Town of Danville Selectboard

P.O. Box 183
36 Route 2 West
Danville, VT 05828

March 19, 2015

David Houston
3736 Thaddeus Stevens Rd.
Danville, VT 05828

Dear David,

This letter is to confirm, to you and the other members of the Conservation Commission, that the selectboard has reviewed and signed off on the Town Forest Plans for Pumpkin Hill and Rodgers Lot.

This decision is documented in the February 19, 2015 meeting minutes on page three.

Sincerely,

Michael K. Walsh, Chair

Craig Vance, Vice-Chair

Douglas Pastula

Kenneth Linsley

Angelo Incerpi

Final

~~*FIRST* DRAFT~~

~~*Awaiting: 1. Selectboard Review & Comment*~~

~~*2. Public Review & Comment*~~

RODGERS LOT TOWN FOREST MANAGEMENT PLAN

"There is serene and settled majesty to woodland scenery that enters into the soul and delights and elevates it, and fills it with noble inclinations."
Washington Irving (1783-1859)

Reviewed by
THE DANVILLE SELECTBOARD
DATE: _____

ADOPTED BY
THE DANVILLE SELECTBOARD
DATE: Feb. 11, 2015

TABLE OF CONTENTS

I. INTRODUCTION

A. Why Plan? (adapted with thanks from the Forest Plans of St. Johnsbury and Warren)

The foundation of a successful town forest that enriches life in a community is a well-constructed management plan that reflects the community's goals for that forest. Without a good plan supported by the community, ecological health could be compromised, conflicts between different uses and ideologies could go unaddressed, legal and financial issues could arise, and short-term gain could be chosen over long-term investment. Considerable research, outreach and thought has gone into creating a comprehensive management plan, meant to promote the wise use and stewardship of Danville's public forest resource, by documenting what is known about the forests, the community's values and goals for their management, and the objectives, guidelines, and actions that can be taken to meet those goals. A well-written Town Forest Plan will also provide for continuity of management—so important because forests tend to outlive those entrusted with their stewardship.

B. Overview

The Danville Conservation Commission (DCC), formed in 2006, identified an early objective of developing detailed management plans for Danville's Town Forests, something which had never been formally done. The Town of Danville owns two "town forests" in common trust for all its citizens. This plan was completed as a group effort, spearheaded by the Conservation Commission and employing the expertise of a number of resource professionals – County Forester Matt Langlais, consulting ecologist Brett Engstrom, State community wildlife biologist Jens Hilke, Vermont Audubon biologist Katie Manaras, and numerous local volunteers and experts. A survey of residents conducted in 2009 and public comments gathered over the course of a variety of public events helped guide the plan as well (see Summary of Public Involvement in Appendix).

C. Purposes of Management Plan

The management of the Danville Town Forest will be a model of environmentally sound public land stewardship to maintain and enhance the diverse forest resource to provide multiple benefits taking into consideration natural resources, timber, wildlife, scenic values and wetlands.. Specifically, stewardship of the forest will strive to:

1. To conserve forestry values, wildlife habitat, biological diversity, natural communities, riparian buffers, aquatic habitats, wetlands, soil productivity and native flora and fauna
2. To preserve ecological processes that sustain these natural resource values as they exist in 2011 and as they may evolve in the future
3. To provide primarily non-motorized (except for snowmobiles on VAST trails and ATVs on town roads and trails) and non-commercial recreational opportunities for towns people and visitors
4. To protect historic, cultural and scenic values of the property
5. To inventory, document, preserve, and interpret natural, historical, and cultural resources for the benefit of the community

D. General Description of Town Forest

The Rodgers Lot Town Forest is located between Bruce Badger Memorial Highway (also known as the North Danville Road) and Partridge Lane (a class III and IV dirt road). The forest is 120 acres in size and most of the boundaries are now well marked. The property is almost entirely forested and contains a diversity of forest and habitat types. The headwaters of Whitman Brook flow through the property for a span of 2,400 feet and there are numerous small wetlands and wetland natural communities. The Forest hosts the town "Stump Dump" and as such serves multiple purposes in the community. It is one of two Town Forests in Danville.

II. NATURAL RESOURCES

A. WATER

As noted above, the Rodgers Lot Town Forest hosts the headwaters of a small perennial brook, Whitman Brook, which flows from the middle of the Town Forest in a southeasterly direction, exiting the Town Forest in its southeastern corner. Natural Community mapping by consulting ecologist, Brett Engstrom identified several small wetlands on the southern half of the property. No vernal pools have been identified to date but if they are discovered in the future, they should be mapped and protected (see the description below and the natural community map in the Appendix for wetland information).

GOALS OF MANAGEMENT: All management activities will strive to protect and maintain the integrity of wetlands, in-stream and riparian areas.

STRATEGIES:

- A minimum undisturbed and vegetated buffer of 50 ft. from top of bank on both sides of the brook and other surface waters shall be maintained.
- Larger buffers may be designated in certain sensitive areas (such as vernal pools).
- Any activity which encroaches on a stream or a riparian area must be designed to minimize the impact and maintain the natural condition and channel of the stream.
- Any forestry contract shall follow the Forest Management Plan and shall follow "Acceptable Management Practices for Maintaining Water Quality on Logging Jobs in Vermont", a Vermont Department of Forests, Parks, and Recreation publication dates August 15, 1987, or successor (AMP).
- Any forestry contract shall strive to minimize the number of any required stream crossings in order to protect identified natural resources as required in the Forestry Management Plan.

B. NATURAL COMMUNITIES

A natural community is an interacting assemblage of plants and animals, their physical environment, and the natural processes that affect them. As these assemblages of plants and animals repeat across the landscape wherever similar

environmental conditions exist, it is possible to describe them. Identifying natural communities is a powerful tool for developing effective land management plans, determining conservation priorities, and increasing our understanding of the natural world. The Vermont Fish and Wildlife Department (VFWD) currently recognizes 80 upland and wetland natural community types in Vermont.

In 2009, supported by a "Trees for Local Communities" grant from the State of Vermont, consulting ecologist and botanist Brett Engstrom, conducted a natural community inventory and mapping project of the Danville town forests. The purpose of the inventory was to provide the town with maps depicting the property's ecological diversity, and information on any state or locally significant natural communities which might warrant special management considerations. The inventory entailed a landscape analysis where GIS data layers and other ecological background information were examined. The analysis revealed a surprisingly high diversity of natural communities, especially wetland natural communities in the Rodgers Lot Town Forest. The Town Forest was mapped into 13 natural communities – four upland and eight wetland – as well as an "altered land" designation for the areas including the current stump dump and old dump sites.

In general, a few Northern Hardwood Forest and Red-Spruce-Northern Hardwood Forest areas dominate the forest, with small wetland community areas interspersed throughout. Northern White Cedar Sloping Seepage Forest and the Mixed Sloping Forest are the largest wetland natural communities. Because of the heavy land use history of the forest, there are no state level significant natural communities. However, a number of the wetland communities were judged by Brett to be "locally" significant. These areas serve as natural reservoirs for biodiversity, including game species, herbs, mosses, invertebrates, etc. and typically have soils that are sensitive to heavy equipment and heavy recreational traffic.

The only rare or uncommon plant species found by Brett on the Rodgers Lot Town Forest was Swamp Thistle, *Cirsium muticum*, which was observed as lone vegetative plants scattered in wetland areas (see the attached natural community map and table in the Appendix for more detailed information).

GOALS OF MANAGEMENT: All forest management activities will strive to maintain and protect healthy natural communities as well as work toward converting the existing plantations to toward naturally functioning communities.

STRATEGIES:

- Utilize the natural community map as a reference in making forest management and recreational planning decisions.
- Occasionally check on the status of the Swamp Thistle, *Cirsium muticum*, as documented by Brett Engstrom.

- Exclude the sensitive wetland natural communities from timber management and recreational paths.
- Implement control of invasive exotic plant infestations.

C. WILDLIFE

The wetlands, small open areas and diverse forest stands are habitat for many kinds of wildlife. The State of Vermont has mapped deer wintering areas around the State. Although there are several mapped areas adjacent to the Town Forest, the Rodger's Lot Town Forest does not contain any mapped deer yards. (see maps located in Appendix).

The landscape surrounding Rodgers Lot Town Forest (2,500 acres) is an important component when assessing current habitat conditions and making management recommendations. According to Katie Manaras, of Audubon Vermont, the area around Danville, Vermont is a Priority Bird Block, denoting its high importance to conserving responsibility bird species. This landscape is roughly 90% forested, with the remainder mostly in agricultural use. The contiguous nature of the forested landscape makes the area suitable for area-sensitive birds. These are birds that tend to fledge young more successfully in extensively forested landscapes, compared to fragmented landscapes, commonly due to their vulnerability to nest predators and parasites. The interior forest conditions found on and around the Town Forest likely offer a refuge from nest predators such as raccoons, skunks and housecats and the brood parasite brown-headed cowbird, all of which are associated with developed landscapes. Protecting interior forest conditions is the recommended primary bird habitat conservation goal for the property.

Based on a June 3, 2010 field visit, and detailed in a subsequent report, Manaras divided the property into three habitat units, or areas currently providing different habitat conditions for responsibility bird species. She provided both general and detailed management recommendations, which are discussed later in the management plan (Appendix).

GOALS OF MANAGEMENT: Wildlife habitat management will strive to provide conditions for a diversity of scale-appropriate species. Throughout the forest, wildlife habitat management will be integrated with other uses where consistent with the vision.

STRATEGIES: The following management considerations will be implemented throughout the forested property to protect and enhance the quality of bird breeding habitat.

- Retain yellow birch
- Conduct harvesting operations outside the bird breeding season (May-August)
- Retain a minimum of six live cavity trees and/or snag trees per acre
- Retain large diameter aspen and birch spp.

- Retain coarse and fine woody material by avoiding damaging existing CWD, especially large (18") hollow or rotten logs and rotten stumps and by leaving some large pieces of cull material from harvested trees
- Maintain and regenerate inclusions of softwood cover in hardwood stands and inclusions of hardwood cover in softwood stands
- Maintain permanent openings dominated by grasses, forbes, and shrubs
- Minimize extent of forest access roads
- Soften edges between field and forest habitats
- Monitor and control invasive plants
- Retain streamside buffers
- Manage mast-producing trees and shrubs for a continuous source of wildlife food
- Retain and release wild apple trees
- Maintain and enhance aspen where it occurs by creating openings that are 1.5 times the height of surrounding trees during dormancy
- Manage for suitable nest trees for woodland-nesting raptors by retaining hardwood trees with large multi-pronged "basket" forks
- Avoid impacts to seeps using buffers during timber harvesting

- Continue to consult with wildlife biologists on other ways to enhance wildlife habitat.

PLANNED MANAGEMENT PRACTICES:

1. Implement above referenced wildlife habitat strategies in stands 3, 8, 10,11, 14, and 18 during harvest operations in 2013, 2014, and 2015.
2. Using timber sale revenues brushog permanent openings in 2013, 2016 and 2019.

D. FOREST

Almost the entire Rogers Lot Town Forest is forested, so this represents the most dominant resource value present on the property.

1. Forest Health

In general, Roger Lot Forest is healthy. There is evidence of damage to trees caused by common diseases and insects, but nothing that is a major cause for concern. As the forest matures, however, some issues may arise that will need attention and the potential exists for significant damage by invasive insects. The most important management strategy identified by Danville residents in the Town Forest Survey (86%) was to Manage Invasive Species.

The most abundant and important plant invader in the Roger Lot Town Forest is Japanese knotweed (*Fallopia japonica*). Dense stands located adjacent to or in old dump sites testify to the probable source as infested soil dumped there over the years (roadways are important pathways for alien species). Transport by people is the major facilitator of exotic plant distribution. This is certainly the

case for knotweed. However, once established along stream banks, knotweed destabilizes stream banks and can easily be dispersed downstream in eroded root-infested bank soil. In this forest, containment (preventing further spread) is important as this plant is very difficult to eradicate once established.

GOALS OF MANAGEMENT: Management of the Town Forest will strive to reduce undesired mortality and growth loss of trees from native and non-native pests as well invasive plants will be controlled to the extent necessary to regenerate native tree species.

STRATEGIES

- Stands now changing naturally to be predominately balsam fir will become increasingly susceptible to attack by spruce budworm and balsam wooly adelgid. Management to increase diversity by encouraging cedar, spruce, hemlock or pine might be in order.
- Large, "wolf" white pines occupy space that could be better utilized. These multiple stem trees result from early white pine weevil attack and perhaps also to damage from snow and ice. When and where possible, these large trees should be removed to allow hardwood regeneration to develop.
- The few aspen clones in the forest add valued diversity. However, trembling aspen can be severely damaged by Hypoxylon canker disease.
- Many aspen clones in Danville are heavily infected. Groups of aspen can be perpetuated by patch-cutting to encourage root sprout initiation and growth. Young stands thus derived are relatively free of the disease and are highly favored by grouse, hare and several song bird species.
- The greatest potential threat by an exotic invader is that posed by the Emerald ash borer (EAB). All species of ash are affected and die soon after being attacked. There needs to be a plan in place to salvage the ash resource when this pest arrives. It is now within 30 miles of our northern border. The State Department of Forest, Parks and Rec. is now surveying for the presence of EAB in VT. We need to be ready to survey our Town Forests (and perhaps other forests in Danville) if and when this destructive insect is detected in VT.
- Plantations of red pine were thinned/harvested in the mid 1990s. If thinning is conducted again, consideration should be taken regarding the potentially destructive fugal root disease, Annosus root rot. This disease can be introduced to pine stands by spores that invade the surface of freshly cut stumps and then spread underground to living adjacent trees. Stumps of harvested trees should be treated with borox or urea if nearby pine stands are shown to be infested by Heterobasidium annosum, the cause of Annosus root rot.
- Dump infested soil only in areas where knotweed is already established.
- Initiate trials to first eradicate outlying colonies—later focus on long-established stands.
- Use these control trials as demonstrations for landowners.

- Other invasive plant species are causing major ecological problems in other areas of Vermont. The forest should be surveyed regularly for these species and if detected, removed before they become well established.
  These species include: Japanese and bush honeysuckles, Japanese and common barberries, glossy and common buckthorns, autumn olive, and garlic mustard.

PLANNED MANAGEMENT PRACTICES:

1. Initiate eradication efforts on outlying populations of Japanese knotweed in 2013 using licensed applicators funded by timber sale receipts. Eradication efforts will employ target-specific applications using the concepts of Integrated Pest Management.
2. Monitor (2013-2021) for invasive plant infestations and determine whether control is practical and ecologically feasible. If feasible begin control efforts immediately using above referenced methodologies.

2. **Timber Resource:**

The Town Forest has an array of natural forest stands and plantations, including forests of mixed northern hardwood and softwood and red pine, white pine and Norway spruce plantations. The hardwood forests are secondary forests, which means they have arisen after earlier harvest. The plantations were planted by Future Farmers of America (FFA) groups in the 1950s on fields or pastureland. A forest inventory conducted by Matt Langlais, Caledonia/Essex County Forester identified 20 forest stands based on tree maturity, stocking levels, and species composition. As of the date of plan adoption, there are approximately ___ million board feet of timber in the Rogers Lot Town Forest. Generally 1,500 board feet per acre are necessary for a given area to be considered for a commercial timber harvest.

GOALS OF MANAGEMENT: Forest management decisions will be determined primarily by ecological and land capabilities, natural site and soil tendencies, natural disturbance patterns, and ecological processes. Plantations will be managed to extend their life and preserve their character to the extent feasible while working toward the long-term goal of converting the stands to native tree species

STRATEGIES:

- Maintain a sustainable flow of quality timber through control of stand and forest structure
- Develop stands with a range of tree sizes using partial cutting practices such as group selection, group shelterwood, and individual tree selection.
- Utilize harvest practices that regenerate desired species rapidly and economically while consistent with site capability

- Control the growth and quality of forest stands through maintenance of optimum stand densities
- Utilize harvesting systems that are appropriate to the site and stand objectives
- Utilize the services of the County Forester or professional consulting foresters to mark and oversee harvesting operations
- Choose experienced loggers
- Avoid wet or poor logging conditions to reduce residual stand damage, soil compaction and erosion
- Employ the Acceptable Management Practices for Maintainiing Water Quality on Logging Jobs in Vermont
- Minimize the visual impacts of timber harvesting by matching equipment to the specific harvest, using directional felling techniques to avoid damaging unmarked trees, operating at appropriate times of the year, lopping tops to within 2 feet of the ground
- Plan, construct and maintain skid trails and landings so that they will be available for future use.
- Clear, level and smooth landings of woody debris and plant with appropriate seed mixes
- Educate users of the Town Forest about timber harvesting activities by holding tours of harvesting operations and utilizing interpretive signs to explain harvest activities

PLANNED MANAGEMENT PRACTICES:

The full timber stand inventory and silvicultural management plans are located in the Appendix.

III. HISTORIC RESOURCES

Prior to the towns acquisition of Rodgers Lot, the property was utilized for residential and agricultural purposes as evidenced by old fence lines, stone walls, old farm roads and cellar holes. Old stone walls are a wonderful historical record of past land use management.

The Town of Danville has historically utilized the property for its timber resources, as the site for the town dump and later as the stump dump. In the mid-1950's several plantations were established through the Soil Bank Program on the property which consisted of Norway Spruce, Red Pine, and White Pine. Timber was harvested from several of these plantations in 1994-1996.

The stump dump has existed on the northwestern portion of the property for the disposal of woody debris. It is not known what other types of debris has been dumped over the years in the former land fill dump site. The stump dump remains active, and is officially open from May to October at the discretion of the Road Foreman.

Historical evidence of human activity:

1) Stonewalls and old fence lines
2) Cellar holes and other foundations
3) Roadways and trails
4) Dump (landfill): past use (dates of start and finish)
5) Stump dump: past, present and future use (dates of start)
6) Plantations: planted in the early-mid 1950s by FFA, supported by the Federal Soil Bank Program

The Town of Danville acquired the land for the Rodgers Lot Town Forest in 1957 as a gift from Mr. Merton Rodger and/or Howard and Alice Calkins. Research to date regarding the deed history of the Town Forest is located in the Appendix but there are some holes in our understanding, so the Conservation Commission welcomes any new information about the history of this land.

GOALS OF MANAGEMENT: To inventory, document, protect and interpret the cultural and historic resources of the forest for future generations.

STRATEGIES:

- Partner with the Danville Historical Society on documentation and research of existing cellar holes, such as was done at the old town farm site in the Pumpkin Hill Town Forest.
- Employ recommended practices to protect cultural resources during logging such as, designating "not to be disturbed" buffer zones, designating skid trails during bare ground conditions, minimizing stone wall crossings and restoring after operations

PLANNED MANAGEMENT PRACTICES:

1. Prior to any harvesting/recreational trail development, map existing stone walls, fence lines, farm dumps, etc. and ensure that future forest management or recreational use does not further degrade these historical remnants.

IV. RECREATION

Rodgers Lot has an existing road, classified as a trail, from Bruce Badger Memorial Highway (North Danville Road) to Partridge Lane. The road is used by the VAST snowmobile trail system in the winter. It provides access to the active stump dump and to a lower dump area. The trail is of a width and condition that it is suitable for diverse trail use, such as ATVs, horseback riders, bikers and pedestrians. This road is currently used for hiking, biking, snowmobiles, and XC skiing. Due to the small size of the streams, fishing and water recreation activities are limited. However the streams and wetlands provide good educational opportunities for activities or programs.

There are no roads to the east of Partridge Lane. There are some rough paths which are remnants of the harvesting operations or old farm roads throughout the town forest. These paths are limited to the upland areas of the forest.

GOALS OF MANAGEMENT: Recreation management of the town forest will promote and provide opportunities for recreation including hiking, biking, cross-country skiing, bird-watching, hunting, and snowmobiling on approved corridors. Management will strive for levels of recreational use that upholds the vision and that are sensitive to and respectful of the natural values of the forest

STRATEGIES:

- Develop a comprehensive network of trails, incorporating the existing roadways and trails.
- New trails will be developed to pass through areas that are interesting ecologically and scenically and will connect the ecologically unique features of the forest, where appropriate to the resource.
- Trails will be laid out in anticipation of specific uses including motorized and non motorized usage.
- Trail maps will be created and available, and trails will be named and marked for their appropriate uses.
- The current and projected use of the Town Forest for a stump dump and for motorized vehicles usage renders a less suitable / desirable for camping activities.
- Hunting of game species will be permitted to licensed persons.
- As owner of the Town Forest, the Selectboard retains its authority to manage/control hunting and trapping as circumstances warrant.
- Permanent tree stands and ground blinds are prohibited in the Town Forest.
- Temporary tree stands and ground blinds are allowed from the third Saturday in August through the third Saturday in December. Tree stands or blinds need to be registered with the Town.

PLANNED MANAGEMENT PRACTICES:

1. The Conservation Commission will be open to proposals from user groups for the establishment and maintenance of appropriate recreation trails that are consistent with the vision and goals of management.

V. ACCESS

There is one road traversing the property, most of which is a trail. As noted above, the trail is a VAST snowmobile trail in the winter and is of a width and condition that it could support multiple trail users. This is not an official town road (no classification), but is maintained by the town road crew as needed for access to the wood dump. At this point there are no specific parking areas, however parking areas will be constructed in appropriate areas if use increases.

VI. OWNERSHIP AND MANAGEMENT

Ownership of the Rogers Lot Town Forest resides with the Town of Danville. All management and operational details will be handled by the Selectboard with the

assistance of the Conservation Commission, who will make recommendations for management details to the Selectboard, who will then make the final decisions.

1. Law enforcement

a. Stump Dump: The Town of Danville currently has a policy in place for the activities surrounding the wood dump. The policy outlines hours of operation, accepted materials and a fee schedule for dumping. The wood dump is managed by the Danville Road Foreman. Currently the dump is open for residents to dump clean wood debris only. Because this is an unmanned facility, based on the honor system, there is the potential for misuse and inappropriate dumping. The oversight of the dump is the ultimate responsibility of the Selectboard. The use of the dump should be monitored over time and adjustments made if there are problems. Already the wood dump is having an impact on the greater forest, by introducing invasive species, with Japanese Knotweed being the prime example.

b. Firearms: A town ordinance exists regulating the shooting of firearms in Rogers Lot. While in-season hunting is permitted, casual shooting and plinking is in violation of the ordinance and is punishable by fines.

2. Boundary Maintenance

The town forest boundary has not been surveyed. Over the course of 2009-2010, the Conservation Commission used a GPS to map the property based on field evidence (old fence, stone walls, other landowner boundary markings). The boundaries have been verified to the best of our knowledge, using evidence and deed research. The northern boundary of the Forest is currently under some debate and if the town decides in the future to survey the property or abutters invest in legal surveys, we will upgrade boundary information.

PLANNED MANAGEMENT PRACTICES:

1. All boundaries will be marked with "Danville Town Forest" boundary marker signs in 2011.
2. Signage will be maintained and/or changed as needed.
3. If boundary lines need to be trimmed for visibility, that will done as necessary.
4. Proceeds from all activities in the Town forest will be deposited in the Danville Conservation Fund. Use of those funds will be for specific management and maintenance activities within the Town Forests.

VII. MANAGEMENT PLAN REVISIONS

The Rodgers Lot Town Forest Management plan should be kept current to maintain consistent oversight and stewardship as forest conditions, recreational uses and public support change.

PLANNED MANAGEMENT PRACTICES:

1. The Selectboard will adopt the Management Plan after a public hearing.

2. The Management Plan will be reviewed and up-dated on a ten year schedule, after any major change to the Town Forest, or at any other time as needed by the
5. Selectboard.
3. The Selectboard will consider making the Management Plan a part of the Town Plan.
4. The 10 year periodic review will be undertaken by the Selectboard and the Conservation Commission. Public hearings will be set to hear suggestions for changes and for proposed changes. Final approval of any changes is by the Selectboard.

VIII. APPENDIX

1. MAPS:

TOWN FOREST LOCATION MAP
TOPOLOGICAL MAP
AERIAL MAP
NATURAL COMMUNITY MAP AND TABLES
BIRD HABITAT MAP
TIMBER STAND MAP

2. FORESTRY MANAGEMENT INVENTORY AND PLAN
3. SUMMARY OF PUBLIC INVOLVEMENT
4. SUMMARY OF TOWN FOREST SURVEY
5. RODGERS LOT DEED RESEARCH

DANVILLE'S TOWN FORESTS

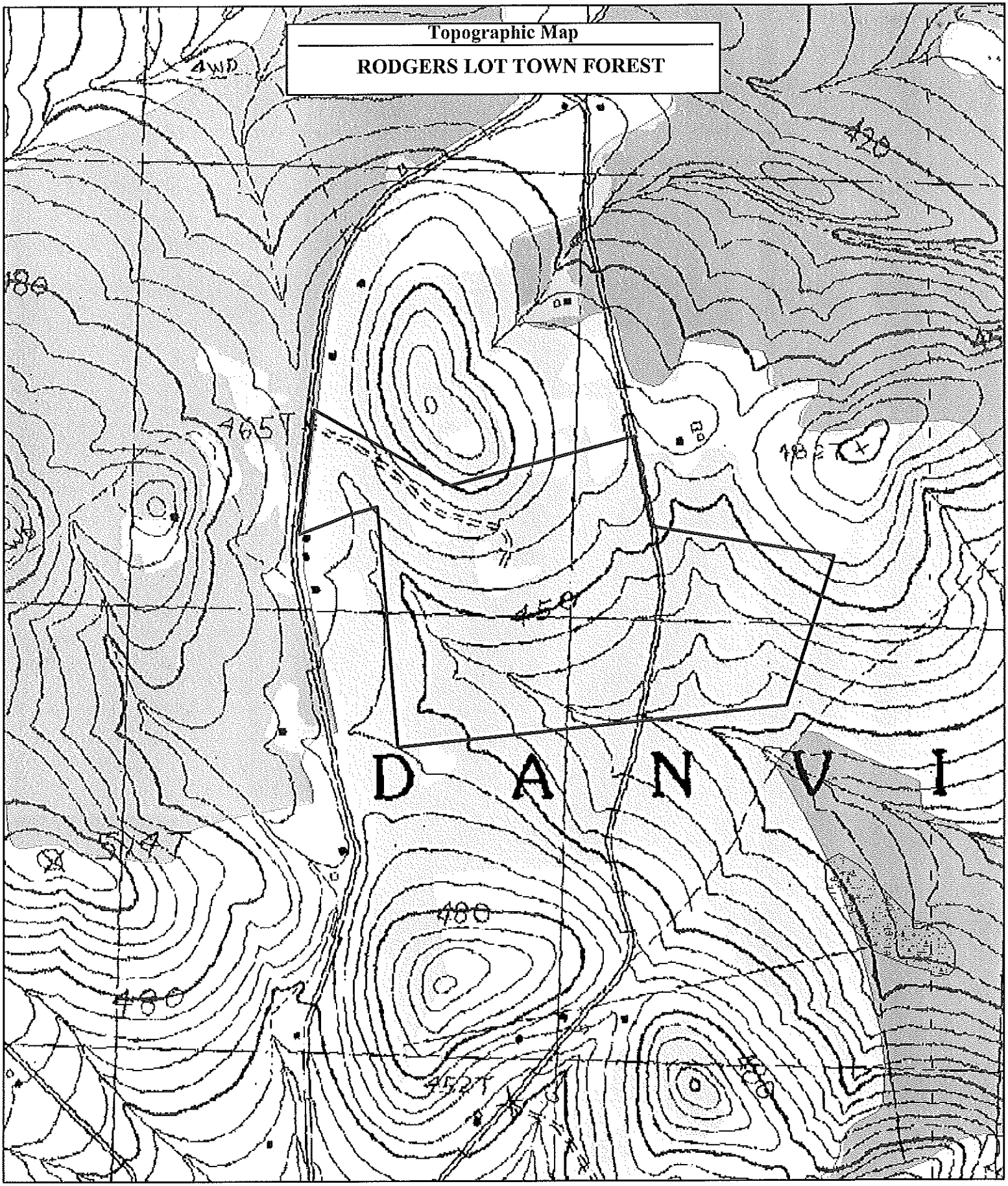
Rodgers Lot Town Forest

Pumpkin Hill Town Forest

rivers/streams & ponds

Scale:1:29,781

0 1,200 2,400 4,800 7,200 9,600 Feet



USGS 7.5 Minute Quadrangles:
Joes Pond, 1983, St. Johnsbury, 1983

Town Forest Boundary | Wetlands (VSWI) | Deeryards | Scale: 1:11,086

Town Forest Boundary

VAST Trails

Tributary to Whitman Brook

0 62.5 125 250 375 500 Meters

0 265 530 1,060 1,590 2,120 Feet

Scale:1:6,444

Town Forest Boundary

Scale:1:6,444

0 62.5 125 250 375 500 Meters

0 262.5 525 1,050 1,575 2,100 Feet

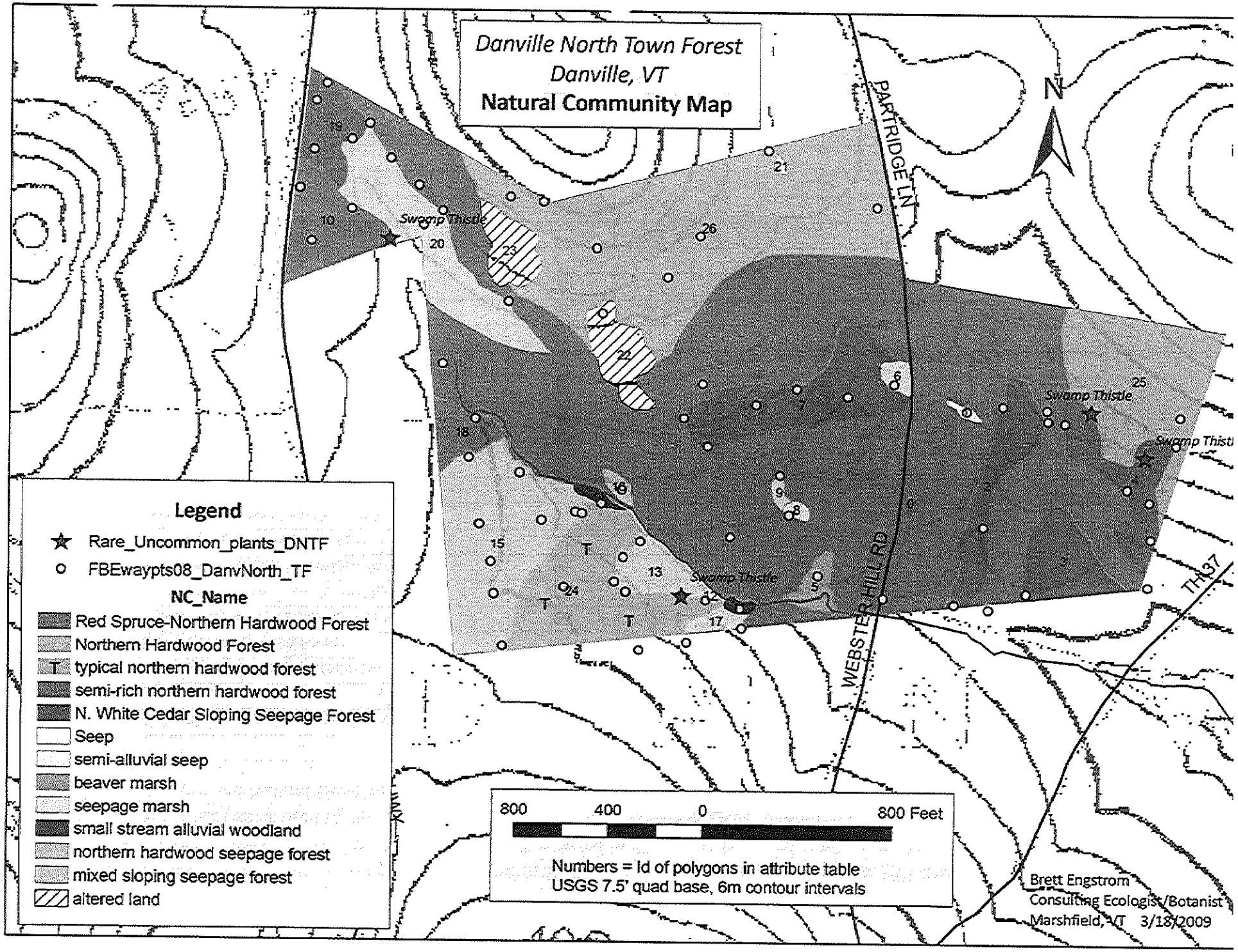
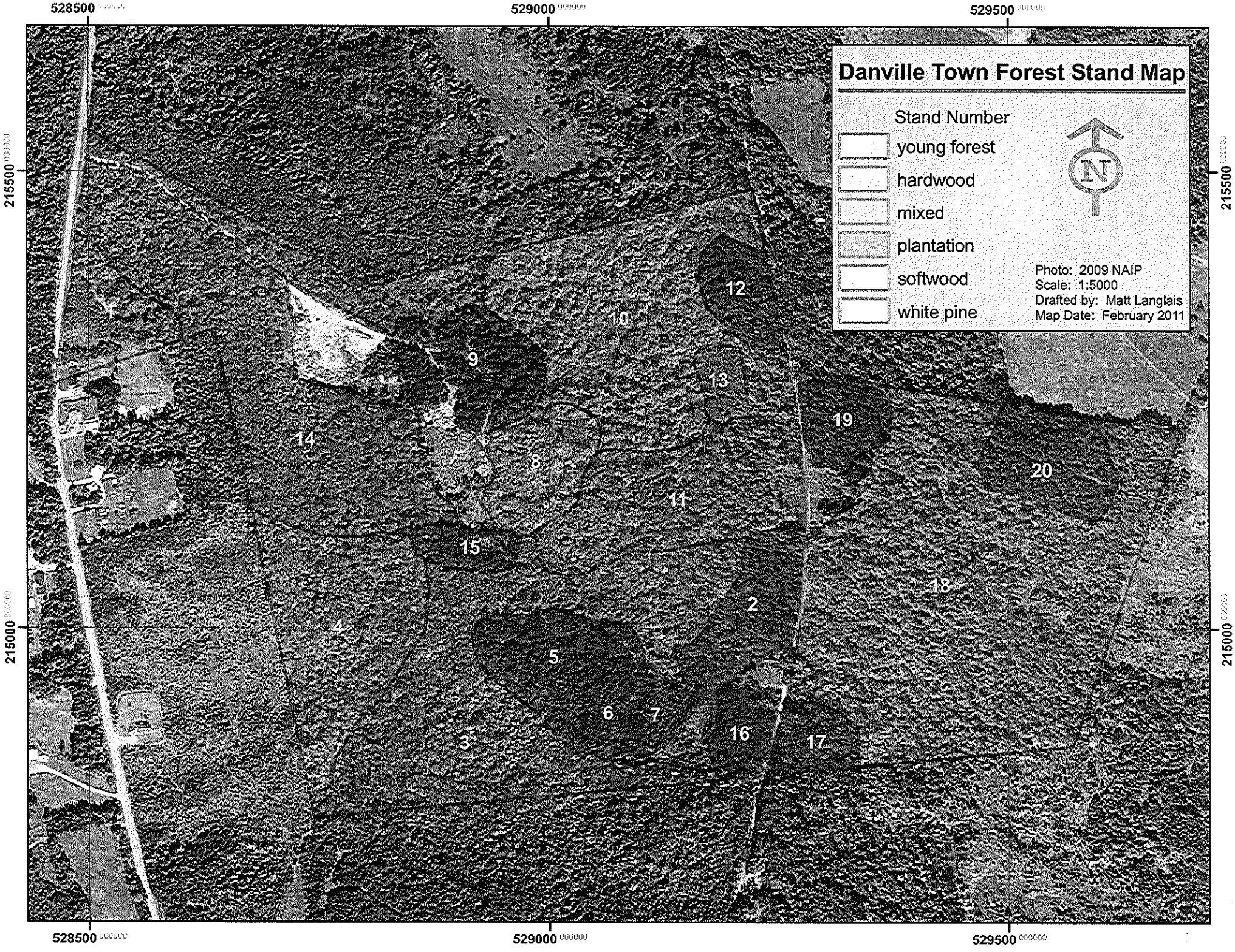

Danville North Town Forest
Danville, VT
Natural Community Map
N
PARTRIDGE LN
WEBSTER HILL RD
TH 37
Swamp Thistle
Swamp Thistle
Swamp Thistle
Legend
Rare_Uncommon_plants_DNTF
FBEwaypts08_DanvNorth_TF
NC_Name
Red Spruce-Northern Hardwood Forest
Northern Hardwood Forest
typical northern hardwood forest
semi-rich northern hardwood forest
N. White Cedar Sloping Seepage Forest
Seep
semi-alluvial seep
beaver marsh
seepage marsh
small stream alluvial woodland
northern hardwood seepage forest
mixed sloping seepage forest
altered land
800 400 0 800 Feet
Numbers = Id of polygons in attribute table
USGS 7.5' quad base, 6m contour intervals
Brett Engstrom
Consulting Ecologist/Botanist
Marshfield, VT 3/18/2009

Table 1. Summary table of natural communities mapped in 2008 at the Danville North and Pumpkin Hill town forests, Danville, Vermont. *Natural community names include both types and variants as found in the Vermont natural community classification (first letters capitalized) and other names used by the author (lower case). State ranks (S-Rank) are determined by Vermont Department of Fish and Wildlife's Nongame and Natural Heritage Program.

		Danville North		Pumpkin Hill		
Natural Community Name (type or variant)*	**State Rank**	**Acres**	**# polys**	**Acres**	**# polys**	**Locally Significant**
UPLANDS						
Red Spruce-Northern Hardwood Forest	S4	64.2	2	21.3	2	
Northern Hardwood Forest	S5	27.7	2	48.1	1	
typical northern hardwood forest	S5	6.5	1			
semi-rich northern hardwood forest	S5	1.2	1	0.4	1	
northern hardwood-hemlock forest	S5			16.3	1	
Rich Northern Hardwood Forest	S4			0.3	1	
Hemlock-Northern Hardwood Forest	S4			6.7	3	PH
WETLANDS						
Northern White Cedar Swamp	S3			4.6	2	PH
Northern White Cedar Sloping Seepage Forest	S3	14.7	5	3.4	3	DN
Hemlock-Hardwood Swamp	S2			0.2	1	PH
Seep	S4	0.2	2	0.1	1	PH
semi-alluvial seep		0.1	1	0.6	1	
Rich Fen	S2			0.1	1	PH
beaver meadow	S4	0.7	1	2.2	7	PH
beaver pond	S4			0.2	1	PH
mixed northern seepage swamp/forest				2.4	2	PH
small stream alluvial woodland		0.4	2			DN?
seepage marsh		0.5	2			
northern hardwood seepage forest		8.1	2			DN
mixed sloping seepage forest		7.1	4	9.0	3	PH & DN
ARTIFICIAL						
altered land		3.1	2			
	TOTAL	134	27	116	31	

Table 2. Rare and uncommon species found at Pumpkin Hill (PH) and Danville North (DN) town forests in Danville, Vermont, during 2008 natural community mapping. State ranks (S-Rank) are determined by Vermont Department of Fish and Wildlife's Nongame and Natural Heritage Program. The range of ranks go from extremely rare (S1) to demonstrably secure (S5) in Vermont. Element Occurrence (EO) ranks are estimates of species viability at a given location. They range from excellent (A) to poor (D), with E assigned to occurrences extant, but not assessed for viability.

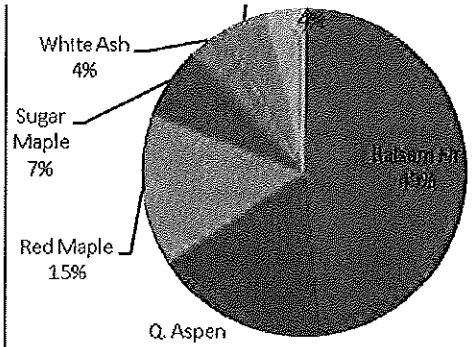
Common Name	Species	S Rank	EO Rank	Significance	Town Forest	Notes
Hay Sedge	*Carex argyrantha*	S2	C?	State	PH	Close to 100 plants constituting single population in two locations along path. Species requires sun and disturbance for persistence. Not typical habitat for species.
Back's Sedge	*Carex backii*	S3	D?	Local	PH	Small population at only 1 location. Otherwise only 1 historical record in Caledonia County.
Swamp Thistle	*Cirsium muticum*	S3	B	Local	PH,DN	Observed mostly as lone vegetative plants scattered in wetlands on both forests. One unusually large population in fen-like open seepage wetland in PH. EO rank at PH.
yellow or showy ladyslipper	*Cypripedium sp.*	S3	E	Site	PH	Observed at 2 wetlands along the west side drainage at PH. Needs confirmation as to species. Both species uncommon.
Goldie's Fern	*Dryopteris goldiana*	S4	D	Site	PH	Restricted to one rich pocket at PH. Occasionally in rich woods elsewhere in Danville.
Matted Spikerush	*Eleocharis intermedia*	S2S3	B?	State	PH	Colonies observed in beaver wetlands in both drainages at PH. Both colonies vigorous.
Mountain Fly-honeysuckle	*Lonicera villosa*	S3	D?	Site	PH	Single colony restricted very small area in seepage forest at PH.


Danville Town Forest Stand Map
Stand Number
young forest
hardwood
mixed
plantation
softwood
white pine
N
Photo: 2009 NAIP
Scale: 1:5000
Drafted by: Matt Langlais
Map Date: February 2011
528500
529000
529500
215500
215000
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20

STAND 1

Acres: 11.3
Current Forest Type: Young early-successional mixed forest
Natural Community: Red Spruce-Northern Hardwood Forest
Site Class: II
Soils: Cabot
Stand Description:
Stand one is located adjacent to the Bruce Badger Memorial Highway. It is a small 3 acre section of 20 year-old balsam fir, quaking aspen, red maple, white ash, sugar maple, red spruce and white cedar that is nearly 20' tall.

Stand 1: 2010



Silvicultural Information:
Cruise Intensity: (3) mil-acre regeneration plots
Age Class Distribution: Even-aged (20-25 years)
Regeneration: Well-established mix of balsam fir, quaking aspen, red maple, white ash, sugar maple, red spruce and white cedar.
Overstory Stocking: N/A
Total Basal Area per Acre: N/A
Acceptable Basal Area per Acre: N/A
Trees per Acre: 3000 stems per acre
Quadratic Mean Stand Diameter: 2"

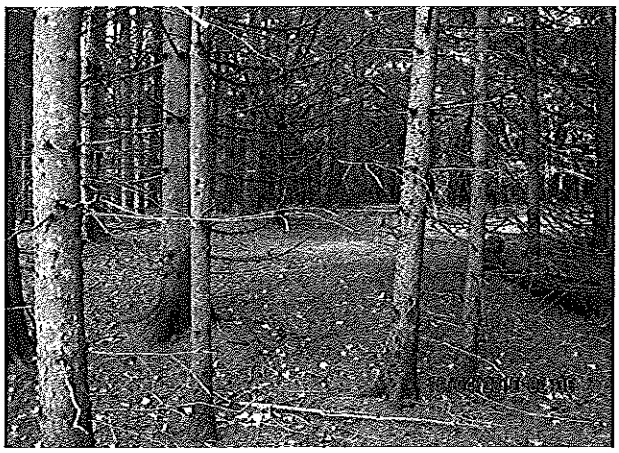
Volume Information:
Sawtimber Volume: N/A
Cordwood Volume: N/A

Stand Health: No forest health problems are threatening the stand at this time. The stand contains a good mix of species that are all well-suited to the site/soil conditions.
Access/Operability: Access to this stand is excellent due to proximity to the Bruce Badge Memorial Highway.

Silvicultural Plan:

Planned Management Practices: No management activities are planned at this time due to the young age of the stand. Cleaning/weeding operations to shift the species composition can occur at any time.

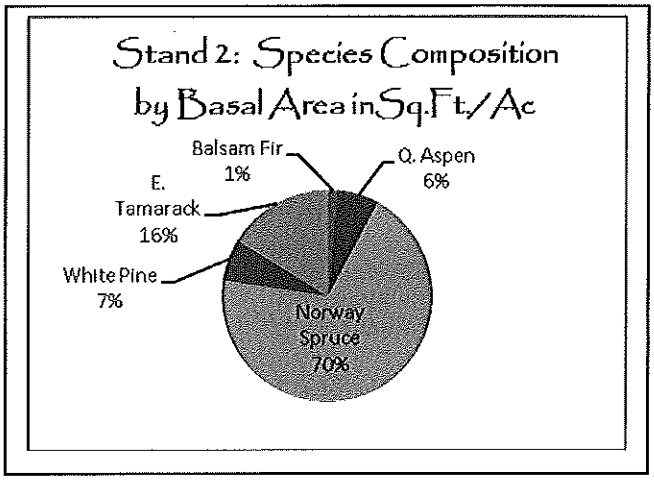
STAND 2



Stand 2: 2010

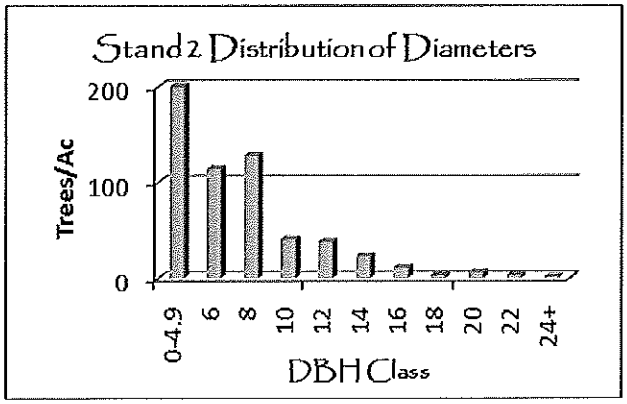
Acres: 4
Current Forest Type: Norway Spruce Plantation
Natural Community: Red Spruce-Northern Hardwood Forest
Site Class: II
Soils: Cabot
Stand Description:
Stand two is located on the west-side of the Rodgers Road. It is a Norway spruce plantation that appears to have been planted in the late 1950's. The stand has never been thinned having many suppressed stems. Soils here are shallow with many of the trees having exposed roots.

Silvicultural Information:
Cruise Intensity: (4) 10-factor variable radius plots
Age Class Distribution: Even-aged (@ 50 years)
Regeneration: None
Total Basal Area per Acre: 205
Acceptable Basal Area per Acre: 120
Trees per Acre: 569 trees per acre
Quadratic Mean Stand Diameter: 10.7"



Volume Information:
Sawtimber Volume: 12 mbf/ac
Cordwood Volume: 16 cords/ac

Silvicultural Plan:
Stand Health: The shallow soils upon which the Norway Spruce have been planted here is not well suited to the long-term health of this stand. Many of the trees have exposed roots making them susceptible to damage from wind events and harvesting. The stand has not been thinned to date causing many of trees to have less than optimum live crown ratios (>20%).
Access/Operability: Access to the stand is readily available as the stand is adjacent to an existing landing. Given the shallow soils and exposed roots any harvesting should occur during frozen ground conditions with snow cover.
Long Range Goals: This, as well as the other plantations on the forest, present difficult treatment challenges in terms of balancing the historic even-aged, monoculture composition and the stand's natural dynamics. Long-term management of this stand should shift the species composition towards the northern hardwood tree species that would occur naturally here. In the near term though, management should focus on preserving the historic character of the intact plantation to the fullest extent possible.
Planned Management Practices: 2015 Conduct a low-thinning by removing poorer quality and declining stems during frozen ground conditions to release selected crop trees with good live-crown ratios. Residual basal area goal is 140sq.Ft./Ac.



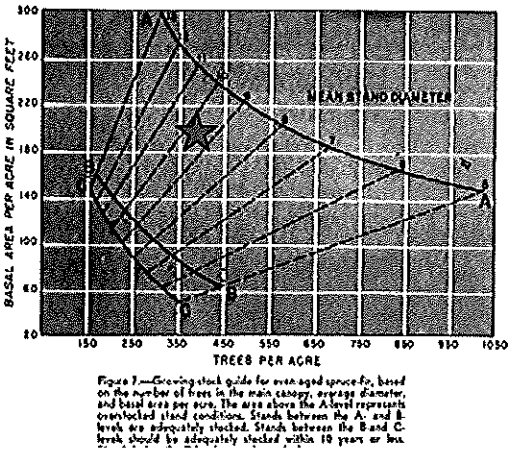


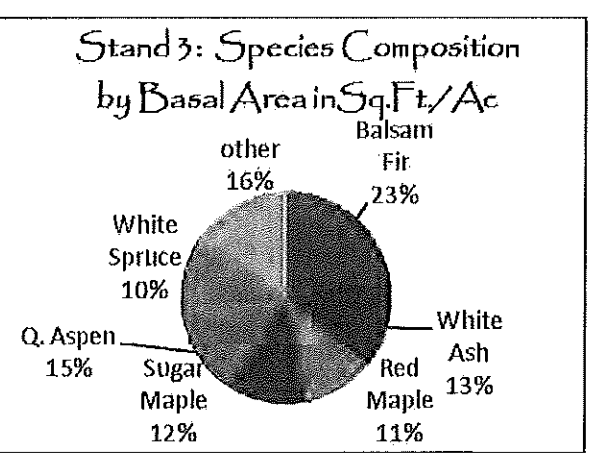
Figure 7.—Growing-stock guide for even-aged spruce-fir, based on the number of trees in the main canopy, average diameter, and basal area per acre. The area above the A-level represents overstocked stand conditions. Stands between the A- and B-levels are adequately stocked. Stands between the B-and C-levels should be adequately stocked within 10 years or less.

STAND 3

Stand 3: 2010

Acres: 16
Current Forest Type: Mixed wood
Natural Community: Red Spruce-Northern Hardwood Forest
Site Class: II
Soils: Cabot & Buckland
Stand Description: Stand 3 is a mosaic type stand at varying stages of succession.

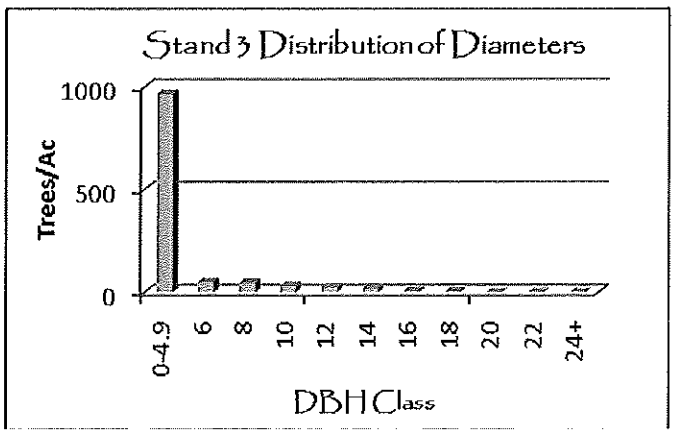
Silvicultural Information:
Cruise Intensity: (7) 10-factor variable radius plots
Age Class Distribution: Two-aged
Regeneration: Regeneration is scattered occurring in pockets. Regeneration consists of yellow birch, sugar maple, balsam fir and quaking aspen.
Total Basal Area per Acre: 117
Acceptable Basal Area per Acre: 63
Trees per Acre: 1146 trees per acre
Quadratic Mean Stand Diameter: 4.5"



Volume Information:
Sawtimber Volume: 4.866 mbf/ac
Cordwood Volume: 15 cords/ac

Silvicultural Plan:
Stand Health: Wind-throw is affecting the stand in localized pockets. Trees mostly affected include balsam fir and white spruce. Balsam fir is also exhibiting signs of maturity as red-cubicle rot is present. Pockets of quaking aspen are showing severe decline due to hypoxylon canker.
Access/Operability: Access to the stand is readily available by the existing network of skid trails. The south-west corner of the stand will however require a bridge crossing as the stand is bisected by a sizable stream.
Long Range Goals: The long range goal for the stand is to convert the existing even-aged (two-aged) structure to a multi-cohort structure using the irregular shelterwood system.

Planned Management Practices: 2015 Conduct a group shelterwood treatment to create and release groups of regeneration. Where regeneration is lacking, this first harvest will concentrate groups on pockets of declining aspen. Depending on overstory tree composition and established regeneration, groups will be from a few trees to not more than ¼ acre in size and not cover more than 25% of the stand. Tending between groups to release crop stems and remove high risk stems will not reduce the basal area below 90 sq.ft./ac.



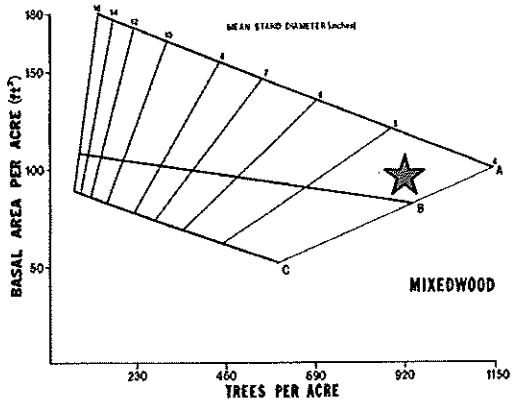
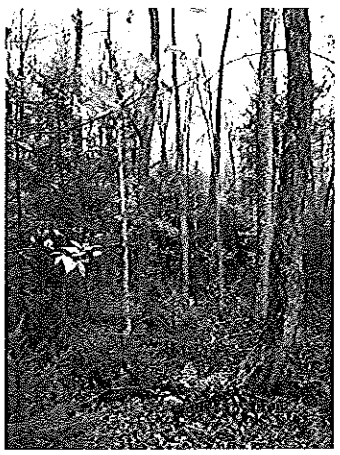


Figure 7.—Stocking guide for main crown canopy of mixedwood stands (25 to 65 percent softwoods) shows basal area and number of trees per acre and quadratic mean stand diameter. The A line is fully stocked, the B line is suggested residual stocking, the C line is minimum stocking.

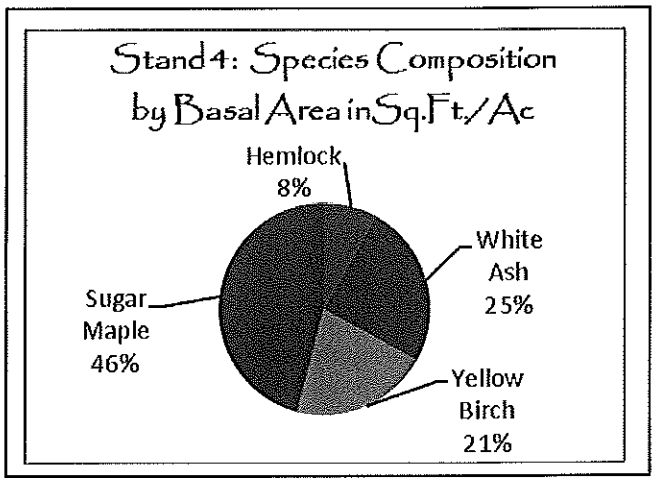
STAND 4



Stand 4: 2010

Acres: 8
Current Forest Type: Northern Hardwood
Natural Community: Northern Hardwood Seepage Forest
Site Class: III
Soils: Cabot
Stand Description: Stand 4 is a pole sized stand of very poor quality hardwood overtopping spruce-fir regeneration. The poor condition of the trees here appears to be a result of both soils as well as past harvesting which left the stand stocked with poor quality suppressed stems.

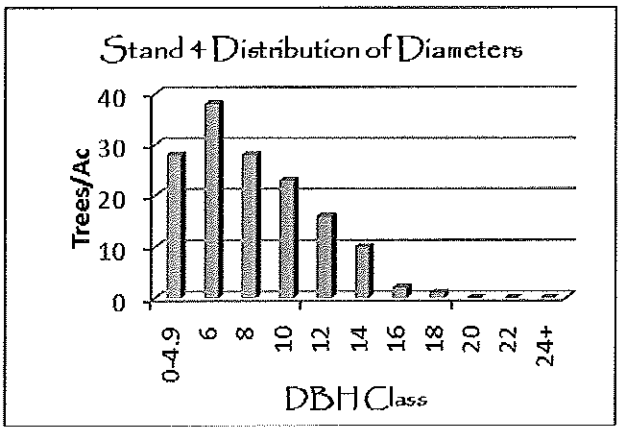
Silvicultural Information:
Cruise Intensity: (4) 10-factor variable radius plots
Age Class Distribution: Even (two-aged)
Regeneration: Balsam fir, red spruce, yellow birch, white ash, brown ash
Total Basal Area per Acre: 60
Acceptable Basal Area per Acre: 12.5
Trees per Acre: 146 trees per acre
Quadratic Mean Stand Diameter: 8.9"



Volume Information:
Sawtimber Volume: 1.1 mbf/ac
Cordwood Volume: 10 cords/ac

Silvicultural Plan:
Stand Health: There are no known forest health problems with this stand other than the fact that it is stocked with non-vigorous trees in the overstory.
Access/Operability: The thin, shallow to hardpan soils here present difficult operating conditions. Rutting, soil compaction, root shearing and erosion are all potential problems.
Long Range Goals: The long range goal for this stand is to allow natural processes to determine the stands eventual composition. At the present time the stand is marginally commercial for timber harvesting given the small diameter and poor quality of the overstory hardwood as well as the difficult operating conditions. It is anticipated that this poor quality hardwood will eventually fall out of the stand and be replaced by a mosaic of red spruce, balsam fir, yellow birch and hemlock.

Planned Management Practices: None



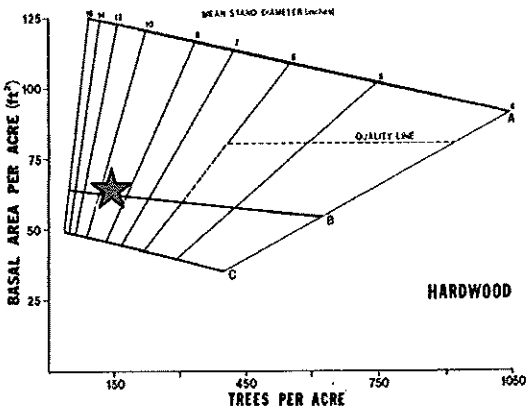
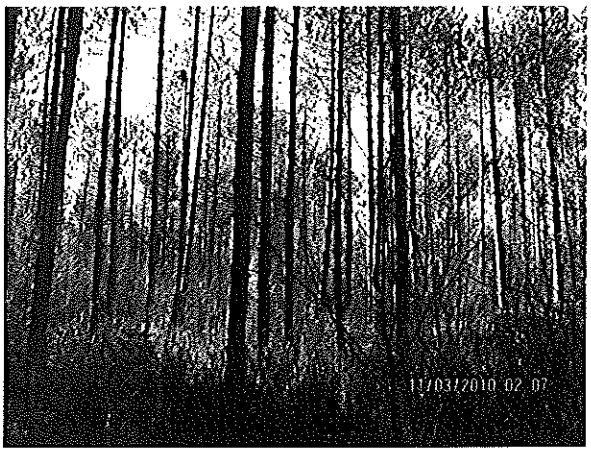


Figure 6.—Stocking guide for main crown canopy of even-aged hardwood stands (beech-red maple, beech-birch-maple) shows basal area and number of trees per acre and quadratic mean stand diameter. The A line is fully stocked, the B line is suggested residual stocking. The C-line is minimum stocking. The quality line is the density required to produce high quality stems of beech, sugar maple, yellow birch, and red maple

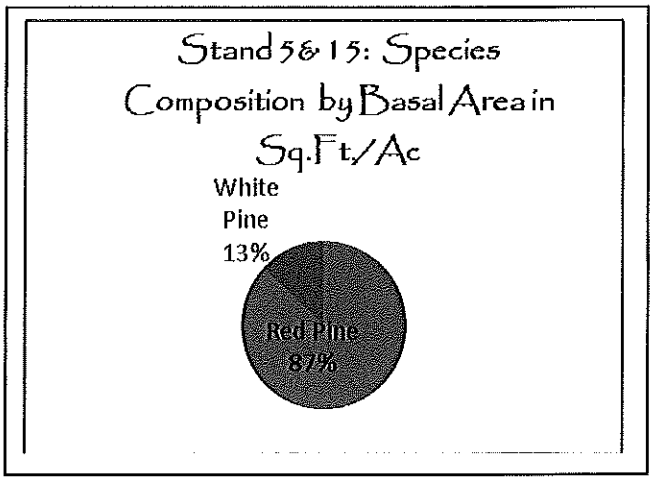
STAND 5&15

Acres: 5a-4 acres; 5b-1 acre
Current Forest Type: Red Pine Plantation
Natural Community: Red Spruce-Northern Hardwood Forest
Site Class: II
Soils: Buckland
Stand Description: Stands 5 and 15 are small red pine plantations planted during the late 1950's. The stands have been thinned once though live crown ratios are not excellent as it may have occurred later in development.



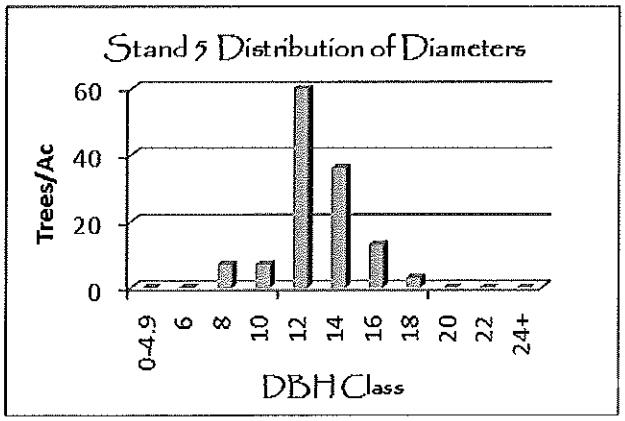
Stand 5: 2010

Silvicultural Information:
Cruise Intensity: (5) 10-factor variable radius plots
Age Class Distribution: Even-aged (@ 50 years)
Regeneration: Sugar maple, yellow birch, white ash, and quaking aspen 1-2" in diameter is well established
Total Basal Area per Acre: 126
Acceptable Basal Area per Acre: 113
Trees per Acre: 152 trees per acre
Quadratic Mean Stand Diameter: 12.3"



Volume Information:
Sawtimber Volume: 16.1 mbf/ac
Cordwood Volume: 3.86 cords/ac

Silvicultural Plan:
Stand Health: Some red pine gall is starting to appear in the stand. Red pine gall levels should be monitored to determine the long-term viability of the stand.
Access/Operability: Access to the stand is readily available via existing landings and skid roads.
Long Range Goals: The long range goal for this stand is to eventually return the species composition to native tree species better suited to the site conditions. This goal will be accomplished over the long term though the next several entries will focus on growing and managing the red pine component.
Planned Management Practices: None planned for the next 10 year as the stand recently thinned to appropriate stocking levels. Future harvests should continue to grow selected crop trees at a density of 120 sq.ft./ac basal area.



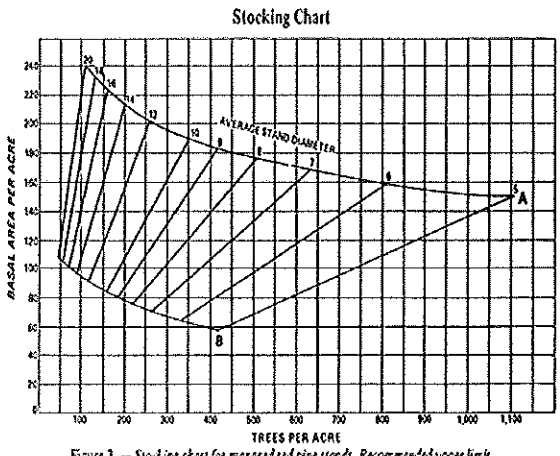
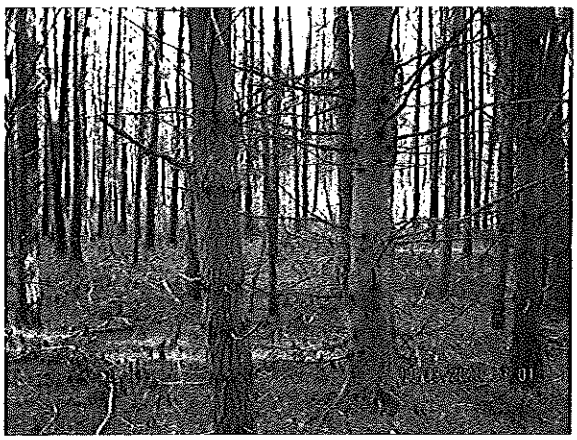


Figure 7. — *Stocking chart for managed red pine stands. Recommended upper limit (A curve) for managed stands is based on 80 percent of Brown and Gevorkiantz (1934) normal yield table with projection to 20 inches based on Woolsey and Chapman (1914). Minimum stocking (B curve) is based on crown width for open-grown trees from Ek (1971).*

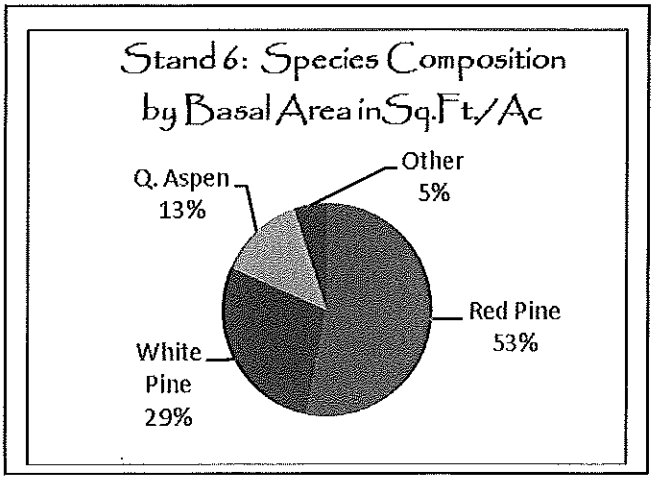
STAND 6

Acres: 1
Current Forest Type: Red Pine/White Pine Plantation
Natural Community: Red Spruce-Northern Hardwood Forest
Site Class: II
Soils: Buckland
Stand Description: Stand 6 is a red pine plantation planted during the late 1950's. The stand has not yet been thinned and many crowns have less than optimal live crown ratios necessary to take full advantage of thinning operations. Once thinned this stand will be combined with stand 5.



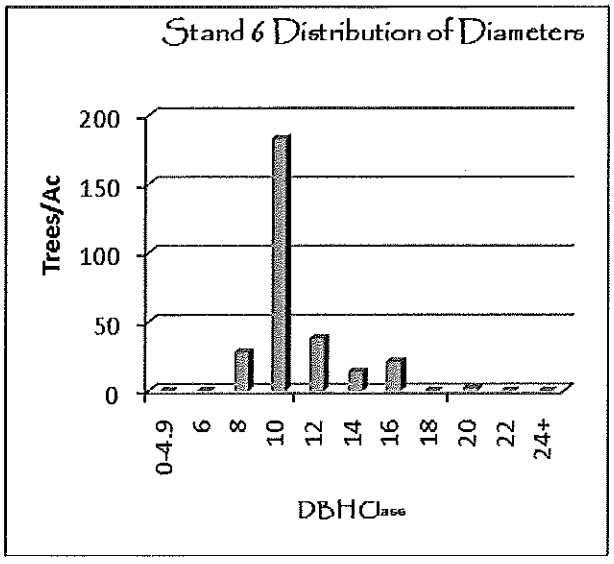
Stand 6: 2010

Silvicultural Information:
Cruise Intensity: (2) 10-factor var. radius plots
Age Class Distribution: Even-aged (@50 years)
Regeneration: None
Total Basal Area per Acre: 190
Acceptable Basal Area per Acre: 130
Trees per Acre: 288 trees per acre
Quadratic Mean Stand Diameter: 11"



Volume Information:
Sawtimber Volume: 18.144 mbf
Cordwood Volume: 12.19 cords

Silvicultural Plan:
Stand Health: Some red pine gall is starting to appear in the stand. Red pine gall levels should be monitored to determine the long-term viability of the stand.
Access/Operability: Access to the stand is readily available via existing landings and skid roads.
Long Range Goals: The long range goal for this stand is to eventually return the species composition to native tree species better suited to the site conditions. This goal will be accomplished over the long term though the next several entries will focus on growing and managing the red pine component.
Planned Management Practices: (2015) Conduct a low-thinning reducing the basal area to 120-130 sq.ft./ac. Removals should focus on stems in the 8-10" diameter class as well as poor quality stems with visible defects.



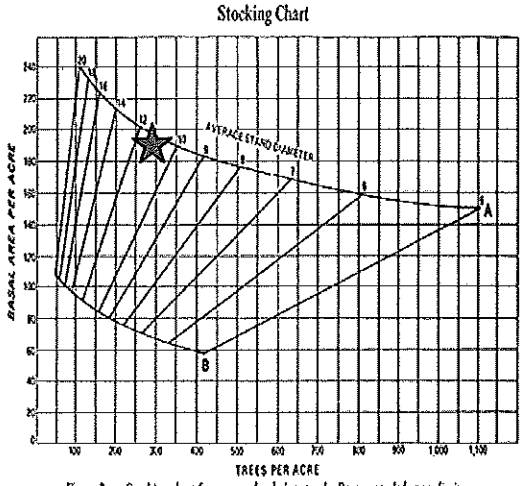
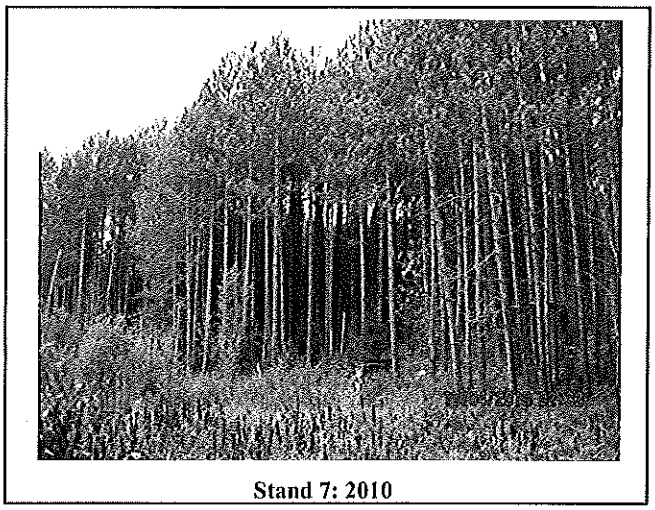


Figure 1. -- *Stocking chart for managed red pine stands. Recommended upper limit (A curve) for managed stands is based on 80 percent of Brown and Gevorkiantz (1934) normal yield table with projection to 20 inches based on Woolsey and Chapman (1914). Minimum stocking (B curve) is based on crown width for open-grown trees from Ek (1971).*

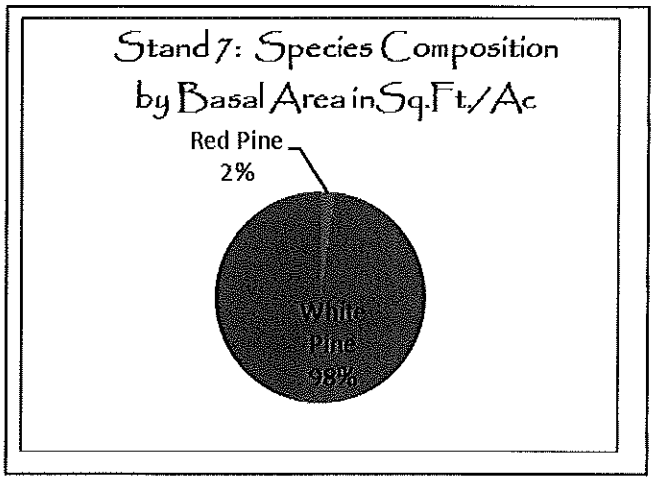
STAND 7

Acres: 1
Current Forest Type: White Pine Plantation
Natural Community: Red Spruce-Northern Hardwood Forest
Site Class: II
Soils: Buckland
Stand Description: Small stand of planted white pine with smaller component of red pine along the edge of an adjacent wetland. Stand has not been thinned.



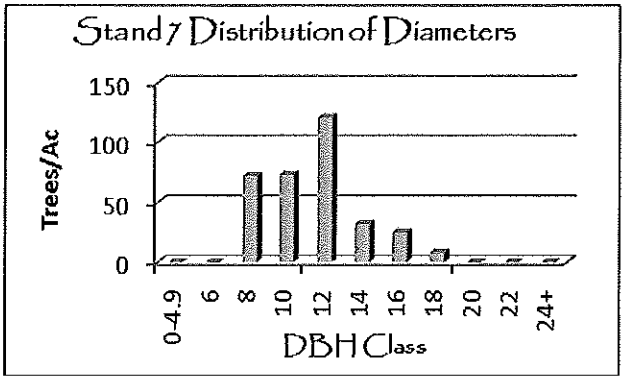
Stand 7: 2010

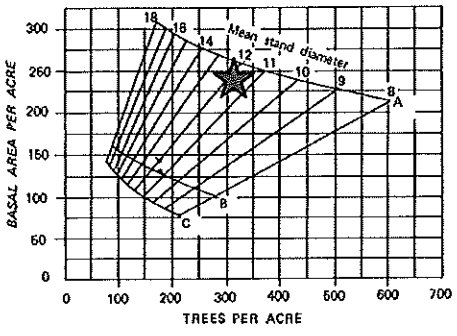
Silvicultural Information:
Cruise Intensity: (2) 10-factor variable radius plots
Age Class Distribution: Even-aged (@50 years)
Regeneration: Some pockets of balsam fir regeneration along margins of the stand.
Total Basal Area per Acre: 245
Acceptable Basal Area per Acre: 140
Trees per Acre: 332 trees per acre
Quadratic Mean Stand Diameter: 11.8"



Volume Information:
Sawtimber Volume: 17.276 mbf/ac
Cordwood Volume: 34 cords/ac

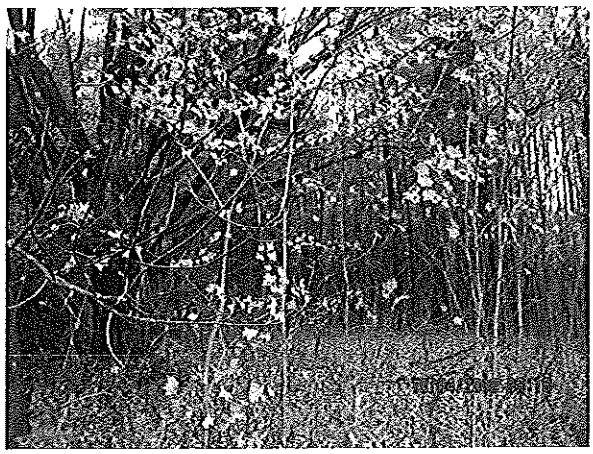
Silvicultural Plan:
Stand Health: The stand has not been thinned to date causing many of trees to have less than optimum live crown ratios (>20%).
Access/Operability: Access to the stand is readily available via existing landings and skid roads.
Long Range Goals: The long range goal for this stand is to eventually return the species composition to native tree species better suited to the site conditions. This goal will be accomplished over the long term though the next several entries will focus on growing and managing the white pine component.
Planned Management Practices: 2015 Conduct a low-thinning by removing stems in the 8-10" size class. Removals will focus poor quality stems with visible defects and double tops. Residual basal area goal is 140-150sq.Ft./Ac.





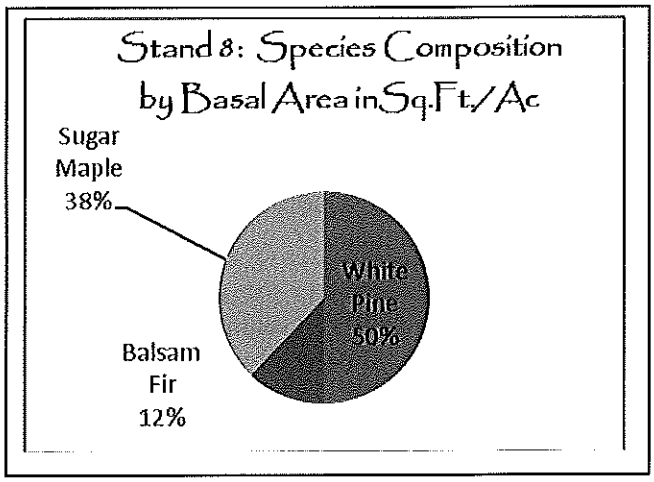
STAND 8

Acres: 3
Current Forest Type: White Pine over Sugar Maple
Natural Community: Red Spruce-Northern Hardwood Forest
Site Class: II
Soils: Buckland
Stand Description: Stand 8 is a two-aged stand of white pine overtopping sugar maple regeneration. The stand appears to have been treated with a shelterwood harvest that regenerated extremely well to sugar maple given the presence of a few stone wall maples.



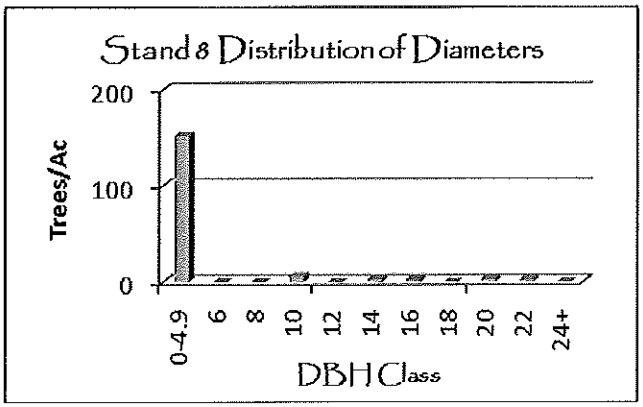
Stand 8: 2010

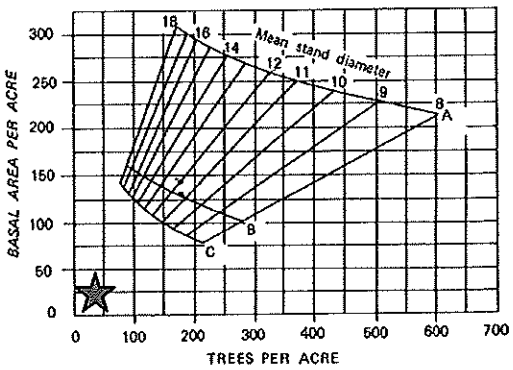
Silvicultural Information:
Cruise Intensity: (3) 10-factor variable radius plots
Age Class Distribution: Two-aged (80/15)
Regeneration: 1200 stems per acre of .5-2" (5-15' tall) sugar maple and white ash.
Total Basal Area per Acre: 26.7
Acceptable Basal Area per Acre: 6.7
Trees per Acre: 16 trees per acre (overstory)/152 (2")
Quadratic Mean Stand Diameter: 5.4



Volume Information:
Sawtimber Volume: .420mbf/ac
Cordwood Volume: 7.62 cords/ac

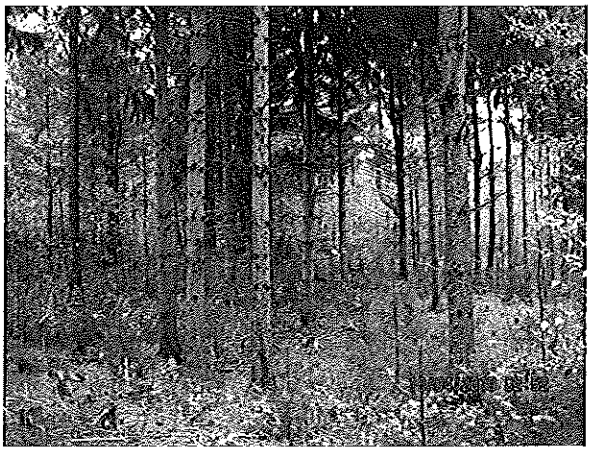
Silvicultural Plan:
Stand Health: No forest health problems are threatening the stand at this time. The stand contains a good mix of species that are all well-suited to the site/soil conditions.
Access/Operability: Access to the stand is readily available as the stand is adjacent to an existing landing.
Long Range Goals: The long range goal for this stand is to grow and develop the sugar maple component.
Planned Management Practices: 2014 Conduct an overstory removal to release the well-established sugar maple seedlings and saplings. The goal of this harvest is to release the regeneration without causing undue damage. Harvesting will only remove overstory white pine where impacts to the regeneration will be minimal. It is anticipated that many of the pine stems will need to be girdled rather than removed.





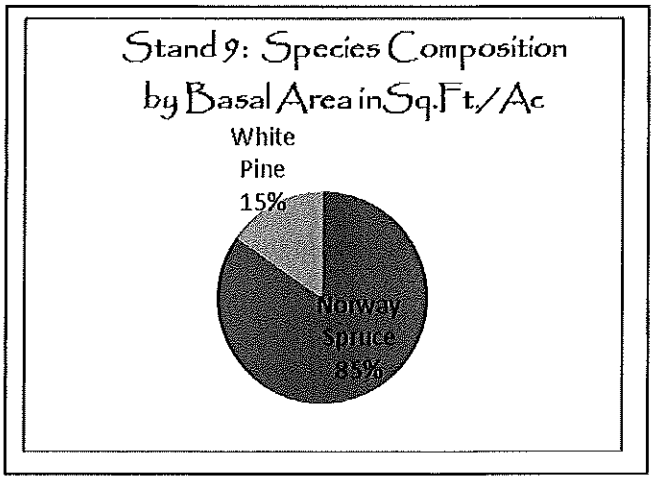
STAND 9

Acres: 4
Current Forest Type: Norway Spruce Plantation
Natural Community: Red Spruce-Northern Hardwood Forest
Site Class: II
Soils: Buckland
Stand Description: Norway spruce plantation planted in the late 1950's. Stand thinned about 15 years ago.



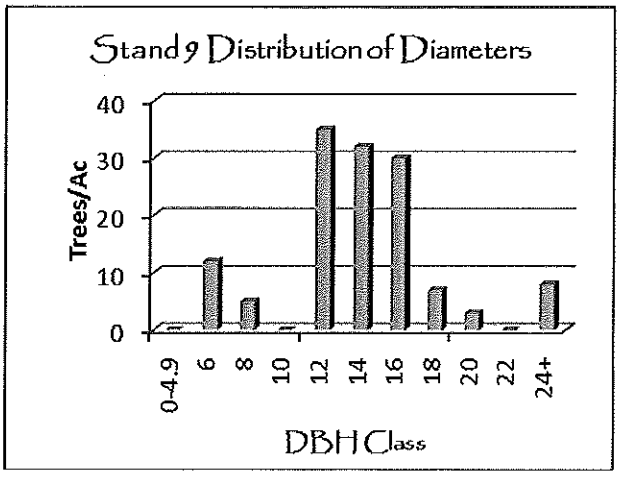
Stand 9: 2010

Silvicultural Information:
Cruise Intensity: (4) 10-factor variable radius plots
Age Class Distribution: Even-aged (@50 years)
Regeneration: 1-2' tall balsam fir well distributed
Total Basal Area per Acre: 132
Acceptable Basal Area per Acre: 95
Trees per Acre: 182 trees per acre
Quadratic Mean Stand Diameter: 13.1"



Volume Information:
Sawtimber Volume: 10.908 mbf/acre
Cordwood Volume: 9.15 cords/acre

Silvicultural Plan:
Stand Health: No known forest health problems affecting this stand.
Long Range Goals: The long range goal for this stand is to eventually return the species composition to native tree species better suited to the site conditions. This goal will be accomplished over the long term though the next several entries will focus on growing and managing the Norway Spruce component.
Planned Management Practices: None planned as the stand currently below recommended stocking levels.



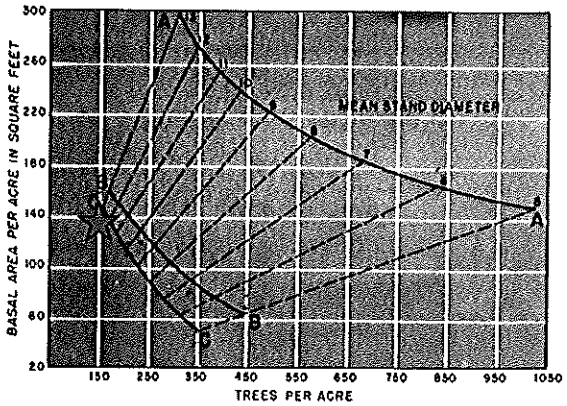


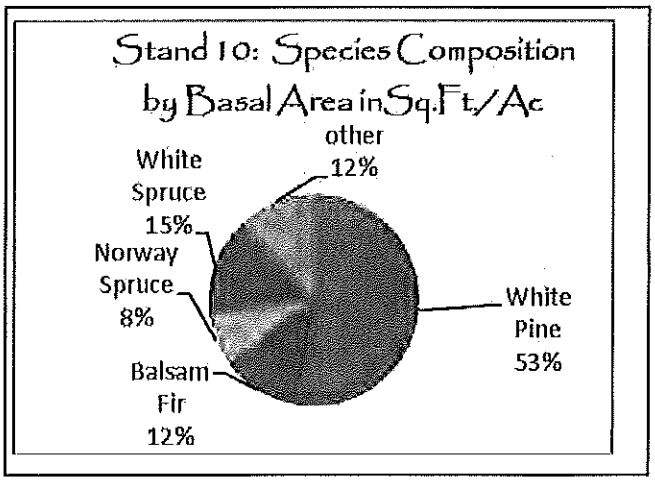
Figure 7.—Growing-stock guide for even-aged spruce-fir, based on the number of trees in the main canopy, average diameter, and basal area per acre. The area above the A-level represents overstocked stand conditions. Stands between the A- and B-levels are adequately stocked. Stands between the B-and C-levels should be adequately stocked within 10 years or less. Stands below the C-level are understocked.

STAND 10

Acres: 12
Current Forest Type: White Pine
Natural Community: Red Spruce-Northern Hardwood Forest
Site Class: II
Soils: Buckland
Stand Description: Stand 10 is a two-aged stand consisting of poorer quality overstory white pine with well-established northern hardwood poles and regeneration in the understory.

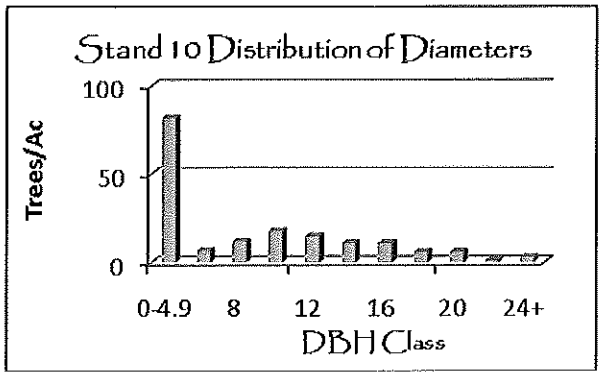
Stand 10: 2010

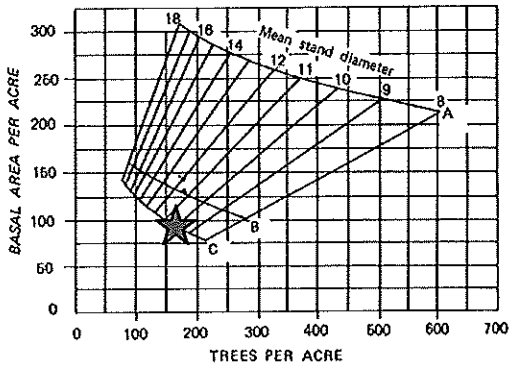
Silvicultural Information:
Cruise Intensity: (7) 10-factor var. radius plots
Age Class Distribution: Two-aged (80/15)
Regeneration: 5000 stems per acre of well established sugar maple regeneration .5-1" diameter and 5-12' tall
Total Basal Area per Acre: 94
Acceptable Basal Area per Acre: 50
Trees per Acre: 173 trees per acre
Quadratic Mean Stand Diameter: 10.5"



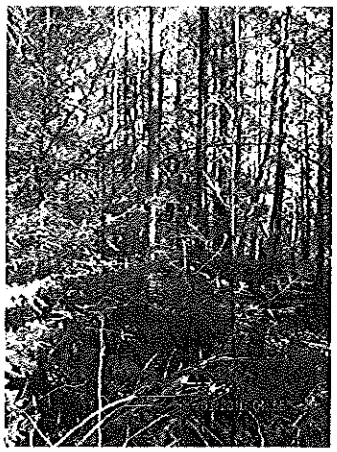
Volume Information:
Sawtimber Volume: 6.022 mbf/acre
Cordwood Volume: 14.09 cords/acre

Silvicultural Plan:
Stand Health: No known forest health problems affecting this stand.
Access/Operability: Access to the stand is readily available as the stand is adjacent to an existing landing.
Long Range Goals: The long range goal for this stand is to grow and develop the northern hardwood component under an uneven-aged management scheme. Converting the existing even aged stand to an uneven-aged stand will require a full rotation.
Planned Management Practices: 2014 Conduct a group shelterwood/expanding gap treatment to release the well-established sugar maple seedlings and saplings. The goal of this harvest is to release the regeneration without causing undue damage. Harvesting will only remove overstory white pine where impacts to the regeneration will be minimal. It is anticipated that many of the pine stems will need to be girdled rather than removed. At this first entry groups will cover no more than 25% of the stand and will only be located over existing regeneration.





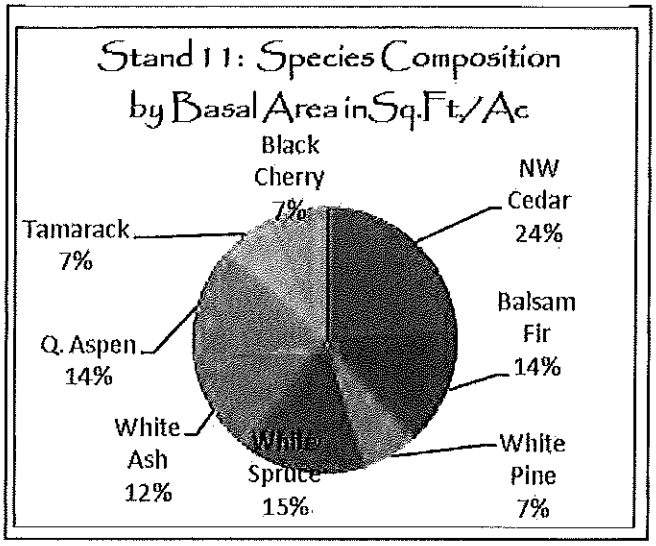
STAND 11



Stand 11: 2010

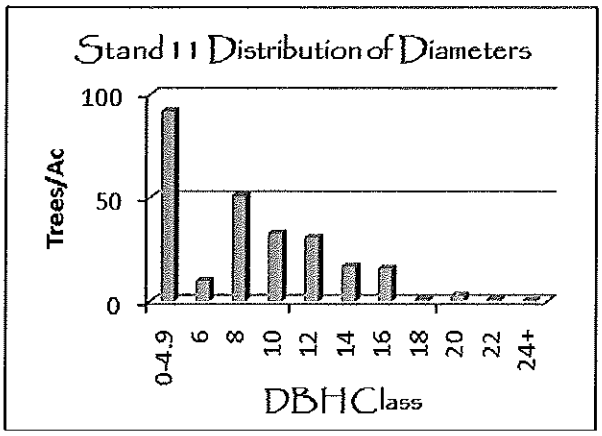
Acres: 9
Current Forest Type: Mixedwood
Natural Community: Northern white cedar sloping seepage forest
Site Class: III
Soils: Cabot
Stand Description: Stand 11 is a mixed wood stand heavy to softwood occurring on shallow to hardpan cabot soils. The stand is slowly falling apart with tree-fall gaps regenerating very well to mixed species.

Silvicultural Information:
Cruise Intensity: (5) 10-factor var. radius plots
Age Class Distribution: Even
Regeneration: Pockets of well-established (5000 spa) white ash, sugar maple, red maple, quaking aspen, and balsam fir
Total Basal Area per Acre: 118
Acceptable Basal Area per Acre: 58
Trees per Acre: 255 trees per acre
Quadratic Mean Stand Diameter: 9.2"



Volume Information:
Sawtimber Volume: 5.965 mbf/acre
Cordwood Volume: 18.73 cords/acre

Silvicultural Plan:
Stand Health: Shallow wet soils causing canopy gaps due to blowdowns. Quaking aspen is being impacted by hypoxylon canker. White birch exhibiting top dieback.
Access/Operability: Access to the stand is readily available using existing skid trails. Operability will be difficult as these soil conditions tend to cause rutting, soil compaction and root shear if care is not taking. All harvesting activities should occur during frozen ground conditions.
Long Range Goals: The long range goal for the stand is to convert the existing even-aged (two-aged) structure to a multi-cohort structure with an aging northern white cedar, white pine, and red spruce component.
Planned Management Practices: 2015 Conduct a group shelterwood/expanding gap treatment to release established regeneration while removing high risk balsam fir, white spruce and quaking aspen. Groups will cover no more than 25% of the stand and will range from several trees to1/4 of an acre.



★

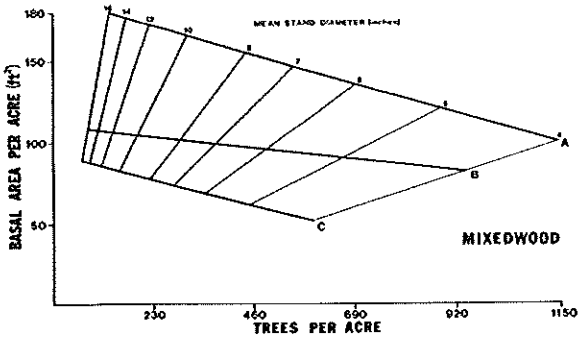
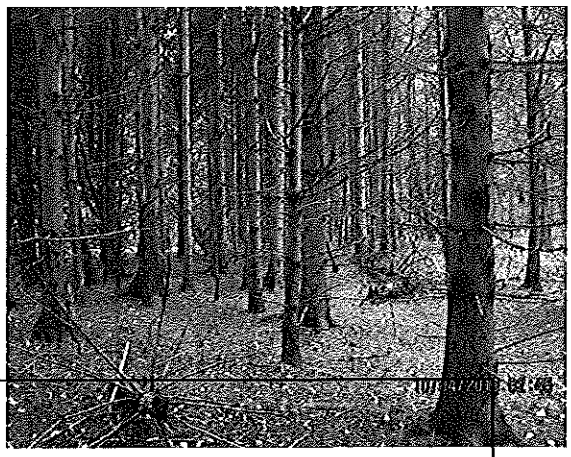


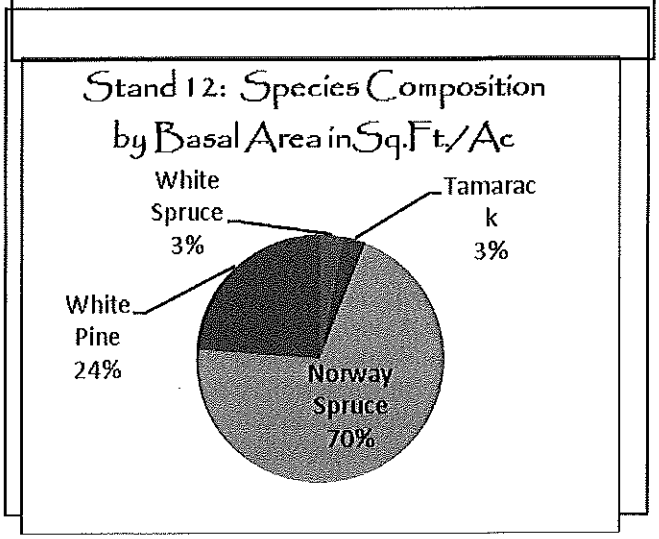
Figure 7.—Stocking guide for main crown canopy of mixedwood stands (25 to 65 percent softwoods) shows basal area and number of trees per acre and quadratic mean stand diameter. The A line is fully stocked, the B line is suggested residual stocking, the C line is minimum stocking



Stand 12: 2010

STAND 12

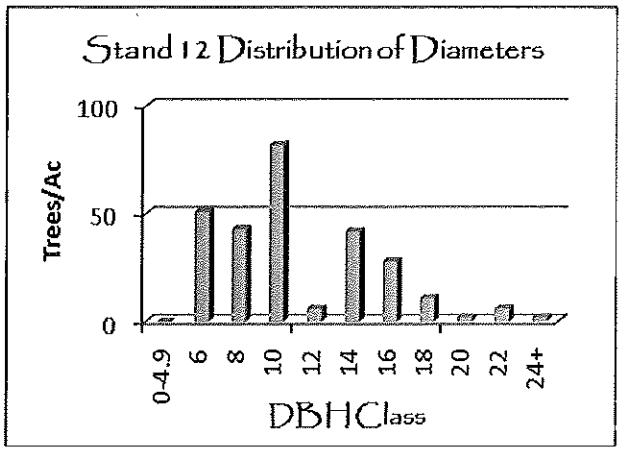
Acres: 2
Current Forest Type: Norway Spruce Plantation
Natural Community: Red Spruce-Northern Hardwood Forest
Site Class: II
Soils: Buckland
Stand Description: Stand 12 is a Norway spruce plantation very similar to stand 2 in age and composition however the buckland soil on which it has been planted here is better suited to this tree species than the cabot soil of stand 2. The stand has never been thinned which has resulted in many crowns having less than optimum live crown ratios.



Silvicultural Information:
Cruise Intensity: (2) 10-factor var. radius plots
Age Class Distribution: Even-aged (@50 years)
Regeneration: None
Total Basal Area per Acre: 205
Acceptable Basal Area per Acre: 120
Trees per Acre: 274 trees per acre
Quadratic Mean Stand Diameter: 13.3"

Volume Information:
Sawtimber Volume: 13.569 mbf/acre
Cordwood Volume: 25.79 cords/cords

Silvicultural Plan:
Stand Health: The stand has not been thinned to date causing many of trees to have less than optimum live crown ratios (>20%).
Access/Operability: Access to the stand is readily available as the stand is adjacent to an existing landing.
Long Range Goals: The long range goal for this stand is to eventually return the species composition to native tree species better suited to the site conditions. This goal will be accomplished over the next 30-45 years (3 entries) through the traditional methodologies of thinning during the first entry, regenerating the stand using the shelterwood method during the second entry, and finally releasing the established regeneration during the final entry.
Planned Management Practices: 2014 Conduct a low-thinning by removing poorer quality and multi-topped stems during frozen ground conditions to release selected crop trees with good live-crown ratios. Residual basal area goal is 140sq.Ft./Ac.



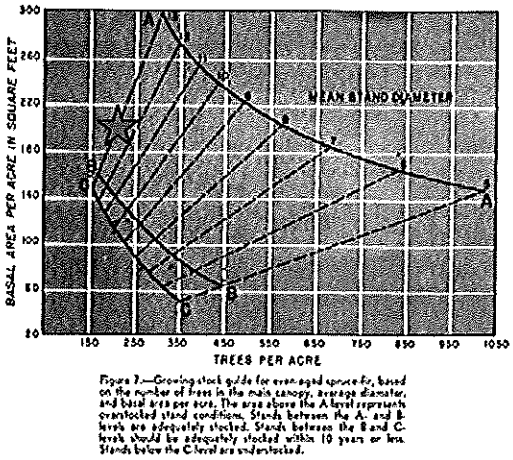
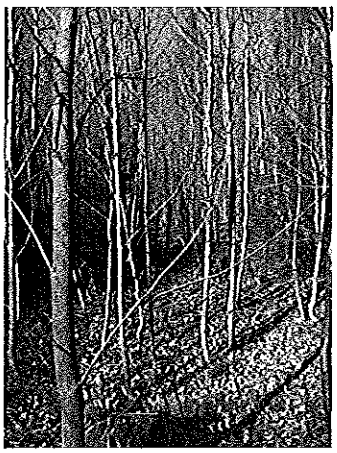


Figure 7.—Growing-stock guide for even-aged spruce-fir, based on the number of trees in the main canopy, average diameter, and basal area per acre. The area above the A level represents overstocked stand conditions. Stands between the A- and B-levels are adequately stocked. Stands between the B and C-levels should be adequately stocked within 10 years or less. Stands below the C level are understocked.

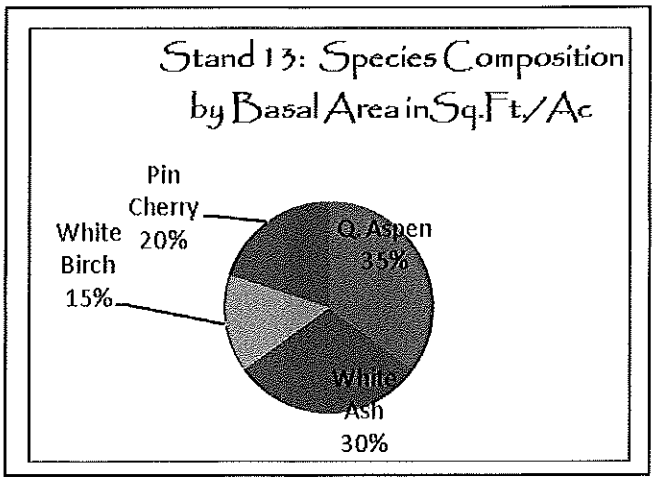
STAND 13

Acres: 1
Current Forest Type: Early Successional Forest
Natural Community: Red Spruce-Northern Hardwood Forest
Site Class: II
Soils: Buckland
Stand Description: Stand 13 is a 1 acre patch of early successional forest.



Stand 13: 2010

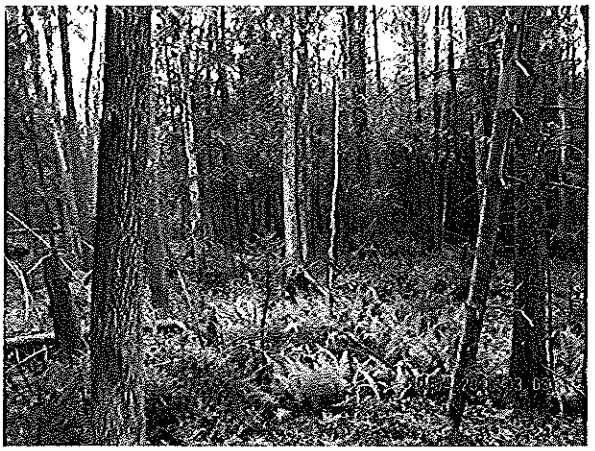
Silvicultural Information:
Cruise Intensity: (2) mil acre regeneration plots
Age Class Distribution: Even-aged (15)
Regeneration: Quaking aspen, white ash, white birch & pin cherry. Diameters average 2" with tree heights ranging from 12-20' tall
Total Basal Area per Acre: N/A
Acceptable Basal Area per Acre: N/A
Trees per Acre: 4000 stems per acre
Quadratic Mean Stand Diameter: 2"



Volume Information:
Sawtimber Volume: N/A
Cordwood Volume: N/A

Silvicultural Plan:
Stand Health: No forest health problems are threatening the stand at this time. The stand contains a good mix of species that are all well-suited to the site/soil conditions.
Access/Operability: Access to the stand is readily available via network of existing skid trails.
Planned Management Practices: None planned. Conduct timber stand improvement (tsi) work when the majority of stems reach six inches in diameter. Improvement work should involve crown release (7' between competing crowns) on selected crop stems.

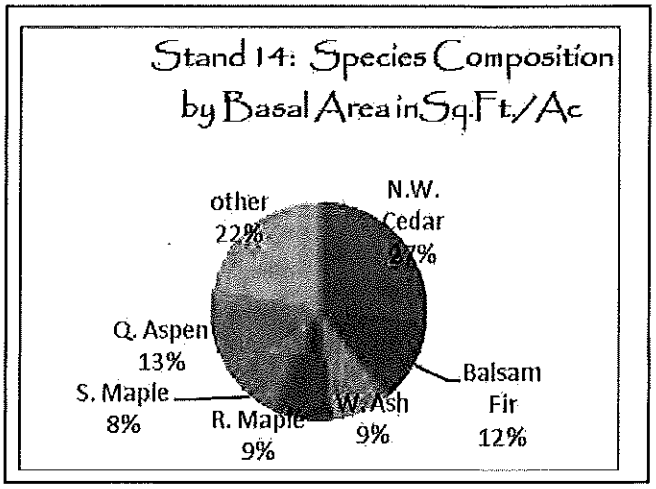
STAND 14



Stand 14: 2010

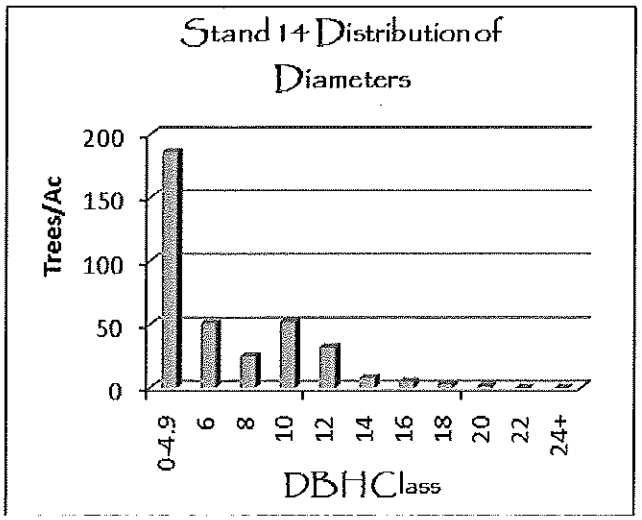
Acres: 19
Current Forest Type: Mixedwood
Natural Community: Red Spruce-Northern Hardwood Forest, mixed sloping seepage forest & northern white cedar sloping seepage forest
Site Class: II
Soils: Buckland & Cabot
Stand Description: Stand 14 is a two-aged stand of mixed hard and softwood species. The stand is patchy in composition due to the variations in soil moisture and depth across the stand.

Silvicultural Information:
Cruise Intensity: (8) 10-factor var. radius plots
Age Class Distribution: Two-aged (65/15)
Regeneration: Well-established (9000 spa) sugar maple, white ash, n.w. cedar, red maple, q. aspen and balsam fir. Regeneration is .5-2" in diameter and 15' tall
Total Basal Area per Acre: 100
Acceptable Basal Area per Acre: 45
Trees per Acre: 363 trees per acre
Quadratic Mean Stand Diameter: 9.8"



Volume Information:
Sawtimber Volume: 3.251 mbf/acre
Cordwood Volume: 13.47 cords/acre

Silvicultural Plan:
Stand Health: Quaking aspen is being afflicted by hypoxylon canker to the extent that it should be salvaged. Wet shallow soils also causing small amount of blowdown.
Long Range Goals: The long-range goal for this stand is create an all-aged condition with an emphasis on increasing the softwood representation. Past land use history has pushed this stand toward intolerant hardwood species such as quaking aspen and red maple. The focus of the next several entries will try to reverse this trend by releasing the established softwood regeneration by small group selection harvests
Planned Management Practices: (2014) Conduct a group shelterwood/expanding gap treatment to release established regeneration by removing groups of intolerant hardwood and high risk balsam fir. Groups will cover no more than 25% of the stand and will range from several trees to1/4 of an acre.



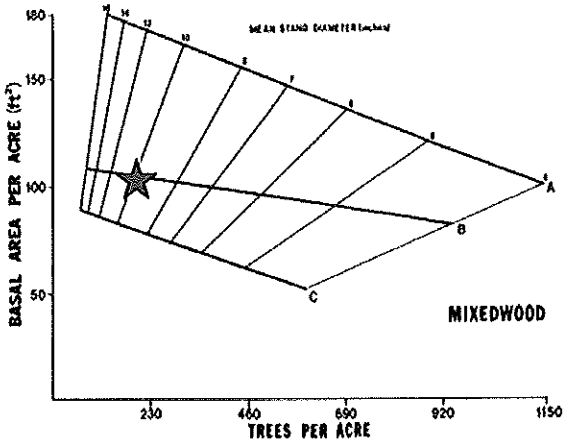
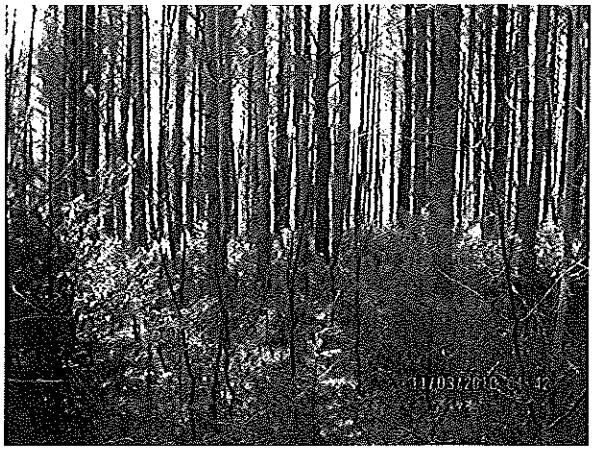


Figure 7.—Stocking guide for main crown canopy of mixedwood stands (25 to 65 percent softwoods) shows basal area and number of trees per acre and quadratic mean stand diameter. The A line is fully stocked, the B line is suggested residual stocking, the C line is minimum stocking.

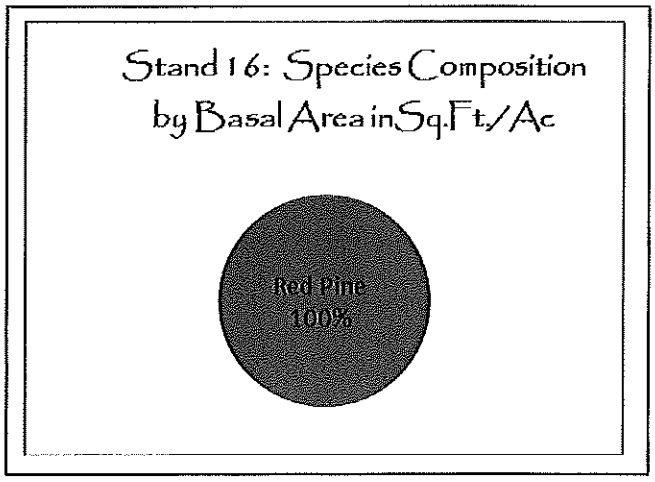
STAND 16

Acres: 2
Current Forest Type: Red Pine Plantation
Natural Community: Red Spruce-Northern Hardwood Forest
Site Class: II
Soils: Buckland
Stand Description: Stand 16 is a small red pine plantation planted in the late 1950's. The stand has not been thinned therefore is considered overstocked with many stems having low live crown ratios. The red pine here however is well suited to the soils and is growing very well.



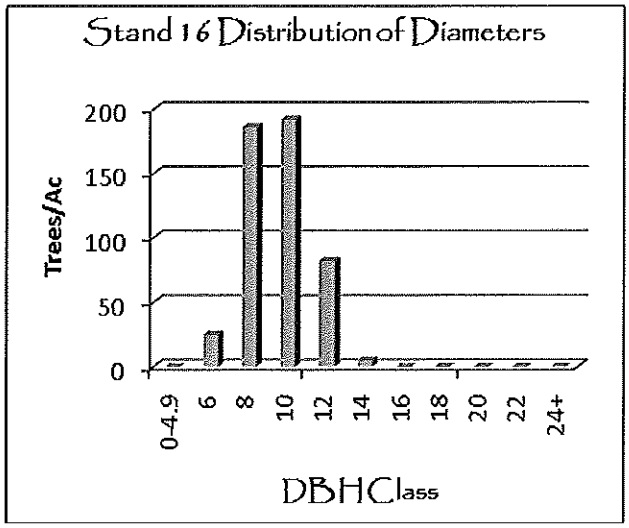
Stand 16: 2010

Silvicultural Information:
Cruise Intensity: (2) 10-factor var. radius plots
Age Class Distribution: Even-aged (@50 years)
Regeneration: None
Total Basal Area per Acre: 245
Acceptable Basal Area per Acre: 245
Trees per Acre: 491 trees per acre
Quadratic Mean Stand Diameter: 9.6"



Volume Information:
Sawtimber Volume: 30.273 mbf/acre
Cordwood Volume: 1.24 cords/acre

Silvicultural Plan:
Stand Health: Evidence of red pine gall was not found in this stand however its presence should be monitored.
Access/Operability: Access to the stand is readily available as the stand is adjacent to an existing landing.
Long Range Goals: The long range goal for this stand is to eventually return the species composition to native tree species. This goal will be accomplished over the long term though the next several entries will focus on growing and managing the red pine component.
Planned Management Practices: (2015) Conduct a low-thinning reducing the basal area to 120-130 sq.ft./ac. Removals should focus on stems in the 6-8" diameter class as well as poor quality stems with visible defects.



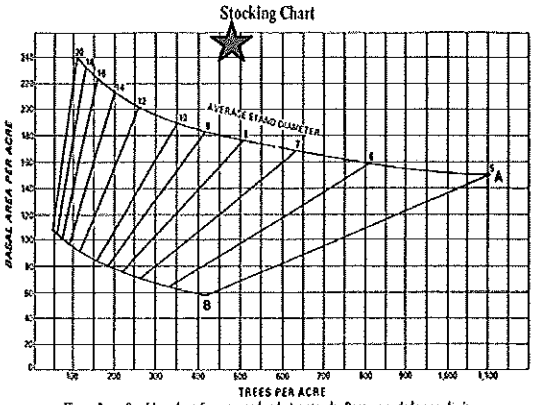
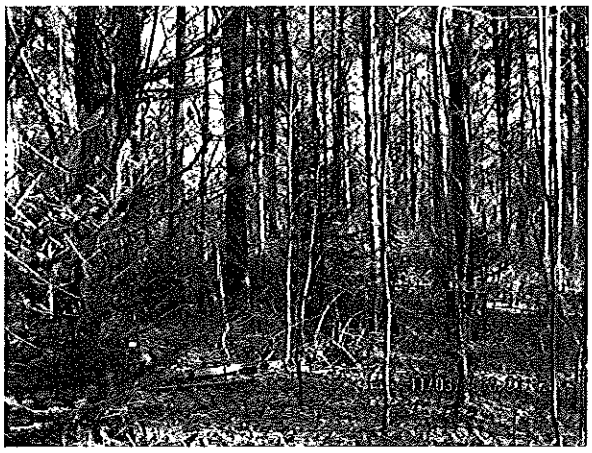


Figure 7. -- Stocking chart for managed red pine stands. Recommended upper limit (A curve) for managed stands is based on 80 percent of Brown and Gevorkiantz (1934) normal yield table with projection to 20 inches based on Woolsey and Chapman (1914). Minimum stocking (B curve) is based on crown width for open-grown trees from Ek (1971).

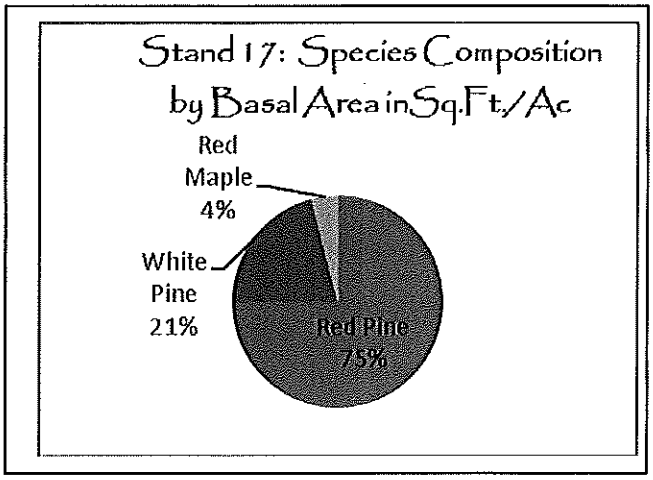
STAND 17

Acres: 2
Current Forest Type: Red/White Pine Plantation
Natural Community: Red Spruce-Northern Hardwood Forest
Site Class: II
Soils: Buckland
Stand Description: Stand 17 is predominantly a red pine plantation with a small component of white pine. The stand appears to have been thinned as a well-established layer of sugar maple and white ash regeneration is present.



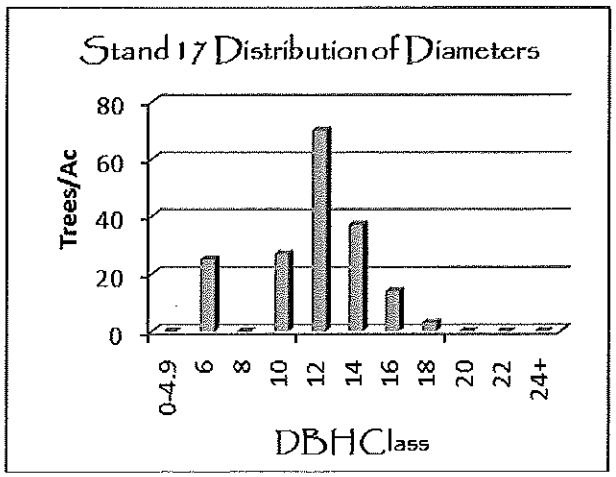
Stand 17: 2010

Silvicultural Information:
Cruise Intensity: (2) 10-factor variable radius plots
Age Class Distribution: Even-aged (@50 years)
Regeneration: Well-established sugar maple and white ash .5-1" diameter.
Total Basal Area per Acre: 140
Acceptable Basal Area per Acre: 135
Trees per Acre: 177 trees per acre
Quadratic Mean Stand Diameter: 12.8"



Volume Information:
Sawtimber Volume: 20.784 mbf/ac
Cordwood Volume: 0 cords

Silvicultural Plan:
Stand Health: Evidence of red pine gall was not found in this stand however its presence should be monitored. White pine blister rust is present with some mortality occurring.
Access/Operability: Access to the stand is readily available as the stand is adjacent to an existing landing.
Long Range Goals: The long range goal for this stand is to eventually return the species composition to native tree species. This goal will be accomplished over the long term though the next several entries will focus on growing and managing the red pine component as well as encouraging the well established northern hardwood regeneration.
Planned Management Practices: (2015) Conduct a low-thinning reducing the basal area to 120 sq.ft./ac. Removals should focus on stems in the 6-10" diameter class as well as poor quality stems with visible defects (blister rust). Expand the gaps of regeneration by removing groups of overtopping stems.



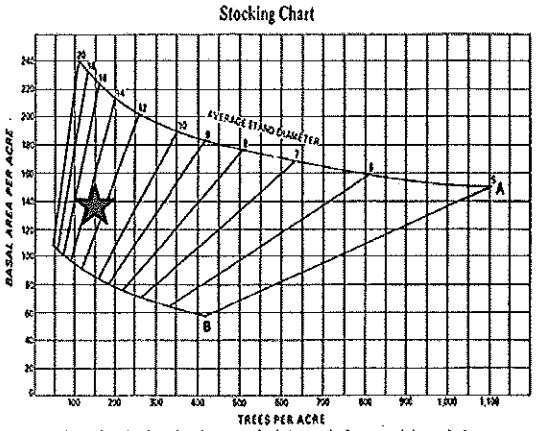
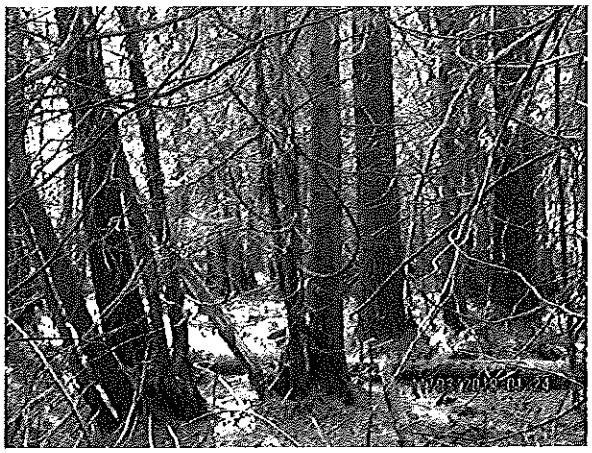


Figure 1. -- Stocking chart for managed red pine stands. Recommended upper limit (A curve) for managed stands is based on 60 percent of Brown and Gevorkiantz (1934) normal yield table with projection to 20 inches based on Woolsey and Chapman (1914). Minimum stocking (B curve) is based on crown width for open-grown trees from Ek (1971).

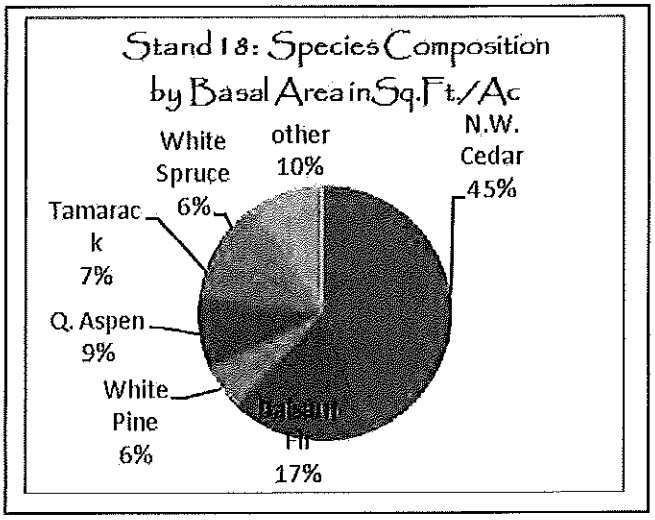
STAND 18

Acres: 27
Current Forest Type: Mixed Softwood
Natural Community: N.W. Cedar Sloping Seepage Forest
Site Class: III
Soils: Cabot
Stand Description: Stand 18 is a mosaic type stand located on the eastern half of the town forest. The stand contains a good mix of softwood species. Wet shallow soils as well as over mature pockets of balsam fir that have blown over have caused a nice mixture of regeneration amongst older aged trees.



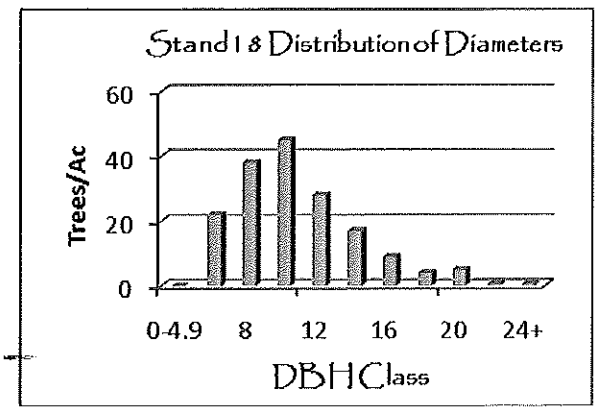
Stand 18: 2010

Silvicultural Information:
Cruise Intensity: (9) 10-factor var. radius plots
Age Class Distribution: Even-aged (two-aged)
Regeneration: Pockets of balsam fir and cedar throughout. The southeast corner of the stand appears to have been clearcut around 20 years ago and has regenerated very well to spruce, fir and cedar, red maple and quaking aspen.
Total Basal Area per Acre: 114
Acceptable Basal Area per Acre: 62
Trees per Acre: 169 trees per acre
Quadratic Mean Stand Diameter: 11.1"



Volume Information:
Sawtimber Volume: 6.038 mbf/acre
Cordwood Volume: 15.55 cords/acre

Silvicultural Plan:
Stand Health: Red cubicle rot present in balsam fir.
Access/Operability: The thin, shallow to hardpan soils here present difficult operating conditions. Rutting, soil compaction, root shearing and erosion are all potential problems. Winter operations with well planned skid trails will be necessary to reduce impacts. Summer layout of buffers should occur as the stand is laced with small brooks and seeps.
Long Range Goals: The long-range goal for this stand is to create an all-aged condition with an emphasis on increasing an older age class of red spruce, white cedar and white pine. The focus of the next several entries will be to establish new age classes by small group selection harvests.
Planned Management Practices: (2013) Conduct a group shelterwood/expanding gap treatment. Groups of balsam fir and intolerant hardwood up to ¼ of an acre in size will be removed to both release established regeneration as well as create conditions for establishment. No more than 25% of the stand will be treated during this entry.



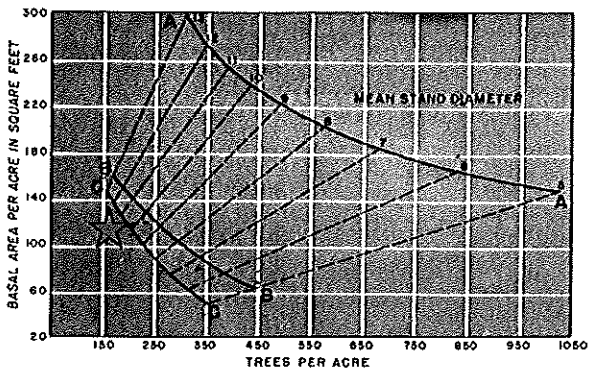
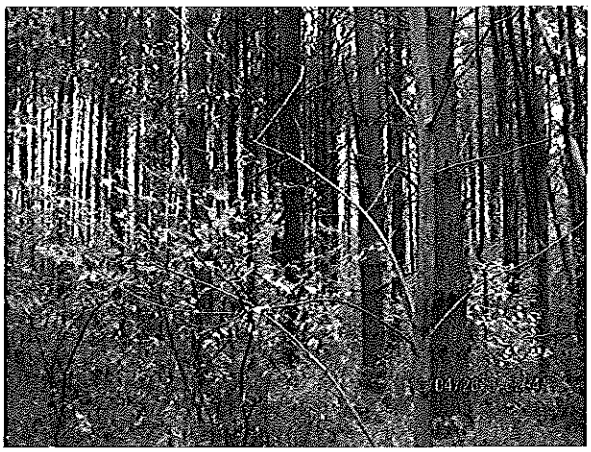


Figure 7.—Growing-stock guide for even-aged spruce-fir, based on the number of trees in the main canopy, average diameter, and basal area per acre. The area above the A-level represents overstocked stand conditions. Stands between the A- and B-levels are adequately stocked. Stands between the B-and C-levels should be adequately stocked within 10 years or less. Stands below the C-level are understocked.

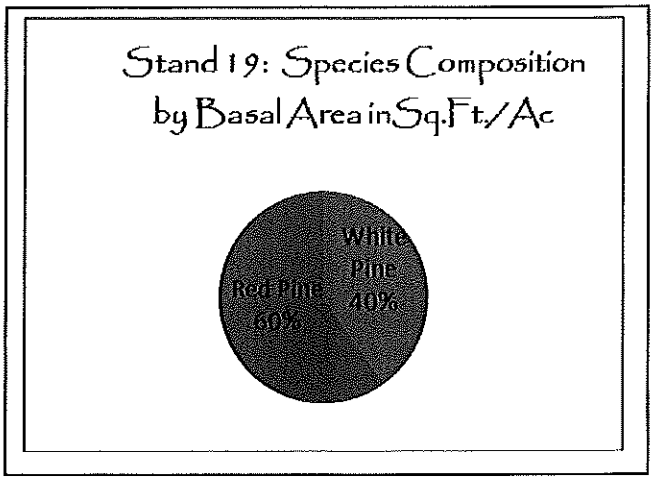
STAND 19

Acres: 2
Current Forest Type: Red Pine/White Pine Plantation
Natural Community: Red Spruce-Northern Hardwood Forest
Site Class: II
Soils: Buckland
Stand Description: Stand 19 is a mixed bag plantation of red and white pine likely planted in the late 1950s. It is located on good well-drained soils and is need of a low thinning to maintain acceptable live crown ratios to maximize growth.



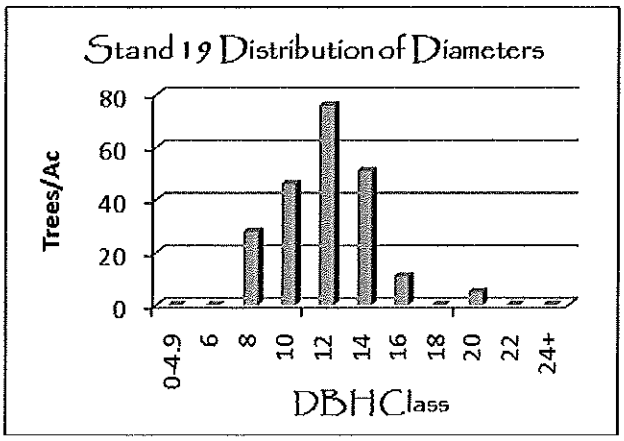
Stand 19: 2010

Silvicultural Information:
Cruise Intensity: (2) 10-factor var. radius plots
Age Class Distribution: Even-aged (@50 years)
Regeneration: Edges of stand have regenerated to tolerant northern hardwood species.
Total Basal Area per Acre: 175
Acceptable Basal Area per Acre: 165
Trees per Acre: 217 trees per acre
Quadratic Mean Stand Diameter: 12.1"



Volume Information:
Sawtimber Volume: 26.356 mbf/acre
Cordwood Volume: 3.58 cords/acre

Silvicultural Plan:
Stand Health: Small amount of white pine blister rust was observed though levels certainly not alarming.
Access/Operability: Access to the stand is readily available as the stand is adjacent to an existing landing. Summer or winter operations feasible given soil conditions.
Long Range Goals: The long range goal for this stand is to eventually return the species composition to native tree species. This goal will be accomplished over the long term though the next several entries will focus on growing and managing the red and white pine component as well as encouraging the well established northern hardwood regeneration found along the edge of the stand
Planned Management Practices: (2013) Conduct a low-thinning reducing the basal area to 120 sq.ft./ac. Removals should focus on stems in the 8-10" diameter class as well as poor quality stems with visible defects. Trees located along the margin of the stand that are overtopping well-established regeneration can be removed at this time as well.



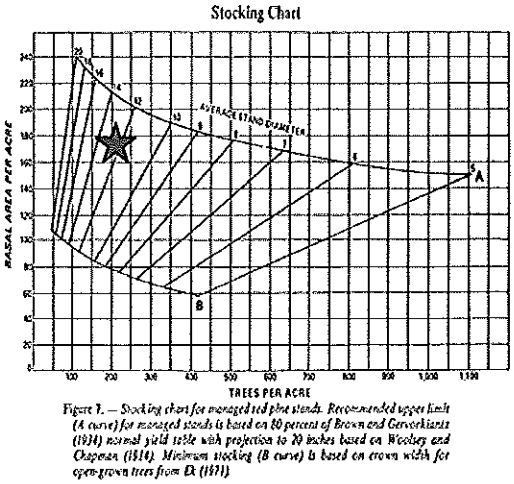
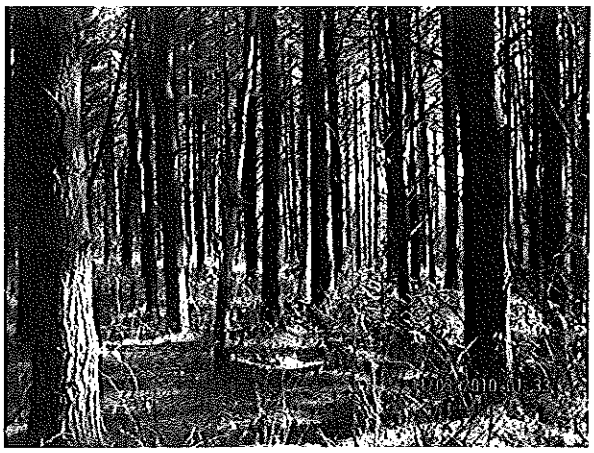


Figure 1. — Stocking chart for managed red pine stands. Recommended upper limit (A curve) for managed stands is based on 80 percent of Brown and Gevorkiantz (1934) normal yield table with projection to 70 inches based on Wiesley and Chapman (1954). Minimum stocking (B curve) is based on crown width for open-grown trees from Ek (1971).

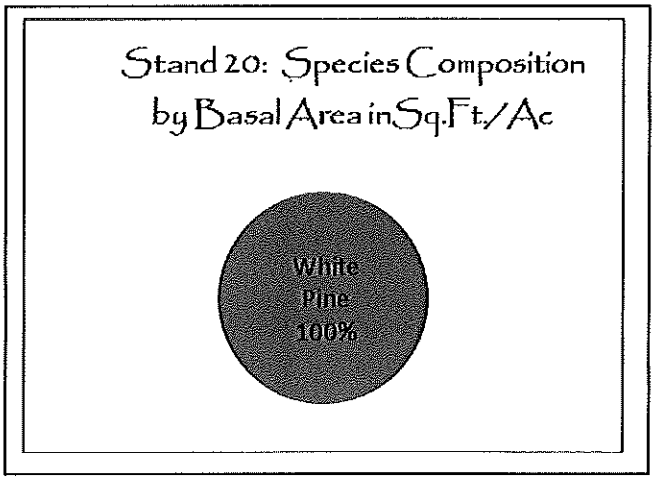
STAND 20

Acres: 3
Current Forest Type: White Pine Plantation
Natural Community: Northern Hardwood Forest
Site Class: II
Soils: Buckland
Stand Description: Stand 20 is a white pine plantation planted in the late 1950's. The soils here are well drained and the stand appears to be growing well.



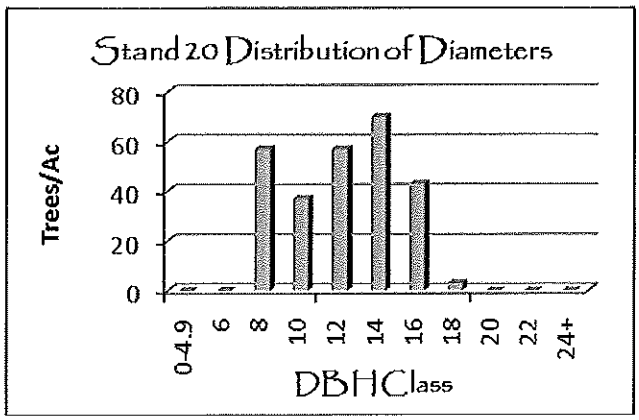
Stand 20: 2010

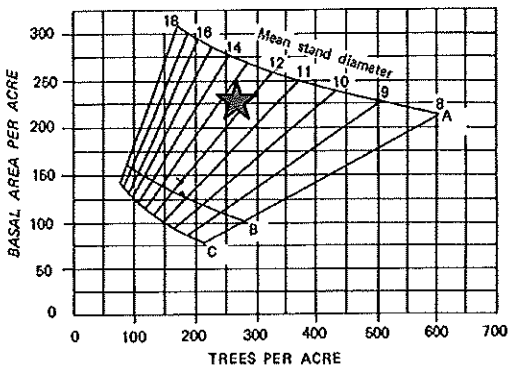
Silvicultural Information:
Cruise Intensity: (2) 10-factor var. radius plots
Age Class Distribution: Even-aged (@50 years)
Regeneration: Well-established tolerant northern hardwood regeneration occurs along the bottom edge of the stand.
Total Basal Area per Acre: 225
Acceptable Basal Area per Acre: 175
Trees per Acre: 267 trees per acre
Quadratic Mean Stand Diameter: 12.4"



Volume Information:
Sawtimber Volume: 28.662 mbf/acre
Cordwood Volume: 136.63 cords/acre

Silvicultural Plan:
Stand Health: A small amount of white pine blister rust was observed though levels certainly not alarming.
Access/Operability: Access to the stand will require the installation of a bridge. Soils will permit harvesting on bare ground conditions.
Long Range Goals: The long range goal for this stand is to eventually return the species composition to native tree species. This goal will be accomplished over the long term though the next several entries will focus on growing and managing the white pine component as well as encouraging the well established northern hardwood regeneration found along the bottom edge of the stand
Planned Management Practices: (2013) Conduct a low-thinning reducing the basal area to 150 sq.ft./ac. Removals should focus on stems in the 8-10" diameter class as well as poor quality stems with visible defects. Trees located along the margin of the stand that are overtopping well-established regeneration can be removed at this time as well.





SUMMARY OF PUBLIC INVOLVEMENT

2007 – CC established; town forest management planning identified as top priority
2008 – Caledonia County Forester begins advising on initial planning
Summer Forest Celebration held (Pumpkin Hill Town Forest)
Forest and Wildlife Habitat Display at the Danville Town Fair
2009 - Town Forest Survey (mailed to all residents)
Presentation by Brett Engstrom on natural community mapping
Public meeting hosted to gather initial input for Town Forest
2010 – Jens Hilke, State of VT, hosts public meeting re: wildlife management and community involvement
Boundaries of town forests identified, flagged and GPS'd
2011 - Initial draft presented to Selectboard
First draft, with SB input, ready for review by Town Meeting
Public meeting for comment on first draft; revisions subsequent

TOWN FOREST SURVEY RESULTS

The town of Danville has two Town Forests. One forest, Pumpkin Hill Forest, is located on Pumpkin Hill, and the other, Rodgers Lot, is located on North Danville Road and includes the site of the "stump dump". To gauge the residents' knowledge and attitudes regarding the two forests, a survey of landowners was conducted by the Danville Conservation Commission (DCC). The survey did not distinguish between the two forests and asked the residents to rate the appropriateness of activities that could be conducted in either. Approximately 100 people returned the survey, which represents about 5% of the population of Danville.

Results:

Of those surveyed, 25% did not know of either forest and 32% had never been to them. One respondent said that they have lived in Danville for 20 years and never knew that the "stump dump" was part of a town forest. There were also several comments encouraging more signage and publicity about the locations of the forests, and what they have to offer.

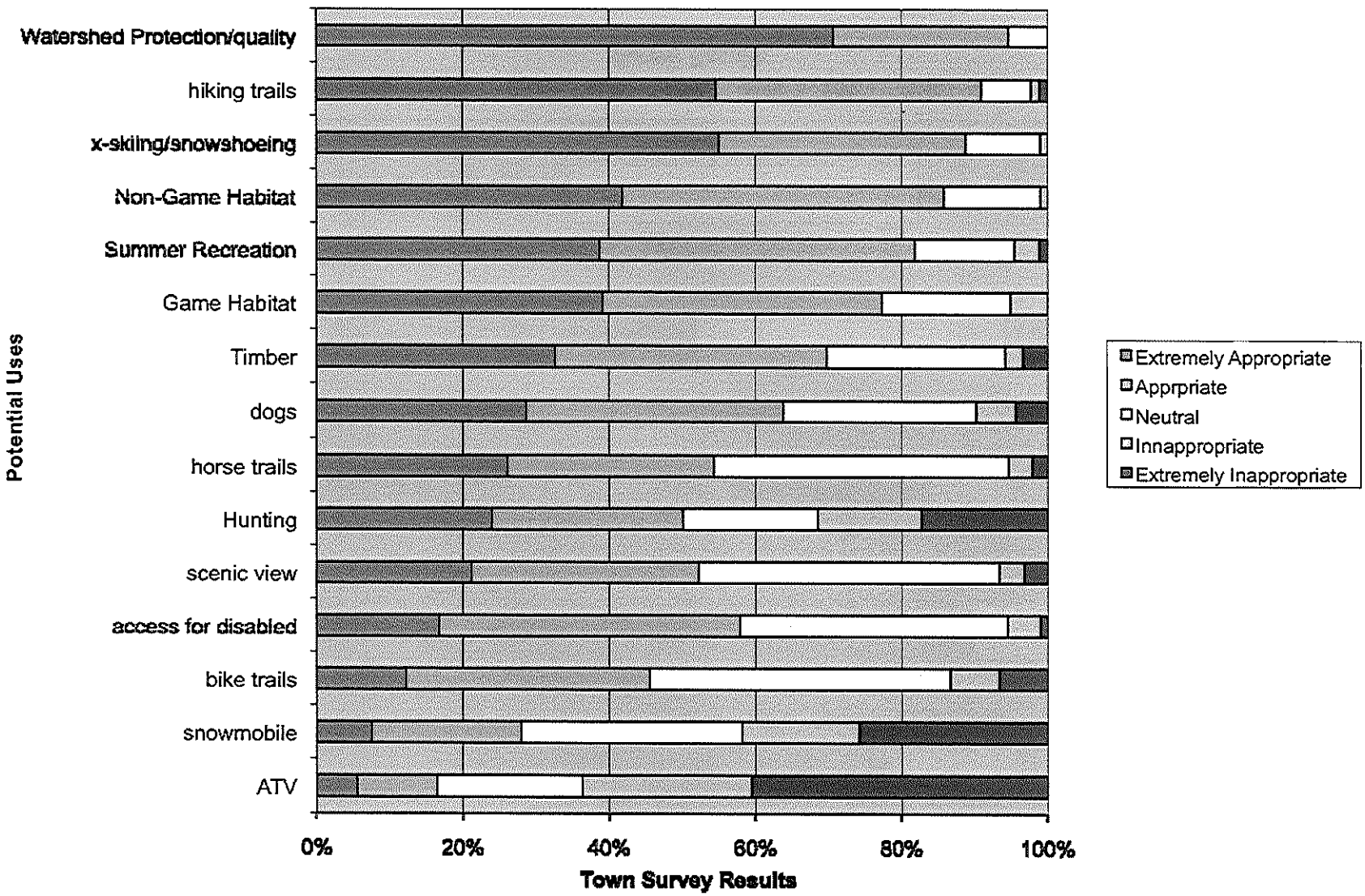
Currently, the Pumpkin Hill and the Rogers Lot forests are used more in the summer and fall, and less in the winter and spring. Of those who use the forests 77% enjoy them with family and friends, 8% go with a group, and 12% go alone. The most popular current uses and potential future uses are wildlife viewing, nature study, photography, hiking or walking, and snowshoeing and cross country skiing.

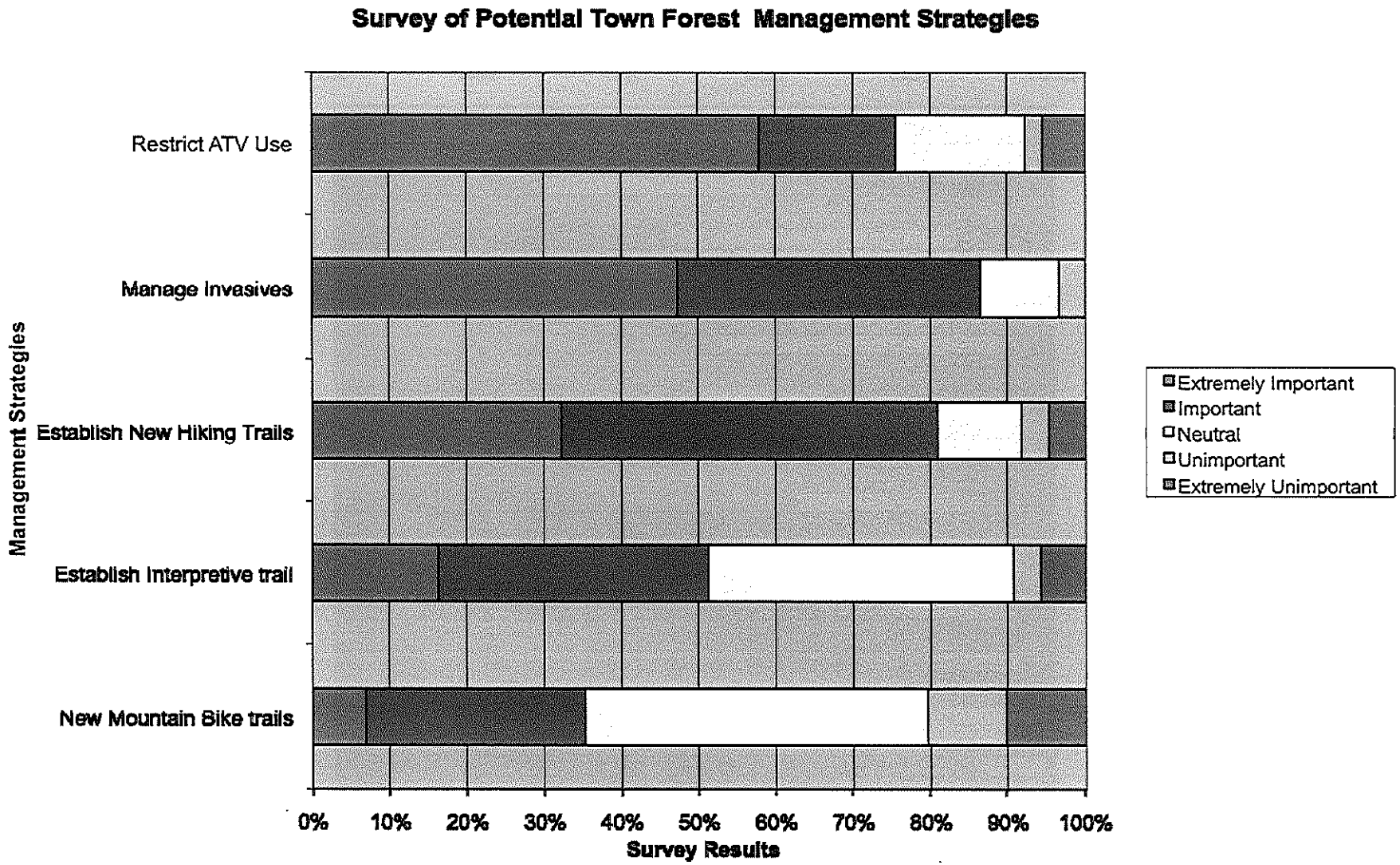
Because it is important that our town forests are utilized in the way residents desire, they were asked what uses they felt were appropriate, and/or not appropriate. The results are summarized in the chart below. The survey response showed that watershed protection and quality was the most appropriate use for the forests, followed by hiking, cross country skiing or snowshoeing, summer recreation, and game and non-game habitat. Uses of lower popularity included bike trails, horseback trails, hunting, creating access for the disabled, and creating scenic views. The least popular uses included snowmobile and ATV use. In fact 76% of those who responded felt that it was important or extremely important to restrict ATV use in the forests. Managing invasive species was the most important management strategy (86%).

Both forests have been utilized in the past for their timber resources. The survey revealed that 70% of respondents felt it was appropriate or extremely appropriate to utilize the forests for their timber resources. We also received several comments that the forests should be left as natural as possible, be sustainably managed, and should leave some room for old growth.

The survey is just the first outreach for participation. There will be several more opportunities for Danville residents to get involved in this important community planning. From the survey it is clear that our first steps at the DCC is to create more opportunities and information for residents to increase their familiarity and usage of the town forests as they now exist so that we can plan for their future.

Survey Results for Potential Town Forest Uses




Survey of Potential Town Forest Management Strategies
Restrict ATV Use
Manage Invasives
Establish New Hiking Trails
Establish Interpretive trail
New Mountain Bike trails
Management Strategies
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
Survey Results
Extremely Important
Important
Neutral
Unimportant
Extremely Unimportant

HISTORICAL RESOURCES

The following timelines were created by the commission after consulting the town records. This is what our research shows to date, but we invite any clarification of this information from knowledgeable Danville residents

Rogers Lot Town Forest
Land Owners 1850 -2011

May 1957 –Present: Town of Danville
Feb 1957-May 1957: Howard and Alice Calkins
June 1945-Feb. 1957: Herald and Margaret Miller
May 1927-June 1945: Merton L. Roger
Aug. 1925 – May 1927: John Allen
Nov.1923 –Aug 1925: Harland Howe
Aug. 1918 – Nov. 1923: Harry Withers
May 1913 – Aug. 1918: Fred J. Fry
May 1908 – May 1913: Elmer E. Robinson, Fred Allison and Earl Howe
April 1854 – May 1908: Warner and Mabel Goodenough

Rogers Lot Town Forest
(Research by Dave Houston and Tom Forster 12/8/10)

May 22, 1957 — Howard and Alice Calkins to Town of Danville (40 acres "Goodenough Lot" and 77 acres (included in 3 other parcels). (book 43, p. 61)

Feb. 4, 1957 — Herald and Margaret Miller to Howard and Alice Calkins (book 43, p.31)

June 21, 1945 — Merton Roger (died) Land sold to Herold and Margaret Miller
(all Land includes 4 parcels:
*40 acres: "Goodenough Lot" (book 39, p.434)
* Parcel from Henry Willey
* Parcel from Mary Bovee (book 23 p.132)
* 30 acre parcel from Aaron Smith

*May 20, 1927 — John Allen to Merton L and Herbert L. Roger: "Goodenough Lot" 40 acres (book 31, p. 131)

Aug. 28,1925 — Harland Howe to John Allen (received 40 acres for $1.00)(book 31 , p. 45)

Nov. 1,1923 — Harry W. Withers to Harland Howe (Land from Fred Fry)(book 30 , p. 445)
*Good description of Northern Boundary of Land!

Aug. 17, 1918 — Fred J. Fry (went Bankrupt) JW Gilles (trustee) land to Harry Withers
(book 28 , p.549)
100 acres "excepting" 60 acres on northern boundary.

July 1,1913 — 30 acres from Aaron Smith to Merton L. Roger (book 26, p.199)

May 23,1913 — Elmer E. Robinson , Fred Allison, Earl Howe to Fred Fry -100 acres (book 26, p. 300)
(JM Cassidy - Neighbor to the North.

Jan. 17,1912 — Henry Willey to Merton Roger (book 26, p.105)

May 15,1908 Warner and Mabel Goodenough to Robinson, Allison and Howe– 100 acres (Book 25, p.219)

Aug.18,1859 Calvin Woodward – 23 acres to Warner Goodenough (book 14, p.23&24)

Daniel Batchelder (Widows Dower)
Batchelder's original Pitch (23 acres)
"the same as being set out to Lyman Watts and Steven Sargent (Christopher Sargents Estate)"

April 18,1854 John F. Sargent -125 acres to Warner Goodenough (book13 , p. 297&298) (except 6 acres - (book 21 , p. 541))