



# **Forest Bird Habitat Assessment And Management Recommendations**

## **Thetford Town Parcels**

*Thetford Town Forest*

*Taylor Tract*

*Post Mills Nature Area*

*Hughes Forest*

**Thetford, VT**

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## Introduction

The purpose of this document is to 1) provide an assessment of forest bird habitat on the four Thetford Town-owned parcels in Thetford VT and 2) offer management recommendations that will protect, create, and/or enhance breeding habitat conditions for *responsibility forest bird species* as identified by Audubon Vermont's Forest Bird Initiative (FBI) program. A *responsibility species* is a bird species with a high proportion of its global breeding population found in the Northern Forest region. See Appendix 1 for a complete list of FBI responsibility species.

The four properties are located in the Atlantic Northern Forest Bird Conservation Region (BCR 14) as delineated by the North American Bird Conservation Initiative (NABCI). The Atlantic Northern Forest encompasses a geographic area stretching southwest to northeast from the Taconic Hills of eastern New York/western Massachusetts and the Adirondack Mountains (cut off from the remainder of the BCR by the Lake Champlain valley), through most of Vermont, New Hampshire and Maine, Quebec south of the St. Lawrence River including the Gaspé Peninsula, and all of the Maritime provinces of New Brunswick, Prince Edward Island, and Nova Scotia. (BCR14 Blueprint page 7) (Figure 1). Predominant general forest types include spruce-fir, northern hardwood, and mixed deciduous-coniferous forests.

Audubon Vermont has identified the landscape around the parcels as the Orange Co. Forest Bird Block, denoting its high importance to conserving responsibility bird species (Figure 2). The block is roughly 308,000 acres of land bounded by VT Rt. 302 on the north, I-89 on the south, I-91 on the east and VT Rt. 110 on the west (Figure 2). This block is approximately 90% forested.

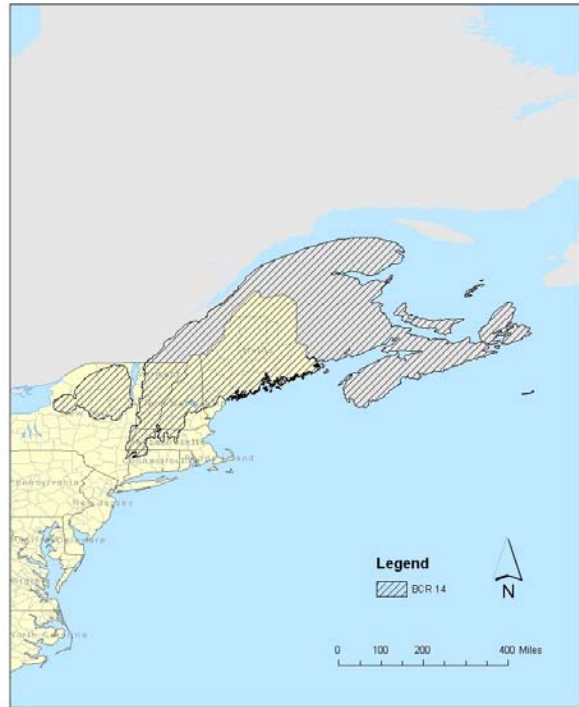


Figure 1 - BCR 14

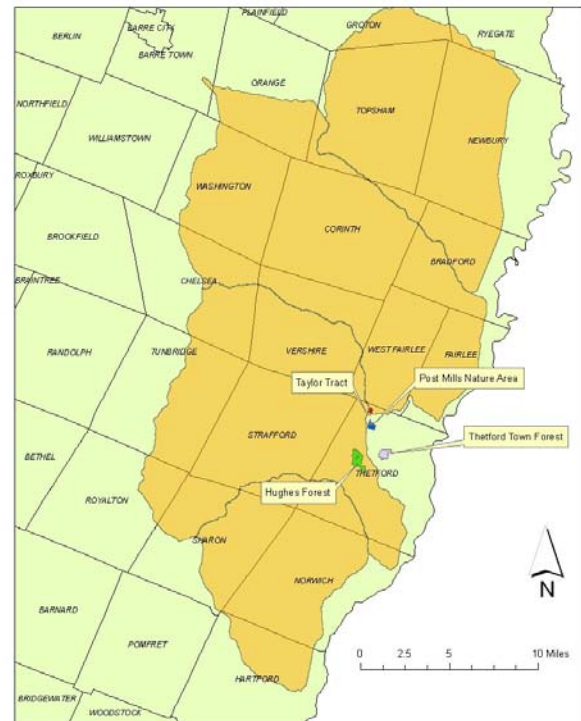


Figure 2. Orange Co. Forest Bird Block

Habitat units have been delineated for each parcel based on a qualitative on-the-ground assessment conducted during the summer of 2008 and aerial photo interpretation. Acreage figures are as calculated by ArcView mapping software. These habitat units serve as a basis for assessing the forest bird breeding habitat as well making management recommendations.

**The following pages provide an assessment of current habitat conditions and forest management recommendations that would enhance habitat for forest responsibility bird species on the property. While not always discussed in the report, the recommended practices will also benefit a variety of other bird and other wildlife species. The recommendations are designed to be discussed with the property's forester or land manager and implemented where practical and appropriate.**

**Contact Steve Hagenbuch, Audubon Vermont Conservation Biologist, at 802-434-5827 or shagenbuch@audubon.org for more information on the recommendations outlined in this report.**

## **Thetford Town Forest – 176 acres (Map 1)**

### ***Area description:***

The Thetford Town Forest (Map 1) is located to the east of 5 Corners Road, just north of its terminus at Rt. 113. The parcel is dominated by mid-successional mixed hardwood/softwood forest. A red maple – black ash swamp natural community is located along the southern property boundary. Non-native honeysuckle species are abundant throughout. Hay-scented fern dominates the forest floor in areas where the canopy is broken and sunlight reaches the ground. Habitat units for this property are 1) mixed forest, 2) white/red pine, and 3) wetland.

### **I. Mixed Forest – 166 acres**

Mixed forest is the dominant vegetative cover type, covering 94% of the total acreage. Dominant canopy tree species are site dependent and include white pine, red pine, eastern hemlock, red maple, red oak, American beech, and paper birch mostly in the poletimber size class (4-11.9 inch dbh), although there are sawtimber size (>12 inch dbh) trees. Understory vegetation and regeneration is low to locally moderate (Figure 3). American beech saplings, honeysuckle sp., and hay-scented fern are the most abundant plant species. Snag (standing dead trees) abundances are moderate. Coarse woody debris (down logs, branches, etc) is in low-moderate abundance. A hummocky forested wetland is located in the southeast corner of the habitat unit. Yellow birch and red maple are common tree species growing on the hummocks. One seasonal stream flowing north cuts through the northeast corner while a second stream near the southern boundary flows west through the red maple/black ash swamp (Habitat Unit #3). A minor network of access roads exists.

### ***Assessment of Current Habitat Conditions:***

The current conditions of this habitat unit are most suitable to mature mixed forest canopy nesting and foraging bird species, including area sensitive species such as scarlet tanager, due in part to the dominance of pole and sawtimber sized trees, lack of fragmentation, and contiguousness with similar habitat to the north and south. High abundances of leaf litter also make this area suitable for some ground nesting species such as the ovenbird. Bird species such as the black-throated blue warbler that nest in woody-stem understory vegetation may find suitable nesting and foraging sites (in fact the aforementioned warbler was heard during the June 16 visit) however this is not a dominant feature. The invasive nature of hay-scented fern into areas where the overhead canopy has been opened may be one reason for this (Figure 4). A high deer population that browses tree seedlings may be another. Streams are shallow and slow moving and therefore likely do not provide

habitat for the Louisiana waterthrush, a responsibility species of swiftly flowing, rocky bottomed forested streams. The narrow width access roads, along with the maintenance of a high percentage of canopy cover overhead, will likely not lead to negative effects, such as the introduction of nest predators and parasites into the forest interior. Berries of non-native honeysuckle are eaten by many species of birds however the nutritional value is reported to be lower than that found in the berries of native plant species. High quality fruits and berries are particularly important as migratory bird species prepare for the fall migration.

Light timber harvesting and intermediate treatments appropriate to forest composition have the potential to protect and enhance the current interior forest habitat conditions, particularly through understory development and increases in snags and coarse woody debris. Caution should be taken however so that active management does not exasperate the invasive/non-native plant problems that currently exist.

If and when harvesting occurs in the future, the following are recommended.

***Management Recommendations:***

- ✓ The use of uneven-aged silvicultural methods, with single-tree and group selections of 2-3 trees, may release any advanced tree regeneration and promotes sapling and shrub development such as that utilized for nesting by the black-throated blue warbler. Larger group selections are not recommended due to the invasive/non-native plant concerns discussed above. These methods of tree harvesting will maintain the overall interior forest conditions that exist over this habitat unit. Interior forest is defined as habitat that occurs in unfragmented forest at least 600 ft. from the habitat edge.
- ✓ If summer harvesting is required, try to schedule it before the start of the bird breeding season (generally the second to third week of May if soil conditions permit) or after the second week of July, which will allow breeding birds to fledge a first brood. If summer harvesting is not required, harvesting during frozen ground conditions is preferred as it will have no impact on the breeding bird community.
- ✓ Standing snags and downed trees are of significant value to many species of wildlife. Dead or dying standing trees provide roosting, perching, foraging, and nesting sites for roughly 40 species of birds. Retain a minimum of six snags per acre, with one exceeding 18 in. dbh and three exceeding 16 in. dbh. Priority should be given to hardwood snags as they remain intact longer. Aspen is of particular value to yellow-bellied sapsuckers. Also retain some live trees of poor form and quality during harvests to serve as the next cohort of snags and CWD. If target number of snags does not exist, consider girdling poor quality trees in order to achieve abundance objectives.
- ✓ The tops of harvested trees that are left in the forest contribute to vertical structure, an important habitat feature. They may also protect seedlings from being browsed by deer, thereby promoting regeneration. Minimize the use of whole tree harvesting and leave as much slash (branches, limbs, etc.) as possible.
- ✓ Exercise care when harvesting near streams and forested wetlands. Maintain buffers of at least 50 ft. in which trees are not harvested or harvested very lightly and only during frozen ground conditions.
- ✓ Forest access roads and recreational trails can serve as pathways for increased predation and nest parasitism. Minimize the width, number, and extent of new access and skid roads built for a harvest and utilize the current road system as much as possible. Road/trail widths <25 ft. are preferred. Wider roads may serve as corridors for nest predators and parasites.

Whenever possible maintain forest canopy closure of > 70 percent over access roads and trails.

- ✓ Develop a plan to address the abundance of non-native plant species. The Nature Conservancy's "Wise on Weeds" program (<http://www.nature.org/wherewework/northamerica/states/vermont/volunteer/art21105.html>) is a good source of information.

**Target Responsibility Bird Species:** \*denotes species observed during field visit

Mid-late Successional Forest-

- Wood Thrush
- Yellow-bellied Sapsucker\*
- Veery\*
- Ovenbird\*
- Scarlet Tanager
- Eastern Wood-Pewee\*
- Black-throated Blue Warbler\*
- Blackburnian Warbler
- Black-throated Green Warbler\*
- Parula Warbler\*
- Blue-headed Vireo
- Ruffed Grouse\*



Figure 3. Mixed Forest w/ low abundance of understory vegetation



Figure 4. Invasive nature of hay-scented fern in forest openings

## **2. White Pine – 6 acres**

Two small stands of red and white pine are found near the western edge of the property. Together they comprise 3% of the total acreage. Dominant canopy tree species are white pine and red pine mostly in the poletimber size class (4-8.9 inch dbh) for softwoods. Understory vegetation and regeneration is low (Figure 5). Snag (standing dead trees) and coarse woody debris (down logs, branches, etc) abundances are low.

### ***Assessment of Current Habitat Conditions:***

The current conditions of this habitat unit are most suitable to mature softwood forest canopy nesting and foraging bird species due to the dominance of pole-sized pine trees. The habitat quality is low for ground and shrub nesting species due to the low abundances of deciduous leaf litter and woody stemmed vegetation 1-10 ft. in height.

Light timber harvesting and intermediate treatments have the potential to enhance the conditions of this habitat unit, particularly through understory development and increases in coarse woody debris. Caution should be taken however so that active management does not exasperate the invasive/non-native plant problems that currently exist in the adjacent mixed forest.

If and when harvesting occurs in the future, the following are recommended.

### ***Management Recommendations:***

- ✓ The use of uneven-aged silvicultural methods, with single-tree and group selections of 3-5 trees, may promote hardwood regeneration and shrub development such as that utilized for nesting by the black-throated blue warbler. Larger group selections are not recommended due to the invasive/non-native plant concerns discussed above.
- ✓ It is likely that hardwoods will regenerate this site under the silvicultural methods recommended above. If harvesting of the pine does occur when the trees attain the desired diameter objective, it is recommended that a few residual pine be left behind. Doing so will retain the habitat feature preferred by bird species such as the blackburnian warbler as well as serve as potential nesting sites for woodland raptors.
- ✓ If summer harvesting is required, try to schedule it before the start of the bird breeding season (generally the second to third week of May if soil conditions permit) or after the second week of July, which will allow breeding birds to fledge a first brood. If summer harvesting is not required, harvesting during frozen ground conditions is preferred as it will have no impact on the breeding bird community.
- ✓ The tops of harvested trees that are left in the forest contribute to vertical structure, an important habitat feature. They may also protect seedlings from being browsed by deer, thereby promoting regeneration. Minimize the use of whole tree harvesting and leave as much slash (branches, limbs, etc.) as possible.

### ***Target Responsibility Bird Species: \*denotes species observed during field visit***

- Blackburnian Warbler
- Blue-headed Vireo
- Black-throated Blue Warbler



Figure 5. Red pine stand w/ minimal understory

### **3. Wetland – 4 acres**

The red maple/black ash swamp along the southern border of the property comprises 2% of the total acreage. Balsam fir is also found along with the maple and ash. Understory vegetation is dominated by various fern species, including cinnamon fern, and scattered woody shrubs. Snags and coarse woody debris abundances are moderate-high.

#### ***Assessment of Current Habitat Conditions:***

This forested wetland provides conditions favorable for Canada warbler. Low, dense vegetation along with tip-ups and other coarse woody debris provide nesting and foraging sites for this significantly declining species. The Canada warbler is sensitive to forest fragmentation which advocates for protection of the wetland and adjacent forest.

#### ***Management Recommendations:***

- Maintain a forested buffer of at least 100 ft. around the wetland complex in which trees are not harvested or are harvest very lightly and only during frozen ground conditions.

#### **Target Responsibility Bird Species: \*denotes species observed during field visit**

- Canada Warbler



Figure 6. Possible Canada warbler habitat in the red maple/black ash swamp

## **Taylor Tract – 34 acres (Map 2)**

### ***Area description:***

The Taylor Tract is located north of Rt. 244, just east of its terminus at Rt. 113. The parcel is dominated by flood plain forest. Additional vegetative cover types on the parcel include early-successional forest consisting of gray birch, aspen, and elm saplings that has regenerated on a sand and gravel pit and an open field consisting of herbaceous plants such as goldenrod species and milkweed. Non-native plant species including buckthorn and Japanese knotweed are abundant throughout. The Ompompanoosuc River flows south along the western boundary. Habitat units for this property are 1) early-successional, 2) open, and 3) floodplain forest.

### **I. Early-Successional – 6 acres**

The young, densely stocked stands of predominately pioneer tree species that make up this habitat unit comprise 18% of the total acreage. Tree species include gray birch, elm species, speckled alder, and willow species mostly in the sapling size class (1-3.9 inch dbh), although there are poletimber size (4-11.9 inch dbh) trees. A few apple trees are scattered throughout. Non-native buckthorn and Japanese knotweed are in high abundance. As to be expected in young stands, snags and coarse woody debris are in low abundance. This habitat unit is colonizing what was a sand/gravel pit in the not too distant past.

### ***Assessment of Current Habitat Conditions:***

Young, regenerating forest habitats such as this are less common throughout Vermont and the rest of northern New England today than they were 40+ years ago. Areas such as these provide critical breeding habitat for declining bird species including chestnut-sided warblers and white-throated sparrows. Recent research also indicates that early-successional habitats, particularly those with fruit producing trees and shrubs, are used by mature forest species, including scarlet tanager and wood thrush, as post-breeding habitat. The length of time that these habitats serve as early-successional varies, but in the big picture is a relatively short period of time – generally up to 20 years after they are created. The apple trees are an excellent habitat feature for many species of wildlife, although their utility to responsibility bird species is generally low. Buckthorn does produce fruits that are eaten by birds however the nutritional value is reported to be lower than that found in the berries of native plant species. High quality fruits and berries are particularly important as migratory bird species prepare for the fall migration.

### ***Management Recommendations:***

- Early-successional conditions can be maintained over time by clearing the woody vegetation on a frequency of 10-15 years, dependent upon the rate at which the vegetation grows. Initially clearing this habitat unit will require a significant investment of resources (manual labor or equipment such as a Brontosaurus). Future clearing could be achieved with a heavy-duty brush hog. Specifically, manage the entirety of this habitat unit as two separate units. Alternate the clearing/brushhogging between the two units so that there are always approximately 3 acres of early-successional habitat within the habitat unit (e.g. clear unit #1 in year 1, unit #2 in year 5-7, returning to unit #1 in year 10-15).
- Conduct clearing once the majority of the migrant birds have departed and at the end of the fruiting season, with September being a good month.
- Wildlife Habitat Incentive Program (WHIP) funds may be available to help cover the costs associated with maintaining early-successional conditions.
- When clearing leave small clumps of larger residual trees to serve as perch sites.



- Retain and release apple trees by removing overhanging vegetation as well as vegetation within the apple tree's dripline. Doing so will provide the tree with more sunlight and enhance its fruiting ability.
- Develop a plan to address the abundance of non-native plant species. The Nature Conservancy's "Wise on Weeds" program (<http://www.nature.org/wherewework/northamerica/states/vermont/volunteer/art21105.html>) is a good source of information.

**Target Responsibility Bird Species:** \*denotes species observed during field visit

- Veery\*
- Alder Flycatcher\*
- Chestnut-sided Warbler
- White-throated Sparrow
- Mourning Warbler
- American Woodcock
- Ruffed Grouse
- Northern Flicker



Figure 7. Early-successional habitat

## **2. Open – 4 acres**

This habitat unit dominated by herbaceous plants is located in the northwest corner of the property, on both sides of the Ompompanoosuc River. Combined it comprises 12% of the total acreage. Herbaceous vegetation includes goldenrod species, milkweed, and grasses. Scattered willow shrubs and raspberry add a woody vegetation component.

### ***Assessment of Current Habitat Conditions:***

There are no responsibility bird species for which open, herbaceous areas are a preferred or critical habitat type however woodcock may use it for aerial courtship display. Other species of wildlife may utilize this habitat feature more regularly however for feeding and cover.

### ***Management Recommendations:***

- ✓ Maintain herbaceous conditions by mowing this habitat unit once every 2-3 years.
- ✓ Develop a buffer of 50 ft. along the edge of the river that is mowed less frequently.
- ✓ Conduct mowing at the end of the summer season with September being a good month.
- ✓ Wildlife Habitat Incentive Program (WHIP) funds may be available to help cover the costs associated with maintaining early-successional conditions.

### ***Target Responsibility Bird Species: \*denotes species observed during field visit***

- American Woodcock



Figure 8. Open area dominated by herbaceous plants

### **3. Floodplain Forest – 24 acres**

Floodplain forest is the predominant habitat on the property comprising 70% of the total acreage. Canopy tree species include sugar maple and white pine along with willow, speckled alder, a few spruce, and Scotch pine in certain areas. The Sugar Maple-Ostrich Fern Floodplain Forest natural community that covers a portion of this habitat unit is relatively rare in Vermont. A small oxbow pond is in the northern half of the unit. Invasive species are very likely to be in this area, although none were observed during the quick overview of this habitat unit during the visit.

#### ***Assessment of Current Habitat Conditions:***

This is a small patch of forested habitat surrounded predominately by open agricultural and residential areas. There is no connectivity between this forested patch and more extensive forest to the north, west, and south. Although area sensitive bird species such as wood thrush and parula warbler may be found here (in fact a parula was heard during the June 2008 visit), it is not likely to be providing high quality breeding habitat. The veery on the other hand is less area sensitive and may find moderate to high habitat suitability within this small forest patch. Numerous veery were heard during the visit.

#### ***Management Recommendations:***

- No active management is recommended for this habitat unit. Protecting this small forest patch and promoting connectivity to other forested areas is of highest priority.

#### **Target Responsibility Bird Species: \*denotes species observed during field visit**

- Veery
- American Woodcock
- American Redstart
- Eastern Wood-Pewee

## **Post Mills Nature Area – 82 acres (Map 3)**

### ***Area description:***

The Post Mills Nature Area is located just east of Rt. 113, just south of Post Mills. The parcel contains a mix of vegetative cover types including mixed upland forest, open fields, an alder wetland, and riparian forest bordering the Lake Fairlee outlet. Non-native honeysuckle is found in scattered patches near the south edge of the open field. A conservation easement is held by the Upper Valley Land Trust. Habitat units for this property are 1) mixed forest, 2) riparian forest, 3) open, and 4) alder wetland.

### **I. Mixed Forest – 42 acres**

Mixed forest is the dominant vegetative cover type, covering 51% of the total acreage. Dominant canopy tree species are site dependent and include white pine, eastern hemlock, sugar maple, and American beech mostly in the pole timber (4-11.9 inch dbh) and sawtimber (>12 inch dbh) size classes. Understory vegetation and regeneration is low to locally moderate. Snag (standing dead trees) abundances are low. Coarse woody debris (down logs, branches, etc) is in moderate abundance. Soils are generally wet particularly in the eastern portion. Non-native plant species do not appear to be abundant.

### ***Assessment of Current Habitat Conditions:***

The current conditions of this habitat unit are most suitable to mature mixed forest canopy nesting and foraging bird species, including area sensitive species such as scarlet tanager and black-throated green warbler, due in part to the dominance of pole and sawtimber sized trees, lack of fragmentation, and contiguous nature with similar habitat to the south and east. High abundances of leaf litter also make this area suitable for some ground nesting species such as the ovenbird. Bird species such as the black-throated blue warbler, that nest in woody-stem understory vegetation, may find suitable nesting and foraging sites however this is not a dominant feature.

Habitat management that opens up the canopy in small patches has the potential to protect and enhance the current interior forest habitat conditions, particularly through understory development and increases in snags and coarse woody debris.

If and when harvesting occurs in the future, the following are recommended.

### ***Management Recommendations:***

- ✓ The use of uneven-aged silvicultural methods, with single-tree and group selections of 2-3 trees, may release any advanced tree regeneration and promotes sapling and shrub development such as that utilized for nesting by the black-throated blue warbler. These methods of tree harvesting will maintain the overall interior forest conditions that exist over this habitat unit. Interior forest is defined as habitat that occurs in unfragmented forest at least 600 ft. from the habitat edge.
- ✓ If summer harvesting is required, try to schedule it before the start of the bird breeding season (generally the second to third week of May if soil conditions permit) or after the second week of July, which will allow breeding birds to fledge a first brood. If summer harvesting is not required, harvesting during frozen ground conditions is preferred as it will have no impact on the breeding bird community.
- ✓ Standing snags and downed trees are of significant value to many species of wildlife. Dead or dying standing trees provide roosting, perching, foraging, and nesting sites for roughly 40

species of birds. Retain a minimum of six snags per acre, with one exceeding 18 in. dbh and three exceeding 16 in. dbh. Priority should be given to hardwood snags as they remain intact longer. Aspen is of particular value to yellow-bellied sapsuckers. Also retain some live trees of poor form and quality during harvests to serve as the next cohort of snags and CWD. If target number of snags does not exist, consider girdling poor quality trees in order to achieve abundance objectives.

- ✓ The tops of harvested trees that are left in the forest contribute to vertical structure, an important habitat feature. They may also protect seedlings from being browsed by deer, thereby promoting regeneration. Minimize the use of whole tree harvesting and leave as much slash (branches, limbs, etc.) as possible.
- ✓ Exercise care when harvesting near seeps and streams. Maintain buffers of at least 50 ft. in which trees are not harvested or harvested very lightly and only during frozen ground conditions.

**Target Responsibility Bird Species:** \*denotes species observed during field visit

- Wood Thrush
- Yellow-bellied Sapsucker
- Veery
- Ovenbird\*
- Scarlet Tanager
- Black-throated Blue Warbler
- Blackburnian Warbler
- Black-throated Green Warbler\*
- Parula Warbler
- Blue-headed Vireo
- Ruffed Grouse

## **2. Riparian Forest – 8 acres**

This habitat unit is found in a narrow strip between the open fields (Habitat Unit #3) and the Lake Fairlee outlet. It comprises 9% of the total acreage. Tree species include black cherry, chokecherry, and basswood accompanied by fruit producing shrubs such as dogwood species.

### ***Assessment of Current Habitat Conditions:***

The conditions of this habitat unit may prove suitable for edge favoring responsibility species such as the American redstart and Nashville warbler. The variety of fruit producing trees and shrubs may also provide critical food sources to many responsibility species during the post-breeding/pre-migration period. This area serves as a corridor linking forest stands to the east and west.

### ***Management Recommendations:***

- ✓ Protect and widen this feature by allowing a  $\geq 50$  ft. buffer to develop in the adjacent open fields (Habitat Unit #3). This may be accomplished naturally by not mowing within 50 ft. of the riparian forest or by planting native trees and shrubs. Fruit and berry producing species are recommended.

**Target Responsibility Bird Species:** \*denotes species observed during field visit

- American Redstart
- Nashville Warbler

### **3. Open – 30 acres**

Open fields dominated by herbaceous vegetation comprise 36% of the total acreage. The fields are currently under a WHIP contract for delayed mowing after Sept. 1.

#### ***Assessment of Current Habitat Conditions:***

The current conditions of this habitat unit may provide singing grounds for American woodcock. This is particularly true on this site which contains an adjacent alder wetland. Ruffed grouse may also use this area as a feeding ground for their young. A female grouse with young was flushed from the eastern patch of field during the June 16, 2008 visit. Although not currently found on this site, bobolink, a grassland species of conservation concern in VT, may find suitable nesting habitat here under the right management conditions (Figure 9). Therefore recommendations for this species are provided.

#### ***Management Recommendations:***

- Conduct mowing frequency and timing according to current WHIP schedule
- Pick up cut grass at least every other year. This will promote new spring growth at a quicker rate than a field with thatch cover.
- Develop riparian buffer along Lake Fairlee outlet (see Habitat Unit #2 above)

#### **Target Responsibility Bird Species: \*denotes species observed during field visit**

- American Woodcock
- Ruffed Grouse\*
- Bobolink – not a responsibility for BCR 14, but of state conservation concern



Figure 9. Potential bobolink breeding habitat

### **3. Alder Wetland – 2 acres**

This small alder dominated wetland comprises 2% of the total acreage.

#### ***Assessment of Current Habitat Conditions:***

The current conditions and management regime of this habitat unit provide feeding cover for American woodcock. This feature combined with adjacent open fields for courtship display and young hardwood and mature forest for nesting creates a good overall opportunity for this species. This habitat unit is also great breeding habitat for the alder flycatcher due to the high density of shrubs and wet soils, and in fact this species was heard during the June 16, 2008 visit.

#### ***Management Recommendations:***

- Continue management according to the “Treatment Schedule for The Post Mills Nature Area”. Doing so will maintain the density of young alder stems over time thereby providing good daytime feeding cover.

#### ***Target Responsibility Bird Species: \*denotes species observed during field visit***

- American Woodcock
- Alder Flycatcher



Figure 10. Alder wetland providing woodcock feeding cover and alder flycatcher nesting sites

## **Hughes Forest – 261 acres (Map 4)**

### ***Area description:***

The Hughes Forest is located to the east and west of Poor Farm Road just east just south of its terminus with Sawnee Bean Road. Primary vegetative cover type is a mixed forest with stands of northern hardwoods, eastern hemlock, and white pine. A small open/brushy field is located on the north side of Sawnee Bean Road. A pond and herbaceous wetland is along the north border of the eastern compartment. Non-native honeysuckle is found in scattered patches and hay-scented fern is dominant in areas where the forested canopy has been opened. A conservation easement is held by the Upper Valley Land Trust. Habitat units for this property are 1) mixed forest, 2) early-successional, and 3) wetland.

### **I. Mixed Forest – 250 acres**

Mixed forest is the dominant vegetative cover type, covering 95% of the total acreage. Dominant canopy tree species are site dependent and include white pine, eastern hemlock, sugar maple, American beech, and yellow birch mostly in the pole (4-11.9 inch dbh) and sawtimber (>12 inch dbh) size classes. Understory vegetation and regeneration is low to locally moderate (Figure 11). American beech, sugar maple, and white ash saplings and hay-scented fern are the most abundant plant species. Snag (standing dead trees) abundances are low. At least two small (~1/4 – 3/4 acre) openings in the forest currently exist. These openings are growing primarily fern species although there is some hardwood regeneration in the form of saplings (Figure 12). Non-native honeysuckle is occasionally found. At least two small streams are found and soils are generally wet in the east compartment. A minor network of access roads and trails exists.

### ***Assessment of Current Habitat Conditions:***

The current conditions of this habitat unit are most suitable to mature mixed forest canopy nesting and foraging bird species, including area sensitive species such as scarlet tanager, due in part to the dominance of pole and sawtimber sized trees, lack of fragmentation, and contiguousness with similar habitat to the south, east, and west. High abundances of leaf litter also make this area suitable for some ground nesting species such as the ovenbird. Bird species such as the black-throated blue warbler that nest in woody-stem understory vegetation may find suitable nesting and foraging sites (in fact the aforementioned warbler was heard during the June 16 visit) however this is not a dominant feature. The invasive nature of hay-scented fern into areas where the overhead canopy has been opened may be one reason for this. A high deer population that browses tree seedlings may be another. Streams are shallow and slow moving and therefore likely do not provide habitat for the Louisiana waterthrush, a responsibility species of swiftly flowing, rocky bottomed forested streams. The narrow width access roads, along with the maintenance of a high percentage of canopy cover overhead, will likely not lead to negative effects, such as the introduction of nest predators and parasites into the forest interior. Berries of non-native honeysuckle are eaten by many species of birds however the nutritional value is reported to be lower than that found in the berries of native plant species. High quality fruits and berries are particularly important as migratory bird species prepare for the fall migration.

Light timber harvesting and intermediate treatments appropriate to forest composition have the potential to protect and enhance the current interior forest habitat conditions, particularly through understory development and increases in snags and coarse woody debris. Caution should be taken however so that active management does not exasperate the invasive/non-native plant problems that currently exist.



If and when harvesting occurs in the future, the following are recommended.

**Management Recommendations:**

- ✓ The use of uneven-aged silvicultural methods, with single-tree and group selections of up to ¼ acre in size (on better soil sites), may release any advanced tree regeneration and promotes sapling and shrub development such as that utilized for nesting by the black-throated blue warbler. These methods of tree harvesting will maintain the overall interior forest conditions that exist over this habitat unit. Interior forest is defined as habitat that occurs in unfragmented forest at least 600 ft. from the habitat edge. Additionally larger openings may result in the growth of blackberry/raspberry and other soft mast producing trees and shrubs which are important food sources for many forest birds during the post-breeding season. These same openings may also provide a density of regeneration and shrub development to provide breeding habitat for some species of early-successional forest birds, but this form of silviculture will not create a true early-successional bird community. Shape of group selection cuts should be circular to maximize functionality of regenerating conditions. If multiple larger group selections are implemented, cluster these as much as possible during any harvest in order to maintain larger areas of contiguous mature forest. Actual location and size of harvests should be determined by the property's forester.
- ✓ If summer harvesting is required, try to schedule it before the start of the bird breeding season (generally the second to third week of May if soil conditions permit) or after the second week of July, which will allow breeding birds to fledge a first brood. If summer harvesting is not required, harvesting during frozen ground conditions is preferred as it will have no impact on the breeding bird community.
- ✓ Standing snags and downed trees are of significant value to many species of wildlife. Dead or dying standing trees provide roosting, perching, foraging, and nesting sites for roughly 40 species of birds. Retain a minimum of six snags per acre, with one exceeding 18 in. dbh and three exceeding 16 in. dbh. Priority should be given to hardwood snags as they remain intact longer. Aspen is of particular value to yellow-bellied sapsuckers. Also retain some live trees of poor form and quality during harvests to serve as the next cohort of snags and CWD. If target number of snags does not exist, consider girdling poor quality trees in order to achieve abundance objectives.
- ✓ The tops of harvested trees that are left in the forest contribute to vertical structure, an important habitat feature. They may also protect seedlings from being browsed by deer, thereby promoting regeneration. Minimize the use of whole tree harvesting and leave as much slash (branches, limbs, etc.) as possible.
- ✓ Exercise care when harvesting near streams. Maintain buffers of at least 50 ft. in which trees are not harvested or harvested very lightly and only during frozen ground conditions.
- ✓ Forest access roads and recreational trails can serve as pathways for increased predation and nest parasitism. Minimize the width, number, and extent of new access and skid roads built for a harvest and utilize the current road system as much as possible. Road/trail widths <25 ft. are preferred. Wider roads may serve as corridors for nest predators and parasites. Whenever possible maintain forest canopy closure of > 70 percent over access roads and trails.
- ✓ Yellow birch is of particular importance to insectivorous birds. The 10 most common foliage-gleaning bird species, including Blackburnian warbler, black-throated green warbler, and scarlet tanager, prefer yellow birch for foraging. Retain as many mature trees as possible.

- ✓ Retain hemlock trees containing *Usnea* lichen. The lichen species is an important nesting material for the parula warbler. If possible do not harvest trees in stands where *Usnea* is present.
- ✓ Develop a plan to address the abundance of non-native plant species. The Nature Conservancy's "Wise on Weeds" program (<http://www.nature.org/wherewework/northamerica/states/vermont/volunteer/art21105.html>) is a good source of information.

**Target Responsibility Bird Species:** \*denotes species observed during field visit

Mid-late Successional Forest-

- Wood Thrush
- Yellow-bellied Sapsucker
- Veery
- Ovenbird\*
- Scarlet Tanager
- Eastern Wood-Pewee\*
- Black-throated Blue Warbler\*
- Blackburnian Warbler\*
- Black-throated Green Warbler\*
- Parula Warbler\*
- Blue-headed Vireo\*
- Ruffed Grouse

Larger group selection harvests-

- Chestnut-sided Warbler
- Mourning Warbler
- White-throated Sparrow\*



Figure 11. Hemlock stand with low understory development



Figure 12. Small forest opening w/ high abundance of hay-scented fern

## **2. Early-Successional – 1 acre**

This habitat unit is an abandoned field found in a narrow strip north of Sawnee Bean Road. It comprises < 1% of the total acreage. Plant species include sapling white pine, milkweed, goldenrod, *Spirea* sp., and non-native honeysuckle (Figure 13).

### ***Assessment of Current Habitat Conditions:***

Brushy/shrubby habitats such as this are less common throughout Vermont and the rest of northern New England today than they were 40+ years ago. Despite the small acreage of this area it may still provide critical breeding habitat for declining bird species including chestnut-sided warblers and white-throated sparrows. A chestnut-sided warbler was heard during the June 2008 visit. The length of time that these habitats serve as early-successional varies, but in the big picture is a relatively short period of time – generally up to 20 years after they are created. Non-native honeysuckle does produce fruits that are eaten by birds however the nutritional value is reported to be lower than that found in the berries of native plant species. High quality fruits and berries are particularly important as migratory bird species prepare for the fall migration.

### ***Management Recommendations:***

- Early-successional conditions can be maintained over time by clearing the woody vegetation on a frequency of 10-15 years, dependent upon the rate at which the vegetation grows. This can be achieved through the use of a brush hog.
- Conduct clearing once the majority of the migrant birds have departed and at the end of the fruiting season, with September being a good month.
- Wildlife Habitat Incentive Program (WHIP) funds may be available to help cover the costs associated with maintaining early-successional conditions.
- Develop a plan to address the abundance of non-native plant species. The Nature Conservancy’s “Wise on Weeds” program (<http://www.nature.org/wherewework/northamerica/states/vermont/volunteer/art21105.html>) is a good source of information.

### ***Target Responsibility Bird Species: \*denotes species observed during field visit***

- Chestnut-sided Warbler
- Mourning Warbler
- White-throated Sparrow



Figure 13. Early-successional habitat

### **3. Wetland – 10 acres**

This habitat unit consists of open water surrounded by herbaceous wetland vegetation including cattail, sensitive fern, and grasses. A few willow shrubs are scattered about. A number of snags are located in and along the edges (Figure 14). It is mapped as part of the VT Significant Wetland Inventory.

#### ***Assessment of Current Habitat Conditions:***

The current conditions of this habitat unit may provide breeding grounds for swamp sparrow due in part to the open shallow water, low herbaceous vegetation, and elevated songposts in the form of snags. Alder flycatcher may also find suitable nesting areas along the edges in shrubby vegetation.

#### ***Management Recommendations:***

- Protect this habitat unit by maintaining a forested buffer of  $\geq 50$  ft. in the adjacent forest (Habitat Unit #1).
- Consider girdling trees along the edge of the wetland that are of poor form and quality to create additional elevated songposts for swamp sparrows.

#### ***Target Responsibility Bird Species: \*denotes species observed during field visit***

- Swamp Sparrow
- Alder Flycatcher



Figure 14. Herbaceous wetland habitat

### **Bird Monitoring**

Understanding the response of bird communities to forest management is a critical aspect of conservation efforts. It is important for us to understand how our management activities impact bird populations over time, so that we can adapt practices accordingly. One method to collect this information is through a bird monitoring program. By periodically recording the bird species present at a given time and place on the property in question, we can see if and how the composition of the bird community is changing in response to management activity.

For assistance on getting started with monitoring on this property, please contact Audubon Vermont at 802-434-5827 or [shagenbuch@audubon.org](mailto:shagenbuch@audubon.org).