

Eastern Westchester Biotic Corridor: Northern Terminus Addendum North Salem and Southeast, New York



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Eastern Westchester Biotic Corridor: Northern Terminus Addendum North Salem and Southeast, New York

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Front cover image:

Clockwise from top left: vernal pool, Holly Stream, Eastern Box Turtle, Virginia Rail (photos by E. Davison)

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1.0 INTRODUCTION

1.1 *Background*

Fieldwork conducted in 1999 and 2000 by the Metropolitan Conservation Alliance (MCA) identified a corridor of important habitat for wildlife, or “biotic corridor,” in the three contiguous towns of Lewisboro, North Salem, and Pound Ridge in eastern Westchester County New York. The map of the corridor and planning recommendations to maintain its integrity for the benefit of both biodiversity and human populations were published as the “Eastern Westchester Biotic Corridor” (EWBC) report (Miller and Klemens, 2002). In 2007 the eastern sections of Bedford were inventoried and portions of this area were incorporated into the biodiversity corridor, and the Town of Bedford became the fourth town to enter in the EWBC planning compact (LaBruna and Klemens, 2007). In 2009, the land north and south of Titicus Reservoir, which was designated as an area of future study in the 2002 EWBC report, was inventoried and appended to the EWBC (Davison and Klemens, 2009). Since that time, the towns have made progress toward implementing some of the planning recommendations in the various reports as follow:

1. Created an intermunicipal agreement (IMA) and working group to facilitate implementation of the EWBC.
2. Refined an intermunicipal conservation overlay district.
3. Developed multi-town as well as single jurisdictional strategies for the implementation of the overlay district.
4. Developed strategies for engaging the Westchester County Agricultural District properties within the EWBC.
5. Addressed issues of sustainable forestry harvest within the EWBC.

Due in part to the extensive media coverage the EWBC project has received other communities in Westchester County continue to acknowledge and advance the values of protecting wildlife habitat to maintain the rich level of biodiversity that our region enjoys. Biodiversity affords us many benefits, including: cleaner water, cleaner air, pollination services of insects, reduction of certain diseases¹, outdoor recreational opportunities (fishing, bird watching, and hunting), the economic benefits that recreational activities bring to local businesses, and the “sense of place” unique to our particular part of the northeastern United States. The primary threat to biodiversity in our region is habitat fragmentation, fueled by poorly-planned, land-consumptive development known as sprawl. MCA partners with communities to help them understand and protect their natural resources and manage their patterns of development to promote ecological resiliency. MCA works with its partners to seek alternatives to sprawl, promoting land use and development that is more compatible with natural resource protection than traditional dispersed suburban developments.

¹ For example, Lyme disease infection rates are less prevalent in areas with higher mammal biodiversity. See Allan *et al.* (2003).

The area studied in 2010 represents the northernmost reach of land that could potentially be included in the EWBC. This study area is bounded to the north by Interstate 84 (I-84) and to the west by Interstate 684 (I-684) which together form an insurmountable barrier to the dispersal of most terrestrial wildlife, especially the guild of development-sensitive species discussed in this report under FoSA analysis (see Figures 1 & 2).

1.2 Acknowledgements

We acknowledge financial support provided by the Westchester Community Foundation, the Gage Fund, and by Dr. Lucy Waletzky. Without the generous support and encouragement of these donors, this project would not have been possible.

We also acknowledge the tireless support of Cynthia Curtis, Milly Nugent and Amy Rosmarin who assisted with the design and implementation of this study. We thank the Town Boards of both North Salem and Southeast for their interest, encouragement and support as well as Southeast's Open Space Committee and North Salem's Planning Board. A special mention of gratitude is expressed to those individual citizens of North Salem and Southeast who so graciously allowed us access to their properties.

We especially acknowledge the contributions of Cary Institute volunteer Rebecca Burnham who assisted with both with the collection of field data as well as compilation and presentation of GIS data.

2.0 METHODS

2.1 Field Data Collection

MCA biologists conducted field surveys between April and August 2010. All species observed during the study are listed in Appendix Tables B1, B2 and B3. Amphibian and reptile survey techniques consisted primarily of visual searches and the turning over of cover objects (logs, rocks, and other debris). Dip-netting was employed to detect larval amphibians and, in some cases, adult amphibians and reptiles. Our trained herpetologist's knowledge of a given species activity patterns and preferred habitats maximized the diversity of species detected in the study area.

Breeding bird surveys were conducted at peak song period, starting approximately thirty minutes before sunrise when weather conditions were calm (winds less than 10 mph, no rain), until approximately 12:00 noon, assuming weather conditions remained favorable. Species detection rates are maximized at these times and under these conditions. Most data were collected through auditory cues (i.e., listening to bird songs and calls) and some birds were visually observed. Surveys were conducted during the optimal bird breeding season, from mid-May through late June.

2.2 *The Focal Species Approach*

MCA concentrates survey efforts on wildlife species which respond specifically to development impacts including habitat loss and habitat fragmentation. Such species are termed “focal species,” and can be further divided into two broad categories. Many focal species experience population declines as a result of land development and suburbanization. These species, referred to as “development-sensitive” focal species (DS FoSA species), are usually habitat specialists, with relatively narrow ecological requirements and/or complex life-history requirements that involve use of multiple, interconnected habitat types. The specialized habitats and interconnections between habitats required for DS FoSA species are often compromised by development. Examples of DS FoSA species that are often impacted in this manner include neotropical migrant bird species, vernal pool-breeding amphibians, and long-lived species such as the Eastern Box Turtle. Such species tend to disappear from the landscape as their habitats are altered or fragmented. Populations of other focal species increase in response to suburbanization. These species, referred to as “development-tolerant” focal species (DT FoSA species), are usually habitat generalists, with much less-specific habitat requirements. Human alterations to landscapes favor, or “subsidize” (*see* Mitchell and Klemens, 2000) these generalists which tend to be found in areas that have already been degraded or along edges, such as highway right-of-ways (R.O.W.). Examples of such species include Crow, Blue Jay, Canada Goose, Bullfrog, Snapping Turtle, Raccoon and White-tailed Deer. As suburbanization spreads, development-sensitive species are out-competed by the more development-tolerant species. In this manner, the biomass of development-tolerant species tends to increase, while the overall biodiversity of development-sensitive species declines. Note that species observed by MCA biologists that are not particularly reactive to development are considered “development-neutral” species (DN FoSA species).

MCA refers to the process of evaluating focal species, and its implications for ecosystem health and land use, as the “Focal Species Approach,” or simply “FoSA”. The results of FoSA analyses enhance planning efforts by assessing the importance of individual sites for conservation or development. For example, development should be discouraged or clustered within areas that support healthy populations of development-sensitive focal species, and redirected toward sites that are already degraded (i.e., those that are dominated by development-associated species).

FoSA represents an innovative departure from traditional conservation efforts. By expanding the scope of investigation beyond federal or state-listed threatened and endangered species, we are able to more proactively conserve natural resources. There are many species, currently unlisted and unprotected, whose populations are declining in response to sprawl. Rather than waiting until they are on the brink of extinction (when recovery efforts are not only dangerously uncertain, but also very expensive), it is wiser to attempt to address their habitat requirements and to stabilize their populations now. In addition, ecosystems contain complex interactions among many species. FoSA evaluates systems more reliably by considering a much broader suite of species and their relative abundances, as opposed to basing land use recommendations on a single threatened or endangered species. FoSA methods are not intended to replace the existing and necessary efforts to conserve

threatened and endangered species; instead, they complement ongoing conservation and land use planning efforts.

MCA focuses, in particular, on birds and herpetofauna (amphibians and reptiles). Besides being particularly “reactive” to development pressures (and therefore good indicators of ecosystem condition), the presence and status of these species can be rapidly assessed in a relatively cost-efficient manner using established field techniques. These two groups (birds and herpetofauna) also show differing responses to fragmentation. Because of poor dispersal abilities, herpetofauna are initially more affected by fragmentation than avifauna (LaBruna *et. al.* 2006). When used in tandem, these two groups provide a robust evaluation of ecosystem integrity.

Lists of development-sensitive focal species vary from region to region because species ranges, habitat requirements, and responses to development also vary. The creation of the Titicus Addendum species list (see Appendix B) was based on the list used for the Eastern Westchester Biotic Corridor Study (4 and 4A), which, in turn, was based on a review of literature that addressed development-sensitivity within the New York/New England region (e.g., Andrie and Carroll, 1988; Klemens, 1990; Klemens, 1993; Bull, 1998; and Klemens, 2000) and on observations of species distribution trends in the field.

It should be noted that these FoSA analyses are not a substitute for site-specific detailed biological surveys that are required as part of SEQRA (State Environmental Quality Review Act). FoSA analyses designate contiguous blocks of high-quality habitat at a coarse, broad-brush scale for use in town-wide and regional planning. Properties located within the habitat blocks designated in Figure 5 have the potential to contain significant biodiversity and need to be carefully analyzed in the context of any proposed development.

3.0 DATA COLLECTION, MANAGEMENT & ANALYSIS

The following steps outline the collection, management and analysis of data used to delineate the EWBC Northern Terminus study area:

- **Step 1 – Field Data Collection:** Each day’s field survey data were summarized and catalogued. These summaries include weather, parcels surveyed, habitat types surveyed and species observed. All development-sensitive FoSA species as well as vernal pools and other significant habitats observed were plotted on hard copy field maps.
- **Step 2 – Data Entry:** Locations of all development-sensitive FoSA species as well as vernal pools and other significant habitat features were entered into GIS shapefiles created with ESRI ArcMap version 10.0. True-color 2007 and 2004 orthophotos layered with contour data were used to delineate the location of vernal pools and DS FoSA species that were observed during field work (see Figure 3).
- **Step 3 – Mapping Vernal Pool Envelopes and Critical Terrestrial Habitat:** Vernal pool “envelopes and critical terrestrial habitat” refers to the area within 100ft and 750ft respectively of

vernal pools (Calhoun and Klemens, 2002). This area provides terrestrial (upland) habitat used by adult pool-breeding amphibians. This habitat zone was mapped around each of the vernal pools identified in the study area (see Figure 4).

- **Step 4 – Habitat Block Mapping:** Habitat blocks located within the study area were delineated and mapped. Habitat blocks consisted of large tracks (>100 acres) of contiguous wildlife habitat. These habitat blocks were delineated by reviewing current GIS data including 2007 and 2004 true-color aerial photography, topographic maps and hydrography data, coupled with data collected during field work. Roads (including land immediately adjacent to roads), development (including fenced areas, lawns and intensively-managed farmland) as well as other areas deemed as unsuitable habitat were excluded from the habitat blocks. These habitat blocks encompass all of the vernal pools and development-sensitive FoSA species recorded in the study area (see Figure 5). Note that habitat block mapping should not be used to assess wildlife habitat value on a parcel level. These blocks are intended to be illustrative only, showing areas containing confirmed and potential FoSA species habitat as well as wildlife movement corridors.

4.0 RESULTS & DISCUSSION

4.1 *Habitat Blocks*

MCA biological surveys revealed that the Northern Terminus study contains pockets of rich biodiversity fragmented into nine habitat blocks. The nine habitat blocks have been designated as follows:

Block #	Block Name	Acreage
1.	Dingle Ridge West	482
2.	Dingle Ridge East	591
3.	Cedar Swamp	203
4.	Ryder Farm	161
5.	Bloomerside Preserve	161
6.	Fields Farmstead Preserve	102
7.	Fields Lane South	166
8.	Starr Ridge West	236
9.	Nichols Road East	120

Limiting factors to wildlife diversity and distribution are present at this northern terminus of the EWBC, including dense development and high-volume roadways such as I-84, I-684 and Route 121. The presence of high-traffic roadways represent significant and in some cases impassable barriers (such as I-684 and I-84) to wildlife movement. The location of the study area near the interchange of two major highway systems and the presence of significant development results in a fragmented terminus to the EWBC with a reduction in overall significant biodiversity when compared to areas further south (*see Davison and Klemens, 2009*).

It should be noted that several of the habitat blocks including Starr Ridge West, Fields Lane South and Nichols Road East, were not directly surveyed due to a lack of permission to access these parcels. However, using a combination of observations from adjacent public roads combined with a review of aerial photo imagery and topographic maps, we were able to delineate contiguous undeveloped habitat capable of supporting DS FoSA species absent our ability to actually examine these parcels. **It is especially important to note that in the event development is proposed within these habitat blocks, a full SEQRA (State Environmental Quality Review Act) analysis should be undertaken to determine actual presence or absence of these species in these areas and the potential cumulative impact of proposed developments on these species.**

Habitat Block 1 – Dingle Ridge West

This habitat block totals 482 acres and is bordered to the north-northeast by Nichols Road, to the west by Peach Lake Road (Route 121), Vails Golf Course, Red Fox Lane and intensive farmland bordering Peach Lake Road, to the south by Dingle Ridge Road and to the east by Coventry Lane. Access was only available at the southernmost portion of the habitat block west of Dingle Ridge Road within and adjacent to the North Salem Open Lands Foundation property Gaymark Preserve. Areas to the north of Coyote Court were not surveyed due to a lack of accessible parcels; however, this area was included in the habitat block as it consists of undeveloped land contiguous with Gaymark Preserve.

The southern portions of the habitat block within and adjacent to Gaymark Preserve consists of a large and diverse wetland system, containing a complex of marshland, streams, and forest. This wetland system contains a high diversity of wetland-dependant wildlife with some rare and notable species present, including the state-listed Spotted Turtle, Virginia Rail, Four-toed Salamander and Dusky Salamander. The Dusky Salamander is an especially significant record as it is known from only a handful of sites in Westchester County. Once widespread within Westchester County, this species has undergone a precipitous decline due to degradation of its preferred habitat, detritus-rich streams and groundwater seeps. The major cause of decline of this species as reported in Klemens, 1993 (pp. 56-57) is the negative impacts to water-quantity (i.e., increase in peak flows) and water-quality resulting from watershed urbanization.

Habitat Block 2 – Dingle Ridge East

This habitat block totals 591 acres and is bordered to the north by I-84 and Tulip Road, continues eastward into western Fairfield County (Danbury and Ridgefield) Connecticut, and southward to the boundary of the original 2002 EWBC corridor near Finch Road. Few properties were accessible for survey within this habitat block. We received permission only to examine several properties within the southernmost portion of the habitat block along Finch Road that abut or overlap the original EWBC. This area is heavily forested and contains several productive vernal pools, forest-interior bird species including the Scarlet Tanager and forested wetlands which contain Four-toed Salamander.

Habitat Block 3 – Cedar Swamp

This habitat block totals 203 acres and is bordered to the north by Cobb Road, to the west by Starr Ridge Road, to the east by Peach Lake Road and to the south by Seven Oaks Lane. Dense residential development borders this habitat block on all sides. The block is centered on the Putnam County

Land Trust's Birdswood Preserve property which encompasses Cedar Swamp and Peach Lake Brook. A limited number of FoSA species were observed within this block. This may be the result of several factors; (1) the block is occupied by Cedar Swamp, a large, densely-vegetated mucky swamp which was difficult to survey and (2) the block is surrounded by dense development which has isolated this area from other wildlife habitat patches and degraded the upland buffer around Cedar Swamp. Despite these issues, several FoSA species were observed in the block, including Ovenbird, Woodcock and Wood Duck. A small utility line R.O.W. runs through the northern portion of the block. The brushy vegetation bordered by wetlands and mature forest represent suitable habitat for the Eastern Box Turtle, although none were observed during our survey efforts.

Habitat Block 4 – Ryder Farm

This habitat block totals 161 acres centered around the Ryder Farm property located on the northwestern shore of Peach Lake. The block is bordered to the north by Seven Oaks Lane, to the west by Starr Ridge Road and to the south by Bloomer Road. The Ryder Farm habitat block contains a complex of both forest as well as non-forested habitat. Non-forested habitat includes active cropland, hayfield, fallow field and old field which provide abundant habitat for early-successional (non-forested) FoSA species. Notable early-successional bird species observed include Blue-winged Warbler, Indigo Bunting, Rufous-sided Towhee and Hooded Warbler (a species of transitional forest) as well as forest edge species such as the American Redstart. A large swamp system occurs within the Ryder Farm property which supported Great-blue Heron, breeding Wood Duck and contained an embedded (i.e., cryptic *sensu* Calhoun and Klemens, 2002) vernal pool with a high-density of Wood Frog. Forested portions of the habitat block were found to support forest-interior bird species including Scarlet Tanager, Wood Thrush, Ovenbird and Veery. The habitat block contains high-quality habitat for the Eastern Box Turtle, although none were observed during this survey work.

Habitat Block 5 – Bloomerside Preserve

This habitat block totals 161 acres and is centered on the North Salem Open Lands Foundation property Bloomerside Preserve. The block is bordered to the north by Bloomer Road, to the east by June Road, to the south by development and to the east-southeast by the original 2002 EWBC corridor. The block is entirely forested except for a utility line R.O.W. which runs through Bloomerside Preserve. Two vernal pools were confirmed within the habitat block as well as a variety of forest-interior bird species including the Scarlet Tanager, Wood Thrush and Ovenbird. The utility line R.O.W. provides habitat for early-successional (non-forested) species, including the Blue-winged Warbler and the state-listed Eastern Box Turtle.

Habitat Block 6 – Fields Farmstead Preserve

This habitat block is small (totals 102 acres) and occurs within a highly fragmented landscape. The site is bordered to the north and west by I-684, south by Fields Lane and to the east by Sutton Place. The block is centered on the Putnam County Land Trust property Fields Farmstead Preserve located adjacent to the Brewster Ice Rink. The presence of I-684 to the northwest of the habitat block represents an insurmountable barrier to most terrestrial wildlife. Despite the small size and highly fragmented nature of this habitat block, several FoSA species were confirmed on the Fields Farmstead Preserve property, including a vernal pool containing Wood Frog, forested wetlands containing Four-toed Salamander and upland forest supporting Wood Thrush and Ovenbird.

Habitat Block 7 – Fields Lane South

This habitat block was not surveyed for biodiversity due to a lack of permission to access properties within the habitat block. This habitat block totals 166 acres and connects to the 460 acre Hardscrabble Northwest habitat block identified during the 2009 Titicus Addendum work (Davison and Klemens, 2009). The block is bordered to the north by Fields Lane and to the west by Hardscrabble Heights. Despite some recent clearing, the block remains predominately forested with a non-forested utility line R.O.W. at its southernmost boundary. The habitat block is capable of supporting forest-dwelling FoSA species as well as early-successional FoSA species such as the Eastern Box Turtle observed in other portions of the study area.

Habitat Block 8 – Starr Ridge West

This habitat block was not surveyed for biodiversity due to a lack of permission to access properties within the habitat block. The block totals 236 acres and is bounded to the north by I-684, the west by Turk Hill Road (Route 51), the east by Starr Ridge Road and the south by Stallion Trail and North Salem Road. The block is predominately forested and has the potential to support forest-dwelling FoSA species observed in other portions of the study area.

Habitat Block 9 – Nichols Road East

This habitat block was not surveyed for biodiversity due to a lack of permission to access properties within the habitat block. The block consists of a complex of forestland, pastureland and a non-forested utility line R.O.W. and is capable of supporting forest-dwelling FoSA species as well as early-successional FoSA species such as the Eastern Box Turtle observed in other portions of the study area.

4.2 Species Status

Appendix Tables B1, B2 and B3 list the development-sensitive, development-associated and development-neutral species identified during field work. Development-sensitive species identified in the study area include 24 birds, five amphibians and two reptiles². Of those development-sensitive species, two are New York Stated-listed Species of Special Concern, the Spotted Turtle and Eastern Box Turtle. The other development-sensitive species are considered to be of conservation concern by organizations such as the NY DEC, the Audubon Society, Partners in Flight, or based on regional biodiversity research conducted by MCA and the authors.

5.0 RECOMMENDATIONS

1. Formally incorporate the nine delineated habitat blocks illustrated on Figure 5 into the Eastern Westchester Biotic Corridor Overlay Map.

² Note that while conducting this survey work, a new record of a Wood Turtle (*Clemmys insculpta*), a state-listed species of special concern, was documented in the 2009 Titicus study area north of Hardscrabble Road.

2. Protect habitat for forest-interior bird species by minimizing forest fragmentation and loss within habitat blocks. Protection measures should focus on the largest areas of contiguous forest (generally greater than 100 acres) provided that forest-interior is present (i.e., areas that are approximately 300ft or greater from non-forested habitat) as these can provide habitat for uncommon forest-dwelling birds. At present, the largest contiguous forest block occurs in the Dingle Ridge East block, as this forested area is contiguous with forestland in adjacent Ridgefield and Danbury Connecticut. Note that selective forestry is compatible with protection of forest-interior bird habitat assuming that typical forestry BMP's are utilized and that a closed tree canopy remains after harvesting.
3. Protect development-sensitive amphibians and reptiles, especially vernal pool species, within working forests. This can be accomplished by additional sensitivity to maintaining tree cover near wetlands, and the staging of tree harvest at times of years that will minimize take of wildlife. We recognize that selective timber harvest on certain parcels within the study area may be an important conservation strategy to maintain these extensive areas of rugged open space. Selective timber harvesting on these parcels is a far preferable long-term land-use strategy for the maintenance of ecological values when compared to the impacts of conventional residential or commercial development. If the land is committed to long-term sustainable forestry practices, the recommendations found in Calhoun and deMaynadier (2004) are appropriate. If the timber is being harvested as a prelude to development, the standards of Calhoun and Klemens (2002) should be applied for vernal pool conservation.
4. Develop voluntary partnerships with landowners in the Westchester County Agricultural District to provide technical assistance to: (1) maintain ecological connectivity within and between working farms; (2) promote the value of agricultural landscapes as adding value to biodiversity conservation; (3) work with landowners to promote ecologically-friendly land-use practices as they pertain to fencing, nutrient runoff and stormwater management and (4) promote Low Impact Development (LID) practices for stormwater management.
5. Due to our inability to access many of the parcels within the study area, it is especially important to note that in the event development is proposed, a full SEQRA (State Environmental Quality Review Act) analysis should be undertaken to determine actual presence or absence of DS FoSA species in these areas and the potential cumulative impact of proposed developments on these species. This is especially relevant to the habitat blocks designated as "unsurveyed" on Figure 5, specifically Fields Lane South, Starr Ridge West and Nichols Road East.
6. It should be noted that FoSA analyses are not a substitute for site-specific detailed biological surveys that are required as part of SEQRA (State Environmental Quality Review Act). FoSA analyses designate contiguous blocks of high-quality habitat at a coarse, broad-brush scale for use in use in town-wide and regional planning. Properties located within the nine habitat blocks designated in Figure 5 have the potential to contain significant biodiversity and need to be carefully analyzed in the context of any proposed development.
7. The exclusion of a particular property from the nine habitat blocks indicated on Figure 5 does not preclude the potential for FoSA species or other important habitats and resource values

to be present. Therefore, comprehensive environmental review is still required on those parcels lying beyond the designated habitat blocks.

8. Develop EWBC extensions eastward into the towns of Ridgefield and Danbury, CT. MCA is currently developing Ridgefield's Natural Resource Inventory which will contain reciprocal language regarding trans-boundary conservation opportunities with North Salem and Southeast.

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APPENDIX A

Northern Terminus Focal Species Tables

APPENDIX TABLE A1 Development-Sensitive Species				
<i>Common Name</i>	<i>Scientific Name</i>	<i>New York State Status</i>	<i>Audubon Watchlist Designation*</i>	<i>Partners in Flight Designation*</i>
BIRDS				
American Woodcock	<i>Scolopax minor</i>	GCN species	Yellow	PIF-IA
American Redstart	<i>Setophaga ruticilla</i>			
Baltimore Oriole	<i>Icterus galbula</i>			PIF-IA
Barn Swallow	<i>Hirundo rustica</i>			
Barred Owl	<i>Strix varia</i>			
Black and White Warbler	<i>Mniotilta varia</i>			PIF-IIA
Blue-winged Warbler	<i>Vermivora pinus</i>	GCN species	Yellow	PIF-IA
Chestnut-sided Warbler	<i>Dendroica pensylvanica</i>			
Eastern Bluebird	<i>Sialia sialis</i>			
Eastern Wood Pewee	<i>Contopus virens</i>			PIF-IIA
Field Sparrow	<i>Spizella pusilla</i>			
Great-blue Heron	<i>Ardea herodias</i>			
Hairy Woodpecker	<i>Picoides villosus</i>			PIF-IIA
Hooded Warbler	<i>Wilsonia citrina</i>			
Indigo Bunting	<i>Passerina cyanea</i>			
Ovenbird	<i>Seiurus aurocapillus</i>			
Ruby-throated Hummingbird	<i>Archilochus colubris</i>			
Rufous-sided Towhee	<i>Pipilo erythrophthalmus</i>			PIF-IIA
Scarlet Tanager	<i>Piranga olivacea</i>	GCN species		PIF-IA
Veery	<i>Catharus fuscescens</i>			
Virginia Rail	<i>Rallus limicola</i>			
Willow Flycatcher	<i>Empidonax traillii</i>	GCN species	Yellow	
Wood Duck	<i>Aix sponsa</i>			
Wood Thrush	<i>Hylocichla mustelina</i>	GCN species	Yellow	PIF-IA
AMPHIBIANS & REPTILES				
<i>Common Name</i>	<i>Scientific Name</i>	<i>New York State Status</i>	<i>Status in Klemens 2000</i>	
Eastern Box Turtle	<i>Terrapene carolina</i>	Special concern	Special Concern	
Four-toed Salamander	<i>Hemidactylum scutatum</i>	GCN species	Secure	
Red-spotted Newt	<i>Notophthalmus viridescens</i>		Declining	
Spotted Salamander	<i>Ambystoma maculatum</i>		Declining	
Spotted Turtle	<i>Clemmys guttata</i>	Special concern	Declining	
Wood Frog	<i>Rana sylvatica</i>		Declining	
Grey Treefrog	<i>Hyla versicolor</i>		Declining	

KEY – Appendix Table A1

* Applicable to birds only

New York State Status

Species listed as special concern (sc), threatened (T) or endangered (E) by the NY Department of Environmental Conservation [182.2(g-i) of 6NYCRR Part 182]; OR species listed as “Greatest Conservation Need” (GCN) as described in the NY State CWCS

Audubon Watchlist Designation

Red: species in this category are declining rapidly and/or have very small populations or limited ranges, and face major conservation threats. These typically are species of global conservation concern

Yellow: this category includes species that are either declining or rare. These typically are species of national conservation concern. Visit <http://web1.audubon.org/science/species/watchlist/index.php> for additional information.

Partners in Flight Designation (Area 09)

Tier I High Continental Priority

Species that are typically of conservation concern throughout their range. These are species showing high vulnerability in a number of factors, expressed as any combination of high parameter scores leading to an average score > 3 (the midpoint); total of 7 parameter scores will be ≥ 22 , with AI ≥ 2 (so that species without manageable populations in the region are omitted).

Tier I A High Continental Priority-High Regional Responsibility - Species for which this region shares in major conservation responsibility; i.e., conservation in this region is critical to the overall health of this species. Species with AI of 3 - 5, or a high percent population (above threshold in II B).

Tier II High Regional Priority

Species that are of moderate continental priority, but are important to consider for conservation within a region because of various combinations of high parameter scores, as defined below; total of 7 parameter scores = 19-21.

Tier II A High Regional Concern. Species that are experiencing declines in the core of their range and that require short-term conservation action to reverse or stabilize trends. These are species with a combination of high area importance and declining (or unknown) population trend; total of 7 parameters = 19-21, with AI + PT ≥ 8 .

Visit http://www.partnersinflight.org/bcps/pl_09sum.htm for additional information.

Status in Klemens 2000

Reptile and amphibian species listed as “declining” in Klemens, M.W. 2000, pp. 80-84. Note that all State-listed species are, by definition, also declining.

APPENDIX TABLE A2 Development-Tolerant Species	
<i>Common Name</i>	<i>Scientific Name</i>
BIRDS	
American Crow	<i>Corvus brachyrhynchos</i>
European Starling	<i>Sturnus vulgaris</i>
Canada Goose	<i>Branta canadensis</i>
Blue Jay	<i>Cyanocitta cristata</i>
Northern Mockingbird	<i>Mimus polyglottos</i>
House Sparrow	<i>Passer domesticus</i>
Brown-headed Cowbird	<i>Molothrus ater</i>
Chipping Sparrow	<i>Spizella passerina</i>
Mute Swan	<i>Cygnus olor</i>
AMPHIBIANS & REPTILES	
Bullfrog	<i>Rana catesbiana</i>
Green Frog	<i>Rana clamitans</i>
Common Snapping Turtle	<i>Chelydra serpentina</i>
Painted Turtle	<i>Chrysemys picta</i>
Eastern Garter Snake	<i>Thamnophis sirtalis</i>
Northern two-lined Salamander	<i>Eurycea bislineata</i>
Redback Salamander	<i>Plethodon cinereus</i>
American Toad	<i>Bufo americanus</i>
Northern Spring Peeper	<i>Pseudacris crucifer</i>

APPENDIX TABLE A3 Development-Neutral Species	
<i>Common Name</i>	<i>Scientific Name</i>
BIRDS	
American Goldfinch	<i>Carduelis tristis</i>
American Robin	<i>Turdus migratorius</i>
Black-capped Chickadee	<i>Parus atricapillus</i>
Common Grackle	<i>Quiscalus quiscula</i>
Common Yellowthroat	<i>Geothlypis trichas</i>
Downy Woodpecker	<i>Picoides pubescens</i>
Eastern Phoebe	<i>Sayornis phoebe</i>
Fish Crow	<i>Corvus ossifragus</i>
Grey Catbird	<i>Dumetella carolinensis</i>
Mallard	<i>Anas platyrhynchos</i>
Mourning Dove	<i>Zenaida macroura</i>
Northern Cardinal	<i>Cardinalis cardinalis</i>
Northern Flicker	<i>Colaptes auratus</i>
Red-bellied Woodpecker	<i>Melanerpes carolinus</i>
Red-eyed Vireo	<i>Vireo olivaceus</i>
Red-tailed Hawk	<i>Buteo jamaicensis</i>
Red-winged Blackbird	<i>Agelaius phoeniceus</i>
Song Sparrow	<i>Melospiza melodia</i>
Tree Swallow	<i>Tachycineta bicolor</i>
Tufted Titmouse	<i>Parus bicolor</i>
Turkey Vulture	<i>Cathartes aura</i>
White-breasted Nuthatch	<i>Sitta carolinensis</i>
Wild Turkey	<i>Meleagris gallopavo</i>
Yellow Warbler	<i>Dendroica petechia</i>
AMPHIBIANS & REPTILES	
Pickerel Frog	<i>Rana palustris</i>

APPENDIX B - FIGURES

Figure 1 – Town parcel map

Figure 2 – Aerial photograph

Figure 3 – Development-sensitive species & vernal pools

Figure 4 – Vernal pool critical terrestrial habitat mapping

Figure 5 – Habitat blocks

FIGURE 1
TOWN PARCEL MAP
EWBC - NORTHERN TERMINUS
NORTH SALEM - SOUTHEAST, NY



Scale 1 in = 3,000 ft

Legend

- 2010 Study Area
- ▨ High-density Development (Excluded from study area)
- Parcel Boundaries
- Streams
- Water Bodies

Map prepared by :
Metropolitan Conservation Alliance,
a program of the

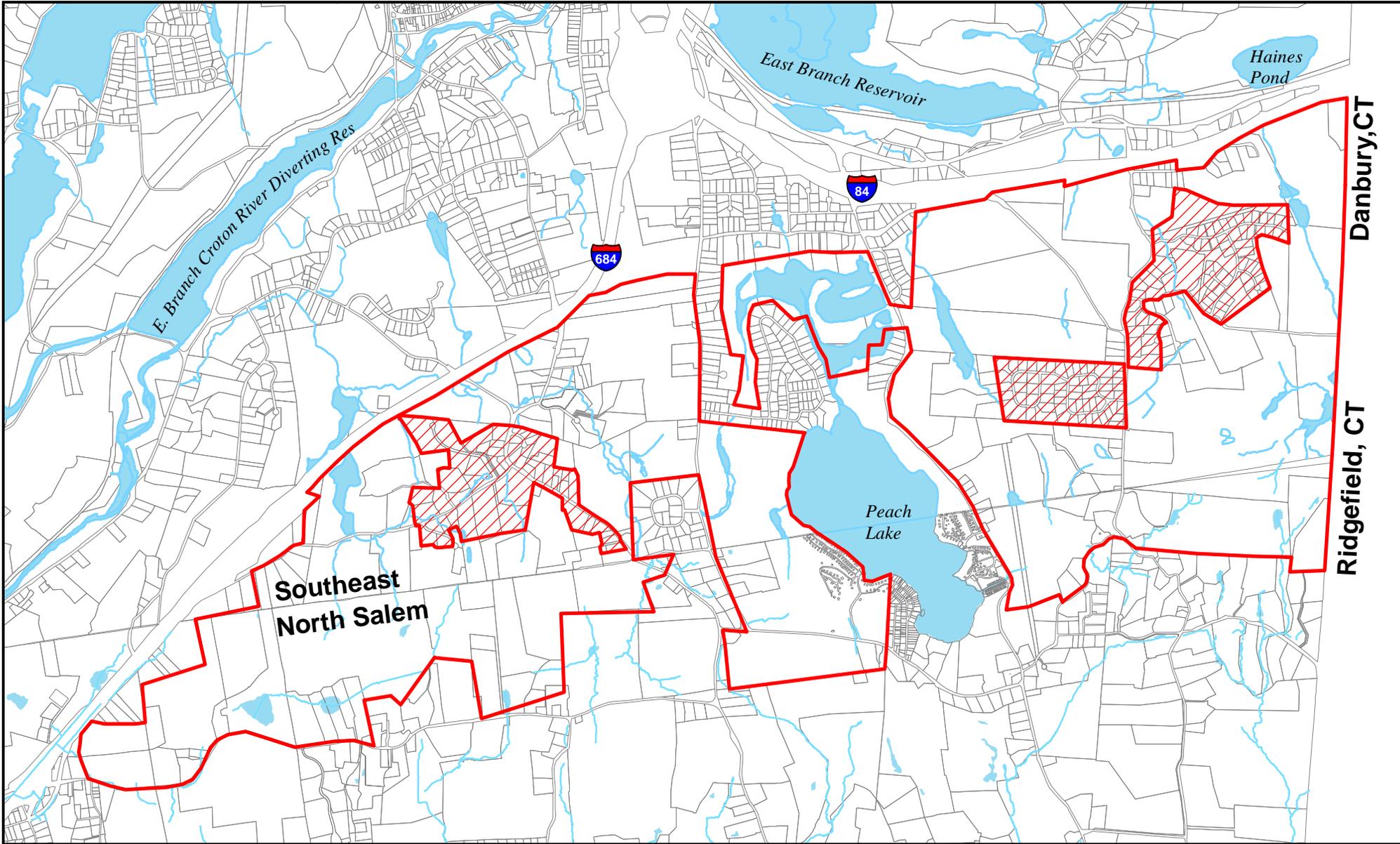


FIGURE 2
AERIAL PHOTOGRAPH
EWBC - NORTHERN TERMINUS
NORTH SALEM - SOUTHEAST, NY



Source:
Orthophotos:
NorthSalem (2007)
Southeast (2004)

Scale 1 inch = 3,000 feet

Legend



Parcel Boundaries



2010 Study Area



High-density Development
(Excluded from study area)

Map prepared by :

*Metropolitan Conservation Alliance,
a program of the*



Cary Institute
of Ecosystem Studies



**FIGURE 3:
DEVELOPMENT SENSITIVE
SPECIES & VERNAL POOLS
EWBC - NORTHERN TERMINUS
NORTH SALEM - SOUTHEAST, NY**



Source:
Orthophotos:
North Salem (2007)
Southeast (2004)
Note: 2009-2010 datum shown

Scale 1 inch = 3,000 feet

Legend

● Birds

● Reptiles or Amphibians



Vernal Pools



Potential
Vernal Pools

Map prepared by :

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of Ecosystem Studies

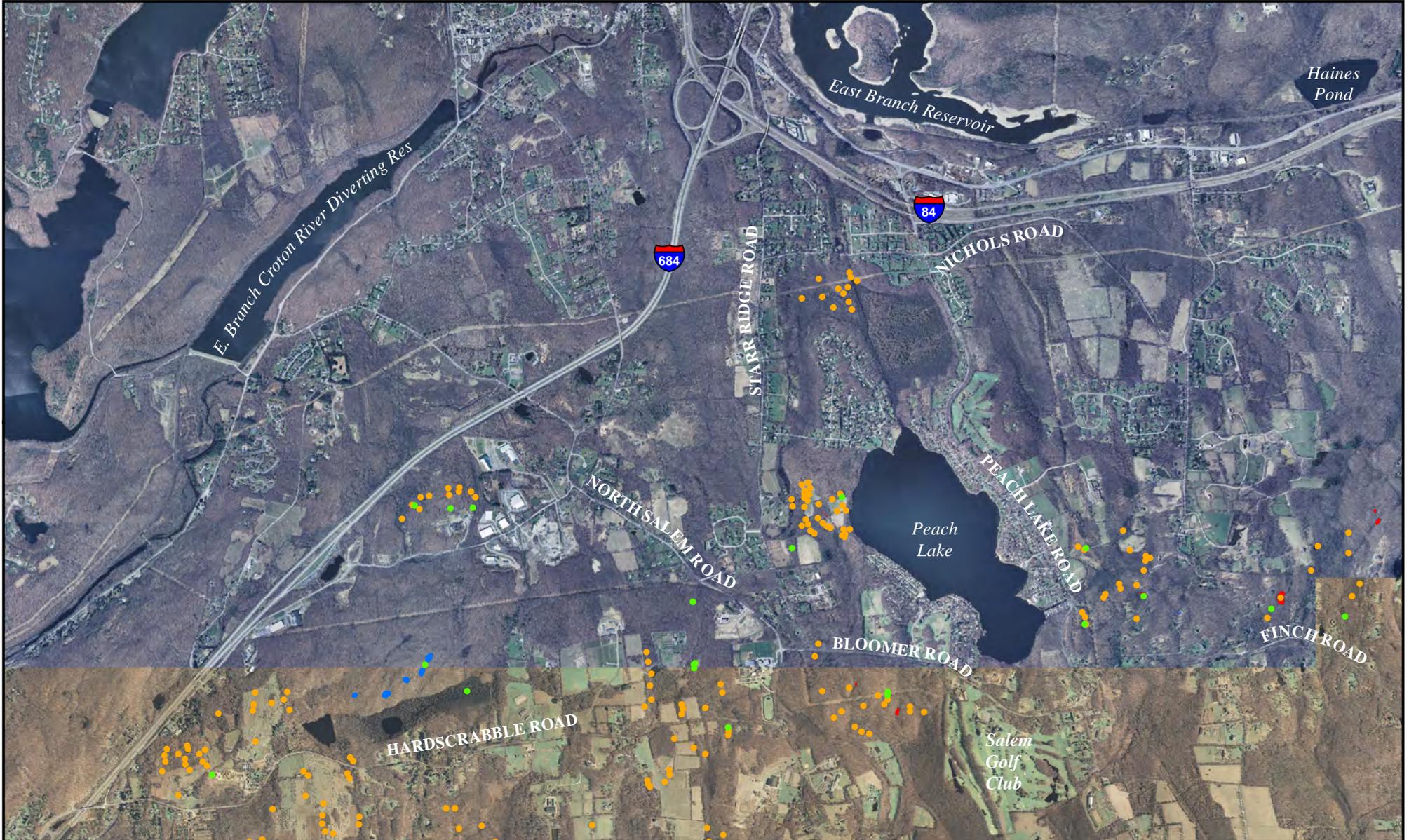


FIGURE 4
VERNAL POOLS
EWBC - NORTHERN TERMINUS
NORTH SALEM - SOUTHEAST, NY



Source:
 Orthophotos:
 North Salem (2007)
 Southeast (2004)
 Note: 2009-2010 datum shown

Scale 1 inch = 3,000 feet

Legend

Confirmed Vernal Pools

-  Confirmed Vernal Pools
-  Confirmed Vernal Pool Terrestrial Habitat (750ft)

Potential Vernal Pools

-  Potential Vernal Pools
-  Potential Vernal Pool Terrestrial Habitat (750ft)

Map prepared by :

*Metropolitan Conservation Alliance,
 a program of the*



FIGURE 5
HABITAT BLOCKS
EWBC - Northern Terminus
North Salem - Southeast, NY



SCALE 1 inch = 3,000 feet

Legend

----- 2010 Study Area

 Haines Pond 2009-2010 Study Area

 EWBC 2009 Study Area

Habitat Blocks

 EWBC 2002 Study Area

 Habitat Block (surveyed)

 Habitat Block (unsurveyed)

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