United States Department of Agriculture

NRCS

Black-throated Blue Warbler

Integrating Timber/ Songbird Habitat Mgt.

Vermont Forest Stand Improvement Practice Jobsheet VT-666

Purpose

This series of component practices to the NRCS Conservation Practice Standard **Forest Stand Improvement – 666** is intended to implement management recommendations to improve forest health and productivity while also improving habitat for priority forest birds and other wildlife by enhancing both vertical and horizontal diversity.

Vertical diversity or structure, which is the extent of layering of plants within a stand, is critical for many mature forest songbirds in the northeast. Many of these birds are habitat specialists and will only use certain vegetation layers (e.g. ground, understory, midstory or canopy layers) in the stands for nesting and/or feeding. For instance, the black-throated blue warbler (male pictured above) only nests in thick understory cover within 5 feet of the ground. By enhancing structure in forest stands through wise management, a variety of priority, mature forest songbirds will benefit.

Horizontal diversity (also known as patchiness) refers to the complexity of the arrangements of plant communities or forest types, forest stand age classes and other habitats across a forest or landscape. As horizontal diversity increases, with more forest types and range of age classes, the greater the potential that more wildlife species will be present. Through silviculture, by removing patches of trees for regeneration or retaining or regenerating softwood (as in hardwood stands), there can be an enhancement in horizontal diversity. Depending upon the scale and extent of the patches, this can benefit a diverse array of forest songbirds and other wildlife.

Even aged forests across Vermont are common. Where they are also overstocked (see picture at left below) they typically have limited vertical and horizontal diversity. This generally equates to low quality habitat for a variety of forest songbirds. Another common stand condition across Vermont is from past "high-grading" where the highest quality and largest trees were harvested leaving landowners with limited future options for management and perhaps poor wildlife habitat as well. Through the series of treatments below such as thinning, releasing crop trees, creating canopy gaps, removing unacceptable growing stock (UGS), etc. there will be an improvement in timber quality while also improving vertical and horizontal diversity for priority forest songbirds and other wildlife. Please see Audubon documents below for more detailed information about target species and habitat requirements.

Poor vertical structure/habitat – pre-management

Good vertical structure/habitat – after management

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Background

These offered practices through NRCS are the result of a joint effort among Audubon Vermont, Vermont Department of Forests, Parks and Recreation (FPR), and NRCS to assist with the implementation of the recommendations from the *Foresters for the Birds* project. This project stemmed from Audubon Vermont's Forest Bird Initiative (FBI) and was aimed at working with foresters to integrate songbird habitat management into their management plans and silvicultural prescriptions. See Audubon Vermont website for more information about the FBI, Foresters for the Birds, and for the Foresters for the Birds Toolkit. The full Toolkit includes *Silviculture with Birds in Mind - Options for Integrating Timber and Songbird Habitat Management in Northern Hardwood Stands in Vermont*, *Birds with Silviculture in Mind - Birder's Dozen Pocket Guide for Vermont Foresters*, and *Forest Bird Habitat Assessment - A Guide to Integrating Bird Habitat Data into a Vermont Forest Inventory*. http://vt.audubon.org/fbi.html

Every attempt was made to follow the intent of the *Silviculture with Birds in Mind* document. However, some terminology is different and not all options will be supported through this practice due to complexities of evaluation or other factors. In general, the Stand condition and treatments should look familiar with some added clarification or eligibility requirements for the NRCS practice. NRCS and partners in Vermont are pleased to offer this series of component practices and see it as a way to increase habitat quality while improving our forests.

Requirements

This series of component practices are only eligible on northern hardwood or mixedwood forest types. These silvicultural treatments are intended to compliment the forester's application of existing silvicultural guides such as NE-603, the Silvicultural Guide to Northern Hardwood Types in the Northeast. The silvicultural options described (in the Foresters for the Birds Tool Kit) combine information from a wide range of sources. Stands will be assessed on site. Those stands or parts of stands that already have all the targeted habitats well represented such as thick understory vegetation throughout, good vertical and horizontal diversity, large-diameter trees, etc. will not be eligible.

- A current Forest Management Plan that identifies the need and specifications for this practice is a requirement. The FMP will meet the minimum requirements of the Vermont Department of Forest and Parks Use Value Appraisal (UVA) program. Refer to the Checklist below to be sure the proper information is included in the stand prescription or in the amended stand description.
- Site Quality – financial assistance will only be allowed where the potential productivity class of the stand or site is a high site III or better with a minimum site index as listed below. Use Web Soil Survey for Site Index as many of the published hard copy soil surveys are out of date.

  http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm
  Forest Type Site Index
  Spruce-Fir 35
  White Pine 55
  Northern Hardwoods 50
  Oak Hardwoods 50

- Minimum area to be treated – 5 contiguous acres
- Monitor for invasive species and, where present, develop a control plan for pre and post harvest
- In stands with bear scarred beech, prescription must not conflict with *VT ANR Management Guidelines for Optimizing Mast Yields in Beech Mast Production Areas*
- No whole tree harvesting on treatment areas - leave tops and branches less than 4 inches in diameter in the woods

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Requirements (continued)

- 4 stems/acre will be recruited and left on site to provide coarse woody debris. Leave large and worst quality entire stems for coarse woody material
- 4 snags/acre will be maintained or created. Recruit snags by girdling poor quality dominants
- If significant aspen is present plan to coppice re-sprout a portion of this component to enhance species composition and structure. If aspen is limited to scattered tree, retain these trees for future cavity trees as these are high quality cavity trees.
- Leave some structurally sound large diameter, large crowned trees for raptor nesting sites
- Leave evenly distributed groups or individual conifers and or softwood inclusions for perch, foraging and nesting opportunities
- Percent acceptable growing stock (AGS) is greater post treatment than percent AGS pre-treatment
- Make every effort to protect unmarked trees and regeneration from unnecessary damage during the treatment
- On site meeting between forester and NRCS/FPR Foresters with marking to be approved prior to the occurrence of any cutting.
- Treatment areas within Indiana bat range (consult with NRCS) will need review and potentially limitations on timing of the practice or design. Within the Indiana bat range, review by NRCS and potentially the USFWS will be required before practice layout and implementation. There may be some requirements that need to be followed to eliminate negative impacts to bats. See: Vermont Federally Threatened And Endangered Species List By Town and County http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1081322.pdf

- Evaluation and payment for this practice will be based upon a site review. The evaluator will GPS the perimeter of treatment area to determine acreage of the treatment. Treatment area will be determined by evidence of culled trees. Untreated areas within the contiguous treatment area are allowed but should not exceed an acre in size. Large untreated areas could be excluded depending upon the site conditions. Untreated areas on margins of overall treated polygon area will not count toward the treated acreage. Basal area plots will be used to determine if the basal area within the treated area was approximately reduced to the level prescribed. Adherence to the prescription as well as levels of coarse woody material and snags will be evaluated during the site visit.

Considerations

When managing habitats it is not realistic to expect benefits for all species due to the wide range of habitat preferences or requirements. For certain silvicultural treatments, such as larger groups (approaching 2 acres) a significant reduction in canopy cover and increase in regeneration (stems/acre) is expected. While numerous understory dependent species (e.g. black-throated blue warbler and Canada warbler) and early successional or shrubland birds (e.g. chestnut-sided warbler, black and white warbler, mourning warbler and white-throated sparrow) will likely benefit from these options there are other mature forest species (e.g. scarlet tanager, black-throated green warbler and blackburnian warbler) that will likely limit their use of these areas during the nesting season due to the changes to habitat structure. Consider this during planning and implementation of these options.

Operation and Maintenance

Periodic inspections during and after treatment activities are necessary to ensure that purposes are achieved and resource damage is minimized, e.g., assessment of insects, disease and other pests, storm damage, and damage by trespass. The results of inspections shall determine the need for additional treatment under this practice. The practice lifespan for Forest Stand Improvement is 10 years.

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Stand Condition Eligibility Criteria:

1) Pole to small sawtimber, high stocking
2) Stocking should be more than halfway between the A and B line
3) AGS >40 ft^2/acre for hardwood, AGS>60 ft^2/acre for mixed wood*

*Stands with good potential for management but with lower AGS can be evaluated on a case by case basis by NRCS/FPR Foresters.

Post Treatment Evaluation/Measurement

- Walk-through to evaluate whether treatment was implemented according to plan and near-term objectives were met, including:
  - Residual stocking (basal area and trees per acre, or mean stand diameter) and number and size of gap targets have been met.
  - Heterogeneity of species and structure has been enhanced.
  - Post harvest Requirements (see page 2-3) have been followed.

Even-Aged Tending Treatments

Prescription should specify:

- Residual Basal Area
- Species favored for retention and/or regeneration
- Clear descriptions of patches/gaps

Treatment: Crop Tree Release with Canopy Gap Formation

Typical Conditions: High percentage of mast/crop trees (cherry, oak, yellow birch, or other mast trees)

- Identify 30-70 crop trees per acre; crop trees include future timber, mast, or den trees.
- Poles: release 2-3 sides, 5-10 foot crown release. Sawtimber: 1-3 sides crown release.
- Between crop trees **create gaps** 30-75 feet in diameter (on no more than 5-15% of the total stand area) to enhance structure. All poor quality stems >1 inch to be cut. Locate gaps to release advanced regeneration of shrub layer or to remove high risk, low vigor, low value trees to allocate space for new seedlings.
- Residual basal area (BA) should be no lower than the B-line on the hardwood or mixedwood stocking guides. No more than 1/3 of the initial basal area should be harvested. Maintain 70-80% crown closure on average across the stand using openings to enhance structure.

Treatment: Variable Density Thinning

Typical Conditions: Heterogeneous species composition or stand density or transition forest with early successional overstory species (e.g. aspen).

- Residual basal area (BA) should be no lower than the B-line on the hardwood or mixedwood stocking guides over the treated area. No more than 1/3 of the initial basal area should be harvested. Maintain 70-80% crown closure on average across the stand. Variable size openings, as well as untreated pockets, may be used to enhance structure.
- Focus on removal of trees with low vigor and poor quality.
- Remove most overtopped individuals; in the co-dominant class remove 10-25% and remove 50-60% in the intermediate class.

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Uneven-Aged Treatments

Prescription should specify:

- Size of groups and % of stand area to be regenerated by groups
- Treatment/Residual basal area between groups

Treatment: Group Selection using area regulation

Typical Conditions: Applicable in stands transitioning from an even-aged condition to a multi-aged condition using area regulation to achieve the multi aged structure and sustained yield. This treatment mimics natural disturbance events with gap size from 0.25 acres to 2 acres. Area Regulation is determined by dividing the entry interval by the rotation age and multiplying by the stand area.
Example: A 50 acre mixedwood stand with 15 year entry with rotation age of 120 years. 15 yr entry/120 year rotation age x 50 acre stand = 6 ¼ total acres of groups 0.25-2 acres may be cut at each entry on that stand.

- Create group selection gaps in a range of 0.1 ac. – 2.0 ac. maximum gap size. Groups may be irregular in configuration.
- Harvest on average 1% (range 0.7-1.3%) of the stand area for each year between entries.
- Specify number, size, and spacing of groups.
- Residual basal area should be no lower than 65-70 ft2/acre for hardwood and 80-120 ft2/acre for mixed wood.
- Locate small groups to remove low vigor, low value stems, to establish intolerant regeneration, or to release advanced mid and tolerant regeneration. Retention of larger trees is encouraged for one or more of the following: mast, seed source, wildlife habitat and permanent Legacy. Gaps should be at the large end of range when large mature trees are retained to assure good understory response.
- Provide type of treatment in matrix, no treatment, crop tree release, or improvement cut.

Hybrid between Even-aged and Uneven-aged Treatments

Prescription should specify: See Uneven-Aged Treatments above

Treatment: Expanding Gap Irregular Group Shelterwood

Conditions: Particularly applicable in degraded stands as transition strategy to more complex structure and composition. Dominant cover must contain an adequate quantity and distribution of seed trees of desirable species, vigor and quality.

- Must retain two or more age cohorts for longer than 20% of the rotation age.
- Provide number of gaps (Cutting entries may be variable in length, but 15 years is an appropriate interval for gap calculation).
- Create canopy gaps in a range of 0.1 ac. – 1.0 ac.; gaps are expanded at each entry.
- Area of gaps should be on average 1% (range 0.7-1.3%) of the stand for each year between entries
- Locate gaps through removal of low quality, low value trees or to release advanced regeneration. . Seed trees, mast trees, wildlife/legacy trees may be left as retention within gaps
- Implement improvement treatments between gaps to increase growth and quality. Implement mast tree release where possible.
- Residual basal area (BA) between gaps should be no lower than the B-line on the hardwood or mixedwood stocking guides. The basal area is an average across the stand; it is not evenly distributed. No more than 1/3 of the initial basal area should be harvested.

NRCS

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For:		*Tract #:* *Land Unit(s):*
Stand Numbers:		*Forest Management Plan Date:*
Planned By: *Signature:*		*Consulting Forester:* *Company:*
Date:	*Phone:*	*UVA Plan?**

Purpose:

EXISTING STAND CONDITIONS AND PRESCRIPTIONS

NOTE: It is expected that a good description of existing stand conditions (Site Class, Mean Stand Diameter, stems/acre, AGS/UGS BA, etc.) and management prescriptions are found within the landowner's forest management plan. Please be sure that a copy is included in the case file so that it can be referred to later. It is the basis for implementation of this practice and activity. *For UVA plans, be sure there is County Forester concurrence.

Management Description – Under site specifications be sure to clearly describe treatment. Refer to requirements on pages 2-5 and include information in specifications for each stand.

Stand Number:	**Approach:** **Even Aged Tending** ☐ **Uneven-Aged** ☐ **Hybrid** ☐	
	Treatment:	
Acres to Treat:	**Site Specifications:**	
Date to be completed:		
Pre-Cutting Meeting Date:		

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