

STATE OF CONNECTICUT

DEPARTMENT OF ENERGY AND ENVIRONMENTAL  
PROTECTION




Bureau of Natural Resources

Division of Forestry

FOREST MANAGEMENT PLAN  
2012 through 2022

Nathan Hale State Forest

Approvals:

 8-1-12

Christopher Martin, Director      Date  
Division of Forestry

 8/1/12

William Hyatt, Bureau Chief      Date  
Bureau of Natural Resources

 Aug. 3, 2012

Susan Frechette, Deputy Commissioner      Date  
Outdoor Recreation & Natural Resources

Author: William Hochholzer, Forester 1

CT. Dept of Energy and Environmental Protection  
Division of Forestry  
79 Elm Street, 6<sup>th</sup> Floor  
Hartford, CT 06106

## Contents

A. History.....	2
B. Acres and Access .....	4
C. Special Use Areas.....	5
D. Extensive Areas of Concern .....	9
E. Wildlife Habitat .....	10
F. Vegetative Condition .....	12
G. Landscape Context .....	13
H. Specific Acquisition Desires.....	14
I. Public Involvement .....	14
J. Adaptive Management .....	14
K. Ten Years Goals .....	14
L. Work Plans .....	15
M. References .....	16
N. Acknowledgements.....	16
O. Appendix .....	17
P. Comment .....	18
Q. Glossary.....	18

### Mapping;

See inserts in back of Plan

- A. Topographic Map
- B. Base Map
- C. Site Quality Overlay
- D. Forest Type, size Overlay
- E. Special Features Overlay
  - a. Cultural
  - b. Recreation
  - c. Natural Areas
  - d. Critical Habitat
- F. Work Plan Overlay

## A. History

Nathan Hale State Forest (NHSF) was the 26<sup>th</sup> forest added to the statewide system consisting of 32 forests and over 170,000 acres. The acquisition was made possible by a generous gift received from the Seymour Estate in 1946 however, the groundwork to preserving the Nathan Hale homestead, farmland, and forest began in 1914 when George Dudley Seymour began purchasing land in Coventry. At that time, Mr. Seymour purchased the 850 acres which included the Hale Homestead and other historical sites with the hopes of restoring the property to a state comparable to that which existed during Nathan Hale's boyhood.



Nathan Hale Homestead, Coventry CT

*"Nathan Hale, a martyr soldier of the American Revolution, was born in Coventry, Conn., June 6, 1755. When but little more than twenty-one years old he was hanged, by order of General William Howe, as a spy, in the city of New York, on September 22, 1776".*

In stepping forward to accept the assignment to gather intelligence behind enemy lines, Hale is quoted as saying, *"I wish to be useful, and every kind of service necessary to the public good becomes honorable by being necessary. If the exigencies of my country demand a peculiar service, its claim to perform that service are imperious."* And upon his capture, his infamous last words, *"I only regret," he said, "that I have but one life to lose for my country."*<sup>1</sup>

*"On October 1, 1985, by an act of the General Assembly and the efforts of the Nathan Hale Chapter of the Sons of the American Revolution, Nathan Hale officially became Connecticut's State Hero".*<sup>2</sup>

As the land has reverted from farm to forest since the late 1800's, Mr. Seymour developed a management strategy based on his interests; forest management for timber products and wildlife habitat. In the 1930's and with the influence of two forester friends, he began establishing conifer plantations and planted the forest boundaries with hemlock and arbor-vitae. Since acquiring the land, the state has made additional acquisitions and today the forest totals 1,529 acres.

Under state control, the forest has produced tobacco poles, Christmas trees, and sawtimber which have been sold as products of management activities. From 1946-1972 Douglas fir, Black locust, Siberian Pine, Hemlock and Tulip plantations were established, pruned and thinned. Former State Forester, Harry McKusick, used the forest for experiments such as below ground wood preservation, herbicide effectiveness and cold hardiness of conifer species. During that time, McKusick also harvested logs from the forest that were sawn into picnic table stock for the Parks Division. Currently, the state forests of Connecticut supply enough wood to the Department of Energy and Environmental Protection (DEEP) Parks Division to build 500 picnic tables a year.

---

1 [http://www.connecticutsar.org/patriots/hale\\_nathan.htm](http://www.connecticutsar.org/patriots/hale_nathan.htm)

2 [CT.gov: The State Hero](http://www.ct.gov)

Additional research includes work by the [Connecticut Agricultural Experiment Station](#) (CAES) on gypsy moth defoliation in Comp. 5 during the mid 1970's and active research on an American Chestnut restoration project.

Since 1974 the state has managed the forest for timber and wildlife habitat using the even-aged Shelterwood System and uneven-aged Selection System. In the 1970's several stands were thinned to stop mortality from [Oak Decline](#) triggered by the combination of [gypsy moth](#), [two-lined chestnut borer](#), and [shoestring root rot](#). These thinnings, monitored by the CAES, resulted in vigorous growth rates, producing high quality stands. Shelterwoods were conducted to establish regeneration in declining stands. In the 1980's pole stands and plantations were thinned to accelerate growth rates on potential crop trees. Five hardwood stands were treated to release or promote hardwood regeneration. Three hardwood stands were thinned to begin their conversion to northern hardwoods. In the 1990's forestry worked to create a sustainable forest ecosystem. Presently the forest is healthy and populations of deer, turkey, coyote, hawk, fox, raptors, grassland birds, neo-tropical migrants (shrub and interior species) are flourishing.

### **Reasons for acquisition and funding sources**

The Seymour donation included specific language in the deed that the forest was... *"to be managed as a state forest... in accordance with the principles of scientific forestry, with special reference also to wildlife conservation, including appropriate provision for bird and game sanctuaries."*<sup>3</sup> Today the forest has grown to over 1,500 acres. Additional purchases were funded largely through the Recreation and Natural Heritage Trust Fund, DEEP's primary program for acquiring land to expand the state's system of parks, forests, wildlife, and other natural open spaces.

### **Changes in the last Management Period**

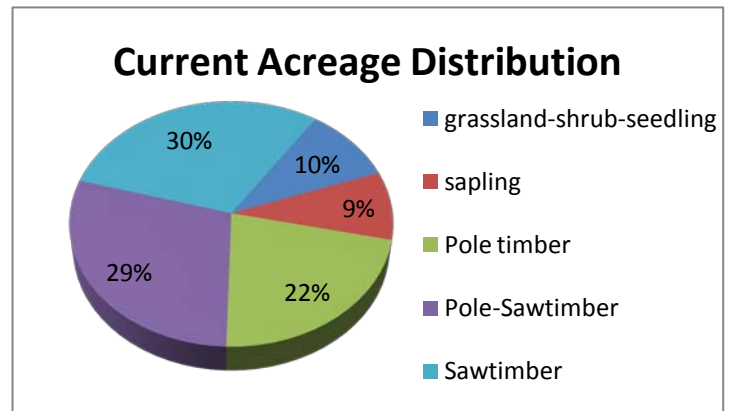
- 57 acres at the north end of the forest, leased to the Town of Coventry, is being used as a passive recreation town park with hiking trails, protected vernal pools and a pond. Lease expiration date is 2017. The Captain Nathan Hale Middle School studies the vernal pools and the Coventry High School cross-country team holds competitive meets in the leased area. The town Tree Warden oversees the general activity in the area. DEEP Forestry and the Town of Coventry mark the boundaries.
- 185 acres were acquired in the mid 1990's. The area has been added to Compartment 3 of the forest.
- The Northeastern Drone Society (NEDS) has established a presence at the forest, flying remote control aircraft by Special Use License issued annually by DEEP Parks Division in the 'Trueman Meadows' along South River Road.
- Since 2002, the DEEP Wildlife Division has conducted breeding bird surveys (point count method) in Compartments 2 and 19.
- Invasive species have become pervasive throughout the forest, reducing cover of native plant communities and disrupting sustainable forest management.

---

<sup>3</sup> "Last Will and Testament of George Dudley Seymour", Article XIX, pg 29, July 26, 1943

- **Silviculture:** A total of 431 acres received silvicultural treatment during the last planning period which was 82% of the harvest goal. The untreated 18% were planned TSI treatments with firewood sales. The firewood market was poor during this time and the only local licensed vendor stopped doing business in the area. The overall goal of the previous plan was to bring the forest closer to a regulated even-aged condition where there is an equal distribution of 5 age classes. This helps to provide for sustainable yield of forest products in the future and sustained wildlife carrying capacity.

That goal was substantially achieved as the Acreage Distribution chart illustrates. There are fewer acres of seedling and sapling stands managed as an even-aged forest than originally planned. However, there is an increase in stands converting to northern hardwoods; from thinnings in the 1970's and a hurricane in the mid 1980's. Regeneration counts indicate shade tolerant sugar maple, beech and some birch occur in substantial amounts and often exceed oaks.



### **Rotations and cutting cycles being used on managed forestland**

A one hundred (100) year rotation is the established guide used for even-aged stands managed by the Shelterwood System on approximately 500 acres. A twenty year cutting cycle has been established for uneven aged stands managed by the Selection System on approximately 423 acres.

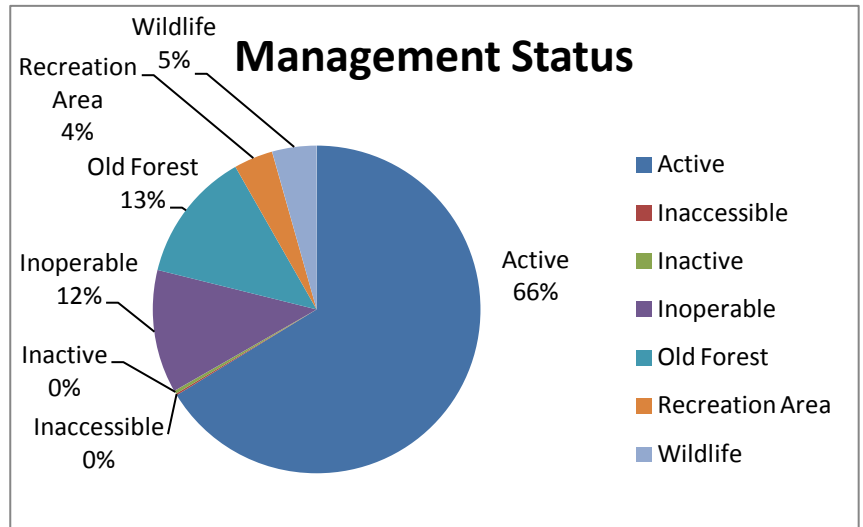
## **B. Acres and Access**

**Total acres: 1,529**

- **Present access** –There are eight miles of asphalt town roads along the forest frontage of NHSF. These roads include: Seagraves Road, South River Road and South Street in Coventry, and Wheeling Road, Bear Swamp Road and Skinner Hill Road in Andover. There is access on Nathan Hale Road (discontinued town road) through the Hale Homestead. There are two gravel forest roads; Gravel Pit Road and Matt Road, which are gated at town road intersections providing access to Compartments 2 and 6.
- **Numbers of gates** – Eight wooden gates are maintained by DEEP Parks. Four gates, which are used the most, are in good condition, and four are deteriorating and need replacement. Wooden gates are used as a cost savings, to maintain the rural character of the area and because of the absence of vandalism. Cedar gate stock is available in Compartment 2 stands 9 and 15.
- **Permanent landing access points** – Two of the five permanent landings are blocked with logs or rocks. These areas have been designated as landing areas for commercial timber operations. It is important that access remained blocked to prevent illegal or unauthorized use.
- **Maintenance needs** – Bear Swamp Road will require gravel and erosion control work on

approximately a half-mile of road. A quarter mile of Gravel Pit Road requires brush cutting and drainage ditch maintenance on the uphill side of road. Also a rip-rap apron is needed at the entry to counter the surface runoff that has been directed onto the gravel road from the town road. A half-mile of Matt Road needs to be brushed out mechanically to allow for 2-wheel drive access. No immediate action is required to repair the roads; access will be improved during harvest operations that use the roads to haul out forest products.

- **Management Status-** The forest has been evaluated and categorized into groups affected by current physical conditions, policy, or management principles. The pie chart to the right illustrates the forest as it exists today. The category labeled “Active” is forestland that is actively managed for timber resources which directly enhance the wildlife habitat in the forest. “Old Forest” is a contiguous block of land, interior to the forest that has been set aside to allow for the natural processes of stand



development to occur without the influence of active forest management. “Inoperable” land contains physical features such as steep slopes, excessively rocky terrain, or wetlands that prevent active management for resource protection or operator safety. “Inaccessible” areas are stands that cannot be accessed due to the deterioration of forest roads or inoperable conditions (i.e. wetlands). “Wildlife” areas are managed by the Wildlife Division to maintain grasslands and other early successional habitats, such as old fields and shrublands, and the “Recreation Area” is Creaser Park, which is leased to the Town of Coventry.

- **Right of Ways (ROW)** – The State has a ROW past the front of the Nathan Hale Homestead on Nathan Hale Road which is a discontinued town road.
- **Boundary conditions and total miles of boundary** – The boundaries were marked in 2009. Seventy-five percent of the lines are readily identified with planted hemlock. The 13 miles of boundary need remarking by 2016. Boundaries adjacent to harvest areas will be clearly marked prior to harvest. Roadside corners are monitored regularly. All boundary locations are known and marked around the forest.

## C. Special Use Areas

Division	Compartment	Description
Forestry	10	Old Forestland Management Site
Wildlife	2	Pheasants are stocked annually during the small game hunting season. Stand 15 is periodically mowed to maintain early successional habitat, and will be expanded by treating Stand 8, if funding becomes available. Breeding bird surveys are conducted annually in Stand 15.

	3/19	Early successional habitat is maintained in Compartment 3 (Stands 6 and 9). The fields on Talcott Hill Road (Compartment 3 Stand 7) and Trueman Meadow (Compartment 19 Stand 1) are managed under an agricultural agreement with a local farmer. In exchange for the use of the fields on Talcott Hill Road for corn and/or hay production, the farmer mows Trueman Meadow outside of the nesting period to benefit grassland birds and other wildlife. Breeding bird surveys are conducted annually in Trueman Meadow.
Parks	6/19	The Local Farmer’s Market uses a portion of Matt Road from the Hale Homestead to South Street on Sundays from June-October. This activity is monitored by the DEEP Parks Division. NEDS receives a Special Use License annually for use of Trueman Meadow as a flying/landing area for model airplanes.
Inland Fisheries	18/19	Skungamaug River – Stock trout annually.
Property Management	18	Oversees leased land to Coventry, known as Creaser Park and town fire pond with dry hydrant access. The current lease will expire in 2017. Any process to extend the agreement will be handled by DEEP Property Management.
CAES	1/6/10	Chestnut Blight Research study areas
Support Services	2	Gravel pit – Bank run gravel suitable for forest roads.

**Lakes and Ponds** – Creaser Pond is a 2.5 acre pond leased to the Town of Coventry. The pond is used locally for fishing.

**Streams and Rivers** – The Nathan Hale State Forest contains three streams of fisheries importance, the Skungamaug River, Rufus Brook and Bear Swamp Brook. The Skungamaug River, a major tributary of the Hop River, is annually stocked by the DEEP with more than 3,500 adult (9-12") brook, brown, and rainbow trout. The river also supports a wide variety of stream fishes such as: fallfish, common shiner, tessellated darter, blacknose dace, white sucker, and the catadromous American eel. Rufus Brook is a high quality coldwater, headwater watercourse that supports a robust native brook trout population and blacknose dace. The Bear Swamp Brook fish community has not been sampled. It is expected to support a mixture of fluvial dependent fishes and warmwater pond fish that have emigrated from small man-made impoundments.

Since the Inland Fisheries Division highly values the fisheries resources in these streams, efforts must be expended to preserve and maintain existing instream, riparian and water quality conditions. This can be accomplished through the utilization of best management practices for all timber harvest operations that can include:

- 1) Utilizing riparian buffer strips along watercourses. Well-vegetated riparian zones offer stream protection by filtering-out sediments, stabilizing streambanks, regulating stream hydrology, and

providing beneficial shading/cooling of stream waters. It is recommended that only selective or partial tree removal take place within 100 feet of a watercourse, and the use of a skidder within riparian zones be restricted. Sensitive riparian areas may require that no harvest occur within the 100-foot buffer zone. Streamside overhead tree canopy should not be removed without consensus of forestry and fisheries personnel. Loss of stream shading, especially in designated coldwater streams, can increase ambient stream water temperatures resulting in the dispersal of fish from the immediate impacted zone, and changes in fish community structure.

- 2) Utilizing seasonal harvest restrictions in sensitive areas that contain steep slopes and highly erodible soils.
- 3) Avoiding stream crossings if possible. Log bridges should be constructed over streams that have either steep approaches or soft stream bottoms. Bridges should be removed upon harvest completion.

The Inland Fisheries Division will continue to provide specific fisheries resource guidance during reviews of individual forest operation plans.

**Cultural sites** – [The Nathan Hale Homestead](#), a historic site owned by the Connecticut Antiquarian and Landmark Society, and the Strong-Porter House, owned by the Coventry Historical Society, are located on South Street and surrounded by the forest. Six foundations, three wells and numerous stone walls are found throughout the forest. There are charcoal mounds along Skinner Hill Road in Compartment 5 and the remains of an old portable sawmill site in Compartment 8. South Street and Skinner Hill Road are designated scenic roads in Coventry and harvesting should take that into consideration as a courtesy to the public. The ‘scenic road’ designation does not have restrictions prohibitive to harvesting.

**Recreation and scenic sites** – Parking at the forest is limited to road-side pull-offs and Creaser Park. There are no sanctioned DEEP trails within the forest. The will of the original grantor, George Dudley Seymour, states that “the fields and woodland of the Hale Farm...be managed as a state forest by the State Park and Forest Commission in accordance with the principles of scientific forestry, with special reference also to wildlife conservation, including appropriate provision for bird and game sanctuaries”. Skid trails and interior forest roads exist and are open to the public for passive recreation. However, creating access, parking areas and additional recreational trails is not a goal or objective of the DEEP Divisions of Forestry and Parks.



In 2003, in honor of the Centennial of the State Forest System, Connecticut DEP's Division of Forestry invited the public to visit State Forests by placing a series of letterboxes throughout the State Forest network. DEEP Forestry has maintained the letterbox program since that time. NHSF was the 26<sup>th</sup> of 32 state forests designated. For additional information regarding letterboxing and for clues to find the boxes, please visit [DEEP: Letterboxing in Connecticut's State Forests](#) website.

Creaser Park, in Compartment 18, is leased to the town of Coventry. There are hiking trails, fishing access, and a ‘dog-friendly’ area which receives intensive recreational use. Recreation is concentrated at the north end of the forest in Creaser Park, which was not part of the Hale Farm or Seymour gift. This area is designated ‘no hunting’. Compartment 2 is stocked annually with pheasants during the small



game hunting season in the fall and is periodically mowed by the Wildlife Division to maintain grassland and early successional forest bird habitat.

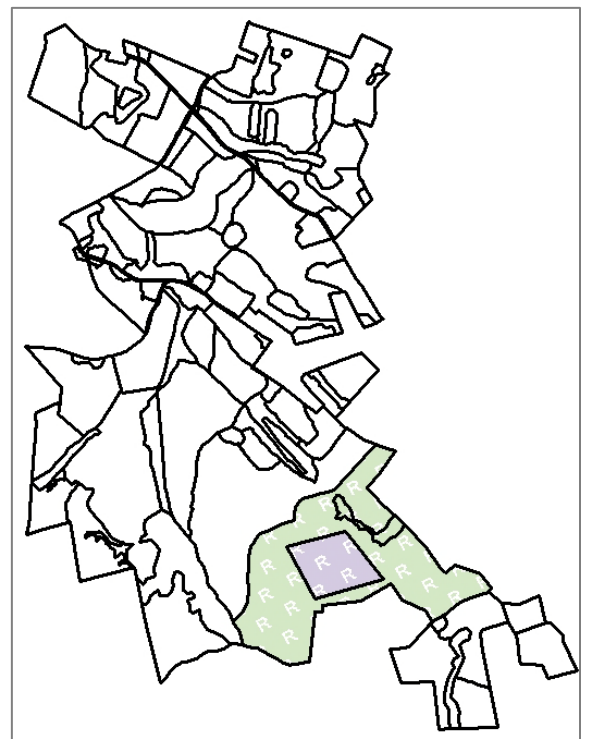
Between the mid-1980s and 2004, NEDS flew model airplanes at the Trueman Meadow under a series of 5-year agricultural agreements. Beginning in 2005, NEDS authorization to use the area became the subject of annual Special Use Licenses. Additionally, in 2005, NEDS members modified the runway and parking area and enlisted to assist in performing stewardship activities on the Trueman Meadow. The terms of the license in 2005, 2006 and 2007 included the manual control of invasive plants along the field perimeter, removal of any trash generated by NEDS activities, maintenance of the entrance to the property and keeping a log of all NEDS member activities. The Wildlife Division began monitoring grassland nesting bird use of the Trueman Meadow in 2002. NEDS was made aware of the wildlife resource concerns for the area based on meetings and correspondence with Forestry and Wildlife personnel.

**Critical habitat** – The Natural Diversity Data Base records indicate that five species of special concern; Eastern ribbon snake (*Thamnophis sauritus*); wood turtle (*Glyptemys insculpta*); Eastern meadowlark (*Sturnella magna*); bobolink (*Dolichonyx oryzivorus*) and broad-winged hawk (*Buteo platypterus*), have been documented in the vicinity of NHSF. Forest operation plans scheduled during the next management period will take into consideration the presence of these species and efforts will be made to promote and protect the habitats these species use.

**Natural Areas** – A 31-acre Nathan Hale Natural Area and 50 acre buffer strip was established on September 9, 1975 by DEP directive issued by Theodore Bampton. (See appendix) At the time of designation, the area was described as “old and second growth hardwoods which is of local significance and which is being left virtually unmanaged within the Nathan Hale State Forest.”<sup>4</sup> The map to the right depicts the approximate location of the Natural Area, which now has additional protection by the proposed designation of the old forestland management site.

**Old Forestland Management Site** – DEEP Forestry has designated the 198-acre Compartment 10 as an ‘Old Forestland’ area, to naturally develop without forest management. There are 6 acres of hardwood swamp and 192 acres of upland oak and hardwood forest, including the 31-acre natural area. Classifying this area as Old Forestland does not permanently protect the compartment, as does the designation of a natural area; however, it is a management decision to allow stand succession to occur naturally without silvicultural disturbances for the immediate future.

**Natural Area and  
Old Forestland Location Map**



The criteria guiding this decision are (1) The compartment is a parcel of the former Hale Farm farthest

<sup>4</sup> Department of Environmental Protection Directive Form, 1651 D1, dated September 9, 1975.

from the homestead and most likely to have been abandoned prior to the Civil War, (2) Stonewalls indicate that a portion of the area was cultivated during the colonial period, but there is no evidence of harvesting since the time of abandonment and (3) There is evidence of hurricane blow-down in 1938 and 1985 which have created natural canopy gaps, tending toward old growth characteristics such as the in-growth of shade tolerant species.

The compartment averages three standing dead snags per acre, four hollow den trees in use per acre, and coarse woody debris is common on the forest floor. The understory is generally open with a three foot high browse line except where canopy gaps occur. Mountain laurel, which is uncommon in this forest, can be found on a few acres along the boundary of Compartments 9 and 10. Invasive plants were noted at one location, but the compartment is generally invasive free. Overstory oak is second growth, approximately 125 years old and has attained stand dominance after the loss of the American chestnut, due to [chestnut blight](#), in the early 1900's. The compartment has indications of converting to a more shade tolerant species mix of sugar maple and associated species which is part of the natural successional process. The wetlands range from open water to scrub-shrub swamps and hardwood swamps (elm-ash-red maple).

A woods road passes through the area and is used by hikers, horse and mountain bike riders as well as unauthorized ATV, four wheel-drive and dirt bikes. The road will remain open to serve as a firebreak. If invasive species take hold within the area, an eradication plan will be developed to protect the old forest characteristics of the ecosystem.

**Research areas** – In Compartments 1, 6, and 10, the CAES has established research plots to monitor chestnut growth.

## D. Extensive Areas of Concern

**Trails and signs:** There are no state authorized trails in NHSF, except at Creaser Park, which are maintained by the town of Coventry. Interior gravel forest roads and old farm roads are open to the public for passive recreational use. The Parks Division does not maintain any trails, trail markers, trail maps, or post trail markers or signs in the forest.

Due to the close proximity to the densely populated residential community surrounding the forest, unauthorized and illegal use by ATV, off-highway vehicle and mountain bikers occurs throughout the entire forest. Negligent use has caused soil compaction in some areas, and significant erosion in others. Unauthorized stream crossings have caused stream siltation. Heavy use has been documented in Compartments 2, 3, 5, 6, 10, 13, & 14.

Consideration should be given to creating a wilderness pass that could be sold or issued on an annual basis that would require recreational mountain bikers to register, authorizing users to ride “non-maintained” forest roads and trails, and would allow for enforcement of ethical trail use guidelines. Guidelines under this permit could include limited group sizes for organized rides (may require a Special Use License), restricting trail use to existing natural features, and honoring trail closures during certain periods of the year due to high soil moisture content or active timber harvesting.

**Invasive Species:** Agency policy states *“Protecting native plant species and the habitats in which they occur is an objective of the Connecticut Department of Environmental Protection (the Department).”*

*Many non-native plants have been introduced intentionally or accidentally, with most having no deleterious effects on agricultural lands, waterways, wetlands, or conservation areas. Some non-native plants, however, exhibit an aggressive growth habit and can out-compete and displace native species. These are referred to as invasive. Invasive plants, also called harmful or noxious weeds, are a serious problem in Connecticut and elsewhere, reducing agricultural production, impairing recreation, and causing the loss of biological diversity. Significant funds are invested annually in the control of invasive species, both by the citizens and municipalities in Connecticut, and by State and Federal agencies.*

*Non-native invasive species that have a detrimental impact to native plants, wildlife, or their habitats will be controlled, reduced, or removed from lands and waters managed by the Department whenever practical.”<sup>5</sup>*

227 acres representing 15% of the total property have been identified as having significant populations of invasive plant species that require action to eradicate prior to implementing a forest practice. The Forestry Division will eradicate invasive species working with the Wildlife Division. Project proposals will be used to identify areas of concern and treatment methods. Funding can be provided by the 11-192 revolving forestry account.

## **E. Wildlife Habitat**

Wildlife management objectives for Nathan Hale State Forest have focused on the enhancement of early successional habitats and providing opportunity for wildlife-based recreation.

Habitat management activities over the last 10 years have included the following;

- 1) the administration of an agricultural agreement on approximately 28 acres of land used for corn and hay production off of South River Road and Talcott Hill Road (Compartment 19/Stand1; Compartment 3/Stand 7);
- 2) installation of bluebird nest boxes; and
- 3) the enhancement of 20-25 acres of old field habitat (Compartment 2/Stand 15; Compartment 3/Stand 6) using heavy-duty brush cutting equipment (Hydro-Ax, Brontosaurus, ASV and tractor-mounted brush hog) and the application of a selective herbicide to control invasive plants and other competing low quality hardwoods; the work was funded with two DEEP-administered forestry contracts in 1999 and 2000, and two Wildlife Habitat Incentives Program grants received from the USDA, Natural Resources Conservation Services in 2000 and 2006; in an effort to replicate natural old field succession, a three acre irregular shelterwood harvest was completed releasing red cedar and white pine in Compartment 2/Stand 15, through a DEEP-administered forestry contract in 2003.



---

<sup>5</sup> [DEEP Non-Native Invasive Plant Species Policy](#)

**The Natural Diversity Database (NDDDB)** indicates the presence of five state-listed Species of Special Concern that require early successional habitats such as grasslands, old fields and meadows for at least part of their life cycle (reference 1/31/11 memo from Julie Victoria to Will Hochholzer). Since 2002, breeding bird surveys (point count method) have been conducted annually in Compartment 19/Stand 1 (Trueman Meadow) and in Compartment 2/Stand 15. Use by state-listed species has been documented.

**Agricultural Agreements:** Trueman Meadow has been hayed under an agricultural agreement since the late 1980s. The last farmer to harvest hay from the area was Noel Miller in 2006. In 2007, based on use of the area by grassland breeding birds and wildlife management objectives for Nathan Hale State Forest, the field was taken out of hay production and a new agreement was established with William Trueman. In exchange for his use of the fields on Talcott Hill Road for corn and/or hay production, Mr. Trueman mows Trueman Meadow outside of the nesting period to benefit grassland birds and other wildlife.

**Hunting:** Nathan Hale State Forest continues to be one of the most heavily used public hunting areas in Eastern Connecticut. Since the late 1980s, there has been a significant decline in the number of acres of private land open to public hunting in the Towns of Bolton and Columbia. For example, from 1989 to 1993, the acreage declined from 1,959 acres to about 500 acres, representing a loss of 74%. As of the 2007-08 hunting season, only 59 acres of private land remained open to public hunting in the town of Bolton.

In order to promote use and increase opportunities on some of the highest quality state-owned areas, a daily permit is no longer required for small game hunting at Nathan Hale State Forest (as of the 2007-08 hunting season). With exception to this change and the addition of firearms turkey hunting in the fall, there have been no changes to the hunting activities permitted on the property since 1993. The only part of the forest that is closed to hunting is Creaser Park located on Case Road, which is leased to the Town of Coventry. The remainder of the property is open for public hunting (waterfowl, small game, turkey and deer) and trapping. Please check the [DEEP Hunting and Trapping Field Guide](#) for additional information (e.g. season dates, bag limits, license and permit requirements, etc.).

**Investment in habitat improvement:** It is recommended that habitat enhancement efforts continue with an emphasis on maintaining and expanding old field and seedling/sapling habitat in Compartment 2 (Stands 15 and 8) and Compartment 3 (Stands 6 and 9). Compartment 2/Stand 15 will be regularly mowed to perpetuate native shrubs and grass cover, and old field habitat will be restored in Compartment 2/Stand 8 if funding becomes available. Work will continue in Compartment 3 to include the removal of invasive species and creation of additional early successional habitat in Stands 6 and 9 (12 acres). These areas and Trueman Meadow will be maintained by periodic mowing. Over the last several years, questions and concerns have been raised about the level of disturbance that occurs in Trueman Meadow as a result of unleashed dogs, NEDS' activities, and the general public (e.g., unauthorized motorized vehicles, horseback riding, etc.). The Wildlife Division will continue to explore these issues, including conducting annual breeding bird surveys in Trueman Meadow and Compartment 2/Stand 15. Based on the results of this work, a recommendation that addresses public use and wildlife conservation at Trueman Meadow will be developed.

**Existing diversity situation:**

Prior management activities have focused on developing balance among size classes to ensure a

sustainable level of timber growth and age class diversity. However, the immediate focus will be to slow the spread of invasive plants and eradicate existing invasive strongholds to prevent to the loss of diverse native plant communities that are in decline within the forest. Prior to implementation of any silvicultural treatments, invasive plant populations must be controlled to encourage native plant propagation.

## F. Vegetative Condition

Over half (53%) of the forest cover at NHSF falls within the oak/ hickory cover group as defined by the United States Forest Service (USFS) Forest cover type groups in Northern United States. The table below provides a breakdown of acreage by cover group and size class in NHSF.

### Forest size classes by forest type (total forest)

Cover Type	Seedling	Sapling	Pole	Saw	Saw-Seed	Sap-pole-saw	Pole-Saw	Other	Total
Elm-Ash-Red Maple		42	55	99			23		218
Exotic Hardwoods			1						1
Maple-Beech-Birch		73	4	142		82			301
Oak-Hickory	10	59	119	317	29	12	269		816
Oak-Pine			9			6	8		23
Other –fields, wetlands, etc		12	2					72	88
Spruce-Fir			6	1					8
White-Red-Jack Pine			14	53		5	4		77
<b>Grand Total</b>	<b>10</b>	<b>186</b>	<b>210</b>	<b>612</b>	<b>29</b>	<b>106</b>	<b>304</b>	<b>72</b>	<b>1,529</b>

### Forest type, size class, and condition class on areas to be managed

#### Oak and Hardwood Commercial Management Unit

Size Class	OK at present	THIN – Overstocked Acceptable AGS	REGENERATE – AGS too low
Seedling-Sapling	148		
Pole Timber	150		
Pole-Saw Timber	215	113	
Saw Timber	139		177

**Softwood Commercial Management Unit**

Size Class	OK at present	THIN – Overstocked Acceptable AGS	REGENERATE – AGS too low
Seedling-Sapling			
Pole Timber	12		
Pole-Saw Timber		62	
Saw Timber			

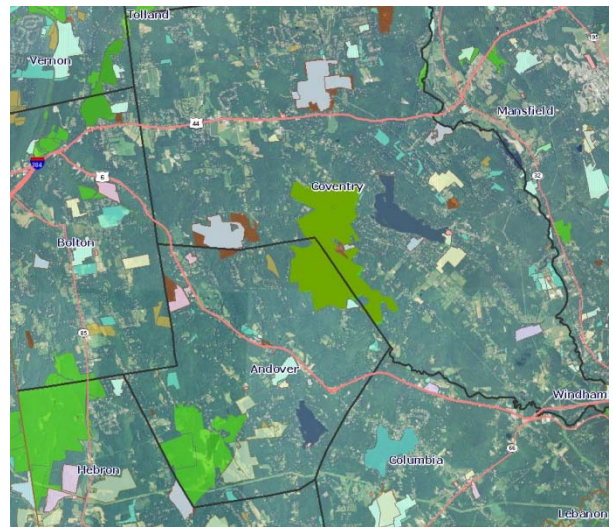
**Forest concerns:** There are generally fewer numbers of native mast producing understory shrubs and desirable mast producing seedlings and saplings than there were 30 years ago. Invasive shrubs and wildlife populations are slowly and silently altering the landscape of the forest. Understory shrubs such as blueberry, hazelnut, shadbush, spicebush and viburnum have declined as natural forest succession occurs and the forest matures. Field edges, stands near boundaries adjacent to residential development, and along town roads are populated with non-native invasive plants. [Japanese knotweed](#), [Japanese barberry](#), [multi-flora rose](#), [autumn olive](#), and [oriental bittersweet](#) dominate the understory to the exclusion of native shrubs, wherever sunlight penetrates the forest floor along stand edges. Abundant turkey and deer populations affect acorn mast crops; which are eaten before germination or consumed as browse once above the winter snow depth. Small natural canopy gaps or light silvicultural treatments favor the growth of black birch, beech and red maple.

The oak forests that exist today are being threatened as the pressures mentioned herein are trending toward the establishment of mixed hardwood forest. Diligence will be required of working foresters to identify the forest stands suitable to regenerating oak species and work to establish and retain these hard masts producing species. Citing the [Forest Regeneration Handbook](#) released by the Connecticut Agricultural Experiment Station, “oak forests have been declining at a rate of 5% every decade since the hurricane of 1938.”<sup>6</sup> If this trend continues, the oak forests that our native communities rely on will be replaced by birch, maple and beech; and the ecological, economic and aesthetic values that are associated with oak forests will be lost.

**G. Landscape Context**

Nathan Hale State Forest provides 1,529 acres of protected forestland for communities living near Coventry Lake. Private farm and forestland exists within the area but very little acreage is currently under permanent protection.

With increasing residential development, and thus disturbance, it is expected that invasive plant species will continue to thrive and an invasive control plan will be crucial to keeping balance in the forest which serves as the primary food and cover habitat for wildlife populations.



**Landscape View; Nathan Hale State Forest is one of only a few parcels listed as protected open space in the area surrounding Coventry Lake .**

<sup>6</sup> [Forest Regeneration Handbook](#)

## **H. Specific Acquisition Desires**

Nathan Hale State Forest is surrounded by a densely populated residential community of Coventry Lake leaving only a small number of undeveloped forest and farmland properties that abut State property. Consideration should be given to any abutting parcel of undeveloped land that consists of 50 acres or more, or improves access to the interior portions of the forest.

## **I. Public Involvement**

The Conservation Commissions in Coventry and Andover received copies of this draft plan for review and comment in March 2012. No comments were received after two months.

DEEP Forestry is available to talk to town Conservation Commissions or an equivalent town commission for the purpose of explaining the objectives of the proposed management activities, and coordinating open space planning and acquisition. This resource plan and a locator map may be viewed on the DEEP website.

## **J. Adaptive Management**

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

## **K. Ten Years Goals**

1. Maintain forest ecosystem health with vigorous growth rates, wildlife productivity, and protection against insect, disease and weather catastrophe.
  - a. Control non-native invasive plants to prevent the displacement of native trees, shrubs, and regeneration established following silvicultural prescriptions.
2. Retain wildlife, aesthetic and historic values:
  - a. Developing a forest of even and uneven-aged stands consisting of a variety of hardwood and conifer species.
  - b. Control and monitor intensive uses that might cause soil erosion or stream siltation.
  - c. Maintain aesthetics along town roads especially within one mile of Hale Homestead and on scenic roads.

- d. Maintain wildlife carrying capacity and habitat quality through hunting, a continuum of early successional habitat, and controlled recreation.
- e. Establish the Old Forestland Management Area in Compartment 10.

## L. Work Plans

- Boundary marking-2016.
- Road construction- Maintain forest haul roads in a drainable, smooth, accessible condition by contractual requirements during and after harvest operations. (Bear Swamp Rd to Comp. 13 & 14)
- Recreation or scenic site work- maintain cedar pole wood gates from forest growing stock by DEEP Parks Division in 2012-2015.
- Improvement of critical habitat – Signage Comp. 10 – Old Forestland Management Area – Forestry Division/internet and forest education and outreach.
- Upland wildlife opening work or leasing- Agricultural agreements in the grasslands by Wildlife Division.
- Wildlife habitat improvement - Periodically mow Comp. 2/Stand 15 (22 acres) and Compartment 19/Stand 1 (19 acres) to maintain grassland and old field habitat; maintain early-successional habitat in Comp. 3/6 (6 acres); create early successional habitat in Comp. 2/Stand 8 (9 acres) and Comp. 3/Stand 9 (6 acres) as funding becomes available.
- Invasive species control work – Develop work plans to control invasive plants on 210 acres in Comp. 2/Stand 5 (6 acres); Comp. 3/Stands 1,2,3,5,6,7,8,9&13 (163 acres); Comp. 6/Stands 4,6 & 7(32 acres) ; Comp.14/Stand 1(14 acres); and Comp. 20/Stand 1(12 acres).
- Silvicultural Treatments

Year	Scheduled Activity	Forest Stand	Acres	Invasive Concerns**
2012	First Shelterwood	C3_S1,2,&3	66	Treatment required
2013	Selection Harvest	C13_S1	18	None
2013	Second Shelterwood	C11_S1	13	None
2014	Softwood thinning	C2_S9	30	None
	Softwood thinning	C6_S6	14	Treatment required
	Softwood thinning	C6_S7	18	Treatment required
	Softwood thinning	C9_S5	10	None
2015	Thinning	C2_S7	23	None
2016	Second Shelterwood	C9_S1	115	None

- Re-inventory 2019, write management plan 2020.

\*\* Treatment is not recommended until invasive species have been eradicated\*\*



## M. References

DeGraaf, etal. 1992. New England Wildlife: Management of Forested Habitats, U.S. Forest Service.

CT DEP Archives-History of Nathan Hale State Forest

Lancaster, Kenneth F. and Leak, William B. Sept. 1977. A Silvicultural Guide for White Pine in the Northeast, Forest Service General Technical Report NE-41, Northeast Experiment Station.

Leak, William B. Solomon, Dale S. and Filip, Stanley M. 1969. A Silviculture Guide for Northern Hardwoods in the Northeast, USDA Forest Service Research Paper NE-143, , Northeast Experiment Station.

Parda, James. Vegetative Management Plan, 1994-2003, Nathan Hale State Forest, Approved April 1996. 11

Roach, Benjamin, and S. Gingrich. Dec. 1968. Even-Aged Silviculture for Upland Central Hardwoods, Agriculture Handbook 355, US Forest Service.

## N. Acknowledgements

I would like to acknowledge the following colleagues who have made the completion of this plan possible; DEEP State Lands Program Manager, James Parda, for contributions made during all phases of the planning process; DEEP Seasonal Forestry Technician, Daniel Burns, for inventory assistance; DEEP Fisheries Biologist, Brian Murphy, and DEEP Wildlife Biologist, Ann Kilpatrick, for contributing fisheries and wildlife resource information and recommendations; and DEEP Forest Planner, Helene Hochholzer, for editorial contributions.

## O. Appendix

Department of Environmental Protection      MANUAL CODE 1651

DIRECTIVE FORM

D 1

SUBJECT: Nathan Hale Natural Area

There is established within the Nathan Hale State Forest an area which shall be known as the Nathan Hale Natural Area. This natural area, comprising approximately 31 acres and surrounded by a buffer strip of an additional 50 acres, is within the townships of Andover and Coventry and can be located on the U.S.G.S. South Coventry map at 41 45 30" N latitude and 72 20' 30" W longitude.

This is an area of old and second growth hardwoods which is of local significance and which is being left virtually unmanaged within the Nathan Hale State Forest. The area has a wide variety of forest vegetation. Major tree species include white, red, and black oak; white birch; hickory, sugar and red maple; and ash. Blueberry is the major shrub species. This is essentially a two-aged forest stand with some very large oak scattered across the site which are probably remnants of the oak-chestnut stand that occupied the site at the turn of the century. Oak mortality in this area is light, reflecting both the quality of the site and the possibility that truly mixed stands resist the effects of defoliation.

Management of the area shall be restricted to that required to maintain the site in a natural condition including protection from wildfire. The existing woods road now used as a bridle trail shall be continued. Casual recreational use may be permitted but not encouraged.

All persons desiring additional information or seeking to use the area in a manner not clearly permitted in the above description, shall contact either of the following:

Chairman - Natural Area Preserves Committee  
Regional Director - Region III

---

Issued by: Theodore B. Bampton

Distribution:

Date: September 9, 1975

All Manual Holders -  
Division of Conservation  
and Preservation

Special Instructions: This directive replaces directive #1651 D1 issued on August 29, 1974.

## P. Comment

No public comment received. See page 14 J.

## Q. Glossary

### Forest Stand Size Classes

Sawtimber - hardwood trees 12-inch dbh (diameter breast height or 4.5 feet off the ground) and larger, and softwood trees 10-inch dbh and larger, that contain at least one 8-foot sawlog.

Poletimber- hardwood trees between 5 and 11 inches dbh, and softwood trees 5 to 9 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.

Stand – an area of trees of a certain species, composition (cover type), age class or size class distribution and condition (quality, vigor) 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 sometimes are designated by age-class (e.g. a 40- year old stand) or broad size-class (e.g. seedling/sapling, poletimber, sawtimber).

An uneven-aged stand contains trees of several 15-20 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.

**Shelterwood** Used in even-aged management; involves the removal of the understory and lower crown canopy trees to allow the new stand to regenerate in partial shade. Trees to be retained are usually of the best quality to serve as a desirable source of seed. Once adequate regeneration is established, the overstory is removed in one or two cuts.

**Selection harvest** used in uneven-aged management; involves the removal of trees singly or in groups of 2 or 3, or in patches of up to 1/3 acres, maintaining a fairly continuous canopy.

## Forest Types (U.S. Forest Service)

*Forest Type is based on species composition of the overstory. Species composition is based on the proportion of the total stand basal area represented by each species or species group.*

**Chestnut oak: Associates** – scarlet oak, white oak, red maple, red oak, black oak. Sites - rocky outcrops with thin soil, ridge tops.

**Chestnut oak/ black oak/ scarlet oak:** Associates – red oak, white oak, hickory, red maple.

Sites – dry upland sites on thin-soiled rocky outcrops on dry ridges and slopes.

Hemlock: Associates - beech, sugar maple, yellow birch, basswood, red maple, black cherry, white ash, white pine, paper birch, sweet birch, red oak, white oak. Sites - prefers cool locations, moist ravines, and north slopes.

**Mixed upland hardwoods:** Any mixture of hardwoods of species typical of the upland central hardwood region, includes at least some oak. Sites - wide variety of upland sites.

**Northern red oak:** Associates - black oak, scarlet oak, chestnut oak, tulip poplar. Sites - spotty distribution on ridge crests and north slopes but also found on rolling land, slopes, and benches on loamy soil.

**Red maple/oak:** Associates - This type is dominated by red maple and some of the wide variety of central hardwood associates including oak, hickory, tulip poplar. Sites - uplands.

**Red maple/upland:** Associates- the type is dominated by red maple and some of the wide variety of northern hardwoods like sugar maple, beech, and birch. This type is often man-made and may be the result of repeated cuttings. Sites - uplands.

**Scarlet oak:** Associates – black oak, chestnut oak, white oak, red oak, hickory. Sites – Dry ridges, south or west facing slopes and flats but often moister situations, probably as a result of logging or fire.

**Sugar maple/beech/yellow birch:** Associates - basswood, red maple, hemlock, red oak, white ash, white pine, black cherry, sweet birch. Sites - fertile, moist, well drained soils.

**White oak/ red oak/hickory:** Associates - white ash, sugar maple, red maple, beech, tulip poplar, hemlock, white pine, sweet birch. Sites - wide variety of upland soils.

**White pine:** Associates - red maple, paper birch, sweet birch, yellow birch, black cherry, white ash, red oak, sugar maple, basswood, hemlock, tulip poplar, chestnut oak, white oak. Sites - wide variety, but best development on well drained sands and loams.

**White pine/ red oak/ white ash:** Associates - red maple, basswood, yellow birch, aspen, sugar maple, beech, paper birch, black cherry, hemlock, sweet birch. Sites - deep, fertile, well drained soil.

**White spruce:** plantation, not naturally occurring.

**Yellow poplar:** Associates- red maple, sweet birch, other moist site hardwoods, white oak, red oak. Sites - lower slopes, northerly slopes, moist coves, flats, old fields