Protecting regeneration from herbivory practice manual

Draft 4/26/2020

I. ELIGIBILITY CONDITIONS

a. The property is within the eligible geography (see map below)
b. Eligible land tenure and ownership type: Forest stands on private ownerships of greater than or equal to 30 acres and less than or equal to 2,400 acres
c. Forests originating from natural regeneration (e.g. plantations are ineligible).
d. Eligible condition status at the time of contract signing:
    i. Land not subject to any existing legal encumbrance (e.g. conservation easement or state/local restrictions) that excludes forest harvest activity (e.g. riparian buffers, designated reserves or no harvest areas) or the actions described in this practice
    ii. The project area shall score 5, 6, or 7 indicating significant damage from deer or moose browse, as measured using Massachusetts Deer Browse Impact survey (attached, and damage attributable to moose should also be included).
    iii. Landowner must allow hunting on the project area (following all local requirements for written landowner permission, posting/signage, hunter licensing, and safe exclusions around homes and buildings).
    iv. If project area has greater than 30% cover of competing vegetation, this practice must be combined with pre-treatment to remove competing vegetation.

II. PRACTICE DESCRIPTION AND SPECIFICATIONS

a. General Description – This practice produces carbon benefits through improved forest productivity from enhanced regeneration in stands impacted by herbivory from deer and/or moose. Actions under this practice aim to reduce over-browsing and protect regeneration from herbivore damage. Future-adapted tree species should be targeted for protection.

b. Specifications
    i. Landowners, with their forester/harvester teams, may choose whether to apply fencing or tree shelters, with several successful projects listed as references below to help make this decision. Fences or shelters must be maintained for at least ten years, with payments for this practice based on successful performance.

        1. For fencing, either perimeter fencing or small-scale (<50m^2) exclusions[1] that protect a minimum of 100 trees per acre are recommended. Fencing is also recommended when high canopy cover produces low-light condition, since shelters will not provide adequate sunlight for seedling growth.

2. Tree shelters are recommended for areas of more than 5 acres and less than 400 trees per acre[2]. Barriers must be maintained, including sealing removable shelters and tree tubes to the ground, for a minimum of five growing seasons.

ii. Payments are based on a performance standard of 350 stems per acre, well-distributed across the stand (taken from VT Use Value Appraisal Program), after 5 years.

iii. A final payment will be paid in year 10 if the site has at least 350 stems per acre of native tree species greater than 6 feet in height. This performance standard may not be met in all cases, and landowners should consider this final payment as a possibility, not as a given.

III. CONTRACT PERIOD AND PAYMENT SCHEDULE

a. Timeline to implement practice and commitment period to maintain practice: 1-2 years to apply treatment, 10-year contract term.

Payment Schedule – Removing Competing Vegetation	
Time	Amount
No more than 60 days after contract signing	15%
Following application of fencing/shelters	35%
Year 5, upon verification of conformance with contract terms.	15%
Year 10, upon verification of conformance with contract terms and verification of maintenance of target post-treatment conditions	35%

IV. MONITORING AND VERIFICATION

a. Landowner will ensure specific monitoring actions:

i. Initial (prior to contract signing) attestation that all eligibility criteria are met, including field assessment browse severity (submitted as part of Project Planning by FFCP-Approved Natural Resources Professional)

ii. Receipts for any fencing and tree shelter materials purchased.

iii. Year-5 submission of attestation that all practice requirements were met, including intact fencing or shelters and at least 350 living stems of appropriate species (native, commercially viable tree species found in the surrounding forest type) per acre.

iv. Year-10 submission of attestation that all practice requirements were met, including presence of 350 stems per acre of appropriate species at least 6-8 feet in height.

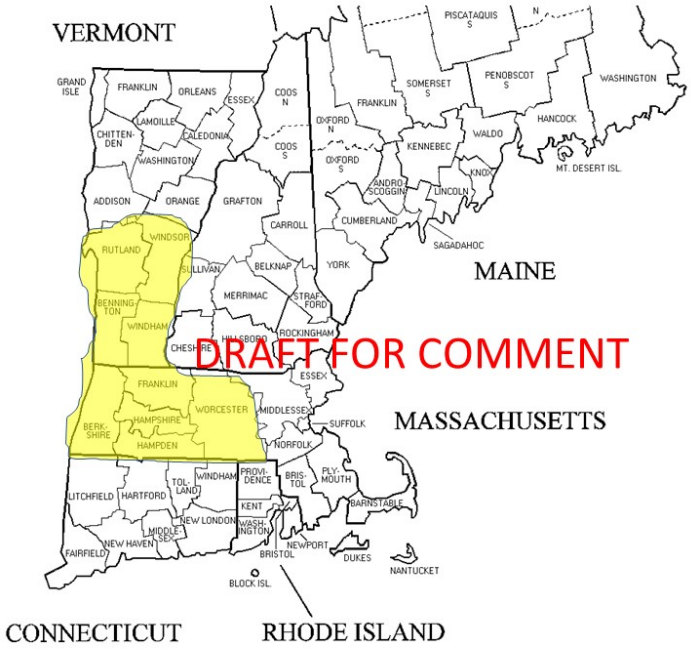
v. Potential site-level verification by FFCP representatives (at any time during the contract period)

b. Commitment to ongoing program level validation: The landowner will reserve to FFCP staff and representatives the right to access the property to carry out the site level monitoring actions specified above, and to establish long-term monitoring plots on enrolled stands to directly measure and monitor the impacts of the practice to improve FFCP program-level reporting.

References:
[1]Martin, K. 2006. Can small deer exclosures work? Woodland Management [http://www.deerandforests.org/ resources/Can%20small%20deer%20enclosures%20work.pdf]

[2]Jacobson, M. 2006. Fencing for Forest Regeneration: Does it Pay? Penn State Extension [https://extension. psu.edu/forest-finance-2-fencing-for-forest-regeneration-does-it-pay]

V. Eligible Project Areas



VI. Deer/moose browse impact survey

Massachusetts Deer Browse Impact Survey

Property Name: _____ Town(s): _____

Ownership: _____

General Surroundings: Rural/Forest/Ag Low-residential Med-residential High-residential

General level of use by public: Low Moderate Heavy Unknown

Is this property open to hunting? Yes No Unknown Special Hunting Restrictions:

General level of nearby hunting? None Limited Moderate Heavy Unknown

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Date of site visit: _____ Name(s) conducting survey: _____

Description of the forest on the property: **(e.g., conifer, mixed conifer/ hardwood, hardwood dominated; what are the dominant trees in the forest canopy; is it closed or open, is the forest older- or younger-aged, is there active logging, etc):**

_____

_____

Survey Instructions: Using the worksheet on the back, walk through a representative area (10-50%) of the forest to come up with an average level of impact on a property. Avoid areas near trails and roads as these are not representative. Pay special attention to what is able to grow and which tree species are being browsed, especially in canopy gaps (e.g., areas where the sun is able to reach the forest floor from fallen trees, recent cuts, etc.). Take a few pictures showing overall forest floor as well as specific cases of browsing, if present. Please also record a GPS track or attach a map of the property with areas surveyed marked. After filling out the survey on the back, check the box below that best describes the general level of forest impacts from deer browsing. Please email a copy of the survey, GPS track/map, and pictures to david.stainbrook@state.ma.us.

General level of forest impacts from deer browsing on the property *(check one)*:

☐ 1: Little to No Impact

Preferred hardwood tree seedlings and saplings such as maple, oak, ash, and hickory are growing up to and above 6 feet tall, with little to no sign of browsing. The shrub and herbaceous layers are well developed and show little to no impact (e.g., Pink Lady's Slipper, Trilliums, and Wild Sarsaparilla are present)

☐ 2: Between Little to No Impact and Moderately Impacted

☐ 3: Moderately Impacted

Preferred hardwood tree seedlings and saplings such as maple, oak, ash, and hickory are growing up to and above 6 feet tall, but most do show some signs of browsing. Some moderately preferred trees (e.g., cherry) may show slight browsing, but no sign of browsing on low-preference tree species such as American beech and white pine. Some preferred to moderately preferred shrubs show evidence of browsing (e.g., viburnums) and preferred herbaceous plants (e.g., Trilliums, Pink Lady's Slipper, Canada Mayflower, and Wild Sarsaparilla) are present, but show some signs of flowering parts removed.

☐ 4: Between Moderately Impacted and Impacted

☐ 5: Impacted

Preferred hardwood tree seedlings and saplings such as maple, oak, and ash are not common, and when present, show signs of moderate to heavy browsing. In their place are other tree species such as American beech, white pine, cherry, birch, etc., which may show evidence of browsing. Some low-preference shrubs show evidence of browsing (e.g., blueberry, Glossy Buckthorn). Few preferred shrubs may be found scattered in the understory and Hay-scented Fern, low-bush blueberry, huckleberry, grasses/sedges, and barberry may dominate large sections of the forest floor.

☐ 6: Between Impacted and Heavily Impacted

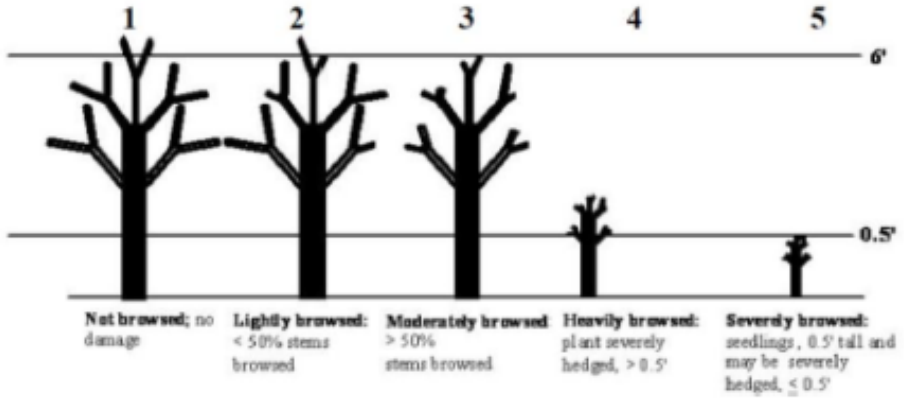
☐ 7: Heavily Impacted

Tree seedlings and saplings preferred by deer are almost non-existent, and when present show signs of heavy browsing. Less preferred shrubs and trees show signs of browsing and/or most saplings are unable to grow above 6ft. Low preference trees, such as white pine may show evidence of browsing. A browse line is often visible below 6ft. Foliage of native shrubs and wildflowers are very limited. Ferns, grasses/sedges, and non-preferred invasive plants such as barberry may dominate the forest floor.

Classify average level of browsing on seedlings/saplings for the following species *(minimum 20 stems)*:

Preferred Species:							
Oak	1	2	3	4	5	Present in canopy, few in understory	Not Present/Seen
Red/Sugar Maple	1	2	3	4	5	Present in canopy, few in understory	Not Present/Seen
Less Preferred Species:							
Eastern Hemlock	1	2	3	4	5	Present in canopy, few in understory	Not Present/Seen
Birch	1	2	3	4	5	Present in canopy, few in understory	Not Present/Seen
American Beech	1	2	3	4	5	Present in canopy, few in understory	Not Present/Seen
Black Cherry	1	2	3	4	5	Present in canopy, few in understory	Not Present/Seen
White Pine	1	2	3	4	5	Present in canopy, few in understory	Not Present/Seen
Other:_____	1	2	3	4	5	Present in canopy, few in understory	Not Present/Seen

Browsing Score



General level of deer sign on the property (e.g., scat, tracks, etc.): Low Medium High Unknown

Is there any evidence of deer impacts in surrounding areas (e.g., homes with landscaping damage)?
None Very Limited Moderate Heavy Unknown

Additional Notes (e.g., describe herbaceous layer):