

# **Haines Pond Biodiversity Study**

## **Town of Southeast, New York**



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**METROPOLITAN CONSERVATION ALLIANCE**

A PROGRAM OF THE



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**MCA TECHNICAL PAPER SERIES: No. 15**

# Haines Pond Biodiversity Study

*by*

**Eric R. Davison, BSc**

*and*

**Michael W. Klemens, PhD**

*Metropolitan Conservation Alliance - A program of the  
Cary Institute of Ecosystem Studies  
Box A-B  
Millbrook, New York  
12545-0129*



***Front cover image:***

Haines Pond, Southeast, New York (photo-E.R. Davison)

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## 1.0 INTRODUCTION

A biodiversity study was conducted at Haines Pond and its surrounding landscape (referred to hereafter as “the study area”) by the Metropolitan Conservation Alliance (MCA), a program of the Cary Institute of Ecosystem Studies.

Haines Pond is located in the southeast portion of the Town of Southeast, bordering the Connecticut state line at the Town of Danbury (see Figure 1). The study area includes Haines Pond as well as contiguous habitats located along the inactive railroad line between Joes Hill Road and the Connecticut state line (see Appendix A, Figures 2-3). This study builds upon field work conducted at this site by Dr. Michael W. Klemens between 1985-1986 and 1991.

We acknowledge the financial support of the Town of Southeast Open Space Advisory Committee as well as the efforts of that Committee in commissioning this study. Special thanks are due to Open Space Advisory Committee Chair, Mildred Nugent, as well as Town Supervisor Michael Rights and the Town Board members, as well as Town Assessor Bill Ford.

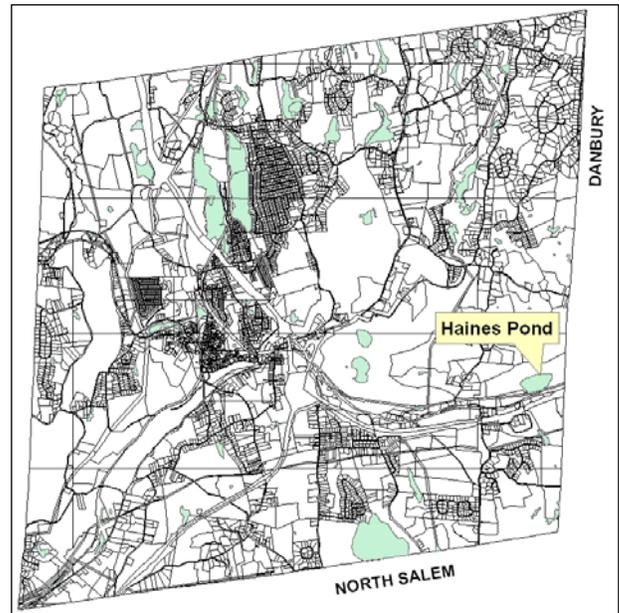


Figure 1: Town parcel map showing location of Haines Pond

## 2.0 METHODS

### 2.1 *Field Data Collection*

MCA’s field herpetologists conducted amphibian and reptile surveys between April and August 2009. Survey techniques consisted primarily of visual searches and turning over 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 herpetologists’ knowledge of a given species’ activity patterns and preferred habitats maximized the number of species detected in the study area.

MCA’s field ornithologist conducted breeding bird surveys at peak song periods, 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. To determine presence of birds that sing in evening hours, such as thrushes, some surveys were conducted in the late afternoon or evening. Most data were collected through auditory cues (i.e., listening to bird songs and calls). Less often, birds were visually observed by the field ornithologist. 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, are usually habitat specialists, with relatively narrow ecological requirements and/or complex life-history requirements that involve use of multiple, interconnected habitat types. These specialized habitats and interconnections are often compromised by development. Examples include Neotropical migrant bird species, vernal pool-breeding amphibians, and long-lived reptile species, especially turtles and large snakes. These 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, 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. Examples of such species include Corvids (crows and jays), Canada geese, bullfrogs, snapping turtles, raccoons and white-tailed deer. As urbanization proceeds, development-sensitive species are out-competed by development-tolerant species. In this manner, development-tolerant species tend to increase and, over time, replace development-sensitive species, resulting in an overall reduction of biodiversity. Note that species observed by MCA biologists that are not particularly reactive to coarse-scale fragmentation are considered “development-neutral”.

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 analysis can enhance planning efforts by assessing the importance of individual sites for conservation. 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 Haines Pond focal species list (*see* Appendix B) was based on the list used for other biodiversity studies conducted by MCA, such as the Eastern Westchester Biotic Corridor Study, which, in turn, was based on a review of literature that addressed development-sensitivity within the New York/New England region (e.g., Andrlé and Carroll 1988, Klemens 1990, Klemens 1993, Bull 1998, Klemens 2000) and on observations of species distribution trends in the field.

## **3.0 RESULTS**

### **3.1 *Abiotic (non-living) Site Characteristics***

The study area is located in southern Putnam County within the Hudson Highlands Ecozone (Andrle and Caroll 1988). The study area is located around a headwater wetland system which flows west into the East Branch Reservoir, a drinking water supply reservoir for New York City. The easternmost boundary of the study area straddles the CT-NY state line and is located at the watershed divide between the Hudson River (New York) and Housatonic River (Connecticut) drainage basins.

The study area consists of a broad headwater wetland system located on the north side of State Route 6 and the inactive railroad tracks. To the north this wetland system is bordered by a pronounced, bedrock-controlled forested ridge known as “Joes Hill”, which climbs to an elevation of 900ft. This wetland system is fed by two unnamed perennial streams, one draining from Joes Hill to the north and one draining from the forested ridge south of the site and northeast of Peach Lake, along the North Salem town line.

Soils in the study area are derived from glacial outwash, glacio-fluvial and glacial till surficial deposits and include the Hinckley, Charlton, Chatfield, Hollis, Knickerbocker, Palms and Fredon soil series. USDA drainage class ranges from moderately-well drained to excessively drained in upland portions of the site and poorly drained to very-poorly drained in wetland portions of the site. Very-poorly drained organic (muck) soils dominate in wetlands bordering the north and south side of the railroad line.

### **3.2 *Habitat Types***

A rich diversity of both upland and wetland habitats occur within the study area. The study area’s wetland habitats are interconnected and their characteristics are strongly influenced (in a positive manner) by the engineering activity of beavers, which have created a wide range of hydrologic conditions resulting from the cycle of creation and subsequent draining of beaver ponds. These include seasonally-saturated wetlands in which surface water is limited to springs and shallow surface flow (e.g. hillside wooded swamps), seasonally-flooded wetlands in which standing water is present throughout the spring and early summer and generally absent by late summer (e.g., marshes, shrub-scrub and wooded swamp wetlands occurring on gentle topography) and permanently-flooded wetlands in which water is present throughout the year (e.g., Haines Pond).

The following eight habitat types were identified in the study area. Their locations are illustrated on Figure 4. Their general characteristics are described in the following sections.

- (1) Emergent marsh (e.g., beaver meadow)
- (2) Shrub-scrub wetland (= shrub swamps)
- (3) Perennial stream
- (4) Vernal pool
- (5) Wooded swamp
- (6) Open water (e.g., Haines Pond)
- (7) Forest
- (8) Old field

### 3.2.1 Emergent Marsh

Emergent marsh is the dominant plant community in the study area. Emergent marshes are dominated by persistent and non-persistent grasses, sedges, rushes, and other herbaceous grass-like plants. Emergent marsh habitat occurs between the unnamed pond immediately east of Joes Hill (referred to informally as “Joes Hill Pond”) and Haines Pond, both north and south of the railroad tracks. Common plant species include Cattails (*Typha latifolia*), the invasive, non-native Reed Canarygrass (*Phalaris arundinaceae*) and Tussock Sedge (*Carex stricta*).



Figure 2: Stream flowing through emergent marsh. Note dead standing timber resulting from former beaver impoundment. This is prime habitat for Wood Turtle.



Figure 3: Birdseye view looking south at emergent marsh habitat located immediately south of Haines Pond. This wetland was frequented by Musk Turtle.

Marsh habitat borders the north and south side of the railroad tracks throughout the study area. Figure 3 shows a birdseye view of the marshland bordering the entrance trail off of Route 6. This wetland is highly eutrophic (nutrient-enriched), contains hummocky micro-topography and is permanently-ponded.

### 3.2.2 Shrub-Scrub Wetlands

Shrub-scrub wetlands are dominated by woody vegetation, shrubs with some scattered stunted trees less than 20 feet in height. Shrub-scrub habitats at the site are intermingled with emergent marshes (see Figure 4). Dominant plant species include Winterberry (*Ilex verticillata*), Speckled Alder (*Alnus rugosa*), Highbush Blueberry (*Vaccinium corymbosum*) and Sweet Pepperbush (*Clethra alnifolia*). Many of these are fruiting shrubs species which provide a vital food source for birds during the breeding season.



The interspersed of shrub-scrub, emergent marsh and open water provides excellent basking and nesting habitat for both aquatic turtles and birds.

Figure 4: Birdseye view looking south at the shrub-scrub and emergent marsh wetland complex located north and south of the railroad line.

### 3.2.3 Perennial Stream

Three unnamed streams are located within and immediately adjacent to the study area. The first originates north of the study area on Joes Hill and drains southward into Haines Pond. The second originates south of the study area and northeast of Peach Lake and drains northward under both Route 6 and I-84 before reaching the study area. The third drains out of the study area westward into the East Branch Reservoir.

### 3.2.4 Vernal Pool

Two vernal pools were identified within the study area. The first is located north of Haines Pond along the forested ridgetop of Joes Hill. This pool is located within a larger wooded swamp system. Egg masses of two vernal pool obligate species, the Wood Frog (*Rana sylvatica*) and Spotted Salamander (*Ambystoma maculatum*), were observed in the pool during a spring field visit.

The second pool is located adjacent to the northeast corner of Haines Pond (see Figure 5). The pool's water level fluctuates throughout the growing season but is permanently ponded. During periods of peak runoff and high groundwater, this pool maintains a surface water connection with Haines Pond. The pool contained egg masses of Spotted Salamander and possibly Blue-spotted Salamander complex (*Ambystoma cf laterale*).



Figure 5: Vernal pool located northeast of Haines Pond. View looking southwest across pool with Haines Pond in the background.

### 3.2.5 Wooded Swamp

Wooded swamps are the most abundant wetland type in the region and have a vegetational community which is characterized by a forest canopy at least 20 feet tall. Wooded swamps occur on the broad south facing hillside below Joes Hill. The majority of these wetlands are steeply sloping, draining downslope into the marsh system as well as Haines Pond. Dominant plant species include Red Maple (*Acer rubrum*) and Green Ash (*Fraxinus pennsylvanica*) in the tree layer, Spicebush (*Lindera benzoin*) in the shrub layer and Skunk Cabbage (*Symplocarpus foetidus*) in the herb layer.

### 3.2.6 Open Water



Figure 6: Birdseye view (looking north) of Joes Hill Pond located immediately east of Joes Hill Road. The pond is shallow and bordered by emergent marsh. A small dam is located at the pond's western end. The pond is frequented by waterfowl and wading birds.

Two open water wetlands occur within the study area, Haines Pond as well as a small unnamed pond located immediately east of Joes Hill Road (referred to informally as “Joes Hill Pond” see Figure 6). Joes Hill Pond totals approximately 3 acres. It is retained by a small concrete dam located at the pond's western end. This dam has been enhanced by beavers, who have added material to the face of the

dam in order to raise the surface water elevation of the pond. Nevertheless the pond is very shallow, with an overall depth of less than 3ft. This shallow depth is due in part to significant sediment accumulations in the pond basin. The pond is surrounded by shallow marsh as well as standing dead timber, providing excellent habitat for waterfowl, wading birds and migrating shorebirds.

Haines Pond totals approximately 32 acres. The pond is located in the uppermost portion of the watershed. The pond is heavily infested with the invasive weed Eurasian Watermilfoil (*Myriophyllum spicatum*). This species has been identified as problematic primarily due to the fact that it interferes with recreational activities, particularly power-boating and swimming.

Although fishery surveys were not part of this study, several fish species were observed in Haines Pond, including Pickerel (*Esox nigra*), Bluegill (*Lepomis macrochirus*), Bass (*Micropterus*) and unidentified species of minnows and catfish.

### 3.2.7 Forest

The dominant upland (non-wetland) habitat type in the study area is hardwood forest. The study area is located within the oak-northern hardwood forest type of New York (Andrle and Carroll 1988). The forest is relatively mature, dominated by sawtimber (12+ inches diameter) with scattered poletimber (4-12 inches diameter). Common tree species include Chestnut Oak (*Quercus prinus*), Black Oak (*Quercus velutina*), Red Oak (*Quercus rubra*), White Oak (*Quercus alba*), Wild Cherry (*Prunus serotina*), Paper Birch (*Betula*

*papyrifera*), Black Birch (*Betula lenta*), hickory (*Carya spp.*) and Sugar Maple (*Acer saccharum*). Common midstory and understory vegetation includes Sassafras (*Sassafras albidum*), White Pine (*Pinus strobus*), Witchhazel (*Hamamelis virginiana*) and the invasive exotic Japanese Barberry (*Berberis thunbergii*). Christmas Fern (*Polystichum acrostichoides*), Pennsylvania Sedge (*Carex pennsylvanica*) and the invasive exotic Garlic Mustard (*Alliaria petiolata*) are common in the herb layer.

In addition to hardwood forest, a small spruce-pine plantation is located on the glacial ridge east of Haines Pond.



Figure 7: Mixed hardwood forest looking west over Haines Pond.

### 3.2.8 Old Field

The term “old field” refers to non-forested successional habitats dominated by a mixture of herbaceous vegetation with scattered shrubs and small trees. An 8-acre old field is located immediately west of Haines Pond. This area was created as the result of some form of anthropogenic disturbance, likely sand and gravel excavation. Vegetation consists of Black Locust (*Robinia pseudoacacia*), Trembling Aspen (*Populus tremuloides*) in the sapling and shrub layer and Goldenrods (*Solidago spp.*), Switchgrass (*Panicum virgatum*), Little Bluestem (*Schizachyrium scoparium*) and the non-native, invasive Mugwort (*Artemisia vulgaris*) common in the herb layer (see Figure 8).

A second small area of old field habitat occurs at the edge of the spruce/pine stand along the Connecticut state line. This area is an old sand and gravel pit which is now reverting back to forest. Eastern Hognose Snake (*Heterodon platirhinos*) and Eastern Box Turtle (*Terrapene c. carolina*), two State-listed reptiles, were observed basking in this sunny forest opening (see Figure 9).



Figure 8: 8-acre old field habitat adjacent to Haines Pond. Indigo Bunting and Great-crested Flycatcher nest here.



Figure 9: Small old field located along CT state line. Hognose Snake and Box Turtle, two State-listed reptiles, were observed basking in this sunny forest opening.

### 3.3 Amphibians and Reptiles

The Haines Pond study area contains an exceptional diversity of amphibians and reptiles. This diversity is especially noteworthy when compared with diversity found at other sites in nearby northern Westchester County where MCA has been conducting field research this year. Four species of salamanders, seven species of frogs, six species of turtles, and five species of snakes were documented in the course of the 2009 survey. Of these 22 species, nine are considered to be of conservation concern and are described in the following paragraphs.

Blue-spotted Salamander complex (*Ambystoma cf laterale*). In the spring survey of the vernal pool at the northeastern end of Haines Pond some single *Ambystoma* eggs typical of Blue-spotted Salamanders were dip-netted. We returned later in the season (August 8th) and dip-netted larvae which were reared through metamorphosis. These had blue flecks, indicative of this species. The Blue-spotted Salamander complex in this area is unusual. Bogart and Klemens (1997) examined specimens from nearby sites in Danbury, Ridgefield, and New Fairfield (Connecticut) and found the populations to be composed entirely of hybrid females, with the preponderance of genetic material in these populations originating from Blue-spotted Salamanders, with a smaller contribution of Jefferson Salamander genes. Many of these unusual salamander populations have been destroyed by subsequent urbanization. Additional field work in 2010 should yield more information on the status of the salamanders in this vernal pool. Blue-spotted Salamanders are considered a Special Concern Species in both New York and Connecticut.

Spotted Salamander (*Ambystoma maculatum*). Spotted Salamanders are a vernal pool obligate species. They are declining throughout the Hudson Valley and Connecticut because of the loss of upland forested habitat surrounding their breeding pools. Spotted Salamanders can move over 800 feet from their breeding pools into adjacent upland forested habitats (Calhoun and Klemens 2002).

Wood Frog (*Rana sylvatica*). Wood Frogs are a vernal pool obligate species. They are declining throughout the Hudson Valley and Connecticut because of the loss of upland forested habitat surrounding their breeding pools. Wood Frogs can move over 1500 feet from their breeding pools into adjacent upland forested habitats (Calhoun and Klemens 2002).

Spotted Turtle (*Clemmys guttata*). The Spotted Turtle is one of several long-lived, landscape sensitive turtles species found at the site. Spotted Turtles require a mosaic of wetland types for seasonal use—and these habitat needs are well filled by the rich diversity of emergent and shrub wetlands on the site. Spotted Turtles are declining throughout the Hudson Valley, and are listed as a New York State Species of Special Concern.

Eastern Box Turtle (*Terrapene c. carolina*). The Eastern Box Turtle is the third species of long-lived turtle that is supported within the Haines Pond ecosystem. Eastern Box Turtles can easily attain ages in excess of eighty years, and ages up to 123 years have been documented. The Haines Pond population is near the natural limit of the species range in the northeastern United States. Range edge populations are extremely important in times of ecological change (climate change) as they may be the best adapted (genetically) to expand their natural range. Eastern Box Turtles require a mixture of wetland edge, field, and forest habitat. The mosaic of habitat types at Haines Pond favors this species. The Eastern Box Turtle is a Species of Special Concern both in New York and Connecticut.



Figure 10: Eastern Box Turtle found basking along railroad tracks.

Wood Turtle (*Clemmys insculpta*). The Wood Turtle is another long-lived turtle species that has large home range requirements. This species requires stream habitat for overwintering, and marshes, fields, and woodlands for summertime foraging. The rich diversity of habitat types at the study site is conducive for this species' survival. Wood Turtles are listed as Species of Special Concern in both New York and Connecticut.

Black Racer (*Coluber constrictor*). Black Racers are active, diurnal terrestrial snakes that favor open fields and other types of open-canopy areas including scarified sites and wetland edges. Black racers have undergone a dramatic decline in many areas, due to habitat fragmentation, but also the loss of their preferred open field habitats. As fields are lost through development or by reforestation, Black Racers disappear, and in some instances are replaced by the forest dwelling Black Rat Snakes. The larger areas of open fields, emergent marsh edges, and the abandoned railroad tracks provide important habitat areas for this species at the Haines Pond site.

Black Rat Snake (*Elaphe obsoleta*). The Black Rat Snake is a large arboreal snake, increasing in areas of the lower Hudson Valley and Connecticut due to the conversion of fields and open areas to more forested habitats. Haines Pond has a rich diversity of open canopy areas (fields, shrub lands, and wetland edges) as well as deciduous forest slopes, which provide habitat for both black snake species (Racer and Rat) to occur together at this site.

Hognose Snake (*Heterodon platirhinos*). An especially significant find in this year's field work (2009) was a Hognose Snake. This species has undergone a long-term non-cyclical decline throughout the northeastern portions of its range. Hognose snakes require well drained, sandy soils and this snake was found on the glacial outwash area at eastern edge of the site, very near the divide between the Hudson and Housatonic watersheds. Hognose snakes feed on toads and frogs, and use forested as well as non-forested areas for foraging and burrow underground often using small mammal tunnels. Hognose Snakes are Species of Special Concern in both New York and Connecticut.



Figure 11: Black Rat Snake basking along railroad tracks.

### 3.4 Birds

A total of 51 bird species were observed in the study area, including 23 development-sensitive species, 5 development-associated species and 23 development-neutral species (see Appendix B). Development-sensitive species include wetland-dependant, early successional-dependant (e.g. shrubland birds) as well as several forest-dwelling bird species.

The study areas non-forested habitats (old fields and brushy edge habitat) were found to support such species as the Indigo Bunting (*Passerina cyanea*), Blue-winged Warbler (*Vermivora pinus*), Baltimore Oriole (*Icterus galbula*) and the Rufous-sided Towhee (*Pipilo erythrophthalmus*); all of which are development-sensitive FoSA species experiencing non-cycling, long-term population declines in the region (Sauer, J. R., J. E. Hines, and J. Fallon 2008).

The complex of wetlands, open water and standing dead timber provides excellent habitat for a variety of waterfowl, wading birds and other wetland-dependant, development-sensitive species, including Great-Blue Heron (*Ardea herodias*), Green Heron (*Butorides virescens*), Wood Duck (*Aix sponsa*) and Swamp Sparrow (*Melospiza georgiana*).

The study area's forested habitat supports several species of neo-tropical migrant songbirds, including the Wood Thrush (*Hylocichla mustelina*), Eastern Wood Pewee (*Contopus virens*) and Ovenbird (*Seiurus aurocapillus*).



Figure 12: Indigo Bunting perched in locust tree in old field habitat.

#### 4.0 DISCUSSION

The variety of habitats present on the site supports a rich diversity of amphibians, reptiles and birds. We use these focal species groups as a measure of ecosystem health as they exhibit sensitivity to landscape-scale habitat fragmentation at the 1,000-5,000-acre scales. Many of the species that we have documented are state-listed and are also given consideration in other conservation organization lists, including Audubon's Watchlist, USFWS Partners in Flight list and New York's Comprehensive Conservation Wildlife Strategy. Moreover, many of the species observed are becoming increasingly rare in northern Westchester and adjacent Putnam County, making their presence at the site even more significant. Species documented such as the Eastern Box Turtle (*Terrapene c. carolina*), Spotted Turtle (*Clemmys guttata*) and Hognose Snake (*Heterodon platirhinos*) are near their natural northern range limit. Such populations are genetically adapted to cooler and more unpredictable climatic conditions at the range edge and are increasingly important for species resilience in the global climate change scenario we now face.

#### 5.0 RECOMMENDATIONS

MCA's 2009 biodiversity surveys of the Haines Pond ecosystem revealed a remarkable diversity of regionally rare and declining species. The site definitely has merit for conservation and open space preservation based on its array of habitats and species.

For a site of this size and complexity, it is recommended that biodiversity surveys continue for another year to increase the species lists, as well as to gather additional data on population sizes of certain species, particularly several of the turtle species. Additional information on habitat use of various species would be useful, as well as overall management plans for unusual species and habitats.

A better understanding of the relative importance of various habitats on the site is important. Several areas on the site are degraded, and dominated by invasive plants. Additional studies are warranted on how best to manage/restore those areas and what their value may be.

Acquisition of the site for open space protection is recommended, but that should go hand in hand with the development of a management plan for the overall site. Certain types of open space uses may be deleterious to the outstanding natural biodiversity values of the site, and these should be closely examined.

Finally, outreach should continue to the City of Danbury and a comprehensive study of the biodiversity of the connected Haines Pond and Sanford Pond ecosystems should be undertaken.

## 6.0 LITERATURE CITED

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**APPENDIX A**  
**Maps 1-3**

**MAP 1: TOPOGRAPHIC MAP**  
**Haines Pond Biodiversity Study**  
**Southeast, NY**

NOT TO SCALE



USGS topographic map (Brewster, NY quadrangle)  
showing the approximate study area boundary.

Map prepared:

Metropolitan Conservation Alliance,  
a program of the



**MAP 2: 2004 AERIAL PHOTOGRAPH  
Haines Pond Biodiversity Study  
Southeast, NY**

SCALE 1 inch = 1,022.55 feet

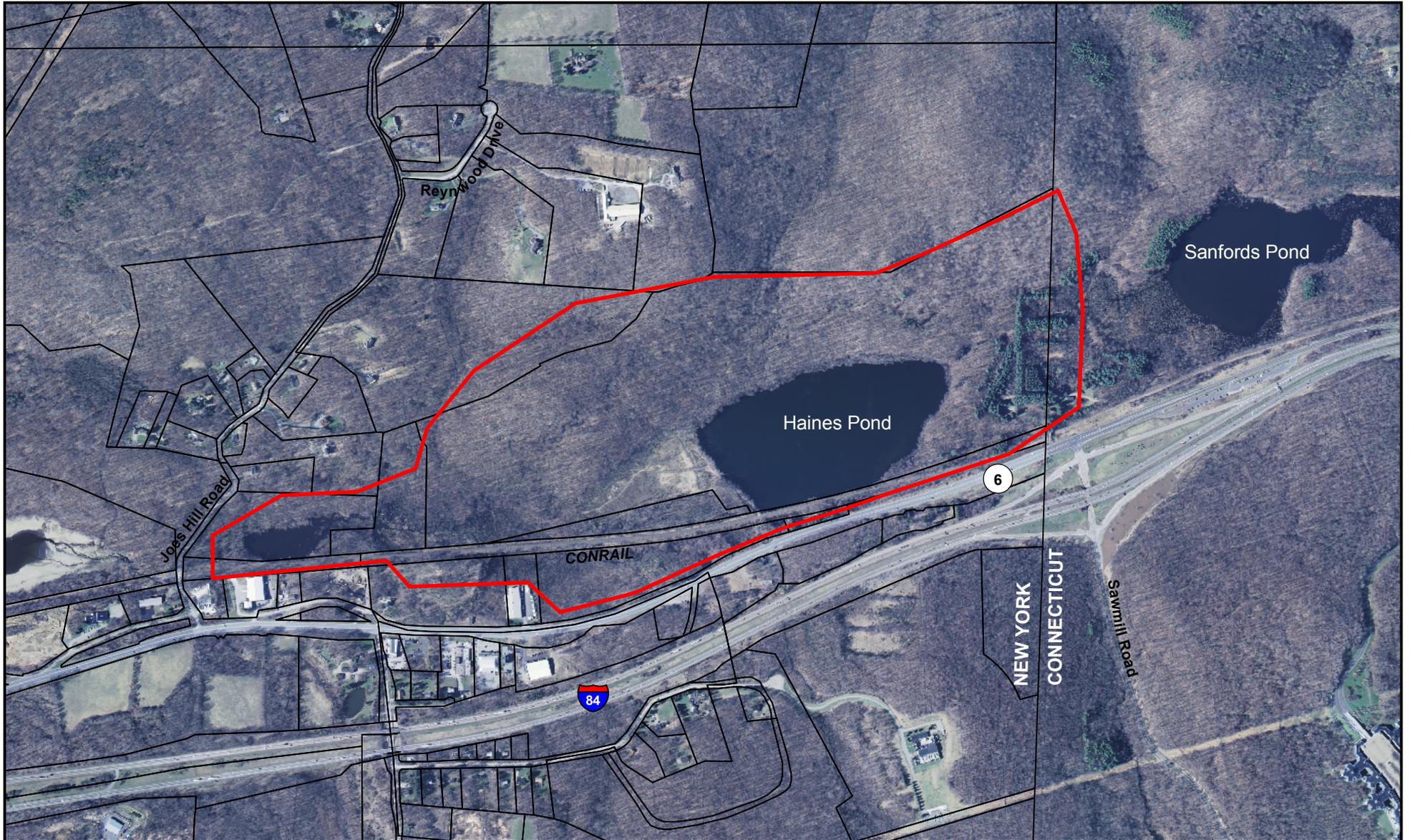


**Legend**

-  Haines Pond study area
-  Parcel boundary

Map prepared:

*Metropolitan Conservation Alliance,  
a program of the*



**MAP 3: HABITAT TYPES**  
**Haines Pond Biodiversity Study**  
**Southeast, NY**

SCALE 1 inch = 650 feet

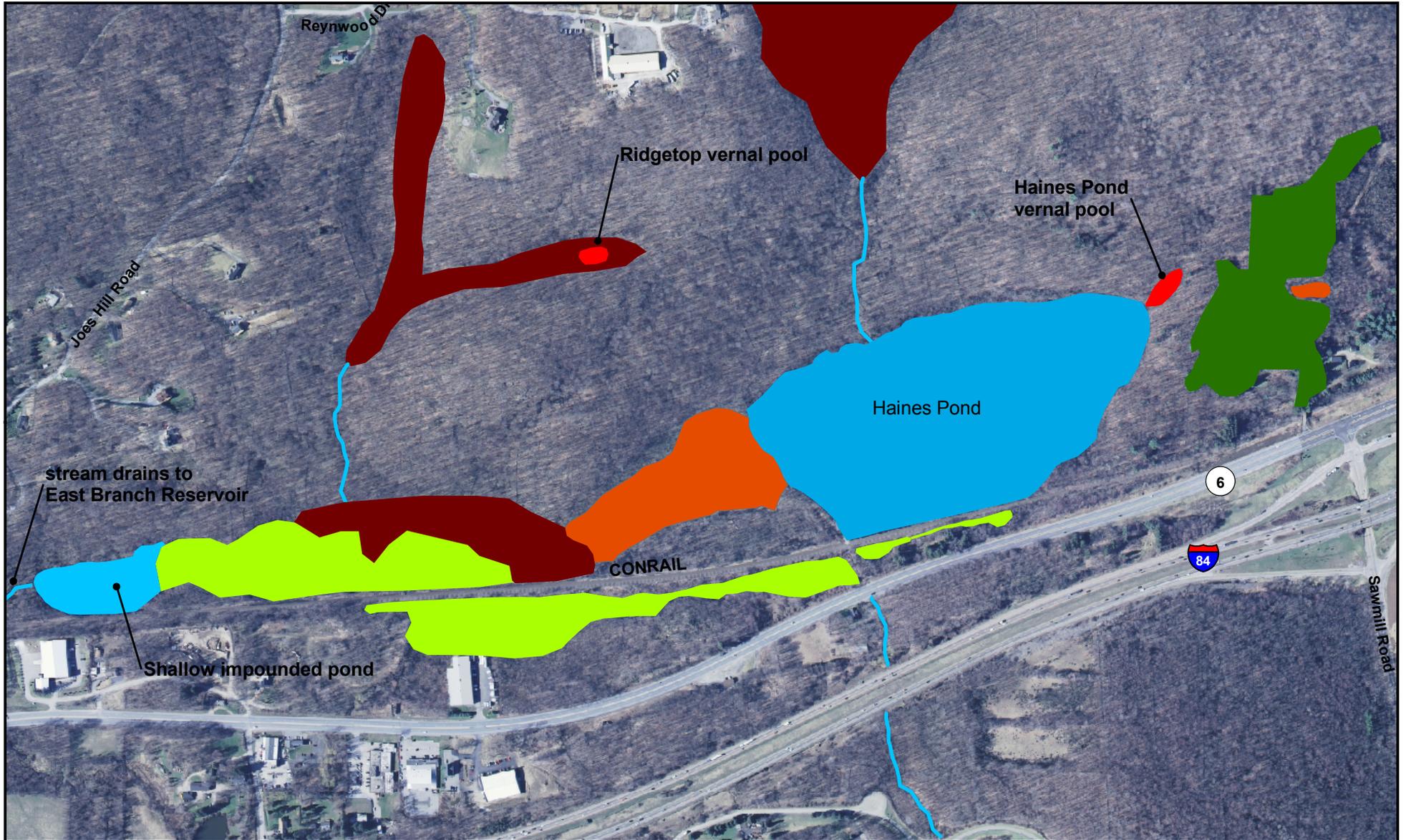


**Legend**

- |   |   |
|---|---|
|  HARDWOOD FOREST |  EMERGENT MARSH      |
|  STREAM          |  VERNAL POOL         |
|  OLD FIELD       |  PINE / SPRUCE STAND |
|  OPEN WATER      |  WOODED SWAMP        |

Map prepared:

*Metropolitan Conservation Alliance,  
a program of the*



**APPENDIX B**  
**Haines Pond Focal Species Tables**

<b>Haines Pond Focal Species Development-Sensitive Species</b>				
<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>
<b>BIRDS</b>				
American Redstart	<i>Setophaga ruticilla</i>			
Baltimore Oriole	<i>Icterus galbula</i>			Tier IA
Barn Swallow	<i>Hirundo rustica</i>			
Black-and-White Warbler	<i>Mniotilta varia</i>			Tier IIA
Blue-winged Warbler	<i>Vermivora pinus</i>		Yellow	Tier IA
Cedar Waxwing	<i>Bombycilla cedrorum</i>			
Eastern Bluebird	<i>Sialia sialis</i>			
Eastern Kingbird	<i>Tyrannus tyrannus</i>			
Eastern Wood Pewee	<i>Contopus virens</i>			Tire IIA
Great-crested Flycatcher	<i>Myiarchus crinitus</i>			
Great Blue Heron	<i>Ardea herodias</i>			Tier V
Green Heron	<i>Butorides virescens</i>			
Indigo Bunting	<i>Passerina cyanea</i>			
Louisiana Waterthrush	<i>Seiurus motacilla</i>			Tier IA
Owl	<i>Species unknown</i>			
Ovenbird	<i>Seiurus aurocapillus</i>			
Rose-breasted Grosbeak	<i>Pheucticus ludovicianus</i>			Tier IIA
Rufous-sided Towhee	<i>Pipilo erythrophthalmus</i>			Tier IIA
Swamp Sparrow	<i>Melospiza georgiana</i>			
Willow Flycatcher	<i>Empidonax traillii</i>		Yellow	
Wood Duck	<i>Aix sponsa</i>			
Wood Thrush	<i>Hylocichla mustelina</i>		Yellow	Tier IA
Yellow Warbler	<i>Dendroica petechia</i>			
<b>AMPHIBIANS &amp; REPTILES</b>				
<i>Common Name</i>	<i>Scientific Name</i>	<i>New York State Status</i>	<i>Status in Klemens 2000</i>	
Blue-spotted Salamander Complex	<i>Ambystoma laterale</i>	Special Concern	Special Concern	
Wood Frog	<i>Rana sylvatica</i>		Declining	
Spotted Salamander	<i>Ambystoma maculatum</i>		Declining	
Eastern Box Turtle	<i>Terrapene c. carolina</i>	Special Concern	Special Concern	
Eastern Hognose Snake	<i>Heterodon platirhinos</i>	Special Concern	Special Concern	

Northern Black Racer	<i>Coluber c. constrictor</i>		Declining	
Spotted Turtle	<i>Clemmys guttata</i>	Special Concern	Declining	
Wood Turtle	<i>Clemmys insculpta</i>	Special Concern	Special Concern	

KEY

\* Applicable to birds only

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](http://www.partnersinflight.org/bcps/pl_09sum.htm) for additional information.

Status in Klemens 2000

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

<b>Haines Pond Focal Species Development-Tolerant Species</b>	
<i>Common Name</i>	<i>Scientific Name</i>
<b>BIRDS</b>	
American Crow	<i>Corvus brachyrhynchos</i>
Blue Jay	<i>Cyanocitta cristata</i>
Canada Goose	<i>Branta canadensis</i>
Northern Mockingbird	<i>Mimus polyglottos</i>
European Starling	<i>Sturnus vulgaris</i>
<b>AMPHIBIANS &amp; REPTILES</b>	
Two-lined Salamander	<i>Eurycea bislineata</i>
American Toad	<i>Bufo americanus</i>
Northern Spring Peeper	<i>Pseudacris crucifer</i>
Green Frog	<i>Rana clamitans</i>
Bullfrog	<i>Rana catesbiana</i>
Common Snapping Turtle	<i>Chelydra serpentina</i>
Northern Water Snake	<i>Nerodia sipedon</i>
Painted Turtle	<i>Chrysemys picta</i>
Eastern Garter Snake	<i>Thamnophis s. sirtalis</i>

<b>Haines Pond Focal Species Development-Neutral Species</b>	
<i>Common Name</i>	<i>Scientific Name</i>
<b>BIRDS</b>	
American Goldfinch	<i>Carduelis tristis</i>
American Robin	<i>Turdus migratorius</i>
Belted Kingfisher	<i>Ceryle alcyon</i>
Common Grackle	<i>Quiscalus quiscula</i>
Common Yellowthroat	<i>Geothlypis trichas</i>
Eastern Phoebe	<i>Sayornis phoebe</i>
Grey Catbird	<i>Dumetella carolinensis</i>
Mallard	<i>Anas platyrhynchos</i>
Mute Swan	<i>Cygnus olor</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>
Rough-winged Swallow	<i>Stelgidopteryx ruficollis</i>
Solitary Sandpiper	<i>Tringa solitaria</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>
Wild Turkey	<i>Meleagris galopavo</i>
<b>AMPHIBIANS &amp; REPTILES</b>	
Redback Salamander	<i>Plethodon cinereus</i>
Musk Turtle	<i>Sternotherus odoratus</i>
Gray Treefrog	<i>Hyla versicolor</i>
Pickerel Frog	<i>Rana palustris</i>