

Paugussett State Forest

Lower & Kazan Blocks Forest Management Plan



Forest Ecosystem Health & Diversity

The Lower and Kazan Blocks contain healthy and diverse ecosystems of oak ridges, red maple bottomlands, and hemlock slopes that provide highly functional, valuable, and resilient habitats for plants and animals.



Wildlife Habitat

New England cottontail is a Species of Greatest Conservation Need (SGCN) in Connecticut and regionally. Forest management practices in these Forest Blocks are implemented to benefit this species and allow known populations to expand and thrive. The Lower Block is also core habitat for other threatened species in Connecticut.



Climate Change Mitigation through Sequestration and Storage

Climate change is an important global issue. The management of the Lower and Kazan Blocks provides the opportunity to sequester and store carbon, through sustainable forest management, in vegetation and long-lived wood products.



Recreational/Health Benefits

The Blue-Blazed Zoar Trail provides over 6.5 miles of scenic trail in the Lower Block along Lake Zoar, offering the public recreational opportunities and a place to explore in a healthy and active way.



Economic Benefits

The following plan outlines timber harvesting activity on 191 acres. These sustainably harvested forest products provide jobs and raw materials for a locally-sourced, forest-based, green economy.



Increasing Resilience

The plan recommends silvicultural treatments that will create a diverse mix of tree species and age classes. The plan will increase the amount of young forest while still designating 906 acres, or 71% of the total forested acres in both Blocks, for passive management. Diverse forests are resilient forests.



Forest Protection

The plan addresses threats such as wildfire, extreme weather events, exotic invasive plants, insects, pathogens, and unauthorized use. Management strategies are outlined for each of these threats to protect this valuable public forestland asset.



STATE OF CONNECTICUT

DEPARTMENT OF ENERGY AND ENVIRONMENTAL PROTECTION



Bureau of Natural Resources

Division of Forestry

FOREST MANAGEMENT PLAN

2022-2032

Paugussett State Forest Lower and Kazan Blocks

1,313 acres

Newtown, Connecticut

Approvals:

6/28/2022

N/A

Christopher Martin, Director
Division of Forestry

Date

Bureau Chief
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6/28/2022

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Date

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Introduction

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

The [2020 Connecticut Forest Action Plan](#) was developed to address these needs with input from the DEEP, its partners, and various user groups. It serves as 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. Protect forests from threats;
3. Enhance public benefits from trees and forests.

The following objectives were considered in developing the management plan for the Lower and Kazan Blocks of Paugussett State Forest.

1. **Forest Ecosystem Health and Diversity** – Healthy and diverse forest ecosystems provide highly functional, valuable, and resilient habitats for plants and animals.
2. **Climate Change Mitigation through Sequestration and Storage** – Climate change is an important global issue. The sustainable management of the Lower and Kazan Blocks provides the opportunity to sequester and store carbon in above and below ground vegetation and long-lived wood products. Forest management can also improve a forest’s adaptability under changing conditions.
3. **Economic Benefits** – Sustainably harvesting forest products from Connecticut’s State Forests provide local jobs and goods that are sold in the local economy. The following plan outlines timber harvesting activity on 191 acres. State Forests also provide a model for private forest landowners to consider when managing their own properties.
4. **Forest Protection** – Managing Connecticut’s State Forests allows threats, such as wildfire, weather events, invasive plants, insects, and pathogens, and unauthorized use, to be addressed. This helps maintain healthy and productive forests.
5. **Wildlife Habitat** – Many of Connecticut’s wildlife species use a wide variety of forested habitats. Forest management deliberately creates habitat diversity. New England cottontail is a Species of Greatest Conservation Need in Connecticut that relies on young forest habitat.
6. **Recreational/Health Benefits** – Connecticut’s State Forests offer many recreational opportunities. The Blue-Blazed Zoar Trail provides over 6.5 miles of scenic hiking trail in the Lower Block of Paugussett State Forest.
7. **Increasing Resilience** – The plan will increase the amount of young forest habitat, while designating 906 acres, or 71% of the total forested acres in these Blocks, as areas that will not undergo active management. Diverse forest systems are more resilient to disturbance and change.

DEEP welcomes questions and comments regarding the management of state forest lands and encourages public engagement 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.

A. Executive Summary

Paugussett State Forest is in Newtown, Fairfield County, Connecticut. It consists of three Blocks; Upper, Lower and Kazan, comprising a total of 2,118 acres. This management covers the Lower and Kazan Blocks.

Lower Block

The Lower Block of Paugussett State Forest consists of 1,100 acres on the western shore of Lake Zoar. Most of the Lower Block was acquired by the State in the mid-1940s. It contains 7.7 miles of the Blue Trail system, including the popular 6.5-mile Zoar Trail.

Kazan Block

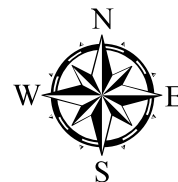
The Kazan Block of Paugussett State Forest consists of 213 acres, including the 13.8-acre Warner Pond. This Block is separated into two compartments. Compartment 1, located south of Route 34, is 153 acres. It was bought in 2002. Compartment 2, located north of Route 34, is 60 acres. It was given to the State in 2003.

- 1) Since 1973, 222 acres in the southern section of the Lower Block have been harvested. Poor access, nearby housing, and rugged terrain, such as steep slopes and wetlands, limit management potential for the northern section of the Lower Block and much of the Kazan Block.
- 2) The Wildlife Division has identified the Lower and Kazan Blocks as important habitat areas for the New England cottontail (NEC), a Species of Greatest Conservation Need (SGCN) in Connecticut and regionally. NEC is associated with young forest habitat and dense understory conditions.
- 3) Three hundred sixty-five (365) acres (33%) of the total acreage of the Lower Block will eventually be managed. Under this management plan, 191 acres (17%) of the Lower Block will undergo selection harvest. No active management is planned in the Kazan Block.

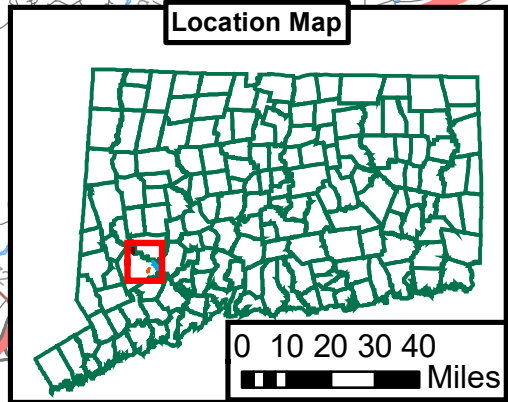
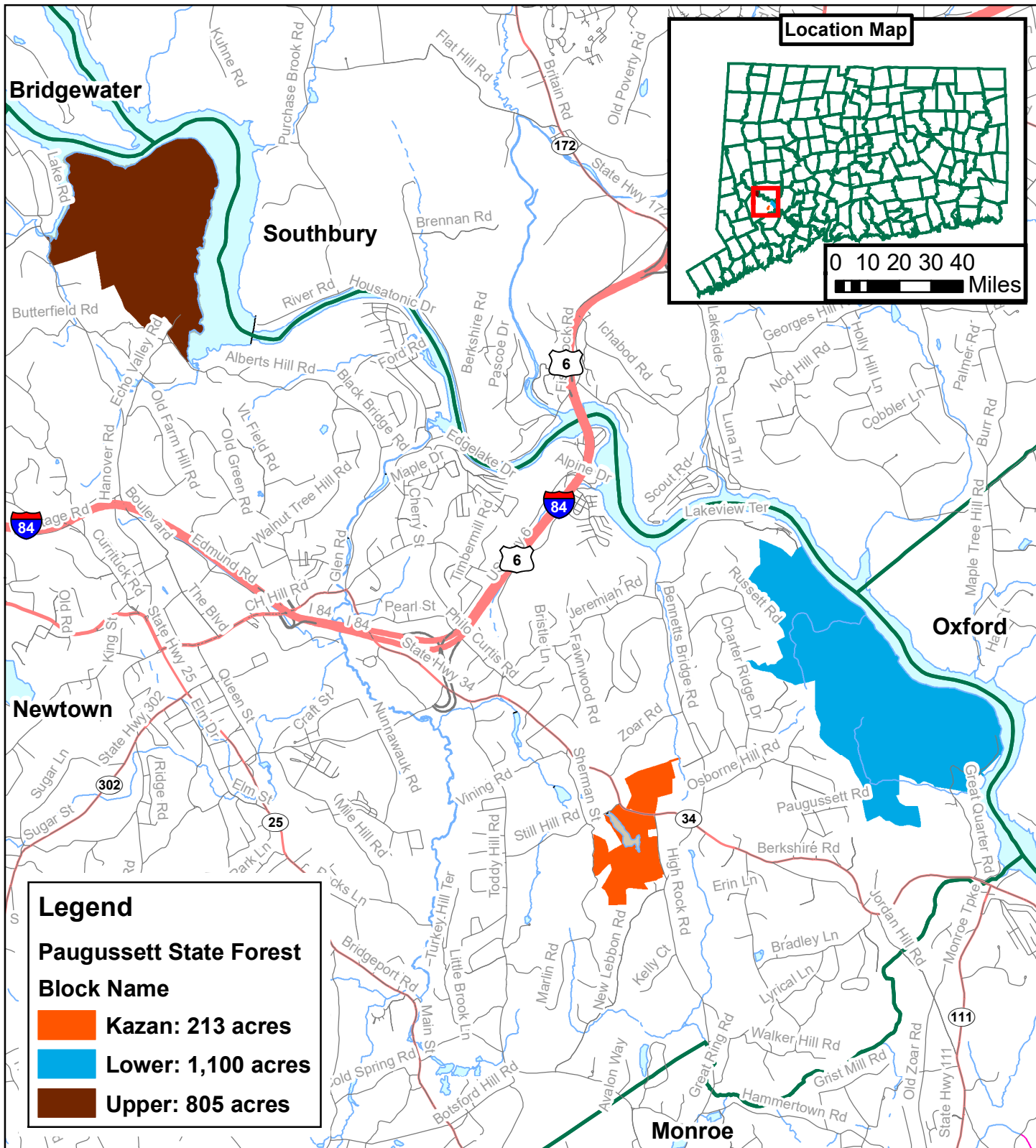


Paugussett State Forest

Location of Forest Blocks Newtown, Connecticut



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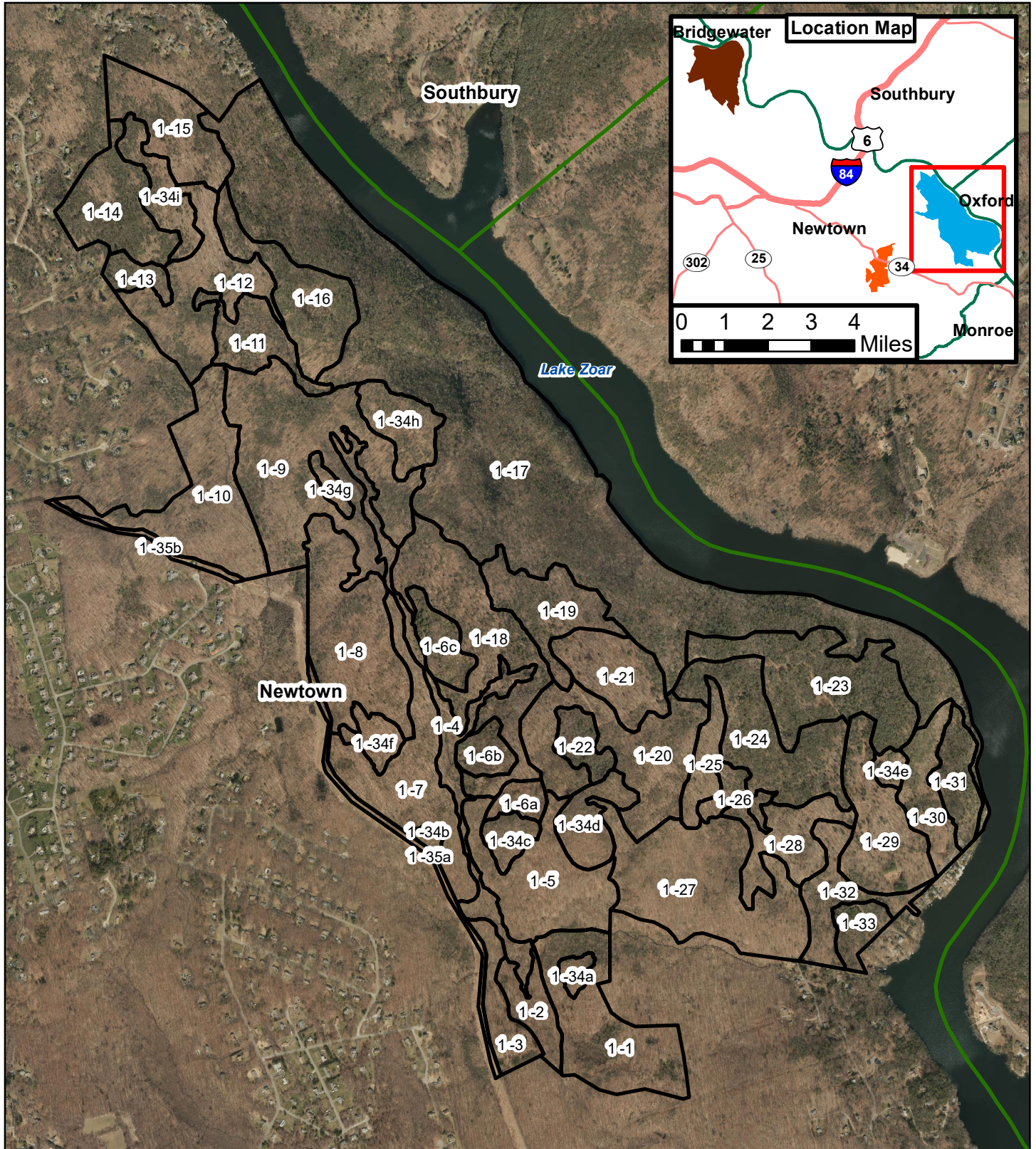
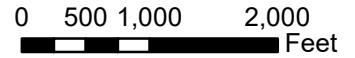


Paugussett State Forest Lower Block Forest Stand Reference Map

Newtown, Connecticut
1,100 Acres



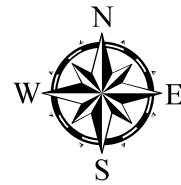
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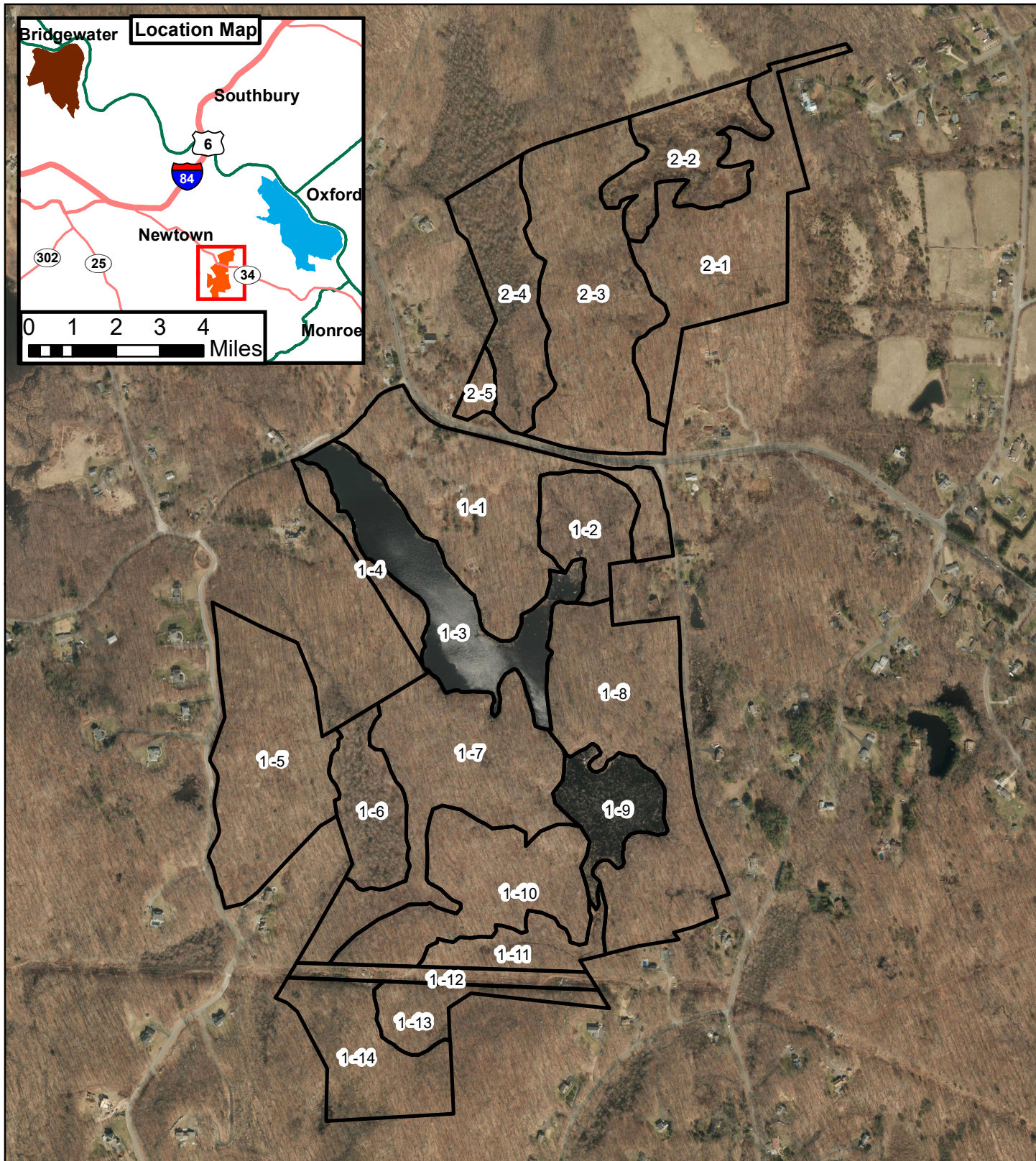
Paugussett State Forest Kazan Block Forest Stand Reference Map

Newtown, Connecticut
213 Acres



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B. History

Reason for acquisition and funding sources

Lower Block

Much of the Lower Block was acquired in 1945 by the State Park and Forest Commission (now DEEP) to be used primarily for recreation along Lake Zoar. It was referred to as Paugussett State Park when it opened to the public in the spring of 1945. However, rough terrain, limited access, and insufficient funding affected the plans for campgrounds, developed picnic and recreation areas, and a possible fish hatchery. In a 1954 review of the property by the State Park and Forest Commission, plans for recreational development already seemed unlikely. It was noted that the forest was too young to be harvested with logging operations and most of the wood was difficult to access because of the topography.

Land was purchased with state funds or donated to the State Park and Forest Commission. Over 78% of this Block (860 deeded acres) was bought from Harold C. Kimball and Stathes T. Georges for \$70,000. Kimball and Georges, from Yonkers and New York City, New York, respectively, acquired the land from the American Brass Company in 1930, likely hoping to develop prime real estate near Lake Zoar. The Great Depression and World War II halted development plans and the State bought the property. A 55-acre parcel was donated to the State by George Waldo, owner of the Bridgeport Post and Chairman of the Connecticut Park and Forest Commission in the 1940s. He donated many pieces of property to the State. George Waldo State Park in Southbury is named after him. The Fairfield County League of Sportsmen's Clubs donated \$1,600 to be used for land purchases at the end of Stone Bridge Trail, demonstrating their interest in this area. Later in 1945 and into 1946, 133 additional deeded acres were purchased from several abutting landowners.

In 1967, 27 deeded acres were purchased at the end of Stone Bridge Trail. In 1968, a 59.65-acre parcel and 10-acre parcel were partially gifted to the State from the Morris Family. This land was to be called the Charles G. Morris and Elisabeth Woodbridge Morris Tract in recognition of their interest in Connecticut woodlands. Charles G. Morris was a lawyer and businessman with significant civic and municipal involvement throughout his life. His wife, Elisabeth Woodbridge Morris, was one of the first women to earn a Ph.D. from Yale University. The State paid the six Morris children \$6,900 each (a total of \$41,400) for these parcels of their inherited property with a deeded acreage of 69.65 acres valued at \$49,000; the difference in purchase price versus actual value was gifted to the State by the grantors.

In 1991, the Iroquois Gas Transmission System, L.P., constructed a gas pipeline which would have fragmented the State Forest. Iroquois agreed to purchase privately held land east of the gasline and donate it to the State. The State transferred or sold its land west of the gasline. As a result, the State lost acreage west of the gasline and acquired parcels east of the gasline. These were the most recent acquisitions in the Lower Block.

Kazan Block

The Kazan Block was acquired from the Kazan family in the early 2000s. Compartment 1, south of Route 34, was bought by the State in 2002 for \$1,100,000. Compartment 2, north of Route 34, was given to the State in 2003.

Development of resource before and after acquisition

The name “Paugussett” (there are many historical variations of the spelling) comes from the Paugussett Native Americans, who once occupied a large region of western Connecticut, from Norwalk to West Haven and from Long Island Sound as far north as they could navigate on the Housatonic and Naugatuck Rivers. The name Paugussett can be translated as “where the river widens out” or “place of the shallows”. According to some sources, this tribe was divided into four subgroups. The people that resided in the area which now includes Paugussett State Forest were known as the Pootatuck (also Potatuck or Pohtatuck). This name can be translated to “place of the waterfalls”. Some sources list the Paugussett and Pootatuck as separate tribes and state that as the Paugussett tribe fragmented, some members may have joined the Pootatuck. The Pootatuck tribe spoke an Algonquian language and likely farmed, hunted, and fished in the area.

After initial contact with English settlers in the early 1600s, the Paugussett tribe quickly began losing land to colonists, sometimes for a token payment. By 1700, approximately one-third of their original territory of 800,000 to 900,000 acres was owned by settlers. By 1800, only 1,100 to 1,700 acres remained Paugussett land and the tribe had been fragmented. The Pootatuck subgroup began to lose land more rapidly beginning in the 1700s as settlements expanded into their territory. In 1705, the Pootatuck sold most of their land. According to local history, this included about 60 square miles in what is now Newtown, where Paugussett State Forest is located, that were sold to three settlers for “four guns, four broadcloth coats, four collars, ten shirts, ten pairs of stockings, forty pounds of lead, ten pounds of powder, and forty knives”. In the mid- 1700s, as the Pootatuck people were dispersing and encroachments from neighboring settlers increased, the remainder of Pootatuck lands in Newtown were sold. The original location of their village was likely along the Housatonic River.

Newtown was incorporated in 1711. Early settlers likely used this part of town as woodlot and pasture. There was valuable timber in the area, including American chestnut. In the early 1700s, there is a reference to the General Assembly prohibiting the cutting of chestnut in this area for 3 years. This would have been an early, if not the first, forest conservation measure in the region.

Lower Block

In the 1890s, the Lower Block was owned by Coe Brass Manufacturing and then the American Brass Company, a consolidation of some of Connecticut’s largest brass companies (Coe Brass Manufacturing, Waterbury Brass Company, and Ansonia Brass and Copper). In the early 1900s, this company expanded into other parts of the United States, and at its peak produced roughly two-thirds of the brass in this country.

Brass manufacturing required huge amounts of charcoal to fuel the furnaces. The forests owned by these companies were heavily cut to make charcoal from approximately 1894 to 1911. In the Lower Block, there are many mounds where wood was burned in large piles to make charcoal. There is a chimney of a collier’s hut, where the collier, or charcoal maker, lived when he was tending the hearths. There are gullies along the steep slopes running down to Lake Zoar, where logs were pulled down the hill to be floated on the Housatonic River, before it was dammed. Aerial images taken in 1934 show that this Block was mostly young forest land regrowing after this intensive cutting.

Lake Zoar was created by Connecticut Light and Power (CL&P) when the Stevenson Dam was completed in 1919 to supply hydroelectric power. Lake Zoar flooded sections of the Zoar and Gray's Plain areas of Newtown. Land around the lake and the Stevenson Dam are now owned by FirstLight Power (FLP). CL&P also had a powerline right-of-way that cut across the southern portion of the Block and crossed Lake Zoar, but it is now abandoned and forested.

After State acquisition, plans for recreational opportunities along Lake Zoar, Ivy Brook, and Prydden Brook, as well as hiking trails and a hatchery on Prydden Brook were discussed. The Zoar Trail was established by the Connecticut Forest & Park Association (CFPA) but none of the other developments were built.

There have been other uses of this State Forest over the years. In the 1950s, the Boys Club of Derby and Shelton ran Camp Whippoorwill. It was next to Lake Zoar at the end of Great Quarter Road. In stand 1-28, there is a gravel bank along Great Quarter Road which was actively mined for gravel until the 1990s. There is also an area along the boundary between stands 1-30 and 1-31 that was once an informal shooting range, but it is no longer used.

The State Board of Fisheries and Game (now DEEP) created several wildlife plots in the southern section of the Lower Block in the 1960s and 1970s to promote game species habitat and improve hunting opportunities. Two plots were located in stand 1-3 and 1-29, where soil was plowed and conifers were planted. Some of these trees can still be found here. There are smaller plots in stand 1-5 that were cleared to create small openings. These plots have not been maintained and are reverting to forest.

Since the 1980s, Great Eighth Road, a gated access road off of Great Quarter Road, has been improved in stages to access harvest areas, and is now drivable for approximately 1.25 miles.

Stone Bridge Trail was improved for 0.3 miles to access stand 1-5, which was harvested in 1998. This road has a pressure-treated timber bridge over Ivy Brook.

Kazan Block

In aerial images from 1934, a large portion of this Block was in agricultural use. There were fields north and east of Warner Pond and there were several buildings on High Rock Road. Compartment 2 was primarily open fields and sparse forest cover. Compartment 1 was divided into multiple parcels under different ownership. Compartment 2 was owned by Charles G. Morris, who also owned property that is now part of the Lower Block. Stone walls, an old farm road, and the existing field (stand 2-2) also indicate this area was used for agriculture.

Elia Kazan began acquiring land here in the 1950s. Compartment 1 had his modern residence, a caretaker's farmhouse, a tennis court, a pool, and some outbuildings. After State acquisition, the buildings were torn down, the pool was filled in, and the tennis court was left unmaintained.

In 1973, the Kazan family had 196.4 acres certified as Forest Land under Connecticut's Public Act 490 (Connecticut General Statutes Sections 12-107a through 107-f), including acreage in what is now the Kazan Block. In 1996, the Town of Newtown received an easement from the Kazans to install a dry hydrant near

Warner Pond on Old Mill Road. CL&P (now Eversource) also received a right-of-way easement for transmission lines in stand 1-12.

Changes in the last 10 years

There have been no land use changes in the last 10 years.

C. Acres and Access

Acres

The Lower Block is 1,100 acres and the Kazan Block is 213 acres. Each Block is divided into compartments based on access. Compartments are numbered chronologically according to when that section was acquired by the State. Each compartment is further divided into stands, or individual management units of similar composition or site quality, to aid in management-making decisions.

Table 1.1. Acres of land in the Lower Block by land cover type.

| Lower Block | |
|--------------------|--------------|
| Land Cover | Acres |
| Forest | 1062 |
| Wetland | 28 |
| Gasline ROW | 10 |
| Total | 1100 |

Table 1.2. Acres of land in the Kazan Block by land cover type.

| Kazan Block | |
|--------------------|--------------|
| Land Cover | Acres |
| Forest | 153 |
| Field | 9 |
| Wetland | 28 |
| Waterbody | 20 |
| Transmission ROW | 3 |
| Total | 213 |

Access: Roads for Public, Management Access, and Gates

Lower Block

One of the most difficult aspects of managing this Block is the limited access. Only the southern portion is accessible by road. Great Eighth Road has been improved in increments as harvests are conducted to gain access farther north into the Block. This road could be improved to allow access to more northerly stands. Stone Bridge Trail has been improved for 0.3 miles. There are several ways to access the Lower Block by foot or bike on trails from town roads and access easements. There are also Newtown Open Space parcels that are or could potentially be used for pedestrian access to this Block.

- 1) Great Quarter Road- There are two official parking areas along this town road. One is at the end of Great Quarter Road and the other is at the entrance to Great Eighth Road. There are gates at the end of Great Quarter Road and at the entrance to Great Eighth Road.
- 2) Stone Bridge Trail- There is an official parking area where Stone Bridge Trail enters the Lower Block. The road forks at the parking area. There are gates where each of these roads enters the Block. Stone Bridge Trail is an old town road. The town right-of-way continues across Ivy Brook and turns east, eventually connecting to Great Quarter Road near Ivy Brook Lane. Stone Bridge Trail is drivable for 0.3 miles until it turns east after crossing Ivy Brook. (This road is also called Lattin Road on some older maps.)
- 3) Charter Ridge Road/Chambers Road- Charter Ridge Road is a town road built as part of the Cider Mill Farm Subdivision in 2002. It crosses the roadbed of Chambers Road, an old town road (Chambers Road is referred to as Old Gelding Hill Road on some older maps). Chambers Road is used for walking and biking access. It crosses the Iroquois Gas Transmission System right-of-way and becomes the northern boundary of the Lower Block for approximately 0.3 miles before it enters the Lower Block. The old town road extends approximately 0.4 miles into the Lower Block.
- 4) Paugussett Road- There is parking at the end of this road. The Blue/Yellow blazed trail leads from the end of the road and enters the State Forest after crossing Iroquois Gas Transmission System property.
- 5) Leopard Drive- There is parking at the end of this road. The Blue/Red blazed trail leads from the end of the road and enters the State Forest after crossing Newtown Open Space and Iroquois Gas Transmission System property.
- 6) Russett Road- There is a 10-foot-wide pedestrian easement leading to the Lower Block that was created by the Town of Newtown as part of the Cider Mill Farm Subdivision, without notifying the DEEP. It is marked with Newtown Conservation Commission staked signs. The popular trail crosses private property before following the pedestrian easement into the Block. Despite the intended use as a pedestrian easement, it is used by mountain bikes and off-road vehicles.
- 7) Andras Road- There is a 50-foot-wide, 0.11-acre parcel of the Lower Block accessible from Andras Road that allows pedestrian access to Lake Zoar. There is no parking at this location.
- 8) Pequot Trail- Some maps show the Pequot Trail, an old woods road, leading into the northern end of the Lower Block from property developed by the Cedarhurst Association. An existing "Travelled Way" leading from Spring Trail to State Forest land is referenced in Newtown property maps and a deed for a neighboring property states, "Said premises are subject to... Rights of other to pass and repass over Pequot Trail." The exact location of this trail is unknown and has not been marked, but it is likely used as a driveway by the neighbors.

- 9) Other Newtown Open Space and public access easements- There are several areas of Newtown Open Space on the western boundary of the Lower Block and associated public access easements that lead to the town property. These could be potential access points to the Lower Block but are not heavily used.
- 10) Lake Zoar- There is boating access on flat areas along the shore of Lake Zoar.

Kazan Block

This Block has roughly 1.4 miles of road frontage, but access is limited due to stone walls, wetlands, and steep banks.

- 1) Route 34 (Berkshire Road)- There is a small pull-off on the southern side of Route 34. A trail leads into the Block.
- 2) Old Mill Road- There are two small, dirt pull-offs for one car each on Old Mill Road, just north of Warner Pond. Trails from here lead to the lake. The old driveway to the Kazan houses is blocked with a pole gate.
- 3) Hoseye Coach Road- There is limited pull-off parking along Hoseye Coach Road, although there are no established or regularly used access points.

Inaccessible Areas and Access Potential

Lower Block

Approximately 290 acres of operable forested land are currently inaccessible. Chambers Road could potentially be used for access to the western side of the Block, although extensive road work would be required. There are no plans to improve this road. Great Eighth Road could be extended, but it would require extensive road work. There are no plans to improve it beyond stand 1-19. If these improvements were completed, 103 operable acres north of Prydden Brook would still be inaccessible.

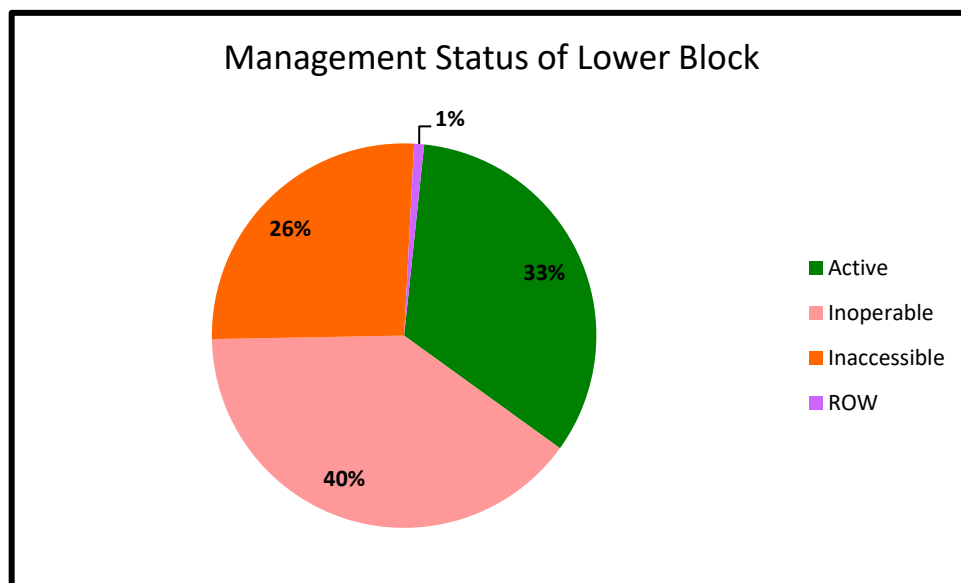


Figure 1.1. Management status of the Lower Block by percent of total acreage.

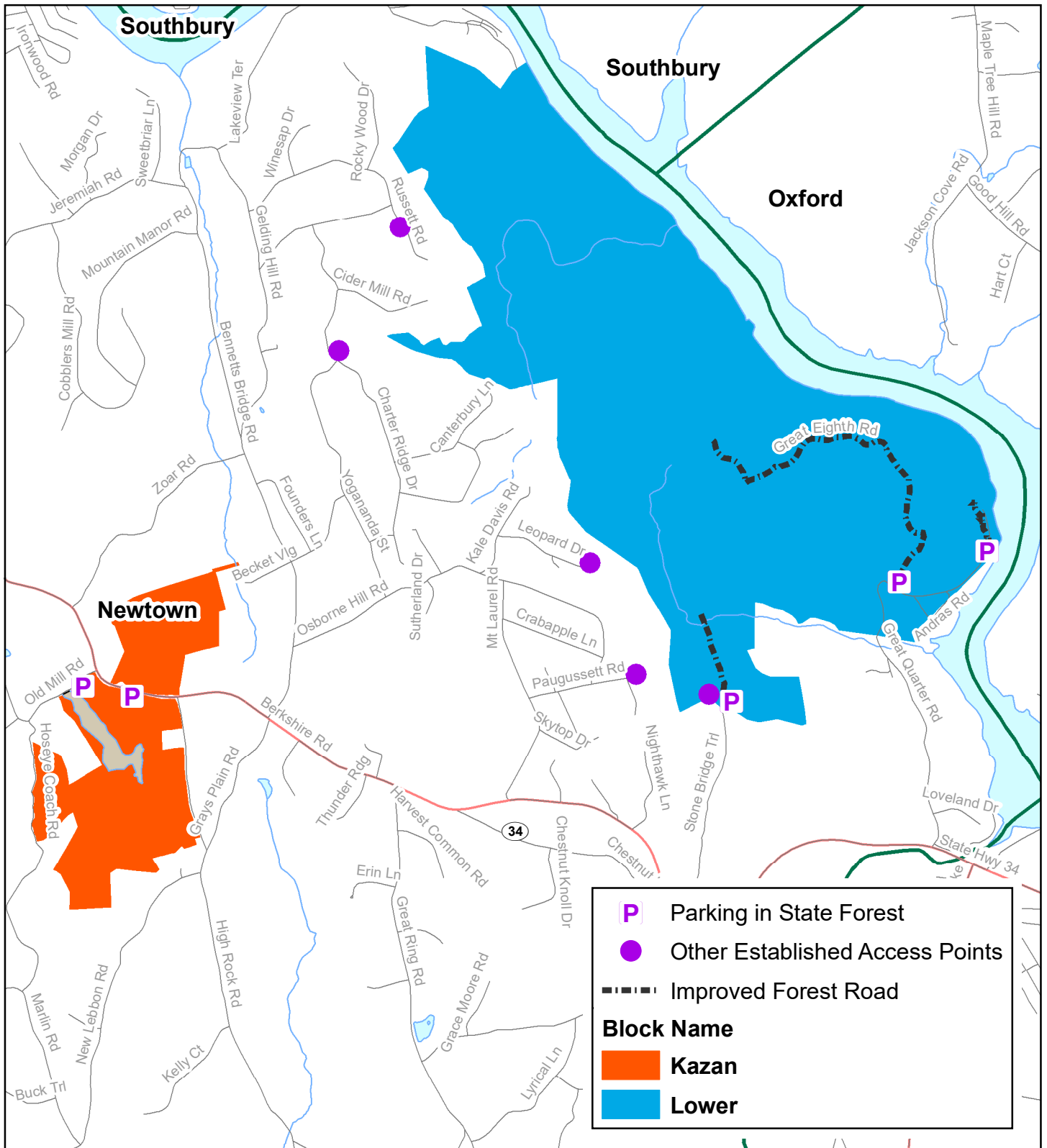
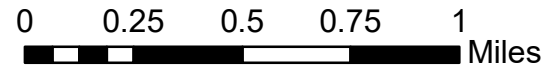


Paugussett State Forest Lower and Kazan Blocks

Access Points and Gated Forest Roads



January 2021
Prepared by: J. Humphreys



Kazan Block

One hundred twelve (112) acres of Compartment 1 are inaccessible due to wetlands, waterbodies, steep slopes, stone walls, and nearby houses. Stands 1-1, 1-5, and 1-8 could potentially be accessed with significant improvements. However, no improvements for access are called for in this management plan.

Forty (40) acres of Compartment 2 are currently inaccessible due to a steep slope along Route 34 and wetlands.

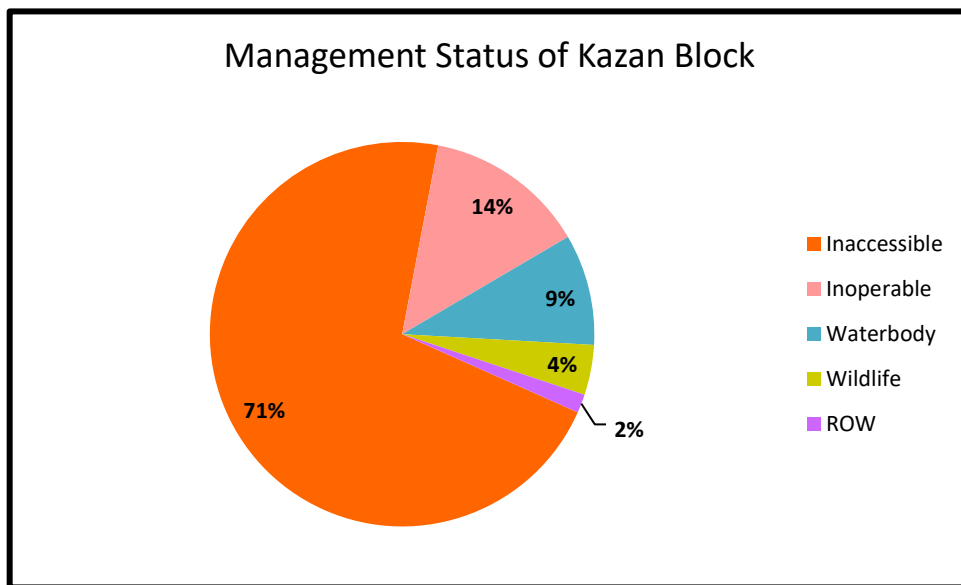


Figure 1.2. Management status of the Kazan Block by percent of total acreage.

Rights-of-Way

Lower Block

The Iroquois Gas Transmission System, LP., has a gasline right-of-way for approximately 1.6 miles along the western boundary of the Block (stands 1-35a and 1-35b). The boundary approximately follows the centerline of the cleared right-of-way.

FirstLight Power has flowage rights up to 110 feet elevation according to their Stevenson Dam project boundary along Lake Zoar. The State owns to approximately 98 feet elevation, which is below the lake’s usual water level. There is also a 0.7-mile stretch of abandoned CL&P powerline in the southern part of the Block; it crosses Great Quarter Road and runs northeast to Lake Zoar.

Kazan Block

Eversource has a transmission line right-of-way in the southern part of Compartment 1 (stand 1-12).

Boundary Conditions and Total Miles of Boundary

Lower Block

The Lower Block has 8.1 miles of perimeter boundary line and 1 mile of roadside boundaries along Great Quarter and Andras Roads. To the east, 2.4 miles of boundary follow the shore of Lake Zoar and are not marked. To the west, 1.6 miles of boundary follow the gasline right-of-way and were marked with wooden posts in the early 2000s after the gasline was completed. The rest of the boundary line was refreshed between 2018 and 2020. The boundary will be maintained again in 2027.

Kazan Block

The Kazan Block has 4.6 miles of boundary line. Almost 1.4 miles are roadside. The boundary line was refreshed from 2019 to 2020. The boundary will be maintained again in 2028.

Known Boundary Problems

Lower Block

When the Iroquois Gas Pipeline was established and land was swapped to create what is now the western boundary of the Block, some monumentation was lost. There is a 12.8-acre parcel, west of stand 1-8, that could not be established as part of the State Forest and includes land to the east and west of the gasline. The boundaries marked in the field exclude this parcel, as do the maps in this plan. DEEP's Land Acquisition and Management Office has been contacted about this parcel.

An agreement was reached with FirstLight that the State Forest boundary extends into Lake Zoar to 98 feet in elevation. This elevation is below the usual water level. On the maps for this management plan, the shoreline of Lake Zoar is used as the boundary line.

Kazan Block

For approximately 0.34 miles, the western boundary of Compartment 2 is not marked. This boundary line crosses a wetland. Evidence of corner monuments could not be found. Unfortunately, a Class A-2 survey was not acquired in 2003 when the property became part of the Kazan Block.

D. Special Use Areas

Lakes and Ponds

Lower Block

This Block is located on the western shore of the 909-acre Lake Zoar. Lake Zoar is a popular recreation area, open to boating and fishing. DEEP Fisheries stocks this reservoir with walleye and does electrofishing sampling and creel surveys.

Kazan Block

Warner Pond (stand 1-3) is a 13.8-acre pond open to fishing and non-motorized boats. It feeds into Curtis Pond and Curtis Pond Brook, a tributary of the Pootatuck River. There is beaver activity, and several wood duck boxes have been installed. Stand 1-9 is a 6-acre waterbody that feeds into Warner Pond resulting from beavers damming an unnamed stream that originates to the east of High Rock Road. The snags in this wetland provide nesting sites for a Great Blue Heron rookery.



Figure 2. Warner Pond (stand 1-3) is a shallow pond that has significant beaver and wildlife activity.

Rivers and streams

Lower Block

Ivy Brook and Prydden Brook are the named tributaries of Lake Zoar that flow through the Lower Block. Ivy Brook has been sampled by the DEEP Fisheries Division. Data indicates a population of wild Brook Trout. Blacknose Dace and Creek Chub were other species found during sampling in 2019. Prydden Brook has not been sampled. It is a significant recreational area because there is a waterfall where it empties into Lake Zoar.

There are other unnamed intermittent streams in this Block.

The DEEP Fisheries Division Riparian Corridor Protection policy recommends a vegetated buffer of at least 100 feet around perennial watercourses and 50 feet around intermittent watercourses (<https://portal.ct.gov/-/media/DEEP/fishing/restoration/RiparianPolicypdf.pdf>). This buffer will be maintained wherever possible along watercourses within sale areas.

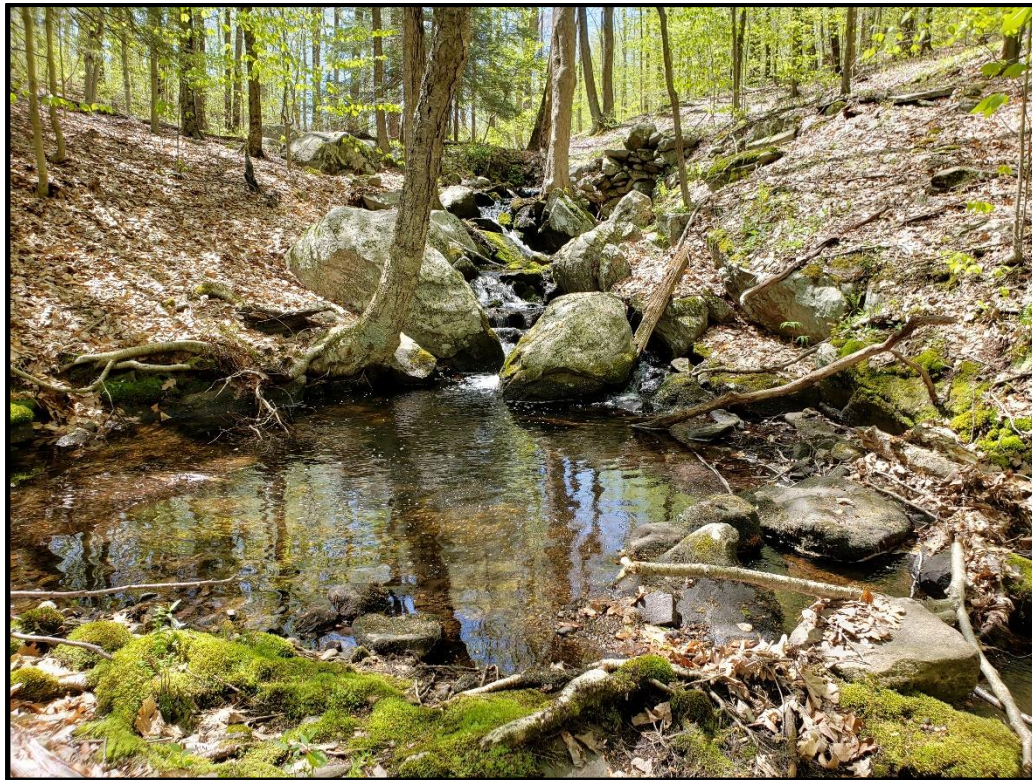


Figure 3. An upper branch of Prydden Brook flows through stand 1-10.

Kazan Block

A branch of Gelding Hill Brook is located along the easternmost boundary of Compartment 2 where it travels for approximately 50 feet through stand 2-1. This brook is a tributary of Lake Zoar.

Cultural/Historic Sites

Lower Block

There are the remains of a collier’s hut (Figure 4.) and many charcoal mounds (Figure 5.), dating from the late 1800s to early 1900s when the land was used for charcoal production by brass companies.

The foundation of a cottage, called “Maher’s Cottage”, is in stand 1-17, on the bank above Lake Zoar near the Blue Trail. The cottage burned down in 1975. The parcel was acquired by the State in 1988. There is also a stone foundation and stonewalls in stand 1-3, dating to when the western edge of the Block was in agricultural use.



Figure 4. The stone chimney of a collier's hut in stand 1-18.

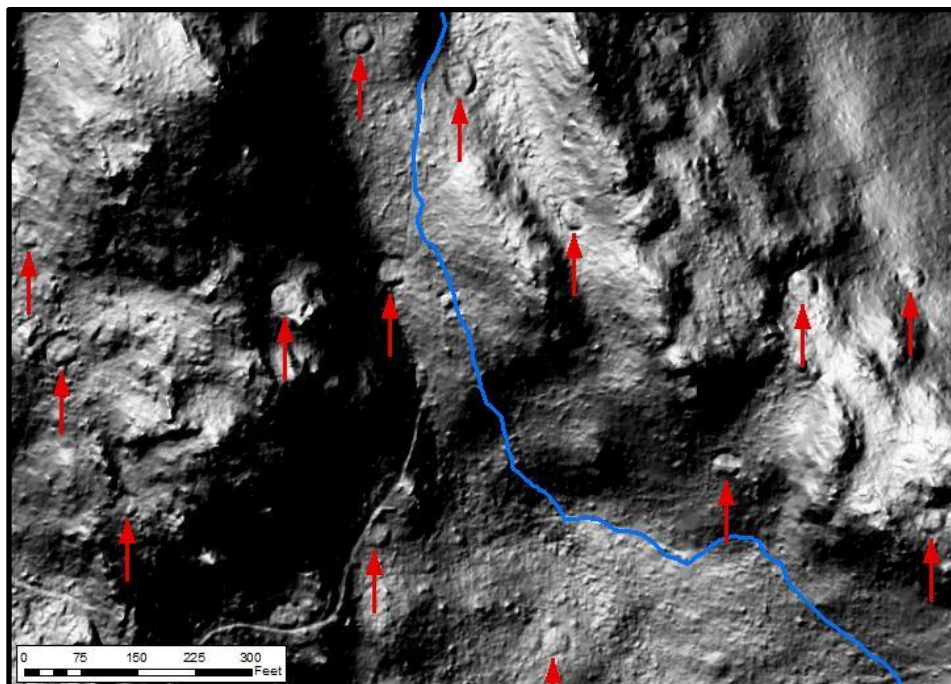


Figure 5. Charcoal mounds can be found throughout the Lower Block. The faint circles can be hard to spot on the ground but are visible using LiDAR elevation mapping images. This image shows charcoal mound locations near the Zoar Trail north of Prydden Brook.

Kazan Block

Many stone walls can be found throughout the Kazan Block. Stand 2-2 is now an overgrown field. In stand 2-1, there is a collapsed cabin, possibly used by guests of the Kazan family.

In stand 1-1, the foundations of the main house and the caretaker's house are at the end of the paved driveway that enters the property from Old Mill Road. These houses were standing when the State acquired the property in 2002 but were demolished in the late 2000s due to vandalism. The tennis court and a small, collapsed outbuilding are nearby.

A review completed in 2007 by the Connecticut State Historic Preservation Office noted that the structures were historically important as the home of Elia Kazan, a film director, producer, screen writer, and novelist. Kazan was also controversial for his testimony to the House on Un-American Activities Committee regarding colleagues in the film industry. This review also mentions an in-ground pool and unmarked grave as historically significant features on the property. The pool was filled in and the unmarked grave has not been found since the review. The State Historic Preservation Office recommended securing the buildings against vandalism (before they were demolished) and conducting further research about the historic context of Elia Kazan and the property. However, there was no funding provided.

Recreation and Scenic Sites

Lower Block

An original reason for the acquisition of this land was for the potential recreational uses, particularly along the shore of Lake Zoar.

The approximately 6.5-mile Zoar Trail became part of the CFPA's Blue Trail system in the late 1980s. It is a large loop trail that follows the shoreline of Lake Zoar, then climbs steeply to the west and follows the top of the ridge, with its highest elevation at approximately 650 feet. In addition to the 6.5 miles of Blue-Blazed Trail, there is a 0.25 mile Blue-White blazed trail that follows Prydden Brook and two connector trails; the 0.80-mile Blue-Red blazed trail connects to Leopard Drive and the 0.45-mile Blue-Yellow blazed trail connects to Paugussett Road. The main access for the Zoar Trail is the parking area at the end of Great Quarter Road where there is an information kiosk, but the connector trails and other existing trails are also used for access. The trail is maintained by volunteers from the CFPA. Information regarding the Connecticut Blue-Blazed Hiking Trail System can be obtained by contacting the CFPA (<http://www.ctwoodlands.org>). These trails are only open to foot traffic by State Statute (CGS 23-10a), except where they overlap multiple use trails.

In addition to the trails that are part of the Blue Trail system, there are approximately 2.9 miles of old town roads and improved woods roads that are multiple use (some sections of the old town roads are in poor condition). There are an additional 5.5 miles of other existing hiking trails, including old woods roads, the gasline right-of-way, and connector trails from various access points. The hiking trails other than the Zoar Trail that do not follow old roadbeds are not authorized trails. The Housatonic Valley Chapter of the New England Mountain Bike Association (NEMBA) is working with DEEP to establish an approximately 6-mile approved mountain bike trail with access from Charter Ridge Road and Great Quarter Road.

There is a small flat area used for recreation along Lake Zoar, approximately 1.25 miles on the Zoar Trail from the Great Quarter Road parking area. Approximately 1.6 miles on the Zoar Trail from the Great Quarter Road parking area, Prydden Brook feeds into Lake Zoar where there is a waterfall and small flat area popular with

hikers and boaters.

This Block is open to all forms of hunting as per the current DEEP Hunting Guide.



Figure 6. This sign for the Zoar Trail is located near the parking area at the end of Great Quarter Road. Blue-Blazed hiking trails are only open to foot travel.

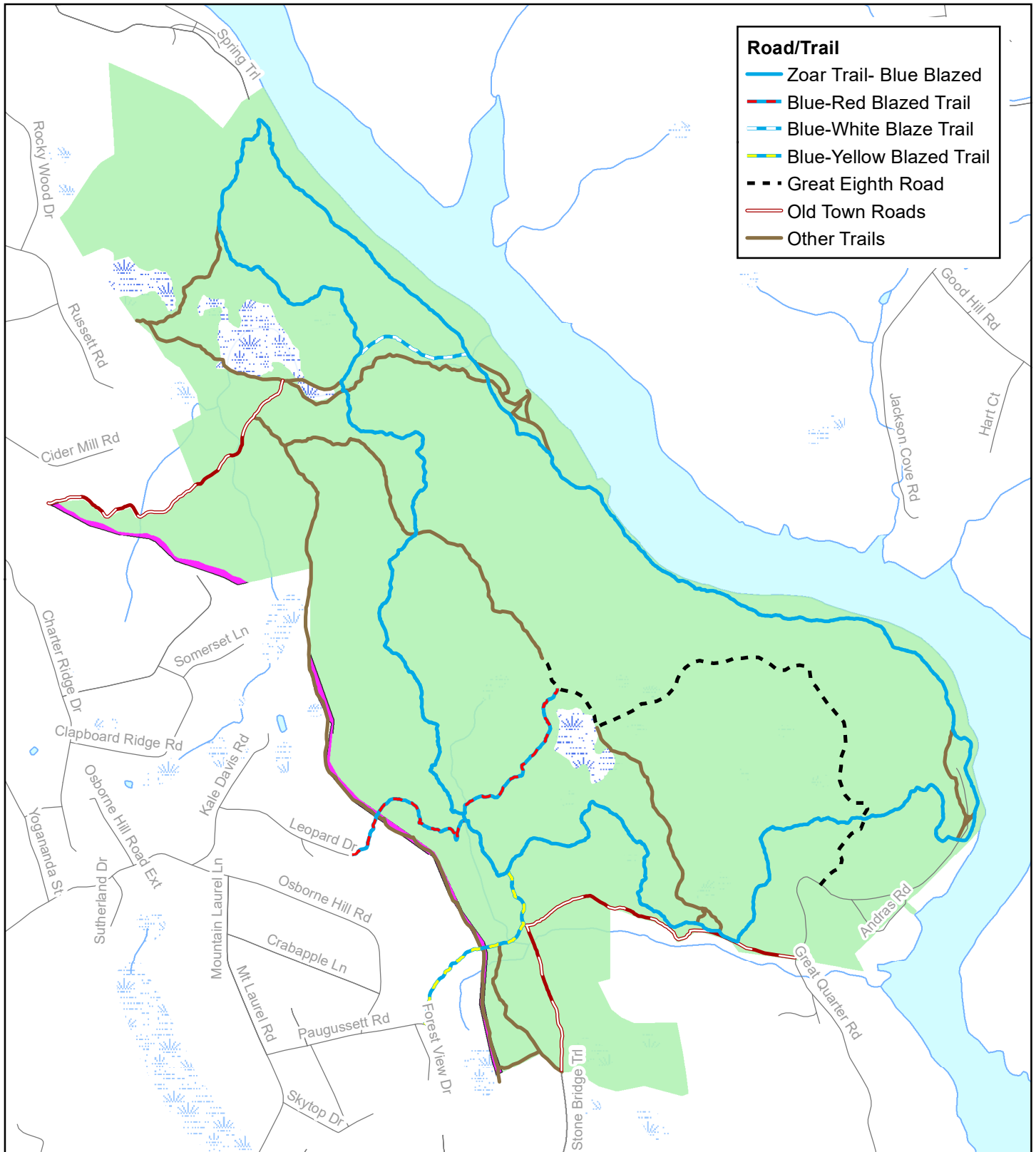
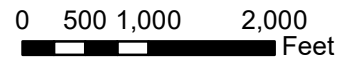


Paugussett State Forest Lower Block








Trails Map



January 2021
Prepared by: J. Humphreys



Road/Trail

-  Zoar Trail- Blue Blazed
-  Blue-Red Blazed Trail
-  Blue-White Blaze Trail
-  Blue-Yellow Blazed Trail
-  Great Eighth Road
-  Old Town Roads
-  Other Trails

Kazan Block

Warner Pond is used for boating and fishing. There is access to the pond from Old Mill Road. In 2006, the Newtown Bridle Lands Association (NBLA) proposed an equestrian trail in Compartment 1. The trail was approved by the State but is no longer active. NBLA signs can still be found along its route.

This Block is open to bowhunting only.

Natural Areas

There are no state-designated Natural Areas in the Lower or Kazan Blocks.

Old Forestland Management Sites

The Old Forestland Management Site land classification was created to set aside a portion of land to allow for the natural processes of forest stand development to occur without the influences of active forest management. There are no sites officially designated as Old Forestland Management Sites in the Lower or Kazan Block, although 906 acres of forested land and forested wetland will be passively managed.

Research Areas

A researcher from the biology department of Central Connecticut State University studying fisher (*Pekania pennanti*) obtained a permit to place triggered wildlife cameras and specified bait and scents at three sites in the Lower Block. The permit expired in May of 2021.

Pellet surveys for NEC occur periodically in these Blocks and will continue at sites of suitable habitat and/or where NEC were previously recorded. The Blocks are part of a standardized route for the annual Midwinter Eagle Survey along the Housatonic River. No other formal wildlife surveys occur within the Blocks.

E. Extensive Areas of Concern

Trails and Signs

Lower Block

The Lower Paugussett State Forest informational sign at the end of Great Quarter Road was updated in 2021 in collaboration with CFPA. CFPA volunteers maintain the 7.7 miles of the Blue Trail system in the Lower Block. CFPA "Foot Traffic Only" signs were posted by DEEP in 2020 where connector trails intersected Blue Trails to reduce mountain bike use of the trails (see Unauthorized or Illegal Activity).

The trail system in this Block is extensive. In addition to the Blue Trail, there are 20.4 miles of unmarked trails, including 2.9 miles of old town road and improved road, 5.5 miles of other hiking trails that follow old road beds or are not authorized, and 12 miles of unauthorized multiuse trails. There are many accounts of hikers unfamiliar with the area becoming lost on unmarked trails and being unable to rely on trail maps. CFPA volunteers installed trail map signs at intersections on the Blue Trails to help solve this problem.

Kazan Block

The Kazan Block does not contain maintained trails or DEEP signage.

Wetlands/Vernal Pools

Lower Block

There are many unnamed wetlands within the Lower Block. Stand 1-4 has wetland soils and includes significant wetland areas along Ivy Brook. Stands 1-11 and 1-13 are forested wetlands that feed into Prydden Brook. Stand 1-22 is a forested wetland and stand 1-26 also has periodically saturated soils. Stand 1-10 contains wetland areas along a branch of Prydden Brook, and the western edge of stand 1-27 has small patches of wetland. Stand 1-16 contains an approximately 1.5-acre wetland, located near the Zoar Trail. There are other scattered wetlands throughout the block

Stands 1-1, 1-21, and 1-27 each contain two vernal pools. There is one small vernal pool in stand 1-7 near the Blue-Red Trail.

Kazan Block

Stands 2-4, 1-2, 1-6, and 1-11 are large wetland areas. The southwestern most corner of Stand 1-14 is wetland as well.

Unauthorized or Illegal Activity

Lower Block

The Zoar Trails and the connector trails that are part of the Blue Trail system are the only authorized marked trails. The 2.9 miles of old town roads and improved service roads are also open for use and the 5.5 miles of other hiking trails primarily follow old woods roads or are used to access features and have minimal impact to natural resources. However, a 12-mile network of unauthorized multiuse trails is located throughout this Block. Trail construction has included cutting herbaceous plants, cutting downed trees, installing narrow wooden bridges and jumps, and raking or leaf-blowing the trails to expose mineral soil. Section 23-4-1 (b) of the general regulations of the Department of Energy and Environmental Protection states, "No person shall deface, destroy, alter, remove or otherwise injure in any manner any structures, buildings, vegetation, earth or rock material, trees, or fuelwood, nor shall any wildlife be molested or disturbed except as authorized by the Department of Energy and Environmental Protection." Unauthorized trails traverse wet areas and steep slopes that are now compacted, rutted, and eroded. Sections of the Blue Trail that are only open to foot traffic are also used by mountain bikes. This use increases compaction and erosion and degrades them.



Figure 7. Purple fringed bog orchids are a native flower that usually occur in wetlands. This orchid was found in a wetland in the Kazan Block.

These unauthorized trails also conflict with the DEEP’s mission to conserve fisheries, wildlife, and their habitats. All recreational trails fragment and degrade habitat by creating a constant disturbance to wildlife as well as creating avenues for non-native invasive plant introductions. According to the publication *Trails for People and Wildlife* (Stevens and Oehler 2019) published by the New Hampshire Fish and Game Department in collaboration with the U.S. Fish and Wildlife Service, trails can negatively impact wildlife within 400 feet of each side of a trail. Negative impacts include direct stress to wildlife such as changing the animal’s heart rate, temperature, or stress hormones. Animals may also change their foraging locations, reducing the habitat area available for their use and putting them at increased risk of predation. Because this Block is a significant NEC habitat, the increased number of trails is particularly impactful. **Using a 400-foot buffer on all trails in this block, only 9% of the total acreage remains undisturbed by recreational traffic.** The unauthorized trails in this block affect 115 acres within their 400-foot buffer that would otherwise be undisturbed by other existing trails. NEC populations that have been confirmed in this area fully or partially use the small percentage of land **outside** the 400-foot trail buffer.

Unauthorized use by mountain bikers and dog walkers can also negatively impact fish and wildlife-based recreation such as hunting and wildlife viewing. Hunters in this area have reported mountain bikes and unleashed dogs appearing in areas where there are no official trails, creating unsafe situations. Trails are important for providing access and recreational opportunities to the public in our State Forests. However, the authorization and construction of any trail needs to be well planned to maximize recreational opportunities while minimizing negative impacts. Creating unauthorized trails without DEEP permission constitutes vandalism (Sec 23-4-1). Existing unauthorized trails and any future unauthorized trails discovered on the property may be closed at the discretion of the Forestry Division.



Figure 8. A heavily used spur trail in the Lower Block that is accessed from town property. The layer of organic matter has been removed, exposing mineral soil and roots. The sediment from this trail flows directly into the stream.

There is also illegal off-road vehicle activity along the gasoline right-of-way (stands 1-35a and 1-35b) and on the gated portion of Stone Bridge Trail. A section of the Blue-Yellow Connector Trail, where it crosses stand 1-4, has been eroded by this activity, resulting in the release of sediment into Ivy Brook. A trail stabilization project is planned in this area for the summer of 2021. Motorized dirt bikes also regularly use sections of the Zoar Trail, causing increased compaction and erosion. Connecticut Forest and Park “Foot Traffic Only” signs were placed at trail intersections in the summer of 2020. Neighboring private landowners have reported illegal off-road activity in the northern section of the Lower Block as well. These vehicles are accessing the State Forest from adjacent Newtown Open Space and private land.

Mountain bike trails that connect with Blue Trails and/or are in NEC habitat areas will be posted as closed and blocked. This includes 4.3 miles of the 12-mile unauthorized trail system. Jumps found along any trails will be taken down. NEMBA is in discussions with DEEP to create an authorized mountain bike trail that will improve poorly laid out unauthorized trails and incorporate forest habitat and management considerations.

Multiple fire rings have been created along Lake Zoar and in other areas of the forest. This increases the risk of forest fire in this Block.

There have also been concerns raised by neighboring homeowners at the end of Great Quarter Road. When the paved parking area is at capacity, visitors park along Great Quarter Road in unauthorized locations. Dumping of trash and littering occurs regularly in this parking area.

Residents of Ivy Brook Lane have been using unauthorized parking areas in the State Forest on the northern side of Ivy Brook Lane.



Figure 9. This trail is not part of the Blue-Trail system and is heavily used by both mountain bikers and hikers. When a trail crosses a wet area, it tends to widen as users try to find drier ground.

On Andras Road, a neighbor's concrete drive that provides access to Lake Zoar is encroaching onto the State Forest property. This encroachment was confirmed after a survey was completed of 22 Andras Road for the State of Connecticut DEEP in 2012. The DEEP Land Acquisition and Management Unit is aware of the encroachment.

Kazan Block

In Compartment 1, there has been illegal dumping of landscaping material, including brush, plant cuttings, dirt, and woodchips, in the pull-off along Route 34 and in the old driveway used to access the property from Old Mill Road. The Connecticut Department of Transportation has cleared dumped material from the pull-off in the past. The foundation of the Kazan house is still present in stand 1-1. There is evidence that the chimney at the site is used for illegal fires.

There are 1.5 miles of unauthorized trails created by dirt bikes in Compartment 2, emanating from a neighboring property. EnCon Police were asked to investigate. A 400-foot buffer on either side of these trails impacts 45 acres, including areas of documented NEC habitat.

F. Wildlife Habitat – DEEP Wildlife

Wildlife Habitat Management

The DEEP Wildlife Division has a mission to *advance the conservation, use, and appreciation of Connecticut's wildlife resources*. The Wildlife Division supports the Forestry Division in planning forest management and conducting habitat management within State Forests. Although no dedicated wildlife habitat management has occurred within these Blocks within the past 25 years, forest management is an important strategy for the conservation of biological diversity. The timber harvests previously completed have helped maintain a healthy and diverse forest, and periodic firewood cutting activities have included the creation of numerous wildlife brush piles. Planning decisions and silvicultural treatments can sustain and create suitable habitat for a wide array of wildlife.

There are no wildlife impoundments within the Blocks, though Warner Pond provides open water and wetland habitat totaling approximately 21 acres. This site supports wildlife associated with wetland habitats, such as great blue heron and wood duck. Several wood duck nesting boxes have been installed in the Warner Pond complex by local conservation groups and may be monitored by DEEP in the future.

Habitat Composition and Landscape Context

Undeveloped open space provides important habitat for wildlife. The Blocks represent large tracts of forestland within the increasingly fragmented landscape of southwestern Connecticut. Newtown has experienced a -6.7% change in forest cover from 1985-2015; and is currently 63.6% forested (UConn Center for Land Use Education and Research (UConn CLEAR)). The Kazan Block contains two separate patches of core forest (<250 acres), while the Lower Block represents the largest patch of core forest (>1000 acres) in the town of Newtown, and one of the largest remaining patches of core forest in southwestern Connecticut

(UConn CLEAR). Conserving open space and maintaining healthy and resilient forests is important to sustain wildlife populations.

Following historical land clearing practices, the forest has grown continuously with limited disturbance resulting in a somewhat homogenous mid-successional forest. Connecticut's wildlife depends on a variety of habitats which today's landscape lacks. Forest management can mimic disturbance and deliberately create habitat diversity to create or sustain suitable conditions for certain wildlife. Non-forested upland habitats within the Blocks include shrubland and meadow, occurring primarily with utility rights-of-way. Though relatively small, these areas can provide important habitat for a variety of wildlife and beneficial insects and add to the overall diversity of habitats within the Blocks. The vegetation within rights-of-way are typically managed by the corresponding utility company.

New England cottontail (*Sylvilagus transitionalis*) is Connecticut's only native cottontail and has declined more than 85% throughout its range in the Northeast. It is associated with young forest habitats and dense understory conditions and is a Species of Greatest Conservation Need (SGCN) in Connecticut and regionally due primarily to habitat loss and forest maturation (CT WAP 2015). NEC have been documented within both the Kazan and Lower Blocks. The Wildlife Division has created Focus Areas that encompass extant NEC populations to better direct conservation efforts such as habitat creation and enhancement. Paugussett State



Figure 10. The New England cottontail prefers young forest habitat and thickets (photo by Tom Barnes).

Forest is located centrally within the Newtown-Oxford New England Cottontail Restoration Focus Area (Figure 11.). Currently, this Focus Area is estimated to have 1780 acres of suitable habitat; efforts to increase the amount of suitable habitat are needed to reach Focus Area population goals. Forest management aimed at creating suitable conditions for NEC is recommended to sustain or enhance existing populations. Silvicultural practices that create young forest and dense understory within mature forests can result in suitable habitat. Recommendations intended to benefit NEC have been incorporated into this management plan. A recent wildlife shelterwood harvest on adjacent town-owned land was completed in 2019 to benefit NEC.

While NEC is a focal species for young forest habitat creation, over 50 SGCN rely on young forest or shrubland. On that list are many songbirds such as eastern towhee, indigo bunting, prairie, chestnut-sided and blue-winged warbler; several State Listed reptiles; several small mammals; and many insects including pollinators. The harvests in this plan will benefit many species in this suite of shrubland/young forest-dependent wildlife in support of the 2015 [Connecticut Wildlife Action Plan](#). Additionally, large tracts of interior forest are important for many neotropical birds such as black-throated green warbler and worm eating warbler, two SGCN that occur at Paugussett State Forest. Sufficient amounts of habitat will remain in passive management

to support these species, and silvicultural practices that increase the horizontal and vertical structure of the entire forest can create habitat that these species rely on for nesting and raising young. Silvicultural practices that retain >80% canopy cover, such as selection harvests, are consistent with maintaining or creating suitable habitat for these species.

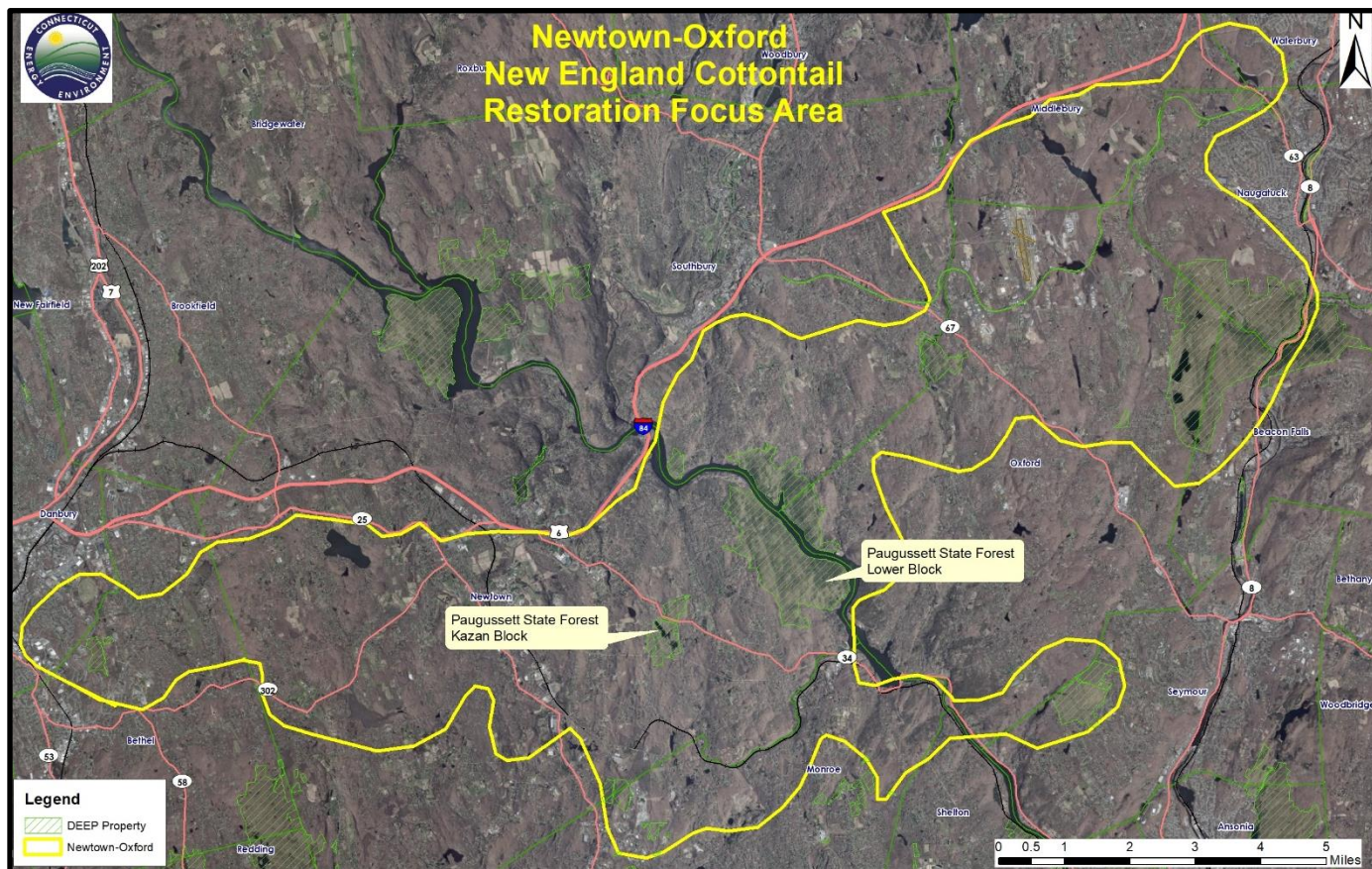


Figure 11. The Newtown-Oxford New England Cottontail Restoration Focus Area.

Wildlife-based Recreation

The Blocks are open to certain forms of regulated hunting, fishing, and trapping. The Kazan Block is a Designated Deer/Turkey Bowhunting Only Area, where deer and turkey hunting is permitted by archery methods only. This area is also open to small game hunting by archery methods only. The Lower Block is open to all forms of regulated hunting including small game, waterfowl, turkey, and deer hunting. There are no lottery restrictions for deer hunting in the Block. Regulated trapping is permitted in the Lower Block with a State Lands trapping certificate. Trapping is not permitted in the Kazan Block. Opportunities for passive wildlife-based recreation such as birding, wildlife photography and wildlife viewing are available year-round throughout the entire property.

Trails through State Forests provide a variety of recreational opportunities. Authorized trails are approved by the Forestry Division with consideration for forest, water, and wildlife resources. The network of recently established unauthorized trails damages vegetation, causes erosion, disturbs soil-vegetation relationships,

and were established without spatial consideration for wildlife resources. Closing unauthorized trails will benefit wildlife, help maintain healthy forests, and protect soil and water resources. The entire property is open to off-trail foot travel.

State-Listed Threatened and Endangered Plants and Animals

Several Natural Diversity Database (NDDDB) areas are located within the Blocks (Figure 12). A preliminary assessment of the Blocks was conducted by the Wildlife Division’s Ecological Services Program to identify critical biological resources within the area covered by this plan. A determination was received for the Lower Block on February 27, 2020; and a second Determination was received for the Kazan Block on March 2, 2020. These assessments identify the occurrence of four State-listed species (RCSA Sec. 26-306) within the Blocks: one reptile and three birds. Management recommendations were provided for each species with regard to forest management activities. Several state threatened and endangered species occur within adjacent properties. These Blocks form part of an important ecological corridor for wildlife. No areas of mapped Critical Habitat (CT Critical Habitats 2006) exist within the Blocks.

DEEP Forestry and Wildlife will consider all management recommendations provided by NDDDB when planning and implementing management activities. Silvicultural practices that create early successional forest will benefit some of the listed species that occur on the property. Each harvest operation will obtain a site-specific NDDDB review before starting to protect and potentially enhance habitat for State-listed species.

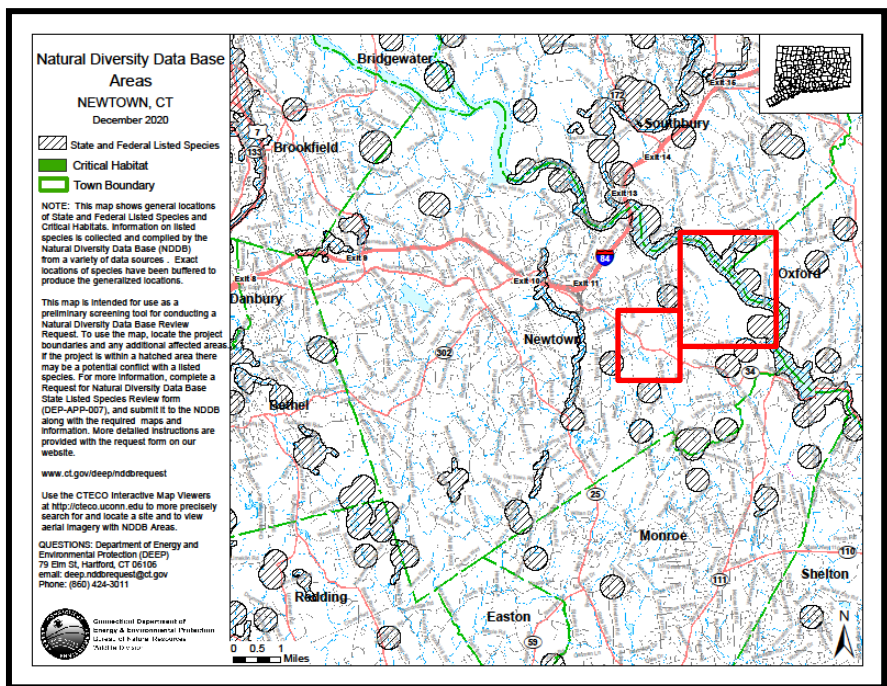


Figure 12. DEEP NDDDB Review of Newtown with Lower and Kazan Block areas indicated.

Lower Block

There is one known reptile classified as a State Species of Special Concern. There have also been occurrences of two bird species identified as threatened in Connecticut: bald eagle (*Haliaeetus leucocephalus*) and northern goshawk (*Accipiter gentilis*). Goshawk have not been seen in the area for over 15 years, but a historical nesting site is noted in the NDDDB Review. Bald eagles are federally protected and use winter roosting areas along Lake Zoar. No activities are planned in this area. The DEEP Wildlife Division recommends a 660-foot (200 meter) set back from critical roosting sites with no public access, but the Zoar Trail follows the shoreline of Lake Zoar closely in this area.

The Lower Block is also included as a connector in a Core Block in the HUC6 Terrestrial Core-Connector

Network (McGarigal et al 2018) as part of the Nature’s Network project. These core and connector areas “represent the ecological network designed to provide strategic guidance for conserving natural areas, and the fish, wildlife, and other components of biodiversity that they support within the Northeast” (McGarigal et al 2017). Focal Species in this core area include a reptile species, cerulean warbler (*Setophaga cerulea*), and wood thrush (*Hylocichla mustelina*). Cerulean warbler is a State Species of Special Concern that benefit from unfragmented, structurally diverse deciduous forest. Wood thrush is a common but declining species in Connecticut that also prefers deciduous forested areas.

Kazan Block

There are two known State Species of Special Concern: broad-winged hawk (*Buteo platypterus*) and one reptile. Broad-winged hawk has been noted in the southern section of Compartment 2. Its breeding season extends from April 15th to the end of July. It benefits from large, unfragmented forest blocks. No work is planned near the known location of this species, but if an active nest is found, any new activity will provide a 660-foot (200-meter) buffer around the nest.

The reptile species of Special Concern found in both forest Blocks is threatened by habitat loss, fragmentation, and degradation from development. It benefits from a patchwork of habitat types, minimal soil compaction, and large woody debris. Individuals can be directly affected by forestry activity at any time of year because they are terrestrial and overwinter in upland forest areas under a few inches of soil. Activities planned in areas where it may occur will incorporate DEEP Wildlife recommendations to help protect this reptile.

G. Vegetative Condition

Management History

Table 2. Timber harvests recorded in the Lower Block since 1973.

| Timber Harvests Recorded in the Lower Block since 1973 | | | | | |
|--|---------------|--------|-------|---|-------------|
| Year | Current Stand | Sale # | Acres | Harvest Type | Volume (BF) |
| 1973 | 31 | - | 16 | Hardwood Salvage | 33,540 |
| 1986 | 23 | W-27 | 37 | Hemlock/hardwood salvage (3 ac); Thinning (34 ac) | 98, 875 |
| 1992 | 35a, 35b | W-IR | 3 | Salvage of trees felled for Iroquois gas line | 10,600 |
| 1992 | 21 | W-186 | 21 | Shelterwood | 62,540 |
| 1997 | 1, 2, 3 | W-201 | 32 | Group selection (11 ac); Shelterwood (21 ac) | 112,400 |
| 1997 | 29 | W-206 | 29 | Thinning | 121,420 |
| 1998 | 5, 6a | W-209 | 34 | Shelterwood (27 ac); Patch cuts (7 ac) | 108,780 |
| 2001 | 6b, 6c, 18 | W-254 | 50 | Thinning (40 ac); Patch cuts (10 ac) | 127,440 |

Forest Cover Types, Size Classes, and Condition

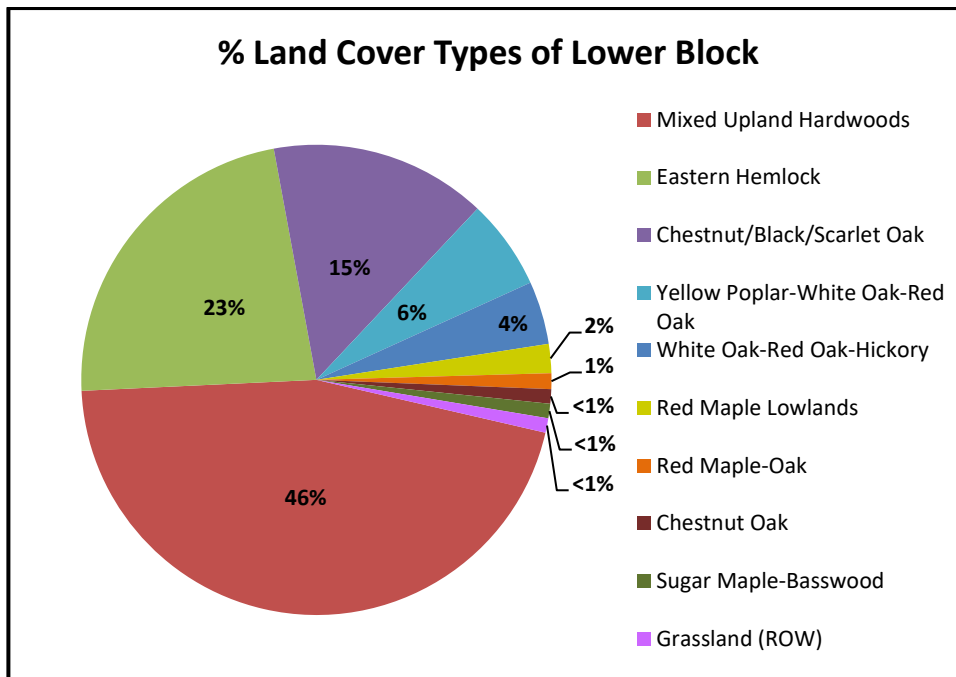


Figure 13.1. Land cover types by percentage of the Lower Block.

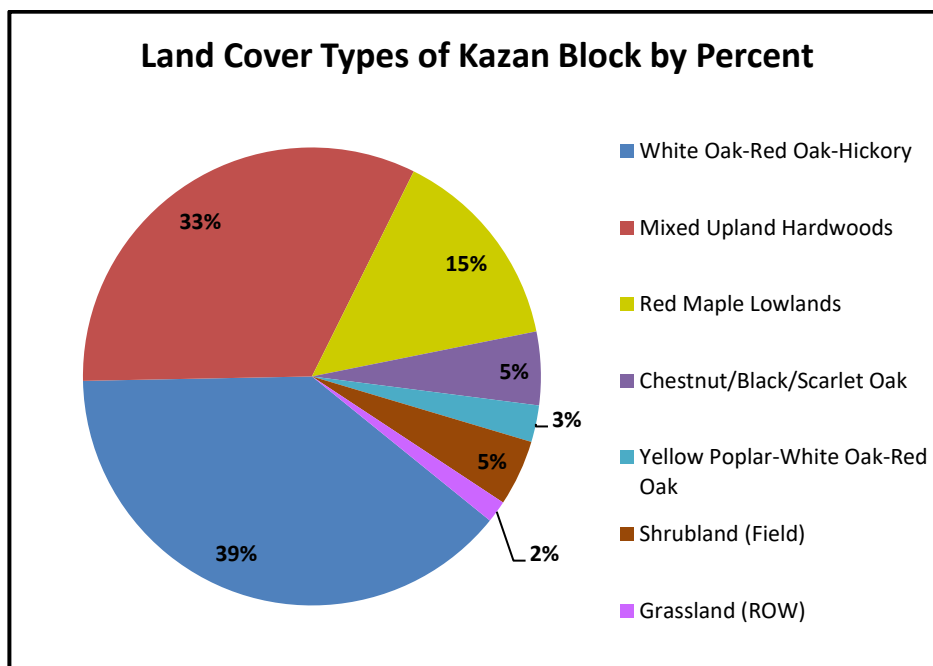


Figure 13.2. Land cover types by percentage of the Kazan Block.

Table 3.1. Acres of forest land by size class and forest type in the Lower Block. This table excludes acres which are considered rights-of-way. Forested wetlands are included.

| Lower Block Acres of Forestland by Size Class and Forest Type | | | | | | | | |
|---|------------------|------|-------------|------------------|----------|------------|-------------|---------|
| Forest Cover Group | Size Classes | | | | | | Total Acres | % Total |
| | Seedling/Sapling | Pole | Saw/Sapling | Sapling/Pole/Saw | Saw/Pole | Saw Timber | | |
| Mixed Upland Hardwoods | 9 | 5 | 11 | 70 | 162 | 248 | 505 | 46% |
| Eastern Hemlock | 0 | 0 | 0 | 0 | 12 | 241 | 253 | 23% |
| Chestnut/Black/Scarlet Oak | 0 | 0 | 0 | 0 | 165 | 0 | 165 | 15% |
| Yellow Poplar-White Oak-Red Oak | 0 | 0 | 0 | 0 | 24 | 45 | 69 | 6% |
| White Oak-Red Oak-Hickory | 0 | 0 | 0 | 0 | 0 | 48 | 48 | 4% |
| Red Maple Lowlands | 0 | 15 | 0 | 0 | 7 | 0 | 22 | 2% |
| Red Maple-Oak | 6 | 6 | 0 | 0 | 0 | 0 | 12 | 1% |
| Sugar Maple-Basswood | 0 | 0 | 0 | 0 | 0 | 9 | 9 | <1% |
| Chestnut Oak | 0 | 0 | 0 | 0 | 7 | 0 | 7 | <1% |
| Total Acres | 15 | 26 | 11 | 70 | 377 | 591 | 1090 | 100% |
| % Total | 1% | 2% | 1% | 6% | 35% | 54% | 100% | |

Table 3.2. Acres of forest land by size class and forest type in the Kazan Block. This table excludes acres which are considered rights-of-way, fields, or bodies of water. Forested wetlands are included.

| Kazan Block Acres of Forestland by Size Class and Forest Type | | | | | | |
|---|------------------|------|----------|------------|-------------|---------|
| Forest Cover Group | Size Classes | | | | Total Acres | % Total |
| | Seedling/Sapling | Pole | Saw/Pole | Saw Timber | | |
| White Oak-Red Oak-Hickory | 0 | 0 | 54 | 21 | 75 | 41% |
| Mixed Upland Hardwoods | 0 | 0 | 63 | 0 | 63 | 35% |
| Red Maple Lowlands | 0 | 17 | 11 | 0 | 28 | 15% |
| Chestnut/Black/Scarlet Oak | 0 | 0 | 10 | 0 | 10 | 6% |
| Yellow Poplar-White Oak-Red Oak | 0 | 0 | 0 | 5 | 5 | 3% |
| Total Acres | 0 | 17 | 138 | 26 | 181 | 100% |
| % Total | 0% | 9% | 76% | 14% | 100% | |

Oak-Hickory Group

The Oak-Hickory group makes up the largest portion of both the Lower and Kazan Blocks: 73%, or 806 acres, in the Lower Block and 80%, or 153 acres, in the Kazan Block. The dominant species of this group are red oak, white oak, black oak, scarlet oak, chestnut oak, shagbark hickory, pignut hickory, black birch, and red maple. Within this group there are multiple sub-groups, referred to as forest types or stand types. Forest types in the Oak-Hickory group found in these forest Blocks are Mixed Upland Hardwood, Chestnut Oak-Black Oak-Scarlet Oak, White Oak-Red Oak-Hickory, Yellow Poplar-White Oak-Red Oak, Red Maple-Oak, and Chestnut Oak. Eighty-seven percent (87%) of the group is mature or approaching maturity and is in the Sawtimber or Saw/Pole size class. All forest types in areas to be managed in the Lower Block under this management plan are classified under the Oak-Hickory Group.

Pine-Hemlock Group

The eastern hemlock forest type makes up 23% of the Lower Block. Eastern hemlock is the largest component in this forest type, but is associated with hardwood species, including oak species, black birch, and sugar maple. One eastern hemlock stand will be actively managed in the future and is currently fully stocked. The other stands where this forest type is present are inoperable but are mature and overstocked.

Elm-Ash-Cottonwood Group

Two percent (2%) of the Lower Block and 15% of the Kazan Block is red maple lowland. These areas are characterized as having wet, saturated, or poorly drained soil and grow tree species that do well in wet conditions such as American elm, white ash, and red maple. Because these areas have poorly drained soils, no activity will take place in this forest type.

Northern Hardwood Group

Nine (9) acres of the Lower Block are classified as Sugar Maple-Basswood cover type, less than 1% of the Block. This area is dominated by sugar maple, American beech, yellow birch, and black birch. This forest type is located on an inoperable slope where no activity will take place.

Areas to be Managed

Three hundred sixty-five acres (33%) of forest land can be actively managed in the Lower Block. All stands that will undergo active management are currently fully stocked or overstocked. Higher stocking levels can cause higher tree mortality rates and make forest stands less resistant to future insect and disease impacts. Fully stocked stands consist of a full range of crown classes and have high stand densities, so trees in these stands will compete for resources. Overstocked stands have little available growing room and resources are completely utilized to the point that growth has slowed, and many trees are suppressed. All forest cover types in areas to be managed under this management plan fall under the Oak-Hickory forest-type group (USFS).

Table 4. Forest cover type, size class, and condition class in areas to be managed.

| Forest Cover Type and Size Class of Active Areas (acres) | | | | |
|---|-------------------|--------------------------|------------------------------|--------------|
| Forest Cover Type | Size Class | Selection Harvest | No Scheduled Activity | Total |
| Mixed Upland Hardwoods | Saw | 21 | 0 | 21 |
| | Saw-Sap | 11 | 0 | 11 |
| | Saw-Pole | 118 | 19 | 137 |
| | Sap-Pole-Saw | 0 | 70 | 70 |
| | Pole | 0 | 5 | 5 |
| | Sapling | 0 | 9 | 9 |
| White Oak - Red Oak - Hickory | Saw | 0 | 53 | 53 |
| Chestnut Oak - Black Oak - Scarlet Oak | Saw-Pole | 38 | 0 | 38 |
| Eastern Hemlock | Saw-Pole | 0 | 12 | 12 |
| Red Maple - Oak | Sapling | 0 | 6 | 6 |
| Chestnut Oak | Saw-Pole | 3 | 0 | 3 |
| Total | | 191 | 174 | 365 |

Forest Health

Lower

Non-native invasive plants are present, primarily along roads and trails and in former game plots. These include Asian bittersweet (*Celastrus orbiculatus*), Japanese barberry (*Berberis thunbergii*), Japanese knotweed (*Reynoutria japonica*), winged euonymus (*Euonymus alatus*), multiflora rose (*Rosa multiflora*), Japanese stiltgrass (*Microstegium vimineum*) and Chinese wisteria (*Wisteria sinensis*). In stands 1-2 and 1-3, there is young Asian bittersweet along trails and roads. Along Ivy Brook, there are thickets of Japanese barberry, including a large patch in the southern part of stand 1-5. Along Great Quarter Road, there are scattered patches of Japanese knotweed. All these invasive species are also found along Great Eighth Road but to a lesser extent. There are no dense patches of invasive plants in interior forest areas.

The gasoline right-of-way is also a consistent seed source for invasive species. In the maintained right-of-way,

other invasive species include phragmites (*Phragmites australis*) and autumn olive (*Elaeagnus umbellata*).

There are several exotic insects and diseases in the forest. Exotic insects include hemlock elongate scale (*Fiorinia externa*), hemlock woolly adelgid (*Adelges tsugae*), and emerald ash borer (*Agrilus planipennis*). Emerald ash borer was discovered in Newtown in 2013. LDD moth or gypsy moth (*Lymantria dispar dispar*) impacted the oak forest in the past but are not currently abundant. Exotic diseases include beech bark disease, a complex of a scale insect and *Nectria* fungi, which can damage and kill American beech trees, and chestnut blight (*Cryphonectria parasitica*). Beech leaf disease (associated with the nematode *Litylenchus crenatae mccannii*) has recently been identified in this forest and can lead to beech decline and death.

By managing the forest to provide a diverse mix of species and age classes, there will be more resilience to future insects, fungi, pathogens, weather events, and climate change.

Forest management, including timber harvesting, is consistent with the goals of promoting long-term carbon sequestration and storage. Younger, faster growing stands sequester carbon at a higher rate, while older stands store more carbon. Managing for complex forest structure, such as maintaining stocking of large trees while also providing growing space for younger trees, can promote higher rates of stand-level carbon sequestration and storage. In addition, the durable wood products resulting from the harvests in this plan will store carbon for a long time.

Kazan

In the Kazan Block, exotic invasive plant species include Asian bittersweet, Japanese barberry, winged euonymus, multiflora rose, tree of heaven (*Ailanthus altissima*), chocolate vine (*Akebia quinata*), mile-a-minute weed (*Persicaria perfoliata*), and black swallow-wort (*Cynanchum louiseae*).

Stand 2-2 is a field that is important for wildlife habitat, but non-native invasive shrubs and vines are the dominant cover type. Mile-a-minute weed is very dense in stand 2-2 and continues to spread rapidly, smothering other vegetation. Invasive management targeting this species is planned beginning in 2022.

H. Landscape Context

Newtown is approximately 63.6% forested, 17.6% developed, 9.3% turf and grass, and 5% agriculture field (CLEAR). Since 1985, forest cover has decreased by 6.7% while developed areas and turf and grass (lawn) cover have both increased. The Upper Block of Paugussett State Forest is located approximately 4.5 miles north of the Lower Block on Lake Lillinonah, another impoundment along the Housatonic River. In addition to the three blocks of Paugussett State Forest, other state-owned forest land in Newtown includes Rocky Glen State Park and sections of Collis P. Huntington State Park and Centennial Watershed State Forest.

Lower

Lake Zoar borders the Lower Block to the east. It is managed by FLP for hydroelectric power. They regularly treat the lake for aquatic invasive species and draw down the water levels to reduce vegetation along the lake

edges. Kettletown State Park is on the eastern side of Lake Zoar. It is 605-acres and primarily used for recreation.

Iroquois Gas Transmission System has a right-of-way that is the southwestern boundary of the Block. The company periodically manages the right-of-way by mowing and treating for invasive species. The Iroquois Gas Transmission System also owns 28.33 acres on the western boundary of the Block that is vacant unbuildable land.

Newtown owns 4 parcels of designated open space that abut the southern and western boundaries of the Block, totaling 116.36 acres. The 37.5-acre parcel owned by the Town of Newtown, located on the southern Block boundary and west of Stone Bridge Trail, was managed with a shelterwood treatment to promote early successional habitat and benefit wildlife species, particularly New England cottontail. A 154.5-acre parcel on the southern boundary of the block, east of Stone Bridge Trail, is privately owned forest land in the Connecticut 490 program. The remaining area surrounding this Block is residential or wooded land.

Kazan

The Kazan Block is surrounded primarily by residential land. Compartment 2 is bordered by forested parcels to the north that are in the Connecticut 490 program. Compartment 1 is bisected by a transmission line right-of-way (stand 1-12) that is regularly maintained by Eversource.

I. Specific Acquisition Goals

1. There is a 12.787-acre parcel located on the western boundary of the Lower Block, between Stands 1-35a and 1-35b that could not be established as part of the State Forest. The Town of Newtown shows this area as property of the State of Connecticut in the Town of Newtown Connecticut Geographic and Property Information Application but there is no documentation of ownership. DEEP's Land Acquisition and Management Office has been contacted about this parcel.
2. Parcels that provide improved access to the northern section of the Lower Block are desirable. These parcels include a 5.31-acre parcel at 30 Cedarhurst Trail (Newtown Parcel #52-11-26), a 2.55-acre parcel at 46 Cedarhurst Trails (Newtown Parcel #52-11-RES#2), a 1.77-acre parcel at 48 Algonquin Trail (Newtown Parcel #52-9-RES#1), and an 11.5-acre parcel at 3 Pequot Path (Newtown Parcel #51-8-26).
3. Large tracts of adjacent, accessible forest land are desirable to increase operable acreage and protect forested land. This includes a 154-acre parcel at 319 Berkshire Road (Newtown Parcel #57-3-7).

J. Public Involvement

A copy of this plan was sent to the Town of Newtown Conservation Commission, FirstLight Power, Housatonic Valley Association, the Housatonic Valley Chapter of the New England Mountain Bike Association, Iroquois Gas Transmission System, and Connecticut Forest & Park Association for comment. Comments are attached in Appendix A and incorporated into the plan.

K. Adaptive Management

The Division of Forestry understands the nature of forest management 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 conditions and resource needs warrant. Some of these changes may be associated with biological factors such as insects and disease. 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 conditions 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 will address unforeseen circumstances as needed during the tenure of this forest management plan.

L. 10 Year Goals

The DEEP, as stewards of public land for present and future generations, must strive to maintain and improve soil productivity, water quality, and diversity of vegetation and wildlife. Management activities and public use need to be planned in accordance with the natural characteristics and suitability of the land. All known species classified as threatened, endangered, special concern, or greatest conservation need, and their habitats will be protected, along with cultural and recreational features in the State Forest.

Timber will be harvested to provide diverse wildlife habitat, improved or sustained forest health, and a sustainable supply of forest products. In the Lower Block of Paugussett State Forest, the goal of management activities occurring near existing New England cottontail populations is to expand habitat for this Species of Greatest Conservation Need. Creating young forest habitat can also help increase the diversity and abundance of forest bird species by providing habitat for young forest specialists (Audubon Connecticut 2020). Bird species, such as wood thrush and cerulean warbler, which prefer mature forests, benefit from varying forest structures that are created with forest management.

Economic Benefits

Sustainable forest management can also benefit the local economy. In 2017, Connecticut's forest products industry provided direct employment to over 7,700 workers and had a direct output of \$2.4 billion (Public Sector Consultants et al. 2020). Connecticut's forest-based economy also supports over 16,000 jobs in total. The four harvests prescribed in this plan will be a source of local jobs and long-lived forest products, a carbon-friendly alternative to concrete and steel.

Revenue generated from selling forest products on DEEP land is used to improve State Forests. It funds invasive management, trail and road construction, habitat improvement, and permanent and seasonal employee costs, among other things.

Uneven Aged Management

Under this plan, 191 acres of the Lower Block will be actively managed on an uneven-aged basis.

In uneven-aged management, timber harvests will use single tree and group selection to create openings (<2 acres) in the canopy, allowing shade intolerant species, such as paper birch, tulip poplar, or northern red oak, to regenerate while also maintaining the presence of shade tolerant species, such as sugar maple or beech. This will increase overall stand diversity by differentiating age, size class, and species.

Roughly 33% of the basal area (and approximately 33% of the timber volume) in a given stand will be removed with each harvest, to be repeated on a 20-year cutting cycle.

Three hundred sixty-five (365) acres managed with a 20-year rotation results in 18.25 acres harvested on average per year (182.5 acres every 10 years).

As management activities occur, unauthorized hiking or mountain bike trails within the sale areas will be permanently closed.

M. Work Plans

Of the total 1,090 forested acres in the Lower Block, 365 acres (33% of the total forested acres) will eventually undergo active forest management. Seven hundred twenty-five (725) acres (67% of the total forested acres in the Lower Block) will not be actively managed due to poor access, operability, recreational use, or unique habitat features. One hundred ninety-one (191) acres will be harvested over the course of 4 harvests. During all harvesting, a minimum 50-foot buffer will be maintained along all trails that are part of the Blue Trail System, except for skid trail crossings. This 50-foot buffer covers 20.6 acres across all areas to be actively managed, including 9 acres in areas that will be harvested over the course of this management plan.

DEEP is actively working with the Housatonic Valley Chapter of NEMBA to establish an approved mountain bike trail in the Lower Block and close unauthorized trails. The Parks, Forestry, and Wildlife Divisions of DEEP will partner to authorize a sustainable trail network that balances recreational needs with the conservation of the forest's natural resources.

Wildlife Habitat Management (DEEP Wildlife)

Wildlife habitat management will consist of the Forestry Division's silvicultural activities resulting in a more diverse and structurally complex forest that will create suitable habitat for a variety of wildlife. Single tree and group selection treatments will create gaps in the canopy to promote regeneration of trees and shrubs while retaining some canopy cover and have been sited with consideration for SGCN. These treatments will also benefit hard mast producing tree species, such as oak and hickory, which provide an important food source for wildlife. Wildlife brush piles will continue to be created by firewood cutters in Lower Block stands 1-2 and 1-3 as time allows.

Non-forested upland habitat is minimal in these Blocks. Shrubland habitat occurs in portions of the utility

rights-of-way and at an abandoned field in the Kazan Block (stand 2-2). Herbaceous meadow occurs in active utility rights-of-way and this habitat is expected to persist given the utility company’s vegetation management programs. These rights-of-way can serve as important wildlife corridors and provide early successional habitat. If time and resources allow, the Wildlife Division may engage in invasive plant control and native seeding of grasses and wildflowers within portions of rights-of-way to improve meadow habitat for wildlife and beneficial insects. When feasible, forested areas adjacent to the gasoline right-of-way will be thinned by timber harvest or firewood cutting activities to promote tree and shrub regeneration and improve the ecotone between forest and meadow. Kazan Block stand 2-2 (9 acres) consists primarily of invasive woody shrubs and vines but provides important habitat for species known to occur here and will be managed to maintain ideal shrubland conditions. Due to the discovery of mile-a-minute weed overtaking the field, invasive management activities are scheduled during the planning period. Single tree selection will be used along field edges to promote tree and shrub regeneration and improve the ecotone between forest edge and shrubland.

Table 5.1. Work plans for the Lower Block.

| Lower Block, Paugussett State Forest Work Plan | | | |
|---|--|---------------------|-------------|
| Order of Activity | Scheduled Activity | Forest Stand | Area |
| 1 | Invasive Treatment | 1-1 | as needed |
| | Invasive Treatment | 1-2 | as needed |
| | Invasive Treatment | 1-3 | as needed |
| | Single Tree and Group Selection | 1-1 | 36 acres |
| | Single Tree and Group Selection | 1-2 | 10 acres |
| | Single Tree and Group Selection | 1-3 | 11 acres |
| | Single Tree and Group Selection | 1-34a | 3 acres |
| | Development/Authorization of a Sustainable Trail Network | | 6 miles |
| 2 | Single Tree and Group Selection | 1-19 | 21 acres |
| | Single Tree and Group Selection | 1-20 | 38 acres |
| | Great Eighth Road Improvements | | 4,000 feet |
| 3 | Invasive Treatment | 1-5 | as needed |
| | Single Tree and Group Selection | 1-5 | 32 acres |
| | Boundary Line Maintenance | | 6.7 miles |
| 4 | Single Tree and Group Selection | 1-23 | 41 acres |
| Evaluate conditions after activities are complete. | | | |

Table 5.2. Work plans for the Kazan Block.

| Kazan Block, Paugussett State Forest Work Plan | | |
|---|---------------------|-------------|
| Scheduled Activity | Forest Stand | Area |
| Invasive Treatment | 2-2 | 9 acres |
| Boundary Line Maintenance | | 4.6 miles |
| Evaluate conditions after activities are complete. | | |

N. Forest Map Set

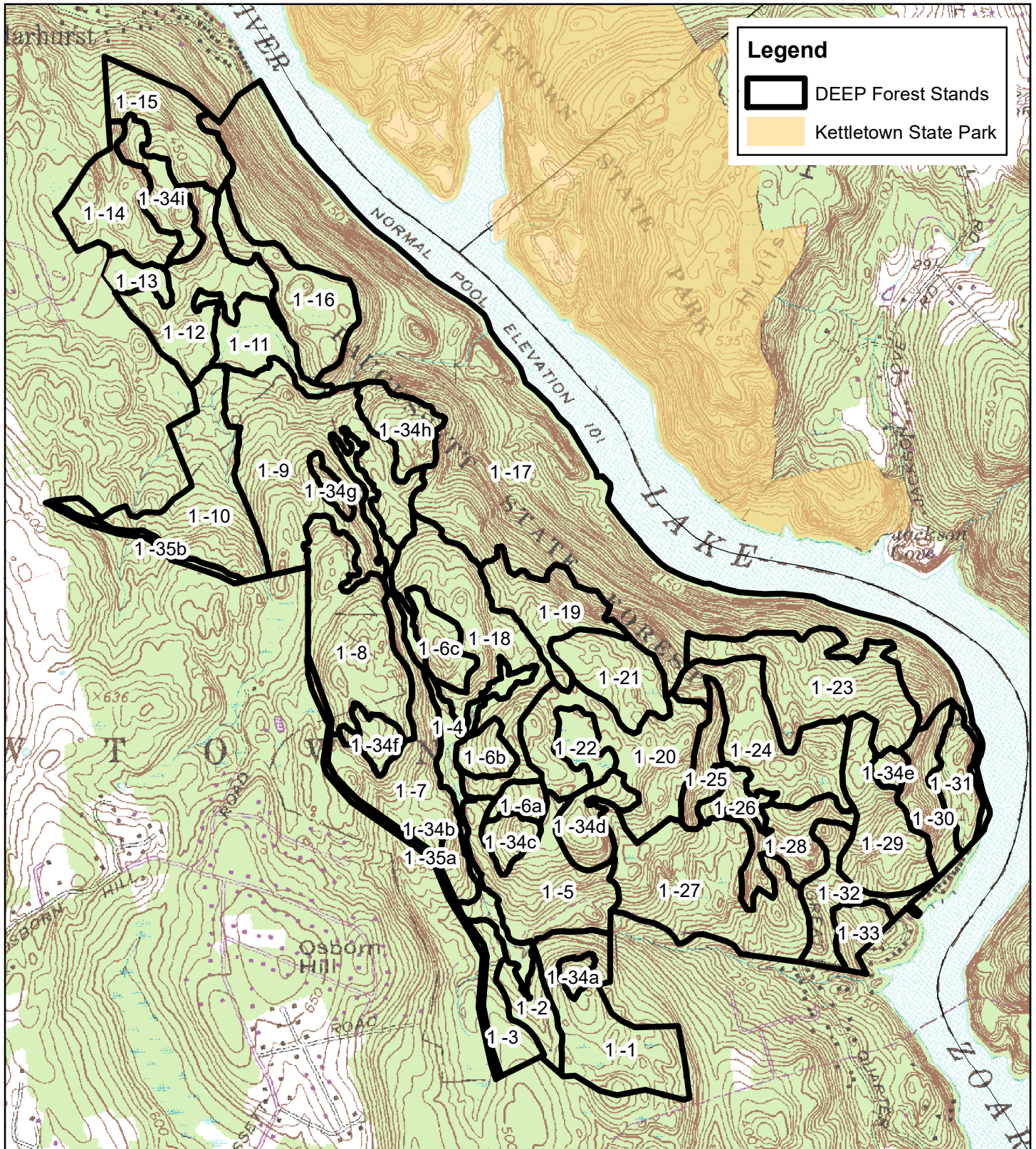
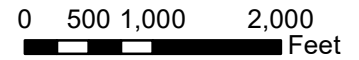


Map A - Topographic Paugussett State Forest: Lower Block

Newtown, Connecticut
1,100 Acres



January 2021
Prepared by: J. Humphreys



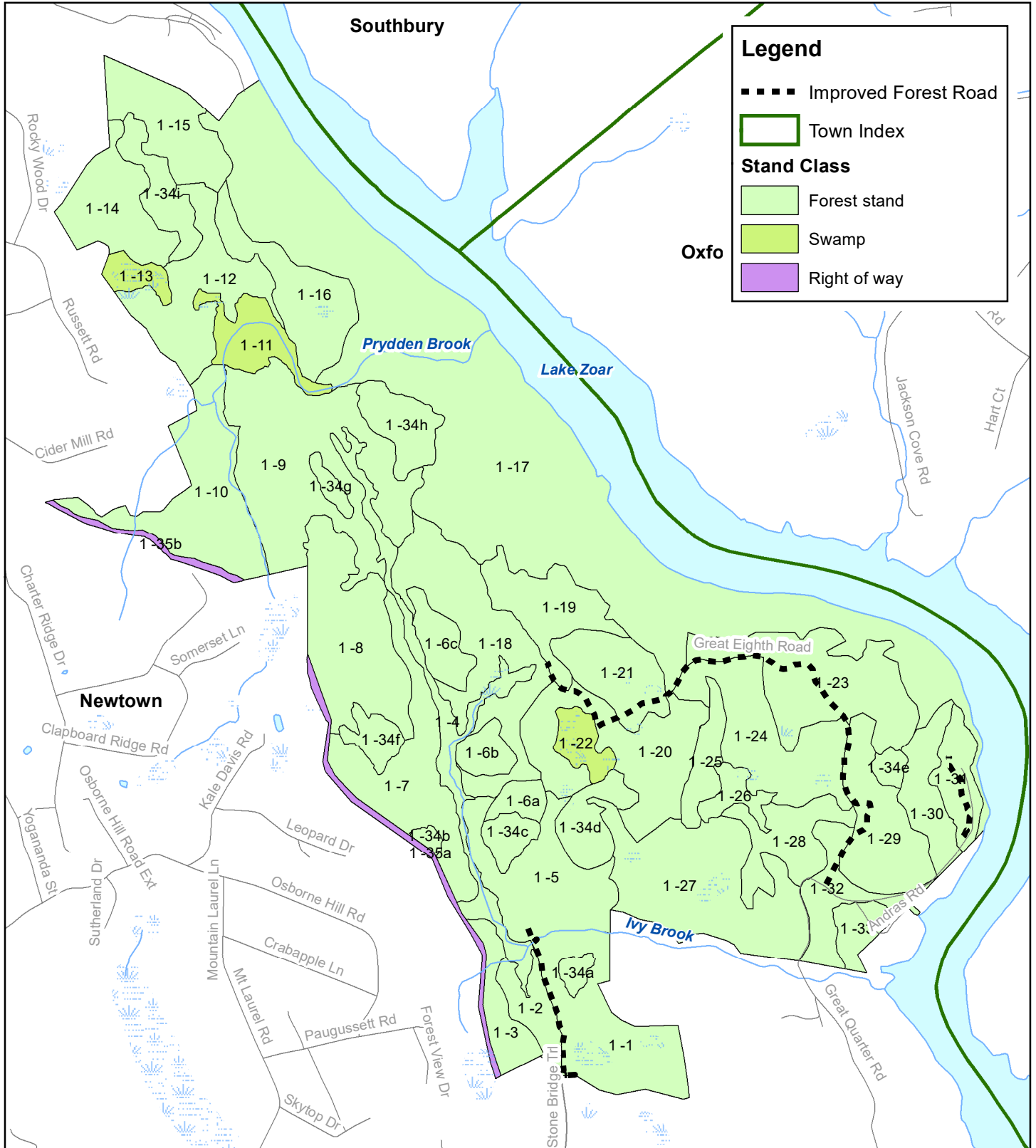
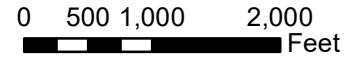


Map B - Base Paugussett State Forest: Lower Block

Newtown, Connecticut
1,100 Acres



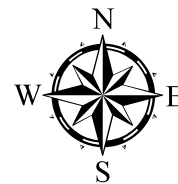
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Prepared by: J. Humphreys



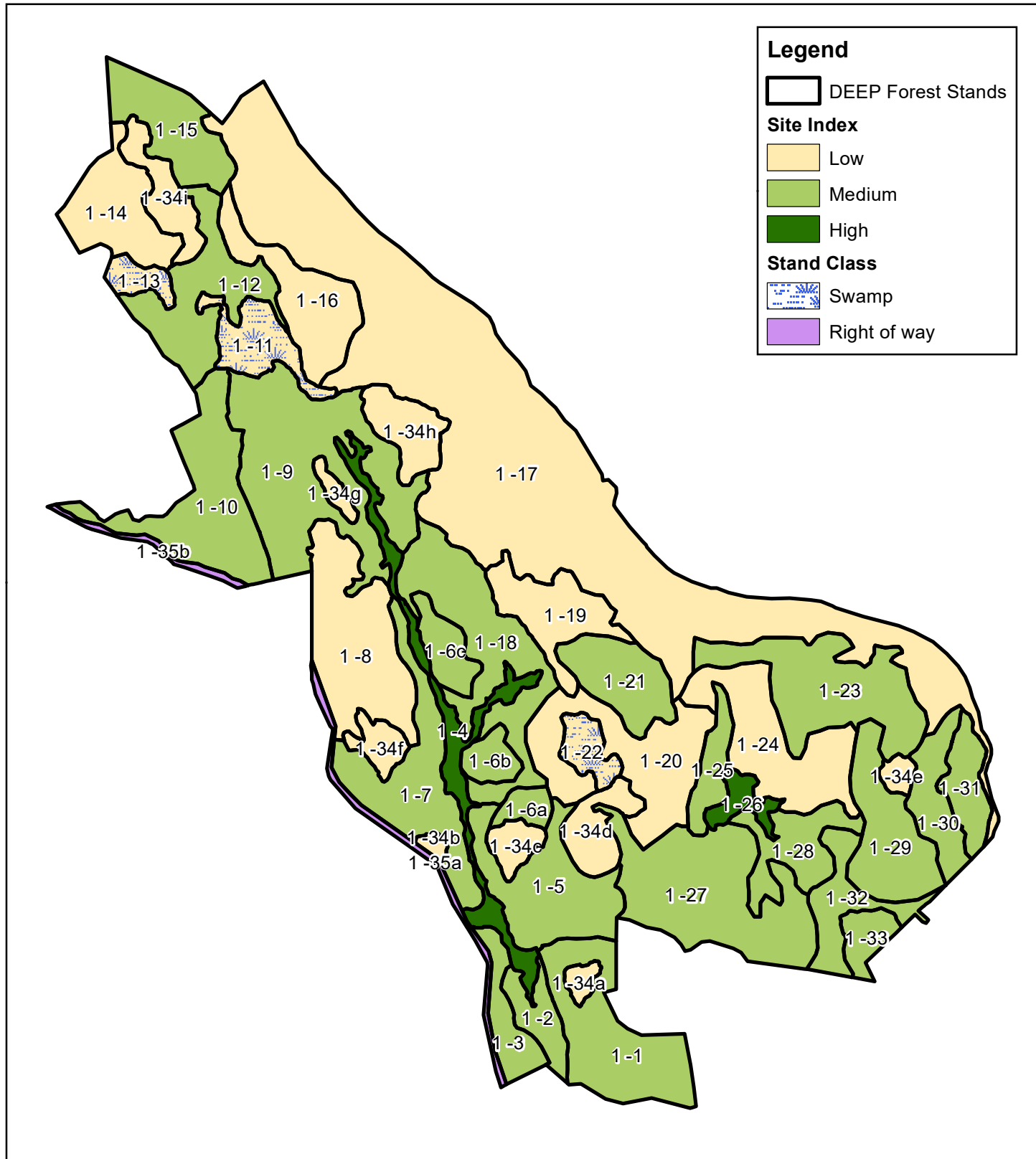
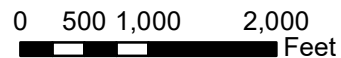


Map C - Site Quality Paugussett State Forest: Lower Block

Newtown, Connecticut
1,100 acres



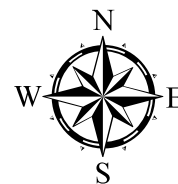
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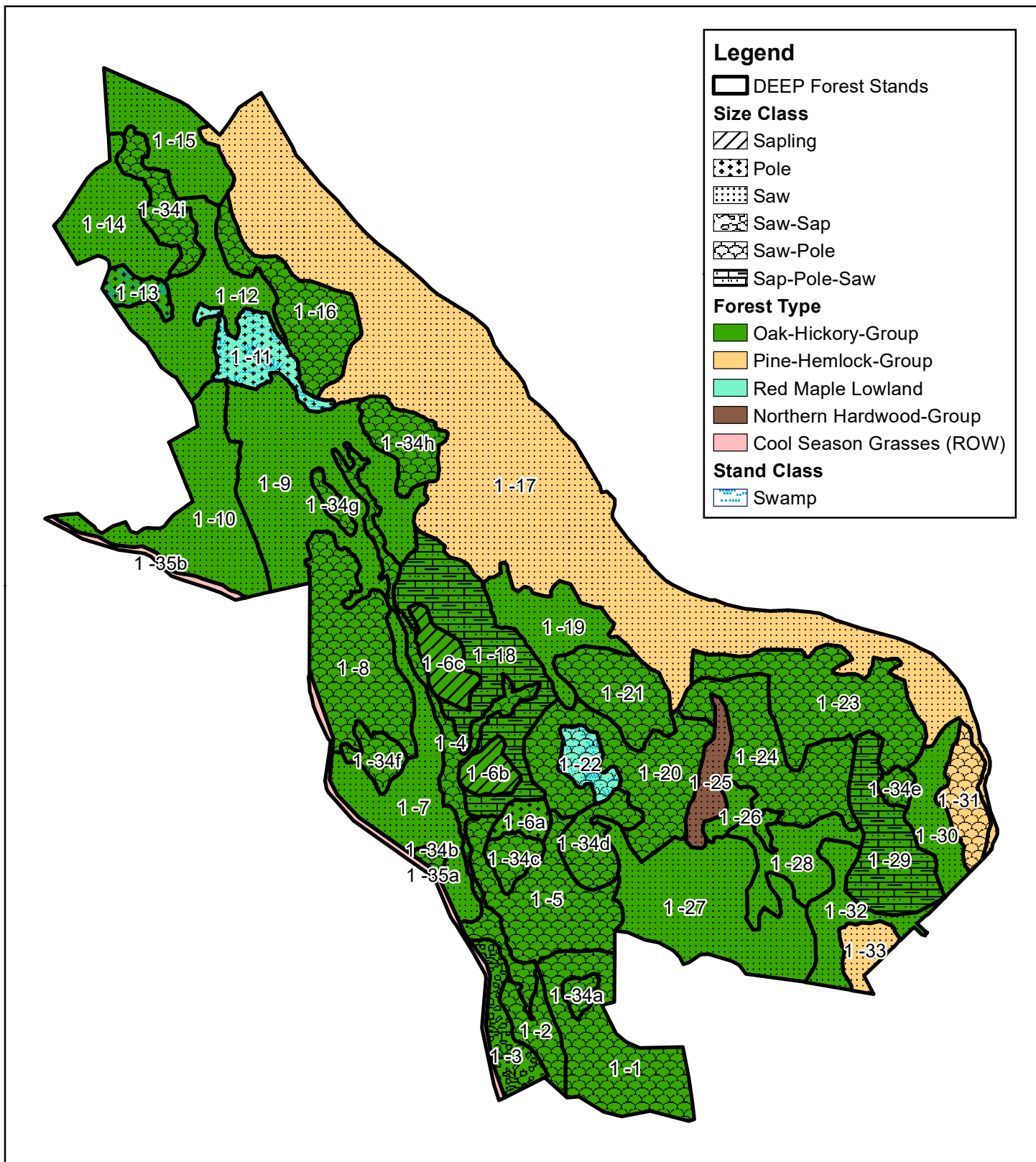
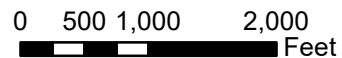


Map D - Forest Type & Size Class Paugussett State Forest: Lower Block

Newtown, Connecticut
1,100 Acres



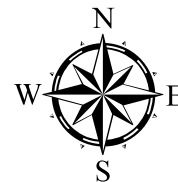
January 2021
Prepared by: J. Humphreys



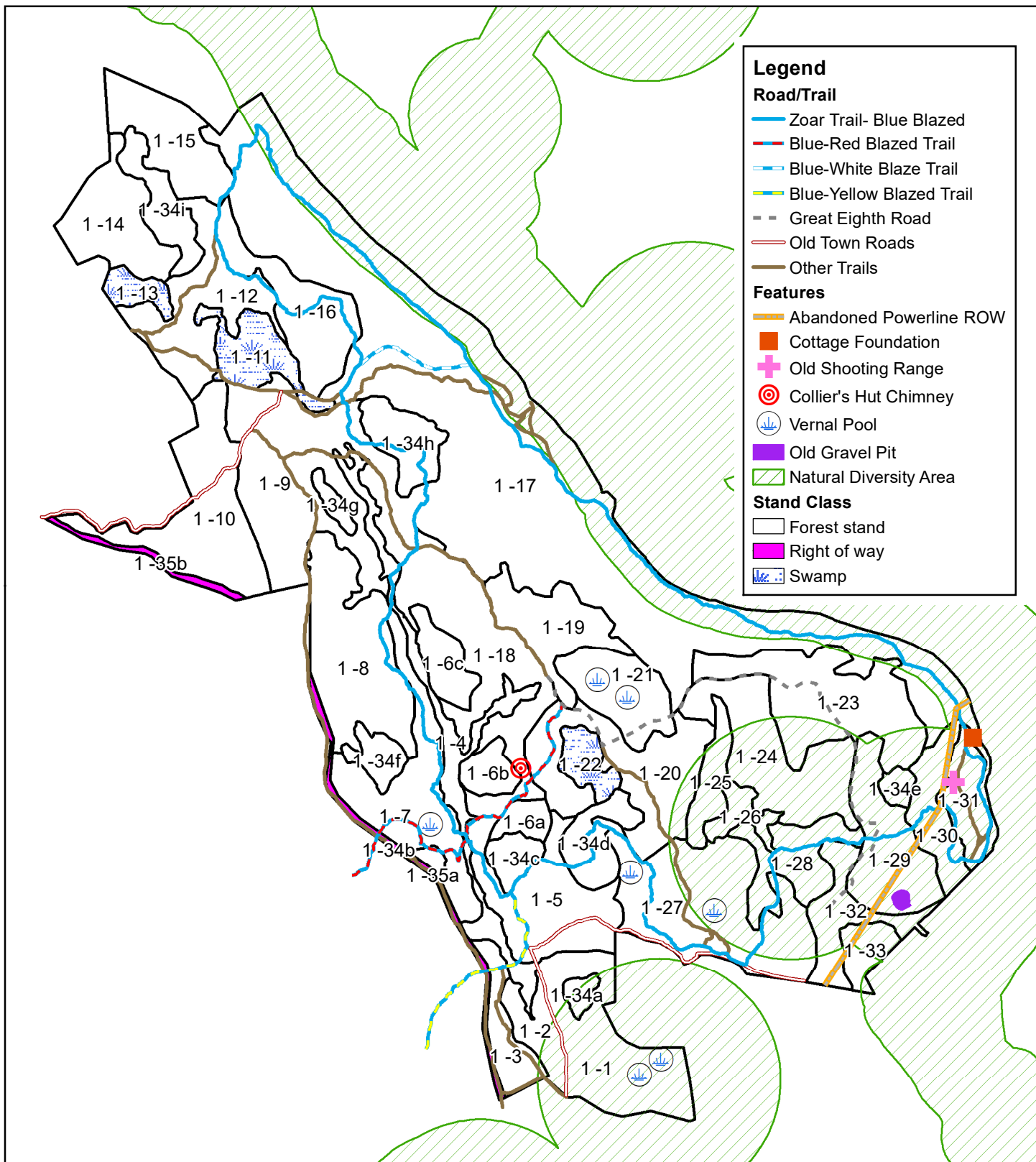
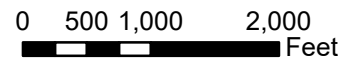


Map E - Special Features Paugussett State Forest: Lower Block

Newtown, Connecticut
1,100 Acres



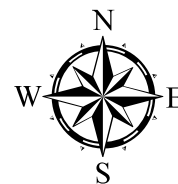
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Prepared by: J. Humphreys



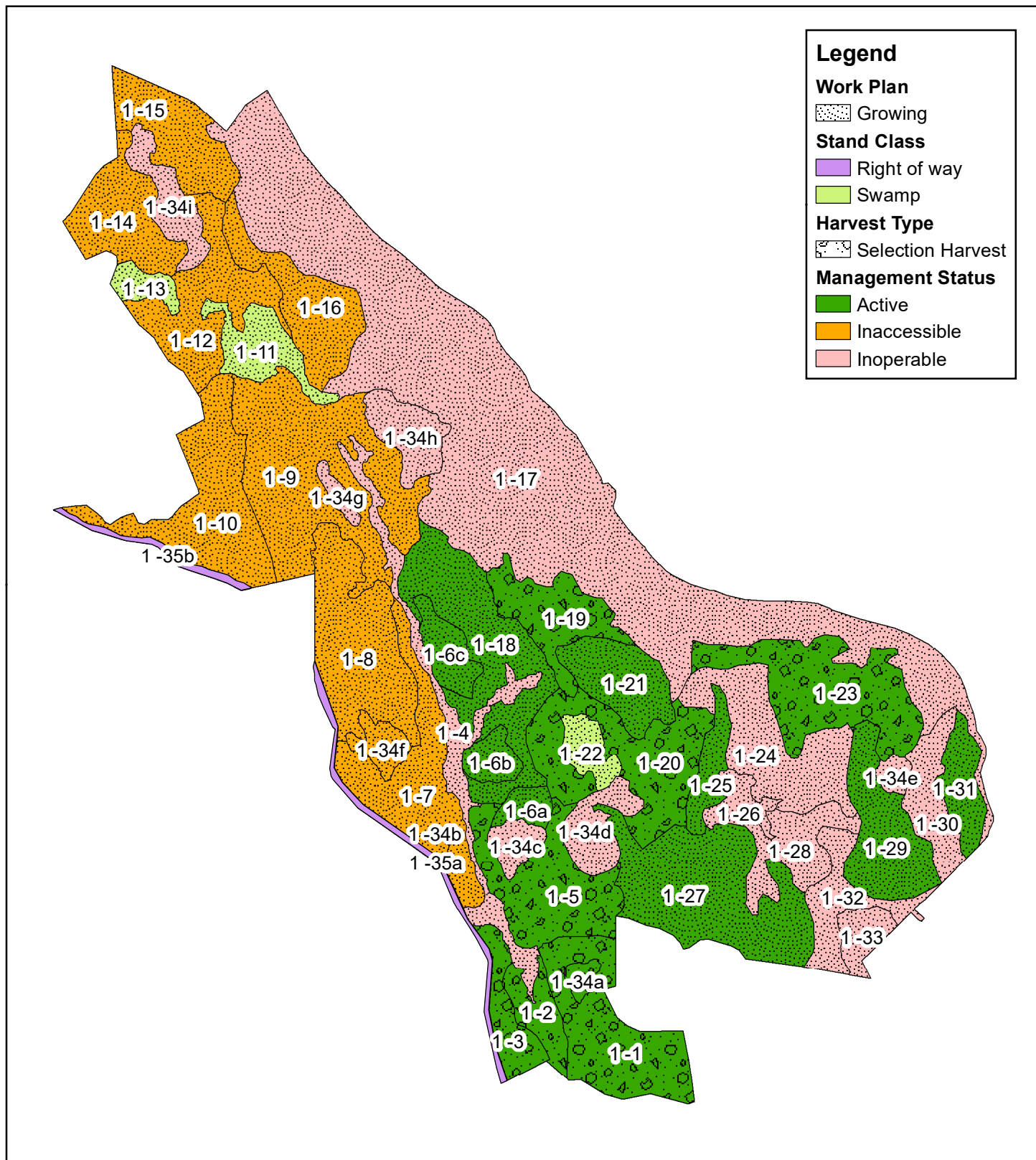
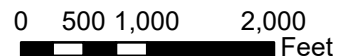


Map F - Work Plan Paugussett State Forest: Lower Block

Newtown, Connecticut
1,100 Acres



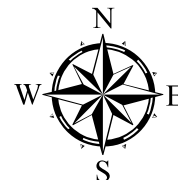
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Prepared by: J. Humphreys



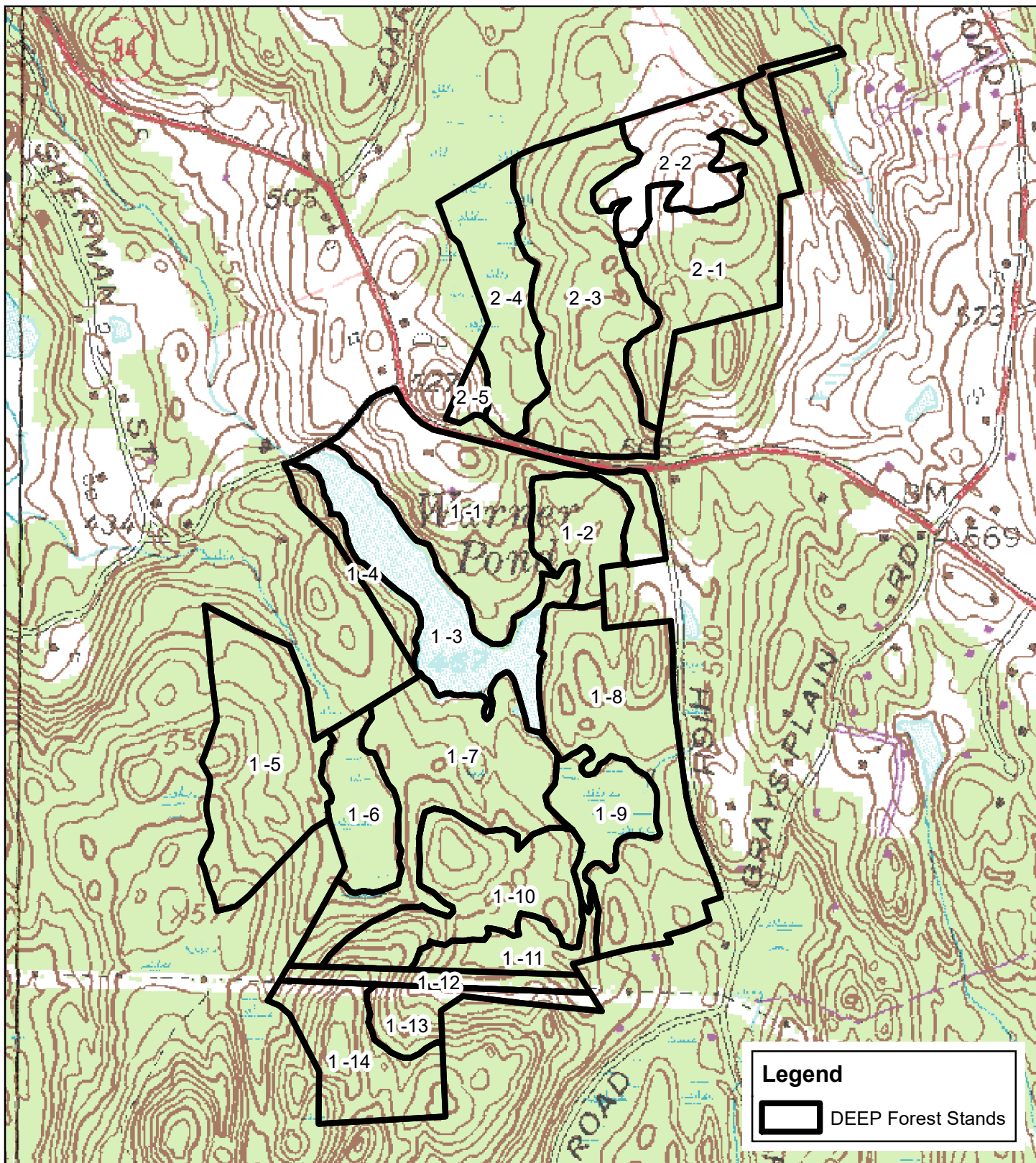
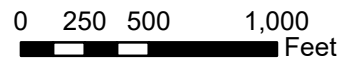


Map A - Topographic Paugussett State Forest: Kazan Block

Newtown, Connecticut
213 Acres



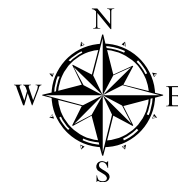
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Prepared by: J. Humphreys





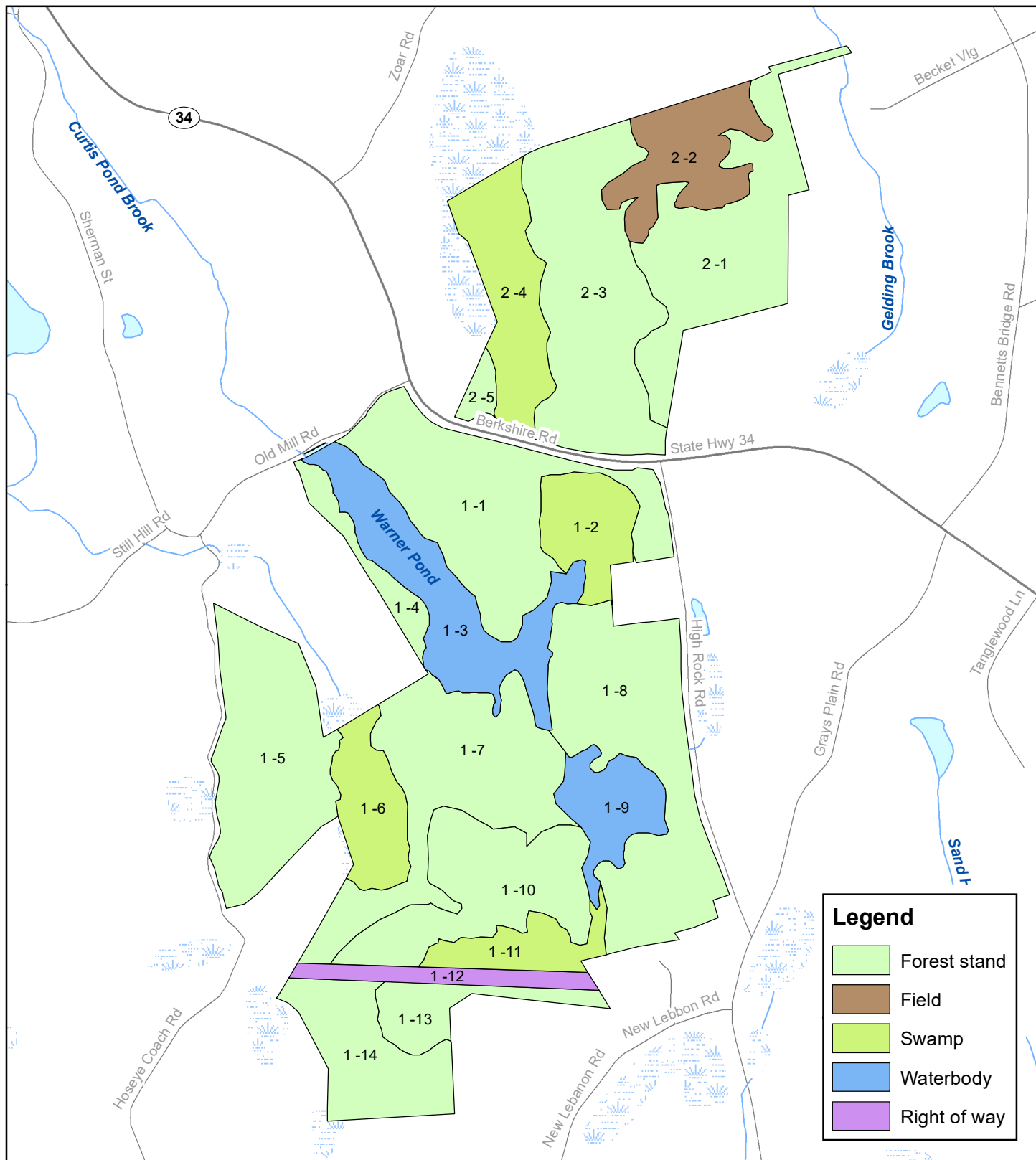
Map B - Base Paugussett State Forest: Kazan Block

Newtown, Connecticut
213 Acres



January 2021
Prepared by: J. Humphreys

0 250 500 1,000
Feet



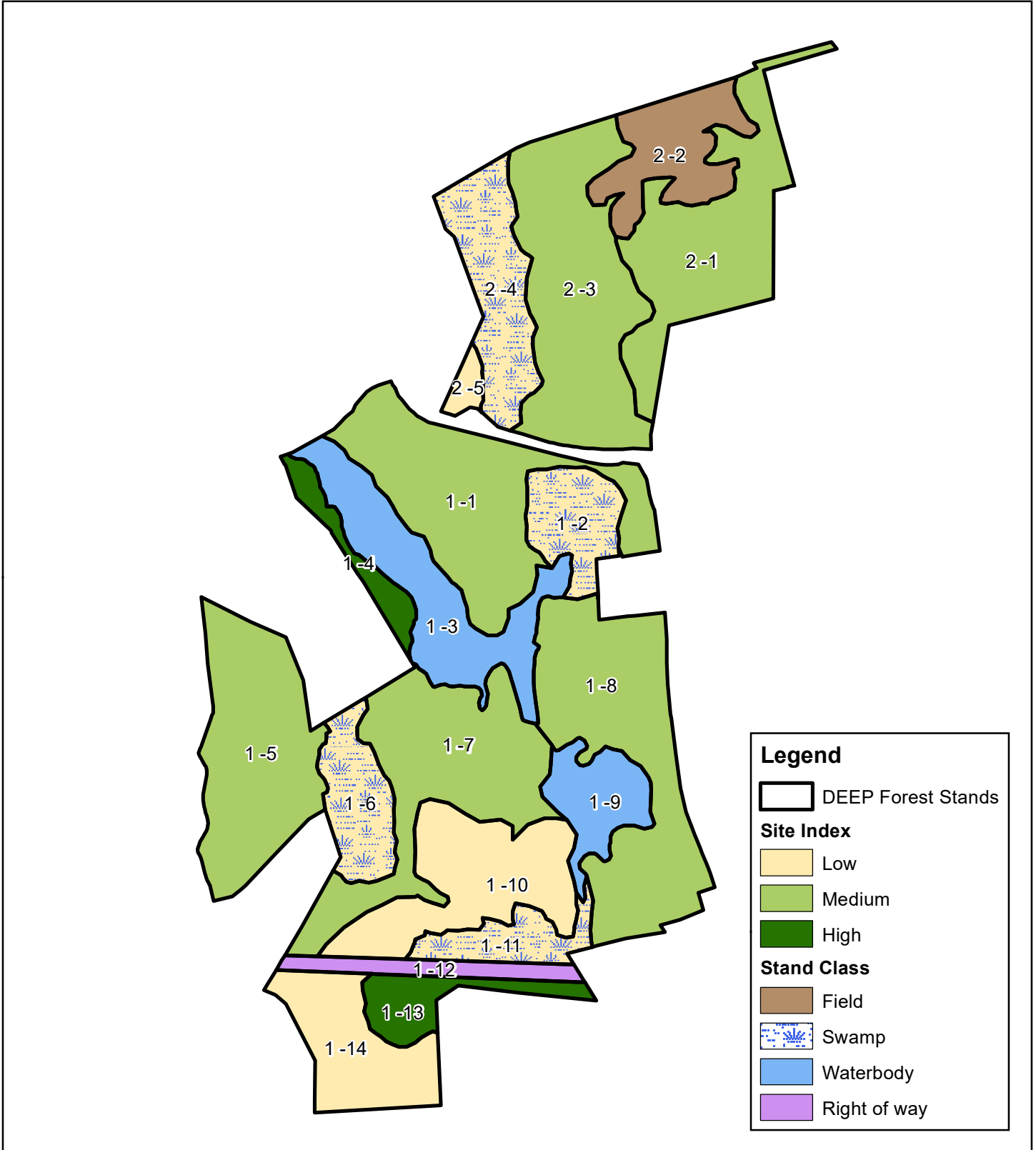


Map C - Site Quality Paugussett State Forest: Kazan Block

Newtown, Connecticut
213 acres



January 2021
Prepared by: J. Humphreys



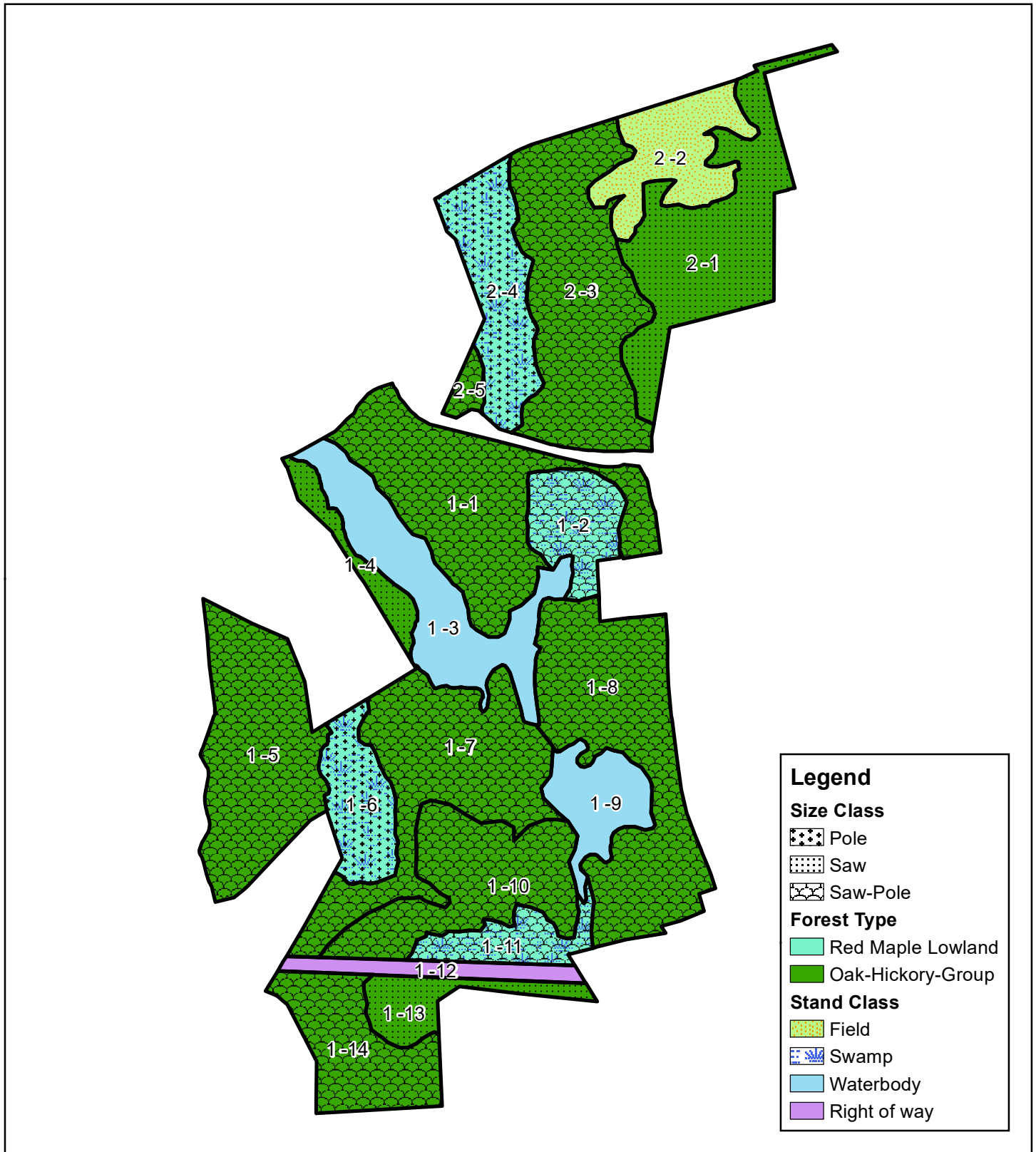
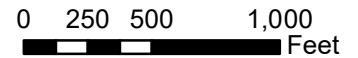


Map D - Forest Type & Size Class Paugussett State Forest: Kazan Block

Newtown, Connecticut
213 Acres



January 2021
Prepared by: J. Humphreys



Legend

Size Class

- Pole (Pattern: small squares)
- Saw (Pattern: small dots)
- Saw-Pole (Pattern: small triangles)

Forest Type

- Red Maple Lowland (Color: light blue)
- Oak-Hickory-Group (Color: green)

Stand Class

- Field (Color: yellow)
- Swamp (Color: light blue with pattern)
- Waterbody (Color: light blue)
- Right of way (Color: purple)

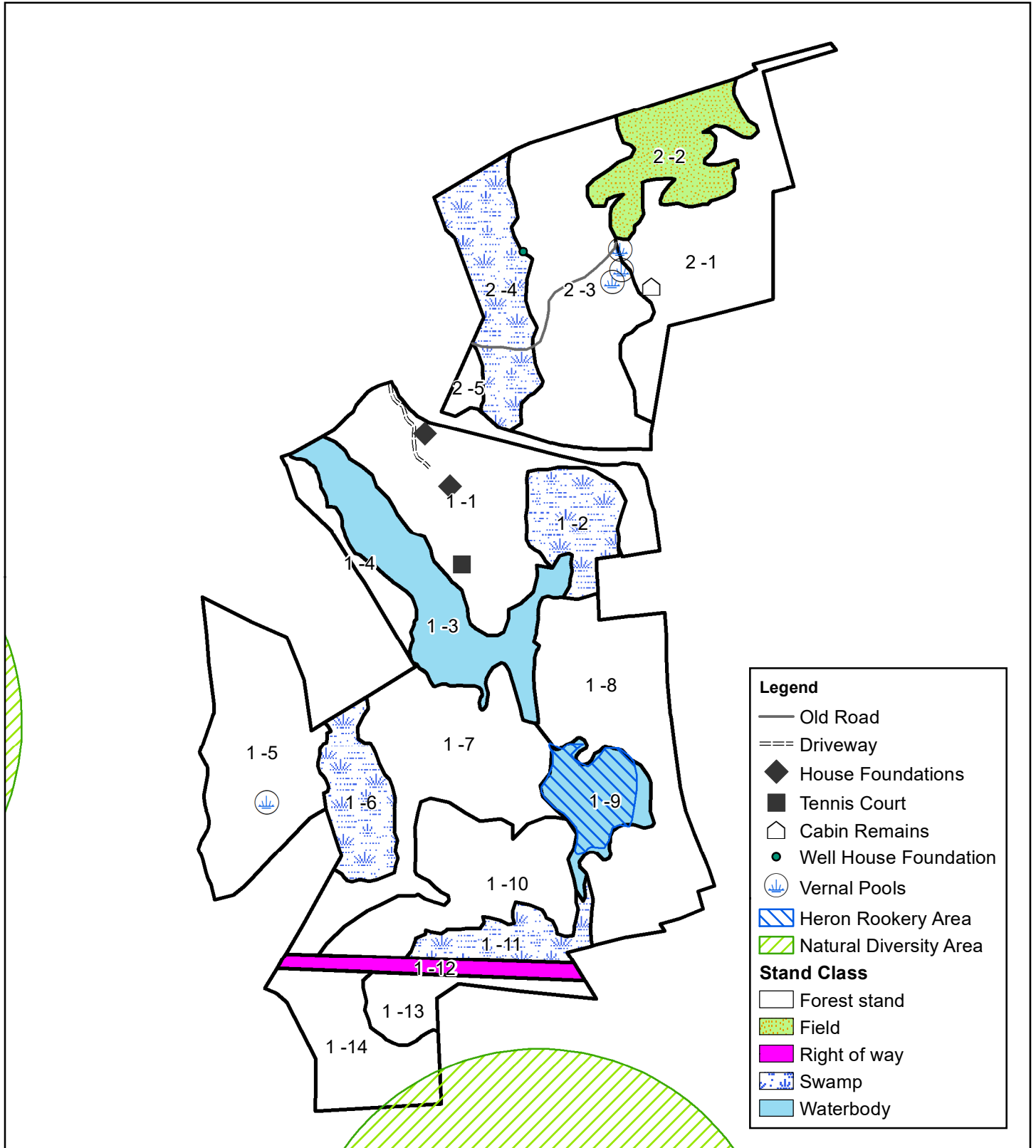
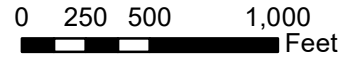


Map E - Special Features Paugussett State Forest: Kazan Block

Newtown, Connecticut
213 Acres



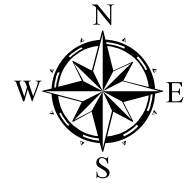
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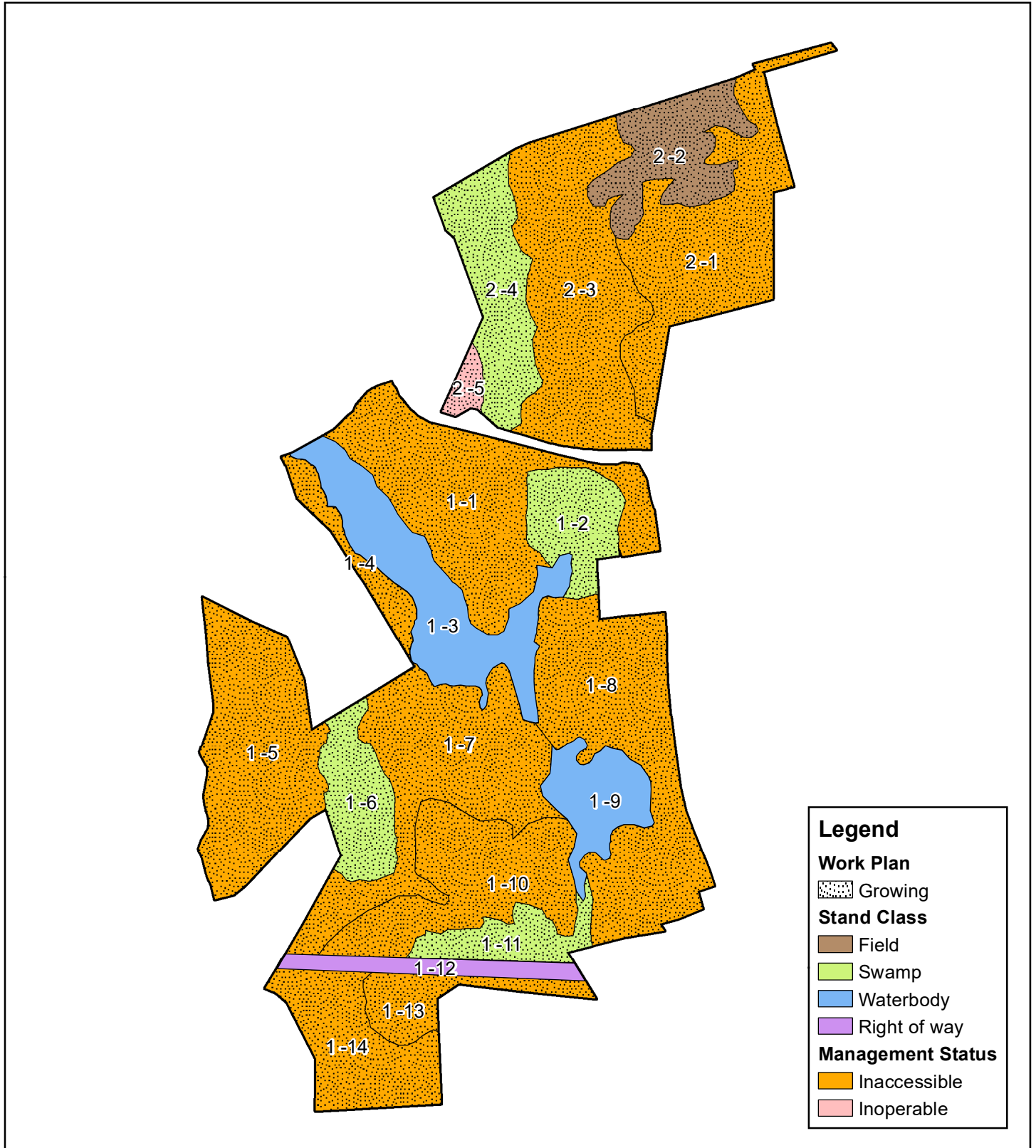
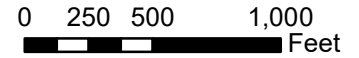


Map F - Work Plan Paugussett State Forest: Kazan Block

Newtown, Connecticut
213 Acres



January 2021
Prepared by: J. Humphreys



Appendix A- Review and comments (DEEP and non-DEEP)

DEEP Western District Comments

Skip Kearns- DEEP Support Services Operations Supervisor – “I see no concerns relating to Support Services with this plan.” (May 12, 2021)

Tammy Talbot- DEEP Operations and Park Management – “Looks good. Thanks!” (April 16, 2021)

Comments from **Gerard Milne- DEEP Forestry, Matt Goclowski- DEEP Fisheries, Tanner Steeves- DEEP Wildlife, Kate Moran- DEEP Wildlife, Peter Picone- DEEP Wildlife, and Lisa Wahle- DEEP Wildlife** are incorporated into the plan.

Other Stakeholder Comments

Connecticut Forest and Park Association – Comments provided by **Clare Cain, Trails Director**.

“Related to recreation- It seems that the unauthorized mountain bike trails will need to be closed off. I wondered if working with NEMBA to do this would be appropriate. They have the most influence over their user group (although no one can control folks who choose not to follow the rules). Also, I am sure neighbors have had some input or review of the plan, but maybe if a reminder went out to neighbors about the allowed uses in the forest, that would help with local monitoring. Peer pressure on neighbors who habitually use motorized vehicles in the forest could potentially help curtail the abuse. The motorized traffic is the most egregious and it is hard to recover natural systems or trails once they have been damaged by motorized vehicles.

If you find that you want help closing off unauthorized trails, let me know. We could possibly host a public work party to help out.” (June 24, 2021)

FirstLight Power – Comments provided by **Eric Hansen of Ferrucci & Walicki, LLC**, contracted forester for FirstLight Power, are incorporated into the plan.

Housatonic Valley Association – None.

Housatonic Valley Chapter of the New England Mountain Bike Association (NEMBA) – None. (Discussions to establish an authorized mountain bike trail are ongoing.)

Iroquois Gas Transmission System – None.

Newtown Conservation Commission – None.

Appendix B- References

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Appendix C- Definitions

This section includes a list of commonly used forestry terms.

Acceptable Growing Stock (AGS) – Trees that meet the landowner’s objectives. Usually this includes saleable trees that are of good form, species and quality and would be satisfactory as crop trees.

Aerial Photo – Photo taken from a position above the earth’s surface, such as a plane or satellite.

Age class – The trees in a stand that became established at, or around, the same time. The range of tree ages in a single age class is usually less than 20 percent of the expected age of that class.

Basal area – The cross-sectional area of a tree’s stem at 4.5 feet above the ground, or breast height. Basal area per acre is often used as a stand metric to determine stand stocking and density.

Best Management Practices (BMPs) – Procedures and treatments that lessen soil erosion, sedimentation, stream warming, movement of nutrients, and visual quality during or following forest management activities.

Biological diversity – The variety and abundance of species, their genetic composition, and the communities, ecosystems, and landscapes in which they occur. Also, the variety of ecological structures and functions at any one of these levels.

Board-foot volume – The volume of wood expressed as the number of boards 1’x1’x1” thick (a board foot or BF).

Carbon sequestration – The process of removing carbon from the atmosphere for use in photosynthesis, resulting in the maintenance and growth of plants and trees. The rate (or amount and speed) at which a forest sequesters carbon changes over time. In the northeastern United States, carbon sequestration (rates) typically peak when forests are young to intermediate in age (around 30-70 years old), but they continue to sequester carbon through their entire life span.

Carbon storage – The amount of carbon that is retained in a carbon pool within the forest. Storage levels increase with forest age and typically peak in the northeastern United States when forests are old (>200 years).

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

Diameter at Breast Height (DBH) – The diameter of a tree trunk measured at 4.5’ above the ground.

Endangered Species – Any native species documented by biological research and inventory to be in danger of extirpation throughout all or a significant portion of its range within the state and to have no more than five occurrences in the state, and any species determined to be an "endangered species" pursuant to the federal Endangered Species Act (CGS Sec. 26-304).

Forest Product – Any raw material yielded by a forest.

Forest Type – A classification of forests based on species abundance and composition of the overstory, with the overstory defined as all trees in the 1” DBH class and larger. Species composition is based on the proportion of total stand basal area represented by each species or species group. Forest type designations are not assigned to

stands until they grow out of the seedling stage into the sapling class. The USDA Forest Service identifies 140 forest types.

Forest Types mentioned in this plan are:

Chestnut Oak - Associates – scarlet oak, white oak, black oak, pitch pine, red maple, red oak. Sites—rocky outcrops with thin soil, ridge tops. Classified under Oak-Hickory Group in USDA Forest Service Classification.

Chestnut Oak - Black Oak - Scarlet Oak - Associates – northern red oak, white oak, shagbark hickory, pignut hickory, tulip poplar, red maple, Eastern white pine, pitch pine. Site—dry upland sites on thin soiled rocky outcrops on ridges and slopes. Classified under Oak-Hickory Group in USDA Forest Service Classification.

Eastern Hemlock - Associates- beech, sugar maple, yellow birch, basswood, red maple, black cherry, white ash, white pine, paper birch, paper birch, northern red oak, and white oak. Sites—cool locations, moist ravines, and north slopes. Classified under White-Red-Jack Pine Group in USDA Forest Service Classification.

Sugar Maple - Basswood - Classified under Maple-Beech-Birch (Northern Hardwood) Group in USDA Forest Service Classification.

Mixed Upland Hardwoods - Associates – Any mixture of hardwood species typical of the upland central hardwood region, should include at least some oak. Sites- wide variety of upland sites. Classified under Oak-Hickory Group in USDA Forest Service Classification.

Northern Red Oak - Associates- black oak, scarlet oak, chestnut oak, and tulip poplar. Sites—spotty distribution on ridge crests and north slopes in mountains but also found on rolling land, slopes, and benches of loamy soil. Classified under Oak-Hickory Group in USDA Forest Service Classification.

Red Maple - Oak - Associates – the type is dominated by red maple and some of the wide variety of central hardwood associates include upland oak, hickory, tulip poplar, and sassafras. Site—uplands. Classified under Oak-Hickory Group in USDA Forest Service Classification.

Red Maple Lowland - Classified under Elm-Ash-Cottonwood Group in USDA Forest Service Classification.

White Oak - Red Oak - Hickory - Classified under Oak-Hickory Group in USDA Forest Service Classification.

Yellow Poplar - White Oak - Northern Red Oak - Classified under Oak-Hickory Group in USDA Forest Service Classification.

Forest-Type Group – A broader classification of forests created by aggregating similar forest types. The USDA Forest Service identifies 28 groups. The State of Connecticut uses group names found in Connecticut forests.

Forest-type Groups mentioned in this plan are:

Oak-Hickory Group

Pine- Hemlock Group - Subgroup under USDA Forest Service White-Red-Jack Pine Group

Northern Hardwood Group - Maple-Beech-Birch Group in USDA Forest Service Classification.

Invasive species – A non-native species that exhibits an aggressive growth habit and can outcompete and displace native species.

LiDAR – Light Detection and Ranging is a remote sensing method that uses light from pulsed laser to measure distances to the Earth.

Log Rules – Methods of estimating the amount of lumber that can be sawed from logs of given lengths and diameters. The log rule statutorily mandated in Connecticut is the International ¼ -inch Rule.

Mast – Nuts of trees that serve as food for wildlife.

Mature tree – A tree that has reached biological maturity shows declining year-to-year volume growth.

Multiple use (multi-use) trails – Trails not specifically designated as hiking trails, but can be used for multiple forms of recreation including biking or horseback riding.

Native plant – A species that naturally occurs in a given location where its requirements for light, warmth, moisture, shelter, and nutrients are met.

Non-commercial treatment – Any forest management activity that does not produce enough revenue to pay for the costs associated with the treatment.

Nutrient – Elements and other chemical substances that support biological activity.

Old Growth – A forest community that has remained undisturbed by man for a long period of time, the length of which is relative and dependent upon locality.

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

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.

Relative Density – An index of crowding in forest stands, also called the tree-area ratio; a measure of the absolute stand density expressed as a ratio to the density of some reference level. The reference level is usually the stand density of a fully stocked stand for a particular species composition, site, and method of treatment.

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

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.

Shade tolerance/intolerance – The relative inability of a plant to become established and grow in shade.

Silviculture – The art, science, and practice of establishing, tending, and reproducing forest stands with desired characteristics.

Silvicultural Treatments - Different types of cutting methods used to manage a forest for desired outcomes.

Clearcut - Used in even-aged management to regenerate a new forest using seeds already in the soil, seeds brought in from adjacent areas by wind or animals, and/or sprouts from stumps. All stems are removed to provide maximum sunlight for the new forest. Trees such as black cherry, yellow poplar, aspen, and paper birch often regenerate after clearcuts. This method is often used to create early successional wildlife habitat.

Patch cut - Removal of overstory trees to create patches of regeneration within a stand.

Seed Tree - An even-aged silvicultural technique similar to a clearcut but leaves several residual trees per acre to provide a seed source for regenerating target species.

Shelterwood - Used in even-aged management. Understory and lower crown canopy trees are removed to allow the new stand to regenerate in partial sunlight. Trees to be retained are usually of the best quality to serve as a desirable source of seed. After adequate regeneration is established, the overstory is removed in one or two cuts. Shelterwoods are often used to regenerate species such as oak and white pine that have

irregular crops of seed.

Selection harvest - Used in uneven-aged management. Trees are removed singly or in small groups, maintaining a continuous canopy. Selection harvests tend to favor trees that can grow in partial shade such as sugar and red maples, black and yellow birch, beech, and hemlock.

Group selection - An uneven-aged silvicultural technique where trees are removed in groups usually 1/10 to 2/3 acre in size, but sometimes up to 1 or 2 acres on large properties. Group selection can be applied in combination with single-tree selection to create a more varied landscape.

Single-tree selection - An uneven-aged silvicultural technique where trees are removed singly or in groups of 2 or 3, which maintains a continuous canopy and an uneven-aged or uneven-sized mixture.

Thinning - Used in even-aged management to reduce stand density to improve growth and health. The crowns of crop trees are released on at least two sides and preferably three or four sides.

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

Site Index – An expression of forest site quality based on the height of a dominant or co-dominant tree at age 50 (in the eastern United States).

Size Classes – A designation of trees based on their DBH.

Sawtimber - Trees 12-inch DBH (diameter at breast height, or 4.5 feet off the ground) and larger that contain at least one 8-foot sawlog.

Poletimber - Trees between 5 and 11 inches DBH. These trees are too small for sawlogs, but could be sold as pulpwood, fuelwood, or other small products where such markets exist.

Saplings - Trees 1 to 5 inches DBH.

Seedlings - Trees less than 1-inch DBH.

Soil Compaction – The process by which the void space in soil is decreased. Compaction can cause decreased tree growth, increased water runoff and soil erosion.

Species diversity – The number of different plants, animals, and other life forms coexisting in a community.

Species of Special Concern – Any native plant species or any native nonharvested wildlife species documented by scientific research and inventory to have a naturally restricted range or habitat in the state, to be at a low population level, to be in such high demand by man that its unregulated taking would be detrimental to the conservation of its populations or has been extirpated from the state (CGS Sec. 26-304).

Species of Greatest Conservation Need – Species of wildlife, including low and declining populations as each State fish and wildlife agency deems appropriate, that are indicative of the diversity and health of wildlife of the State and are listed in a state's Wildlife Action Plan.

Stand – An area of trees of a certain species composition (cover type), age class or size class distribution and condition (quality, vigor, risk), usually growing on a fairly homogeneous site. An even-aged stand contains trees in the main canopy that are within 20 years of being the same age.

Even-aged stands contain trees in the main canopy that are within 20 years of being the same age. These stands are sometimes designated by age-class (e.g. a 40-year old stand) or broad size-class (e.g. seedling/sapling, poletimber, sawtimber).

Uneven-aged stands contain trees of several 15- to 20-year age-classes. These stands generally contain trees of many sizes (seedlings through sawtimber) due to the range in ages and the differences in growth rates

among species.

Stand condition – The relative number, size, species, quality, and vigor of trees in a forest stand.

Stand density – A quantitative measure of the proportion of area in a stand occupied by trees such as basal area or trees per acre.

Stocking – A subjective indication of stand density that helps determine whether the stand needs to grow further, be thinned, or regenerated.

Sustainable Forest Management – A dynamic and evolving concept, which aims to maintain and enhance the economic, social, and environmental values of all types of forests, for the benefit of present and future generations.

Threatened Species – Any native species documented by biological research and inventory to be likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range within the state and to have no more than nine occurrences in the state, and any species determined to be a “threatened species” pursuant to the federal Endangered Species Act, except for such species determined to be endangered (CGS Sec. 26-304).

Understory – The saplings, shrubs, seedlings, and other vegetation growing beneath the forest canopy and above the herbaceous plants on the forest floor.

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

Watershed – An area of land through which precipitation is redistributed into components of the hydrologic cycle, including evaporation, groundwater, and streamflow. A watershed is all the land giving rise to streamflow at a selected point in a stream channel; the area drained by a river or stream and its tributaries.

Wetland – A land/water ecosystem characterized by periodic inundation. The soils are developed under the influence of saturation and support plants and animals adapted to these conditions.