



quality of the wood in Area A is fair to good (the red oak is generally higher quality than the other species), in these white pine blocks quality is poor to fair, and the live crown ratio is poor. A-2 and A-4 have pockets of advanced white pine regeneration. The understory in the remainder of Area A is dominated by beech, hemlock, red maple, black birch and sugar maple. Regeneration tends to be patchy to sparse and dominated by beech, moose wood, sugar maple, red maple and white pine. Aspen was noted on 15% of the cruise points, and occurs in or near each of the white pine areas. A-3 is a 1.7 acre pocket of red oak and red maple pole-timber. The western half of A-3 is very rocky and marginally operable. The eastern portion is old field/orchard and includes some poor quality stems (specifically white pine), however, many of these low quality stems are not yet commercial, so it is likely all of A-3 will be left until the next entry into the stand in 15 to 20 years. Large cavity trees (18 inches or larger) were noted at 11% of the cruise points; large snags (18 inches or larger) were noted at 18% of the cruise points, and large dead and down woody material (18 inches or larger) was noted at 20 % of the cruise points.

**Area B** is dominated by red oak in combination with northern hardwoods, birch or red maple. Though much of the wood is small saw-timber, large red oak, white ash and sugar maple are scattered throughout the area – frequently occurring along stream channels or along stone walls and fence rows – and pole sized material and smaller occurs throughout the area. The understory is dominated by moderate to dense beech, sugar maple, black birch, red maple, hemlock and yellow birch. Regeneration is scattered to vacant dominated by beech, red maple, hemlock, white pine, moose wood, black birch, American chestnut and red oak. Large cavity trees (18 inches or larger) were noted at 11% of the cruise points; large snags (18 inches or larger) were noted at 6% of the cruise points, and large dead and down woody material (18 inches or larger) was noted at 15 % of the cruise points.

**Area C** is primarily fair to poor quality, uneven-aged mixed-wood at the southern end of the sale area. Aspen was noted at 10 % of the cruise points. The understory is dominated by moderate to dense beech, black birch, sugar maple, hemlock, moosewood and American chestnut. Regeneration is patchy to vacant dominated by beech, sugar maple, American chestnut and red oak. Large cavity trees (18 inches or larger) were noted at 11% of the cruise points; large snags (18 inches or larger) were noted at 30% of the cruise points, and large dead and down woody material (18 inches or larger) was noted at 29 % of the cruise points.

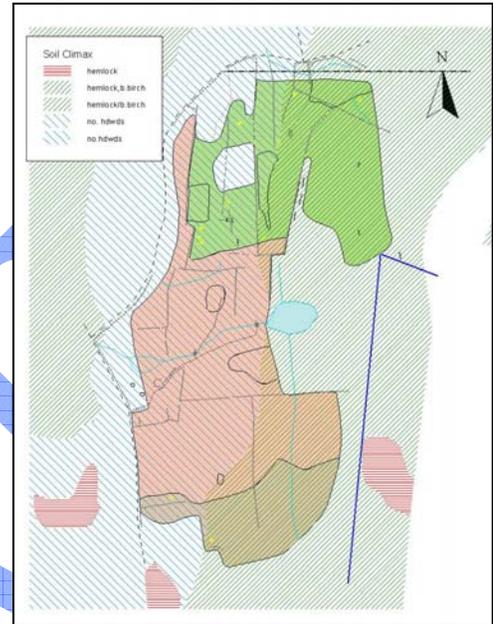
**HISTORY** The project area is somewhat unique in that it falls within one of the few portions of the Park with a strong agricultural history. The project area is old pasture, with an extensive network of stone walls. The area stretches from the Joshua Cook homestead (circa 1805)<sup>1</sup> off Old Chesterfield Road, north along John Hill Road ending south of the John Hill orchard and the early successional wildlife habitat project P1-394 initiated in 1998 to restore a small old field area. Much of this area regenerated to aspen and will be managed as such for its early successional habitat. Throughout the project area, and most specifically the northeastern corner, in Area A, there is evidence of blow down from the 1938 hurricane. The age of the white pine blocks in Area A would indicate that they established after the hurricane (though whether this was in the wake of blow down salvage or field abandonment is unclear). The project area will be east of the Cook homestead cellar hole and the Doolittle Sugar house footprint. A small area surrounded on three sides by stone walls, near the Cook cellar hole is a possible burial ground,

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<sup>1</sup> A guide for Historic Sites in Pisgah, pamphlet, rev. ed. July 20, 1991.

and will be buffered by a minimum of 25 feet in all directions. Skid trails will utilize existing breaks in the stone walls, however this will require widening most of these breaks to accommodate modern equipment. This will be done with care, and the breaks will be maintained to accommodate future management access without additional impacts to the wall fabric. Two functional old stone crossings east of the cellar hole will be protected and re-used. (See **WATER/SOIL CONTROLS** for details.)<sup>2</sup>

**SOIL/SITE** The eastern half of Area A falls into the Tunbridge – Berkshire (60D) soil series, a well drained loamy till, with a Pine-Oak-Maple successional tendency and a hemlock-black birch climax. The western half of Area A falls in the Marlow (77D) soil series, a well drained loamy/compact till with a northern hardwood successional tendency and a northern hardwood climax. Most of Area B also fall in the Marlow series, with a small portion of the northeastern part of the area and the southeastern third in the Tunbridge – Berkshire series. Most of Area C falls within the Tunbridge – Berkshire series, with a small portion of the northwestern finger in the Marlow series.



**ROADS/TRAILS** Access will be off Old Chesterfield Road and John Hill Road. The portion of Old Chesterfield within the Park boundaries, and all of the John Hill Road are winter snow machine trails. Several old farm/woods roads extend into the project area and will be utilized where possible. Because of terrain it is highly likely that two log yards will be needed, one at the entrance to the old field (P1-394) on John Hill Road, and a second off Old Chesterfield Road near the Joshua Cook homestead (see **RECREATIONAL/VISUAL IMPACT**).

**MANAGEMENT OBJECTIVE** Work toward proposed desired future condition goals in proposed HMU 2. Proposed HMU 2 is currently dominated (68% of the area) by sawtimber sized pine-oak-maple types. The HMU is lacking in aspen-birch cover types (in all age categories), as well as younger age classes (seedling-sapling, and poletimber) in pine-oak-maple and northern hardwood. Area A – Increase the amount of early successional habitat (both in terms of seedling-sapling size classes and aspen-birch stand types) in juxtaposition to the John Hill orchard and old field/aspen complex. Do intermediate work to ensure that the next entry for this purpose can be accomplished through a commercial timber sale. Area B – Begin movement toward pure northern hardwoods, while managing existing high quality stems, and diversifying structure. Area C – Diversify the structure of pine-oak-maple within the HMU by increasing the amount of seedling/sapling size class, and increase the potential for aspen-birch type expansion.

**MANAGEMENT PRESCRIPTION** Area A – Regenerate approximately 1/3 of the stand, by implementing three patch clearcuts, focused around white pine pockets and nearby aspen clones. These areas total 8.2 acres. Maintain 60% crown closure in an intermittent stream buffer (0.5

<sup>2</sup> Edna Feighner, Historian/Archaeologist, NH Dept. of Cultural Resources, Division of Historical Resources, Personal communication October 31, 2006.

acres) through one of the patch clear cuts (see **WATER/SOIL CONTROLS**). Leave Area A-3. In the remaining portions of Area A implement Crop Tree Release of 60-100 stems per acre. Area B – A 0.5 acre portion of the northeastern corner of the Area B will be included in one of the Area A patch clearcuts. Maintain 60% crown closure in the three stream buffers (5 acres). In the remainder of Area B (36 acres) implement a combination of crop tree release (60 stems per acre) and group selection (regenerating no more than 8 acres) in 1/4 - 1/2 acre groups. Area C - Maintain 60% crown closure in the stream buffer (1.2 acres). Regenerate the remaining portion (9.6 acres) of the area utilizing a deferment cut, leaving 10 stems per acre (see **WILDLIFE IMPACT** and **RECREATIONAL/VISUAL IMPACT**). Dormant season cutting is preferable in Area A & C to best promote aspen root suckering where possible.

**ALTERNATIVE PRESCRIPTIONS**

<b>Area &amp; Prescription</b>	<b>Alternative Prescriptions</b>	<b>Impact on Management Goals</b>
<b>A</b> Patch Clear Cuts and Crop Tree Release	No Action	No action in these areas would delay the goal of generating early successional and young forest habitats.
<b>A</b> Patch Clear Cuts and Crop Tree Release	Overstory Removal	Regenerating the entire area at this stage would preclude leaving blocks to regenerate in the future, thus making it more difficult to diversify the structure of early successional habitat.
<b>B</b> Group Selection & Crop Tree Release	No Action	Soils with the ability to support northern hardwoods are the exception at Pisgah. No action will push this already over-stocked area toward hemlock and beech, rather than working toward the goal of maintaining and expanding northern hardwoods where possible.
<b>B</b> Group Selection & Crop Tree Release	Overstory Removal	Overstory removal at this juncture would prematurely remove many high quality red oak and, because of the dominance of beech in the understory and regeneration, push the area toward beech dominance.
<b>C</b> Deferment Cut	No Action	No action in these areas would delay the goal of reducing the amount of pine-oak types in the proposed HMU and over time expanding northern hardwood types where soils allow.
<b>C</b> Deferment Cut	Thinning	Like no action, simply thinning in the area would delay the goal of reducing the amount of pine-oak types in the proposed HMU and over time expanding northern hardwood types where soils allow.

**WILDLIFE IMPACT** The project area is at the eastern margin of the Park within one of the few historically agricultural portions of the property. It also falls within relatively close proximity (1/2 to 3/4 mile) to sizable maintained fields, homes and a series of wetlands (including those along Broad Brook). The three patch clearcuts in Area A are in close

juxtaposition to the John Hill orchard (restoration of the old orchard by the Park staff and volunteers began in 1990) and a portion of old field reopened in 1998. The deferment cut in Area C lies in close proximity to several wetlands, additional old agricultural lands, and within a half mile of the Doolittle old field complex which was in active agriculture until acquisition by the state. The treatments in Area A and C will result in additional young forest and early successional components to compliment maintained upland openings, increasing the opportunity for species like chestnut sided warblers, blue-winged warbler, Nashville warbler, red fox and white tailed deer. NEWILD<sup>3</sup> identified the stand and size classes which will result from the work in Area A and C as preferred habitat for 26 species which could occur at Pisgah. This project will result in preferred habitat, immediately or in the near future for several of the species of greatest conservation concern in the New Hampshire Wildlife Action Plan (WAP) including black racer, rufous-sided towhee, and ruffed grouse. Further it will work towards WAP Habitat Management Strategy Objective 502, to “generate early successional and young forest habitats”. Ten of the bird species identified by NEWILD were present in the Eastern Block (roughly equivalent to proposed HMU 2) according to the Audubon Society of New Hampshire’s (ASNH) “Summary of 2004 Breeding Bird Atlas at Pisgah State Park”. Currently Area C does not have as many opportunities for aspen development as there are in Area A, however regenerating the area will increase the young forest component. Utilizing a deferment cut rather than a clear cut in Area C will result in “minimal overstory canopy conditions” which provide foraging and nesting opportunities for species including red-tailed hawks and American kestrels.<sup>4</sup> Forested habitat consistent with the work planned for Area B, provide preferred habitat for 48 species identified by NE Wild, including species such as black-billed cuckoo, black-throated blue warblers and pileated woodpeckers which were also noted in the ASNH survey. Large cavity trees, large snags, and large dead and down woody material were noted frequently across the project area (see **STAND/AREA DESCRIPTION**). This is significant since larger material is often in short supply in the region’s second growth forest. Cavity trees provide den sites (for e.g. flying squirrels), escape and roost sites (for e.g. pileated woodpeckers) and foraging sites (for e.g. woodpeckers). While many wildlife species can utilize smaller diameter cavities, snags and coarse woody debris, for others diameter is a limiting factor. This is true for large primary excavators like pileated wood peckers, and many secondary cavity users like fisher.<sup>5</sup> Large standing snags generally stand longer than smaller dead stems and so are available for wildlife use for a longer period of time. During this time they provide foraging sites for many of the woodpeckers, and the hollow at the top of large broken stubs provide nesting locations for species including barred owls and turkey vultures.<sup>6</sup> Once they fall, larger stems provide opportunities for more wildlife species, and remain useful longer than small dead and down material. Large dead and down woody material can be used for dens by mammals including black bear; it can provide drumming logs for male ruffed grouse during courtship; red efts may hibernate beneath them, and northern red back salamanders can inhabit the interior of decaying logs. Large down material will be left in place wherever possible, large snags will be retained where they pose no safety threat, and large cavity trees will be retained throughout the project

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<sup>3</sup> Thomasma, S.A., Thomasma, L.E., Twery, M.J., NEWILD Version 1.0.

<sup>4</sup> DeGraff, R.M., Yamasaki, M., Leak, W.B. and Lanier, J. W. 1992. “New England Wildlife: Management of Forested Habitats” Gen. Tech. Report NE-144. USDA Forest Service. P 46.

<sup>5</sup> Tubbs, C.H., DeGraff, R.M., Yamasaki, M., and Healy, W.M. 1987. “Guide to Wildlife Tree Management in New England Northern Hardwoods” Gen. Tech. Report NE-118. USDA Forest Service. P3.

<sup>6</sup> DeGraff, R.M. and Shigo, A.L. 1985. “Managing Cavity Trees for Wildlife in the Northeast” Gen. Tech. Report NE – 101. USDA Forest Service. P14.

area. During the prescription cruise the only deer activity was noted near P1-394, however browse in this area is rapidly growing out of reach. The project area, specifically the clearcuts and deferment cut will provide quality browse for several years.

**RECREATIONAL/VISUAL IMPACT** Because both the Old Chesterfield Road (within the Park's boundaries) and John Hill Road are snow machine trails, the dormant season cutting necessary to achieve the desired vegetative response will require coordination with the Trails Bureau. Since John Hill Road serves as a major feeder trail for snowmobiling at Pisgah, it is preferable that the portion of the sale which will utilize a log yard accessed by it, be cut as early in the dormant season as possible. This is also advisable to avoid a portion of relatively steep grade during icy road conditions. Should the portion of the project landed off Old Chesterfield Road coincide with snow mobile season, it would be possible to share the section of road from the Park headquarters to the landing. However the Trails Bureau Area Supervisor has indicated that temporarily closing the trail from the junction of the Doolittle Trail north to the junction of John Hill Road may be preferable. Cutting within the project area will be visible from both the Old Chesterfield Road and John Hill Road, no other maintained trails enter the project area. The patch clearcuts in Area A, because of the current location of early successional opportunities, will all be visually buffered from the roadways. However, both thinning within Area B and a portion of the work Area C will be visible. Deferment cutting was chosen over clear cutting in Area C, in part to soften the visual impact of this heavy cut. Given that this will be the first commercial timber sale at Pisgah since acquisition by the state it affords an interpretive opportunity which meets mission goals of both the Division of Forests and Lands and the Division of Parks and Recreation.

**WATER/SOIL CONTROLS** Several stream crossings will be necessary. In Area B at least two historic crossing sites will be protected and used. The first crossing site is a functional curtain drain. Use of such a crossing for skidding is prohibited, however, even with the use of a forwarder there is a concern by the Division of Historical Resources that repeated crossing, may compact the stones making up the crossing. Here a skidder bridge will span the historic structure. The second crossing is a simple stone ford, and while water is still passing through the stones there is evidence that it is overtopped at high water. Here too the historic structure will be protected, however, a poled ford laid over the stone crossing should serve to prevent further degradation. The location and type of additional crossings will be determined during the layout process. Of the four streams in the project area three are intermittent, and the one with the historic structures in Area B is perennial (though in summer most of its flow appears to be below ground). Those in areas B and C will have a 50 foot buffer (per Good Forestry in the Granite State) with retention of 60% crown closure in the buffer. In Area A the small intermittent flow that crosses one of the patch clear cuts will receive a 33 foot buffer, retaining 60% canopy closure<sup>7</sup> as suggested in a recent study of clear cuts in Maine. Narrowing the buffer at this location will allow for more vigorous aspen cloning and thus result in more rapid shade replacement along the intermittent flow.

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<sup>7</sup> Wilkerson, Hagan, Seigal and Whitman, "The effectiveness of Different Buffer Widths for Protecting Headwater Stream Temperature in Maine", *Forest Science* 52(3) 2006, pg. 229.

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Date

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Forester

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Date

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Approved, Regional Forester

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Date

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Approved, Administrator Forest Management

DRAFT

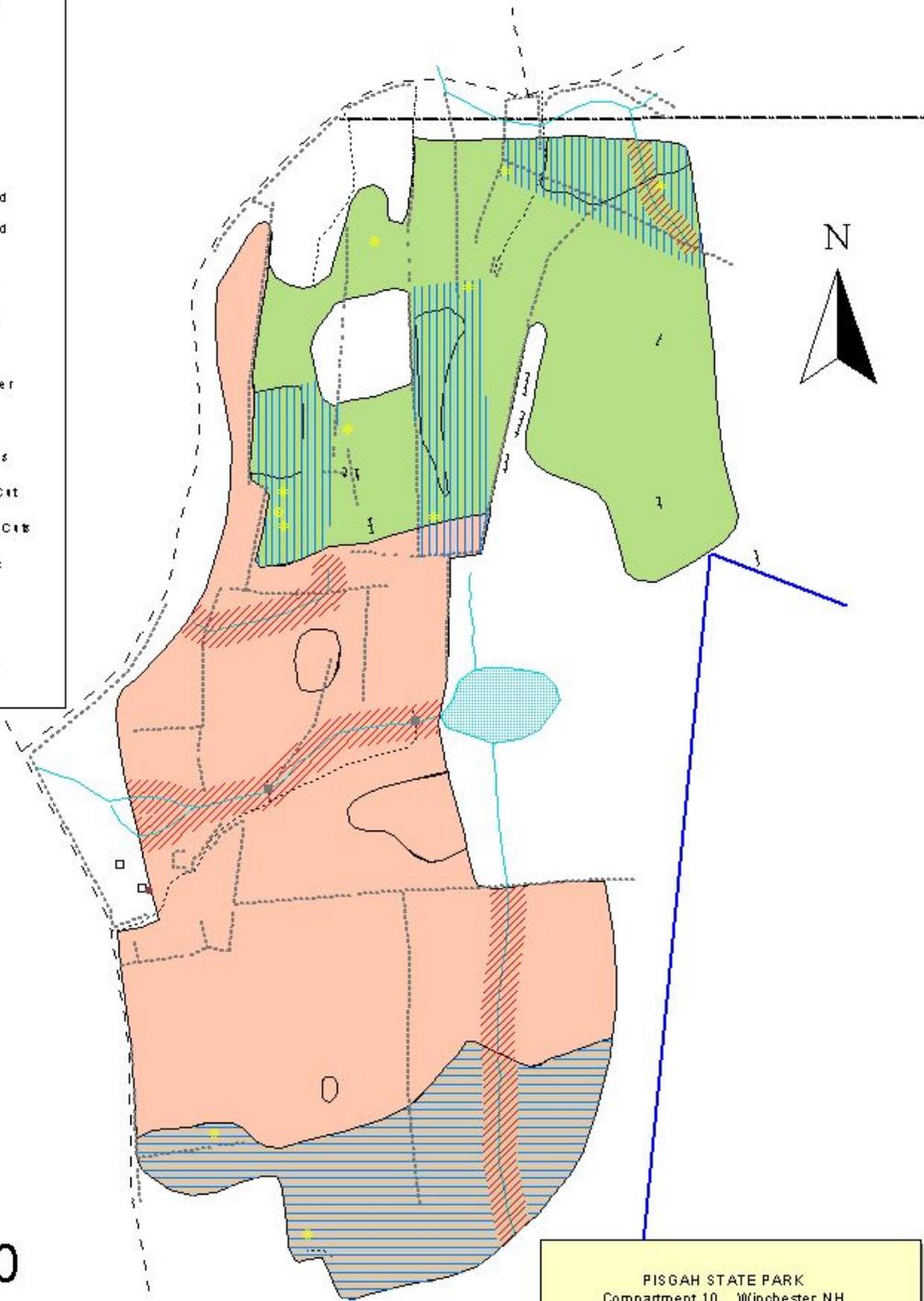
### LEGEND

**Timber Sale Areas**

- A
- B
- C

**Line Legend**

- Road
- Woods Road
- Woods Road
- Stream
- Stone Wall
- Power Line
- Ledge
- Stream Buffer
- Well
- Aspects
- Defoliation Cut
- Patch Clear Cut
- Stone X-lags
- Wetland
- Powerline
- Cellular Holes



1:5000

**PISGAH STATE PARK**  
 Compartment 10 Winchester NH  
 Prepared By I.V. Seaboyer NHDFL 11/07/06