

**Massachusetts Department of Conservation and Recreation  
Bureau of Forest Fire Control and Forestry  
Forest Management Proposal  
Name: Ole Shaker Sale**

<b>Date Posted:</b>	<b>February 9, 2018</b>
<b>End of Comment Period:</b>	<b>March 26, 2018</b>
<b>Region:</b>	West
<b>Recreation District:</b>	Lakes
<b>Forest Management District:</b>	Northern Berkshires
<b>State Forest:</b>	Lindon W. Bates Memorial State Park
<b>Closest Road:</b>	Route 20
<b>Town</b>	Hancock
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**Overview:**

The proposed project area is located within the Lindon W. Bates Memorial State Park, adjacent to Massachusetts State Route 20, and directly south of the boundary of Pittsfield State Forest. The project contains 130 acres of mixed northern hardwoods, 29 acres of eastern white pine-hardwoods, 14 acres of oak-hardwoods, and a 24 acre beech treatment area.

*Conditions that led to selecting the area for active management*

- Significant tree and forest health issues
  - High densities of white ash (*Fraxinus americana*) within the sale area, and emerald ash borer (EAB) confirmed in the Town of Hancock. The white ash appears to be declining with smaller crowns, and a loss of fine twigs, potentially from “ash yellow disease”.
  - The white pine is heavily damaged by white pine weevil, as well as Caliciopsis canker and/or needle cast disease.
  - Sugar maple borer and black knot of cherry are affecting portions of the stand.
  - Rampant beech bark disease (BBD)
- Previous history of forest management activity
- Opportunities to provide ecosystem services from Woodland Zones (see goals below).

## *Goals of the Ole Shaker Sale*

- Increase forest resilience by removing declining ash trees and ash trees at high risk for mortality due to EAB and ash yellows disease.
- Increase the health and vigor of remaining white pine (*Pinus strobus*) by removing pine affected by white pine weevil, Caliciopsis canker and/or needle cast disease.
- Increase forest resilience by removing beech infected with BBD and manage the beech understory to favor more mixed species.
- Increase biological and structural diversity through a combination of an even and uneven-aged management system.
- Demonstrate harvesting techniques and best management practices that protect forest resources through compliance with all Best Management Practices (BMPs), and frequent monitoring of operations to minimize site damage.
- Follow the general guidelines of the Northern Berkshire Forest Management Plan.
- Create and provide ecosystem services from this Woodland as directed by the Landscape Designations for DCR Parks & Forests: Selection Criteria and Management Guidelines (2012).
  - o Provide locally grown forest products to the local economy
  - o Create a more diverse forest structure that is resilient to disturbance
  - o Sequester carbon in retained overstory trees, permanent forest products produced from the harvest, and in the vigorous regenerating forest.
  - o Provide the conditions for early seral or regenerating forest that will support diverse species.

## **Stand Description:**

### *Species Composition*

#### Mixed Northern Hardwoods:

Generally these are two-aged stands, with densities ranging anywhere from 70 ft<sup>2</sup>/acre upwards of 140 ft<sup>2</sup>/acre of basal area (basal area is a measure of stocking or tree density). They are primarily composed of American beech (*Fagus grandifolia*), red maple (*Acer rubrum*), sugar maple (*Acer saccharum*), yellow birch (*Betula alleghaniensis*), white ash (*Fraxinus americana*), and white birch (*Betula papyrifera*). Other species observed include: hophornbeam (*Ostrya virginiana*), American elm (*Ulmus americana*), black cherry (*Prunus serotina*), butternut (*Juglans cinerea*), black birch (*Betula lenta*), and quaking aspen (*Populus tremuloides*). The stand tends to be more even-aged toward the bench and lower slope on the northeast edge of the sale, whereas the hillside appears to be more uneven-aged, with more evenly distributed small and large diameter trees.

#### Eastern White Pine – Hardwoods

The Eastern White Pine-Hardwoods consist of 29 +/- acres of mostly two aged forest, located on the western portion of the project area. These stands are composed mainly of an overstory of planted eastern white pine (*Pinus strobus*), with a

significant component of mixed northern hardwoods; basal areas are typically in excess of 120 ft<sup>2</sup> per acre. The white pine has weevil damage, is approximately 95 years old, and is also showing signs of Caliciopsis and/or needle cast disease through heavy sapping. The understory consists of a mix of hardwoods, with pole size red oak and red maple.

### Oak - Hardwoods

The Oak-Hardwood stands within the project area have a composition similar to that of Mixed Northern Hardwoods, with the exception of a significant red oak (*Quercus rubra*) component. These stands are typically even aged and have densities between 80 ft<sup>2</sup> of basal area per ac and 120 ft<sup>2</sup> basal area per acre. This area is on the lower slope of the project area and is mainly two storied.

### Beech Treatment Area

The overstory in this area consists mainly of mixed northern hardwoods; i.e.: white ash, yellow birch, black cherry, red maple, American beech, etc. Basal areas of trees over 6" in diameter at breast height (dbh) are also similar. The condition that makes this area dissimilar from the previously described mixed northern hardwoods is the amount of beech regeneration present. The profuse beech regeneration is in response to BBD, and becoming so dense that other species of trees are not able to establish themselves. In turn, this is reducing the diversity of tree species within the forest canopy. Additionally the diversity and occurrence of ground cover is also decreasing because of extreme shading. This beech regeneration is clonal, and will have the same susceptibility to BBD, so none of it will mature into healthy trees.

### Groundcover

Groundcover in all of the stands, including the beech treatment area, is fairly similar consisting mainly of *Lycopodium spp.*, Indian cucumber (*Medeola virginiana*), Canada mayflower (*Maianthemum canadense*), stinging nettle (*Urtica dioica*), hay-scented fern (*Dennstaedtia punctilobula*), and evergreen wood fern (*Dryopteris intermedia*). Invasive exotic species have also been identified within the project area to include Japanese barberry (*Berberis thunbergii*) and glossy buckthorn (*Frangula alnus*).

### *Previous Silviculture Activity*

This parcel was owned from the settlement period until 1825 by William Berry, and then acquired by the Mount Lebanon Shaker Community in the 1830's. In 1911 – 1912 it was purchased by the Bates family, the namesake of the Park. The land was willed to the City of Pittsfield following the death of Lindell T. Bates, brother of Lindon W. Bates, Jr. in 1937, and then turned over to the Commonwealth's state forest and parks system in 1939.

Prior to state acquisition the area appears to have been a source of building materials and firewood for both the Shaker community and potentially the Bates'. There are no extensive areas of very large or exceptionally old trees. Also judging by the size and distribution of the remnant stands, some of the peaks appear to have been cleared at some point in the past

60 or 70 years. No records were located that would indicate the eastern white pine or Norway spruce were planted as part of the Massachusetts Reforestation Lot program or Civilian Conservation Corps project, it is therefore inferred that the plantations were installed as private improvements pursued by one of the previous landowners.

Since state acquisition there have been 4 sales recorded on this site, focused mainly in the northwest corner of the property, and totaling 81 acres. The most recent operation identified was a thinning in 1989 on 18 acres.

### *Topography and Soils*

The project area is primarily located on the north slope of larger hills south of State Route 20. Perry Peak is south of the project area with most of the project occurring between 1500' and 1800'. A majority of the project area consists of gentle 10-20% slopes which allow for excellent drainage. The hills in the project area have slopes that can approach 50%. The New York State – Commonwealth of Massachusetts border defines the westernmost area of the sale.

The primary soil associations included within the project area are Taconic-Macomber and Fullam-Lanesborough. These soils are characterized as a gravelly loam formed from basal till over metamorphic rock. Both the Taconic-Macomber and Fullam-Lanesborough soil series are typically rich and moderately to well drained. Site indices range from 50 – 70 depending on species and microsite, and are considered productive. Even-aged and uneven aged silviculture techniques can be effectively applied to these types of soils.

## **Aesthetic, Recreation, Wetlands, Cultural, Rare Species and Wildlife Considerations:**

### *Aesthetics*

Roads and trails that will be impacted by the harvest are State Route 20 and the Beacon Trail. Though none of these are designated scenic byways, maintaining the visual experience for the users of these roads and trails is a high priority. In order to ensure that this occurs, slash management and harvest guidelines outlined in the 2013 2<sup>nd</sup> Edition of the Massachusetts Forestry Best Management Practices Manual will be followed. Additionally, marking techniques designed to limit visual impacts will be employed.

There has also been a request from members of the community to retain a portion of the planted eastern white pine. In order to facilitate this request eastern white pines that have a very low commercial value, and are not negatively impacting larger (10"+ dbh) healthy and vigorously growing hardwoods or softwoods of the following species: red oak, sugar maple, red spruce (*Picea rubens*), butternut, or hickory; will be retained at minimum rate of 3 stems per acre.

### *Recreation*

The resource based recreational activities that most forest users participate in throughout the sale area, are: hiking, hunting, and wildlife viewing. There is an existing trail system within the western portion of the project area (Beacon Trail). The purpose of this project is to have

either no impact or improve the experiences of users and visitors to the state park. None of the activities associated with harvesting are anticipated to restrict known, legal, recreation.

### *Wetlands*

Wetlands within the project will be thoroughly identified during the stand exam process and when the timber marking has concluded. A review of the DEP wetlands map (MAP 1) does not indicate the presence of any certified or potential vernal pools; or major streams, rivers, or lakes. The streams that are currently shown on the map have been located, and filter strips will be installed during the marking process. Currently, two stream crossings are anticipated, however this may change over the course of project development. If additional wetlands such as non-certified vernal pools, additional intermittent streams, upland wetlands, etc. are encountered; standards outlined in the most recent edition (currently 2013 2<sup>nd</sup> edition) Massachusetts Forestry Best Practices Manual will be followed as they relate to harvesting requirements, crossings, filter strips, water bars, slash management, etc.

### **Cultural Resources**

The Bates' Cemetery and a large cut stone block have been identified within the project area, and it is anticipated that other cultural resources will be located. The cemetery will have a 75' buffer strip installed, and the cut stone block will have a buffer to prevent damage by equipment or falling trees. All cultural resources including stone walls and cellar holes are to be protected from damage due to harvesting. If a stone wall does need to be crossed, it will be done at a designated crossing, and rehabilitated to the condition it was in prior to harvesting. Additional cultural resource protection measures may be necessary once the area is cross referenced with the master site file for the Commonwealth of Massachusetts.

### **Listed Species**

The Massachusetts Natural Heritage Atlas, 13<sup>th</sup> Edition, was referenced for this project. There are no known or identified priority habitats of rare species or estimated habitats of rare species occurring within the project area. Additionally, no listed plants are known to occur within the project area.

### **Wildlife**

#### *Species*

The wildlife occurring in this area is typical of western Massachusetts. Observed species include white-tail deer, ruffed grouse, grey squirrels and chipmunks. Other species expected to occur are black bear, various songbirds, raccoon, various fur bearers, various raptors, and other small mammals such as bats and rodents. Additionally various reptiles and amphibians are expected to occur in the area since there is a known streams and wetlands within the sale area.

### *Snags and Retained Live Trees*

All snags will be retained on-site provided that they do not pose a hazard to humans during or after operations, and a minimum of 5 snags greater than 10" dbh where they exist. Live trees that appear to be a den or nest site either currently or in the recent past will also be retained. Beech that have evidence of bear foraging, or are in excess of 14" in diameter and showing no signs of beech bark disease complex and in good health, will not be designated for removal.

## **Sale Layout and Harvesting Limitations:**

### *Infrastructure*

Landings will be selected based on a number of factors to include existing vegetation, slope, and access by haul vehicles, wetland proximity, etc. During harvesting operations excess slash building up at the landing will be evenly distributed back through the sale area within the skid trails. Prior to the conclusion of the sale, all landings will be cleared of any debris that will inhibit seeding to grasses and forbs. MAP 1 shows the tentative locations of the landings.

Primary skid roads will be identified following the stand exam, and confirmed upon the completion of timber marking. Existing skid trails or agricultural trails will be utilized when possible. Skidding will occur along contours, and sharp pitch or grade changes by skidding equipment will be avoided. Skid trails that experience excessive disturbance will be rehabilitated prior to the conclusion of the sale. MAP 1 shows the tentative locations of skid trails.

### *Harvesting Equipment*

This operation is anticipated to be hand felling with mechanical skidding and forwarding. All equipment and activities will comply with the most recent version of the Massachusetts Forestry Best Management Practices manual, currently the 2013 2<sup>nd</sup> Edition.

### *Areas Excluded From Harvesting*

Any areas that are identified as having cultural significance will be excluded from the sale area, as well as areas that are considered sensitive and will be negatively impacted for a prolonged period post-harvest. Filter strips and wetlands are also excluded from harvesting.

### *Erosion and Sediment Control*

The unwanted movement of soil and sediment across the landscape will be minimized by following and exceeding the requirements and guidelines of the most recent edition of the Massachusetts Forestry Best practice Manual, currently the 2013 2<sup>nd</sup> Edition.

### *In-Kind Services*

An herbicide treatment on 24 acres of American beech, immediately adjacent to the sale area has been identified. Included with this treatment will be any Japanese barberry, glossy buckthorn, and dense occurrences of hay-scented fern encountered. The treatment is designed to reduce the density of American beech infected with BBD, promote higher diversity in both tree and ground cover species, reduce the density and distribution of exotics, and encourage tree regeneration. Specific instructions on delineation, application, and timing within the beech treatment area will be determined following the stand exam and marking period. Treatment of various invasive species including barberry, glossy buckthorn, etc. outside of the treatment area will also be determined throughout the stand exam and marking period. Other items may be identified as the project progresses, and will be evaluated on a case-by-case basis.

### *Proximity to Forest Reserves*

There are no forest reserves within close proximity to the sale area.

## **Silviculture:**

### *All Stands*

Beech over 14" in diameter with no indication of BBD, sugar maple, red spruce, eastern hemlock (*Tsuga canadensis*), and large legacy trees will be biased for leaving within the stand. White ash in excess of 10" will be targeted for removal due to the presence of EAB within the Town of Hancock. Target basal areas within hardwoods will be between 60 and 80 ft<sup>2</sup> per acre, while target basal areas within softwoods will be between 90 and 110 ft<sup>2</sup> per acre. Herbicide applications may be required to control invasive exotic vegetation.

### *Mixed Northern Hardwood*

Stand complexity is moderate to high so a combination of even and uneven-aged silvicultural techniques will be utilized. Variable density thinning with group selection will be used to thin mature overstory trees and create gaps for species of varying shade-tolerance. The focus of the harvest in this stand will be to remove declining or at risk trees such as white ash, trees affected by sugar maple borer, and/or trees infected with black knot of cherry. Beech infected with BBD may be treated in designated areas to promote species diversity. Decreased stocking due to thinning will improve the health and quality of the remaining trees. Intermittent gaps created by group selections will allow more light to reach the forest floor, discourage ferns and regenerate more tree species.

- Methods: 1/3 acre openings will be centered on dominant and/or codominant trees. In between gaps the area will be thinned to a range of densities to include no thinning at all in spots.
- Future Silvicultural Treatments: Future treatment will include expanding on installed gaps, and thinning for continued improvement in quality and quantity of desirable tree species. Herbicide application to control beech regeneration may also

be required in order to ensure a diversity of desirable growing stock in the gaps and/or expanding gaps.

#### *Eastern White Pine/Hardwoods*

Even-aged silvicultural techniques will be used to remove a majority of the planted eastern white pine. This will allow the hardwoods in the understory, and healthy naturally regenerating eastern white pine to move up into the canopy. As mentioned earlier, at least three of the planted eastern white pine will remain per acre, provided there is no interference to healthy neighboring trees of the aforementioned species. The hardwoods in the understory that have poor form, low vigor, or poor health will also be removed. The desired crown closure following harvest will be 40-50% to discourage white pine weevil and ensure enough light for adequate growth

- Methods: The two-storied portion on the hill will be treated as an irregular shelterwood focusing on removing weevil/Caliciopsis/needle cast disease affected trees. One third acre or smaller openings will be created where damage is heavy, keeping in mind wind patterns to prevent wind damage to the residual stand. An improvement thinning will be conducted within the hardwood understory.
- Future Silvicultural Treatments: The installation of group selection openings and further movement towards an uneven-aged condition will be appropriate. Also monitoring and treatment of invasive exotic vegetation may be required because of the substantial increase in the amount of light being introduced into the stand.

#### *Oak/Hardwoods*

- Methods: This stand will be treated using variable density thinning in between 1/3 acre gaps. Gaps will be anchored by healthy co-dominant or dominant oak trees. Thinning will occur between gaps at a range of densities. The focus will be on removing diseased, damaged, and high risk or unacceptable growing stock trees.
- Future Silviculture Treatments: Expanding established gaps, improvement thinning within the group selection areas, establish new gaps.

#### *American beech*

In order to increase the opportunities for other tree species to establish, and increase the diversity and occurrence of groundcover, approximately 70% - 90% of the current regeneration will need to be eliminated. Currently, beech regeneration estimates are at approximately 4,000+ stems per acre. Successful regeneration rates are typically between 500 – 1,000 stems per acre for all species combined. Final kill rates will be established in the prescription following a stand examination.

- Methods: This area will most likely be treated with either glyphosate (Round-Up, Rodeo,) or triclopyr (Garlon) to reduce the beech density and site dominance and subsequently provide growing space for additional species regeneration. Imazapyr (Arsenal) will be discouraged due to the high probability of incidental damage to oak. All chemicals are applied by Massachusetts licensed pesticide applicators.



Non-target damage will be kept to a minimum, by using low volume direct application.

*Desired Future Conditions*

The desired future condition for the entire project area is stands that are healthy, vigorous, fully stocked stand relatively free of insect and disease issues. Plentiful regeneration of diverse species will also be present. Noxious weed issues will be minimal, and over the course of time all the stands will be well diversified in ages so as to include early successional stages in certain areas and old growth characteristics in others.

**District Forester:** \_\_\_\_\_

**Date:** \_\_\_\_\_

**Field Operations Team Leader  
Or Park Supervisor:** \_\_\_\_\_

**Date:** \_\_\_\_\_

**Regional Director:** \_\_\_\_\_

**Date:** \_\_\_\_\_

**Management Forestry  
Program Supervisor:** \_\_\_\_\_

**Date:** \_\_\_\_\_

Attached: Topographic map showing project details. Locus map showing project location within regional context.

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# LINDON W. BATES MEMORIAL STATE PARK Ole Shaker Forest Management Proposal 2018

