A MANAGEMENT PLAN

for the

GOLD'S PINES NATURAL AREA PRESERVE

and the

GOLD'S PINES BLOCK of Housatonic State Forest

Draft - rev. 12-22-11

Photo by Gerard Milne

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INTRODUCTION

Section 23-5a of the Connecticut General Statutes (CGS) establishes a State System of Natural Area Preserves. Areas with “outstanding scientific, educational, biological, geological, paleontological, or scenic value” can be selected and designated as Natural Area Preserves.

A Connecticut Natural Area Preserve Advisory Committee is responsible for assisting the Commissioner of the Department of Energy and Environmental Protection (DEEP) in selecting appropriate areas and recommending their inclusion into the Natural Area Preserves System.

On May 27, 1999, the Advisory Committee voted to recommend the Gold’s Pines as a Natural Area Preserve.

On December 4, 2000, Governor John Rowland designated the Gold’s Pines Natural Area Preserve (NAP) in Cornwall.

This Management Plan is authorized by CGS 23-5. Its content is prescribed by CGS 23-5c-1 of the Regulations of Connecticut State Agencies. As per the Regulations, the plan will “set forth in specific detail the purpose, character, resources, management, and other considerations for the protection and use” of the Gold’s Pines Natural Area Preserve.

This plan focuses on the Preserve, but will also include the adjacent State Forest land (the Gold’s Pines Block of Housatonic State Forest), because management activities in either section can impact the other.

This Management Plan was prepared by Gerard Milne, DEEP, CT Certified Forester.

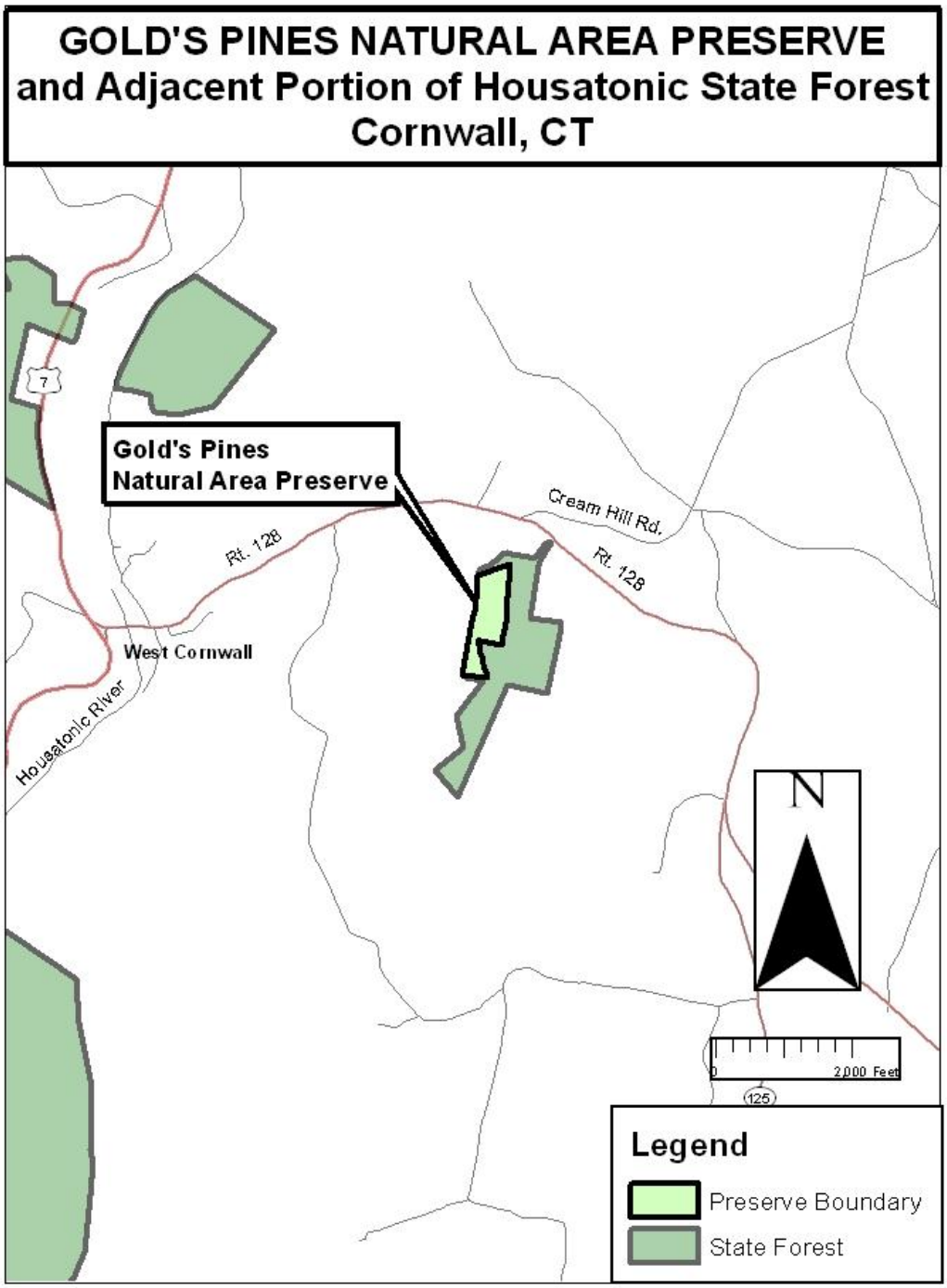


Figure 1. Location map of the Gold's Pines Natural Area Preserve.

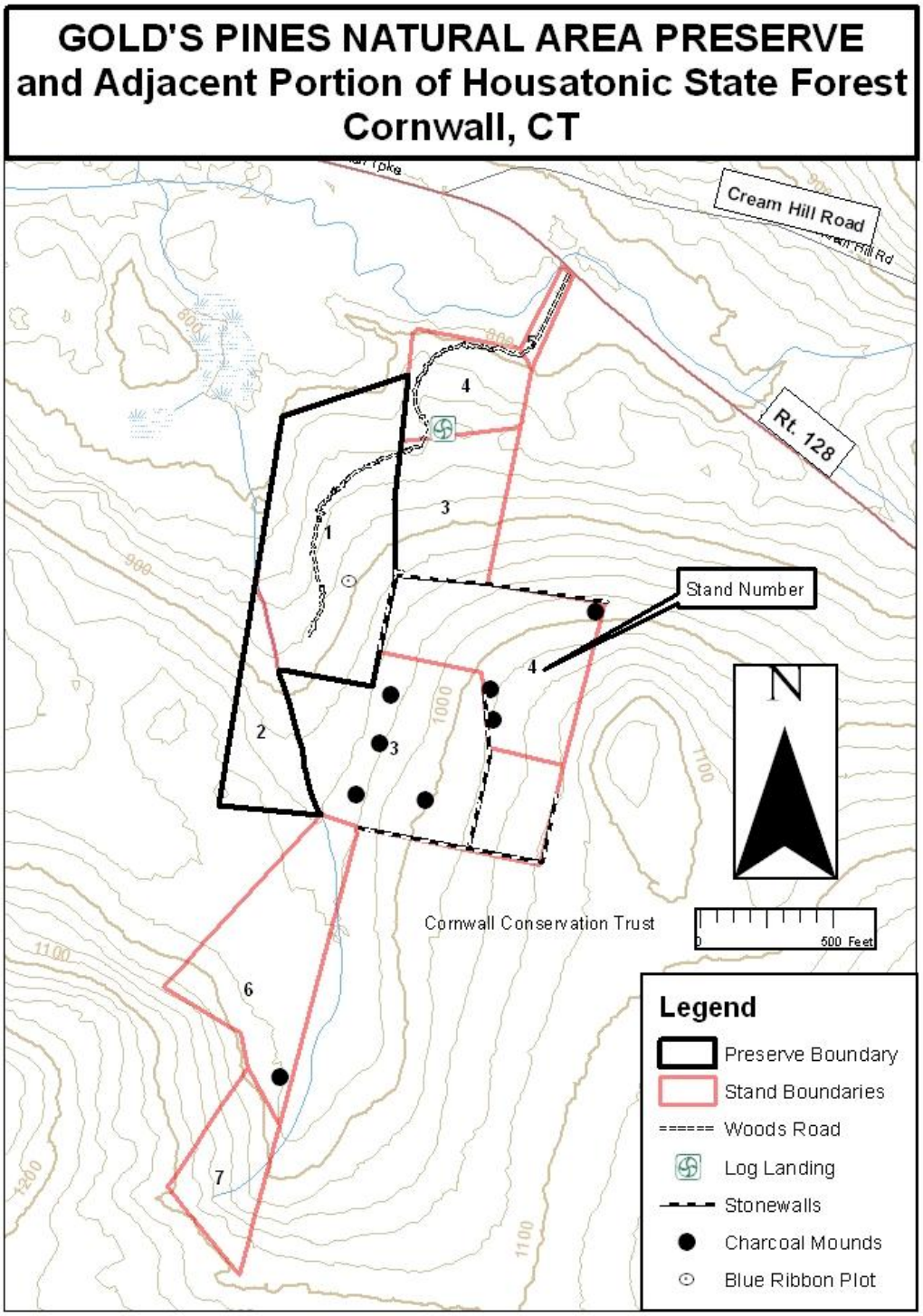


Figure 2. Topographic map of Gold's Pines Block of Housatonic State Forest.

BASIC INFORMATION

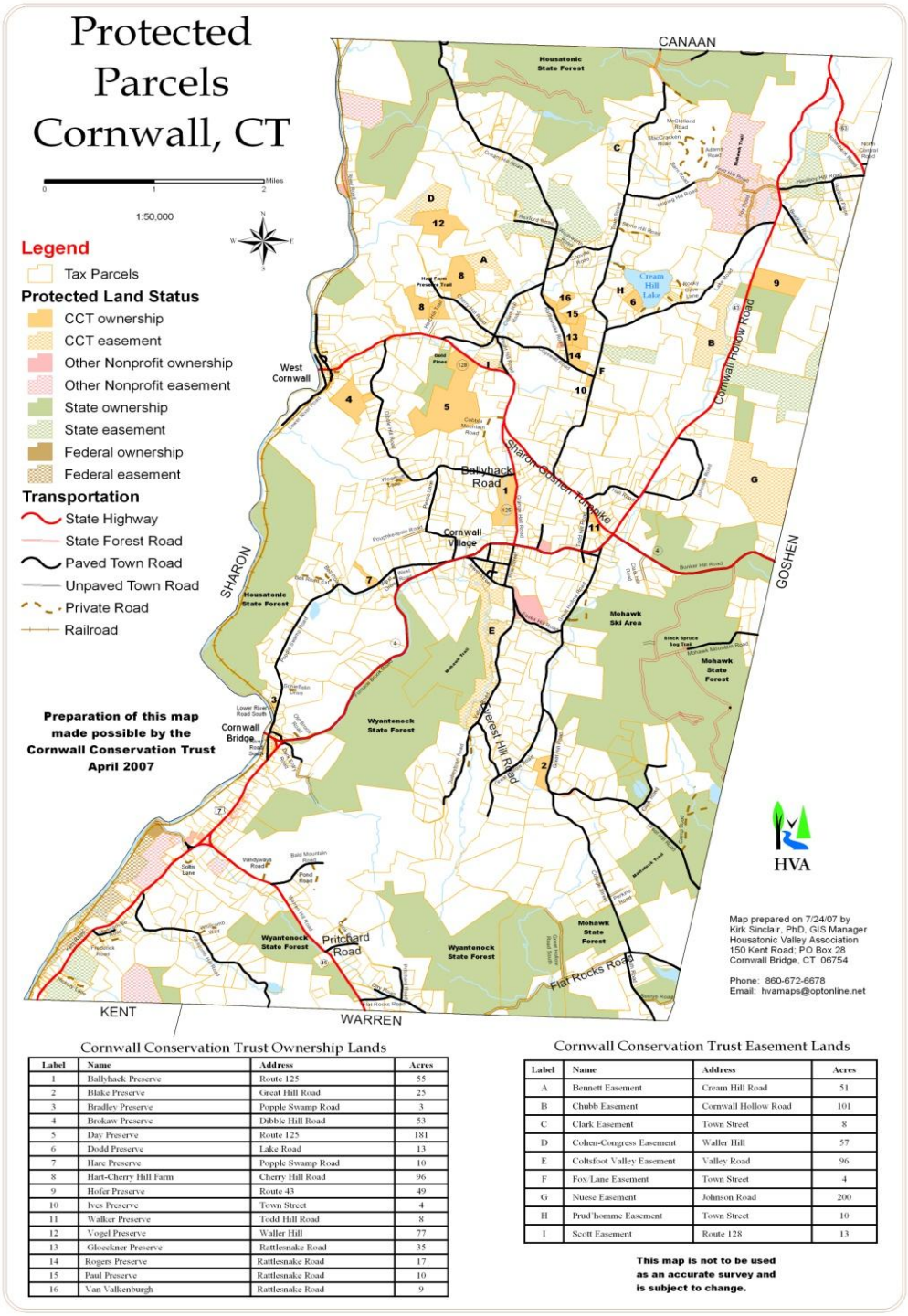
Location

The Gold's Pines Natural Area Preserve consists of 14 acres in Cornwall that is part of an approximately 56 acre Block of Housatonic State Forest. The entrance to the Preserve is on the south side of Rt. 128, about 500' east of the intersection of Cream Hill Road. There is a small parking area marked by a Connecticut State Forest shield sign. There is also an informational sign with a map of the parcel.

Figure 3. Informational sign at the Rt. 128 entrance to Gold's Pines Natural Area Preserve. *Photo by Gerard Milne.*

A locked metal pipe gate at the parking area leads to a woods road that provides access into the interior of the Preserve.

The entrance is bounded to the northeast by the Little Guild, an animal rescue shelter. Most of the eastern and southern boundaries are bordered by 181 acres owned



Cornwall Conservation Trust Ownership Lands

Label	Name	Address	Acres
1	Ballyhack Preserve	Route 125	55
2	Blake Preserve	Great Hill Road	25
3	Bradley Preserve	Popple Swamp Road	3
4	Brokaw Preserve	Dibble Hill Road	53
5	Day Preserve	Route 125	181
6	Dodd Preserve	Lake Road	13
7	Hare Preserve	Popple Swamp Road	10
8	Hart-Cherry Hill Farm	Cherry Hill Road	96
9	Hofer Preserve	Route 43	49
10	Ives Preserve	Town Street	4
11	Walker Preserve	Todd Hill Road	8
12	Vogel Preserve	Waller Hill	77
13	Gloeckner Preserve	Rattlesnake Road	35
14	Rogers Preserve	Rattlesnake Road	17
15	Paul Preserve	Rattlesnake Road	10
16	Van Valkenburgh	Rattlesnake Road	9

Cornwall Conservation Trust Easement Lands

Label	Name	Address	Acres
A	Bennett Easement	Cream Hill Road	51
B	Chubb Easement	Cornwall Hollow Road	101
C	Clark Easement	Town Street	8
D	Cohen-Congress Easement	Waller Hill	57
E	Coltsfoot Valley Easement	Valley Road	96
F	Fox/Lane Easement	Town Street	4
G	Nuese Easement	Johnson Road	200
H	Prud'homme Easement	Town Street	10
I	Scott Easement	Route 128	13

Figure 4. Map of Protected Open Space in Cornwall, CT. The Gold's Pines are located west of CCT Parcel #5 in the upper middle of the map. *Housatonic Valley Association.*

by the Cornwall Conservation Trust (see Figure 4). The Natural Area Preserve is bounded on the west by private forestland.

Acquisition

In 1870, Theodore Sedgwick Gold bought the deeded 12-acre parcel *(editor's note: GPS and GIS measure this as 14 acres)* on January 22, 1870 for $500.00. Mr. Gold graduated from Yale in 1838, and later became an accomplished farmer in Cornwall. With his father, he helped form the Cream Hill Agricultural School, and was Secretary of the State Board of Agriculture from 1866-1900. He was also a Trustee for the Storrs School and Agricultural College, the forerunner of the University of Connecticut.

According to a undated report from the Connecticut State Park and Forest Commission, which quotes an article in the Connecticut Forest and Park Association's newsletter, "Connecticut Woodlands" (January 1941), Mr. Gold bought the tract intending to sell the timber for locomotive fuel. But shortly after, the railroad switched to coal, and the trees were not cut.

In 1933, the State Forester established a "Blue Ribbon" plot on the property. This was part of a series of research plots created around Connecticut to showcase good forestry practices; the "Blue Ribbon" referring to the "best in show" at agricultural fairs. At that time, the pines were estimated to be 80 years old.

In 1941, the parcel was almost sold to lumbermen to settle the estate of Charles Gold, who had inherited it. The January, 1941, issue of Connecticut Woodlands (the newsletter of the Connecticut Forest and Park Association) stated "with proper management, the stand could be continued indefinitely as a producing forest. To save the beauty and utility of this tract, probably the second best stand of pine in Connecticut, the property should be acquired by the State". *(editor's note: the best stand of pine at that time was probably the Cathedral Pines, also located in Cornwall. It was blown down by a tornado in July, 1989).*

Later that year, the General Assembly passed a special appropriation of $5,000 to acquire the Gold's Pines. It is listed as Parcel 54 of Housatonic State Forest in the DEEP Land Records.

In 1942, the State bought an additional 30 deeded acres *(29 acres by GPS and GIS)*, called the "Wright" parcel, immediately to the east of Gold's Pines (DEEP Parcel 56).

In 1948, the State acquired a definite right-of-way, one rod wide (16-1/2 feet), to access the western end of the Wright parcel from Rt. 128 (DEEP Parcel 67).

In 1981, the State acquired 13.5 deeded acres *(12 acres by GPS and GIS)* to the south of the Gold's Pines (DEEP Parcel 76) to bring the Gold's Pines Block up to its current size of 56 acres.

Figure 5. Scarlet tanager observed during the forest inventory, July, 2011.
Photo by Gerard Milne.

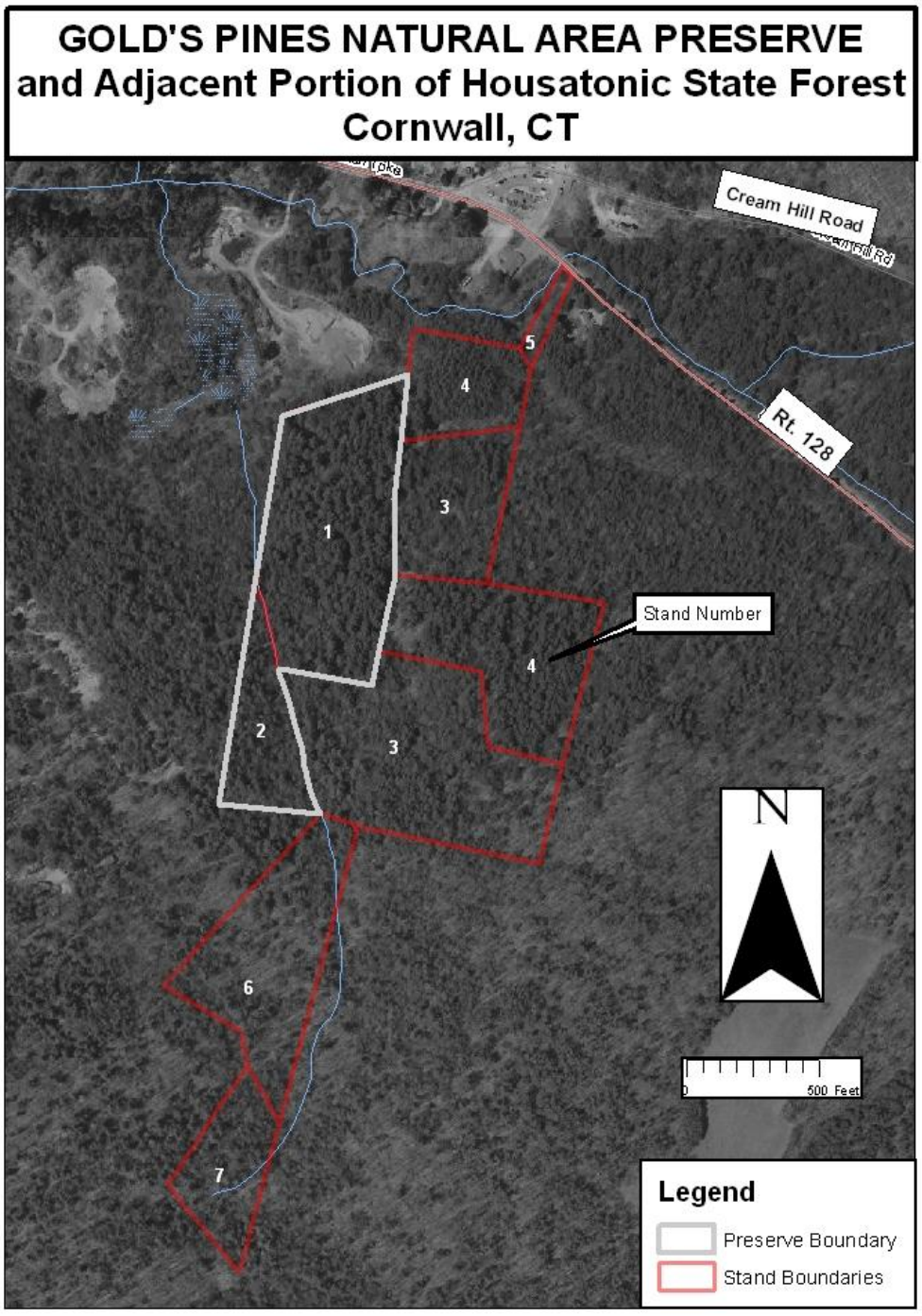


Figure 6. 2004 aerial photo of the Gold's Pines Block of Housatonic State Forest.

PURPOSE

As stated in the recommendation by DEP Commissioner Arthur Rocque, Jr. to create the Gold's Pines NAP, the purpose of the Preserve is to protect the "unique assemblage of very large and very old White pine. The stand of large, mature individuals is approximately 180 years old and is considered the oldest stand of White pine in Connecticut. The area has a well-documented history of forest management activities and contains a Blue Ribbon plot, a long term forest research plot established in 1932. This plot is among the oldest such research plots in the nation and is an extremely valuable scientific resource".

The application also states, "the proposed Preserve has historically been managed for maintenance of a stand of old, large White pine. The Connecticut Agricultural Experiment Station continues to conduct long-term forest growth studies within the site…These existing studies will be allowed to continue, and new limited educational uses, including a guided trail, will be developed. The Department intends to continue managing the site for maintenance of the mature White pine and will employ appropriate forest management practices to achieve that end".

GENERAL MANAGEMENT GOAL

The general management goal is to protect the mature white pine resource using appropriate forest management practices. The challenge will be to do this in the face of vastly different environmental conditions than those that existed when the stand originated, such as higher deer populations, lack of clearcutting for charcoal, no grazing by livestock, and fewer forest fires. In addition, there are new invasive exotic insects, diseases, and plants that affect forest health. There is also the potential for climate change, and the unpredictability of severe weather events.

SPECIFIC MANAGEMENT GOALS

- Maintain the health of the mature pines by increasing the amount of live crown ratio (LCR) to a minimum of 40%. Currently, LCR on many of the pines has dropped below 25%, causing the stand to slowly sink into a state of steady decline.
- Manage pines in the former Wright parcel (outside the Natural Area Preserve) to become "big trees" with judicious thinnings to promote growth of dominant pines. These can serve as replacements should the Gold's Pines succumb to storms.
- Provide for educational and recreational uses compatible with protecting the mature white pines.

- Provide for scientific research.
- Protect nesting sites for raptors that nest in large conifers.

RESOURCES of the PRESERVE

GEOLOGY, HYDROLOGY, SOILS

The area of Connecticut where the Preserve is located is part of the Hudson Highlands, within the Oak-Dominated Forest -Eastern Broadleaf Forest Province (Metzler and Barrett, 2006).

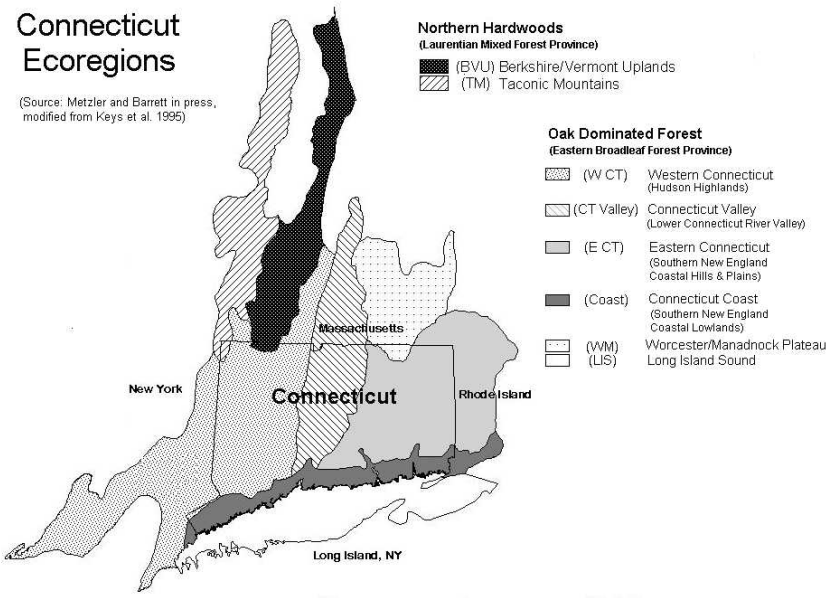


Figure 7. Connecticut Ecoregions (from Metzler and Barrett, 2006).

The Preserve lies within the Housatonic River drainage basin. All drainage flows northerly into Mill Brook, which then flows westerly for about 1 mile into the Housatonic River in West Cornwall. There is one unnamed watercourse that flows northerly through the Preserve and enters Mill Brook.

The elevation ranges from 920 feet in the southeastern corner down to 850 feet in the northeastern corner.

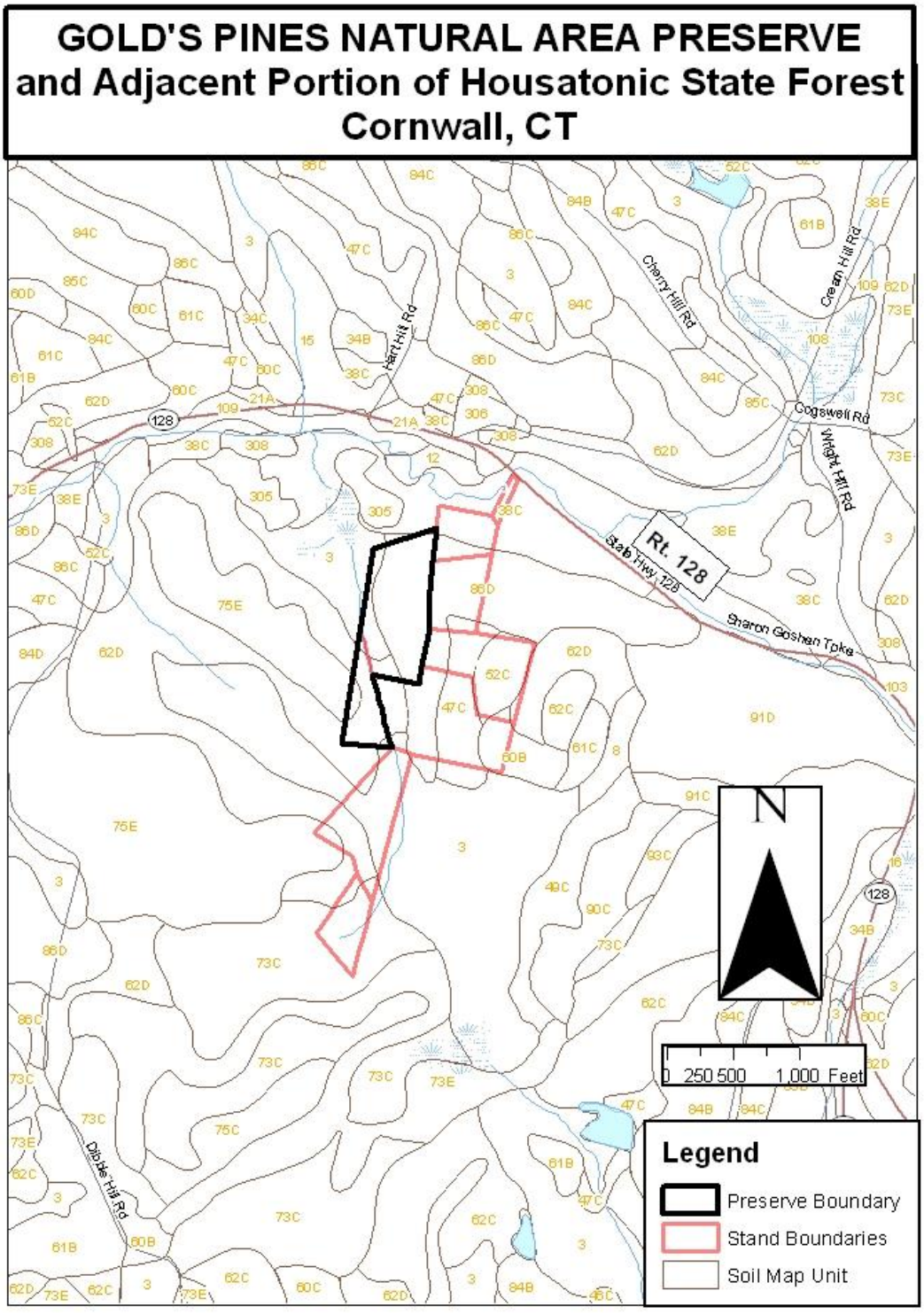


Figure 8. Soils Map of the Gold's Pines Natural Area Preserve and Adjacent State Forest. Soil descriptions are below.

The soils in the Preserve formed in glacial till. The parent material is granite and/or gneiss and/or schist. These soils are generally rocky and have little organic matter accumulation in the upper layers. The soils within the Preserve boundaries include the following:

86D—Paxton and Montauk fine sandy loams, 15 to 35 percent slopes, extremely stony

Most of the Preserve consists of this soil type. Although described as well-drained, it contains a dense layer called a fragipan ("hardpan"), about 20-40" from the surface. This layer impedes downward water movement and creates a "perched" water table from fall through spring.

62D—Canton and Charlton soils, 15 to 35 percent slopes, extremely stony

This soil type is characterized as well-drained, but does not have a hardpan. It is found in the southwestern corner of the Preserve.

3—Ridgebury, Leicester, and Whitman soils, extremely stony

This soil type is poorly drained and is classified as wetlands in Connecticut. It is found near the intermittent drainage that runs northwesterly through the Preserve. It is also located in the portion of State Forest south of the Preserve.

75E—Hollis-Chatfield-Rock outcrop complex, 15 to 45 percent slopes

This soil type is somewhat excessively well drained and is very steep. The soils are shallow. In some cases, bedrock is at the surface. There is only a sliver of this soil in the southwestern corner of the Preserve.

In the adjacent State Forest, the soils consist of the following:

38C—Hinckley gravelly sandy loam, 3 to 15 percent slopes

This soil is excessively well drained, formed from sandy and gravelly glaciofluvial deposits. It is found in the northern portion near the Mill Brook drainage.

47C—Woodbridge fine sandy loam, 2 to 15 percent slopes, extremely stony

This soil is moderately well drained with a fragipan at 20 to 40" below the surface.

52C—Sutton fine sandy loam, 2 to 15 percent slopes, extremely stony

This soil is moderately well drained but does not have a fragipan.

60B—Canton and Charlton soils, 3 to 8 percent slopes

This soil is well drained and fertile.

BIOLOGICAL RESOURCES

VEGETATION

A review of the DEP Natural Diversity Database (March 2011), indicated that there are no State-listed plant species.

There are two stands within the Preserve (Stands 1 and 2) and five stands in the adjacent State Forest (Stands 3-7).

Stand Descriptions within the Preserve (Stands 1 and 2)

Stand 1

Size:11 acres
Forest Type: White Pine- Eastern Hemlock
Size Class: Sawtimber
Basal Area: 256 sq.ft./acre
Volume/Acre: 55,526 BF (Board feet)

Predominant Species	Basal Area sq./ft./acre	Basal Area %	BF/Acre
White pine	127	50	38,539
Eastern hemlock	88	35	13,947
Mixed hardwoods	41	15	3,480

Stand 1 is on a northerly slope. Understory species include striped maple, white ash, wild sarsaparilla, partridgeberry, starflower, Canada mayflower, blackberry, jack-in-the pulpit, blue cohosh, occasional Japanese barberry, and ferns. There is mostly dense shade and a thick pine needle duff. Canopy closure is often 85-90%, except for openings created by past harvesting and downed trees from storms.

There are several clumps of windblown trees. In the openings, striped maple and ferns are abundant.

The hemlocks have sparse canopies and discolored foliage from infestations of hemlock woolly adelgid and elongate scale. The pines have a Live Crown Ratio (LCR) of 25% or less.

The stand includes a small section (about 1 acre) dominated by large tulip poplars in the southwestern portion near the stream.

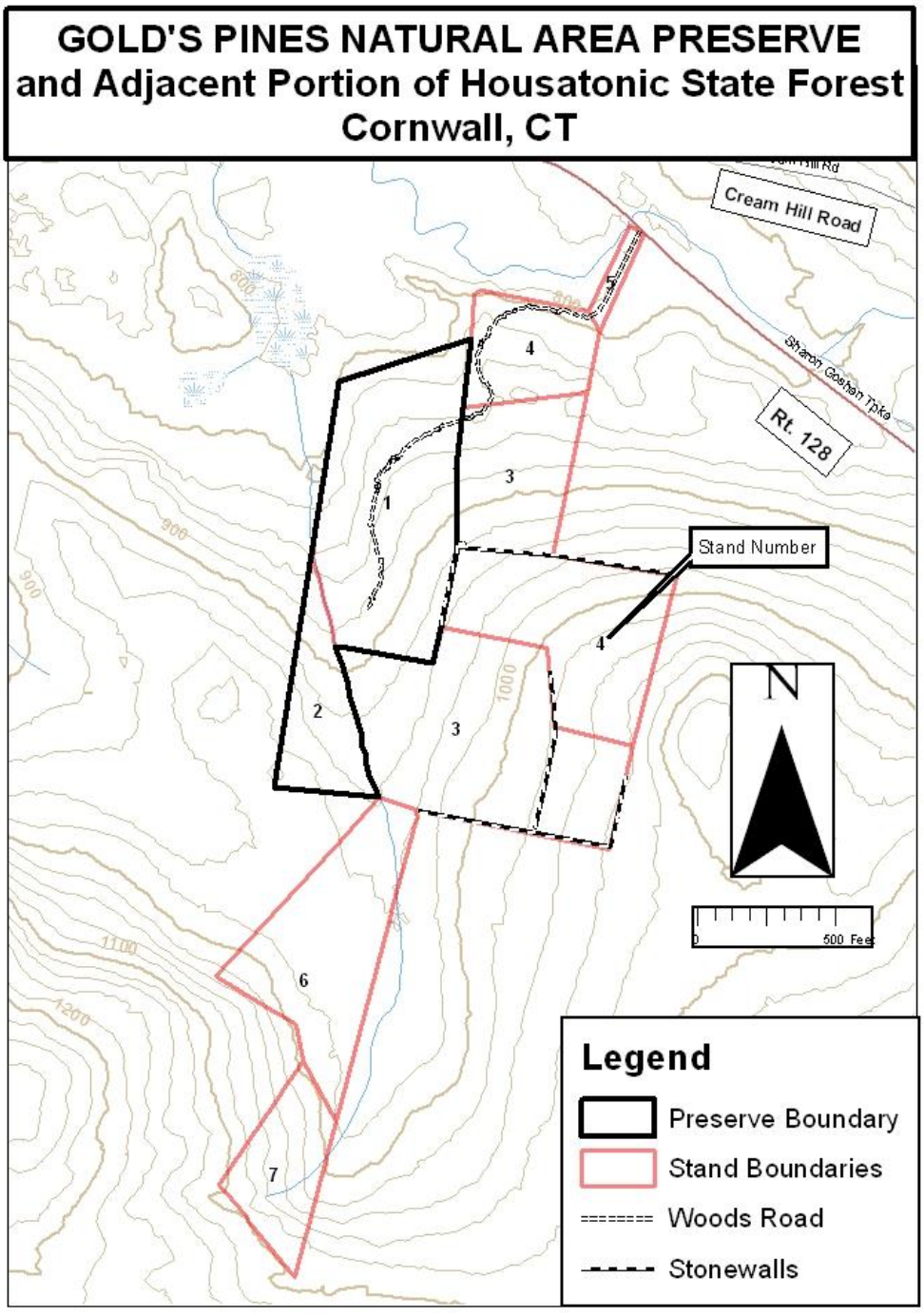


Figure 9. Stand Map of Gold's Pines Natural Area Preserve and Adjacent State Forest.

Stand 2

Size: 3 acres
Forest Type: Eastern Hemlock- Hardwoods
Size Class: Sawtimber
Basal Area: 195 sq.ft./acre
Volume/Acre: 37,470 BF

Predominant Species	Basal Area sq./ft./acre	Basal Area %	BF/Acre
Eastern hemlock	95	49	18,064
White pine	40	20	11,110
Mixed hardwoods	60	31	8,296

Stand 2 is on the western side of the intermittent stream that runs through the Preserve. For the most part it is characterized by deep shade and big moss-covered rocks. There is some scattered regeneration of white pine and red oak. Other herbaceous plants include wild sarsaparilla and ferns. The hemlocks are infested with adelgid and scale. On the drier sites, the hemlocks have died from these insects, creating openings in the canopy.

Stand Descriptions Outside the Preserve (Stands 3 -7)

Stand 3

Size: 17 acres
Forest Type: Eastern Hemlock-Hardwoods
Size Class: Sawtimber
Basal Area: 166 sq.ft./acre
Volume/Acre: 20,939 BF

Predominant Species	Basal Area sq./ft./acre	Basal Area %	BF/Acre
Eastern hemlock	57	37	7,916
Mixed hardwoods	95	54	10,104
White pine	14	9	2,919

Stand 3 is composed of two sections. The predominant hardwoods are black birch, red oak, red maple, hickory, and white ash.

Stand 4

Size: 12 acres
Forest Type: White Pine
Size Class: Sawtimber
Basal Area: 215 sq.ft./acre
Volume/Acre: 45,033 BF

Predominant Species	Basal Area sq./ft./acre	Basal Area %	BF/Acre
White pine	137	63	34,670
Eastern hemlock	50	23	7,716
Mixed hardwoods	28	14	2,647

Stand 4 is made up of two sections. The northernmost portion is on a gravelly Hinckley soil, and is almost pure white pine, about 70 years old. The southern portion is older, and is on a moister soil. It has more hardwoods and hemlock.

Stand 5

Size: 0.5 acres
Forest Type: Non-forest, grassy meadow

Stand 5 is the grassy entrance off of Rt. 128. The portions behind the gate and adjacent to the Little Guild animal shelter are mowed periodically, keeping it in grass. The rest is reverting to old field, mostly goldenrod and blackberries.

Stand 6

Size: 8 acres
Forest Type: White pine-hardwoods
Size Class: Sawtimber
Basal Area: 110 sq.ft./acre
Volume/Acre: 17,182 BF

Predominant Species	Basal Area sq./ft./acre	Basal Area %	BF/Acre
White pine	40	36	11,153
Red maple	40	36	3,854
Other hardwoods	30	27	2,175

Stand 6 is south of the Preserve. In addition to red maple, the other hardwoods include red oak, black birch, and yellow birch. The eastern portion of this stand is on a

wetland soil, although the soils maps seem to exaggerate the extent of the wetlands. Understory species include maple-leaved viburnum, ferns, and witch hazel. It contains at least one charcoal mound.

Stand 7
Size: 4 acres
Forest Type: Oak-Northern Hardwoods
Size Class: Sawtimber
Basal Area: 140 sq.ft./acre
Volume/Acre: 12,041 BF

Predominant Species	Basal Area sq./ft./acre	Basal Area %	BF/Acre
Oak (red, chestnut, white)	60	42	7,046
Eastern hemlock	40	28	3,104
Mixed hardwoods	40	28	1,891

Stand 7 is on the steep upper slope of the southernmost portion of the Block. It is dry and rocky. An old logging trail runs up the center of the stand. Understory species include beech, mountain laurel, and wild sarsaparilla. The beech has beech bark disease.

WILDLIFE RESOURCES

There are no known surveys of wildlife at the Preserve. A review of the DEP Natural Diversity Database (March 2011), indicated that there are no State-listed animal species.

The Preserve should provide habitat for most forest-dwelling species typically found in the woodlands of northwestern CT. Gold's Pines lies within adjoining larger forest patches, providing interior forest habitat for a variety of wildlife. Forest interior birds would likely be residents. In fact, a scarlet tanager was seen, and a wood thrush was heard, while collecting forest inventory data.

A stick nest was observed in a white pine on the lower slope of Stand 1. It is not known if the nest was active or what species used it, however tall white pines are commonly used by raptors such as Cooper's hawks and Goshawks for nesting.

The proposed forest management of selectively removing some of the white pine will improve the vertical stratification of vegetation . This action benefits birds foraging in the lower and mid levels of the forest, especially during the spring migration and nesting periods Allowing light to reach the forest floor will allow more pine seedlings to survive and become dense pockets of young pines. Dense understory vegetation is not very common in the Gold's Pine Block due to the existing canopy closure.

CULTURAL RESOURCES and LAND USE HISTORY

Cornwall was settled by Europeans in 1740. They cleared large areas of land for farming and used the remaining woodland for fuel and building supplies. Iron making was an important industry and huge amounts of charcoal were needed as fuel. In fact, there are at least 8 charcoal mounds found on the State Forest outside the Preserve *(see Figure 2).*

The stone walls and barbed wire on the Preserve and adjacent State Forest indicate that, after clearing, this land was used for agriculture, probably for grazing. It is possible that livestock (perhaps sheep) influenced the trees that grew in the pasture by favoring the hardwoods and leaving the pines and hemlock to grow.

By 1820, the clearing of forestland in Connecticut had peaked. Farmers concentrated their efforts on the better soils, or left their farms for the Midwest. The steeper, rockier, less fertile soils were allowed to revert to woodland. The presence of charcoal mounds outside the Preserve indicates that these areas were probably clearcut, maybe more than once, until the early 1900s, as the trees regrew to sufficient size to make charcoaling feasible.

Timber Harvesting

Between 1944 and 1997, roughly 205,000 Board Feet (BF) were cut from the Preserve and the surrounding Block. All of the harvests were to remove the poorer quality trees or to salvage trees damaged or blown over from storms.

Harvest History

1944 - 74,700 BF harvested, but there is no map available of the specific area. A State Park and Forest Commission report from 1945 states “A recent selective cutting has improved the stand and provided much good lumber for the war effort”.

1961 – A report from the State Park and Forest Commission, dated October 1961, stated “This small area is to be kept more or less as a show place, an example of what second growth white pine in particular can do. In order to keep this stand healthy, we intend to make light thinnings at short intervals, probably about every five years. The thinnings will remove hemlock in preference to white pine, and only deformed, or decadent trees, or intermediate trees which might be damaging the larger ones will be removed....Our objectives are to give the surviving trees sufficient growing space to keep them healthy and to increase the percentage of white pine stems”. This report was the basis for subsequent harvesting. Several acres were harvested more than once.

1961 - 32,000 BF harvested from 1.75 acres.

1962 - 2,750 BF and 12.75 cords of hardwood from the same 1.75 acres.

1963 - 31,000 BF harvested from 11 acres.

1965 – 11,000 BF harvested from 2 acres.

1967 – 2 acres of pruning and weeding, no products harvested.

1975 – 39,000 BF harvested from 10 acres.

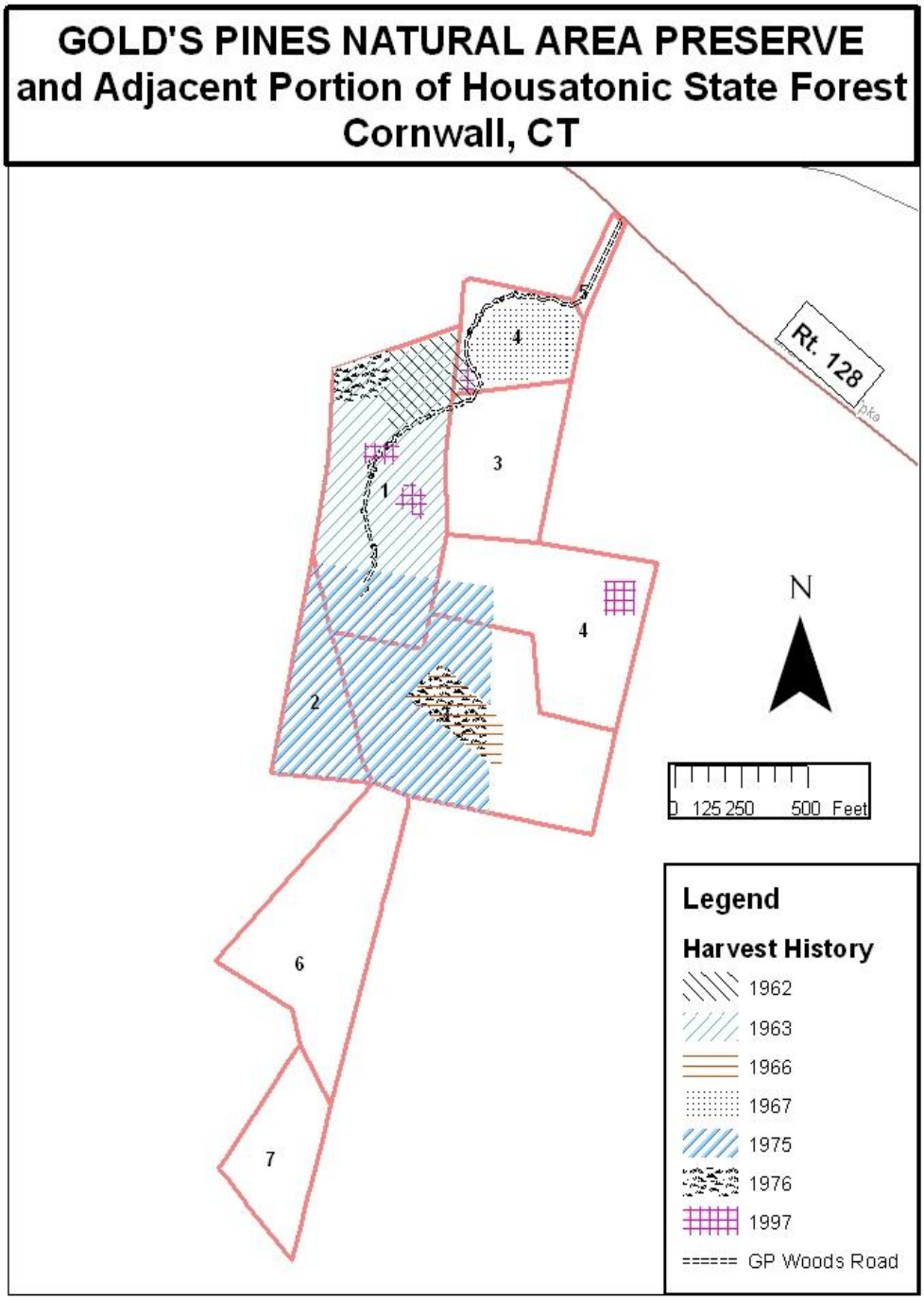


Figure 10. Area harvested since 1961. Records do not indicate specifically where the harvest of 1944 occurred.

1997 – 14,800 BF salvaged from about 3 acres at various locations. Removals were limited to broken or tipped over trees from December, 1996 and March, 1997 snowstorms.

Blue Ribbon Plot

In 1932, the State Forester of Connecticut established the 1.0 acre research plot to study the effect of partial thinning on growth in a mature white pine-eastern hemlock stand. The stand was 135 years old at that time. The volume of wood per acre was estimated to be 49,000 BF.

In 1994, the Connecticut Agricultural Experiment Station remeasured the plot. Since 1944, approximately 12,000 BF/acre had been harvested. The researchers found that the volume/acre in 1994 was 50,000 BF, and the mean diameter of the pines had increased from 20.7 to 28.8 inches.

The tallest trees were close to 140 feet in height. The largest diameter pine in the plot was 38.2 inches.

The conclusion of the study was that mature white pine stands can be partially thinned to provide income and release stagnating trees without sacrificing “Big Tree” stand characteristics and continued volume growth of residuals.

The plot was last measured in 2000.

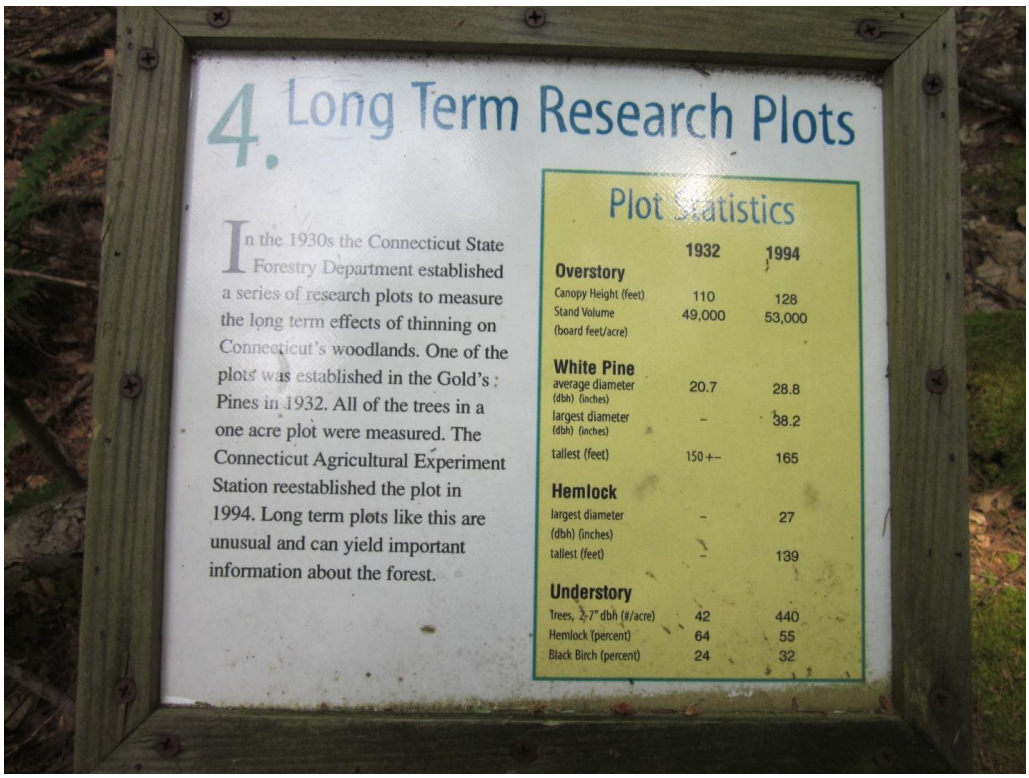


Figure 11. Interpretive sign at the Blue Ribbon Plot. ***Photo by Gerard Milne.***

MANAGING VISITORS AND USE

There seems to be only a moderate amount of recreational use of the Preserve and surrounding area. It appears that it is used mostly by hikers and hunters, and perhaps dog walkers from the neighboring animal shelter. A geocache was discovered during the data collection for this report.

The current visitor uses do not conflict with the purpose of the Preserve. There is no need to create "use zones". However, public use may have to be restricted temporarily during timber harvests.

The general management rules and regulations that govern the public's use and enjoyment of the State Forest shall also apply to the Preserve.

USES of the PRESERVE

Low impact recreational uses such as hiking, hunting, and geocacheing should be permitted. There are no plans to enlarge the trail system.

The Preserve should also be used for scientific and educational purposes. For example, the Preserve was the site of a field meeting of the Society of American Foresters. There is potential to increase the educational benefits of the Preserve because the Cornwall Consolidated Elementary School is located only about ½ mile to the west, at the intersection of Rt. 128 and Cream Hill Road.

Requests for scientific research need a Special Use License from DEEP. These requests should be reviewed by the DEEP Natural Diversity Database (NDDB) and the Natural Area Preserve files (also see page 27, Research or Educational Activities).

SPECIAL MANAGEMENT PROBLEMS and CONCERNS

The primary concern is how to maintain and protect a mature white pine stand that is subject to the inevitable forces of ecological succession and unpredictable disturbances caused by severe weather events. White pine is not the climax species for this ecoregion. An understory of shade tolerant hardwoods is more likely to respond to disturbances than white pine unless conditions to favor the pine are created by appropriate forestry practices.

As mentioned earlier, the Cathedral Pines, comparable to the Gold's Pines, were blown down by a tornado in 1989, only a few miles east of the Preserve. That site appears to be regenerating to a mixture of hardwoods. The Hurricane of 1938 destroyed thousands of white pines in eastern New England. So it is possible that at some point there will be a stand-replacing storm that will topple the Gold's Pines. The Division of Forestry will try to create conditions that keep them as healthy and vigorous as possible until that happens.

The effects of nonnative insects and plants are impacting the Preserve. The hemlocks are declining from scale and woolly adelgid infestations. Japanese barberry, multiflora rose, and bittersweet, while not prevalent, are found in the Preserve and adjacent State Forest.

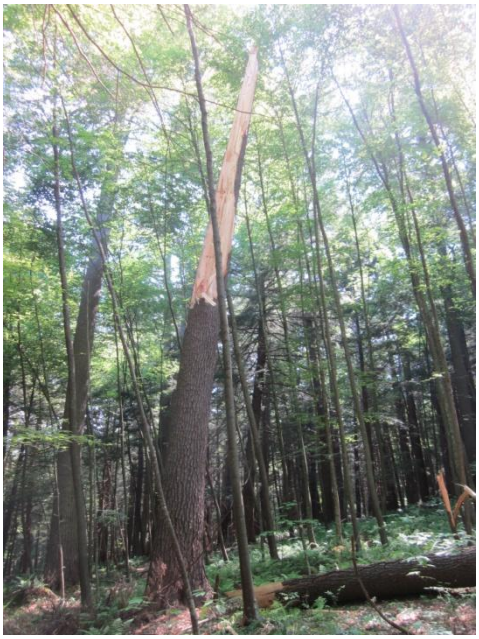


Figure 12
Wind damaged white pine tree in the Preserve. ***Photo by Gerard Milne.***

Figure 13
Recent blowdowns in the Preserve. ***Photo by Gerard Milne.***

ADMINISTRATION

The DEEP Forester with management responsibility for the Housatonic State Forest will be designated as the Site Manager and will have the authority and responsibility to assure protection of the Preserve's protected resources. It is understood that DEEP Support Services, and Park Staff at the Macedonia Brook State

Park Management Unit, which includes Housatonic State Forest, will be responsible for maintenance at Gold's Pines. This includes mowing the parking areas, periodic grading and clearing of roads, and refurbishing signs.

The Site Manager will be guided by this Management Plan.

MANAGEMENT PROVISIONS

Stands 1 and 2 (Within the Preserve)

The main goal will be to maintain the health of the mature pines by increasing the amount of live crown ratio (LCR) to a minimum of 40%. Currently, LCR on many of the pines has dropped below 25%, causing the stand to slowly sink into a state of steady decline. Secondarily, it would be desirable to establish white pine regeneration that could someday take over if the mature pines succumb to a severe storm.

This will be accomplished by releasing the crowns of the healthier pines on one side to provide them with more sunlight, but not allow so much room that they are more prone to windthrow. Trees to be removed include hemlocks weakened by woolly adelgid and scale, black birch (to reduce a seed source that could compete with pine regeneration) as well as pines. This thinning should be done during a good pine cone year. White pines produce bumper crops of cones every 3-5 years, and the cones take 2 years to mature, so it is possible to schedule harvests to coincide with good seed years. Scarification of the soil during the harvest will improve conditions for germinating pine seed.

A second light thinning would take place about 10 years later, this time releasing the selected pines on 2 or 3 sides. The Experiment Station will be asked to measure the Live Crown Ratio of the remaining trees to gauge the success of the treatments.

If pine hasn't regenerated after the first thinning, it may be necessary to prepare the seedbed by prescribed fire, mechanical means, or herbicides to kill hardwood regeneration.

Stand 2 would not receive any active management and would be subject to the forces of nature.

Stands 3-7 (Outside the Preserve)

Stand 3- This stand would be thinned to remove the declining hemlock and favor white pine wherever possible. It should also occur during a good pine cone year. Openings in the canopy should not be wider than one-half tree height to not allow too much sunlight to reach the forest floor.

Stand 4 – This stand is overstocked and can be thinned. The northern portion has the best potential for maintaining white pine because the pine seedlings can compete with the hardwoods on the drier, gravelly soils. Again, the harvest should occur during a good cone year to build up white pine advanced regeneration.

Stand 5- no activity.

Stands 6 and 7 will not receive any active management.

Natural Disasters

CGS 23-5i states: “Nothing in sections 23-5a to 23-5i, inclusive, shall limit any other duly appointed public authority from exercising responsibility related to suppression of fire, or any noxious insect, animal or plant, when such action is deemed necessary to protect public health or safety”.

The Site Manager shall review the risk for damage to the Preserve by natural causes, including fire, flood, wind, disease, insects, or invasive species. They shall review, consider, and plan for the appropriate use of all reasonable measures that would prevent or alleviate damage to the Preserve.

In the event of a natural disaster, the Site Manager shall recommend appropriate actions to the Commissioner. These recommendations shall be guided by the Department’s need to protect human health and safety and the Preserve’s resources.

The degree to which preventive and corrective actions are implemented shall be that deemed necessary to accomplish the general and specific goals of the Preserve. For example, salvage of storm damaged trees will be allowed if it does not conflict with the goals of the Preserve. If a natural disaster damages the Preserve to such an extent that it is no longer recognizable as a mature pine stand, such as happened at the Cathedral Pines, then salvaging the timber will be recommended.

The public’s use of the Preserve may be curtailed after a natural disaster. All reasonable attempts will be made to maintain and continue authorized educational, scientific, and recreational uses.

Minor Deviations

Minor deviations from the requirements of the Management Plan may be requested from the Commissioner. The review of such requests shall be coordinated by the Site Manager. All recommendations shall be guided by the Department’s need to protect public health and safety and the Preserve’s resources. Any significant deviation from this plan will constitute a plan modification. It will be subject to the requirements of subsection (b)(2)(D) of Section 23-5c-1 of the Regulations of Connecticut State Agencies.

The Site Manager will decide on the necessity for undertaking any actions beyond those detailed in this Plan and make appropriate recommendations for the Commissioner’s review and approval. Depending upon the nature and extent of these Recommendations, they may be classified as Minor Deviations from this Plan and so implemented.

Deviations from General Management Rules

The Preserve lies within the Housatonic State Forest. The general management rules and regulations that govern the public’s use and enjoyment of the State Forest

shall also apply to the Preserve. Minor deviations from the application of these rules within the Preserve may be requested, following the same procedures specified above.

STRUCTURES and FACILITIES

The only structure is an outhouse located just past the entrance gate. As mentioned previously, there is a Connecticut State Forest shield sign on Rt. 128 and an informational sign board at the parking area.

BOUNDARY MARKERS and FENCES

The property lines of the Preserve and adjacent State Forest were marked with yellow paint and DEP State Land signs in the summer of 2011, except for the corner pins on RT. 128 which were not located. There is approximately 11,000 feet of boundary line. Most of the boundary lines and corners were recorded with GPS and installed on ArcMap GIS.

The internal boundaries of the Preserve were marked with cream colored paint at the same time.

ACCESS LANES

There is a ½-mile woods road running southerly into the Preserve from Rt. 128. The first 1,000 feet are graveled to the old log landing. More gravel may be required to allow access by log trucks. The rest of the road has had minimal improvements.

No additional roads are needed.

FIRE BREAKS

No additional fire breaks are needed. The woods road, Mill Brook, and the unnamed stream can serve as fire breaks.

TRAILS

In 1999, an interpretive trail was installed. It follows the path of the old logging road. The trail has informational signs that describe local land use history, ecological characteristics of the predominant trees, and the Blue Ribbon plot.

OTHER STRUCTURES and IMPROVEMENTS

No new structures or improvements other than those already mentioned are proposed. Temporary structures needed for research may be approved.

LANDSCAPE MANAGEMENT PRACTICES

Landscape Management

As previously mentioned, forest management practices such as harvesting, invasive control, and site preparation for regeneration, will be required to maintain the health of the Preserve. Routine maintenance such as clearing brush for trails and boundaries will be done at the Site Manager's discretion.

Safety Precautions

Guard rails, fences, steps, or other devices are not needed. During management activities such as timber harvesting, the trail and/or area of operation may be closed to public use. Signs would be posted at the entrance with appropriate information.

Removal of or Introduction of Objects

Harvesting of forest products will be allowed using Best Management Practices.

Water Control

Not pertinent at this time.

Fire Control

Forest fires will be suppressed. Forest fire suppression will be aggressive enough to try to prevent the fire from leaving the boundaries of the State Forest. Using equipment such as trucks and ATVs will be permitted.

Erosion Control

Erosion on the woods road and logging trails will need to be controlled. The Site Manager will determine the stabilization measures needed.

Management of Vegetation and Wildlife

Sub-section (b)(5)(H) of Section 23-5c-1 of the Regulations of Connecticut State Agencies provides the following guidance for management of vegetation and wildlife at Preserves:

(1) Control of vegetation and wildlife – Actions to control vegetation and controlled reduction of wildlife may be allowed if necessary to preserve the protected resources of the Preserves.

(2) Control of native populations – Actions to increase or reduce populations of native plants or animals or to restrict movement of wildlife across boundaries of a Natural Area Preserve may be allowed, if necessary to preserve the protected resources of the Preserve. No State Endangered, Threatened, or Special Concern species shall be taken (Connecticut General Statute 26-303).

(3) Management of endangered,threatened, and species of special concern- Habitat manipulations to favor these species shall be allowed. A DEEP "endangered species biologist" shall draft or review the proposed endangered

species management plan. There are currently no known threatened, endangered, or species of special concern in the Preserve.

(4) Introduction of plants or animals- The introduction of plants or animals into a Natural Area Preserve may be allowed only as provided in a Management Plan. No introduction of plants or animals is planned.

Buffer Areas

The land of the neighboring Cornwall Conservation Trust acts as a buffer. No additional buffer areas are called for at this time.

Access Control

The locked gate at the entrance limits access to authorized motor vehicles.

Foot traffic may be restricted during timber harvesting. Appropriate signs will be posted at the entrance.

Recreational Activities

Low impact recreational uses such as hiking, hunting, and geocacheing will be permitted in the Preserve.

Research or Educational Activities

A person wishing to engage in research or educational activities shall obtain approval from the Commissioner. A Special Use License, obtainable from DEEP State Parks and Outdoor Recreation, is required.

The Commissioner may approve research or educational activities with such conditions and restrictions as he or she deems necessary. A copy of the proposal for and results from any research conducted shall be given to the Commissioner and a copy kept in the Natural Area Preserves file. A person authorized to engage in educational or research activities shall notify the site manager before commencing and upon completion of such activities.

Prohibited Activities

Removal or Introduction of Objects

There shall be no introduction to, removal from, or consumptive use of any material, product, object, plant, or animal unless specifically designated in this Management Plan.

Fires

No fires may be started in a Natural Area Preserve, except as specifically designated in the Management Plan (such as prescribed burns). Every effort will be made to prevent fires from spreading into the Preserve. All uncontrolled fires shall be brought under control as quickly as possible.

Records

The Commissioner and the Site Manager shall keep records for the Preserve, with a copy kept in the Natural Area Preserves file. The records shall include the Management Plan, annual reports by the site manager, and other pertinent documentary material studies, reports, and descriptions of significant events and shall be open to the public at all reasonable times and places. Information exempted from the Freedom of Information Act may be withheld if the Commissioner deems such exemption necessary to protect the resources of the Preserve.

RECOMMENDED DOCUMENTATION EFFORTS

The Site Manager shall develop a plan to acquire and maintain a comprehensive inventory of the Preserve's natural resources. Documentation on the status and trends of the Preserve's flora, fauna, and physical features, will make it easier to prepare informational and educational materials and annual reports. It will also enable timely response to emerging and emergency needs. This information can be obtained through field inventories, aerial photography and other remote sensing technologies, and possible permanent photo stations, inventory plots (such as the Blue Ribbon plot), and transects.

Quantitative and qualitative results of any management efforts (including removal or other manipulation of species) shall be maintained.

All researchers in the Preserve shall be required to submit an annual report detailing their methods and findings. At the conclusion of a research project, documentation confirming its clean-up shall be submitted to the Site Manager and kept on record.

The Site Manager will collect and document all existing information regarding the Preserve. This information may include photographs, electronic data, maps, reports, texts, geologic, biologic, and boundary surveys, physical artifacts, and recordings.

Section 23-5c requires that information gathered for the purposes of inventorying and describing Preserves shall become part of the Natural Diversity Database of the DEEP. It is strongly recommended that any specimens collected in the Preserve by approved researchers be deposited with a recognized institution that houses collections, preferably at the University of Connecticut's scientific collections in Storrs, CT. The location of the specimens should be stated clearly in the submitted research report.

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