

FOREST STEWARDSHIP PLAN

prepared for the

Town of Barrington's Swain Rd. Town Forest

50+/- Total Acres
Map 241 Lot 35

Barrington, NH

April 2020

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INTRODUCTION

This Forest Stewardship Plan is being prepared at the request of the Town of Barrington's Select Board, Town Forest Task Force/Committee, and Conservation Commission. It is designed to document the natural resources in their current state and formulate management recommendations to meet the landowners' long-term goals and objectives.

GOALS AND OBJECTIVES

The Town of Barrington acquired this parcel in the late-1950's for back taxes owed and designated it as a Municipal Town Forest in the late 1980's. The Town manages the property with many goals in mind. Chief among them are:

- Conservation Education.
- Recreational opportunities for the public.
- The protection and improvement of wildlife habitat.
- To conserve and protect the wetland and water resources.
- To protect rare or unique plant and animal species.
- The sustainable production of commercial forest products where this does not have undue adverse impact to the other stated management goals.

"The Barrington Town Forest is administered by the Barrington Town Forest Task Force and the Barrington Conservation Commission, under the auspices of the Barrington Board of Selectmen." (Taken from the Barrington Town Forest Trail Guide).

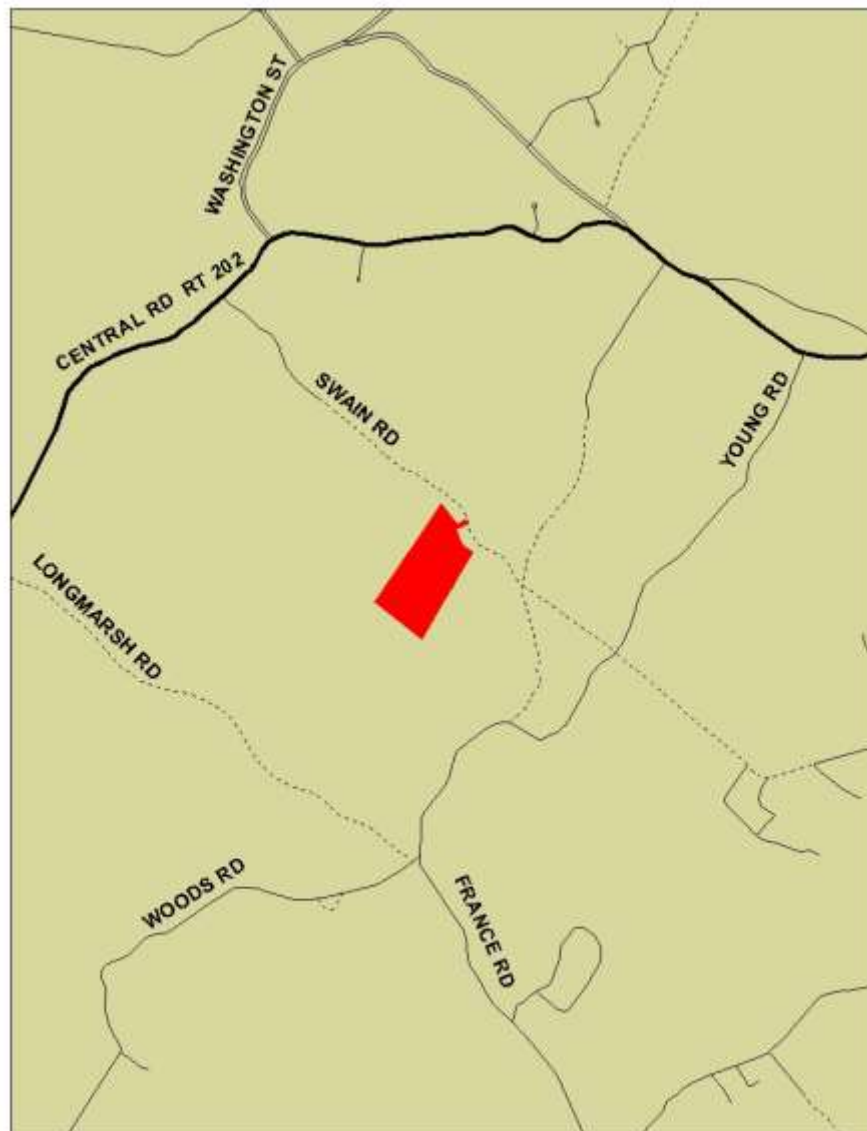
Permitted uses of the property include passive recreation such as walking/hiking, nature study, snowshoeing, cross-country skiing, etc. Mountain biking is also allowed. Non-permitted uses include; OHRV/ATV use, camping, fires and hunting.

CHAPTER 2: WOODLOT DESCRIPTION

LOCATION - DESCRIPTION

The Barrington Town Forest is fairly rectangular in shape and located in the west-central part of Town. It is comprised of a single lot of record, Map 241 Lot 35, and is assessed at 50 acres. It is located on the southern side of Swain Road, near the eastern terminus of the maintained (class V) section.

The deed for the property is recorded at the Strafford County Registry, Book 834 Page 27. The property is shown on a survey map conducted in 1994 when a land swap/boundary line adjustment gave fee ownership of the parking area to the Town. This survey is recorded at the Strafford County Registry, Plan 44-100.



BOUNDARY LINES

The boundary lines of the Barrington Town Forest range from evident but in need of being re-painted to fairly obscure. In general, the southern and eastern lines are in the best shape, being identified by faded orange and blue blazes as well as flagging. The western line is more obscure, consisting of very faded blazes and less defined flagging.

It is of highest importance to paint the boundary lines in the immediate future to ensure that they are not lost and to protect the Town Forest from encroachment that originates on abutting lands. With the intense public recreational use that this property sees, it is also important to have well defined boundaries to help keep people from straying off the Town Forest onto abutting private lands.

Several colors appear to have been used in the past on the Town Forest Boundaries. I recommend using either red, because it is the most universally recognized boundary color and shows up well, or blue, which appears to have been the most recently used and is still faintly evident.

Regardless of color, a good quality oil-based enamel should be used, with brush on paint being much more durable than aerosol. It is substantially messier and more time consuming, but should last upwards of 10-15 years, as opposed to around 5 years for an aerosol application. If the exact location cannot be determined well enough to be painted, then the approximate location should be well flagged, and these flags maintained on a fairly regular basis.

LAND HISTORY

The Barrington Town Forest was acquired for back taxes owed in 1958 from Richard H. Illinick, very shortly after it was heavily logged. It has historically been referred to as the “Tricky Lot”, after the logger who originally cut it. It was officially designated as a Municipal Town Forest at Town Meeting in either 1988 or 1989. At the 1990 Town Meeting, management of the Town Forest was delegated to the Conservation Commission, with all funds from timber harvesting to go into a forest management fund. In 1993, the Barrington Town Forest Task Force was formed by the Conservation Commission and tasked with developing a property management plan, which was completed in 1994. In the late 1994’s, a boundary line adjustment/land swap transferred fee ownership of the area where the parking lot sits, giving the public better access to the property. In 1997, a Forest Stewardship Plan was completed by forest technician Corin Hallowel under the supervision of Bob Edmonds. This plan was updated in 2009 by Andy Fast, UNH Extension Forester, again under the supervision of Bob Edmonds.

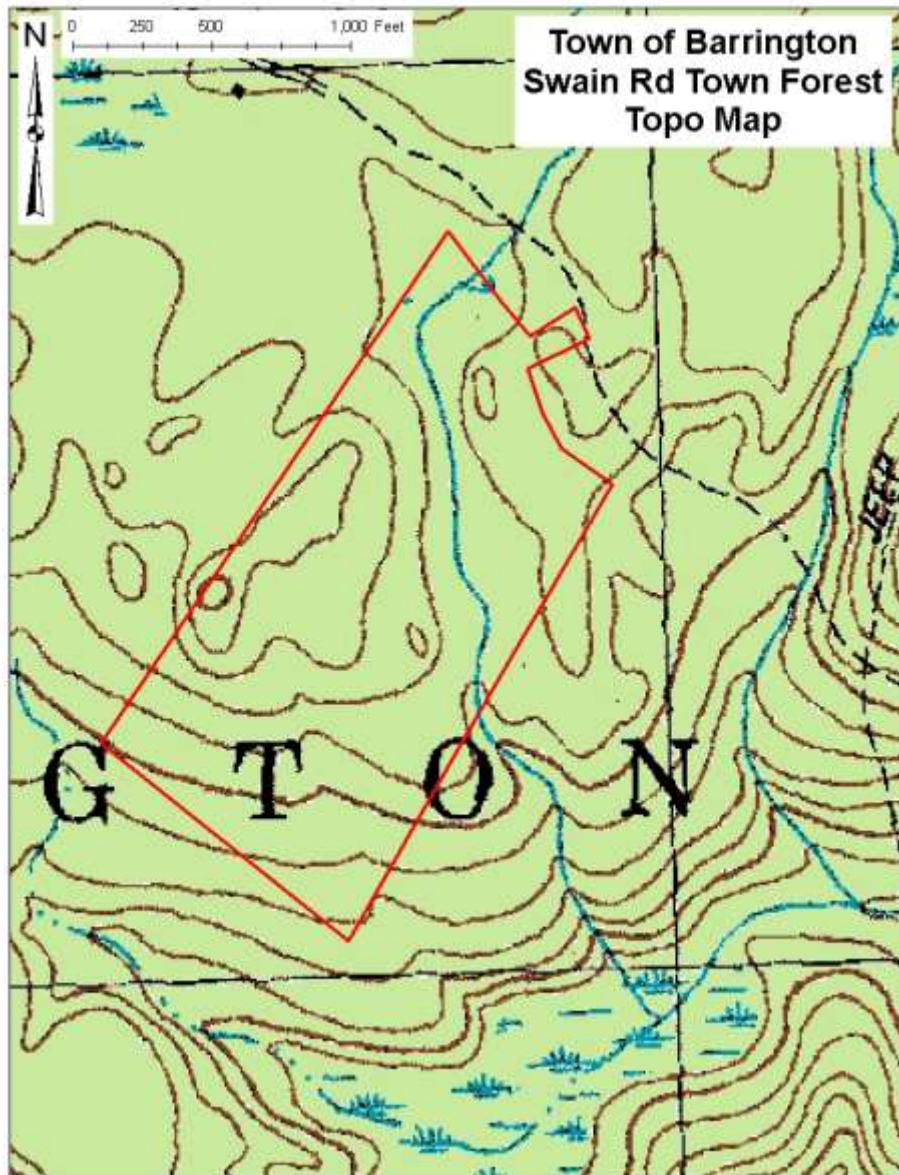
There is an incredibly impressive trail network on the property that is largely the result of 8 separate Eagle Scout Projects completed by members of Boy Scout Troop 358. The following paragraph detailing the various projects was taken from an email thread in the spring of 2012 between members of the Conservation Commission, Town Forest Task Force and the Town Administrator:

“The first project was completed by Mike Boodey was an ecological survey done in 1993. Eric Lenzi cut the first trail and made the first bridge. Bobby Swier widened the trail from the parking lot to the education center. Jon Janelle improve the trail system and put in the second bridge. Shawn Smith improved the trail system by putting walkways over the wet spots. Steven Decker improved the trails and the second bridge. Ryan Mackenzie extended the handicap section from the education center to the two bridges and cut the trail that connects the two bridges. Mark Decker completed the amphitheater. The information about the boy scout projects came from Dick Burroughs who was the scoutmaster at that time.”

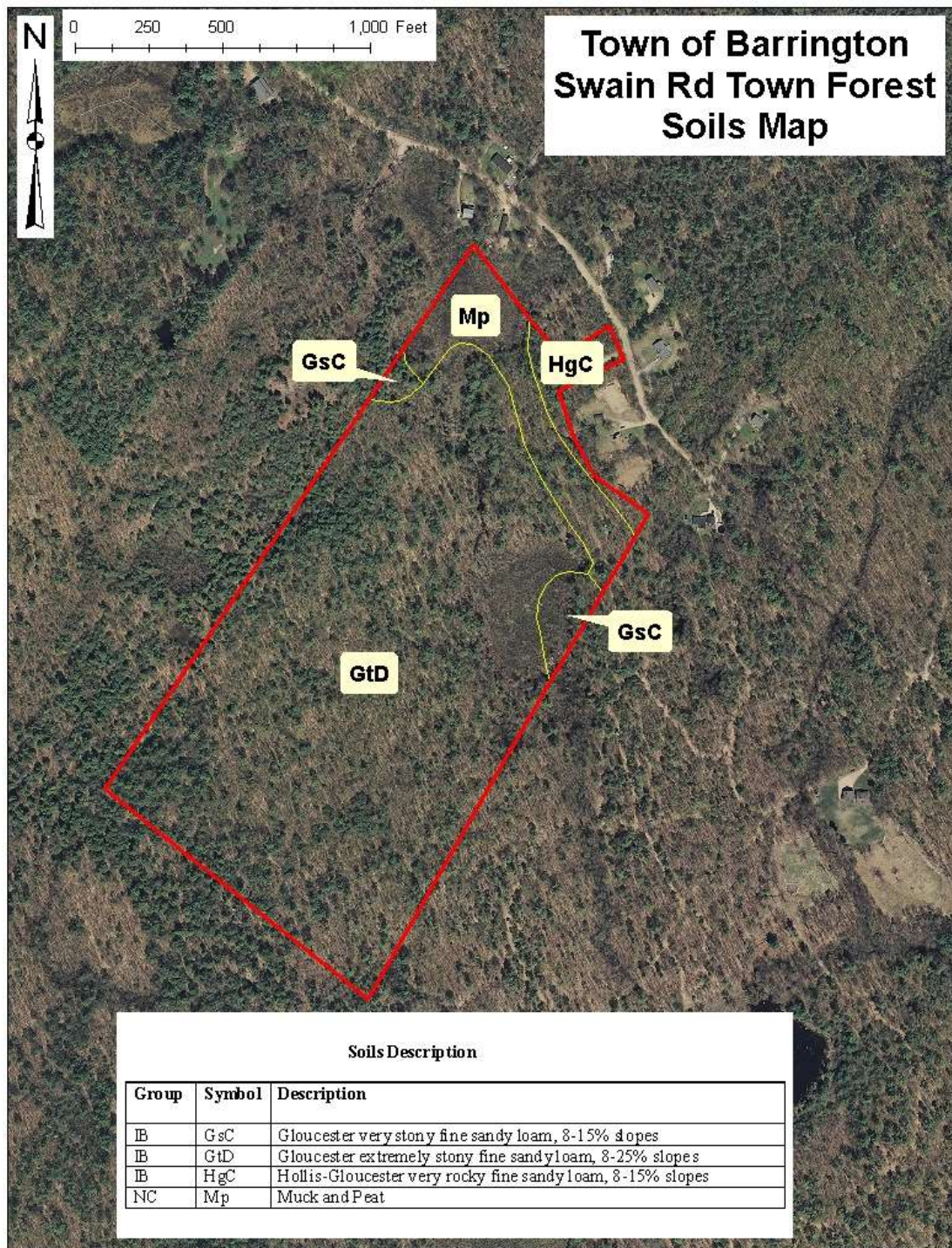
TOPOGRAPHY - ASPECT

The topography on the Barrington Town Forest varies over the extent, but is fairly gentle, with slopes typically averaging between 5-15%.

Aspect varies as well, but the land generally slopes to the south and east.







CHAPTER 2: WOODLOT DESCRIPTION

SOILS

Four soil types underlay the Barrington Town Forest, as determined by the Strafford County Soil Survey Manual. The following is a description of the major forest soil groups (taken from the S.C.S.S.M.) along with a list of which soils fall into each group.

Group IB Soils

Symbol	Description
GsC	Gloucester very stony fine sandy loam, 8-15% slopes
GtD	Gloucester extremely stony fine sandy loam, 8-25% slopes
HgC	Hollis-Gloucester very rocky fine sandy loam, 8-15% slopes

The soils in this group are generally sandy or loamy over sandy textures and slightly less fertile than those in group IA. These soils are moderately well and well drained. Soil moisture is adequate for good tree growth, but may not be quite as abundant as in group IA soils.

Soils in this group have successional trends toward a climax of tolerant hardwoods, predominantly beech. Successional stands, especially those which are heavily cut over, are commonly composed of a variety of hardwood species such as red maple, aspen, paper birch, yellow birch, sugar maple, and beech, in combinations with red spruce, balsam fir, and hemlock.

Hardwood competition is moderate to severe on these soils. Successional softwood regeneration is dependent upon hardwood control.

GROUP NC Soils

Symbol	Description
Mp	Muck and peat

Several mapping units in the survey are either so variable or have such a limited potential for commercial production of forest products they have not been considered. Often an on-site visit would be required to evaluate the situation. In this case, the Muck and Peat soil is associated with open marsh wetlands.

ACCESS

As with any property, the quality of access is the primary issue when planning for any management activity, be it timber management, wildlife habitat improvement, recreational use, etc.

The Barrington Town Forest has a small finger of frontage near the eastern terminus of the Class V (maintained) section of Swain Road. This frontage is thanks to a boundary line adjustment/land swap that occurred in 1994, extinguishing the existing Right-of-Way that benefitted the Town, and granting fee ownership of the area that is now used as a parking area. This land swap was probably the single most important action that the Town has taken in the management of this property in its 62 years of ownership. Without this access, the incredibly extensive network of hiking and interpretative trails that see a high amount of use by the public would not be possible.

This parking area provides excellent access for public recreational use, and for any small-scale management activities such as trail/infrastructure maintenance, boundary maintenance, etc.

As this is a Forest Stewardship Plan, chief among my concerns will be the discussion of developing management access for the purposes of active forest management/timber harvesting. As there is only this small sliver of direct access to a public road, short of obtaining a Right-of-Way (either temporary or permanent) over an abutting property, any timber management activity must originate from the parking area.

The soils here, and throughout much of the upland areas of the property are suitable for the construction of log-landings, woods roads and skid roads. The abundance of rocks will hinder/complicate matters, but no more so than in many areas of the Granite State. What does provide a substantial stumbling block is the extensive trail network and associated infrastructure that has been established on the property for many years.

If there were no trails, or there were significantly less, access would be fairly straight-forward. A short section of truck road would be built out to a landing area on the level, dry ground between the kiosk and the parking lot. From here a skid road would travel southwest, crossing the brook with a temporary steel bridge near the location of the southern recreational bridge. There would be some cost associated with this access construction (and close out/stabilization following the harvest) but the proceeds from the recommended harvesting would more than make up for this expense.

However, the extensive network of trails and educational infrastructure, which represent an incredible investment of volunteer time and for which the property is well-known and appreciated, would be severely impacted. The aesthetic character of the area would be much changed, despite any efforts to minimize the impacts. I cannot envision the multiple use management approach that the Town has taken over the years allowing this to occur without first exhausting all other alternatives and then seeking input from

CHAPTER 2: WOODLOT DESCRIPTION

the many parties/interests that have, and will continue to factor in the management of the property.

The alternative to this is to seek a temporary (or permanent) agricultural Right-of-Way over one of the abutting properties. The three abutting property owners (Atkins to the northwest, Estes to the southwest and Mead to the southeast) should be contacted to see if they would be willing to at least have a conversation with the Town about obtaining timber harvest access over their lands. It may be a situation where the Town could piggyback with a planned harvest on an abutting property to avoid having a separate or undue impact to the abutter. This may be a long-shot, but as an alternative to the significant impact to the recreational system that development of access on the Town's property would entail, it should at least be investigated.

If no other alternative can be found, and the various groups within the Town that have authority/input on the management of the Town Forest decide that going forward with a timber harvest is the best course of action, then the following issues should be addressed to help minimize the impacts to the existing recreational resources on the property.

Cut-to-length mechanized harvesting equipment, where the trees are mechanically felled, limbed and processed into their saleable lengths in the woods, and then carried out of the woods on a hybrid skidder/log truck, would allow for winding skid roads (and greater flexibility when locating skid roads) as trees are not being dragged through the woods in relatively straight lines. The landing area can be smaller in size because the wood is stacked neatly for loading onto trucks, although tractor-trailer trucks are required for transporting the wood to the mills.

The harvesting should occur during the winter when there is less recreational activity, and frozen ground conditions will minimize soils disturbance. The recreational trails should be crossed at right angles whenever possible and buffers retained along the sides of the trails.

The biggest issue I see is the aesthetic impact to the section between the landing area and the brook crossing. The perfect location for the temporary bridge crossing is where the more southern wooden bridge sits. This makes sense, as the bridge was constructed in the most appropriate spot, a credit to the people who designed and installed it. Two alternatives exist, neither of which is attractive. We could either remove the existing bridge, conduct the sale, and have to replace the bridge, or install the temporary bridge directly adjacent to the recreational bridge. Both of these alternatives will have a significant lasting impact to the aesthetics of this immediate area. Following the harvest, the skid road in the immediate area of the trails and bridge should be smoothed and seeded to not only prevent erosion but to provide a more aesthetically pleasing appearance.

Once across the bridge, there will still need to be several trail crossings, which, as previously discussed, should be done at right angles and buffers left along the sides of the trail. The size of these buffers is up for discussion, but in general, at least 25' is recommended. The larger the buffers, the smaller the area of the sale, and the lower the volume/value will be, making it less attractive to logging contractors.

Using a logging contractor that cares deeply about the aesthetic quality and public perception of the job would be of paramount importance. There are so many issues with the implementation of this project, that fighting with the contractor to do what is expected of them would just add aggravation and the possibility for failure.

In summary, logging access could be obtained out to Swain Road, but the decision to do so would have to be made after deciding whether the benefits of conducting a timber harvest outweighs the negative impacts it will have to the aesthetic/recreational/educational resources on the property.

If it comes to pass that a timber harvest is planned for this property, there should be a public information session held by the Conservation Commission to provide information about what is planned, why it is occurring, when it will happen, and how it will impact the public. Providing this information ahead of time will help to keep people from being surprised and help to form public opinion. Following a harvest, a public educational walk should be planned to show off the work done, and again provide information about the project. By involving the public before and after, you can hopefully get them on-board and accepting of the changes to the aesthetics that inevitably occur with a timber harvest.

FOREST CATEGORIZATION & INVENTORY

There are many ways a forester can categorize a woodland. The most common way is to break a larger forested area (be it a whole property, compartment, management unit, etc.) down into stands; areas of the forest with similar characteristics (i.e. species composition, size class, and density or stocking). These stands can then, based on their similarity of character, be treated in a uniform manner.

For ease of reference, these stands are given a numerical label (Stand 1,2,3,etc.). These stands can then be broken down into sections (1-1, 1-2, 1-3 etc.). Stands are then given a short coded description on the Forest Type Map to give someone in the field with the map a coarse description of the stand without reading the more involved description contained in the plan. This coded description deals mainly with the overstory by selecting the segment of each of the following categories that best describes the stand.

SPECIES TYPE	SIZE CLASS	STOCKING LEVEL
H: Hardwood	1: Saplings (1-4")	A: Over stocked
M: Mixedwood	2: Poles (5-11")	B: Fully stocked
S: Softwood	3: Sawtimber (12"+)	C: Under stocked
WP: White Pine		

For example, H2A would indicate an overstocked hardwood pole stand, M3C an understocked sawtimber sized mixedwood stand, or WP1B a fully stocked white pine sapling stand. If information regarding the understory were needed to be given in conjunction with overstory information, it would be recorded as ^{WP3C}/_{H1A}, in this case an understocked white pine sawtimber stand with an overstocked understory of hardwood saplings.

CHAPTER 3: FOREST RESOURCES

The following is a list of the abbreviations of the common trees found on the Barrington Town Forest. These abbreviations can be found throughout the detailed stand descriptions.

Species	Abbreviation	Species	Abbreviation
White Pine	WP	Red Pine	RP
Spruce	SP	Balsam Fir	BF
Hemlock	HM	Other softwood	OS
Red Oak	RO	Red Maple	RM
Sugar Maple	SM	White Birch	WB
Yellow Birch	YB	White Ash	WA
Aspen	AS	Beech	BE
Basswood	Bsw	Other Hardwood	OH

On the Barrington Town Forest, a total of 13 inventory points were recorded using a 20 basal area factor (BAF) prism. Each inventory point was located on a grid spacing of 400' by 400'. At each inventory point, data was recorded regarding tree species, dbh, merchantable height by various product, and overall tree quality. This information was analyzed by the **Forest Tally** computer program, developed by Lee Goldsmith.

Detailed descriptions of each stand can be found in the **STAND DESCRIPTIONS** and **STAND RECOMMENDATIONS** sections of the Management Plan.

STAND DESCRIPTIONS

STAND	CODE	ACREAGE	DESCRIPTION
1	H/WP2/3A	36	Fully to over-stocked, pole to sawtimber sized red oak and white pine with northern hardwoods, white oak, and scattered hemlock. Fair quality. 70+ year old.
2	M2/3A	6	Fully-stocked, pole to small sawtimber sized hemlock, red oak, northern hardwood and white pine. Fair quality. 60+ year old.
		8	Wetlands.
		50	Total Acreage

CHAPTER 3: FOREST RESOURCES

Forest type map

STAND TECHNICAL DATA AND RECOMMENDATIONS

STAND 1 H/WP2/3A 36 Acres

TECHNICAL DATA:

Species Composition by Percent (BA)	RO-50%, RM-19%, WP-12%, BB-12%, Other 7%
Mean Stand Diameter	9.3"
Mean Merchantable Stand Diameter	11.7"
# Trees per acre (4" +)	254
Basal Area/Acre	120 sq. ft./acre

MANAGEMENT GOAL: To improve the timber growth and wildlife habitat.

TIME FRAME: 2020-2030

STAND 1 RECOMMENDATIONS:

Stand 1 comprises the bulk of the woodland acreage on the Barrington Town Forest. It is relatively even-aged, and stocked primarily with pole to sawtimber sized red oak. White pine is the next most prevalent species (making up 12% of the species composition by basal area but 37% by sawtimber volume), with a mixture of northern hardwoods (maple, beech and birch), other oaks and hemlock. Quality is generally fair, as the soils that underlay the stand are moderately productive, having a site index of 55.

Red oak is the most important mast producing species in this area of the country. Healthy beech can produce crops of nuts periodically, but the beech bark disease has affected the overall health of the trees and there does not seem to be regular nut crops like has historically occurred. White oak acorns are favored over red oak, but white oaks make up a much smaller component of our woodlands. The importance of red oak cannot be understated, as it is plentiful throughout much of New England and consistently produces large crops of protein rich acorns.

Red oak will begin bearing acorns at 30+ years of age, but peak production does not occur until they reach 18-24" in diameter, often at 100+ years old. In general, the larger and healthier the trees, the greater the acorn production. As with all trees, health is generally in direct correlation to the size of the crown (photosynthetic area) and trees with ample room to spread out their crown instead of competing with neighboring trees for space tend to be healthier.

CHAPTER 3: FOREST RESOURCES

The oaks in stand 1 are just approaching their peak acorn production years. Overall health is good, although there are scattered individuals throughout the stand that exhibit signs of decay or stress.

Management of this stand would focus on retaining the majority of the good quality red oak component to an old age, looking to provide a steady supply of hard mast for the myriad of wildlife species that feed on them.

Red oak is also a valuable timber species. Timber management of this stand would not differ much from the prescription set forth above for wildlife values. The oak in this stand is just reaching the size when some of it can be considered “veneer” quality. This grade of sawlogs is based on the diameter and quality of the tree, and is generally found in butt logs that are free from defect and greater than 14” diameter. As the trees increase in girth, the value of them increases exponentially, with typically a 40-50% increase in value for the same tree as it increases from 14” to 18”+.

Careful thinning of stand 1 would seek to remove some of the trees that are competing with the better quality red oak stems, reducing the overall basal area from its current level at 120sq.ft./ac down to around 85sq.ft./acre. Giving the good quality oaks room to expand their crowns will allow for increased vigor and growth rates, producing better quality trees and increasing nut production. The thinning would focus mainly on non-oak species (maple and beech) as well as the poorer quality oaks or those necessary to obtain the right spacing in the residual stand. By removing a portion of the stand in a careful thinning operation, not only will the overstory have ample room for crown expansion, but the regeneration process will begin. The areas opened up in the understory will immediately begin to grow back to a mixture of northern hardwoods and hopefully red oak. Obtaining red oak regeneration is hit or miss, but the odds for success can be increased by conducting a harvest in conjunction with a heavy acorn year. The disturbance to the forest floor helps to prepare the seedbed for the germination of the acorns. As the regeneration develops, it should be monitored and every 10-20 years (as needed) additional thinning of the overstory occur to shed additional light on the developing understory. In each thinning, the healthiest oaks should be retained and allowed to increase in size and productivity, eventually harvesting some of them at 22”+ when acorn production and value are maximized.

Additional considerations for management/harvesting in stand 1 would include the potential to develop white pine regeneration. There are scattered white pine throughout the stand. By opening small holes in the canopy adjacent to some of these pines, and scarifying the seedbed during the logging process, white pine seed will hopefully germinate and become established along with the various hardwood species that will inevitably occupy the site. This valuable timber species would be an excellent addition to the future stand that will occupy the site. If it does become established, the development of this regeneration should also be closely monitored and hardwood control conducted if needed.

The very scattered hemlock component of the stand should be retained wherever possible for the wildlife habitat it provides. Even scattered individuals are important, and by retaining them, we would hope to increase their presence within the stand. There is much more hemlock in stand 2 and the specific wildlife values associated with this species are addressed in detail within the management recommendation for that stand.

Stand 1 is fairly uniform in age structure. This is a common occurrence in New England's forests and is not in itself a bad thing. However, from a wildlife habitat standpoint, the greater the diversity in age structure, the greater the number of species that will make use of an area. If a timber harvest were to occur, an interesting addition to the recommendations would be to create an area of early successional growth, which is a habitat type missing from the Barrington Town Forest. By selecting an area and clearcutting it to completely restart the forest succession process, an inclusion of a separate habitat type could be created within stand 1. The grasses, forbs and brambles that immediately take over these early successional sites mingle with the fast growing, sun loving hardwood species that will quickly sprout up. A myriad of bird species will utilize areas such as this as nesting/brooding habitat. Many species of rodents will propagate, which will in turn bring in the mammalian and avian species that prey upon them. Large mammals such as deer and moose will seek these areas out for the succulent browse they provide. When laying out areas such as this, the rule of thumb is "bigger is better", but that isn't always possible or practical, particularly on a forest such as this, with multiple uses and aesthetic concerns. I feel a 2-acre opening would be appropriate. If this opening were to occur, it should be adjacent to the Cornerstone Trail, and signage posted explaining what it is and why it occurred. Public perception of these types of activities can often be shaped based on the availability of information.

This conservative thinning designed to promote good quality sawtimber oak development, the production of hard mast and to hopefully produce white pine regeneration would likely gross between \$8-10,000 in stumpage proceeds. There would obviously be forestry fees (marking and supervision), as well as some access improvement costs, but the sale would still likely net some \$4-6,000.

STAND 2 M2/3A 6 Acres

TECHNICAL DATA:

Species Composition by Percent	HM-45%, RO-24%, BE-14%, WP-10%, Other-7%
Mean Stand Diameter	8.0"
Mean Merchantable Stand Diameter	11.1"
# Trees per acre (4"+)	414
Basal Area/Acre	145 sq. ft./acre

MANAGEMENT GOAL: To promote softwood development and a multi-tiered softwood canopy throughout the stand for wildlife habitat.

TIME FRAME: 2020-2030

STAND 2 RECOMMENDATIONS:

Stand 2 comprises a very small area of the Barrington Town Forest, centered chiefly in the southwest corner and along the western boundary. This area differs greatly from stand 1 in that softwood (principally hemlock) makes up a significant portion of the species mix. In a forest largely dominated by hardwoods, this diversity makes the intrinsic values associated with this type of softwood growth even more significant.

Hemlock is an incredibly important species for wildlife because of the winter cover it provides. A myriad of species rely on thick stands of hemlock to block harsh winter winds, keep snow depth down, and trap small amounts of heat near the ground to help offset nightly radiational cooling. Deer in particular rely heavily on stands of hemlock in the winter months, yarding in these areas when the snow gets deep.

Because hemlock is not a particularly valuable species, it is not often that a landowner is willing to manage the forest to promote its growth. I feel that over time it is making up a lesser part of the forests in this area of New England, and as a staunch proponent of all things that make good deer habitat, I encourage the type of conservative management that promotes healthy hemlock.

The relatively small size of stand 2 will limit the scope and type of management that can occur. In general, if harvesting were to occur in adjacent stand 1, there is some work that could benefit the hemlock component of the stand.

In a larger stand of hemlock, I would recommend a group selection system of harvesting, whereby small openings or patch cuts, ranging between $\frac{1}{10}$ and $\frac{1}{3}$ acre in size (roughly 65-100' in diameter) are spaced throughout the stand, focusing on removing the hardwood species. The resulting regeneration in these small patch openings is often a mixture of fast-growing hardwoods and the more shade tolerant, slower growing

hemlock. Over time, successive harvests, each generating a new age class, will produce a multi-tiered (aged) canopy with a great deal of species diversity and stratified age structure. This diversity adds to the effectiveness of the wildlife habitat and helps to shield the stand from outside impacts like windthrow, disease, insects, climate change, etc.

Management in stand 2 on the Barrington Town Forest, would focus primarily on removing the non-oak hardwood component, providing room for the existing hemlock to expand their crowns and hopefully develop hemlock regeneration. The healthy oaks should be retained for their mast production. There is a scattered component of white pine sawtimber scattered through the stand. These individuals could be targeted for removal, as they have reached sawtimber size and I do not recommend opening up large enough holes in the canopy of this stand to promote white pine regeneration, so there is no point in retaining them as a seed source. Their removal would help to make the work in the stand more economically feasible.

The recommended harvesting in stand 2 would likely only generate around \$1,200 in stumpage revenues, but when added to the operation in stand 1, would help to make the sale more economically attractive to a good logging contractor.

ESTIMATED TIMBER LIQUIDATION VOLUMES AND VALUES
April 2020

Species	Total Volume	Stumpage Value	Total Value
<i>Sawlogs</i>			
White Pine	59 MBF	\$125/MBF	\$7,375
White Pine Box	5 MBF	20/MBF	100
Hemlock	10 MBF	35/MBF	350
Red Oak	87 MBF	325/MBF	28,275
Oak Pallet	75 MBF	50/MBF	3,750
Hardwood Pallet	13 MBF	25/MBF	325
Total Sawlogs	249 MBF		\$40,175
<i>Pulpwood</i>			
Hardwood	1,175 tons	\$4/ton	\$4,700
Softwood	352 tons	1/ton	352
Total Pulpwood	1,527 tons		\$5,052
		Total	\$45,227

TOTAL TIMBER VALUE PER ACRE: \$904

Notes:

- **MBF** is the abbreviation for "thousand board feet", the standard measurement for sawlogs.
- **Tons** can be converted to **Cords** using the following conversion rates;
Hardwood 2.55tons/cord
Softwood 2.2tons/cord
- At the time of this report, the timber markets are quite unstable, and these values represent my best estimate of what the Town of Barrington would receive for stumpage rates on the recommended harvesting. These rates do not reflect the necessary access improvements that will be necessary for the logger to conduct the sale, because these cannot be calculated at this point, not knowing what access route would be used.

WILDLIFE

From observed sign, a wide variety of wildlife are using the Barrington Town Forest. Sign of deer, bear, ruffed grouse, turkey, coyotes, fox, beaver, squirrel, raccoon, skunk, porcupine, pileated woodpecker, raven, hawk, owl, and songbirds was encountered during the field work for this plan. Seasonally, there are probably many more species that use the area, particularly the wetland areas in the summer. I would imagine that several species of ducks, blue herons, a myriad of songbirds, as well as countless amphibian and reptile species can be found within the wetland areas on this and abutting properties.

Periodic cutting maximizes forest succession to the benefit of many forms of wildlife. A dynamic mix of all age classes is considered advantageous for many species for both food and cover. Mast species, especially oak, should be favored and left to grow freely. Larger crowns provide increased nut production and are more valuable for wildlife, especially deer, bear, and squirrels. A main objective would be to retain at least 6 to 12 good mast trees per acre in the large sawtimber size class. Only stand 1 has a high number of oak trees of mast producing size and the management recommendations for this area take this into account.

Trees containing cavities should be left for cavity dwelling birds and animals. Any standing rotten trees should be left as habitat for insects upon which woodpeckers and bear feed. Larger, poor quality, oversized (non-marketable) trees are usually decreasing in vigor which makes them good candidates for future "critter condos". Maintaining a minimum of 6 cavity/snag trees per acre with one exceeding 18" in diameter and 3 exceeding 12" in diameter is recommended. There is not a lot of dead or downed (coarse woody debris) on this property, as it is still recovering from the heavy harvest just prior to the Town taking ownership. By leaving the stand dead trees and those that appear to very soon be standing dead, you are, over time, adding to the amount of coarse woody debris on the forest floor. This woody debris is important for amphibians (salamanders), many species of insect, and is critical for nutrient recycling.

The open wetland areas on the property are another significant addition to the wildlife habitat. Riparian and wetland areas are used by more than 90% of the regions wildlife species and are the preferred habitat for more than 40% of them. The openings are used by some birds for hunting insects in much the same manner as fields. There is generally a good shrub edge to wetlands, often comprised of species that produce edible berries/soft mast. Several species of ducks will nest and raise young in the more open areas of wetland, and other bird species will use the more heavily vegetated areas. Numerous amphibians, reptiles and fish species require the year-round water that these beaver-influenced wetlands provide, including many species of snakes, turtles, frogs, salamanders and aquatic furbearers.

According to the NH Wildlife Action Plan, the majority of the Barrington Town Forest is designated as supporting landscape. The riparian areas that run through the property are not mapped, like due to the relatively small size. If they were mapped, they would likely be listed as Highest Ranked Within the Biological Area.

As addressed in the management recommendations for stand 1, the creation of an area of early successional wildlife habitat could be incorporated into a timber harvest if one were to occur. These areas of early successional forest growth are critically important to many species of wildlife, particularly some songbirds. Brown thrasher, whip-poor-will, chestnut-sided warbler, common yellowthroat, eastern towhee and indigo bunting all rely heavily on this habitat type.

A project to consider would be the installation of several wood duck boxes near the more open water wetland areas. The yearly maintenance of these boxes could be assigned to a class (say 6th grade) and they could keep records about which boxes were used during each year. I have worked with another municipality on a project like this and the students seemed to enjoy it.

WETLANDS - WATER RESOURCES

The wetland and water resources on the Barrington Town Forest consist primarily of the brook and associated wetland areas both upstream and downstream of the recreational bridges. These wetlands range from open beaver bog, to marsh, to scrub/shrub wetland, to forested. This range of diversity is important, as it greatly increased the diversity of the area, providing habitat for a greater range of mammal, bird, reptile and amphibian species.

The State of New Hampshire regulates work in any of these jurisdictional wetlands. Appropriate buffers (100') should be retained along wetlands/streams in which 50% of the crown cover is maintained and soil disturbance is minimized.

Before crossing any watercourse, either seasonal and perennial, with logging equipment, or constructing a permanent crossing during woodsroad construction, it is necessary to file a ***Statutory Permit by Notification - Forestry*** with the State of New Hampshire's Department of Environmental Services Wetlands Bureau. Crossings must be constructed, in accordance with the standards set forth by the State of New Hampshire's ***Best Management Practices for Erosion Control on Timber Harvesting Operations***. Using the appropriate method to cross a stream will prevent the addition of sediment through soil erosion, which is highly problematic as the levels of particular matter increase.

I did not encounter any vernal pools during the field work for this plan, but I do not doubt that there may be some, particularly in the lowland areas near the edges of the wetland. During the marking/layout for any potential management activity, whether it be forest management or recreational development, the presence of any vernal pools should be noted. If present, the following guidelines should be adhered to;

Within the vernal pool basin;

- Avoid running machinery through the vernal pool basin, even during dry periods, to avoid changing the pool's ability to hold water.
- Avoid adding slash (woody material) to vernal pools.
- Avoid removing trees with crowns immediately overtopping any portion of the pool to maintain water temperature and nutrient inputs.

Within 200 feet of a vernal pool;

- Limit tree removal to individual trees or small groups of trees. Locate groups where advanced regeneration or shrub cover occurs to help maintain shady conditions after the overstory is removed.
- Avoid removing stumps, stones, or other large cover objects.
- Maintain as much of the existing understory vegetation as possible.
- Limit the activity of heavy equipment.
- Locate main skid trails and truck roads outside the buffer.

AESTHETICS

When planning and implementing any management activity, the affect on the aesthetics of the property should be taken into consideration. Logging in particular can have negative impacts on aesthetics. Matching the kind of logging operation to the needs of the forest as well as aesthetic considerations is important. Having conscientious operators goes a long way towards leaving a site with a reasonable post-harvest appearance. It is the job of the forester who is marking and laying out the harvest to take these concerns in mind and make sure the logging contractor does what is needed to minimize the visual impact.

As discussed in the **Access** section of this plan, obtaining timber harvest access from Swain Road on the Town's property would change the aesthetics of the area between the parking lot and the brook. Even if no widespread logging were to occur in this area, just the presence of the landing area, main skid road and temporary bridge site would have an impact.

If logging is to occur, buffers should be maintained along the sides of the trails to help minimize the aesthetic impacts, and all crossing of the trails should be done at right angles wherever possible.

RECREATION – EDUCATION

The Barrington Town Forest has a fantastic trail network in place, thanks to a great number of volunteers, including 8 local Boy Scouts conducting Eagle Scout projects. For a property of this size, and occurring well outside of a "Town Center", it offers recreational and educational opportunities far beyond the norm.

The 10-station self-guided nature trail that makes a loop through the high ground in the center of the property is marked in blue and is called the Deer Loop Trail. Each station is numbered and makes notice of a certain feature, ranging from wildlife habitat, to forest succession, to geological features to cultural remains. There is an accompanying Trail Guide available in the mailboxes near the kiosk that provides the information and thinking points that correspond to each station.

The amphitheater area, as well as that area near the kiosk, is used for learning experiences or workshops, often in conjunction with local schools. The availability of this Town Forest as an outdoor classroom is fantastic, and something that should not be taken for granted. I work with a great number of Municipalities, and many of them strongly desire to have the recreational/educational infrastructure that the Barrington Town Forest has.

In terms of additional trail construction opportunities, I feel that a spur trail could be built down to an observation point near the edge of the open wetland. The exact

location of the trail and observation point would need to be determined, but I feel that showcasing the importance of these open wetlands might be something to consider.

Further expansion of the trail system in the southwestern section of the property, notably off the Cornerstone Trail, would be detrimental to the feasibility of conducting active forest management/timber harvesting on the property. If the area of early successional wildlife habitat (the 2-acre clearcut detailed in the management recommendations for stand 1) were to be implemented, signage should be posted along the Cornerstone Trail at the appropriate place, explain what they are looking at and why it was done.

CULTURAL FEATURES

The only significant cultural feature encountered during the field work for this plan is the remnants of an old building/house that is one of the stations (#10) on the self-guided trail.

The large field stone marker at the extreme southern corner of the property is the highlight and namesake of the Cornerstone Trail.

The history the Town's ownership and management of the property, coupled with the volunteer efforts to create such a special property, is becoming a cultural feature. The history of the property and who has been involved should be kept in the Town records, so future generations know who they have to thank while enjoying their Town Forest.

RARE AND ENDANGERED PLANT & ANIMAL SPECIES

There were no rare or endangered plant or animal species encountered during the field work for this plan. That is not to say that none occur.

The Natural Heritage Bureau's databases were queried, and there are no known occurrences of any rare or endangered plant or animal species on the property. There are several known occurrences within one mile of the property, including the presence of two threatened turtle species (spotted and blanding's) that could easily occur on the Town Forest. In general, the protection of the wetlands and the upland areas immediately surrounding them would be the best way to protect potential habitat that would prove beneficial to these species.

There are patches of mountain laurel on the property, which, here in Central New England, is at the far northern edge of its range. This species benefits from openings in the forest canopy and a lack of competition with understory species.

STABILIZING AND RESEEDING

When any harvest operation or road construction project is completed, all critical skid roads and landings should be stabilized. Steep skid roads and truck roads should be waterbarred, outsloped, ditched and smoothed. Truck roads, major skid roads and landings, as well as any sensitive areas (such as near the potential brook crossing) should be seeded with conservation seed mix and mulched with hay where needed. This will help stabilize the soil, provide feed for wildlife, help control woody plant growth and provide an aesthetically pleasing road or trail. Conservation Mix, combined with white clover is the recommended seed mixture in most applications.

SAFETY

In the forested areas, the safety hazard is currently low. There have been no recent logging operations or damaging storms that have created the hazard of falling limbs. In the event that a timber harvest occurs, it would likely prove advisable to limit public access during the timber harvest. While this wouldn't be popular, it would serve to protect people from potential harm and shield both the Town and the logging contractor from liability.

BEST MANAGEMENT PRACTICES

All woods road construction/use/maintenance and wetland/brook crossings should follow recommendations as made, (and required by law on brook crossings), in the "Best Management Practices for Erosion Control on Timber Harvesting Operations in New Hampshire", a resource manual by J.B.Cullen, DRED, Division of Forests and Lands. A copy of this publication can be requested through the above contact at the Department of Resources and Economic Development, P.O. Box 856, Concord, NH 03301 or call 271-2214.

NOTES: Before crossing a stream/wetland for the purpose of logging or road construction with the eventual intent of logging, a **Statutory Permit by Notification - Forestry** (see **Appendix**) form must be filed with the N.H. Wetlands Board.

FOREST PROTECTION - FIRE HAZARD

Practicing good forestry by maintaining species diversity, avoiding monoculture and promoting varied stages of forest succession should minimize mortality from common pathogens, and environmental stress. Based on what limited evidence is available, maintaining a diverse forest will help to minimize the effects of climate change.

There is no significant fire threat on the property and the kindling of fires is prohibited. The care, maintenance and development of access roads/trails will provide access to the property should the need for fire suppression occur.

While owned by the Town, which has no plans to sell or develop the property, the property is not permanently protected. An option for the permanent protection of the property would be to place a conservation easement on it. This has been discussed by the Town in the past and has generally been received positively. Also discussed has been the notion that the gift of a conservation easement might serve as “matching funds” or an “associated project” for a grant application with the Land and Community Heritage Investment Program associated with another conservation project in the Town.

INSECTS AND DISEASES

From observed evidence, there is fairly low occurrence of forest disease problems on the Barrington Town Forest. The only widespread disease that was noted during the field work is the presence of Beech Bark Disease. Nothing can be done to treat trees infected with this widespread malady. Some trees have clean, smooth trunks, being resistant to the beech scale insect, which creates the wounds that enable the Nectria fungus to gain a foothold. These resistant trees should be left in stands and their regeneration encouraged.

The impending infestation of emerald ash borer seems inevitable at this point. It has been discovered within Strafford County and is spreading rapidly. There is nothing to be done to treat infected trees on a forest level and the State of NH is recommended preemptively salvaging ash sawtimber during timber harvests. Ash plays such a small part in the woodlands of the Barrington Town Forest that an infestation by this insect will hardly be felt. During any timber harvest that occurs, living ash should be cut to capture the value before they are lost.

Once killed by these insects, the durability of ash wood will make them an important source of standing dead snags for quite some time.

MANAGEMENT SUMMARY – SCHEDULE OF PRIORITIES

2020-2030

Stands	Recommendation	Goal	Page Reference
	Repaint boundary lines	Firmly identify all boundary lines.	5
	Contact abutting landowners to inquire about the possibility of obtaining timber management access through/over their lands.	Obtain management access.	9-11
1&2	If management access is obtained, and if it is determined that it would not have undue negative impact on the recreational, educational and aesthetic resources, conduct the recommended timber harvesting	Improve timber resources and wildlife habitat.	16-20
	Investigate the possibility of recreational trail expansion to showcase the open wetland areas.	Provide public recreation and education opportunities.	26
	Install wood duck boxes in the more open wetland areas.	Provide wildlife nesting habitat and educational opportunities.	23

APPENDIX

APPENDIX

~Natural Heritage Bureau Printout

~Statutory Permit by Notification - Forestry