

SZIRBIK PROPERTY ECOLOGICAL INVENTORY

MILTON, NEW HAMPSHIRE



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Cover photograph – Jones Brook. Photo Credit: S. Lamonde

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INTRODUCTION

An ecological inventory was conducted on the Szirbik property located in Milton, New Hampshire, from April-October 2021. The purpose of the project was to better understand the significance of this tract of land for conservation and land management planning. The primary goals of this project were to collect data on 1) breeding and migratory birds, 2) wildlife species of greatest conservation need, 3) rare plants, 4) wildlife habitats, and 5) significant natural communities. The specific objectives set forth were as follows:

1. Determine the presence of upland and wetland-associated birds;
2. Determine the relative abundance¹, frequency of occurrence², and breeding status of upland and wetland-associated breeding birds with a focus on secretive wetland species and species of greatest conservation need;
3. Record observations and locations of wildlife species of greatest conservation need;
4. Map locations and document population size of rare plants;
5. Map site-specific upland and wetland wildlife habitats; and
6. Classify and map significant natural communities

METHODOLOGY

Study Area

The 538-acre Szirbik Forest is located in Milton, NH (Figure 1). Jones Brook and its tributaries flows southeast along the northern boundary then north into the Branch River, which eventually flows into the Salmon Falls River in Northeast Pond along the New Hampshire/Maine boundary. The overall topography includes moderate-sized hills with some steep terrain and bedrock outcropping along with a temperate acidic cliff. Four intermittent and perennial streams flow downslope into Jones Brook. Elevation ranges from 900 feet atop the highest point in the southeast part of the property to approximately 500 feet along Jones Brook and its wetland complex along the northern boundary (Figure 2).

¹ Relative abundance refers to the number of birds of one species as a percentage of the total population of the Szirbik Forest property.

² Frequency of occurrence is the number of bird stations (calculated as a proportion) that a species was recorded.

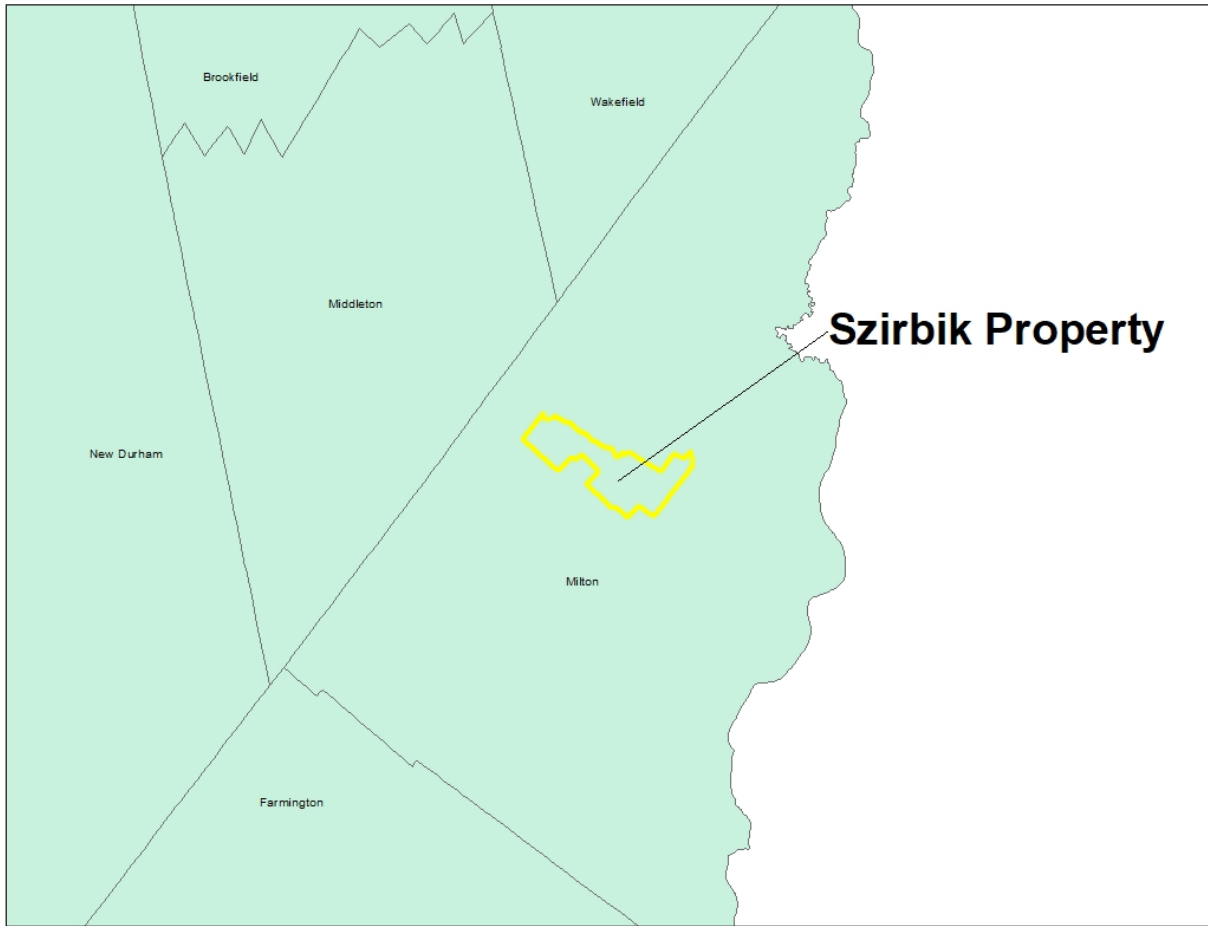


Figure 1. Locus map of the Szirbik property.

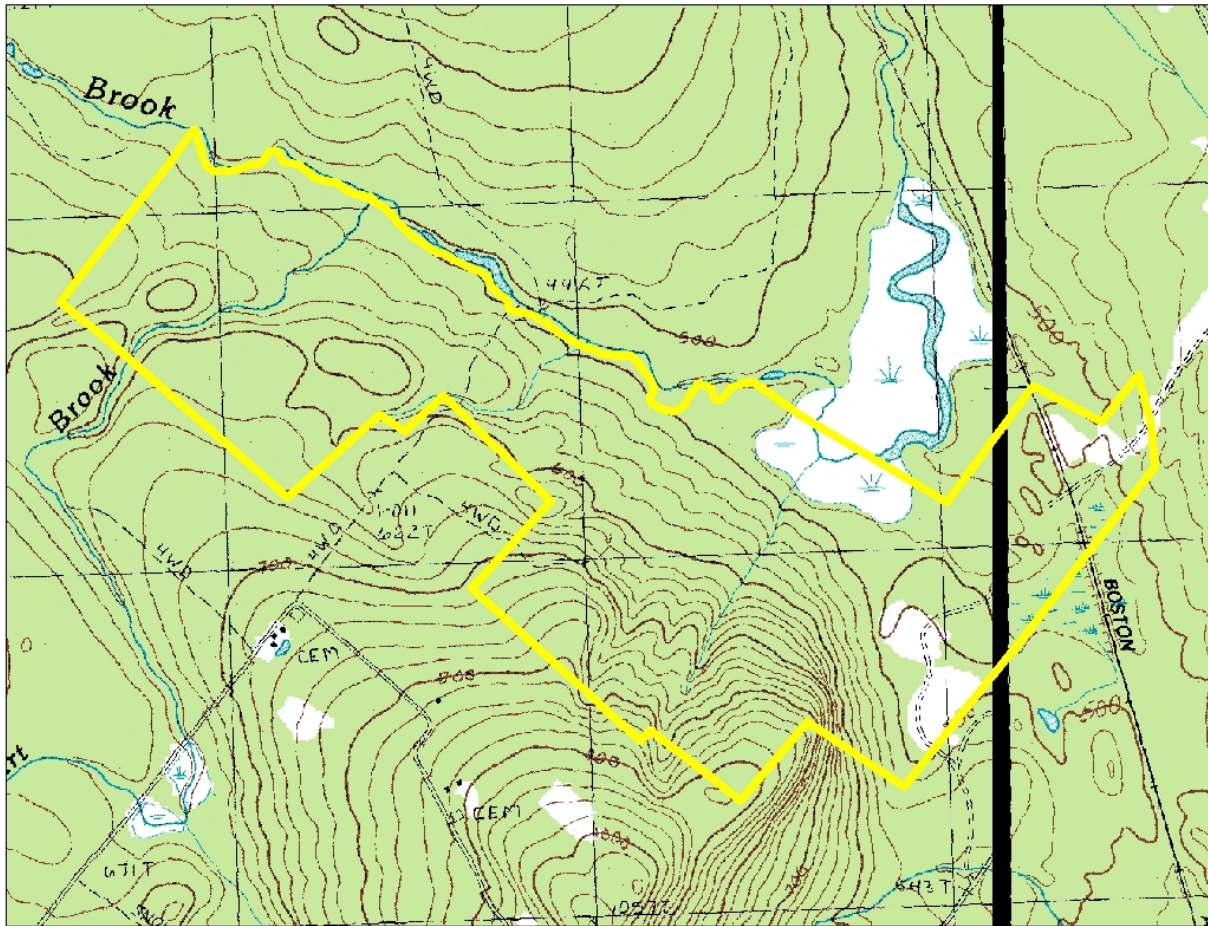


Figure 2. Topography of the Szirbik property.

Of the total 538 acres, approximately 350 acres of mostly mature hemlock-hardwood-pine forests with small patches of enriched forests (Appendix A). Embedded in the forested matrix are approximately 124 acres of wetlands, including emergent marshes, shrub wetlands, forested swamps, and 19 vernal pools (West 2021). These wetlands and their forested upland buffers provide significant habitats for a diverse wildlife community. Other habitats include nearly 64 acres of open areas and shrublands associated with current and past sand and gravel excavation operations.

The property is located within a 4,000-acre block of unfragmented forests, wetlands, and streams. This large tract of land is surrounded by multiple smaller unfragmented forests, but also adjacent to a 17,150-acre block to the northwest. The Szirbik Forest plays a significant role in

providing habitats for area-sensitive species that function best in a less human-disturbed ecological setting.

Survey Methodology

Bird Surveys

Upland and marsh/shrub wetland birds were surveyed during the spring of 2021 from 5:00 am to 10:00 am during the height of the breeding season. A total of 22 point count stations were located at least 250 meters apart and sampled two times from June 4 - June 18, 2021 (Appendix B). Birds were recorded by sight and sound for a total of 10 minutes at each bird station. These surveys were designed to calculate relative abundance and relative frequency of occurrence, as well as to determine presence/non-detection of targeted species. In addition, signs of breeding behavior were recorded for all bird stations (Table 1).

Supplemental sampling was conducted within upland and wetland habitats. These direct search surveys were aimed at detecting secretive species and to increase the probability of detecting additional species of conservation concern, as well as to identify signs of breeding (i.e., nests and fledglings). Secretive wetland bird call playback was used in conjunction with the direct searches in wetlands.

Table 1. List of the breeding evidence codes.

Breeding Code	Description of Indicators
OB = "Observed "	1. Species observed during its breeding season, but not in potential nesting habitat
PO = "Possible" Breeding	1. Individual observed in possible nesting habitat 2. Singing male; OR courtship display of waterfowl or diurnal raptors
PR = "Probable" Breeding	1. Pair observed in possible nesting habitat 2. Territory presumed from observations of territorial behavior 3. Courtship and display 4. Visiting probable nest sight 5. Agitated behavior or anxiety calls 6. Brood patch or cloacal protuberance 7. Excavating nest hole; OR nest building by wrens 8. Species observed at point during both sampling periods
CO = "Confirmed" Breeding	1. Distraction display 2. Nest building for species other than wrens 3. Used nests 4. Recently fledged young 5. Adult leaving or entering cavity indicating occupied nest; OR adult on nest 6. Adult carrying food or fecal sac 7. Nest containing eggs 8. Nest with young

Source: Foss (1994).

Reptile Surveys

Turtle trapping was conducted on the property from May 3 to May 28, 2021. Targeted species included Blanding’s turtle (State-endangered) and spotted turtle (State-threatened). The initial trapping season occurred over a one-week period from May 3-7. However, trapping conditions were hindered by lower than optimal temperatures. Trapping was re-initiated on May 17 for a 2-week period, checking traps daily until the end of trapping on May 28. During all trapping sessions a series of 3-foot hoop traps (targeted for Blanding’s turtles) and 1-foot Promar traps (targeted for spotted turtles) were set along vegetated marsh/shrub habitats along Jones Brook and other open emergent wetlands, as well as adjacent vernal pools (Appendix C). Traps were baited with canned sardines in soybean oil and checked daily, resulting in a total of 12 trap nights. All turtles captured were identified to species. Target species, if captured, were identified

by sex and age, weighed, carapace measured, abnormalities noted, and notched according to NH Fish and Game standards.

Direct searches (visual encounter surveys) were conducted in the spring and summer in optimal habitats for turtles and snakes. Wetlands and vernal pools were targets for Blanding's turtle (State-endangered) and spotted turtle (State-threatened). Open, low-density shrub, and forest edge habitats were targeted for northern black racer (State-threatened) and eastern hognose snake (State-endangered) and other reptiles of greatest conservation concern (i.e., eastern ribbon snake and smooth green snake). Jones Brook and adjacent uplands were searched for wood turtle (NH Species of Special Concern). Open and shrub habitats were searched for nesting turtles in May and early June.

Rare Plant and Significant Natural Community Surveys

A GIS (geographic information system) was used to develop a landscape analysis of the property prior to field investigations for rare plants and significant natural communities. This analysis identified several areas as targets for intensive field surveys. These targets included steep slopes, bedrock outcrops, ridge tops, wetlands, areas of enriched bedrock, and drainages. A provisional predictive GIS-based model for locating undocumented populations of small-whorled pogonia (*Isotria medeoloides*) also directed field efforts. This rare orchid was documented on an adjacent property. Natural communities and systems were classified according to Sperduto and Nichols (2011) and Sperduto (2011), respectively.

RESULTS

Bird Surveys

A total of 90 species were recorded during systematic surveys and incidental observations during 2021 (Appendix D). These included a variety of wetland and upland birds within forests and open habitats, as well as those that generally utilize edges between these habitat types. The majority of species observed during the breeding season were classified as probable breeders (52 species including 30 species of concern). However, 9 species were classified as confirmed breeders, including nine species of conservation concern (ruffed grouse, yellow-bellied sapsucker, verry, prairie warbler, and scarlet tanager). Twenty-one species were classified as

possible breeders, including nine species of conservation concern. The remaining birds were classified as simple observations.

A total of 18 wetland-associated species were recorded during standardized surveys. These surveys focused on marshes and shrub swamps but did not include isolated forested swamps. Birds included wetland obligate species, species that use wetlands for feeding, and birds associated with forest/wetland edges. In addition to these species many other wetland-related birds were recorded as incidental observations (Appendix D).

The most abundant species with widespread distribution within marsh and shrub wetlands were red-winged blackbird, common yellowthroat, common grackle, song sparrow, swamp sparrow, gray catbird, and tree swallow (see Appendices E and F for relative abundance and relative frequency). Four species of waterfowl and wading birds were observed during breeding bird surveys, including common loon, Canada goose, great blue heron, and mallard. Wood duck and common gallinule were also observed during incidental observations but present during the breeding season.

A total of 54 upland-related species were recorded during standardized surveys. These included birds typically associated with upland forests, isolated forested wetlands, open habitats, and edge species. Additional species were also recorded as incidental observations (Appendix D). The most abundant species with widespread distribution included the ovenbird, cedar waxwing, veery, red-eyed vireo, blue jay, mourning dove, pine warbler, black-capped chickadee, and black-and-white warbler (see Appendices E and F for relative abundance and relative frequency).

Bird Species of Conservation Concern

A total of 48 species of conservation concern were observed on the Szirbik Forest property (Table 2), representing almost half of birds recorded. These species were identified through systematic surveys, as well as incidental observations. Conservation status was based on the NH Wildlife Action Plan (2015), Partners in Flight North American Landbird Conservation Plan (Rich et al. 2004), North American Waterbird Conservation Plan (James et. al. 2002), North Atlantic Regional Shorebird Plan (Clark and Niles ND), New England/Mid-Atlantic Coast Bird Conservation Region 30 Implementation Plan (Steinkamp 2008), and Atlantic Northern Forest Bird Conservation Region 14 (Dettemers 2003).

Table 2. Species of conservation concern on the Szirbik Forest property, 2021.

Species	Conservation Status	Common Name	Conservation Status
Canada Goose	3; 7	Veery	1; 3
Wood Duck*	3; 7	Wood Thrush	1; 2; 3; 7
Mallard	3; 7	Purple Finch	1; 3
Ruffed Grouse	1; 3; 4	Field Sparrow	1; 7
Eastern Whip-poor-will	1; 2; 3; 7	White-throated Sparrow	2
Virginia Rail	5	Swamp Sparrow	2
Common Gallinule*	1; 5	Eastern Towhee	1; 2; 7
Killdeer	3; 6; 7	Baltimore Oriole	7
Greater Yellowlegs*	3; 6; 7	Ovenbird	3
Common Loon	1; 3	Louisiana Waterthrush	2; 7
Broad-winged Hawk	7	Black-and-white Warbler	7
Yellow-bellied Sapsucker	2; 3	Nashville Warbler	2
Red-bellied Woodpecker	2	Northern Parula	3
Northern Flicker	3; 7	Magnolia Warbler	2
American Kestrel*	1	Blackburnian Warbler	2; 3; 7
Eastern Wood-Pewee	3	Chestnut-sided Warbler	2; 3
Acadian Flycatcher	2	Black-throated Blue Warbler	3
Alder Flycatcher	2	Pine Warbler	2
Great Crested Flycatcher	7	Prairie Warbler	1; 2; 7
Eastern Kingbird	7	Black-throated Green Warbler	2; 3
Yellow-throated Vireo	2; 7	Canada Warbler	1; 2; 3; 7
Blue-headed Vireo	2	Scarlet Tanager	1; 7
Brown Creeper	3	Rose-breasted Grosbeak	3
Gray Catbird	7	Indigo Bunting	2

* = Species observed in migration only

Conservation Status

- 1 = NH Fish and Game Wildlife Action Plan (species of conservation concern)
- 2 = Partners in Flight (Watch List and/or Stewardship List for Eastern and Northern Forest Biome)
- 3 = Atlantic Northern Forest Bird Conservation Region (BCR 14)
- 4 = NH Fish and Game - NH Game Management Plan 2016-2025
- 5 = North American Waterbird Conservation Plan
- 6 = North Atlantic Regional Shorebird Plan
- 7 = New England/Mid-Atlantic Coast Bird Conservation Region (BCR 30)

Reptile Surveys

Blanding's turtle (State-endangered) and spotted turtle (State-threatened) were the targets for basking and trapping. Wood turtles (species of special concern) were also surveyed for along Jones Brook. However, no targeted species were detected on the property. Painted and snapping turtles were observed in the marsh along Jones Brook.

Targets for snake surveys focused mainly on habitats for northern black racer (State-threatened) and hognose snake (State-endangered). Other species of greatest conservation need were also part of the search effort. An eastern ribbonsnake (species of concern) was observed in spring along an access road south of Jones Brook. Other species observed included garter snake and northern water snake.

Rare Plants and Significant Natural Communities

The western uplands are predominantly *Hemlock-beech-oak-pine forest* while the eastern uplands comprise mostly *Hemlock-beech-oak-pine forest* and *Semi-rich mesic sugar maple forest*. The eastern area has a number of forest seeps, particularly on the lower slopes, which contribute to the botanical diversity of the forest and provide habitat for amphibians. Between the open wetlands and the haul road in the east is a mosaic of forested wetlands, including the uncommon *Red maple-black ash swamp* and the *Red maple-sensitive fern swamp*.

The northwestern Jones Brook floodplain includes an attractive and relatively undisturbed *Temperate minor river floodplain system*. The natural communities there include *Alder alluvial shrubland*, *Red maple floodplain forest*, *Herbaceous riverbank/floodplain*, *Meadowsweet alluvial thicket*, *Mixed tall graminoid-scrub-shrub marsh*, and *Emergent marsh*. The brook provides habitat for a small but apparently secure population of *Eutrochium fistulosum* (hollow Joe Pye weed; State-endangered).

Although *Temperate acidic cliffs* are not uncommon in New Hampshire, the one in the southeastern forest is interesting for its indicators of some mineral enrichment (e.g., *Desmodium glutinosum* [large tick-trefoil], *Geranium robertianum* [herb-Robert], and *Ostrya virginiana* [eastern hop-hornbeam]). This steep series of outcrops is ~50 meters wide and ~60 meters high (based on satellite images). It is quite extensive and undisturbed, and deserves further exploration (with a light touch) earlier in the growing season. The forest above the outcrops is *Dry red oak-white pine forest*, and below is *Semi-rich oak-sugar maple forest*. In the woods

road at the base of the outcrops is a *Circumneutral hardwood forest seep*, an uncommon natural community in New Hampshire.

The Szirbik property contains a few significant natural communities. The *Red maple–black ash swamp* and *Red oak-pine rocky ridge* were previously confirmed as exemplary (Figure 3). Two other significant natural communities were observed during this study. The *Semi-rich oak-sugar maple forest* and *temperate acidic cliff* are great examples of these communities, which occur on top of and along the steep slopes in the southeastern part of the property.

In *Semi-rich mesic sugar maple forest*, a single *Isotria medeoloides* (small whorled pogonia; Federally-threatened and State-threatened), with one capsule (Figure 3). This plant could plausibly generate a small population, as there is ample appropriate habitat. In the northwestern section *Carex baileyi* (Bailey’s sedge; State-threatened) is well-established in an overgrown haul road. Another rare plant observed included *Panax quinquefolius* (State-threatened; American ginseng). Two individuals were observed along the enriched slope in the southern section of the property. In the main aggregate-processing area there were several individuals of *Strophophyles helvola* (trailing wild bean). It is likely an inadvertent introduction from southern New England; most individuals were growing among other herbaceous plants, so it may be naturalizing. If it persists and spreads, it would be a new (rare) species for New Hampshire.

Two concentrated locations of invasive plants were documented (Figure 4). These include the disturbed areas associated with the railroad bed and along the slope and its base adjacent to the haul road in the eastern section of the property. Species included multiflora rose, Japanese barberry, colts-foot, common toadflax, Oriental bittersweet, and autumn olive.

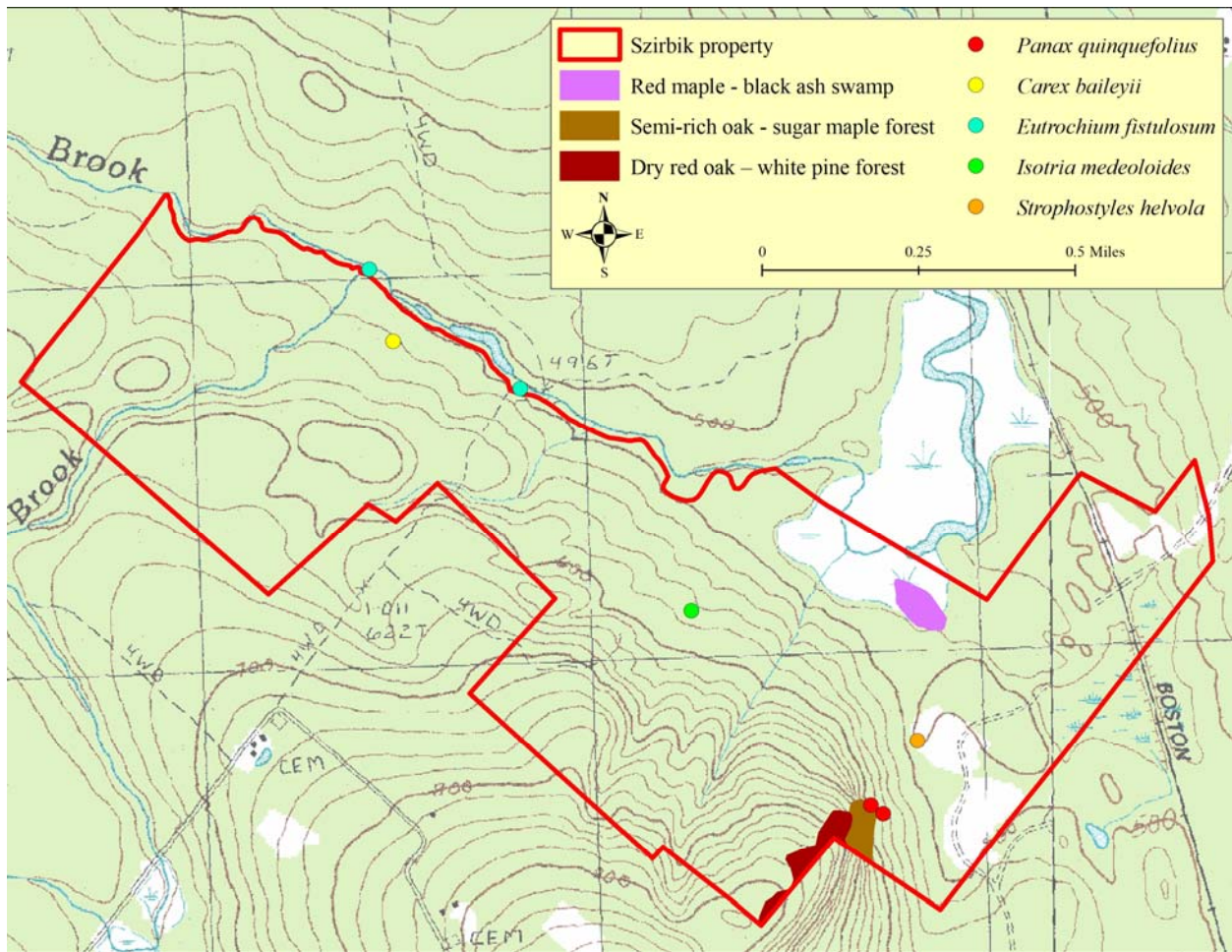


Figure 3 Significant natural communities and rare and uncommon plants of the Szirbik property.

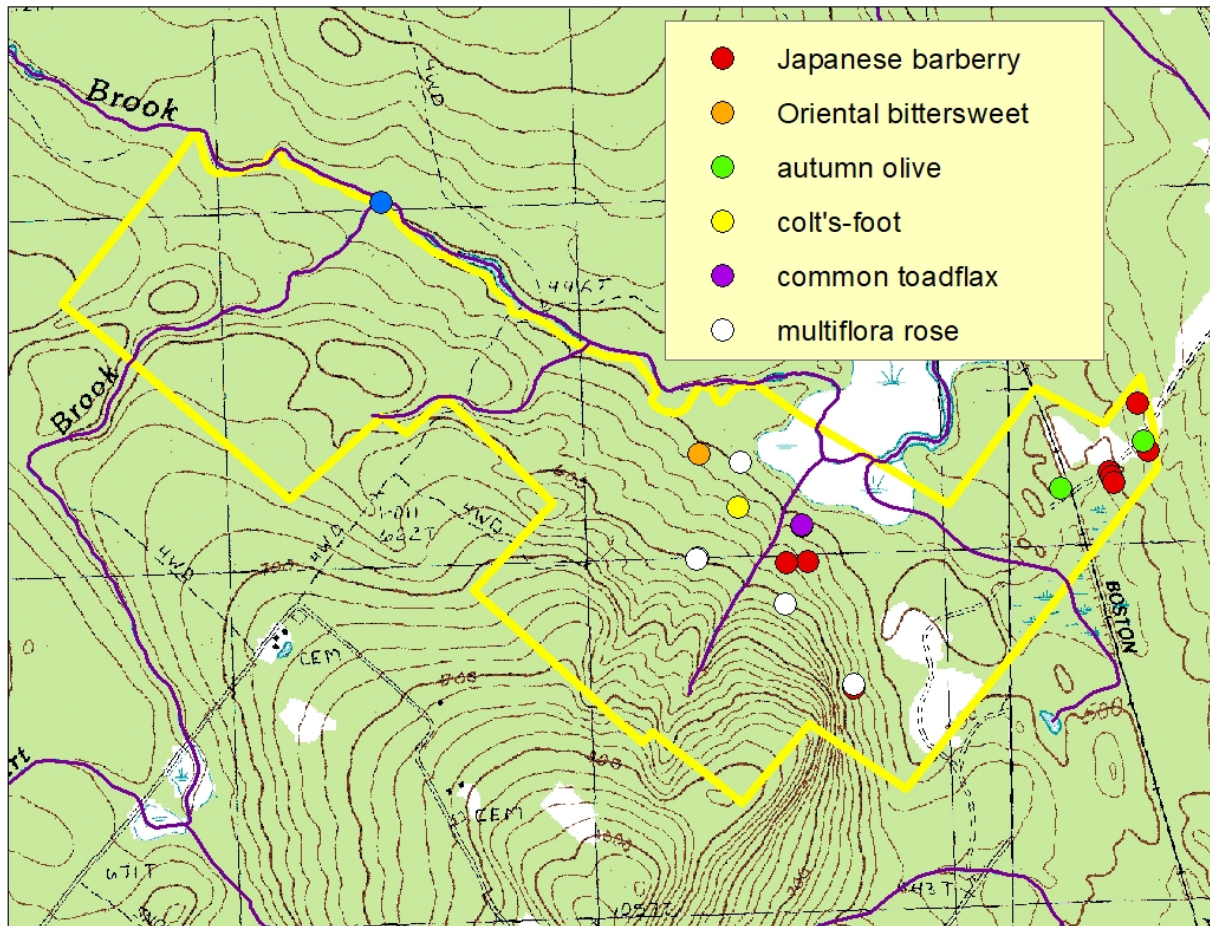


Figure 4 Invasive species observed on the Szirbik property.

DISCUSSION

The Szirbik Forest offers a 538-acre forested refuge with about 124 acres of diverse wetlands, including emergent marshes, shrub wetlands, and forest swamps. Also, there are 19 confirmed vernal pools. These wetlands provide critical habitats for breeding, nesting, brood rearing, feeding, and migration for a variety of bird species. Breeding and migratory bird surveys yielded nearly 90 species of wetland-dependent and associated species, as well as forest and edge-dwelling species. Of these 90 species of birds, 48 species of conservation concern were also observed using the various habitats during the breeding and migratory seasons (Table 2 and Appendix D). These species have been identified in six distinct conservation plans (NH Fish and Game 2015, Rich et al. 2004, James et. al. 2002, Clark and Niles ND, Steinkamp 2008, and Dettemers 2003). Species that are considered to be of conservation concern meet one or more of

the following criteria: 1) a species is listed as rare, 2) a species is considered as a concern due to a significant decline in populations, and/or 3) a species is identified as a management concern in one of the plans listed above. Several species occur on multiple plans (Table 2 and Appendix D).

The Szirbik Forest has great significance for other wildlife as well. During field visits, a wide variety of other wildlife species were observed on the property by sight, sound, track, scat, browse, and other signs. Mammals included moose (species of greatest conservation need), deer, coyote, red fox, beaver, otter, raccoon, gray squirrel, and chipmunk. Nine species of amphibians were noted, including redback salamander, red-spotted newt, spotted salamander, spring peeper, gray treefrog, wood frog, pickerel frog, green frog, and American toad. Representative among the reptiles were snapping turtle, painted turtle, eastern ribbonsnake (species of concern), northern water snake, and garter snake. Bridle shiner (State-threatened) was previously documented in Jones Brook. Based on habitat types available, it is expected that additional wildlife species are using the property throughout the year.

While thorough surveys were conducted for aquatic turtles, breeding birds, and reptiles, unusual springtime weather may have influenced our findings. Above-average temperatures in April and May likely lessened the amount of basking time required by turtles post-hibernation, hence reducing our chances of seeing rare turtles during visual basking surveys. Additionally, below-average rainfall kept wetland water levels low, limiting the distribution and number of trap locations. However, the size and quality of the Szirbik wetlands demonstrate strong potential for Blanding's and spotted turtles, both of which are state-listed species.

Brook trout (*Salvelinus fontinalis*) likely occur in Jones Brook, and recreational anglers have historically reported catching this species here (Colin Lawson, Trout Unlimited, pers. comm. 2021). This species depends on cool water temperatures and high concentrations of dissolved oxygen, conditions which are typically found in small or medium rivers and streams with an adequate presence of deep pools, riffles, coarse woody material, and undercut banks. Brook trout, and the aquatic organisms they feed on, depend on wide, shaded, and biodiverse riparian buffers.

The many beaver impoundments, forested wetlands, streams, and vernal pools found within and directly adjacent to the property provide great habitats for a robust wildlife community. Szirbik Forest is rich in vernal pool habitats. There are at least 19 known vernal pools. Vernal pools support critical habitat for amphibians, including spotted salamander,

Jefferson salamander complex, and wood frog, as well as Blanding's turtle (State-endangered), spotted turtle (State-threatened), eastern ribbonsnake, bobcat, migratory waterfowl, and aquatic macroinvertebrates. A closer inspection for additional vernal pools is recommended, as well as documenting each using *Identifying and Documenting Vernal Pools in New Hampshire* by Anne Tappan and Mike Marchand (2016, third edition). Careful management along the edges of these wetlands can continue to provide a food source for beaver that would encourage their persistence and expansion of wetlands over time.

Four species of rare plants were observed, including the Federally-threatened and State-threatened small-whorled pogonia (*Isotria medeoloides*). A lone individual was observed along the base of the north facing slope in the middle of the property. It is highly likely that additional individuals are located within this forest. Limited but appropriate habitat exists for this species, and several areas have been identified by NatureServe as having a strong possibility for occurrence. However, heavy logging in the northwestern half most likely has affected any individuals in this section of the forest. Additional surveys are warranted in areas where land management activities (e.g., logging) will occur.

Hollow Joe Pye weed (*Eutrochium fistulosum*; State-endangered) was observed in a few locations along Jones Brook. This species is likely to be more widespread. Establishing protective buffers along the brook and other wetlands will help ensure their persistence over time. Bailey's sedge (*Carex baileyi*; State-threatened) was documented along the edge of the haul road south of Jones Brook. This is an obligate wetlands species typically found in wet woods and forested swamps and their edges. Similar to hollow Joe Pye weed, this species is most likely more abundant and appropriate buffers should protect this species. In addition, the State-threatened American ginseng (*Panax quinquefolius*) was observed at the base of the *Semi-rich oak-sugar maple forest*. Two individuals were documented, owing to the enrichment of this area of the Szirbik property.

A very unusual plant was found scattered among other vegetation in an old excavation site. The trailing wild bean (*Strophophyles helvola*) is known to exist in southern New England. However, this species was not on record in New Hampshire until now. These individuals should be monitored to determine if they are naturalizing. If so, being that it would be a new species it may be classified as rare.

Two exemplary forested communities were previously documented at the Szirbik Forest (Appendix F). The *Red maple-black ash swamp* (S2) is considered rare. It is located within the forest swamp system along the eastern edge of Jones Brook. There are several scattered black ashes within these forested swamps, but this particularly one stands out as exemplary due to the number of black ashes present. The other examples peppered along the brook would not classify as *Red maple-black ash swamp* due to the low abundance of black ash.

The other exemplary community includes the *Red oak-pine rocky ridge* (S3) located on top of the steep slope in the southeastern part of the property. Large (2+ feet) red and white oaks are present along with a diversity of understory species. There are some signs of damage from the 1998 ice storm. However, this forest community has a diverse age class of trees, which indicates a lack of human disturbance.

Other significant communities include *Semi-rich oak-sugar maple forest* (S2S3) and *Temperate acidic cliff* (S4). While not exemplary these communities provide a complimentary mix of plant diversity to the property. These are in association with the ridge and steep slopes in the southeastern section of the property. This area should be set aside from active management except for ecological restoration, such as invasive species control. It is likely that additional rare plants are located within these forests. Also adding greater diversity to the property is the floodplain forest, riparian zone, and other wetland communities associated with Jones Brook.

Invasive plants were rather minimal given the level of disturbance. This is unusual for properties within the southern tier of New Hampshire, and especially so for the southeastern part of the state. Two main areas had the most concentrated occurrences. The disturbed areas associated with the railroad bed had the largest concentration of Japanese barberry and autumn olive. Another concentrated area was located at the base of the north facing slope in the eastern section of the property. This area is along the haul road and open woodlands associated with the temperate cliff. Species included Japanese barberry, Oriental bittersweet, multiflora rose, colts-foot, and common toadflax.

It is highly likely that additional invasive species are present on the property, particularly along the edges of wetlands, Jones Brook, and forests, as well as the previously excavated sites. This study did not include an exhaustive search for invasive plants. However, it is recommended that prior to any forest management that a survey be conducted to determine presence and extent of invasive plants. So far, none of the invasive plant populations appear to be choking out native

species, so it would be a good time to remove them before they spread. Restoration efforts of the vegetation in aggregate-removal areas, if it imports soil or seed mix, has the potential to introduce invasive plants.

Not only does the Szirbik Forest property support many significant habitats and high biodiversity, including many species of concern, but it is also part of a much larger landscape from which it should also be viewed. When making considerations for conservation planning it is critical to incorporate a landscape-level perspective with fine-scale habitat data. This consideration aids in a more comprehensive approach that recognizes large-scale habitats and ecological processes within the developed and natural environments. When these elements are considered in combination with the distribution of currently protected lands then a more successful conservation plan can be prepared that incorporates the concepts of biological conservation and ecosystem reserve design to help maximize and sustain biodiversity protection for the long-term.

The Szirbik Forest property is part of a nearly 4,000-acre unfragmented block, which is uncommon in southeastern New Hampshire. Roughly 16%, or 655 acres, of this block is conserved. These conservation lands abut the Szirbik property, owing significance for its protection. This large, intact forest with its wetlands and streams is surrounded by many smaller blocks that are unable to support certain wildlife that the Szirbik Forest is able to sustain. Therefore, the property plays a significant role for providing critical habitats for area-sensitive wildlife while affording protection of the ecological integrity of the core forests and wetlands. This large tract of land is surrounded by multiple smaller unfragmented blocks. The Szirbik Forest property plays a significant role in providing habitats for area sensitive species that function best in a less human-disturbed ecological setting.

Unfragmented blocks of land include a variety of natural habitats such as forests, wetlands, streams, and ponds but also can include human-modified areas such as agricultural lands, meadows, and shrublands. They are defined by the surrounding human infrastructure (roads and developed areas) and can negatively affect species survival rates, including mortality, lowered rates of breeding success, or species loss altogether. The degree of severity of fragmentation depends upon many aspects, such as the size and shape of unfragmented block, the species or community in question, the extent of loss of natural habitats, intensity of human use, and colonization of invasive species.

Large blocks of unfragmented areas are widely known to support greater biodiversity than smaller blocks. As forest blocks become smaller due to the construction of roadways and developments their biodiversity will generally be reduced. This fragmentation affect has less immediate impact on generalist species or those with small home ranges (such as gray squirrels, raccoon, and small rodents) while affecting and potentially eliminating area-sensitive specialists that need large blocks with little human disturbance in order to maintain their home ranges and for long-term survival (such as American black duck, bear, bobcat, moose, Blanding's turtle, wood thrush, and ovenbird).

Large landscapes provide the ability for wildlife movement and connect multiple habitat elements. By maintaining connectivity between critical habitats, it may be possible to provide permanent wildlife corridors within the developed environment. Wildlife travel corridors function as areas that one or many species may use to move from one habitat need to another. This movement can be based on traveling to different areas for feeding, breeding, or shelter. These habitat elements are required by all species.

Wildlife must be able to travel safely throughout the landscape in order to meet their biological needs. Many depend upon a variety of habitats for their survival and may utilize many natural features for travel. These may include areas such as riparian zones of wetlands, ponds, and streams, ridgelines, utility right-of-ways, and forest patches acting as a safe route between two or more habitats. A variety of wildlife can be associated with these corridors, including otter, fox, coyote, bobcat, deer, moose, fisher, mink, beaver, and bear.

Corridors are not only significant for mammals but equally as important for amphibians, reptiles and migratory birds. Both amphibians and reptiles begin to move from their wintering habitats to their respective breeding and nesting grounds in the spring. This is the time of year that most mortality can be noticed as these species travel across roadways in search of critical habitats. This can be especially devastating for local turtle populations as some species breed only after 15 years of age (e.g., Blanding's turtle and wood turtle). This effect can often be exacerbated as the same individuals must return back to their wintering habitats. Thus, there is a great significance in maintaining habitat connectivity, as well as understanding where these patterns of movement are taking place.

The protection of the Szirbik Forest property will also further contribute to the important conservation efforts within New Hampshire and the greater northeastern United States. The

property has been identified as a focus area in at least three conservation plans. Zankel et al. (2004) identified the Hart Brook/Mt. Tenneriffe Conservation Focus Area as part of the conservation plan for NH's coastal watersheds. Connect the Coast (Steckler, P. and D. Brickner-Wood 2019) has identified this area as significant for wildlife. In addition, The NH Wildlife Action Plan (2015) has identified the core part of the property as having the highest ranked habitat in the state (Figure 5). Areas adjacent to the Szirbik Forest have been identified as having the highest rank in the state and biological region, as well supporting these significant areas to help maintain biodiversity and ecological integrity. The steep slopes and ridge top in the southeastern part of the Szirbik Forest would also be a significant attribute for highest ranked habitats due to the rare natural communities and plants.

The findings presented above and the underlying data collected should be used to help develop a comprehensive land management plan to meet the desired goals and objectives of the Southeast Land Trust. This can afford the opportunity to develop appropriate buffers and habitat management adjacent to wetlands and vernal pools, as well as sites in upland forests geared towards wildlife management on both a commercial and non-commercial scale. These data can in turn provide valuable insight on management techniques for these species of concern. Conversely, it can also provide data to inform areas of management to increase overall biological diversity through management techniques that seek to diversify forest age classes. Forestry for the Birds (Audubon VT 2011) is a great guide to combine silviculture with habitat management focused on species of greatest conservation need.

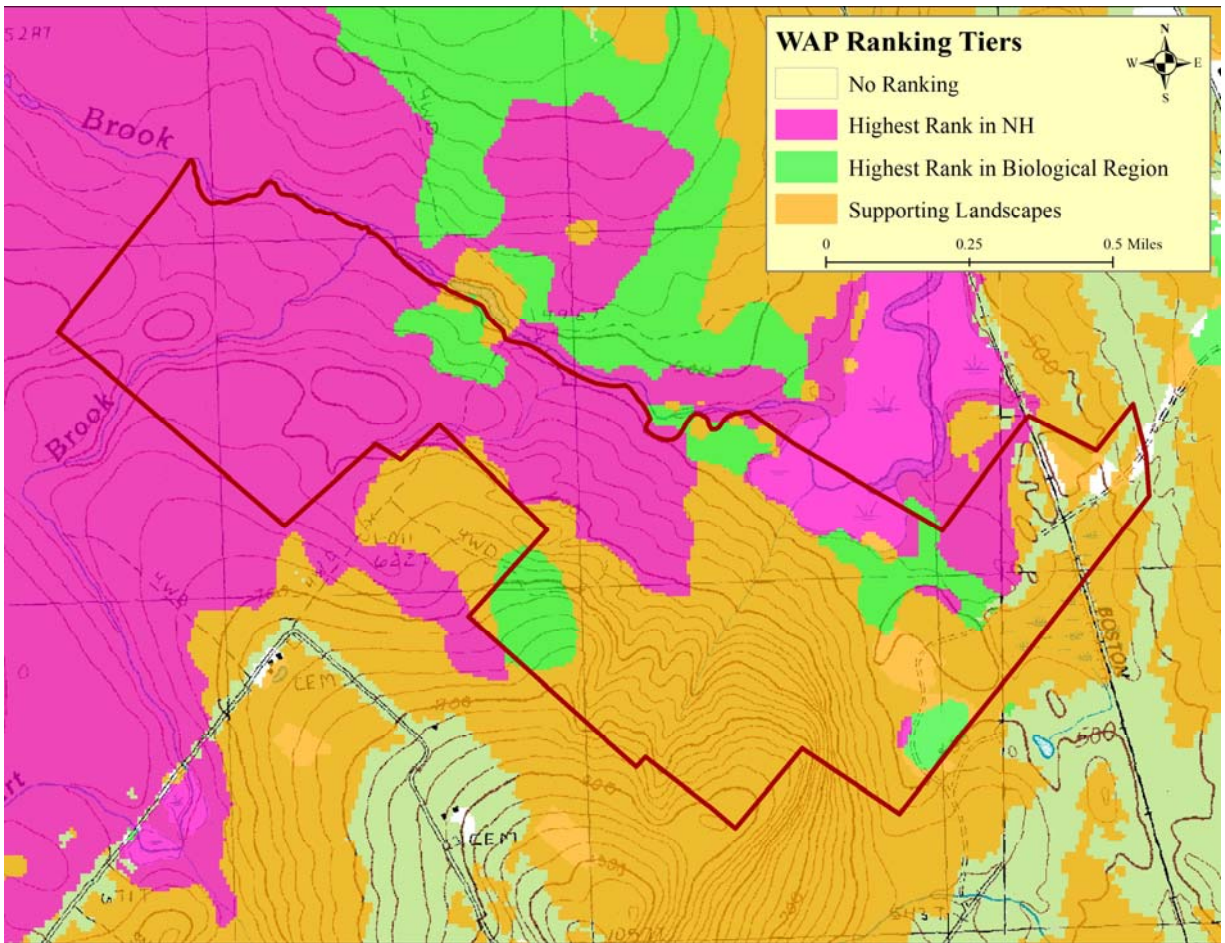


Figure 5 NH Wildlife Action Plan Habitat Ranking Tiers, Szirbik Forest.

In conclusion, the Szirbik Forest property offers a dynamic array of significant habitats for diverse wildlife and plant communities, from aquatic and wetland-related species to those that use large, unfragmented forests with significant embedded wetland ecosystems. These diverse habitats within large blocks of land can function as biologically diverse hotspots within an otherwise more fragmented landscape. Additionally, there are many other significant attributes including the exemplary natural communities, rare plants, and proximity to conserved lands that make the Szirbik Forest an attractive and important link for conservation. Proper stewardship of the Szirbik Forest can enhance and maintain these special ecological attributes whereby contributing to the New Hampshire’s biological legacy.

RECOMMENDATIONS

Below is a basic list of recommendations based on this ecological inventory, and in combination with the wetlands evaluation prepared by West (2021). These should be incorporated into the overall stewardship plan for the Szirbik Forest as the Southeast Land Trust considers land management activities. While these are some basic recommendations, a thorough and thoughtful stewardship plan should include many aspects of land uses that meets the goals and objectives of land management.

- Manage invasive plants before they start to displace native species, especially in the eastern part of Szirbik Forest where significant natural communities and rare species are present.
- Conduct additional floristic surveys within the enriched forests and temperate cliffs in the eastern part of the property. Additional rare species and spring ephemerals are most likely present in this area.
- Additional inventories/observations by professionals and volunteers in future years would be helpful to supplement this report, whereby informing future land stewardship activities.
- Additional surveys are warranted in areas where land management activities will occur (e.g., logging, habitat enhancement). Surveys should focus on rare species (e.g., small whorled pogonia) and invasive species surveys.
- Careful management along the edges of the marsh and shrub wetlands can continue to provide a food source for beaver, encouraging their persistence and expansion of wetlands over time.
- Management along the ridge and slopes associated with the eastern part of the property should be limited to ecological restoration and protection of the rare species and exemplary natural communities found in this area.
- A closer inspection for additional vernal pools is recommended, as well as documenting each using *Identifying and Documenting Vernal Pools in New Hampshire* by Anne Tappan and Mike Marchand (2016, third edition).

- There is a great significance in maintaining habitat connectivity in New Hampshire and the Northeast, as well as understanding where these patterns of movement are taking place. Therefore, the use of snow tracking and wildlife cameras would be instrumental in better understanding habitat connectivity. These data can then be compared to the NH Fish and Game's connectivity modelling to assist the state with future models.
- The findings presented above and the underlying data collected should be used to help develop a comprehensive land management plan to meet the desired goals and objectives of the Southeast Land Trust.

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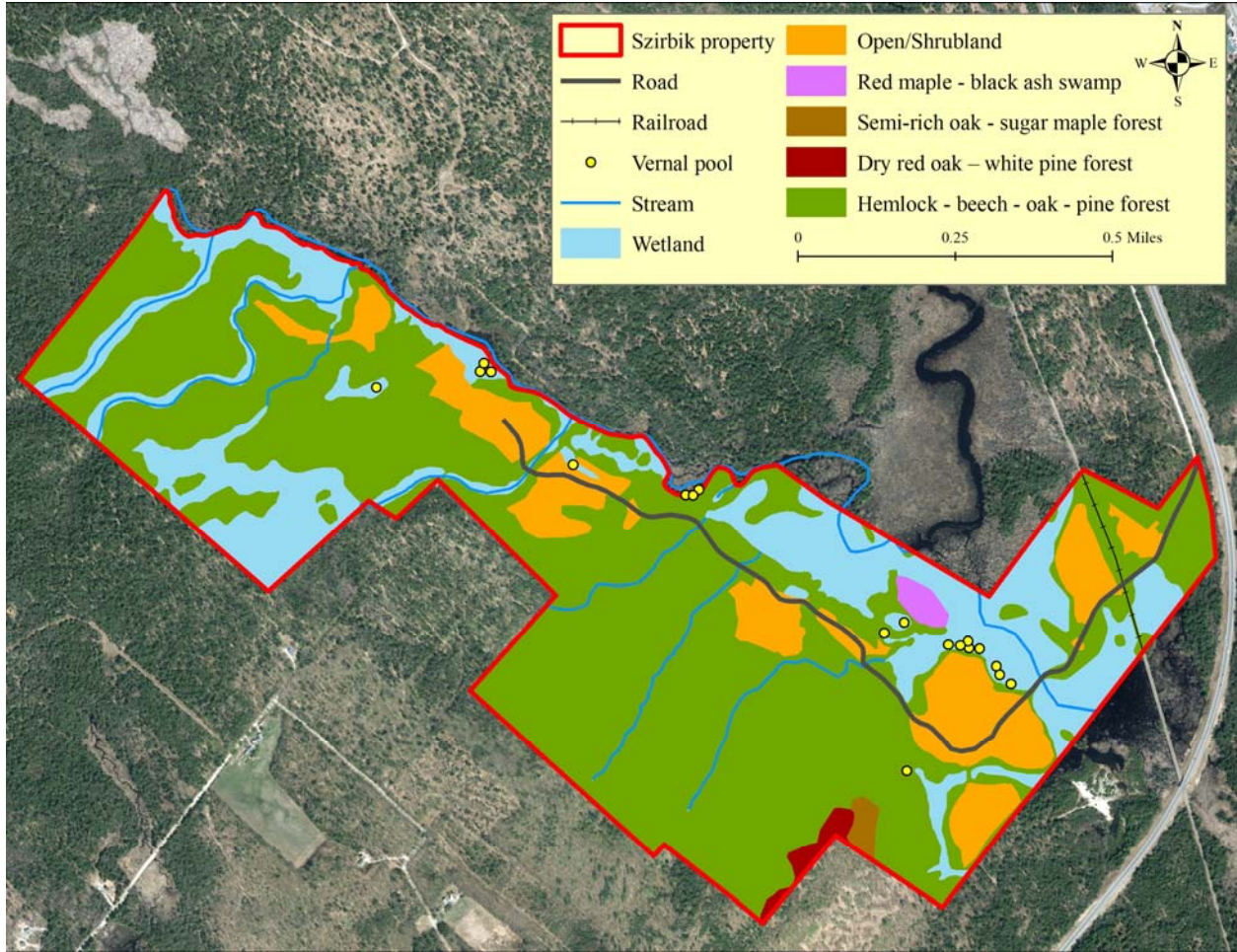
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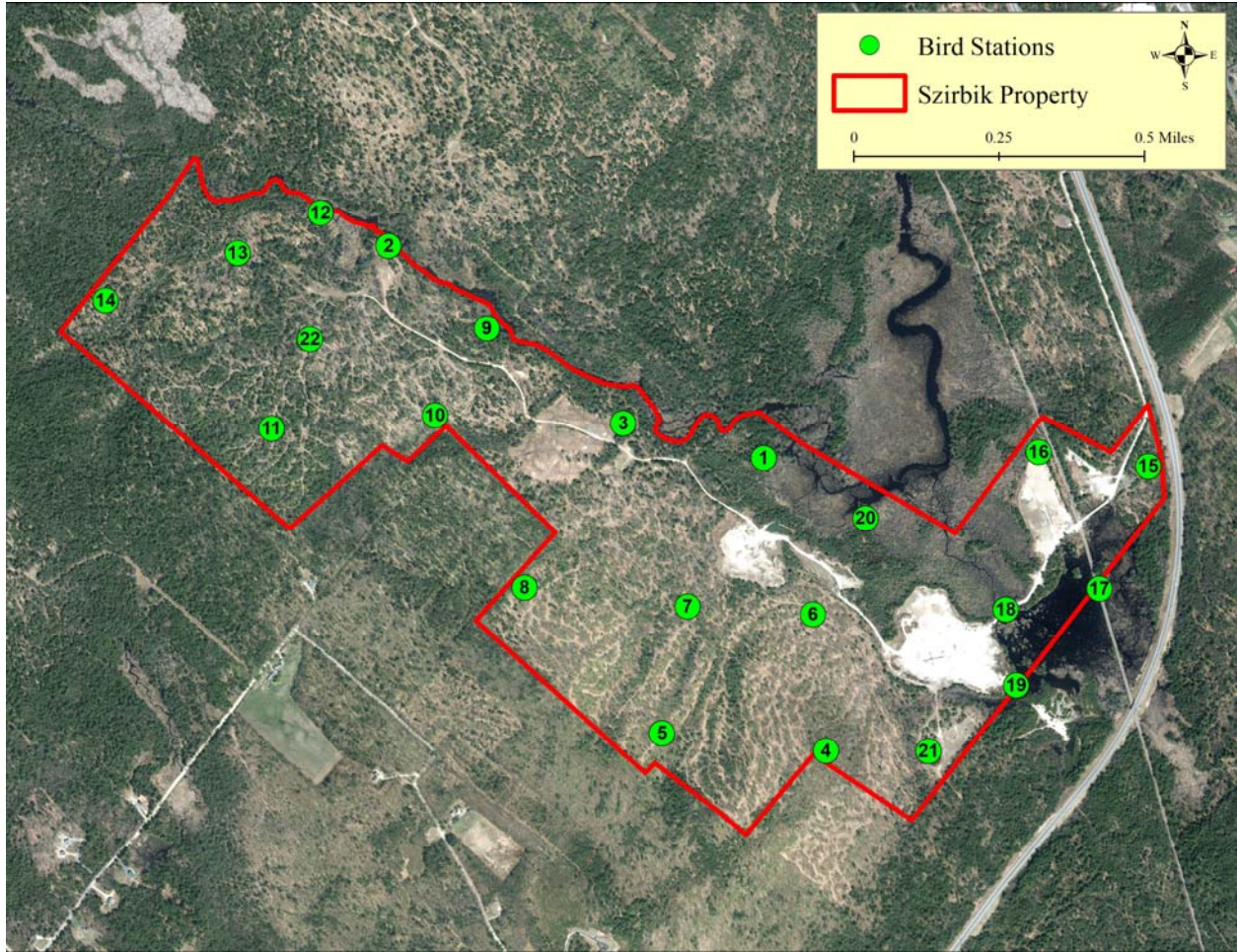
APPENDIX A

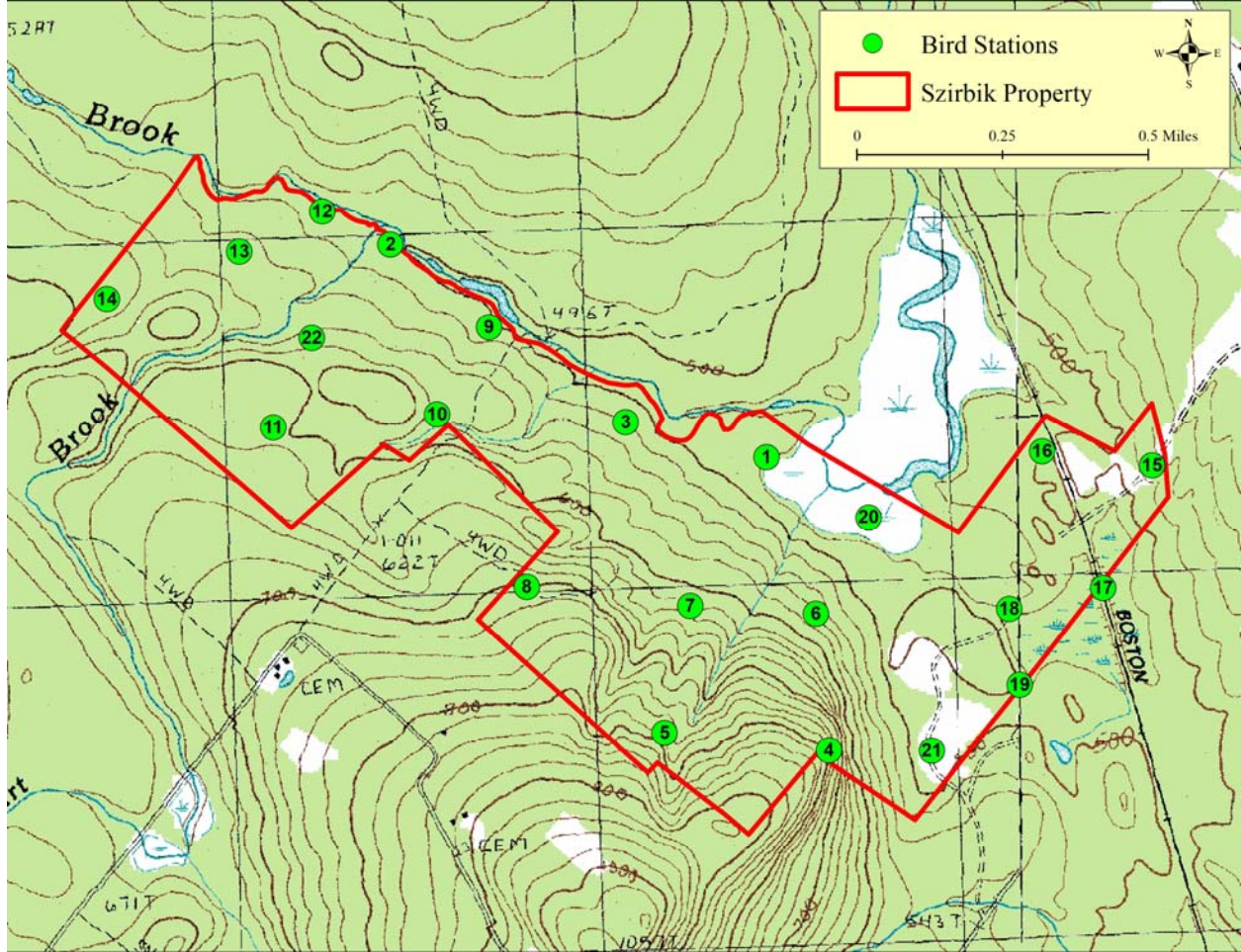
Szirkik Forest Wildlife Habitats and Significant Natural Communities



APPENDIX B

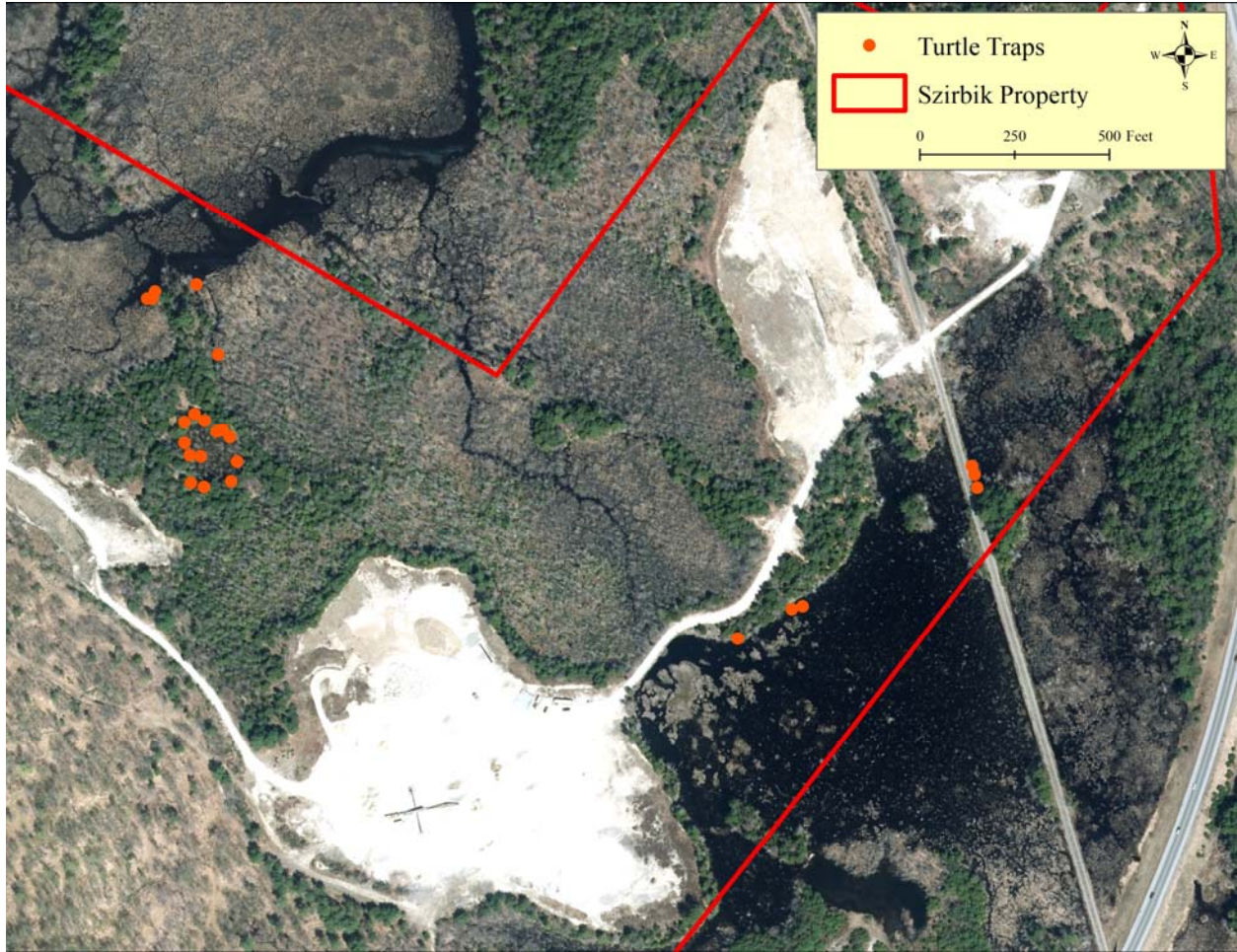
Szirbik Forest Bird Stations

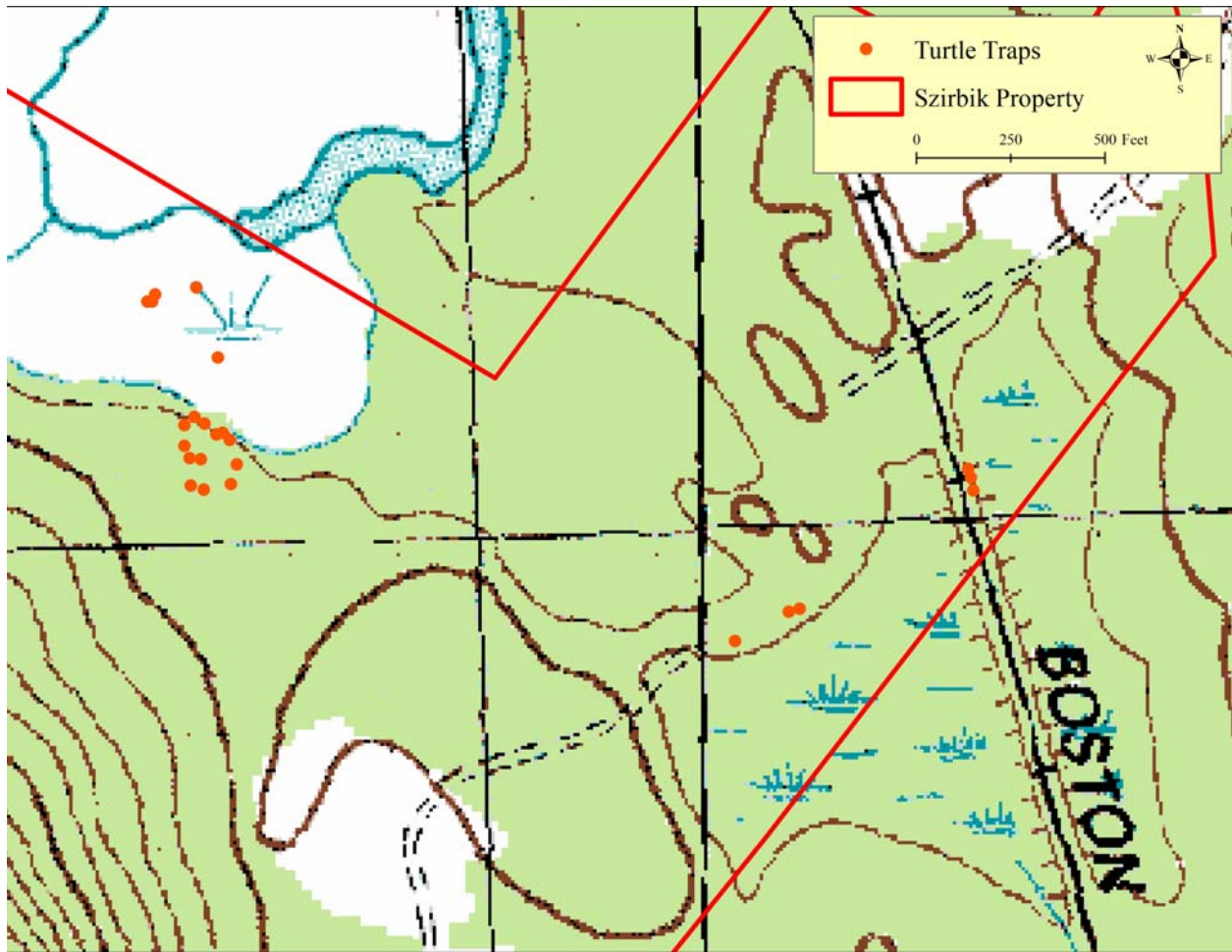




APPENDIX C

Szirk Forest Turtle Trap Stations in Vernal Pools





APPENDIX D

Szirbik Forest Bird Species List

Common Name	Scientific Name	Breeding Evidence	Conservation Status	General Trend
Canada Goose	<i>Branta canadensis</i>	PR	3; 7	Strongly increasing
Wood Duck*	<i>Aix sponsa</i>	PO	3; 7	Increasing
Mallard	<i>Anas platyrhynchos</i>	PR	3; 7	Increasing
Ruffed Grouse	<i>Bonasa umbellus</i>	CO	1; 3; 4	Decreasing
Mourning Dove	<i>Zenaida macroura</i>	PR		Increasing
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>	PO		Decreasing
Eastern Whip-poor-will	<i>Antrostomus vociferus</i>	PR	1; 2; 3; 7	Decreasing
Ruby-throated Hummingbird	<i>Archilochus colubris</i>	PR		Increasing
Virginia Rail	<i>Rallus limicola</i>	PR	5	Unknown
Common Gallinule*	<i>Gallinula galeata</i>	PO	1; 5	Decreasing
Killdeer	<i>Charadrius vociferus</i>	PR	3; 6; 7	Strongly decreasing
Greater Yellowlegs*	<i>Tringa melanoleuca</i>	OB	3; 6; 7	-
Common Loon	<i>Gavia immer</i>	OB	1; 3	Strongly increasing
Great Blue Heron	<i>Ardea herodias</i>	PO		Increasing
Green Heron	<i>Butorides virescens</i>	PO		Strongly decreasing
Turkey Vulture	<i>Cathartes aura</i>	OB		Strongly increasing
Broad-winged Hawk	<i>Buteo platypterus</i>	PO	7	Increasing
Red-tailed Hawk	<i>Buteo jamaicensis</i>	PO		Increasing
Belted Kingfisher	<i>Megaceryle alcyon</i>	PR		Decreasing
Yellow-bellied Sapsucker	<i>Sphyrapicus varius</i>	CO	2; 3	Increasing
Red-bellied Woodpecker	<i>Melanerpes caolinus</i>	PO	2	Strongly increasing
Downy Woodpecker	<i>Picoides pubescens</i>	PR		Increasing
Hairy Woodpecker	<i>Picoides villosus</i>	PR		Increasing
Pileated Woodpecker	<i>Dryocopus pileatus</i>	PR		Strongly increasing
Northern Flicker	<i>Colaptes auratus</i>	PR	3; 7	Decreasing
American Kestrel*	<i>Falco sparverius</i>	PO	1	Strongly decreasing
Eastern Wood-Pewee	<i>Contopus virens</i>	PR	3	Decreasing
Acadian Flycatcher	<i>Empidonax virescens</i>	OB	2	-
Alder Flycatcher	<i>Empidonax alnorum</i>	PR	2	Strongly increasing
Eastern Phoebe	<i>Sayornis phoebe</i>	PR		Stable
Great Crested Flycatcher	<i>Myiarchus crinitus</i>	PR	7	Stable
Eastern Kingbird	<i>Tyrannus tyrannus</i>	PR	7	Strongly decreasing
Yellow-throated Vireo	<i>Vireo flavifrons</i>	PO	2; 7	Stable
Blue-headed Vireo	<i>Vireo solitarius</i>	PR	2	Increasing
Warbling Vireo	<i>Vireo gilvus</i>	PR		Stable
Red-eyed Vireo	<i>Vireo olivaceus</i>	PR		Increasing
Blue Jay	<i>Cyanocitta cristata</i>	PO		Decreasing
American Crow	<i>Corvus brachyrhynchos</i>	PO		Increasing
Fish Crow	<i>Corvus ossifragus</i>	OB		Strongly increasing
Common Raven	<i>Corvus corax</i>	PO		Increasing
Black-capped Chickadee	<i>Poecile atricapillus</i>	PR		Increasing
Tufted Titmouse	<i>Baeolophus bicolor</i>	PO		Strongly increasing
N. Rough-winged Swallow	<i>Stelgidopteryx serripennis</i>	PO		Stable
Tree Swallow	<i>Tachycineta bicolor</i>	PR		Decreasing
Ruby-crowned Kinglet*	<i>Corthylio calendula</i>	OB		Decreasing
Red-breasted Nuthatch	<i>Sitta canadensis</i>	PR		Increasing

Common Name	Scientific Name	Breeding Evidence	Conservation Status	General Trend
White-breasted Nuthatch	<i>Sitta carolinensis</i>	PR		Strongly increasing
Brown Creeper	<i>Certhia americana</i>	PR	3	Increasing
Winter Wren*	<i>Troglodytes hiemalis</i>	OB		Unknown
Gray Catbird	<i>Dumetella carolinensis</i>	PR	7	Stable
Eastern Bluebird	<i>Sialia sialis</i>	PR		Strongly increasing
Veery	<i>Catharus fuscescens</i>	CO	1; 3	Decreasing
Hermit Thrush	<i>Catharus guttatus</i>	PR		Stable
Wood Thrush	<i>Hylocichla mustelina</i>	PO	1; 2; 3; 7	Strongly decreasing
American Robin	<i>Turdus migratorius</i>	PR		Stable
Cedar Waxwing	<i>Bombycilla cedrorum</i>	PR		Stable
Purple Finch	<i>Haemorhous purpureus</i>	PO	1; 3	Strongly decreasing
Red Crossbill	<i>Loxia curvirostra</i>	PO		Unknown
American Goldfinch	<i>Spinus tristis</i>	PO		Stable
Chipping Sparrow	<i>Spizella passerina</i>	PR		Increasing
Field Sparrow	<i>Spizella pusilla</i>	PR	1; 7	Strongly decreasing
White-throated Sparrow	<i>Zonotrichia albicollis</i>	PR	2	Strongly decreasing
Song Sparrow	<i>Melospiza melodia</i>	PR		Decreasing
Swamp Sparrow	<i>Melospiza georgiana</i>	PR	2	Stable
Eastern Towhee	<i>Pipilo erythrophthalmus</i>	PR	1; 2; 7	Strongly decreasing
Baltimore Oriole	<i>Icterus galbula</i>	PR	7	Strongly decreasing
Red-winged Blackbird	<i>Agelaius phoeniceus</i>	CO		Decreasing
Brown-headed Cowbird	<i>Molothrus ater</i>	PO		Decreasing
Common Grackle	<i>Quiscalus quiscula</i>	CO		Strongly decreasing
Ovenbird	<i>Seiurus aurocapilla</i>	PR	3	Stable
Louisiana Waterthrush	<i>Parkesia motacilla</i>	PR	2; 7	Stable
Northern Waterthrush	<i>Parkesia noveboracensis</i>	PR		Strongly decreasing
Black-and-white Warbler	<i>Mniotilta varia</i>	PR	7	Decreasing
Nashville Warbler	<i>Oreothlypis virginiae</i>	PO	2	Strongly decreasing
Common Yellowthroat	<i>Geothlypis trichas</i>	CO		Stable
Northern Parula	<i>Setophaga americana</i>	OB	3	Strongly increasing
Magnolia Warbler	<i>Setophaga magnolia</i>	PR	2	Stable
Blackburnian Warbler	<i>Setophaga fusca</i>	PR	2; 3; 7	Stable
Yellow Warbler	<i>Setophaga petechia</i>	CO		Strongly decreasing
Chestnut-sided Warbler	<i>Setophaga pennsylvanica</i>	PR	2; 3	Strongly decreasing
Black-throated Blue Warbler	<i>Setophaga caerulescens</i>	PR	3	Increasing
Pine Warbler	<i>Setophaga pinus</i>	PR	2	Strongly increasing
Yellow-rumped Warbler	<i>Setophaga coronata</i>	PR		Stable
Prairie Warbler	<i>Setophaga discolor</i>	CO	1; 2; 7	Increasing
Black-throated Green Warbler	<i>Setophaga virens</i>	PR	2; 3	Increasing
Canada Warbler	<i>Cardellina canadensis</i>	PR	1; 2; 3; 7	Strongly decreasing
Scarlet Tanager	<i>Piranga olivacea</i>	CO	1; 7	Strongly decreasing
Northern Cardinal	<i>Cardinalis cardinalis</i>	PR		Strongly increasing
Rose-breasted Grosbeak	<i>Pheucticus ludovicianus</i>	PR	3	Strongly decreasing
Indigo Bunting	<i>Passerina cyanea</i>	PR	2	Stable

* = Species observed in migration only

Conservation Status

- 1 = NH Fish and Game Wildlife Action Plan (species of conservation concern)
- 2 = Partners in Flight (Watch List and/or Stewardship List for Eastern and Northern Forest Biome)
- 3 = Atlantic Northern Forest Bird Conservation Region (BCR 14)
- 4 = NH Fish and Game - NH Game Management Plan 2016-2025
- 5 = North American Waterbird Conservation Plan
- 6 = North Atlantic Regional Shorebird Plan
- 7 = New England/Mid-Atlantic Coast Bird Conservation Region (BCR 30)

Bold = species of conservation concern

Breeding Status - Adapted from Foss (1994); see next page for explanations of codes.

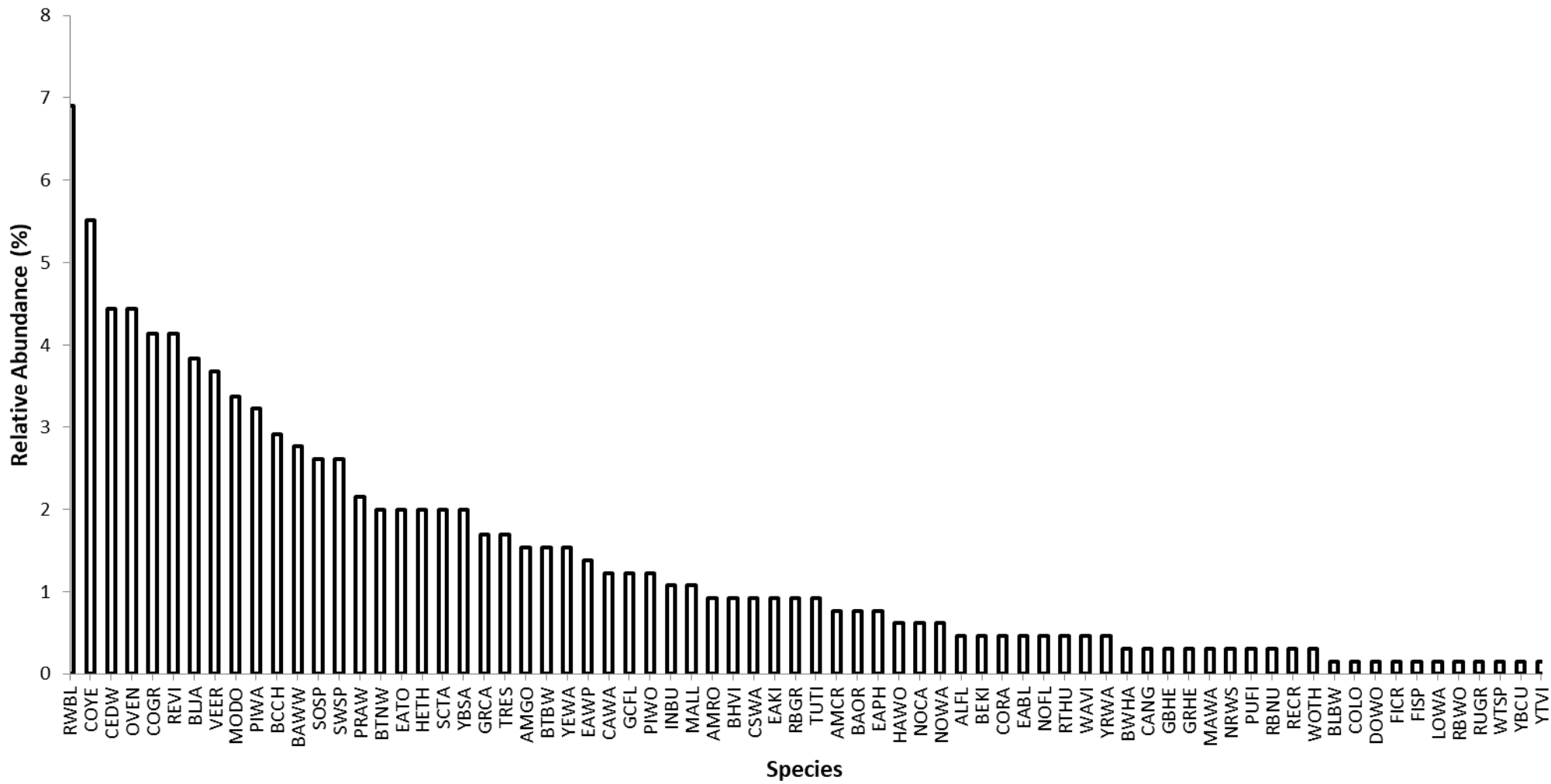
General Trend - Hunt (2009); see next page for explanations.

Breeding Code

- | | |
|------------------------------|--|
| OB = "Observed " | 1. Species observed during its breeding season, but not in potential breeding habitat |
| PO = "Possible"
Breeding | 1. Individual observed in possible nesting habitat
2. Singing male; OR courtship display of waterfowl or diurnal raptors |
| PR = "Probable"
Breeding | 1. Pair observed in possible nesting habitat
2. Territory presumed from observations of territorial behavior
3. Courtship and display
4. Visiting probable nest sight
5. Agitated behavior or anxiety calls
6. Brood patch or cloacal protuberance
7. Excavating nest hole; OR nest building by wrens
8. Species observed at point during both sampling periods |
| CO = "Confirmed"
Breeding | 1. Distraction display
2. Nest building for species other than wrens
3. Used nests
4. Recently fledged young
5. Adult leaving or entering cavity indicating occupied nest;
OR adult on nest
6. Adult carrying food or fecal sac
7. Nest containing eggs
8. Nest with young |

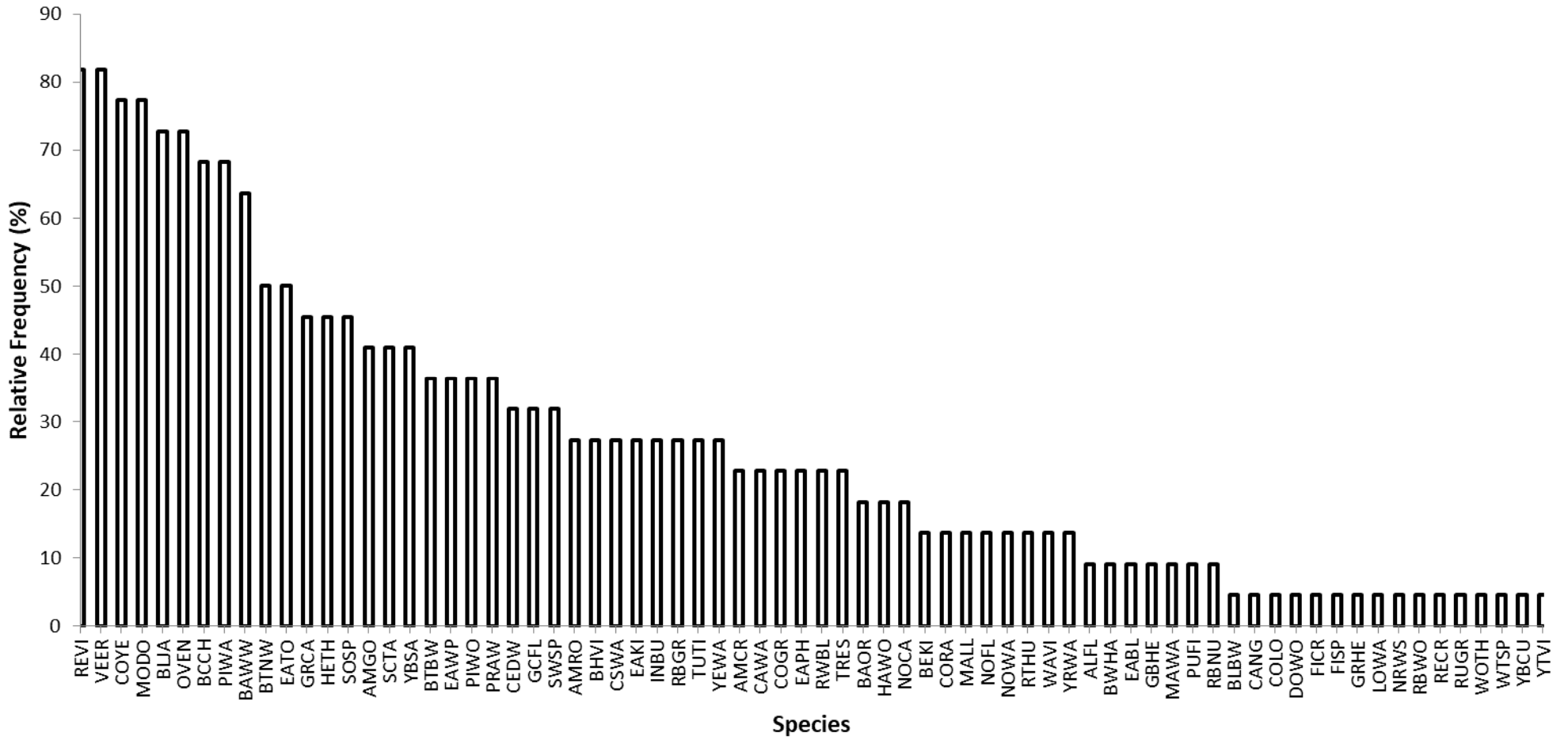
APPENDIX E

Relative Abundance of Birds



APPENDIX F

Relative Frequency of Birds



APPENDIX G

Bird Code Explanations

Code	Species		Code	Species
ALFL	Alder Flycatcher		INBU	Indigo Bunting
AMCR	American Crow		LOWA	Louisiana Waterthrush
AMGO	American Goldfinch		MALL	Mallard
AMRO	American Robin		MAWA	Magnolia Warbler
BAOR	Baltimore Oriole		MODO	Mourning Dove
BAWW	Black-and-white Warbler		NOCA	Northern Cardinal
BCCH	Black-capped Chickadee		NOFL	Northern Flicker
BEKI	Belted Kingfisher		NOWA	Northern Waterthrush
BHVI	Blue-headed Vireo		NRWS	Northern Rough-winged Swallow
BLBW	Blackburnian Warbler		OVEN	Ovenbird
BLJA	Blue Jay		PIWA	Pine Warbler
BTBW	Black-throated Blue Warbler		PIWO	Pileated Woodpecker
BTNW	Black-throated Green Warbler		PRAW	Prairie Warbler
BWHA	Broad-winged Hawk		PUFI	Purple Finch
CANG	Canada Goose		RBGR	Rose-breasted Grosbeak
CAWA	Canada Warbler		RBNU	Red-breasted Nuthatch
CEDW	Cedar Waxwing		RBWO	Red-bellied Woodpecker
COGR	Common Grackle		RECR	Red Crossbill
COLO	Common Loon		REVI	Red-eyed Vireo
CORA	Common Raven		RTHU	Ruby-throated Hummingbird
COYE	Common Yellowthroat		RUGR	Ruffed Grouse
CSWA	Chestnut-sided Warbler		RWBL	Red-winged Blackbird
DOWO	Downy Woodpecker		SCTA	Scarlet Tanager
EABL	Eastern Bluebird		SOSP	Song Sparrow
EAKI	Eastern Kingbird		SWSP	Swamp Sparrow
EAPH	Eastern Phoebe		TRES	Tree Swallow
EATO	Eastern Towhee		TUTI	Tufted Titmouse
EAWP	Eastern Wood-Pewee		VEER	Veery
FICR	Fish Crow		WAVI	Warbling Vireo
FISP	Field Sparrow		WOTH	Wood Thrush
GBHE	Great Blue Heron		WTSP	White-throated Sparrow
GCFL	Great Crested Flycatcher		YBCU	Yellow-billed Cuckoo
GRCA	Gray Catbird		YBSA	Yellow-bellied Sapsucker
GRHE	Green Heron		YEWA	Yellow Warbler
HAWO	Hairy Woodpecker		YRWA	Yellow-rumped Warbler
HETH	Hermit Thrush		YTVI	Yellow-throated Vireo

APPENDIX H

NH Natural Heritage Bureau Report Known Rare Species and Exemplary Natural Communities



New Hampshire Natural Heritage Bureau

DNCR - Division of Forests & Lands
172 Pembroke Road, Concord, NH 03301
Phone: (603) 271-2214 Fax: (603) 271-6488

To: Shaun Dillon
Southeast Land Trust
6 Center Street, PO Box 675
Exeter, NH 03833

From: NH Natural Heritage Bureau

Date: 2021-03-29

Re: Review by NH Natural Heritage Bureau of request dated 2021-03-25

NHB File ID: 3672

Town: Milton, NH

Project type: Landowner Request

Location: 17-22 & 22-31-1

We have searched our database for records of rare species and exemplary natural communities on the property(s) identified in your request. Our database includes known records for species officially listed as Threatened or Endangered by either the state of New Hampshire or the federal government, as well as species and natural communities judged by experts to be at risk in New Hampshire but not yet formally listed.

NHB records on the property(s):

	Mapping Precision	% within tract	Last Reported	Listing Status		Conservation Rank	
				Federal	NH	Global	State
Natural Community							
Northern hardwood - black ash - conifer swamp	High	74	1983	--	--	GNR	S3
Red oak - pine rocky ridge	High	67	2000	--	--	GNR	S3

NHB records within one mile of the property(s):

	Last Reported	Listing Status		Conservation Rank	
		Federal	NH	Global	State
Natural Community					
Northern hardwood - black ash - conifer swamp	1983	--	--	GNR	S3
Red oak - pine rocky ridge	2000	--	--	GNR	S3
Plant Species					
American ginseng - <i>Panax quinquefolius</i>	2003	--	T	G3	S2

NOTE: This review *cannot* be used to satisfy a permit or other regulatory requirement to check for rare species or habitats that could be affected by a proposed project, since it provides detailed information only for records actually on the property.



New Hampshire Natural Heritage Bureau

DNCR - Division of Forests & Lands

172 Pembroke Road, Concord, NH 03301

Phone: (603) 271-2214 Fax: (603) 271-6488

small whorled pogonia - <i>Isotriamedeoloides</i>	2019	T	T	G2	S2
Vertebrate Species		Federal	NH	Global	State
Bridle Shiner - <i>Notropis bifrenatus</i>	2013	--	T	G3	S2

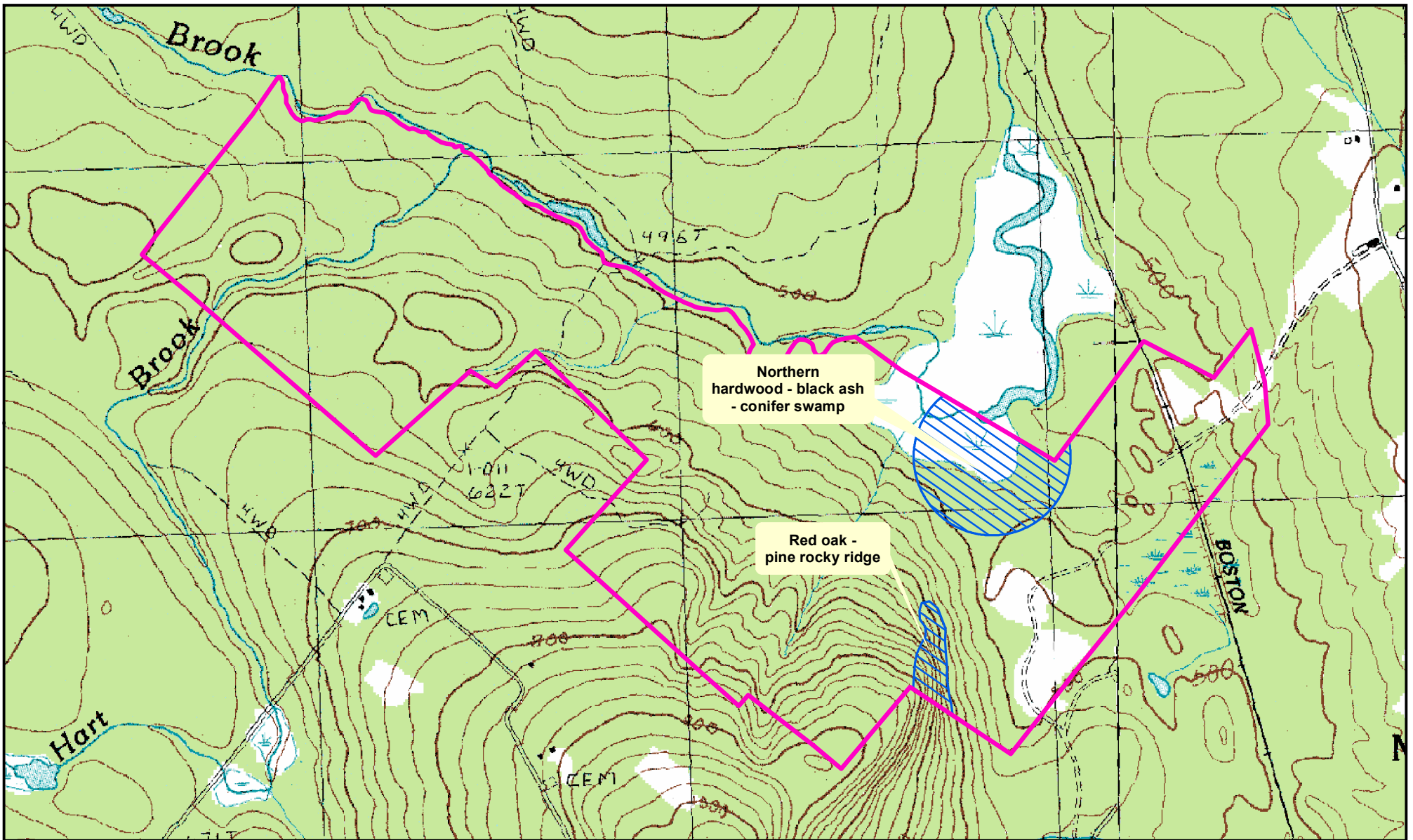
Listing codes: T = Threatened, E = Endangered SC = Special Concern

Rank prefix: G = Global, S = State, T = Global or state rank for a sub-species or variety (taxon)

Rank suffix: 1-5 = Most (1) to least (5) imperiled. "--", U, NR = Not ranked. B = Breeding population, N = Non-breeding, H = Historical, X = Extirpated.

A negative result (no record in our database) does not mean that no rare species are present. Our data can only tell you of known occurrences, based on information gathered by qualified biologists and reported to our office. However, many areas have never been surveyed, or have only been surveyed for certain species. An on-site survey would provide better information on what species and communities are indeed present.

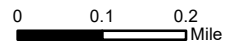
NOTE: This review *cannot* be used to satisfy a permit or other regulatory requirement to check for rare species or habitats that could be affected by a proposed project, since it provides detailed information only for records actually on the property.



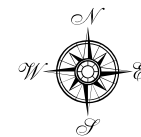
Natural Heritage Bureau Landowner Report

Project ID Number: 3672

NOTE: Any rare species and/or exemplary natural communities in this area are not shown unless they occur, at least in part, within the property bounds.



Symbol	Category	# of Records
	Property Bounds	
	Plant Occurrence:	0
	Animal Occurrence:	0
	Natural Community:	2
	Ecological System:	0



New Hampshire Natural Heritage Bureau - Natural Community Record

Northern hardwood - black ash - conifer swampLegal Status

Federal: Not Listed
 State: Not Listed

Conservation Status

Global: GNR: Not Ranked
 State: S3: Rare or Uncommon

Description at this Location

Quality Rank: Fair
 Quality Comments: Diverse swamp with young trees.

Detailed Description: 1983: Diverse swamp with young trees and a circumneutral tendency with such species as *Solidago flexicaulis* (zigzag goldenrod) and *Cornus sericea* (red osier dogwood).

Characteristic species include: *Saxifraga pennsylvanica* (swamp saxifrage), *Platanthera grandiflora* (large purple-fringed orchid), *Fraxinus nigra* (black ash), *Chrysosplenium americanum* (golden saxifrage), and *Abies balsamea* (balsamfir). Seepy, peaty soil with treed hummocks.

General Area: 1983: Bordered by forest and a streamside swamp.

General Comments: 1983: At least 100 *Platanthera grandiflora* were seen in bloom at time of site visit. Recommend an inventory in the spring.

Mgmt Comments: --

Location

Survey Site Name: Mt. Teneriffe North
 Managed By: Jones Forest

County: Strafford Size: 35.3 acres
 Town(s): Milton Elevation: 475

Precision: High

Directions: Mt. Teneriffe North. Swamp is northeast of Mt. Teneriffe.

Dates documented

First reported: 1983 Last reported: 1983-08-04

New Hampshire Natural Heritage Bureau - Natural Community Record

Red oak - pine rocky ridge

Legal Status

Federal: Not Listed
State: Not Listed

Conservation Status

Global: GNR: Not Ranked
State: S3: Rare or Uncommon

Description at this Location

Quality Rank: Good
Quality Comments: Somewhat small.

Detailed Description: 2000: Oak woodland with bedrock exposure ranging to ca. 70%; lichen and moss species abundant. Dominant species in the understory include *Polygonum scandens* (large climbing false buckwheat), *Dryopteris marginalis* (marginal wood fern), and *Polypodium virginianum* (rock polypody). Light to moderate damage from the 1998 ice storm, including some limb loss in most canopy and subcanopy trees.
1983: Large *Quercus rubra* (red oak) and *Q. alba* (white oak) dominate (to 24-26" dbh). Very nice vegetation structure. Mix of size classes indicates possible lack of disturbance.

General Area: 2000: Bordered downslope to the east by cut-over rich mesic forest (ca. 90% canopy removal). 1983: Steep slope where soil is shallow and dry. Appears natural and undisturbed.

General Comments: 2000: Should return to core trees. 1983: May be virgin stand. Detailed species list not taken.

Mgmt Comments: --

Location

Survey Site Name: Mt. Teneriffe North
Managed By: None

County: Strafford
Town(s): Milton
Size: 7.4 acres
Elevation: 760

Precision: High

Directions: Go north on Rte. 16 in Milton, enter gravel pit after bridge #36, enter woods right off of clearcut and go straight up cliffs to top of ridge.

Dates documented

First reported: 1983-08-04
Last reported: 2000-09-29