



**Connecticut  
Light & Power**

The Northeast Utilities System

NEW ENGLAND  
**EAST**  **WEST  
SOLUTION**

**EX.5: Inventory of Potential Breeding Bird Species and Habitat  
in the Proposed Connecticut to Rhode Island 345-kV  
Project Area 2004**



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Municipal Consultation Filing for the  
Interstate Reliability Project



**INVENTORY OF POTENTIAL BREEDING BIRD SPECIES  
AND HABITATS IN THE  
PROPOSED CONNECTICUT TO RHODE ISLAND  
345-kV PROJECT AREA**

**Appendix G**

**August 2004**



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## 1. INTRODUCTION AND STUDY OBJECTIVES

The Connecticut Light and Power Company ("CL&P") proposes to construct and operate a new 345-kV transmission line and associated substation modifications in northeastern Connecticut. Transmission line routes currently under consideration would traverse approximately 40 miles, extending through portions of New London, Tolland, and Windham counties. The Project would connect CL&P's existing Card Substation in the Town of Lebanon (New London County) and existing Lake Road Substation in the Town of Killingly (Windham County), and would continue northeast through Windham County to the Connecticut – Rhode Island border in the Town of Thompson.

As part of applications for the construction of an electric transmission line, the Connecticut Siting Council's (Siting Council's) *Application Guides for Terrestrial Electric Transmission Line Facilities* (September 9, 2003; Section VIII.H.1) call for a "narrative description of existing conditions along the proposed transmission line route", including an inventory of breeding birds and their habitats. Accordingly, the purpose of this report is to:

- Provide an inventory of the bird species that are known or expected to breed in northeastern Connecticut and their habitats;
- Identify the habitats that are prevalent in the Connecticut to Rhode Island Project area; and
- Describe generally the potential effects of construction and operation of the Project on the bird species in the Project area.

The Connecticut to Rhode Island Project is still in the planning stage and a proposed route has not yet been selected. CL&P anticipates that a proposed route would be identified based on input received during the municipal consultation process, which will be conducted – in accordance with Siting Council regulations - prior to the submission of an application.

For this breeding bird inventory, CL&P and its environmental consultants conducted a preliminary inventory of bird species known or expected to breed in northeastern Connecticut and prevalent breeding bird habitat in the vicinity of the three alternative routes (Green, Blue, and Purple as depicted on Figure XX) that have been identified at this point in the siting process. The area encompassed by these three routes is referred to as the "Project area" in this section.

In general, breeding bird habitats were assessed along the existing ROW between Card Street, Lake Road Substation, and the Connecticut to Rhode Island border (Green Route). It is assumed that such habitats



are relatively representative of the northeastern Connecticut area within which any Project route would be located. This preliminary inventory and habitat analysis will be updated, as appropriate, after the Municipal Consultation process when a proposed Project route has been identified. The results of the updated inventory will be included as part of the CSC Application for the Project. The results of the preliminary inventory of bird species and breeding bird habitat that could occur in the Project area are included in Table 1.



## 2. METHODS

The inventory of potential breeding birds in the Connecticut to Rhode Island Project area was performed based on a review of published data concerning breeding birds in northeastern Connecticut, research concerning avian habitats on ROWs, agency consultations, and field observations concerning the habitat types in the Project area. This section describes these methods used to inventory potential bird breeding habitat in the Project area as part of this preliminary analysis.

### **Review of Breeding Bird Atlas Data**

*The Atlas of Breeding Birds of Connecticut (Atlas; Bevier [ed] 1994)* was the primary source consulted to determine the bird species likely to occur in the Project area. The *Atlas* compiles the results of a comprehensive and systematic survey of the state's breeding birds and their locations. The *Atlas* is based on field surveys conducted over the five-year period from 1982 to 1986 involving more than 500 volunteers.

The *Atlas* survey, which employed a grid system based on the U.S. Geological Survey quadrangle system, subdivided Connecticut into 596 "blocks," each representing approximately 10 square miles of geographic coverage. For each block, volunteers recorded observations of bird species and their behavior, identifying which species were observed and whether breeding in that block was considered possible, probable, or confirmed. For each bird species recorded in Connecticut, the *Atlas* includes a discussion of the species' habitat preferences, and provides a distribution map that indicates in which blocks the species was observed and whether breeding was confirmed, probable, or possible.

To identify bird species that could potentially inhabit the Project area, the bird distribution maps provided in the *Atlas* were compared to the general location of the Green, Blue and Purple Routes. Any species that the *Atlas* identified as possible, probable, or confirmed for breeding within an approximately 10-15 mile area of the Green, Blue, and Purple alternate routes were included in Table 1. The 10-15 mile review area was used because it encompasses approximately the length of a block in the *Atlas*, and takes into consideration home ranges and potential changing distributions of the bird species over time.

### **Published Literature on Breeding Birds and ROWs**

The interaction between breeding birds and maintained ROWs has been the intensively researched over the past several decades. To assess the applicability of such published research to the review of



breeding birds for the Connecticut to Rhode Island Project, a literature search was conducted. Section 3 summarizes the results of the principal studies reviewed, which also are listed in Section 6.

### **Agency Consultations**

CL&P and its environmental consultants also consulted with staff at the CTDEP Natural Diversity Data Base (NDDDB) Program and the U.S. Fish and Wildlife Service (USFWS) to obtain additional information regarding the potential occurrence of bird species classified as Endangered, Threatened, or Special Concern in the Project area. The results of these consultations were incorporated into Table 1.

### **Field Survey of Breeding Bird Habitat**

An analysis of the habitat types traversed by the existing ROW along the Green Route was performed<sup>1</sup> with the presumption that such habitats are relatively representative of the northeaster Connecticut area within which any Project route alternatives would be located. Field surveys of the Green Route were conducted during the summer of 2004, resulting in the identification of general vegetative habitat types that can be expected to be relatively common throughout the northeastern part of the state. In addition, aerial photographs of the Green Route were reviewed to verify habitat types and relative abundance. As a result of these analyses, eight basic vegetative habitat types were identified in the Project area. These include:

- **Old Field/Shrubland**. The predominant habitat type found on the existing CL&P ROW; includes the existing maintained ROW in most areas, as well as adjacent abandoned fields, natural shrublands, and early successional forests.
- **Mature Mixed Forest**. Includes mature mixed deciduous/coniferous forests adjacent to the existing ROW in upland areas where some vegetation clearing may be required. Consists typically of tree species common to the Northeast such as maples, oaks, hickories, spruce, and pine. Ratio of deciduous to coniferous species and age of stands varies.
- **Wooded Wetland**. Includes areas where wooded swamps are found adjacent to the existing ROW and some additional vegetation clearing may be required.
- **Shrub Swamp**. Includes shrub swamp areas within and adjacent to the existing ROWs. Typically includes components of emergent marsh where shrub coverage is substantial.
- **Emergent Marsh**. Includes areas on the existing ROW identified as emergent marsh (i.e., areas dominated by herbaceous wetland species with little or no shrub coverage).
- **Open Water**. Includes substantial areas of open water found along the existing ROW such as lakes, ponds, reservoirs, and large streams/rivers, and the vegetation found along the shorelines of these areas.

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<sup>1</sup> Initial field assessment was conducted along the Green Route (see [Figure ##](#)) where CL&P has ownership and access permission. The eastern part of the Green Route includes substantial portions of the Blue and Purple Routes. Field assessment was not feasible along the western portions of the Blue and Purple Routes due to lack of access to private property.





- **Agricultural Lands.** Includes cultivated fields, hay fields, pastures, and orchards in active agricultural use.
- **Urban Areas.** Includes suburban and urban residential developments/subdivisions, areas developed for industrial or commercial use, recreational areas such as parks and golf courses, maintained lawns, and roadside vegetation.

### **Overall Approach**

For each bird species identified as potentially occurring in the Project area, it was determined which of the eight habitat types each species is likely to utilize and whether the species typically uses that habitat for nesting, foraging, and/or cover, resting, and roosting. Information on habitat preferences was derived from a review of the habitat analysis provided in the *Atlas* and other published sources (e.g., DeGraaf and Yamasaki 2001). The information thus compiled was used to develop Table 1 of and to assess the potential effects of the Project on avian communities.

Each species identified as potentially occurring in the Project area also was ranked in terms of its likelihood of occurrence (high, moderate, or low), based on the distance from the existing ROWs to the blocks where the species was observed; whether breeding was confirmed, probable, or possible; habitat requirements of the species; direct field observations of the species in the Project area; and the overall abundance of the species in Connecticut.



### 3. BIRD USE OF ROWS AND REGIONAL POPULATION TRENDS

The “edge effect” is a long recognized ecological principal that recognizes that the edge (or border) between different habitat types typically produces larger numbers and a greater diversity of wildlife than the adjacent habitats considered alone. This is because the border between habitats is inhabited by species that specialize in utilizing edge habitats, as well as by species that primarily use the adjacent habitat types. This situation is common on ROWs in the northeastern United States, where the maintained old field/shrubland habitat of a ROW often borders a different habitat type (e.g., woodlands, agricultural lands, rural/suburban/urban developments). As a result, ROWs can support a large and diverse population of bird species (Confer and Pascoe 2003; King and Byers 2002; Yahner et. al. 2002; Yahner et. al. 2003).

Long-term studies of bird populations on ROWs have confirmed that they typically support a greater number and diversity of birds than adjacent forested habitats, as they not only provide food and nesting opportunities for early successional species, but also are important sources of food and cover for family groups of woodland species with their fledglings (Confer and Pascoe 2003; Pagen et. al. 2000; Yahner et. al. 2002; Yahner et. al. 2003). Studies have also shown that vegetation management on ROWs does not have a significant detrimental effect on bird populations that utilize the habitat either for nesting or simply for food and cover (King and Byers 2002; Yahner et. al. 2003), and that the presence of a ROW does not significantly affect either nesting success of woodland species in the adjacent forested habitat, or brood parasitism by brown-headed cowbirds (refer to Table 1, located at the end of this report, for the scientific names of species; Confer and Pascoe 2003; King and Byers 2002; Yahner et. al. 2003).

In addition, the old field/shrubland habitat typically maintained on ROWs is becoming scarce in Connecticut and in the Northeast in general, as farmlands have been abandoned and have reverted to forest and as existing woodlands mature (Saucier 2003). At its peak around the middle of the 19th century, agricultural practices resulted in the clearing of nearly three-fourths of the forestland in Connecticut, while at present approximately 60% of the state is forested (USDA 2001). The amount of forestland in Connecticut has remained relatively stable since 1972, with losses due to development being approximately offset by new forestland overgrowing abandoned farms; this trend is expected to continue for the foreseeable future (USDA 2001). ROWs therefore represent an important component of regional habitat diversity, providing a stable, long-term source of shrubland habitat in a region where it is becoming scarce.



The effect of this trend toward more forestland in the Northeast has caused concern for its impact on bird populations that utilize shrubland habitats (Askins 1993; Askins 1998; Confer 1992; Dettmers 2003; Hunter et. al. 2001; King and Byers 2002; Litvaitis et. al. 1999; King and DeGraff 2000; Yahner 2000a; Yahner 2000b). While concerns have also been raised about the decline of forest-nesting birds due to deforestation in their wintering grounds (e.g., Robbins et. al. 1989) or forest fragmentation in their breeding grounds (e.g., Robinson et. al. 1995; Hoover et. al. 1995), in general woodland birds are doing well in the northeastern United States. Breeding Bird Survey (BBS) data (Sauer et. al. 2001) for 1980-2000 show that 57% of all woodland species in the Northeast are increasing (Confer and Pascoe 2003).

In contrast, BBS data show that 66% of all Neotropical migrant birds in the Northeast with significant population trends for 1980-2000 are decreasing (Confer and Pascoe 2003; Sauer et. al. 2001). This is at least in part due to a decline in bird species associated with grasslands and shrublands (Dettmers 2003). Of the declining woodland species, 82% use mid-successional forests, open parklands, or dense understory, and 53% prefer disturbance conditions (Confer and Pascoe 2003; Sauer et. al. 2001). Of the Neotropical migrants from all habitats that show a decline from 1980-2000 in the Northeast, 90% use disturbance-generated habitats such as open fields, shrublands, mid-successional forests, open parkland, and forest edge, and 72% prefer disturbance and non-climax habitats (Confer and Pascoe 2003; Sauer et. al. 2001).

Consequently, perpetuating disturbance-generated habitats such as those typical of maintained ROWs is becoming an increasing concern for avian conservation. The exchange of forested habitats for shrublands is interpreted as a net gain for regional biodiversity (Confer and Pascoe 2003).



#### 4. RESULTS

Of the 173 bird species identified as breeding in Connecticut (Bevier 1994), a total of 135 were identified as potentially occurring in the Project area, based on a review of the breeding bird survey data in the *Atlas*. This includes 81 species that were ranked as having low or moderate potential for occurrence, and 54 species with a high potential to occur in the Project vicinity (see Table 1).

In addition to the *Atlas* review, consultations with CTDEP NDDB identified one State Species of Special Concern – the Whip-poor-will (*Caprimulgus vociferous*) that could occur along the Green Route.



## 5. POTENTIAL EFFECTS AND MITIGATION

The inherent characteristics of the Project, and CL&P's proposed construction and operation procedures, as described in Sections J and K, will limit potential adverse impacts resulting from the Project, and thus will mitigate to a large extent any adverse effects on birds, as described below.

The primary potential effects to birds from construction and operation of the proposed Project will result from vegetation clearing during construction, and vegetation management activities during operation. For both construction and ROW maintenance, existing mature woody vegetation will be removed, primarily large trees that threaten overhead transmission lines, and replaced with the low-growing shrubby habitat typical of CL&P's existing maintained ROW. This will result in a net long term loss of woodland habitat. This potential effect could be mitigated, however, by aligning the proposed new 345-kV transmission line along existing ROWs, and limiting vegetation clearing to that necessary for the construction and safe operation of Project facilities or constructing underground lines within existing roadways. Further, the loss of woodland habitat will be offset by a corresponding equivalent increase in early successional shrubland habitat, a less common habitat type in Connecticut (refer to discussion in Section 3).

Table 1 provides a framework from which to determine the bird species most likely to be found along the three route alternatives, their relative abundance as determined by the distance traversed within the habitat type(s) where they typically occur, and thus the potential impacts to each species. Species with a moderate or high potential for occurrence that typically are found in a habitat type that is common in the Project area (i.e., forest, old field/shrubland, shrub swamp, wooded wetlands, urban areas) are likely to be affected by the Project to some extent. Species with a moderate or high potential for occurrence but that are restricted to one of the rarer habitat types in the Project vicinity (i.e., open water, agricultural lands) may be impacted, but to a lesser extent. Species with a low probability of occurrence are not likely to be impacted, particularly if restricted to one of the scarce habitats, and any impacts would be experienced by relatively few individuals.

The type of habitat preferred by each species will not only affect the likelihood of its being impacted, but also the significance of any impacts. Species typically found in one of the more open habitat types (old field/shrubland, shrub swamp, emergent marsh, open water, agricultural lands, and urban lands) would not be significantly affected regardless of their abundance. Because only large trees that threaten



Project facilities are required to be removed for Project construction and operation, little or no vegetation clearing or management would be required in these open habitats.

Species that utilize forested habitats (mature mixed forest, wooded wetlands) could be affected to a greater extent, as mature woody vegetation will be cleared where necessary and replaced permanently with shrubby habitat. These impacts would be minor, however, as the overall amount of forest cleared would be small, compared to the amount of forest land in the Project vicinity. Following vegetation clearing, woodland birds that utilize the existing ROW edge for foraging can be expected to largely return to their previous daily travel and forage patterns. The only direct impact would be to those few individuals that actually nest in the trees cleared. Because other nesting sites would be readily available following clearing (i.e., no entire forest stands will be cleared), these effects would be expected to be minor.

Overall, the proposed Project is expected to have minor, but long-term effects on bird populations. The loss of mature woody vegetation where clearing is necessary for construction and operation of Project facilities would have a long-term adverse impact on woodland bird species as trees would be permanently removed from the ROW and adjacent areas, where necessary.

The Project would have a long-term beneficial impact to shrubland bird species, as the amount of this habitat type would permanently increase as a result of construction and operation of the Project. As discussed in Section 3, recent declines in populations of shrubland birds in the Northeast are a growing concern among avian conservationists. Consequently, any adverse impacts to woodland species (most of which are increasing in the Northeast; refer to Section 3) would be mitigated to a large extent by benefits to shrubland bird species.

Creating a wider ROW than that which currently exists to accommodate the proposed new 345-kV transmission line would not be expected to adversely impact bird populations, and may benefit shrubland species that nest on the ROW. Studies of a 100-foot ROW in Massachusetts indicated nest predation was highest along the ROW/forest edge, and a wider ROW may therefore actually benefit shrubland-nesting species by providing more potential nesting sites away from the edge habitat (King and Byers 2002). No studies have been done, however, to determine if there is a maximum ROW width that would negate this benefit.

There would be minor, temporary adverse impacts to shrubland birds resulting from construction of the transmission structures and other aboveground facilities that could be associated with the Project (e.g.,



substations, access roads). These would result from human disturbance during construction activities and temporary loss of habitat in areas cleared for construction. However, construction in any one area along any of the alternative Routes would be of short duration, and areas disturbed during construction would be allowed to revert to shrubland habitat following completion of construction activities in that area. Consequently, these impacts would not typically be significant.

Once construction is completed and the Project is operational, routine vegetation management as is currently practiced along existing CL&P transmission line ROWs would not significantly impact birds. Several studies have shown that vegetation management along ROWs, whether mechanical, herbicidal, or a combination thereof, does not have a significant adverse effect on bird populations so long as standard precautions are taken during herbicide application (Confer and Pascoe 2003; King and Byers 2002; Yahner et. al. 2002; Yahner et. al. 2003). In addition, the long-term benefits to shrubland birds resulting from permanently increasing the amount of shrubland habitat available in the Project vicinity would mitigate any temporary adverse impacts to birds resulting from vegetation management during operation of the Project.



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Table 1. Potential Occurrence of Breeding Birds in Connecticut to Rhode Island Project Vicinity, by Habitat Type.

COMMON NAME (1)	SCIENTIFIC NAME	RANK (2)	HABITAT TYPE (3)							
			OF	MF	WW	SS	EM	OW	AG	UR
Great Blue Heron	<i>Ardea herodias</i>	3			N,F,C	F,C	F,C	N,F,C		
Green Heron	<i>Butorides virescens</i>	3			N,F,C			N,F,C		
American Bittern (E)	<i>Botaurus lentiginosus</i>	2				F,C	N,F,C	N,F,C		
Least Bittern (T)	<i>Ixobrychus exilis</i>	1				F,C	N,F,C	N,F,C		
Mute Swan	<i>Cygnus olor</i>	1						N,F,C		
Canada Goose	<i>Branta canadensis</i>	3					N,F,C	N,F,C		N,F,C
Wood Duck	<i>Aix sponsa</i>	3			N,F,C	F,C	F,C	N,F,C		
American Black Duck	<i>Anas rubripes</i>	1	N,C	N,C	N,F,C	N,F,C	N,F,C	N,F,C		
Mallard	<i>Anas platyrhynchos</i>	3	N,C	N,C	N,F,C	N,F,C	N,F,C	N,F,C	N,C	N,C
Gadwall	<i>Anas strepera</i>	1					N,F,C	N,F,C		
Hooded Merganser	<i>Lophodytes cucullatus</i>	1			N,F,C	F,C	F,C	N,F,C		
Turkey Vulture	<i>Cathartes aura</i>	3	F	N,C	N,C				F	F
Sharp-shinned Hawk (E)	<i>Accipiter striatus</i>	1	F	N,F,C					F	
Cooper's Hawk (T)	<i>Accipiter cooperii</i>	1	F	N,F,C	N,F,C	F	F		F	F
Northern Goshawk	<i>Accipiter gentilis</i>	1	F	N,F,C	N,F,C	F	F	F		
Red-shouldered Hawk (SC)	<i>Buteo lineatus</i>	2	F	N,F,C	N,F,C	F	F	F		
Broad-winged Hawk	<i>Buteo platypterus</i>	2	F	N,F,C	N,F,C	F	F	N,F,C	F	N,F,C
Red-tailed Hawk	<i>Buteo jamaicensis</i>	3	F	N,F,C	N,F,C	F	F		F	F
American Kestrel (SC)	<i>Falco sparverius</i>	2	N,F,C	N,F,C					F	N,F,C
Ring-necked Pheasant	<i>Phasianus colchicus</i>	1	N,F,C						N,F,C	N,F,C
Ruffed Grouse	<i>Bonasa umbellus</i>	2	F,C	N,F,C					F,C	F,C
Wild Turkey	<i>Meleagris gallopavo</i>	2	F,C	N,F,C					F,C	
Northern Bobwhite	<i>Colinus virginianus</i>	2	N,F,C	C					N,F,C	
Virginia Rail	<i>Rallus limicola</i>	1				F,C	N,F,C	N,F,C		
Sora	<i>Porzana carolina</i>	1				F,C	N,F,C	N,F,C		
Killdeer	<i>Charadrius vociferus</i>	3	N,F,C						N,F,C	N,F,C
Spotted Sandpiper	<i>Actitis macularia</i>	1	N,C				F,C	F,C	N,C	

Table 1 (cont.)

COMMON NAME (1)	SCIENTIFIC NAME	RANK (2)	HABITAT TYPE (3)							
			OF	MF	WW	SS	EM	OW	AG	UR
Common Snipe	<i>Gallinago gallinago</i>	1				N, F, C	N, F, C			
American Woodcock	<i>Scalopax minor</i>	3	N, F, C		F, C	N, F, C	F, C		N, F, C	N, F, C
Rock Dove (Pigeon)	<i>Columba livia</i>	2	F, C						N, F, C	N, F, C
Mourning Dove	<i>Zenaida macroura</i>	3	N, F, C	N, C	N, C				N, F, C	N, F, C
Black-billed Cuckoo	<i>Coccyzus erythrophthalmus</i>	2	N, F, C	F, C	F, C					
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>	2	N, F, C	F, C	F, C					
Eastern Screech-Owl	<i>Otus asio</i>	1	N, F, C	N, F, C	N, F, C	N, F, C	F, C	F, C	N, F, C	N, F, C
Great Horned Owl	<i>Bubo virginianus</i>	2	F, C	N, F, C	N, F, C	F, C	F, C		N, F, C	N, F, C
Barred Owl	<i>Strix varia</i>	2		N, F, C	N, F, C		F			
Common Nighthawk (T)	<i>Chordeiles minor</i>	1								N, F, C
Whip-poor-will (SC) *	<i>Caprimulgus vociferus</i>	1	N, F, C							
Chimney Swift	<i>Chaetura pelagica</i>	2	F, C			F, C	F, C	F, C	F, C	N, F, C
Ruby-throated Hummingbird	<i>Archilochus colubris</i>	3	N, F, C	N, F, C	N, F, C	N, F, C	F, C		N, F, C	N, F, C
Belted Kingfisher	<i>Ceryle alcyon</i>	3						N, F, C		
Red-bellied Woodpecker	<i>Melanerpes carolinus</i>	2		N, F, C	N, F, C					N, F, C
Downy Woodpecker	<i>Picoides pubescens</i>	3	N, F, C	N, F, C	N, F, C	N, F, C			N, F, C	N, F, C
Hairy Woodpecker	<i>Picoides villosus</i>	3		N, F, C	N, F, C				N, F, C	N, F, C
Northern Flicker	<i>Colaptes auratus</i>	3		N, F, C	N, F, C				N, F, C	N, F, C
Pileated Woodpecker	<i>Dryocopus pileatus</i>	1		N, F, C	N, F, C					N, F, C
Eastern Wood-Pewee	<i>Contopus virens</i>	3	F, C	N, F, C	N, F, C					
Acadian Flycatcher	<i>Empidonax virescens</i>	1	F, C	N, F, C	N, F, C	F, C	F, C	F, C		
Alder Flycatcher (SC)	<i>Empidonax alorum</i>	1				N, F, C	F, C	F, C		
Willow Flycatcher	<i>Empidonax traillii</i>	1				N, F, C	F, C	F, C		
Least Flycatcher	<i>Empidonax minimus</i>	2	N, F, C	F, C	F, C	N, F, C	F, C	F, C		
Eastern Phoebe	<i>Sayornis phoebe</i>	3	N, F, C	N, F, C	N, F, C	N, F, C	F, C	F, C	N, F, C	N, F, C
Eastern Kingbird	<i>Tyrannus tyrannus</i>	3	F, C	N, F, C	N, F, C	F, C	F, C	F, C	F, C	N, F, C
Great Crested Flycatcher	<i>Myiarchus crinitus</i>	2	F, C	N, F, C	N, F, C	F, C	F, C	F, C		N, F, C
Purple Martin (T)	<i>Progne subis</i>	1						F, C	F, C	N, F, C
Tree Swallow	<i>Tachycineta bicolor</i>	3	F, C	N, F, C	N, F, C	F, C	F, C	F, C	F, C	N, F, C

Table 1 (cont.)

COMMON NAME (1)	SCIENTIFIC NAME	RANK (2)	HABITAT TYPE (3)							
			OF	MF	WW	SS	EM	OW	AG	UR
Northern Rough-winged Swallow	<i>Stelgidopteryx serripennis</i>	2				F,C	F,C	N,F,C		N,F,C
Bank Swallow	<i>Riparia riparia</i>	2				F,C	F,C	N,F,C		N,F,C
Cliff Swallow	<i>Hirundo pyrrhonota</i>	1				F,C	F,C	N,F,C		N,F,C
Barn Swallow	<i>Hirundo rustica</i>	3	F,C			F,C	F,C	F,C	N,F,C	N,F,C
Blue Jay	<i>Cyanocitta cristata</i>	3	F,C	N,F,C	N,F,C	F,C	F,C		N,F,C	N,F,C
American Crow	<i>Corvus brachyrhynchos</i>	3	F,C	N,F,C	N,F,C	F,C	F,C	F	F,C	F,C
Black-capped Chickadee	<i>Parus atricapillus</i>	3	N,F,C	N,F,C	N,F,C	N,F,C	F,C		F,C	F,C
Tufted Titmouse	<i>Parus bicolor</i>	3	F,C	N,F,C	N,F,C	F,C	F,C		F,C	N,F,C
Red-breasted Nuthatch	<i>Sitta canadensis</i>	1	F,C	N,F,C	N,F,C	F,C				
White-breasted Nuthatch	<i>Sitta carolinensis</i>	3	F,C	N,F,C	N,F,C	F,C				
Brown Creeper	<i>Certhia americana</i>	2	F,C	N,F,C	N,F,C	F,C				
Carolina Wren	<i>Thryothorus ludovicianus</i>	2	N,F,C	N,C	N,C	N,F,C	F,C			
House Wren	<i>Troglodytes aedon</i>	3	N,F,C	N,C	N,C	N,F,C	F,C		N,F,C	N,F,C
Golden-crowned Kinglet	<i>Regulus satrapa</i>	1		N,F,C	N,F,C					
Blue-gray Gnatcatcher	<i>Polioptila caerulea</i>	3	F,C	N,F,C	N,F,C	F,C	F,C		N,F,C	N,F,C
Eastern Bluebird	<i>Sialia sialis</i>	3	F,C	N,C	N,C	F,C			N,F,C	N,F,C
Veery	<i>Catharus fuscescens</i>	2	N,F,C	N,F,C	N,F,C	N,F,C	N,F,C			
Hermit Thrush	<i>Catharus guttatus</i>	1	N,F,C	N,F,C	N,F,C	N,F,C				
Wood Thrush	<i>Hylocichla mustelina</i>	3		N,F,C	N,F,C	F,C				
American Robin	<i>Turdus migratorius</i>	3	N,F,C	N,F,C	N,F,C	N,F,C	F,C		N,F,C	N,F,C
Gray Catbird	<i>Dumetella carolinensis</i>	3	N,F,C	N,F,C	N,F,C	N,F,C	F,C		N,F,C	N,F,C
Northern Mockingbird	<i>Mimus polyglottos</i>	3	N,F,C			N,F,C	F,C		N,F,C	N,F,C
Brown Thrasher (SC)	<i>Toxostoma rufum</i>	2	N,F,C			N,F,C	F,C		N,F,C	N,F,C
Cedar Waxwing	<i>Bombycilla cedrorum</i>	3	N,F,C	N,F,C	N,F,C	N,F,C	F,C		N,F,C	N,F,C
European Starling	<i>Sturnus vulgaris</i>	3	N,F,C	N,C	N,C	N,F,C	F,C		N,F,C	N,F,C
White-eyed Vireo	<i>Vireo griseus</i>	2	N,F,C	F,C	F,C	N,F,C				
Solitary Vireo	<i>Vireo solitarius</i>	1		N,F,C						
Yellow-throated Vireo	<i>Vireo flavifrons</i>	2	F,C	N,F,C						
Warbling Vireo	<i>Vireo gilvus</i>	2	F,C	N,F,C	N,F,C	F,C	F,C			

Table 1 (cont.)

COMMON NAME (1)	SCIENTIFIC NAME	RANK (2)	HABITAT TYPE (3)							
			OF	MF	WW	SS	EM	OW	AG	UR
Red-eyed Vireo	<i>Vireo olivaceus</i>	3		N,F,C	N,F,C					
Blue-winged Warbler	<i>Vermivora pinus</i>	3	N,F,C	N,F,C	N,F,C	N,F,C	N,F,C	N,F,C	N,F,C	
Golden-winged Warbler (T)	<i>Vermivora chrysoptera</i>	1	N,F,C			N,F,C	F,C		N,F,C	
Nashville Warbler	<i>Vermivora ruficapilla</i>	1	N,F,C							
Northern Parula (SC)	<i>Parula americana</i>	1			N,F,C					
Yellow Warbler	<i>Dendroica petechia</i>	3	N,F,C			N,F,C	F,C			
Chestnut-sided Warbler	<i>Dendroica pensylvanica</i>	2	N,F,C		N,F,C					
Magnolia Warbler	<i>Dendroica magnolia</i>	1		N,F,C						
Black-throated Blue Warbler	<i>Dendroica caerulescens</i>	1		N,F,C						
Yellow-rumped Warbler	<i>Dendroica coronata</i>	1	F,C	N,F,C						
Black-throated Green Warbler	<i>Dendroica virens</i>	2		N,F,C						
Blackburnian Warbler	<i>Dendroica fusca</i>	1		N,F,C						
Pine Warbler	<i>Dendroica pinus</i>	1		N,F,C						
Prairie Warbler	<i>Dendroica discolor</i>	3	N,F,C	F,C						
Cerulean Warbler	<i>Dendroica cerulea</i>	1		N,F,C	N,F,C					
Black-and-white Warbler	<i>Mniotilta varia</i>	2		N,F,C						
American Redstart	<i>Setophaga ruticilla</i>	3	N,F,C	N,F,C	N,F,C	N,F,C				
Worm-eating Warbler	<i>Helminthos vermivorus</i>	1		N,F,C						
Ovenbird	<i>Seiurus aurocapillus</i>	3		N,F,C						
Northern Waterthrush	<i>Seiurus noveboracensis</i>	1			N,F,C	F,C	N,F,C	F,C		
Louisiana Waterthrush	<i>Seiurus motacilla</i>	2			N,F,C	N,F,C	F,C	F,C		
Hooded Warbler	<i>Wilsonia citrina</i>	1	N,F,C	N,F,C	N,F,C	N,F,C				
Canada Warbler	<i>Wilsonia canadensis</i>	1		F,C	N,F,C					
Yellow-breasted Chat (E)	<i>Icteria virens</i>	2	N,F,C		N,F,C					
Scarlet Tanager	<i>Piranga olivacea</i>	3		N,F,C	N,F,C					

Table 1 (cont.)

COMMON NAME (1)	SCIENTIFIC NAME	RANK (2)	HABITAT TYPE (3)							
			OF	MF	WW	SS	EM	OW	AG	UR
Northern Cardinal	<i>Cardinalis cardinalis</i>	3	N,F,C			N,F,C			N,F,C	N,F,C
Rose-breasted Grosbeak	<i>Pheucticus ludovicianus</i>	3	N,F,C	N,F,C	N,F,C	N,F,C				N,F,C
Indigo Bunting	<i>Passerina cyanea</i>	2	N,F,C			N,F,C				
Rufous-sided Towhee	<i>Pipilo erythrophthalmus</i>	3	F,C	N,F,C	F,C	F,C	F,C		F,C	
Chipping Sparrow	<i>Spizella passerina</i>	3	N,F,C	N,C					N,F,C	
Field Sparrow	<i>Spizella pusilla</i>	3	N,F,C							
Vesper Sparrow (E)	<i>Pooecetes gramineus</i>	1	N,F,C						N,F,C	
Savannah Sparrow (SC)	<i>Passerculus sandwichensis</i>	1	N,F,C						N,F,C	
Grasshopper Sparrow (E)	<i>Ammodramus savannarum</i>	1	N,F,C						N,F,C	
Song Sparrow	<i>Melospiza melodia</i>	3	N,F,C			N,F,C			N,F,C	N,F,C
Swamp Sparrow	<i>Melospiza georgiana</i>	2				N,F,C	N,F,C	N,F,C		
White-throated Sparrow	<i>Zonotrichia albicollis</i>	1	N,F,C	F,C	F,C	N,F,C	F,C			F,C
Bobolink	<i>Dolichonyx oryzivorus</i>	1	N,F,C				N,F,C		N,F,C	
Red-winged Blackbird	<i>Agelaius phoeniceus</i>	3	N,F,C			N,F,C	N,F,C	N,F,C	N,F,C	N,F,C
Eastern Meadowlark (SC)	<i>Sturnella magna</i>	2	N,F,C						N,F,C	
Common Grackle	<i>Quiscalus quiscula</i>	3	F,C	N,F,C	N,F,C	F,C	F,C	F,C	N,F,C	N,F,C
Brown-headed Cowbird	<i>Molothrus ater</i>	3	N,F,C	N,F,C	N,F,C	N,F,C	F,C		N,F,C	N,F,C
Orchard Oriole	<i>Icterus spurius</i>	1	F,C	N,F,C	N,F,C	F,C	F,C	F,C	F,C	
Northern Oriole	<i>Icterus galbula</i>	3	F,C	N,F,C	N,F,C	F,C	F,C		F,C	
Purple Finch	<i>Carpodacus purpureus</i>	1		N,F,C						
House Finch	<i>Carpodacus mexicanus</i>	3	N,F,C						N,F,C	N,F,C
Pine Siskin	<i>Carduelis pinus</i>	1		N,F,C						N,F,C
American Goldfinch	<i>Carduelis tristis</i>	3	N,F,C	F,C	F,C	N,F,C	F,C			N,F,C
Evening Grosbeak	<i>Coccothraustes vespertinus</i>	1		N,F,C						
House Sparrow	<i>Passer domesticus</i>	3							N,F,C	N,F,C





**Table 1 Legend:**

- (1). E = Endangered; T = Threatened; SC = Special Concern
- (2). Rank according to likelihood of species occurring in vicinity of the proposed route: 1 = Low; 2 = Moderate; 3 = High.
- (3). OF = Old Field/Shrubland  
MF = Mature Mixed Forest  
WW = Wooded Wetland  
SS = Shrub Swamp  
EM = Emergent Marsh  
OW = Open Water  
AG = Agricultural  
UR = Urban

For each species listed, habitat types marked with an "N" indicate that species may utilize that habitat type for nesting, an "F" indicates the species may forage in that habitat, and a "C" indicates the species may utilize that habitat for cover, resting, or roosting. Blank boxes indicate the species is not typically found in that habitat type, except as occasional transients.

- (4.) "\*" = indicates species identified by DEP NDDDB as having been recorded in Project vicinity.

Source: *The Atlas of Breeding Birds of Connecticut* (Bevier 1994).