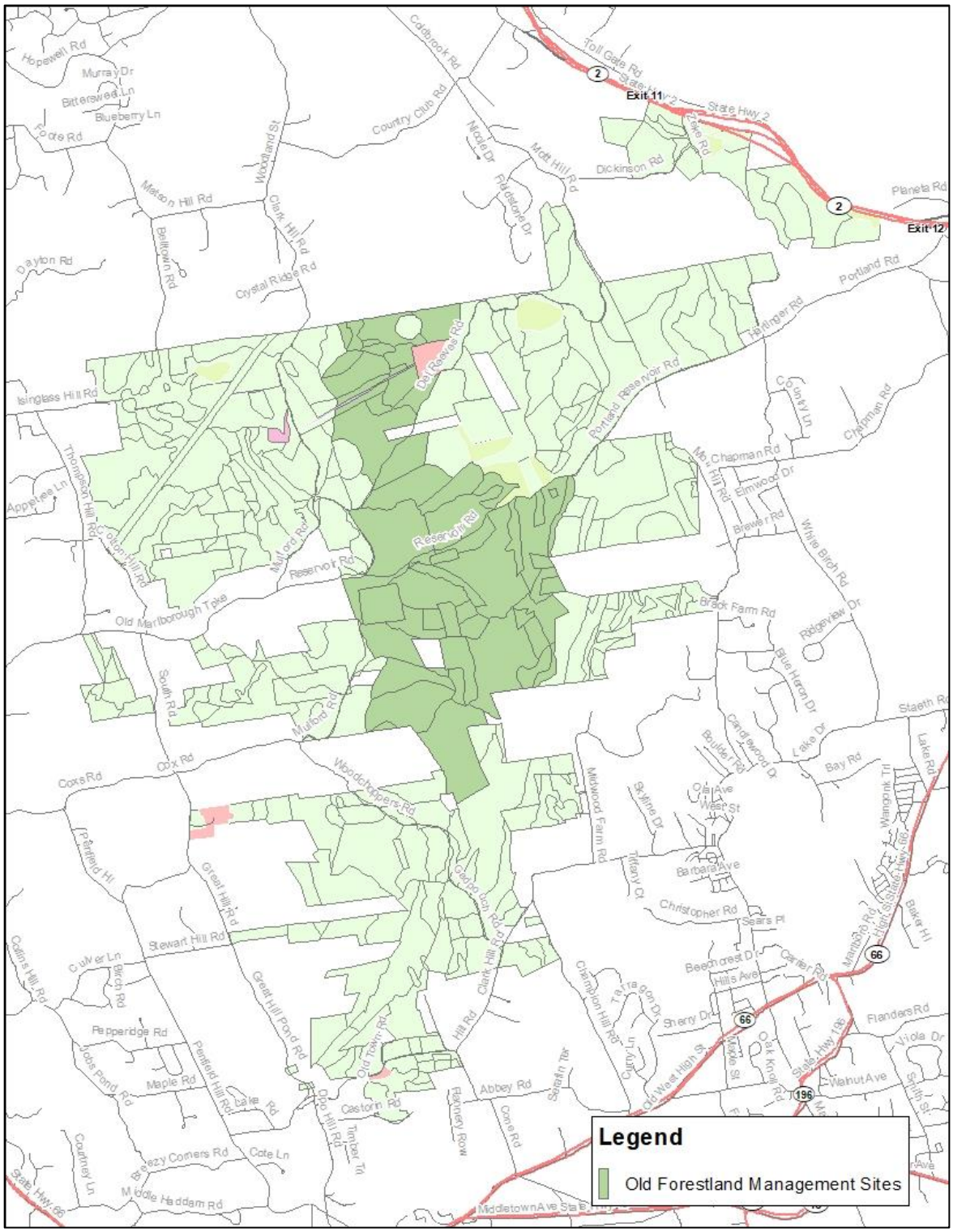


Figure 1.2. Map showing the location of Old Forestland Management Sites (OFMS) within the Mountain Block of Meshomasic State Forest.

An Old Forestland Management Site (OFMS) has been established within the heart of the Meshomasic Mountain Block. The purpose of the OFMS is to allow for the ecological complexity of old forestland to exist so the development of biodiversity that requires old forest may occur. It is necessary to distinguish this area from actively managed land because advanced ecological development may not be possible in areas where silviculture and sustainable forest management are practiced. This area is not considered old growth forest because it has been heavily influenced by people within the last century. However, the area consists of 45 stands in various stages of development, some are mature forest stands of 100 years old, and others are pole sized and less than 25 years of age. Over time the forest will develop characteristics of old growth forests. While there are no known species of wildlife that depend solely on "old forests", there are mosses, lichens, fungi, and insects that depend on these advanced systems. To provide an area for old forest development, 1,396 acres has been defined as OFMS. This area will ultimately support a diversity of tree species of various age and size classes, as well as provide specialized habitat to organisms and wildlife invertebrates for decades as the increased presence of wind thrown trees, tipped root structures, and downed coarse woody debris increases over time.

Research Areas

The Connecticut Agricultural Experiment Station (CAES), located in New Haven, maintains six experimental research plots in the Meshomasic Mountain Block. These experimental research plots are in addition to the Natural Area Preserve research plots. These additional research plots include an American chestnut study plot, four oak regeneration study sites, and one forest health plot.

CAES is pursuing a Landscape Scale Restoration (LSR) grant focused on managing stands with a significant beech component in response to Beech Leaf Disease (BLD). This planning effort has involved preparing several different silvicultural prescriptions, representing different management approaches to this forest health issue. Treatments will be completed by the Division of Forestry in the early years of this management plan and then results will be monitored by CAES. Within the Mountain Block Compartment 31 Stand 6 and Compartment 34 Stands 1, 2, and 3, off Woodchoppers Road in East Hampton, have been recommended for inclusion in this BLD silvicultural treatment study.

Stormwise, a roadside forest management project, was completed within the Mountain Block adjacent to Gadpouch Road in East Hampton. This project, completed with assistance from CAES, UCONN, CFPA, CT Audubon, and Eversource, is one of eight sites established throughout Connecticut for demonstrating and promoting storm-resilient forests. Roadside forests and utility corridors have been managed traditionally by only pruning trees adjacent to utility lines. The Stormwise project integrated silvicultural practices in managing these roadside forests. The concept is to create a forest of stout, evenly balanced trees that will be more wind firm and less susceptible to branch breakage and uprooting during severe weather, two of the principal causes of utility line damage. Please visit www.stormwise.uconn.edu to learn more about this project.

Using state lands for research purposes is subject to a Scientific Collectors Permit. Scientific collector permit requests are directed to the Wildlife Division. More information can be found by following this link; http://portal.ct.gov/deep/natural-resources/scientific-collector-permits.

The Division of Forestry encourages the use of state forestland for these purposes and benefits from the research that has been published because of these partnerships.

Miscellaneous

There have been several miscellaneous uses of the Mountain Block in recent years. Dead or otherwise hazardous trees along public roadways have been felled as a preemptive measure to avoid possible accidents and road blockages after storm events. Much of the wood from these felled hazardous trees have been sold to local residence for use as firewood. Also, witch hazel has been harvested in areas off Cobalt Road in East Hampton. Witch hazel is a native woody shrub that grows in the understory of the forest. It is a common shrub found throughout the Mountain Block. Stems are periodically harvested, chipped, and distilled down to be incorporated into a variety of products, most notably in medicinal, topically applied products to treat for acne, rashes, sunburn, dandruff, and bug bites. Forest products such as firewood and witch hazel are sold under the forest products harvest permit system, administered by the Division of Forestry.

Photo 1.8. Photo of the Stormwise project adjacent to Gadpouch Road in East Hampton. Silvicultural practices implemented along this roadside forest have resulted in the reduced risk of tree-related storm damage to power lines.

F. Forest Ecosystem Health and Diversity

Landscape Context

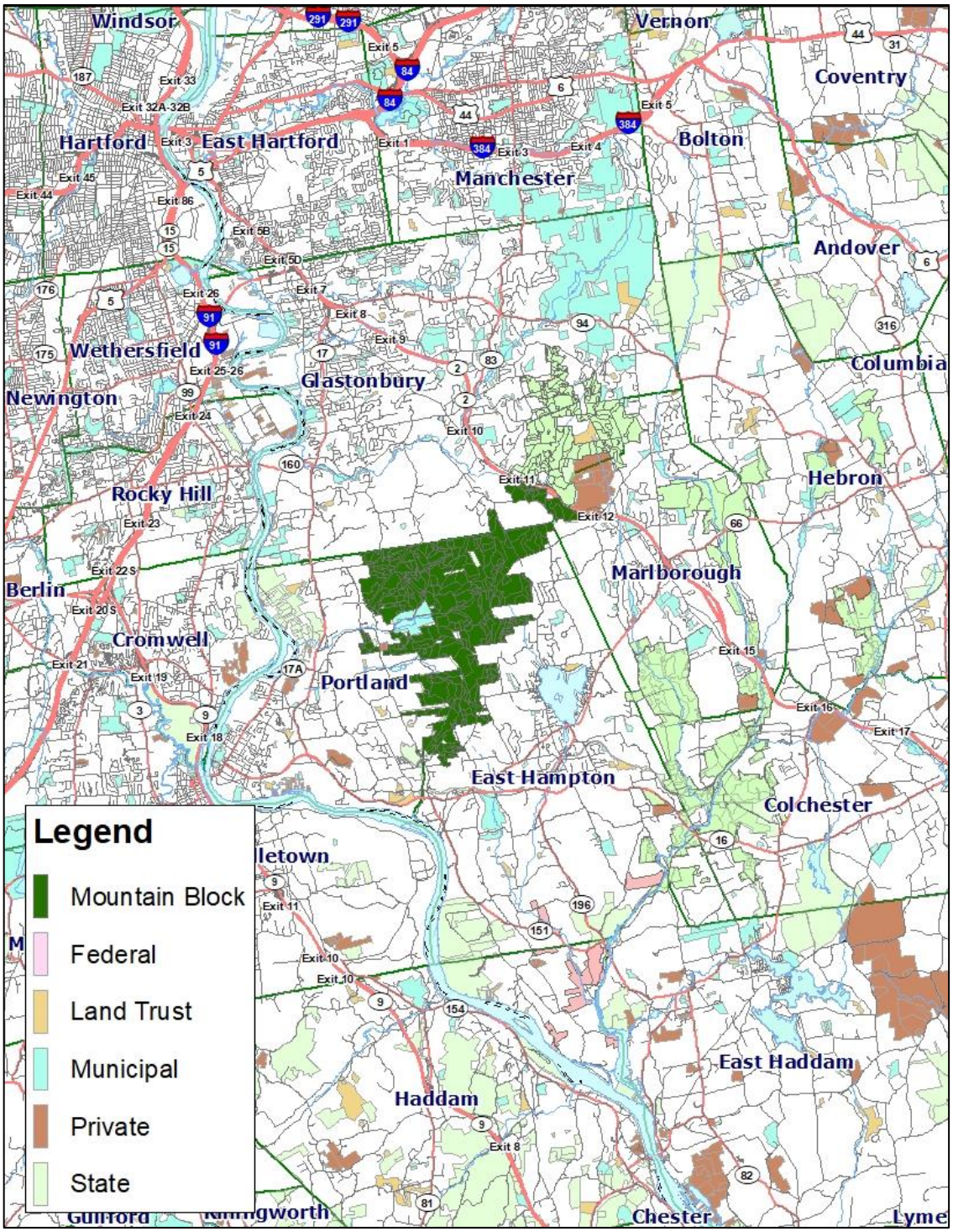


Figure 1.3. Location map showing federal, land trust, private, and state protected lands in the vicinity of the Mountain Block of Meshomasic State Forest.

The Mountain Block is nestled within several of the many bedroom communities outside of the metropolitan center of Connecticut, Hartford. Therefore, this forestland is of significant ecological value. Suburban sprawl has developed a large portion of the landscape that encompasses the Meshomasic State Forest area. However, efforts to protect land at the federal, state, municipal, and private levels have protected thousands of acres of land adjacent to the state forest and in nearby communities. The present-day conditions are recognized as good landscape level habitat, with a diversity of cover types including forestland of various age classes, actively managed agricultural land, and open land containing a diversity of herbaceous plants. A much greater amount of land in this landscape is unprotected and may increasingly be under the stress of development. Therefore, management strategies of the Mountain Block will need to be reviewed on a ten-year cycle to ensure habitat goals are met as landscape habitat is lost due to development.

Current Vegetative Condition

A forest inventory of the Mountain Block was completed in 2021/2022 to gather data to be used in the forest management planning and decision-making process. This inventory collected information on trees throughout the area such as species, diameter, merchantability, health, and quality. To accompany these quantitative data, qualitative data was also collected regarding the composition of understory vegetation, presence or absence of invasive species, infrastructure condition, boundary line condition, operability, and land use history evidence. The quantitative forest inventory data was analyzed using NED II forestry software. Data is organized at the forest stand level. Each stand is categorized into a size class and forest cover group to gain a greater understanding of how much land is considered mature forest, young forest, or anywhere in between, and what is the composition of the forest in each stand.

Size classes are divided into the following diameter ranges.

- Seedling/Sapling: 1 inch – 4.5 inches
- Pole Timber: 4.6 inches – 10.5 inches
- Saw/Pole Timber: 10.6 inches – 13.5 inches
- Saw Timber: 13.6 inches +

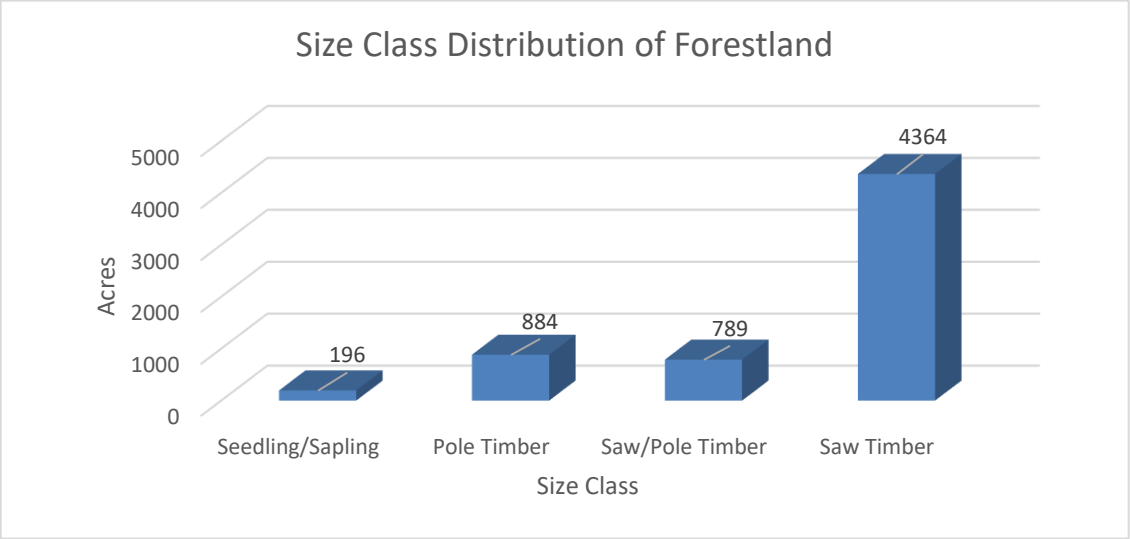


Figure 1.4. Size class distribution of forestland within the Mountain Block of Meshomasic State Forest. This chart excludes areas of the block which are developed, wetlands, rights-of-way, or open/non-forested land.

The Mountain Block of Meshomasic State Forest is comprised of a diversity of different forest types. Oak, hickory, and northern hardwoods are the most dominant forest cover found throughout the property. However, stands of red maple lowlands, white pine, maple-beech and birch, and Norway spruce plantations are also common. Forest stocking, or density, varies greatly with forest type, age, site conditions, soil types, and a complex of past and present forest health issues.

Each forest stand is categorized into one of the following six forest cover groups.

Elm-Ash-Red Maple

The Elm-Ash-Red Maple group makes up 7 % of the Mountain Block, 428 acres. These areas are characterized as having wet, saturated, or poorly drained soils and, as a result, grow tree species that do well in wet conditions such as American elm, black ash, tulip poplar, blackgum, and red maple. Often these stands are referred to as red maple lowlands.

Photo 1.9. Photo of the typical stocking levels and forest structure within the Elm-Ash-Red Maple group.

Maple-Beech-Birch

The Maple-Beech-Birch group makes up 4 % of the Mountain Block, 255 acres. This group is dominated by sugar maple, American beech, yellow birch, and black birch. Other species can be found within this forest group at lower densities, such as hemlock, white pine, white ash, and red oak. These stands are often referred to as northern hardwoods.

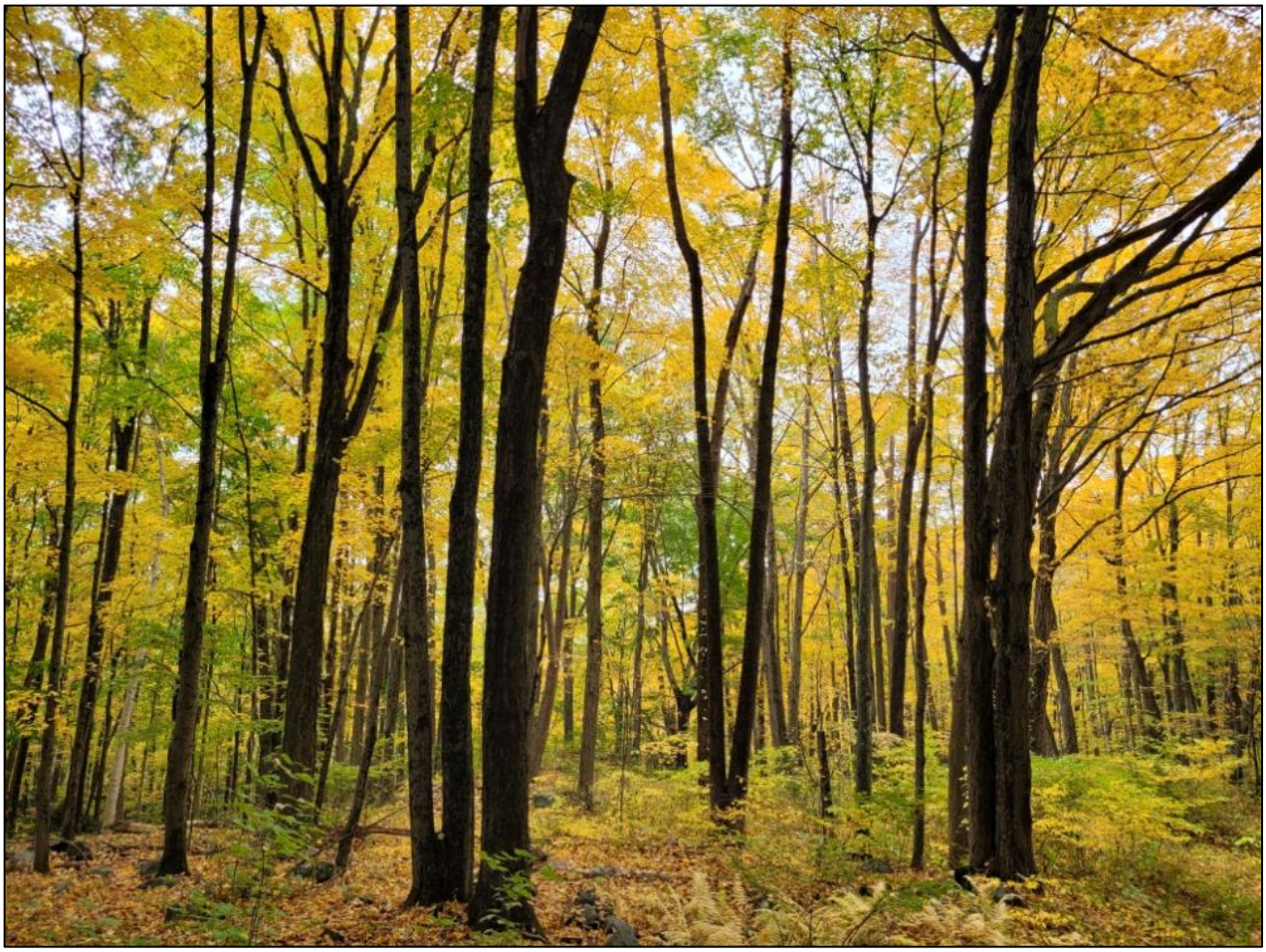


Photo 2.0. Photo of the typical stocking levels and forest structure within the Maple-Beech-Birch group.

Oak-Hickory

The Oak-Hickory group makes up 82 % of the Mountain Block, 5,134 acres. The dominant species found within this group are red oak, black oak, scarlet oak, chestnut oak, shagbark hickory, pignut hickory, black birch, and red maple. Within this group there are several sub-groups, referred to as forest types or stand types that are commonly found on this property. These forest types are upland oak, characterized by a poor-quality upland site growing mostly chestnut oak and/or scarlet oak, and mixed upland hardwoods, characterized as having a medium quality site growing all the species found within the Oak-Hickory group.

Photo 2.1. Photo of the typical stocking levels and forest structure within the Oak-Hickory group.

Oak-Pine

The Oak-Pine group makes up 4 % of the Mountain Block, 254 acres. This group consists of forestland dominated by white pine, pitch pine, red oak, black oak, and scarlet oak.

Photo 2.2. Photo of the typical stocking levels and forest structure within the Oak-Pine group.

Spruce-Fir

The Spruce-Fir group makes up less than one percent of the Mountain Block with only 27 acres being categorized as Spruce-Fir. Often when this forest group is found in New England it is comprised of red spruce and balsam fir, two species that are not common in Connecticut. The areas that are considered Spruce-Fir within the Mountain Block are dominated by Norway spruce, a European species which was planted by the CCC in the 1930's and 1940's.

Photo 2.3. Photo of the typical stocking levels and forest structure within the Spruce-Fir group.

White-Red-Jack Pine

The White-Red-Jack Pine group makes up 2 % of the Mountain Block, 136 acres. All the forest stands that fall into this category are dominated by white pine.

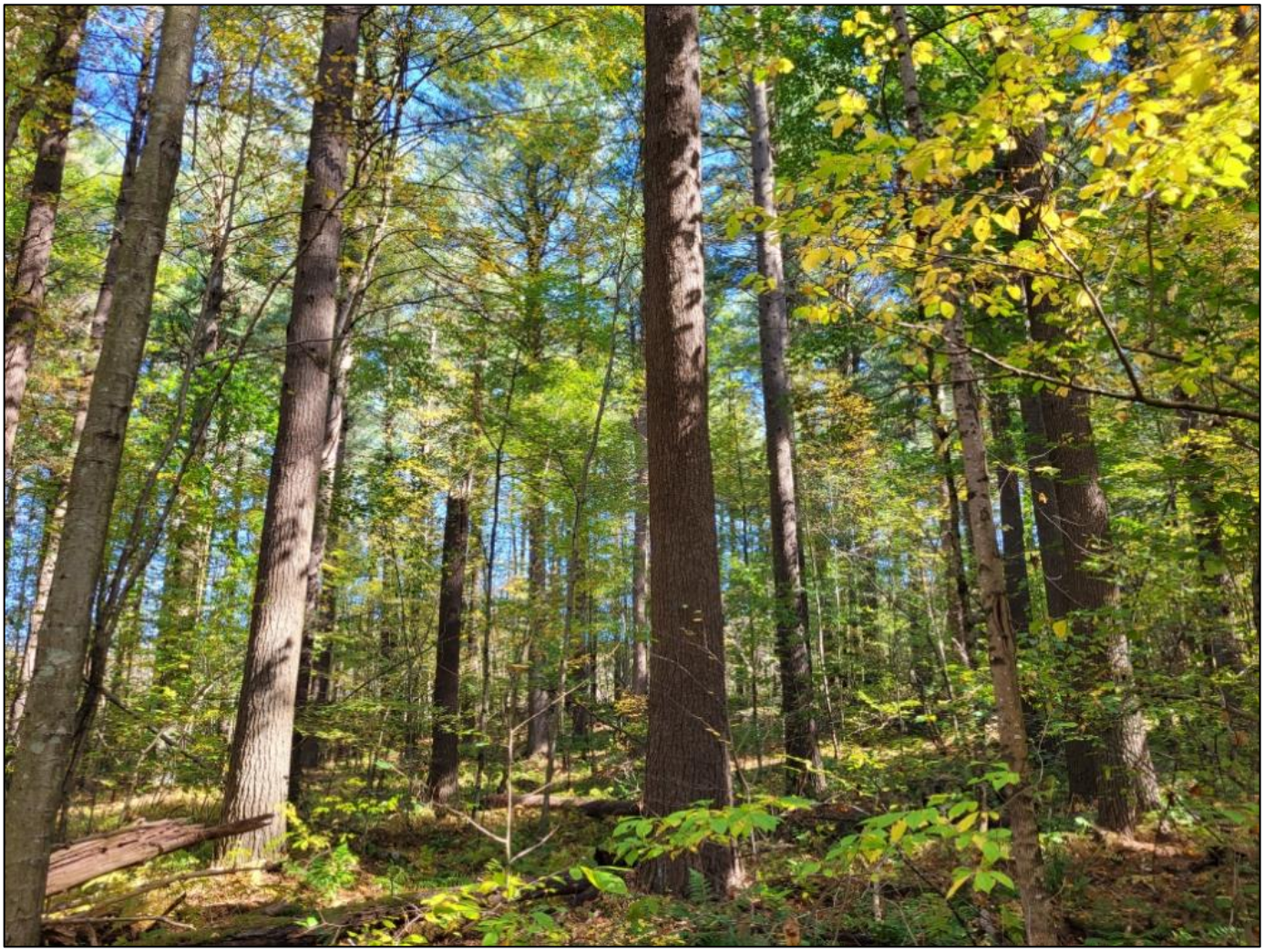


Photo 2.4. Photo of the typical stocking levels and forest structure within the White-Red-Jack Pine group.

Table 1.1. Acres of forestland by size class and forest type within the Mountain Block of Meshomasic State Forest. This table excludes acres of the forest which are developed, wetlands, rights-of-way, or open/non-forested land.

Acres of Forestland by Size Class & Forest Type					
Forest Cover Group	**Seedling/Sapling**	**Pole Timber**	**Saw/Pole Timber**	**Saw Timber**	**Total**
Elm-Ash-Red Maple	0	59	126	243	428
Maple-Beech-Birch	0	5	0	250	255
Oak-Hickory	196	812	556	3570	5134
Oak-Pine	0	0	107	148	254
Spruce-Fir	0	8	0	19	27
White-Red-Jack Pine	0	0	0	136	136
				Grand Total Acres	**6234**

Forest Health: Disease

Chestnut blight is a fungal infection caused by the *Cryphonectria parasitica* fungus. This fungus was accidentally introduced to the United States, from nursery stock from Asia, in the early 1900s. Quickly after its identification it became evident that the mortality of the American chestnut trees was imminent. The fungus causes diffuse cankers to form underneath the bark of infected trees, ultimately cutting off the flow of water and nutrients up and down the stem of the tree. The American chestnut likely once constituted a large portion of all the trees present within the Mountain Block. The loss of this species from this disease was a tremendous set back to the diversity of the forest composition in this area. Currently, the root structure of chestnut trees, as well as the chestnut blight fungus, persists in the soil. As a result, chestnut trees sprout and grow to sapling size before becoming reinfected by the blight. The blight kills the saplings, which then resprout, and the cycle continues.

Photo 2.5. Photo of a diffuse canker on an American chestnut caused by the chestnut blight.

Nectria canker, caused by the *Nectria galligena* fungus, is another common disease found in this block of land, often creating what are known as “target cankers” on black birch individuals. Nectria fungus typically does not result in the mortality of affected individuals, however, it does significantly affect the quality of wood products produced from trees with it.

Photo 2.6. Photo of nectria canker on a black birch.

Armillaria fungus, *Armillaria mellea,* is a third disease that can be found sporadically throughout this block. This disease is often called “shoestring root rot” because the fungus has a shoestring like appearance growing on the roots of affected trees. Branch dieback and crown thinning are common symptoms. Affected trees will typically not die from this fungus alone, however, it does act as a secondary pathogen which will develop on trees already under stress from a variety of other biotic and abiotic factors.

Photo 2.7. Photo of shoestring root rot on a standing dead tree.

Beech leaf disease (BLD) is a novel disease affecting American beech. This disease was first found within the Mountain Block in 2021. This disease is associated with a subspecies of the anguinid nematode, *Litylenchus crenatae mccannii,* which may be present in the buds and leaves of beech trees of all age classes. Nematode infection mechanisms are not fully understood at this time. Symptoms of BLD include dark stripes between lateral veins of leaves. Affected leaves also can become shrunken, crinkled, and have a leathery texture. Tree mortality can result from the disease. No treatments are currently available for BLD on a landscape scale. Research is currently being done by the Connecticut Agricultural Experiment Station (CAES) to better understand the short- and long-term implications that this disease may have on the forests of Connecticut.

Photo 2.8. Photo of an American beech with BLD. Notice the dark stripes in the leaves.

Beech bark disease is also commonly found on American beech individuals within the block. The disease results when the beech scale insect punctures the bark of a beech tree to feed, which creates a wound where the nectria fungus can enter the tree. Once the nectria fungus is within the tree the fungus causes cankers to form, ultimately resulting in the mortality of the tree. To compound the issue, American beech sprouts prolifically from cut stumps and from roots. Furthermore, American beech is very shade tolerant, meaning it grows well in high shade conditions such as the forest floor. Therefore, as American beech individuals succumb to disease, they sprout new stems from their roots and continue the cycle of growth and disease. For long term forest management, the difficulty is establishing desirable regeneration such as red oak in an understory already dominated by disease prone beech sprouts. Silvicultural treatments will focus on even aged management techniques which will allow high amounts of sunlight to the forest floor, thereby favoring shade intolerant and intermediate shade tolerant species over the shade tolerant beech. Treating beech stumps in recently harvested areas with an herbicide to prevent re-sprouting may be recommended as another way to favor the regeneration of more desirable species.

Photo 2.9. Photo of an American beech with beech bark disease. Notice the blistering bark caused by cankers forming underneath the bark.

Forest Health: Insects

Spongy moth caterpillar, previously known as gypsy moth, is a non-native moth introduced to North America that defoliates many tree species, oak species in particular. Successive years of spongy moth caterpillar defoliation and drought conditions in 2016 and 2017 has resulted in the mortality of thousands of trees across eastern Connecticut. Damage varies greatly by locality. In the Mountain Block, spongy moth effects vary greatly by species and site location. Although white oak, red oak, black oak, chestnut oak, and scarlet oak all have been heavily affected, the mortality of white oak seems to be the highest. Also, ridgetops and hilltops generally have a higher proportion of mortality, likely due to the trees already being drought stressed. Individuals that may have been partially defoliated are more susceptible to secondary pathogens such as two-lined chestnut borer and shoestring root rot. Overall, spongy moth has had a moderate impact on the Mountain Block with tree mortality being low, quite scattered in nature, and relatively isolated to the least productive sites with xeric, shallow soils.

Photo 3.0. Photo of a stand of dead oak trees within Meshomasic State Forest as a result of spongy moth defoliation.

Two-lined chestnut borer is an insect that is common from southern Canada through the eastern United States. The insect bores galleries underneath the bark of many species of oaks. These galleries can eventually cut off the flow of water and nutrients up and down the stem of a tree, thereby resulting in its mortality. Tree mortality rarely occurs due solely from the efforts of two-lined chestnut borer. The insect primarily attacks trees that are weakened by drought, defoliation, soil compaction or any number of other stressors. Two-lined chestnut borer, in combination with other stressors is what results in mortality. Silvicultural treatments will aim to thin overstocked stands to increase vigor and capture natural mortality caused by competition. These actions are the best ways, on a state forest wide scale, to prevent excessive two-lined chestnut borer damage.

Emerald Ash Borer (EAB) is present in the state forests throughout Connecticut. This beetle, native to northeastern Asia, feeds on all species of ash. Females lay eggs in the bark of ash trees and larvae feed underneath the bark until they mature into adults. Once they mature into adults they bore through the bark, fly to another host tree and the cycle continues. Signs of the emerald ash borer are horizontal galleries underneath the bark created by the larvae feeding as well as D shaped holes in bark created when adults bore through the bark. The larvae feeding underneath the bark cuts off the flow of water and nutrients to the rest of the tree and results in the mortality of the affected individual. Salvaging affected trees during timber harvesting operations is the only way to minimize the spread of this insect on a state forest wide scale. Fortunately, ash species make up a low percentage of all the trees present within the block. Therefore, this beetle has had a minimal impact on this block. However, in wet areas where ash trees often grow the impact has been quite high with nearly all the ash individuals showing signs of die-back or have already succumbed to EAB.

Photo 3.1. Photo of the galleries underneath the bark of a white ash tree caused by emerald ash borer, leading to the mortality of the tree.

In areas dominated by white pine, the white pine weevil has influenced their quality. This insect lays its eggs in the topmost bud of white pine individuals. These eggs hatch and the larvae feed on the bud, thereby killing it and causing other branches to take over as the terminal leader. This results in a tree with three or more main stems. The quality of white pine with multiple stems due to this insect is typically degraded from sawlog quality to no more than pulpwood quality. This insect prefers high sunlight conditions. As a result, open grown trees are the most affected. The white pine stands in the interior of the forest that regenerated under partial shade are much less affected.

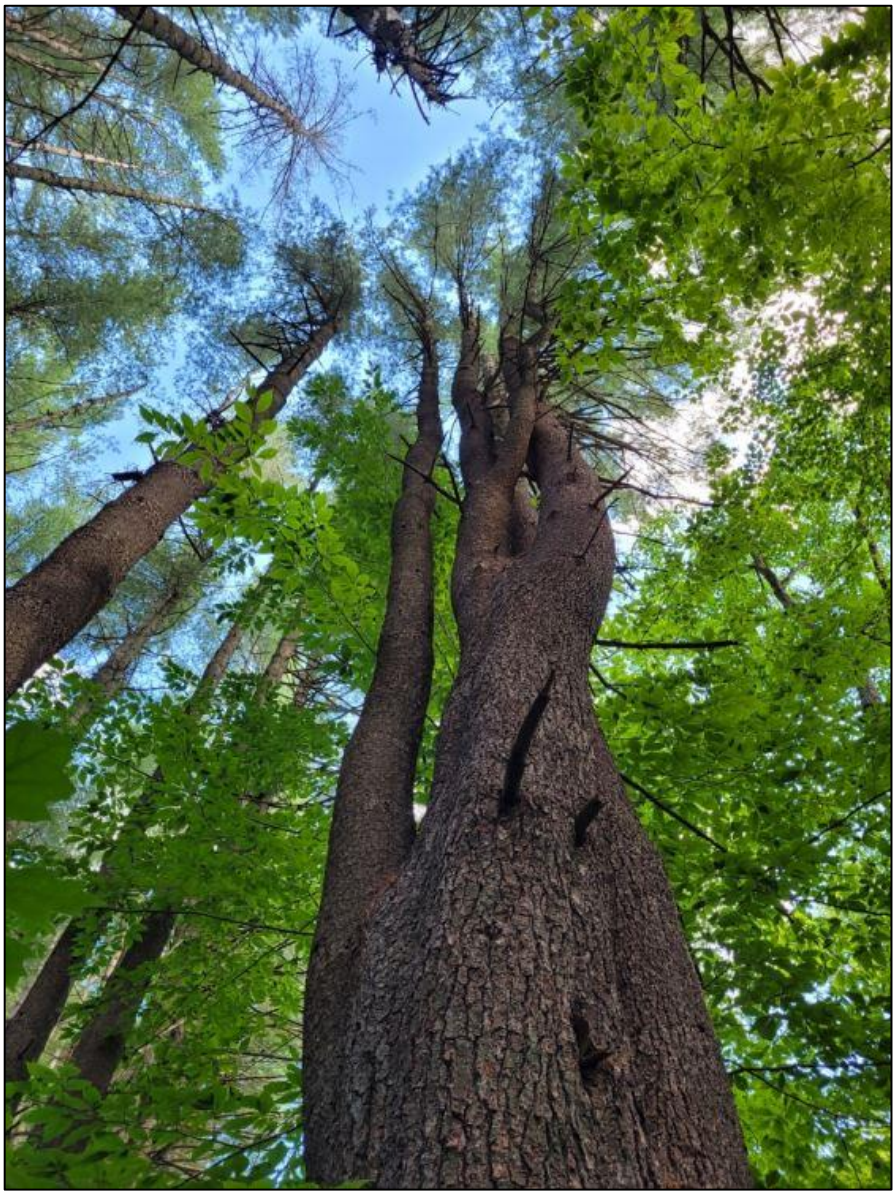


Photo 3.2. Photo of a white pine with multiple leaders, caused by white pine weevil damage.

Southern pine beetle is a bark beetle, native to the southeastern United States, that infests pine trees. The bark beetle enters pine trees through crevices in bark and then bores galleries into the cambium tissue beneath the bark. This boring activity disrupts the flow of nutrients and water, resulting in the mortality of the tree. It typically only takes two to four months for a tree to succumb to southern pine beetle. Although southern pine beetle will attack many different coniferous tree species, red pine and pitch pine tend to be most heavily affected in Connecticut forests. Signs of infestation are popcorn shaped clumps of resin on the exterior of infected trees, shotgun patterned holes on the exterior of a pine trees' bark and reddish-brown needles. In the Mountain Block there are very few red and pitch pine trees, however, there are stands of Norway spruce that could be affected by southern pine beetle. This insect pest has not been detected in the block yet, but annual monitoring will be done to further understand how, where and if this insect pest will affect vulnerable stands of trees.

Historically, the same tree species affected by southern pine beetle, most notably red pine, were affected by red pine scale. Red pine scale is an exotic invasive insect originating from Asia that was first discovered in Eastern Connecticut in 1946 and quickly became very detrimental to red pine plantations (Doane, 1959). Red pine plantations were common in state forests during that time because of CCC planting efforts. Like southern pine beetle, the red pine scale feeds on the inner bark of host trees, eventually resulting in mortality. Some affected stands in the Mountain Block were salvaged in the 1980's and 1990's and are now young, pole sized mixed hardwood stands. Stands that were not salvaged are now most easily identifiable by red pine snags, or standing dead trees, that were killed by red pine scale.

Photo 3.3. Photo of a red pine plantation that was killed by red pine scale. Notice the dead red pine stems have fallen over and are now rotting away on the forest floor while a stand of mixed hardwoods, that regenerated naturally, has taken their place.

Forest Health: Invasives

The block is relatively free of invasive plant species except for a few locations. These areas include the Nike Hercules Missile site, the military officer's headquarters, and the old CCC camp locations. Invasive plant species such as multi-flora rose, Japanese barberry, honeysuckle, Japanese stilt grass, autumn olive, and oriental bittersweet are found in those locations. Invasive plants can threaten to displace native understory vegetation and can overtop young trees, suppressing their growth. The native mountain laurel is also a common understory shrub found throughout the block and can act in much the same way as non-native invasive species. These shrubs tend to be most dense on roadsides, property boundary lines, and field edges with a lower density being present in the interior of the forest under the canopy of trees. Unfortunately, invasive species are so common throughout Connecticut and the rest of the northeast that eradication is not a realistic goal. However, efforts can and should be made to reduce invasive species density. Therefore, each timber harvest that is prescribed in this management plan will address invasive species. If levels are considered high enough to hinder the establishment of regeneration or will overtop advance regeneration, a mechanical or chemical treatment of the invasive plants in that area will be warranted prior to completing the silvicultural activity.

Photo 3.4. Photo of Japanese barberry, an invasive shrub, in the understory of the forest in the Mountain Block, Meshomasic State Forest.

Forest Health: Wildlife

The impact of white-tailed deer on the productivity and the successional trend of forestland can be substantial. A staple in the diet of a deer is the buds and twigs of young trees. This type of deer foraging is categorized as browse. Once young trees have been browsed, they will then grow with a poor form and will be stunted from their full potential. Stunted, browsed seedlings often become overtopped and out competed by faster growing, less palatable tree species. This is one of the most significant reasons why regeneration harvests often result in the regeneration of species less palatable to deer such as red maple, beech, and birch as opposed to oak which is preferred forage for deer. Deer impact is a function of deer density, expressed in deer per square mile, and forage availability such as young trees, acorns, and agricultural crops. Deer densities greater than 20 deer per square mile can have significant negative impacts on forest vegetation. Herbivory is of highest concern when conducting a regeneration harvest because even a moderate to low density of deer can have a high impact on the regeneration within a recently harvested forest stand, stunting its growth, quality, and potential for decades to come. As a result, when conducting regeneration harvests within the Mountain Block, strategies will be employed to reduce browsing impacts. These strategies may include leaving high volumes of down woody material to make it difficult for deer to traverse the harvested area, a slash wall made from down woody material placed around the perimeter of the project area to inhibit deer from entering the treatment area, or fencing in sprouts of desirable regeneration to protect them from browsing when they're most vulnerable (<6 feet tall and at deer eye level).

On average, during the regulated deer hunting season, approximately 53 deer (4 deer/square mile) are harvested from Meshomasic State Forest. The harvesting of deer through regulated hunting is critical for managing deer densities to promote deer herd health and forest ecosystem health.

Photo 3.5. Photo of a heavily browsed white pine seedling. Heavy browsing such as this hinders the future growth potential of affected trees.

Forest Health: Abiotic Factors

The primary abiotic factor that has a significant effect on forest health is weather. Extreme weather events such as tornados, hurricanes, ice storms, and micro-bursts cannot be planned for. However, this management plan aims to be adaptive. After significant weather events areas that were heavily affected will be re-assessed and if any immediate action would be advantageous to mitigate forest health impacts, those actions will be taken at that time.

Photo 3.6. Photo of storm damage within the forest. This white pine was uprooted and fell as a result of a high wind weather event.

A secondary abiotic factor that can impact forest health is fire. Fire is part of the natural disturbance regime of a forest. Some tree species are adapted to this disturbance and can benefit from the occurrence of a fire. An example of a tree species that is well adapted to fire is pitch pine which features thick bark that is able to withstand fire and serotinous cones that only open to release their seeds through the heat of a fire. Other tree species are less adapted to fire, such as red maple and black birch, which feature thin bark. Tree species such as this could be killed during a fire event. Frequent, low intensity fires are often part of a healthy forest disturbance regime and the flush of herbaceous growth after a fire can be beneficial to a variety of wildlife species. Connecticut has a very humid climate, making natural fires (caused by natural events such as lightening) rather uncommon. However, human caused fires, intentionally set prescribed fire as well as unintentionally set fires, are common across the state. No prescribed fires are scheduled for the Mountain Block during this management cycle. The DEEP Forest Protection program along with support staff from various other DEEP divisions are available in the event of a wildfire situation within the Mountain Block.

Photo 3.7. Forest fires can have a significant impact on forest health, composition, and habitat depending on the fire's extent and intensity.

G. Silvicultural Strategies and Climate Change Mitigation

Forest Carbon Science

With the understanding that rising atmospheric carbon dioxide levels are a primary cause of ever-increasing global temperatures, generally referred to as climate change, forests are often looked at to offset climate change impacts. This is due to the fact that forests take in an enormous amount of carbon dioxide from the atmosphere through photosynthesis, using it to maintain themselves and grow (Catanzaro & D'Amato, 2019). Forests sequester and store carbon. However, the rate at which they do these is largely influenced by a variety of factors such as forest age and natural and/or anthropogenic disturbances. Carbon sequestration is greatest in young forests, peaking when the forest is around 30 to 70 years old, but will continue to sequester carbon throughout its entire life span (Catanzaro & D'Amato, 2019). A forests carbon storage level increases with its age in the form of live and dead aboveground biomass such as trees, down woody debris, and soil (Catanzaro & D'Amato, 2019). As a result, in the context of forest carbon, there is a place for both forest reserves (areas that go unmanaged and/or not harvested that serve as carbon sinks) as well as areas that receive management, through silvicultural treatments aimed at regenerating the forest, creating early successional habitat, and creating a forest that is sequestering high amounts of carbon from the atmosphere. Passive and active management often complement one another, and the use of each strategy can result in a more diverse forest in terms of age structure, habitat type, and habitat quality. This management plan aims at striking this balance within the Mountain Block by designating 1,396 acres as an Old Forestland Management Site as well as 4,192 acres that will not be actively managed in the next 10 years that will serve as a forest reserve and carbon sink, maximizing carbon storage. This plan balances this by scheduling silvicultural activity to be done on 825 acres to regenerate the forest, capture natural tree mortality, improve the growing conditions for residual trees, enhance and diversify wildlife habitat, and increase the forests carbon sequestration rate.

Forest Resilience

Biotic and abiotic forest health concerns, as described in section F. Forest Ecosystem Health and Diversity, often result in tree mortality. Considering all these forest health threats, managing for forest resilience is vitally important. A resilient forest has healthy trees of desired phenotypic traits, representing several age classes and a diversity of species. When a forest has these resilience traits, even when a forest health issue arises that results in tree mortality, there are trees already present on site ready and able to fill the void created. In this way, the composition of the forest may change overtime, but it remains a forest.

After tree mortality occurs there may be opportunities to salvage dead individuals. Salvaging can be used to recoup some value of the lost trees as well as control how much light reaches the forest floor to encourage the regrowth of desirable tree species. Salvaging may also take place in high public use areas to remove hazardous trees that could fall and create a dangerous situation to the public. In areas where tree mortality has occurred at a low density with scattered dead individuals throughout the forest, salvaging may not be warranted because retaining dead standing trees can serve as good wildlife habitat and is an important element of a healthy forest.

Active management through timber harvesting, and/or removal of invasive species aids in forest resilience by favoring native vegetation, creating space for all age classes of trees to grow, and maintaining healthy trees of desirable phenotypic traits that can withstand disturbances. However, passively managed areas play a role as well by filtering water in riparian areas, maintaining the habitat created by older age classes of trees, and allowing natural succession to create a complex forest structure where multiple tree species and age classes are represented. As a result, 65 percent of the acreage within the Mountain Block will be passively managed through this management plan, encouraging mature forest growth and the development of a more complex forest structure.

Expectations: Next 100 years in Succession

Within the next 10-year planning cycle, management actions will be taken on sections of the forest that were acquired since the last forest management plan was written and follow up treatments will be made on previously treated areas where applicable. Employing this strategy provides the opportunity for recently acquired parcels, that may have previously gone unmanaged or had been poorly managed, to be set on a long-term path of sustainable management and previously treated areas will receive the attention needed so they may continue a long-term path of sustainable management. By the end of this 10-year planning cycle, 825 acres will have been treated using even aged silvicultural techniques.
The primary silvicultural technique used will be the shelterwood method of regenerating the forest; 498 acres will be treated with this method. This technique removes all trees from a stand through two or three cuttings, stimulating the establishment of a new cohort of trees. Thinning will be done on 238 acres with the goal of removing poor quality growing stock while improving the growth rate and quality of residual trees. An additional 69 acres will be treated using timber stand improvement methods which consists of thinning in young stands to favor trees of desirable species and form. Therefore, 12.6 percent of the total land area in the Mountain Block will be receiving direct attention. This management plan also aims to be adaptive in the next 10 years. The remaining portions of the block, not actively managed, will be actively monitored. If conditions arise, that are unforeseeable at this time such as destructive weather events or insect outbreaks that pose a significant detrimental effect to the forest resource, silvicultural options will be assessed, and emergency actions will be taken as necessary.

Photo 3.8. Aerial photo of a thinning implemented in the Mountain Block of Meshomasic State Forest in 2022. Notice the additional space around the crowns of residual trees on the left, a riparian buffer strip left unharvested in the middle right, and a red maple lowland/swamp area showing some early fall color in the upper right.

Table 1.2. Acres to be managed through even and un-even aged silvicultural techniques within the Mountain Block of Meshomasic State Forest.

Acres to be Actively Managed				
Forest Cover Group	**Regenerate - Even Aged: Clear cut/Seed tree/Shelterwood**	**Regenerate - Uneven Aged: Single tree/Group Selection**	**Thinning: Free/Crown/Low/ Mechanical/Selection**	**Intermediate Treatments: Cleaning/Weeding/ Timber Stand Improvement**
Elm-Ash-Red Maple	0	0	0	0
Maple-Beech-Birch	0	0	0	0
Oak-Hickory	473	0	223	69
Oak-Pine	45	0	0	0
Spruce-Fir	0	0	0	0
White-Red-Jack Pine	0	0	15	0
Total Acres	**518**	**0**	**238**	**69**

The following 10-year planning cycle (2035 – 2045) will aim to continue the strategy outlined above. Areas that were harvested using even aged regeneration techniques, as prescribed in this management plan, will have regenerated a mixture of species. Intermediate treatments, such as timber stand improvement will be employed to favor the best quality individuals of the most desirable species. Also, areas that were thinned, as prescribed in this management plan, may have developed into stands favorable for regeneration harvests to continue producing the next generation of forests. During the next 10-year planning cycle each stand will once again be put under the management planning micro-scope and intensive management will be brought to stands previously left to grow, where it would be advantageous to do so.

All management actions taken, insect and disease problems arising, herbivore browsing, and competing vegetation being present from European settlement to current day has produced the forest as we now know it. With there being more and more insect and disease issues plaguing forests, a steady demand for forest products ever present, and a rising climate change issue, the forest resource is under greater stress than ever. The next 100 years of management will be critical. Due to the near complete suppression of fire on Connecticut's landscape, continual deer browsing and the competitiveness of black birch, American beech, and red maple, it is likely that our forests will transition to a more shade-tolerant mixture of ecological generalist tree species that are common through eastern hardwood forests and away from an oak-hickory forest type. Also, as average annual temperatures rise due to global warming, some tree species may become less prominent due to a shifting in their native range. Extreme weather events that can cause severe damage to forest ecosystems such as ice storms and hurricanes are predicted to become more frequent. However, through sustainable management practices that will continually choose desired phenotypic traits, representing several age classes, and a diversity of species, over undesirable traits and monocultures, Connecticut's forests will be as resilient and as diverse as they can possibly be, preparing them to not only survive, but thrive over the next 100 years.

Adaptive Forest Management

The Division of Forestry understands the nature of forest management as it occurs as part of a dynamic landscape. Management actions are often affected by outside variables which influence the outcome of resource decisions. The Division of Forestry reserves the right to reasonably change our management approach as environmental change and resource needs warrant. Some of these changes may be associated with biological factors such as insect and disease, or population outbreaks. Increased unauthorized motorized recreation which erodes trails and roads may require action unforeseen during the composition of this plan. Additionally, environmental conditions such as hurricanes or record-breaking precipitation may additionally affect resource condition and work requirements. The Division of Forestry and our colleagues in Parks, Wildlife, Fisheries, and Agency Support, evaluate circumstances and use an adaptive-management philosophy and additionally reserve the right to address unforeseen circumstances should they arise during the tenure of this forest management plan.

H. Wildlife Habitat

Habitat Management

The DEEP Wildlife Division has a mission to advance the conservation, use, and appreciation of Connecticut's wildlife resources; and the Wildlife Division supports the Forestry Division in planning and conducting management within State Forests. Maintaining sustainable populations of wildlife requires suitable habitat. State-owned conservation land provides large tracts of undeveloped space that contain a diversity of habitats that support wildlife, and habitat management can further sustain and enhance the condition of these spaces. A variety of techniques are employed by resource managers, including silviculture, which can play an important role in the conservation of biological diversity in forested ecosystems. Silvicultural treatments help maintain healthy forests for wildlife and can be used to provide specific conditions that certain wildlife of conservation concern require, such as young forest or pitch pine-oak woodland. Within this block, the silvicultural treatments carried out by the Division of Forestry have helped maintain a healthy and diverse forest, and future treatments outlined in this plan will create additional suitable habitat for a wide array of wildlife including game species and Species of Greatest Conservation Need (SGCN) identified by the Connecticut Wildlife Action Plan (DEEP, 2015) which guides wildlife conservation efforts.

Other forms of habitat management that occur within State Forests and Wildlife Management Areas include maintenance of early successional habitats, invasive plant control, and maintenance of wetland impoundments. Early successional habitats including grassland, shrubland, and agricultural land provide important habitat diversity for wildlife within State Forests; many wildlife species rely on early successional habitats to survive or reproduce. The Wildlife Division coordinates management of these areas. Most grassland and shrubland patches are maintained by the practice of conservation mowing wherein vegetation is mowed once every two to five years to maintain early successional conditions. At the Mountain Block, there are two patches of non-forested habitat totaling approximately 15 acres. One of these patches is the site surrounding the Vortac Antenna maintained by the FAA's periodic vegetation management activities that provides a patch of quality shrubland habitat approximately 10 acres in size. The other area of shrubland habitat is the site of the former CCC Camp Jenkins, approximately five acres in size. Prescribed fire, selective cutting, and selective herbicide applications may also be

used to sustain these habitats. Invasive plant control aims to reduce the abundance of invasive plants through mechanical and chemical methods to allow native plants to grow and proliferate to benefit native wildlife and support healthy ecosystems. There are no areas of agricultural land managed through agricultural license agreements within the Mountain Block.

The Wildlife Division coordinates the management of one wetland impoundment within the Mountain Block, Del Reeves Marsh. Wetland impoundments are dammed water bodies where water levels are managed to maintain shallow water depth that present suitable habitat for waterfowl, wading birds, and other wetland-dependent wildlife. Impoundments typically feature a water control structure that allows managers to manipulate water levels to promote emergent wetland habitat and to provide waterfowl hunting opportunities where permitted. Water depth is set by adjusting the water control structure, to achieve habitat objectives. Bird species such as mallard, wood duck, American black duck, hooded merganser, and green-winged teal are known to use these impoundments seasonally. Most impoundments are maintained and repaired with funding and equipment provided by the Federal Aid in Wildlife Restoration Program, Connecticut Duck Stamp Program, Ducks Unlimited and the Connecticut Waterfowl Association. Regular maintenance is needed to ensure the structural integrity of dams and the functionality of water control structures. The Wildlife Division, with assistance from Support Services and the State Parks Unit, conducts periodic mowing of the dam to ensure it remains free of woody vegetation, clears beaver debris from the water control structure and spillway, and orchestrates beaver control when necessary to avoid damage to infrastructure and to sustain important wetland habitat. In 2019, a new water control structure was installed at Del Reeves Marsh as part of a cooperative project with Ducks Unlimited. Future projects aiming to repair or reconstruct the dam or water control structure may occur when deemed necessary. The Wildlife Division's Migratory Bird Program maintains three wood duck boxes here. These boxes provide nesting opportunities for wood duck and hooded merganser. Boxes are cleaned and inspected annually for evidence of nesting activity and replaced as necessary. Invasive plant control of *Phragmites* is an important component of wetland management as this species can displace native plants thereby degrading wildlife habitat and critical habitats. *Phragmites* control by mechanical and chemical means may occur within wetland habitats in the Mountain Block as deemed necessary by the Wildlife Division.

Habitat Conditions & Landscape Context

Landscape-level conservation of wildlife requires land managers to consider actions in a regional context. The Mountain Block intersects with significant tracts of undeveloped forestland composed of large (>500 acres) and medium (250-500 acres) core forest blocks (UConn, 2015) within the increasingly fragmented landscape of southern New England. From 1985 to 2015, Connecticut lost an estimated 115,181 acres of forestland due primarily to development (UConn, 2015); a significant habitat loss for wildlife associated with forests. The town of Portland has experienced a 583-acre (-5.6 %) change in forest cover, and the town of East Hampton has experienced a 1022-acre (-5.4%) change in forest cover, from 1985 – 2015 (UConn, 2015). Sustaining large tracts of healthy and resilient forests is important for efforts to maintain sustainable wildlife populations in the face of ongoing land use conversion.

Following historical land clearing practices, the forest has grown since the 1920's with limited disturbance resulting in a somewhat homogenous forest that lacks structural complexity. As noted, many wildlife species require or

benefit from forests that are diverse in age and structure that is mostly lacking in Connecticut. Wildlife benefit from a diversity of habitats; harvesting creates greater structural complexity (the size, spacing, and arrangement of live and dead vegetation) within the forest. Complexity within a forest includes multiple canopy layers (mature trees, mid-story trees, understory trees, ground, and shrub vegetation), edges, down woody material, standing dead trees (snags), and young/early successional vegetation. Gaps in the forest canopy of various sizes and shapes also adds to the complexity of the forest habitat. This diversification of the forest creates more opportunity for a wider range of wildlife species to meet their needs (food, water, cover) within the forest.

In general, a goal of maintaining at least 10-15 % of a landscape in young forest habitat is considered beneficial to wildlife and is within the historical range of what was present on the landscape and to which wildlife have become adapted (DeGraff & Yamasaki 2003, Dettmers 2003). A 2021 mapping effort to assess the statewide extent of young forest and shrubland habitat (Connecticut Young Forest and Shrubland Vegetation GIS Layer) estimates Connecticut is composed of approximately 3 % young forest/shrubland habitat. The current forest inventory indicates 3.1% of forest land within the Mountain Block to be in the seedling/sapling age-class. A portion of the silvicultural treatments planned within these blocks of land will increase and sustain the proportion of seedling/sapling age-class forest that can simultaneously achieve forest regeneration objectives and increase the amount of this habitat available to wildlife. The Mountain Block also features other small patches of early successional habitats (grassland and shrubland) that have become less common in Connecticut over the past 100 years due to land use conversion and forest maturation. The Wildlife Division (in cooperation with other Divisions) will continue to maintain and sustain these patches of habitat using management practices described in the pervious section.

The Mountain Block being part of a large undeveloped tract of forestland is considered a landscape scale Important Bird Area (IBA). Audubon's IBA program is a global effort to identify and protect habitats that will protect sustainable populations of birds (CT Audubon). The IBA program is built around an adaptable, science-based blueprint that allows Audubon and other conservation partners to make sound conservation decisions in the face of considerable uncertainty from a changing climate, the economy, and gaps in our knowledge of the abundance and distribution of priority species (CT Audubon). Connecticut's IBA program strives to complement the conservation programs of state, federal, and nonprofit partners (CT Audubon). Conservation and management practices within the Mountain Block will be conceptualized through the lens of this landscape scale IBA. Practices such as silvicultural and invasive treatments will use best management practices to minimize potential negative impacts to bird species while operations are occurring while striving to diversify the forest structure to enhance forested habitat for a variety of avian species.

Biodiversity

The Mountain Block supports a wide range of wildlife associated with forested habitat. Sections of the Mountain Block fall within the vicinity of known occurrences of state and/or federally listed endangered, threatened or special concern species. The Wildlife Division maintains a spatial database of known locations of State Listed endangered, threatened, and special concern species and important natural communities– the Natural Diversity Database (NDDB). As part of the planning process, a data request was submitted to inform this plan and future management, and a Determination was received October 12, 2022. This report identified one state endangered

species, two turtle species of special concern, two bird species of special concern, one fish species of special concern, three freshwater mussel species (one endangered and two special concern), and three additional invertebrate species (one endangered and two special concern). These species can be negatively affected when forestland is fragmented, converted to other uses, forest management operations take place during their active or breeding season, or when forest management operations do not buffer riparian areas according to best management practices for water quality (DEEP, 2012). An up-to-date NDDB determination will be requested for each forest management and infrastructure activity, as outlined in the work plan of this document, to inform what best management practices need to be employed to protect threatened, endangered, or special concern species while conducting work. Any timber harvesting done in the Mountain Block will be limited to the dormant season of the listed species above and/or will use best management practices outlined by the NDDB Program for conducting work in the forest while minimizing adverse impacts to listed species. In many instances, timber harvesting activity can enhance habitat for both listed and non-listed species. Forest management activities in this block will be largely influenced by these species to preserve and enhance their critical habitat. These efforts will be made in the form of preserving habitat as is, through Old Forestland Management Sites, and harvesting trees in strategic areas while following best management practices for not only water quality but for each listed species as well. The Mountain Block also supports a wide array of forest generalists such as white-tailed deer, bobcat, and wild turkey. Black bears are present but relatively uncommon when compared to other regions of Connecticut. Moose have not been documented recently in this area.

American woodcock is an important migratory game bird that has experienced population declines throughout the northeast due in part to habitat loss and forest maturation. A SGCN, it is associated with young forest and other early successional habitats, and the Wildlife Division and regional partners have created Focus Areas to help direct conservation efforts such as habitat management where existing environmental conditions are suitable. The Mountain Block intersects with a regional American woodcock Focus Area developed by the Wildlife Management Institute. This area of Connecticut is also noted for its importance to eastern box turtle and eastern whip-poor-will. Whip-poor-will have declined over 60% in the past 30 years and benefit from creation and maintenance of open canopy habitats. Over 50 SGCN rely on young forest or shrubland– this includes many birds such as eastern towhee, indigo bunting, prairie warbler, chestnut-sided warbler, and blue-winged warbler; several State-listed reptiles known to occur here; and many invertebrates including pollinators. Also, many birds that nest within mature forest use areas of young forest for foraging and raising young. The forest management proposed in this plan will serve to benefit many species in this suite of shrubland/young-forest dependent wildlife (King and Schlossberg, 2014) in support of the 2015 Connecticut Wildlife Action Plan. Additionally, large tracts of sawtimber size class forest are important for many forest nesting birds such as ovenbird, worm eating warbler and wood thrush. A significant amount of suitable habitat will remain unmanaged in this planning period and be available to these species; and silvicultural practices that promote growth in the midstory and understory while retaining intermediate to high levels of canopy cover are consistent with maintaining or creating suitable habitat for these species. A list of bird species observed during the recent Connecticut Breeding Bird Atlas (2018-2021) in and around the Mountain Block are provided in the appendix of this management plan. Management intended to sustain and enhance habitat for State Endangered species may also occur here.

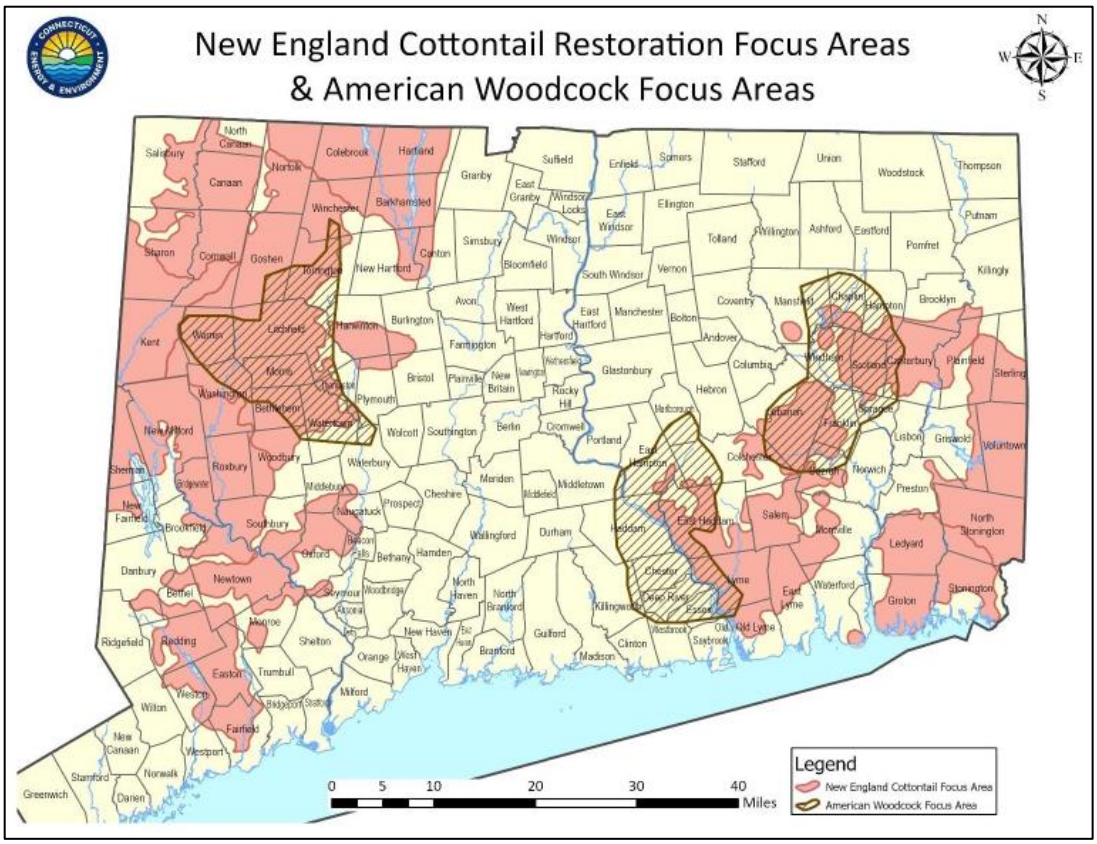


Figure 1.5. American Woodcock and New England Cottontail Restoration Focus Area.

Wildlife Based Recreation

The Mountain Block is open to all forms of regulated hunting (archery and firearms for small game, waterfowl, wild turkey, and white-tailed deer), fishing, and trapping. Regulated trapping is allowed with a State Lands Trapping Permit. Public access maps for these lands are available for viewing or printing on the DEEP Public Hunting Areas webpage which can be accessed through the CT DEEP Hunting and Trapping webpage. These maps may also be obtained by contacting the CT DEEP Eastern District Headquarters in Marlborough. For additional information pertaining to hunting, trapping, and fishing regulations, seasons and permits visit the CT DEEP Hunting and Trapping webpage or the CT DEEP Fishing Guide. Opportunities for passive wildlife-based recreation such as birding, wildlife photography, and wildlife viewing are available year-round throughout the entire property.

Revenue generated through hunting license sales and excise taxes on hunting equipment are vital funding mechanisms for conservation related projects. This funding has allowed the State of Connecticut to acquire additional lands, creating more public lands access opportunities for all recreationalists, while completing projects to enhance habitat features for a wide variety of game and non-game wildlife species.

Photo 3.9. Collage of photos taken of some of the most charismatic megafauna found within Meshomasic State Forest. Upper left – white-tailed deer, lower left – black bear, upper right – barred owl, lower right – box turtle, far right – timber rattlesnake.

Fisheries Habitat and Best Management Practices (BMP's)

Major streams within Meshomasic State Forest Mountain Block include Buck Brook, Mott Hill Brook, Carr Brook, and Reservoir Brook. The upper portions or headwaters of all these streams originate in Meshomasic State Forest; thus, they have been protected from development. All these streams support a high-quality cold-water fish community primarily comprised of fairly robust native brook trout populations and in addition, they function to provide cold, clean, and unpolluted waters to downstream areas of a watershed, which support increased diversity of aquatic organisms. While open to public fishing, these small headwater streams typically do not receive significant fishing pressure except for niche anglers that target native brook trout populations and practice catch and release.

In 2023 the Mott Hill Brook Restoration Project was completed. The project consisted of replacing a substandard 30-inch diameter culvert that conveyed Mott Hill Brook under Del Reeves Road with a three-sided, bottomless concrete box culvert. The outlet of the culvert was elevated above the stream, resulting in the scouring of the culvert outlet. This condition formed a barrier and blocked upstream fish passage for the native brook trout population. This culvert was also undersized, resulting in road washouts and erosion issues during periods of high-water flow within the Mott Hill Brook such as directly after a major storm event. Replacing the culvert with the three-sided, bottomless box culvert significantly increased the water flow capacity, enabling this infrastructure the ability to contain high water flows after major storm events and reduce road washouts and the subsequent erosion issues. The box culvert was designed to be bottomless so that the brook could maintain its natural substrate through its course under Del Reeves Road. The completion of this project restored upstream fish passage and instream habitats for the wild brook trout population and provided stream connectivity to over 1.68 miles of upstream habitats.

Photo 4.0. Photo of the completed Mott Hill Brook concrete, three-sided, bottomless box culvert. This new culvert, completed in January of 2023, conveys the Mott Hill Brook underneath Del Reeves Road.

Currently, there is a dam located on the Mine Brook north of Gadpouch Road in East Hampton. This dam is identified as CT Dam # 4214. The dam is in a state is disrepair with the middle of the structure eroded. Due to this erosion, it is considered to be partially breached. In 2021 the DEEP State Dams Unit recommended that the dam be removed, and the Mine Brook returned to its natural hydrology.

I. Recreation

The Mountain Block of Meshomasic State Forest is used by the public for a variety of different recreational activities including hunting, fishing, hiking, and cycling.

The Connecticut Blue-Blazed Shenipsit Trail traverses the Mountain Block, starting at Gadpouch Road in East Hampton and continuing eight miles north to Route 2 in Glastonbury (See Figure 1.0, page 14, for a map of the trail). Once in Glastonbury, hikers can continue the trail through the adjacent Diamond Lake Block of Meshomasic State Forest for another four miles. This is the only authorized trail within the Mountain Block and it is maintained by the Connecticut Forest and Park Association (CFPA). Information regarding the Connecticut Blue-Blazed Hiking Trail System can be obtained by contacting the CFPA; http://www.ctwoodlands.org.

There is one letterbox within the Mountain Block. DEEP's Division of Forestry letterbox program is a way to encourage the public to visit state forests and learn about the state's history, wildlife, trees, and forests. Letterboxing involves a plastic container hidden in a specific location out in the forest, along with a set of clues as to how to find that container. Inside the container is a notepad, a stamp, and a stamp pad. Visitors are encouraged to bring their own unique stamp to stamp and sign the provided notepad. Visitors can then use the provided stamp to stamp their own personal record book so they can track the letterboxes they have been to. So, to begin letterboxing all that is needed is a unique personal stamp, a record book to record your visits, and a set of clues. To find the clues to navigate to the letterbox in the Mountain Block, visit the letterboxing webpage by following this link CT Letterbox Program - Part treasure hunt and part art project letterboxing is an exciting and fun activity.

The primary recreational concern on this property is the use of off-road vehicles such as motorcycles (dirt bikes), All-Terrain Vehicles (ATV's), and 4 x 4 Jeeps and trucks. Public lands in Connecticut are a finite resource that have a limited number of staff available for maintenance of trails and remediation of rutted and eroded areas of concern. Off-road vehicles create a visual and noise disturbance to wildlife and trails often fragment and degrade habitat. Continued use of unmaintained trails by off-road vehicles results in rutting, erosion, and sedimentation. As a result, the use of off-road vehicles on state lands is prohibited. Regardless, individuals continue to ride their off-road vehicles on state lands. There are many non-authorized off-road vehicle trails throughout the Mountain Block. Gates have been installed and access points blocked with boulders where possible to discourage this use, however, persistent individuals continue to ride on the property. Greater enforcement actions need to be taken to protect public lands in Connecticut from this incompatible, unauthorized use. Increased EnCon patrolling in problem areas is recommended, such as on Dickinson Road, Zeke Road, White Birch Road, Mott Hill Road, Portland Reservoir Road, Isinglass Hill Road, the Dark Hollow Brook where it flows under Route 2, and the powerline corridor from East Cotton Hill Road in Portland to Clark Hill Road in Glastonbury. Furthermore, increased collaboration between EnCon and local town and state law enforcement could be done to improve patrolling and enforcement efforts. Also, because of the interest in off-road vehicle use across the state, more thought should be put into creating additional designated riding areas to provide the public with the opportunity to use their off-road vehicles in a safe, legal manor. The NDDB Determination associated with this plan lists ATV activity as a specific threat to the State Listed plants and animals found here.

Photo 4.1. Photo of significant rutting and erosion caused by 4 x 4 truck and ATV usage on an abandoned town road within Meshomasic State Forest.

Trails within State Forests facilitate a variety of recreational opportunities. However, a significant recreational concern on this property are unauthorized mountain bike trails. Some of these trails traverse through sensitive habitats that are critical for threatened and endangered species. Trails, and the influx of human activity associated with them, in sensitive habitats can lead to habitat degradation and fragmentation. Abundant and generalist wildlife species can often cope with such activity and adjust habitat selection as needed. However, trails can degrade wildlife habitat through sedimentation, erosion, and the introduction of invasive species; trails also cause negative impacts to wildlife by the ongoing disturbance of human use (Stevens and Oehler, 2019). Where appropriate, low density trail networks better sustain and protect wildlife populations, wildlife habitat, and wildlife-based recreational opportunities while high-density trail networks can compromise the ecological integrity of an area. For this reason, DEEP Policy/Procedure # 310 (2019) was enacted to properly examine trail proposals so that DEEP can provide recreational opportunities on public lands for the public while also protecting critical habitat and sensitive species. Authorized trails are approved by the Department only after formal consideration for forest, water, and wildlife resources, and after considering the impacts to wildlife-based recreation. The unauthorized mountain bike trails within sensitive habitats will be addressed within the time frame of this management plan through the discontinuing of trails in critical habitat areas as well as signage and educational information as to why certain trail locations can pose issues.

The NDDB Determination associated with this plan notes the following: "*Many of these listed vertebrate species are core forest dependent and would benefit from considerations and delineation of refuge areas where recreation does not impact important features for these species. Recent analysis of trail distribution in this area indicates only two blocks of forest that are refuges of at least 200 acres from mapped trails (see attached map of refuge areas)….. Blocks of less than 200 acres may not provide proper refuge for these species. Research to delineate important features would greatly benefit planning efforts to balance needs of these species with other forest uses.*"

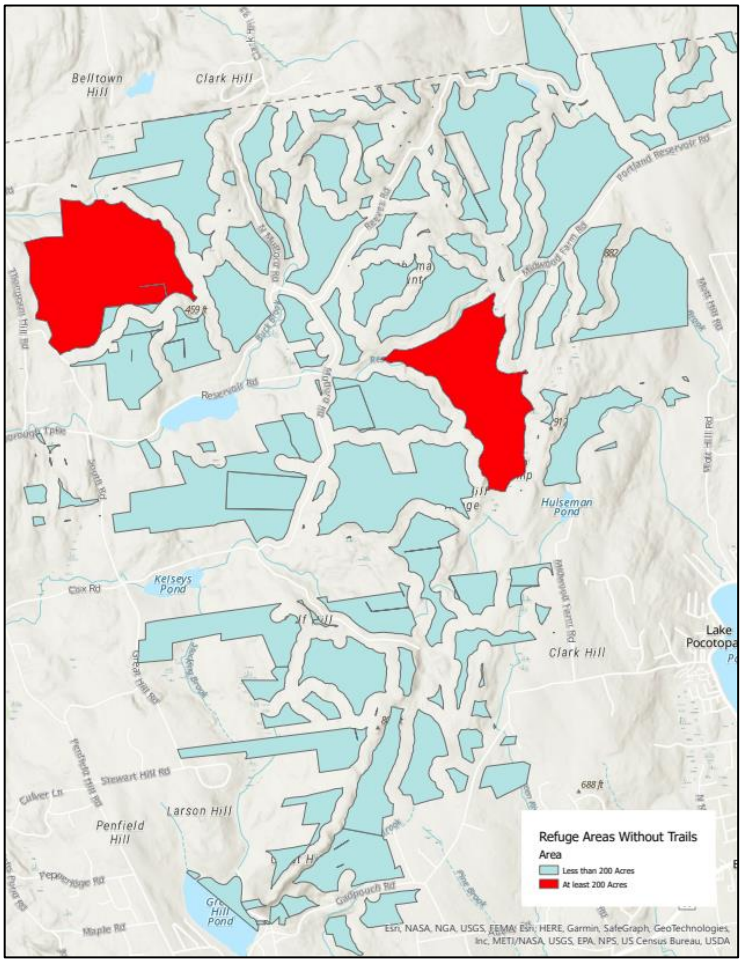


Figure 1.6. Map of Meshomasic State Forest Mountain Block depicting areas in red that have at least 200 acres or more without trails. Areas in blue are those with less than 200 acres without trails. No background color indicates the areas impacted by trails and/or roads. Map prepared by Shannon Kearney, October 2022, DEEP Wildlife Division.

Trails are a vital tool for connecting people with nature and are highly valued by the public. Trails are a common feature on most DEEP properties and are some of our greatest recreational amenities. Trails can even help protect rare habitats and sensitive resources by concentrating use on designated, sustainable pathways. However, state forestland is intended to be managed for the ecological integrity of forest ecosystems, growth of sustainably harvested forest products, wildlife management, and wildlife-based recreation. Unauthorized, user created trails often erode the intended management purpose of these properties and limits their management potential. Recreationalists are asked to obey by the rules and regulations that govern the use of state forestland and to follow the formal channels through DEEP for proposing the creation, use and maintenance of trails (DEEP Policy/Procedure # 310, 2019).

J. Economic Benefits

According to the Forest Products Industries Economic Contributions: Connecticut 2020, the total output of Connecticut's Forest Products Industry was $ 3.96 billion. Of that, primary wood product manufacturing was $ 198 million, secondary wood product manufacturing was $ 402 million, wood furniture was $ 781 million, and paper manufacturing was $ 2.5 billion. Connecticut does not have pulp and paper mills and/or manufacturing facilities. As a result, the paper manufacturing economic contributions represents recycling of paper waste and cardboard, not the use of Connecticut grown wood fiber. Forestry and logging accounted for an additional $ 26 million in output (Public Sector Consultants & Emmerthal, 2020). State forestland in Connecticut is, collectively, the largest landholding in the state. The Division of Forestry, state lands management program has a diversity of goals for this landholding, one being to supply a sustainable source of forest products. According to the 2020 Annual Report Summary prepared by the Forestry Division's Forest Practices Act Program, between 2015 and 2018, Connecticut averaged 27.5 million board feet for sawtimber and veneer purchased from all lands in the state. Approximately 7.6% of this harvest came from state land during this time period which is below the average of 10.2% between 1997 and 2018.

This management plan prescribes silvicultural work to be completed on 825 acres. Through this work, trees are removed to improve the growth and quality of residual trees and to allow for natural regeneration to become established. The trees removed are sold as a forest product and depending on their size, species, and/or quality they will be sawn for lumber, peeled for veneer, ground into wood chips, or burned as firewood. These products contribute to a local forest economy and support many individuals such as foresters, loggers, truckers, sawyers, and carpenters.

Photo 4.2. Timber harvesting operations such as the one shown in this photo contribute to the local forest economy while improving growing conditions for residual trees, regenerating a new cohort of young trees, and

diversifying wildlife habitat within the forest.

K. Public Involvement

Public involvement and receiving stakeholder input are critical aspects of public lands management. Therefore, a preliminary draft of this forest management plan was shared with the towns that this forest resides within as well as organizations that have an interest in the long-term sustainability of the forest for its recreational and ecological value. A draft of this plan was sent to the Town of Portland, the Town of East Hampton, the Town of Glastonbury, the Town of Marlborough, the Connecticut Forest & Park Association (CFPA), the southeast Connecticut chapter of the New England Mountain Biking Association (NEMBA), the Meshomasic Hiking Club, the New England chapter of Back Country Hunters & Anglers (BHA), the Connecticut Conservation Advisory Council, and Audubon Connecticut. These municipalities and organizations are considered major stakeholders in the management of this forest because collectively they represent the constituents of the community the forest is located within, recreational opportunities and trail stewardship, and the conservation of vital wildlife habitat. These stakeholders were asked to review the plan, over a 60-day period, and provide any comments or concerns they might have.

To increase transparency between DEEP and the public an additional outreach process has been adopted to provide the public with the opportunity to review management plans and submit comments, suggestions, and/or concerns. This involved posting a notice on DEEPs Public Notices website for a duration of one month. The notice stated that DEEP Division of Forestry intends to adopt with final approval the Meshomasic State Forest Mountain Block Forest Management Plan. The notice included contact information for the plans author, a map of the management plan area as well as the infographic included at the beginning of this plan. Interested individuals could then contact the author of the plan, requesting a copy. Subsequent comments were received and incorporated into the final copy of the plan before final approval and publishing on the CT DEEP website.

This plan will be made available to the public. State forest management plans are published on the CT DEEP website and can be found by following this link Forest Management on State Lands (ct.gov). Comments and questions regarding the plan are always encouraged. Also, this plan may serve as a resource for local municipalities and non-profit organizations that are actively planning for open space protection and conservation.

L. Management Goals

- Support sustainable recreation while discouraging non-authorized uses that threaten the integrity of the forest resource
- Maintain 1,396-acre Old Forestland Management Site
- Maintain areas of mature forest to serve as carbon sinks, maximizing carbon storage
- Create young forest to increase the rate of carbon sequestration
- Create young forest/early successional habitat to diversify wildlife habitat
- Protect and enhance significant and/or critical habitat
- Control invasive species to prevent them from suppressing native vegetation and to avert their establishment throughout the forest
- Utilize adaptive management principles if damage to the forest is caused by events that are unforeseen at this time such as adverse weather and insect or disease infestations
- Maintain and improve forest infrastructure such as roads, culverts, gates, and signs

M. Work Plans

Silvicultural Operations Schedule

Table 1.3. Table of the silvicultural activities scheduled for the next 10 years within the Mountain Block of Meshomasic State Forest.

Fiscal Year	Compartment	Stand	Acreage	Activity
2026	31	6	20	Shelterwood
2026	34	1	22	Shelterwood
2026	34	2	24	Shelterwood
2026	34	3	11	Shelterwood
2027	25	4a	24	Timber Stand Improvement
2027	38	1	45	Shelterwood
2027	41	1	15	Thinning
2028	4	4	40	Overstory Removal
2028	5	4	74	Overstory Removal
2029	31	4	22	Timber Stand Improvement
2029	33	4	15	Timber Stand Improvement
2029	42	3	8	Timber Stand Improvement
2029	29	1	82	Shelterwood
2029	29	2	37	Shelterwood
2029	27	9	51	Thinning
2030	30	2	127	Shelterwood
2032	15	2	58	Thinning
2032	15	3	51	Thinning
2032	15	4	42	Thinning
2033	1	8	36	Shelterwood
2033	1	7	21	Thinning
Total Acreage			**825**	

The implementation of the silviculture outlined in Table 1.3 begins with a plan for each silvicultural project, a Forest Operation Plan. Forest Operation Plans include current detailed forest inventory data, current conditions, desired project outcomes, long-term silvicultural and habitat objectives, specific logistical aspects of implementation, timber yield and retention volumes, expected monetary value, and all measures and considerations which will be taken to protect each site while work is being completed. An up-to-date NDDB determination will be requested for each silviculture project to inform what best management practices need to be employed to protect threatened, endangered, or special concern species while conducting work. Forest Operation Plans also provide specific instructions on how and where best management practices for water quality, including riparian buffers, adjacent to watercourses, wetlands, and vernal pools, will be implemented in accordance with *Best Management Practices for water quality while harvesting forest products* (DEEP, 2012). Forest Operation Plans are vetted internally by DEEP through review by Support Services, Parks, Wildlife, Fisheries, and Forestry Staff. Before silvicultural work is to begin public outreach is conducted for each project, including an on-site

in-person woods walk with DEEP staff. These events are great opportunities for the public to engage with DEEP staff regarding forest management on state lands.

Prescribed Fire

No prescribed fire is scheduled for this management cycle within the Mountain Block.

Forest Product Permits

Several forest products will be available to the public periodically within the Mountain Block throughout this management plans timeframe. These products are firewood, mountain laurel boughs and branches, witch hazel, and maple taps for sap collection. The harvesting of these products is conducted under the forest products harvest permit system. To learn more about forest product harvest permits or to acquire a permit, e-mail the Division of Forestry at DEEP.Forestry@ct.gov. Products are available on a first come, first serve basis, availability may be limited, and may only be available seasonally.

Photo 4.3. Photo of a witch hazel harvesting operation within Meshomasic State Forest, conducted under the Forest Products Harvest Permit process. Witch hazel is cut, hauled out of the forest, chipped, and distilled down into an extract. This extract liquid is then used in many medicinal, topically applied products for its anti-inflammatory and astringent properties. Witch hazel is often used in products to treat for acne, rashes, varicose veins, dandruff, sunburn, and bug bites.

Invasive Treatments

It is imperative that invasive plants are addressed so they do not suppress forest regeneration efforts and reduce the overall health, quality, and diversity of the forest resource. Treating these plants typically occurs through mechanical or chemical means, or a combination of the two. Mechanical includes mowing, cutting, or pulling and chemical includes the use of herbicides. Chemical treatments tend to be most effective as they can target individual plants or large groups and are effective at killing an entire plant above and below ground. All herbicide applications will be conducted by a state licensed applicator. The label on the herbicide is the law, as such all-herbicide label instructions will be followed during application.

Table 1.4. Table describing where, when, and the extent of invasive treatments planned in the next ten years within the Mountain Block of Meshomasic State Forest.

Fiscal Year	Compartment	Stand	Acreage
2028	33	1	10
2028	33	8	14
2028	33	9a	8
2028	33	9b	11
2028	33	10	5
2029	32	3	12
2029	32	4	14
2030	17	1	11
2030	17	6	13
2033	9	10	21
2033	2	5a	10
2033	6	9	10
2033	6	10	7
Total Acreage			**146**

Road Work

The Mountain Block of Meshomasic State Forest contains eight miles of DEEP maintained gravel roads. These roads include North Mulford Road, Mulford Road, Del Reeves Road, and Woodchoppers Road. These roads contain a combined total of 135 culverts. This block also contains several town owned and maintained gravel roads that provide access to the forest such as Gadpouch Road (East Hampton), Mott Hill Road (Glastonbury), and Dickinson Road (Glastonbury). These roads cover an additional one and a half miles, cumulatively. Road maintenance has included blowing the leaves off the roadsides annually, regrading as needed to smooth over potholes and maintain the crown of the roads, replacing culverts when severely under sized leading to significant road flooding and washouts, and culvert inlet and outlet cleaning/clearing. This work has maintained these roads in good condition. However, additional work needs to be done to further improve road surface and drainage, particularly considering more frequent extreme weather events that erode and degrade this type of infrastructure quickly.

Six priority road segments have been identified for improvement and they are described as follows:

1. Road: North Mulford Road
   Location: Del Reeves Road to Clark Hill Road
   Distance: 1.10 Miles
   Issues: Surface material erosion, washouts on hills due to nonfunctional drainage, clogged culverts
   Scheduled Work: Clean out culvert inlets and outlets, replace culverts as necessary, resurface and regrade
2. Road: Del Reeves Road
   Location: From intersection with North Mulford Road to the entrance to the military barracks site
   Distance: 0.70 Miles
   Issues: Surface material erosion, clogged culverts
   Scheduled Work: Clean out culvert inlets and outlets, replace culverts as necessary, resurface and regrade
3. Road: Del Reeves Road
   Location: Directly west of Del Reeves Marsh, between Del Reeves Marsh and the entrance to the military barracks site
   Distance: 0.25 Miles
   Issues: Surface material erosion, washouts due to nonfunctional drainage, clogged culverts
   Scheduled Work: Clean out culvert inlets and outlets, replace culverts as necessary, resurface and regrade
4. Road: Woodchoppers Road
   Location: From intersection of Cox Road and Mulford Road to the east towards East Hampton
   Distance: 0.33 Miles
   Issues: Surface material erosion, washouts due to nonfunctional drainage, clogged culverts
   Scheduled Work: Clean out culvert inlets and outlets, replace culverts as necessary, resurface and regrade
5. Road: Mott Hill Road
   Location: Town of Glastonbury, from bridge headed south up the hill to the town line
   Distance: 0.50 Miles
   Issues: Periodic Road flooding due to clogged culverts and beaver activity in adjacent wetlands, potholes, washouts due to nonfunctional drainage
   Scheduled Work: Cleaning out culvert inlets and outlets, installing drainage structures, resurface and regrade
   Additional Considerations: This is a town owned road. Therefore, this is an opportunity for DEEP and the town of Glastonbury to work collaboratively towards a long term, sustainable repair of this road. Collaboration between the Division of Forestry, Wildlife Division, and a volunteer trapper to reduce beaver activity adjacent to this road.
6. Road: Dickinson Road
   Distance: 0.33 Miles
   Issues: Washouts due to nonfunctional drainage
   Scheduled Work: Installing drainage structures, resurface and regrade
   Additional Considerations: This is a town owned road. Therefore, this is an opportunity for DEEP and the town of Glastonbury to work collaboratively towards a long term, sustainable repair of this road.

Photo 4.4. Photo to a culvert on Mulford Road, Mountain Block of Meshomasic State Forest. Both the inlet (left) and outlet (right) are filled in with sediment.

Other Infrastructure Improvements -culverts, gates, boundary surveys

Gates are critical infrastructure within the forest as they help prevent nonauthorized access, particularly motorized vehicles such as 4x4 trucks, ATVs, and dirtbikes. There are three locations within the Mountain Block that currently do not have a gate but could benefit from being gated to help protect trails and other off-road forest infrastructure such as skid trails, log landings, and unmaintained town roads. These three locations are Dickinson Road (Glastonbury), Isinglass Hill Road (Portland), and Mott Hill Road (East Hampton). Gates will be installed at these three locations during the timeframe of this management plan.

To protect the DEEP maintained gravel roads during the period at which they are most vulnerable to damage from vehicular traffic, January through March, five gates will be installed. Vehicular use of these gravel roads during the wet conditions of the winter months often results in rutting and erosion issues, leading to higher maintenance costs. Also, due to these roads not being maintained during the winter months when they are most dangerous to traverse, being covered in snow and ice, emergency access may not always be possible. For these reasons, these five gates will be installed and will be closed annually from January 1st to March 31st. Gate locations will be on either end of Woodchoppers Road, Mulford Road, North Mulford Road, and Del Reeves Road. The forest will remain open to the public during the annual gate closer, however, restricted to foot traffic only. All private landowners with inholding property within the Mountain Block will be notified prior to gate installation and will be provided access through the gates during the annual winter gate closer period.

Photo 4.5. Photo of a typical gate design and layout utilized on State lands across Connecticut.

Two boundary issues were described on page 16, both of which involve missing or little to no evidence that would accurately place where the boundary line is intended to be. As a result, these two boundary line segments, totaling approximately 2,400 feet, are not marked. Therefore, these segments will be surveyed by DEEP or an independent surveyor, if necessary, to properly mark these segments in the field.

Photo 4.6. Photo of a well-marked boundary corner within Meshomasic State Forest. The diamond shaped yellow and black signs face neighboring private property, yellow rings are painted around boundary trees to increase boundary visibility from all angles, yellow blazes are placed to indicate boundary line direction, and yellow witness marks are placed to show where a property corner pin is in relation to the tree.

CT Dam # 4214, located north of Gadpouch Road in East Hampton, is in a state is disrepair with the middle of the structure eroded. Due to this erosion, it is considered to be partially breached. In 2021 the DEEP State Dams Unit recommended that the dam be removed, and the Mine Brook returned to its natural hydrology. The deconstruction of this dam may take place during the timeframe of this management plan, pending the availability of personnel and funding. The DEEP State Dams Unit would lead the project.

Habitat Enhancement Work

The Wildlife Division will support forest habitat management as needed by funding certain non-commercial forest management practices that aim to enhance wildlife habitat. As needed, the State Lands Habitat Management Program will continue to aid in monitoring beaver activity within this block and address problems where public health and safety and/or important habitats are being threatened. Assistance from Agency Support Services, Parks, and the Wetlands Habitat and Mosquito Management Program in providing equipment and personnel may be requested.

Mowing and/or mulching is often employed to mechanically remove invasive shrub species, reclaim shrubland or grassland habitats, and/or to remove poor-quality trees of little commercial value to provide additional growing space to adjacent desired individuals. Mowing will be completed in Compartment 33 Stands 8 and 10. This is the site of the former CCC Camp Jenkins and is currently densely vegetated with pole sized aspen, mixed hardwood saplings and poles, and invasive shrubs. This area now serves as shrubland habitat, a rare habitat type within the Mountain Block covering approximately 15 acres, divided between two sites. Mowing will revert this area back to the stand initiation stage of forest succession and the subsequent flush of new growth will sustain shrubland habitat in this area.

Non-Commercial Forest Products Work

Non-commercial forest products work includes timber stand improvement efforts. Timber stand improvement is an important step to take on a site where the goal is to grow healthy, quality trees of the species composition that is desired. Silvicultural regeneration efforts made within the Mountain Block in the last 40 years have resulted in an abundance of black birch, red maple, and American beech regeneration. To favor the growth of the best quality individuals of these species for future sawtimber production as well as to prevent oak species from being outcompeted and maintain a forest with an oak component, timber stand improvement is necessary. Timber stand improvement is analogous to weeding a vegetable garden, in that poor quality and/or undesirable individuals are removed to provide additional growing space to neighboring good quality, desirable individuals.

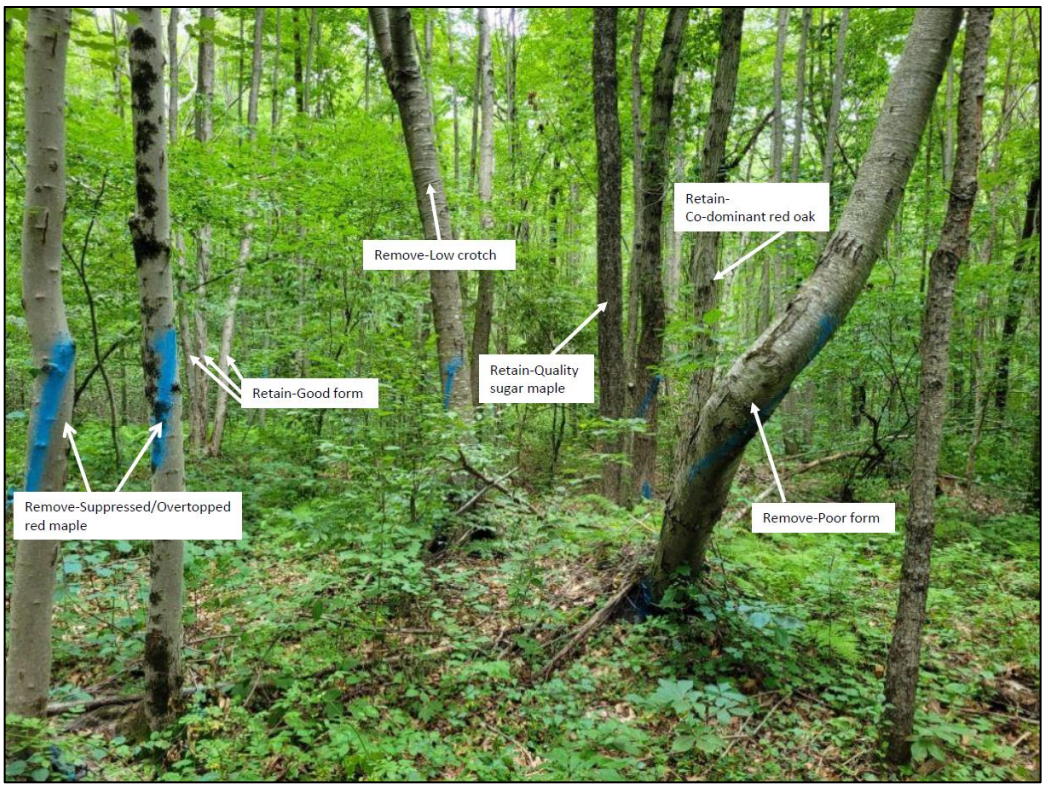


Photo 4.7. Example of how timber stand improvement is applied to improve the growth, value, and species composition of the forest.

Opportunities to conduct this work within the Mountain Block are available in several stands, most notably in stands that have had a regenerative silvicultural operation within the last 40 years and now have young growth of saplings to pole sized trees. These stands include the following:

- Compartment 25, stand 4a, 24 acres that was clear cut in 1991 and is now a pole sized stand of mixed hardwoods
- Compartment 31, stand 4, 22-acre oak/hickory/pitch pine ridge where opportunity exists to release quality growing stock and enhance the growth of residual pitch pine and oak
- Compartment 33, stand 4, 15 acres that was clear cut in 1987 and is now a pole sized stand of mixed hardwoods
- Compartment 42, stand 3, 8 acres that was clear cut in 1990 and is now a pole sized stand of mixed hardwoods

Hazardous Trees

With the plethora of forest health concerns described in this management plan, the mortality of some trees is inevitable. Although having some dead trees in the forest is part of a healthy forest ecosystem, too many dead trees can create potentially hazardous situations. Dead trees can shed branches, be uprooted, or break, posing a threat to people, vehicles, parking lots, roads, gates, signs, etc. As a result, the maintenance of state properties now must consider the removal of dead, dying, or structurally compromised trees in areas where they are, or could become, hazardous. Spongy moth defoliation throughout eastern Connecticut in 2016, 2017, and 2018 resulted in the mortality of many oak trees and a statewide effort to identify and mitigate hazardous trees. Over 100 hazardous trees were identified along the eight miles of gravel roads in the Mountain Block. All the identified trees were removed in 2019 and 2020. Public roads maintained by DEEP, parking areas, and any other high traffic public use areas will actively be monitored for potentially hazardous trees throughout the duration of this management plan. Should additional hazard trees arise, they will be addressed by forestry, wildlife, and parks staff appropriately, paying consideration to public safety, DEEP employee safety, and impacts to associated natural and recreational resources.

Meshomasic State Forest: Mountain Block Work Plan by Year						
Fiscal Year	**Scheduled Activity**	**Forest Compartment**	**Forest Stand**	**Restrictions**	**Area**	**Project Lead**
2026	Shelterwood	31	6	Seasonal	20 Acres	Forestry/CAES
2026	Shelterwood	34	1	None	22 Acres	Forestry/CAES
2026	Shelterwood	34	2	None	24 Acres	Forestry/CAES
2026	Shelterwood	34	3	None	11 Acres	Forestry/CAES
2026	Dickinson Road Improvements	N/A	N/A	None	0.33 Miles	Engineering & Support Services
2026	Boundary Survey	38	2	None	1,900 Feet	Land Acquisition & Management
2026	Boundary Survey	30	1	None	500 Feet	Land Acquisition & Management
2026/2027	Boundary Line Maintenance	N/A	N/A	None	40 Miles	Forestry
2027	Shelterwood	38	1	Seasonal	45 Acres	Forestry
2027	Thinning	41	1	Seasonal	15 Acres	Forestry
2027	North Mulford Road Improvements	N/A	N/A	None	1.10 Miles	Engineering & Support Services
2027	Gates: Dickinson Road, Isinglass Hill Road, Mott Hill Road	N/A	N/A	None	3 Gates	Forestry
2027	Timber Stand Improvement	25	4a	Seasonal	24 Acres	Forestry
2028	Overstory Removal	4	4	None	40 Acres	Forestry
2028	Overstory Removal	5	4	None	74 Acres	Forestry
2028	Invasive Treatment	33	1	Seasonal	10 Acres	Forestry
2028	Invasive Treatment	33	8	Seasonal	14 Acres	Forestry
2028	Invasive Treatment	33	9a	Seasonal	8 Acres	Forestry
2028	Invasive Treatment	33	9b	Seasonal	11 Acres	Forestry
2028	Invasive Treatment	33	10	Seasonal	5 Acres	Forestry
2028	Mowing/Shrubland Habitat Maintenance	33	8	Seasonal	14 Acres	Wildlife
2028	Mowing/Shrubland Habitat Maintenance	33	10	Seasonal	5 Acres	Wildlife
2028	Gates: Woodchoppers Road, Mulford Road, North Mulford Road, Del Reeves Road	N/A	N/A	None	5 Gates	Forestry

Meshomasic State Forest: Mountain Block Work Plan by Year						
Fiscal Year	**Scheduled Activity**	**Forest Compartment**	**Forest Stand**	**Restrictions**	**Area**	**Project Lead**
2029	Shelterwood	29	1	None	82 Acres	Forestry
2029	Shelterwood	29	2	None	37 Acres	Forestry
2029	Thinning	27	9	None	51 Acres	Forestry
2029	Invasive Treatment	32	3	Seasonal	12 Acres	Forestry
2029	Invasive Treatment	32	4	Seasonal	14 Acres	Forestry
2029	Timber Stand Improvement	31	4	Seasonal	22 Acres	Forestry
2029	DelReeves Road Improvements	N/A	N/A	None	0.95 Miles	Engineering & Support Services
2029	Timber Stand Improvement	33	4	Seasonal	15 Acres	Forestry
2030	Shelterwood	30	2	None	127 Acres	Forestry
2030	Invasive Treatment	17	1	Seasonal	11 Acres	Forestry
2030	Invasive Treatment	17	6	Seasonal	13 Acres	Forestry
2030	Timber Stand Improvement	42	3	Seasonal	8 Acres	Forestry
2031	Woodchoppers Road Improvements	N/A	N/A	None	0.33 Miles	Engineering & Support Services
2032	Thinning	15	2	None	58 Acres	Forestry
2032	Thinning	15	3	None	51 Acres	Forestry
2032	Thinning	15	4	None	42 Acres	Forestry
2033	Shelterwood	1	8	None	36 Acres	Forestry
2033	Thinning	1	7	None	21 Acres	Forestry
2033	Invasive Treatment	9	10	Seasonal	21 Acres	Forestry
2033	Invasive Treatment	2	5a	Seasonal	10 Acres	Forestry
2033	Invasive Treatment	6	9	Seasonal	10 Acres	Forestry
2033	Invasive Treatment	6	10	Seasonal	7 Acres	Forestry
2033/2034	Re-inventory Mountain Block & Update Management Plan	All Compartments	All Stands	None	6393 Acres	Forestry
2035	Mott Hill Road Improvements	N/A	N/A	None	0.50 Miles	Engineering & Support Services

Map A - Topographic
Meshomasic State Forest: Mountain Block
Portland, East Hampton, Glastonbury, Marlborough, Connecticut
6,393 Acres

Drafted by: Nathan Piché
December 2, 2024

Map Scale: 1 inch = 2,000 feet (1:24,000)

0 2,000 4,000 8,000 Feet

Coordinate System: NAD 1983 State Plane Connecticut FIPS 0600 Feet

Projection: Lambert Conformal Conic

Map B - Base
Meshomasic State Forest: Mountain Block
Portland, East Hampton, Glastonbury, Marlborough, Connecticut
6,393 Acres

Drafted by: Nathan Piché
December 2, 2024

Map Scale: 1 inch = 2,000 feet (1:24,000)

0 2,000 4,000 8,000 Feet

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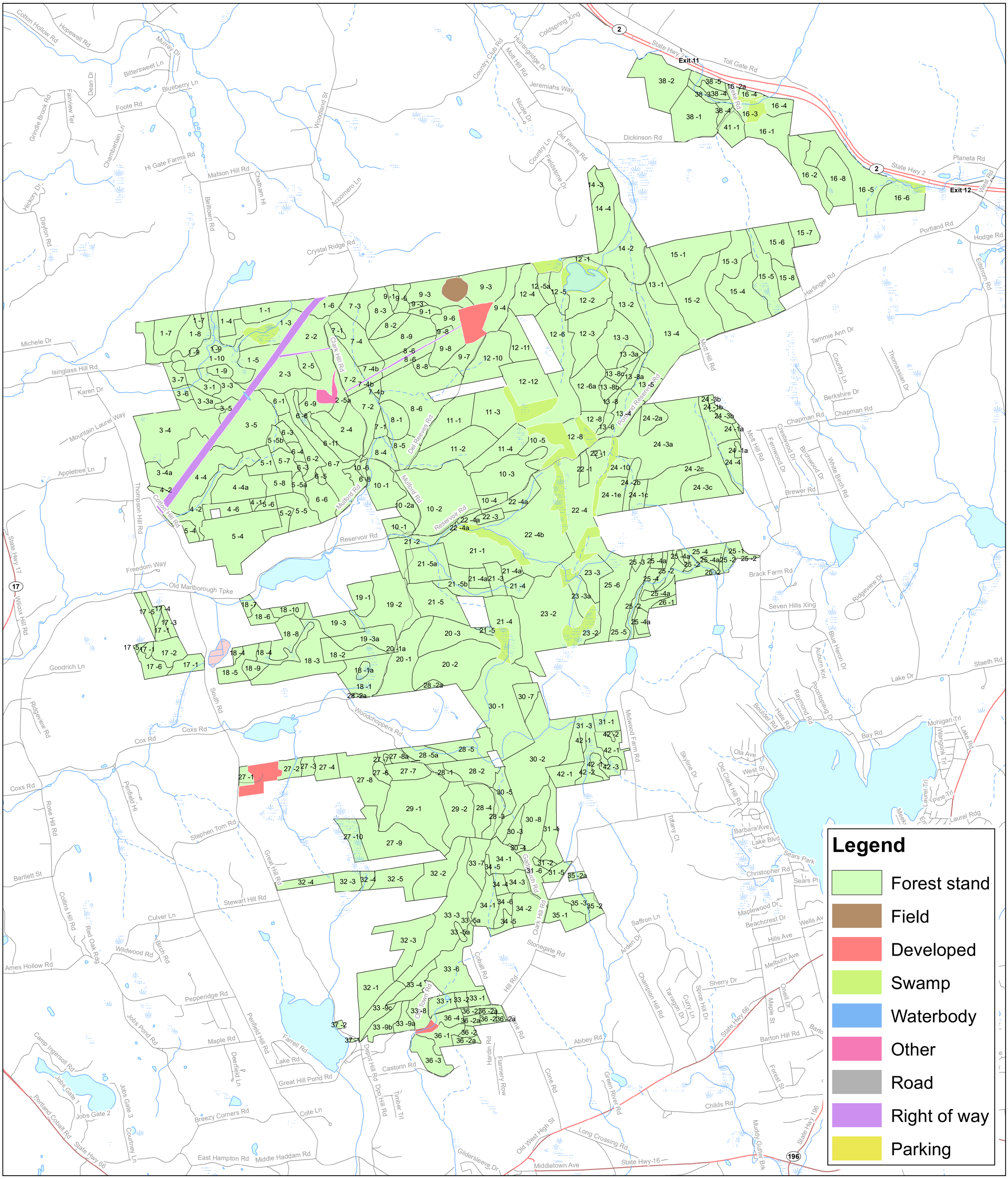

Coordinate System: NAD 1983 State Plane Connecticut FIPS 0600 Feet

Projection: Lambert Conformal Conic

Map C - Site Quality
Meshomasic State Forest: Mountain Block

Portland, East Hampton, Glastonbury, Marlborough, Connecticut

6,393 Acres

Drafted by: Nathan Piché

December 2, 2024

Map Scale: 1 inch = 2,000 feet (1:24,000)

0 2,000 4,000 8,000 Feet

N W E S

Coordinate System: NAD 1983 State Plane Connecticut FIPS 0600 Feet

Projection: Lambert Conformal Conic

Map D - Forest Type & Size Class
Meshomasic State Forest: Mountain Block

Portland, East Hampton, Glastonbury, Marlborough, Connecticut

6,393 Acres

Drafted by: Nathan Piché

December 2, 2024

Map Scale: 1 inch = 2,000 feet (1:24,000)

N W E S

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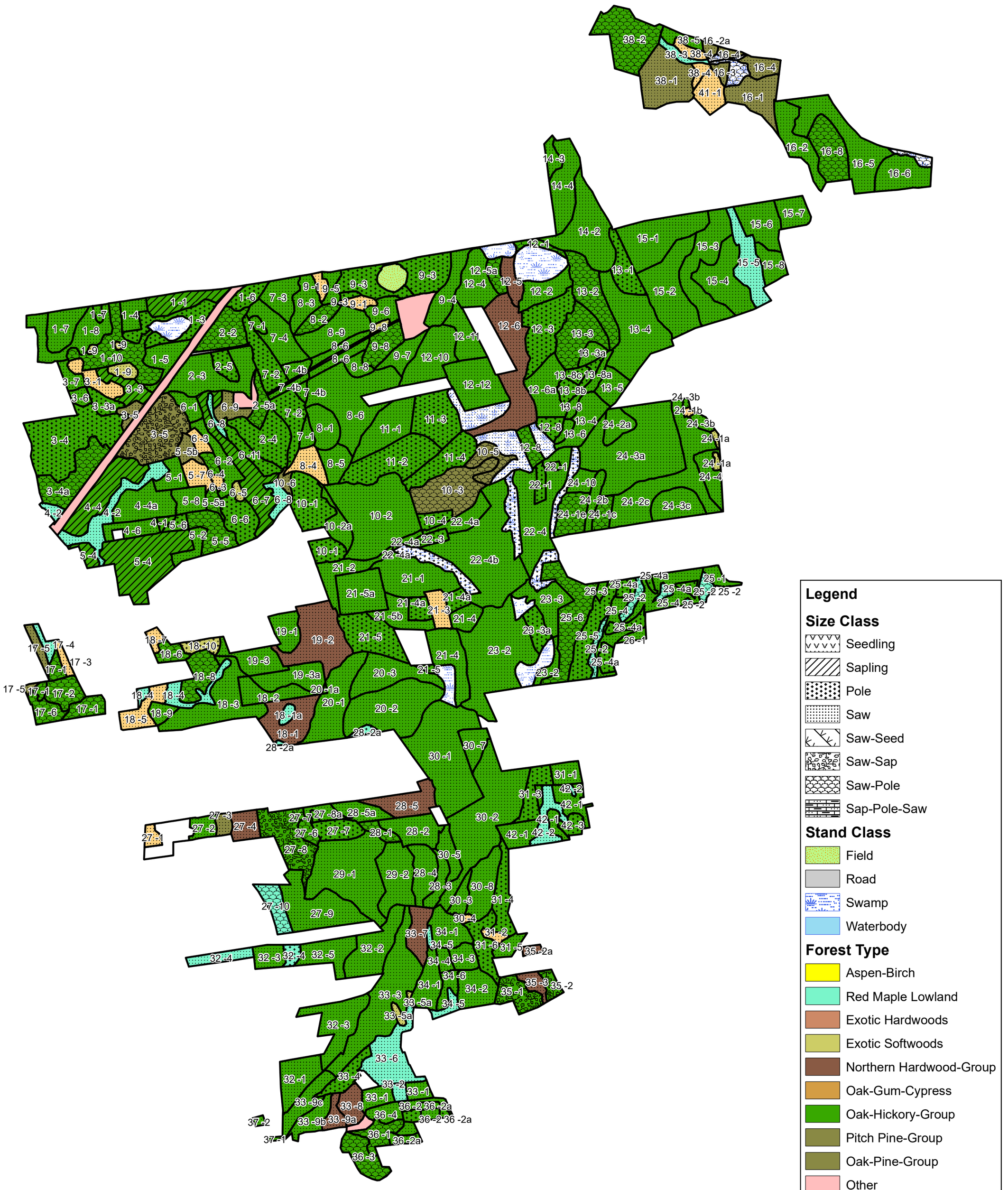

Coordinate System: NAD 1983 State Plane Connecticut FIPS 0600 Feet

Projection: Lambert Conformal Conic

Map E - Special Features
Meshomasic State Forest: Mountain Block
Portland, East Hampton, Glastonbury, Marlborough, Connecticut
6,393 Acres

Drafted by: Nathan Piché
December 2, 2024

Map Scale: 1 inch = 2,000 feet (1:24,000)

0 2,000 4,000 8,000 Feet

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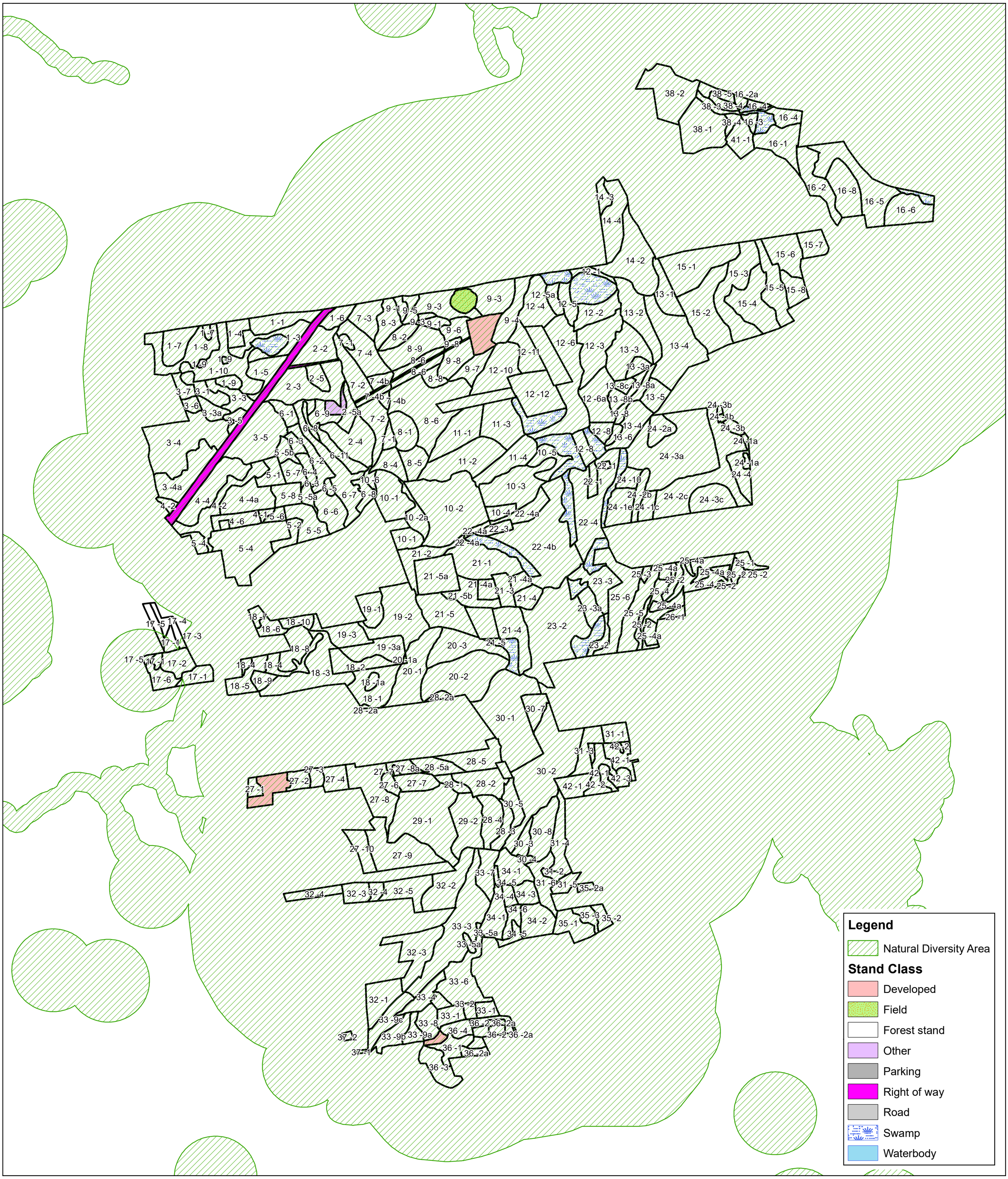


Coordinate System: NAD 1983 State Plane Connecticut FIPS 0600 Feet

Projection: Lambert Conformal Conic

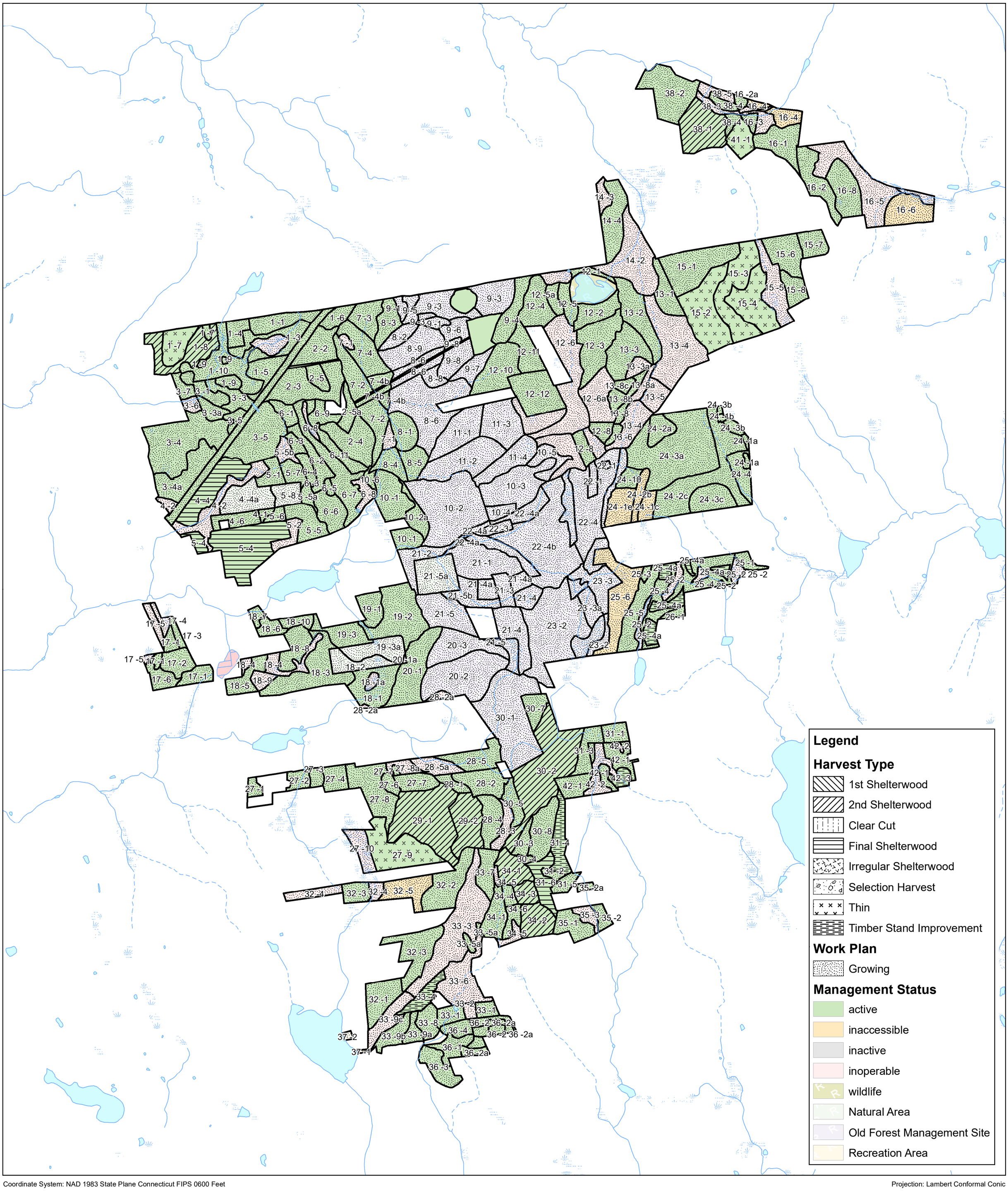
Map F - Work Plan
Meshomasic State Forest: Mountain Block
Portland, East Hampton, Glastonbury, Marlborough, Connecticut
6,393 Acres

Drafted by: Nathan Piché
December 2, 2024

Map Scale: 1 inch = 2,000 feet (1:24,000)

0 2,000 4,000 8,000 Feet

N W E S



Coordinate System: NAD 1983 State Plane Connecticut FIPS 0600 Feet

Projection: Lambert Conformal Conic

Appendix

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Public Involvement

The preliminary draft of the Meshomasic State Forest Mountain Block Management Plan went through an internal DEEP review in January and February of 2025. The plan was reviewed by DEEP staff from Forestry, Wildlife, Parks, Fisheries, Support Services, and Environmental Conservation Law Enforcement. The discussions, comments, and suggestions from this internal review aided in refining a subsequent draft of the plan to be provided to the public for review. As a result, this draft plan was sent out via e-mail for municipal and stakeholder group review for a 60-day period from February 21, 2025 to April 25, 2025. During that time period the plan was reviewed by the Town of Portland, the Town of East Hampton, the Town of Glastonbury, the Town of Marlborough, the Connecticut Forest & Park Association (CFPA), the southeast Connecticut chapter of the New England Mountain Biking Association (NEMBA), the Meshomasic Hiking Club, the New England chapter of Back Country Hunters & Anglers (BHA), the Connecticut Conservation Advisory Council, and Audubon Connecticut. At the conclusion of this 60-day review period, two comments were received. Both comments received came from municipalities. Comments were formatted as questions, seeking clarification on the forest management planning process, the predominant goals and objectives that the plan is addressing, habitat management for specific wildlife species, illegal and unauthorized off-road vehicle use, law enforcement measures, and future public engagement opportunities regarding the action items of the plan as described in the "Work Plan" on pages 68 and 69. These questions were addressed by the author of the plan through phone conversations and e-mail exchanges. In these correspondences, questions were addressed as follows:

- Specifics of the planning process were described including the important role of public review in shaping the final plan.
- Plan goals were contextualized under the core principles of state forestland management.
    1. Forest resource health and diversity
    2. Wildlife habitat quality and diversity
    3. Public recreational access
- Habitat requirements for specific species and work plan items that will be carried out to enhance and/or compliment habitat needs for these species.
- Acknowledgement of illegal and unauthorized off-road vehicle use within the forest and the infrastructure, education, and enforcement measures that are being taken to address this issue.
- Describing future public engagement opportunities for silviculture projects described in the work plan.

Following this 60-day municipal and stakeholder group review period, a notice was posted on the DEEP Public Notices webpage for a duration of one month started on May 23, 2025 and ending on June 27, 2025. The notice stated that DEEP Division of Forestry intends to adopt with final approval the Meshomasic State Forest Mountain Block Forest Management Plan. The notice included contact information for the plans author, a map of the management plan area as well as the infographic included at the beginning of this plan. Interested individuals were then encouraged to contact the author of the plan to requesting a copy. This step in the management planning process broadens the scope of public review to include all those who would like to provide comment, regardless of municipal or stakeholder group affiliation. This is done in a concerted effort to increase transparency between DEEP and the public regarding forest management on state lands.

During this public review period, three individuals requested copies of the plan. Two of the three individuals subsequently submitted comments. Comments were largely supportive of the overall goals underlying the plan as they are congruent to promoting diverse, complex, and resilient forests and habitats. These comments also made specific logistical forest management recommendations as outlined in the list below:

- Implement soft edges in silvicultural operations to reduce edge effects such as predation and nest parasitism on nesting birds.
- Implement best management practices for water quality, including riparian buffers, adjacent to watercourses, wetlands, and vernal pools.
- Request and updated Natural Diversity Database determination letter from the DEEP Wildlife Natural Diversity Program when conducting forest management activities.
- Follow best management practices from the DEEP Wildlife Natural Diversity Program to protect threatened, endangered, and/or of special concern species while conducting forest management activities.
- Protective provisions that need to be made while conducting herbicide applications.
- Updating the statutory definition for wetlands as detailed in the Connecticut General Statues Section 22a-38 (15).

These comments were accepted and incorporated into the final draft of the management plan. Comments such as these are vital for DEEP Forestry to strengthen management planning efforts, increase transparency between the agency and the public, and incorporate the public into the management of the state forestlands held in public trust.

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Acadian Flycatcher	Eastern Kingbird*	Pileated Woodpecker
American Crow	Eastern Phoebe	Pine Warbler
American Goldfinch	Eastern Towhee*	Prairie Warbler*
American Kestrel*	Eastern Whip-poor-will*	Purple Martin*
American Redstart	Eastern Wood Pewee*	Red-bellied Woodpecker
American Robin	European Starling	Red-breasted Nuthatch
American Woodcock*	Field Sparrow*	Red-eyed Vireo
Bald Eagle*	Fish Crow	Red-shouldered Hawk
Baltimore Oriole*	Gray Catbird	Red-tailed Hawk
Bank Swallow*	Great Blue Heron	Red-winged Blackbird
Barn Swallow	Great Crested Flycatcher	Rock Pigeon
Barred Owl	Great Horned Owl	Rose-breasted Grosbeak*
Belted Kingfisher	Green Heron	Ruby-throated Hummingbird
Black-and-white Warbler*	Hairy Woodpecker	Savannah Sparrow*
Black-billed Cuckoo*	Hermit Thrush	Scarlet Tanager*
Black-capped Chickadee	Hooded Merganser	Sharp-shinned Hawk*
Black-throated Green Warbler	House Finch	Song Sparrow
Blue-gray Gnatcatcher	House Sparrow	Spotted Sandpiper
Blue-headed Vireo	House Wren	Swamp Sparrow
Blue Jay	Indigo Bunting*	Tree Swallow
Blue-winged Warbler*	Killdeer	Tufted Titmouse
Broad-winged Hawk*	Least Flycatcher*	Veery*
Brown Creeper*	Louisiana Waterthrush*	Virginia Rail*
Brown-headed Cowbird	Mallard	Warbling Vireo
Brown Thrasher*	Marsh Wren*	White-breasted Nuthatch
Canada Goose	Mourning Dove	Wild Turkey
Carolina Wren	Mute Swan	Willow Flycatcher*
Cedar Waxwing	Northern Cardinal	Winter Wren
Chestnut-sided Warbler*	Northern Flicker*	Wood Duck
Chipping Sparrow	Northern Mockingbird	Wood Thrush*
Common Grackle	Northern Rough-winged Swallow	Worm-eating Warbler*
Common Raven	Northern Waterthrush*	Yellow-bellied Sapsucker
Common Yellowthroat	Orchard Oriole	Yellow-billed Cuckoo*
Cooper's Hawk	Osprey*	Yellow-throated Vireo
Downy Woodpecker	Ovenbird*	Yellow Warbler
Eastern Bluebird	Pied-billed Grebe*	

Glossary

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).

Adverse Regulatory Actions: Written warning, citations or fines issued by law enforcement or regulatory bodies.

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

Afforestation: The establishment of a forest or a stand in an area where the preceding vegetation or land was not forest. (Helms et al, The Dictionary of Forestry, Society of American Foresters, 1998).

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).

Aspect: The direction that a slope faces (north, south, etc.).

Basal Area: The cross-sectional area of a tree, in square feet, at 4.5 feet 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 feet of basal area per acre, which is a measure of a stand's density.

Biomass: A renewable energy source of biological materials derived from living, or recently living organisms, such as wood, waste, and crop residues.

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 foot long, 1 foot wide, and 1 inch thick (144 cubic inches).

Broadcast: To spread or apply seed, fertilizer, or pesticides more or less evenly over an entire area. (Helms et al, The Dictionary of Forestry, Society of American Foresters, 1998).

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

Carbon Sequestration**:** The process of removing carbon from the atmosphere for use in photosynthesis. This results in the maintenance and growth of plants and trees. Generally, carbon sequestration rates are greater in younger (20-70 years old) forests. It is expressed as a rate. It is expressed as a negative value because it indicates the removal of CO2 from the atmosphere.

***Carbon Leakage*:** This is a situation that can occur when there is an increase in greenhouse gas emissions in one geographic area as a result of a reduction of emissions in another geographic area. For example, due to costs related to climate policies in one geo-political area (state, province, country, etc.), a business transfers production to another geo-political area with more relaxed climate policies. This situation could lead to an increase in total emissions. Regulatory bans on forestry in CT results in leakage – the reliance of wood products from further away, in unregulated systems has a greater carbon footprint associated with it than sourcing our wood locally.

***Carbon Storage*:** The amount of carbon in a defined area (tree, acre of forest, cord of wood, etc.). This term is typically used in reference to the carbon stored in aboveground woody biomass, 50% of which is carbon. It is stored in multiple pools in the forest, above and below ground. It is expressed as an amount per defined area (usually mega ton or tons per acre/hectare, etc.). Carbon storage is most often greatest in older, structurally complex forests.

Chip: A small piece of wood used to make pulp or wood composite or fuel. (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.

Core Forest: Unfragmented forest land that is three hundred feet or greater from the boundary between forest land and non-forest land, as determined by the Commissioner of Energy and Environmental Protection.

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

Cull: A tree, log, lumber or seedling that is rejected because it does not meet certain specifications for usability or grade. (Helms et al, The Dictionary of Forestry, Society of American Foresters, 1998).

Culvert: A device used to channel water. It may be used to allow water to pass underneath a road, railway, or embankment for example. Culverts can be made of many different materials; steel, polyvinyl chloride (PVC) and concrete are the most common. Formerly, construction of stone culverts was common.

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

Den Tree: A living tree with a cavity large enough to shelter wildlife.

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 feet above the ground.

Down Woody Material: Any piece(s) of dead woody material (e.g. dead tree trunk, limbs, large root ball) on the ground in the forest or in streams. (Helms et al, The Dictionary of Forestry, Society of American Foresters, 1998).

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 Health: The production of forest conditions by which the resilience, recurrence, persistence, and biophysical processes occur, leading to sustainable ecological conditions. An understanding of forest health is greatly dependent on spatial scale as well as the forests ability to satisfy human needs (USDA Forest Service, Science and Technology, Forest Health).

Forest Owner: Landowner or designated representative such as, but not limited to, professional resource manager, family member, trustee, etc.

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 it trees, particularly its dominant tree species as based on percentage cover of trees, e.g. spruce fir, white pine, northern red oak.

Forest vitality: The health and sustainability of a forest.

Fuel Management: The act or practice of controlling flammability and reducing resistance to control of wildland fuels through mechanical, chemical, biological, or manual means, or by fire in support of land management objectives. (Helms et al, The Dictionary of Forestry, Society of American Foresters, 1998).

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).

Girdling: Completely encircling the trunk of a tree with a cut that severs the bark and cambium of the tree. Herbicide is sometimes injected into the cut to ensure death of the tree.

GPS (Global Positioning System) Coordinates: A commonly hand held, satellite based navigational device that records x, y, z coordinators and other data allowing users to determine their location on the surface of the earth. (Helms et al, The Dictionary of Forestry, Society of American Foresters, 1998).

Hack-n-Squirt: A tree treatment method where an axe or hatchet is used to make "hacks" (injections) into the tree's cambium layer. A plastic "squirt" bottle is used to spray a specific amount of herbicide into the cuts placed around the tree.

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).

High conservation value forests (HCVF): Forests of outstanding and critical importance due to their environmental, social, biodiversity or landscape values. Due to the small scale and low-intensity of family forest operations, informal assessment of HCVF occurrence through consultation with experts or review of available and accessible information is appropriate.

High-Grading: Cutting only the high-value trees from a forest property, leaving a stand of poor quality with decreased future timber productivity.

Incentive Programs: State and federal agencies will offer landowners the opportunity to apply for incentive programs that will provide support and financial assistance to implement forestry and agroforestry related practices through conservation programs. Assistance can also provide for multi-year and permanent easements to conserve forest land to meet program goals.

Integrated Pest Management: The maintenance of destructive agents, including insects, at tolerable levels by planned use of a variety of preventative, suppressive, or regulatory tactics and strategies that are ecologically and economically efficient and socially acceptable (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). 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.)

***Ladder Fuel*:** This is a wildland firefighting term used to describe live or dead vegetation that allows a fire to climb up from ground level or the forest floor into the tree canopy.

Landings: A cleared are 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.

Large Woody Debris: Any piece(s) of dead woody material, e.g. dead boles, limbs and large root masses, on the ground in the forest stands or in streams. (Helms et al, The Dictionary of Forestry, Society of American Foresters, 1998).

Log Rules: A table showing estimated amount of lumber that can be sawed from logs of given lengths and diameters. The log rule commonly used in Connecticut is the International ¼ -inch Rule. The International ¼-inch Rule is a formula rule allowing 1/2 – inch taper for each 4 feet of length and 1/16-inch shrinkage for each one-inch board. This measure approximates the actual sawmill lumber tally.

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 feet.

Noxious Plant (weed): A plant specified by law as being especially undesirable, troublesome and difficult to control (Helms et al, The Dictionary of Forestry, Society of American Foresters, 1998).

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 inches to 12 inches in diameter at breast height.

Prescribed Burn/Fire: To deliberately burn natural fuels under specific weather conditions, which allows the fire to be confined to a predetermined area and produces the fire intensity to meet predetermined objectives. A fire ignited by management to meet specific objectives (Helms et al, The Dictionary of Forestry, Society of American Foresters, 1998).

Pruning: Removing live or dead branches from standing trees to improve wood quality.

Pulpwood: Wood cut primarily for manufacture of paper, fiberboard, or other wood fiber products.

Qualified Contractor: Forest contractors who have completed certification, licensing, recommended training and education programs offered in their respective states.

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 Zone: 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 inches to 6 inches in diameter at breast height.

Sawtimber: Trees at least 12 inches in diameter at breast height 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 also 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 more or less 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 delimbing. (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 inches in diameter at breast height and at least 6 feet 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 Compaction: The process by which the soil grains are rearranged, resulting in a decrease in void space and increasing bulk density. Can occur from applied loads, vibration or pressure from harvesting or site preparation equipment. Compaction can cause decreased tree growth, increased water runoff and soil erosion. (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 diameter at breast height 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.

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.

Visual Quality Measures: Modifications of forestry practices in consideration of public view, including timber sale layout, road and log landing locations, intersections with public roadways, distributing logging residue, tree retention, timing of operations and other factors relevant to the scale and location of the project.

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

Watershed: The area of land where all of the water that is under it or drains off of it goes into the same place. For example, the Mississippi River watershed includes all the land that drains into the Mississippi River. This watershed is the fourth largest in the world and includes water from 31 states.

Wetland: Land, including submerged land, which consists of any of the soil types designated as poorly drained, very poorly drained, alluvial, and floodplain by the National Cooperative Soils Survey, as may be amended from time to time, of the Natural Resources Conservation Service of the United States Department of Agriculture. (Connecticut General Statutes Section 22a-38 (15)).

Wolf Tree: A very large, over-mature tree that is or was open grown. These trees tend to have large full crowns and numerous branches.

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