



Conservation Master Plan for the Coves ESA

Prepared for the City of London Parks Planning & Design

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North-South Environmental Inc.



35 Crawford Crescent, Suite U5
P.O. Box 518
Campbellville, Ontario
L0P 1B0

CONSULTANT TEAM

Brent Tegler	Project Manager and report author, North-South Environmental
Susan Hall	Project Lead, Community Engagement, Lura Consulting
Leah Winter	Project Assistant, Community Engagement, Lura Consulting
Markus Hillar	Trails analysis and design, Schollen and Company
Sarah Mainguy	Project Advisor, Ecology, North-South Environmental
Richard Czok	GIS analysis, North-South Environmental

CITY OF LONDON

Vanessa Kinsley	Project Manager, Parks Planning and Design
Julie Michaud	Advisory Team, Parks Planning and Design
Andrew Macpherson	Advisory Team, Parks Planning and Design

LOCAL ADVISORY COMMITTEE

Bill Maddeford	Ecological and Environmental Planning Advisory Committee (EEPAC)
Bob Porter	Coves Subwatershed Implementation Committee
Brenda Rowe	Friends of the Coves
Christine Creighton	Upper Thames River Conservation Authority
Daphne Lowe	Nature London
Garry Brown	Old South Community Organization
Gillian Barr	Community member
Jessica Sontrop	Community member
Natalie St. Amour	EEPAC
Pat Donnelly	City of London
Stephen Erickson	Community member
Thom McClenaghan	Friends of the Coves

COVER PHOTOGRAPHY CREDIT

Andrew Jackson (www.ontariowildlife.net)



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THE COVES ENVIRONMENTALLY SIGNIFICANT AREA CONSERVATION MASTER PLAN

Section 1 – Introduction to the Coves CMP



Autumn At The South Pond

Photo Credit – Andrew Jackson (www.ontariowildlife.net)



THE COVES ENVIRONMENTALLY SIGNIFICANT AREA CONSERVATION MASTER PLAN

SECTION 1 – INTRODUCTION TO THE COVES CMP

What is an Environmentally Significant Area (ESA)?

Environmentally Significant Areas are recognized and designated as fully protected natural areas *that contain natural features and perform ecological functions that warrant their protection in a natural state*. In the hierarchy of the Natural Heritage System, ESAs are considered the largest, highest quality areas within the City. They represent areas that may have unusual geological processes, contribute important hydrological functions related to wetlands and watercourses, contain high quality vegetation communities, rare and uncommon vegetation communities and species, including Species at Risk, are of sufficiently large size to support critical wildlife habitat and linkage functions, and represent important areas of biodiversity. Protection of important ecological areas, including the physical and ecological features and functions that sustain these areas, is therefore the primary management goal of ESAs.

Why is the Coves an ESA?

The Coves area is representative of the Thames River floodplain, which is characterized by a relatively wide low floodplain of glacial origin with steep valley slopes. The Coves also includes a unique series of ponds that follow an old oxbow which is now cut off from the main Thames River channel. The floodplain vegetation communities present include deciduous forests and swamps, meadow marsh, cultural vegetation communities, and areas of open aquatic habitat associated with the oxbow ponds. There is also deciduous forest vegetation along valley slopes and some adjacent tableland areas and open habitat associated with an old landfill area.

The Coves is situated in the central part of the City of London, south and west of the confluence of the north and south branches of the Thames River. The Coves is an ESA based on the environment meeting the following six criteria used to evaluate an ESA (London 2007).

<i>Criterion 1: Distinctive or unusual landforms</i>	<ul style="list-style-type: none"> • The Coves contains a series of oxbow ponds and meander scars, some of the largest on the Thames River, and the only ones in the City of London • Extensive ravine system including watercourses steep slopes and floodplain • Provincially Significant (S2 Imperiled) vegetation community, Dry-fresh hackberry deciduous forest type (FOD4-3)
<i>Criterion 3: Presence of forest area sensitive species</i>	<ul style="list-style-type: none"> • Great Crested Flycatcher • White-breasted Nuthatch • American Redstart • Blue-gray Gnatcatcher



Criterion 4: Significant hydrological characteristics	<ul style="list-style-type: none"> • Interconnected ponds which are part of the Coves Subwatershed and drain to the Thames River • The ponds perform important stormwater detention and conveyance functions • Large floodplain area • Wetlands
Criterion 5: High community and species diversity	<ul style="list-style-type: none"> • 14 ELC Vegetation Types, 7 Community Series • 9 herpetofauna species • 67 bird species
Criterion 6: Important ecological linkage function	<ul style="list-style-type: none"> • The Coves is linked to the Thames River and forms part of the Thames River corridor
Criterion 7: Significant habitat for rare, threatened or endangered species	<ul style="list-style-type: none"> • Provincially Threatened Eastern Meadowlark breeding habitat present • Provincially Endangered tree Butternut • Significant Wildlife Habitat present as confirmed breeding habitat for American Bullfrog • Thirty bird species considered significant at a provincial, regional and/or local level • Provincially significant (S2/3) Unicorn Clubtail (dragonfly) is present • Special Concern Monarch butterfly is present • Provincially significant (S3) Giant Swallowtail butterfly is present • Five Regionally rare plant species

What is a Conservation Master Plan (CMP)?

Conservation Master Plans may be adopted by Council, and will function as guideline documents for the purposes of defining the boundaries and providing direction on the management of these areas [ESA]. (Official Plan Section 15.3.8)

The development of a CMP is undertaken in two phases. Phase I of the CMP is intended to provide a detailed life science inventory sufficient to formalize and/or refine ESA boundaries, define management zones, identify areas of disturbance and recommend an environmental management strategy for long-term ecosystem health and ecological integrity.

Phase II the CMP process outlines realistic strategies, achievable objectives, and actionable items to manage disturbances that may threaten natural areas, and to identify key indicators that can be monitored to detect change over time, in order to maintain and protect irreplaceable natural heritage values, including earth and life science interests, and sensitive cultural and archaeological resources. Phase II of the CMP process also includes a substantial public engagement process to obtain input on goals, objectives, recommendations and a long term implementation plan based on the priorities identified. One of the most important components of the CMP is how public use will be managed through careful trail design, signage, education and stewardship. Trail planning and design must address physical sustainability (trails that will retain their form over years of use and natural forces acting on them); ecological sustainability (managing the impacts of trail location and use to ensure no loss of ecological features and functions) and stewardship (fostering of individual and collective responsibility for protection of natural areas).



Key Elements of a CMP

- Refinement of the ESA boundary;
- Background information on the natural heritage features and functions present and their ecological significance
- Identification of priority areas for acquisition, where appropriate;
- Identification of appropriate uses, including access areas, formalized pathways and trail systems and programs for site and facility development;
- Proposed management activities to restore degraded areas and enhance ecological functions;
- Opportunities for Community Engagement and Stewardship;
- Monitoring framework to inform adaptive management; and
- Commitment to work with key partners, such as Friends of the Coves, Nature London, the Upper Thames River Conservation Authority and local community.

The CMP for the Coves ESA

The Coves ESA is an important natural area within the City of London for which a CMP has been developed. Protecting a significant natural area like the Coves is challenged by the urban context of this ESA. The CMP includes a careful assessment of the significance and sensitivity the natural features and functions present together with an analysis of impacts arising from surrounding land uses and public use within the ESA. The Coves CMP identifies issues and provides management priorities to ensure protection of the long term ecological integrity of the Coves ESA to sustain the diversity of native plants, animals and habitats present and it identifies ongoing monitoring to support adaptive management.

The Coves CMP is a “living document” that will be updated from time to time providing storehouse of information on natural heritage features and functions, restoration and management issues and recommendations, community stewardship partners and events and monitoring data and analysis. The CMP provides the framework for ongoing adaptive ecological management of the Coves, and as such is provided in an open binder format to facilitate access and updating of information. The proposed revised boundary for the Coves ESA, the recommended zoning, management actions and monitoring have been developed through a two year consultative process. Future analysis and consultation may lead to refinements and additions to what is presented in this document. The Coves CMP includes the following sections:

- Section 1 – Introduction to the Coves CMP
- Section 2 – Natural Heritage Features and Functions in the Coves
- Section 3 – Ecological Management in the Coves
- Section 4 – Trail Management in the Coves
- Section 5 – Ecological Monitoring Framework for the Coves
- Section 6 – Community Stewardship Partners and Events

The Coves CMP builds on previous work completed for the Coves ESA, particularly the comprehensive Coves Subwatershed Plan completed Friends of the Coves (PEIL 2004). Important background material may be found in the following reports:

- Natural Heritage Inventory and Evaluation for the Coves ESA (North-South Environmental 2014)



- Coves Subwatershed Plan Final Report and Appendices prepared for Friends of the Coves by PEIL (2004)
- The Archaeological Component of the Coves Subwatershed Study prepared by D.R. Poulton & Assoc. (2004)
- The Coves Drainage and Remediation Master Plan Characterization Report prepared by Dillon Consulting (2003)
- The Coves Drainage and Remediation Master Plan Final Report prepared by Dillon Consulting (2004)
- Bicycle Master Plan A Guideline Document for Bicycle Infrastructure in the City of London prepared by City of London Planning Division (2005)
- Euston Park Naturalization Plan prepared by Friends of the Coves (2004)
- Coves Elmwood Gateway Concept Plan prepared by the City of London (2010)
- Thames Valley Corridor Plan prepared by Envision (2010)

Mission, Goals and Objectives for the Coves ESA CMP

Coves ESA CMP Mission Statement

The Coves Environmentally Significant Area will be protected, restored and recognized by the City of London and its residents for its distinctive landforms, species diversity, geomorphology, ecological functions and unique cultural heritage.

Coves ESA CMP Goals

The decisions we make regarding the future of the Coves ESA will center on the following guiding principles:

- Conservation first
- Recognize the Coves ESA as part of the Carolinian corridor
- Consider long term sustainability
- Consider the impact of climate change
- Consider the Coves ESA within the context of the larger Coves subwatershed

Coves ESA CMP Objectives

The Coves ESA CMP seeks to achieve the following objectives:

1. Actively manage the natural features and functions of the ESA, including management of invasive species.
2. Undertake ecological restoration to improve ecological integrity within the ESA.
3. Determine the location and type of authorized compatible uses permitted within the ESA.
4. Establish a safe trail network that respects ecological sensitivity.
5. Encourage awareness and education among children, youth and all residents, and promote educational opportunities centered on the natural and cultural features of the Coves.
6. Work with community partners to create a culture of stewardship among Coves users.
7. Carry out regular monitoring in support of an adaptive management approach





Coves ESA

Legend

-  London Coves Proposed ESA Boundary
-  Streams
-  Parcel Fabric



0 50 100 200 300
Meters

North-South Environmental Inc.
Specialists in Sustainable Landscape Planning



June 27, 2014



THE COVES ENVIRONMENTALLY SIGNIFICANT AREA CONSERVATION MASTER PLAN

Section 2 – Natural Heritage Features and Functions in the Coves



Immature Painted Turtle

Photo Credit – Andrew Jackson (www.ontariowildlife.net)



**THE COVES ENVIRONMENTALLY SIGNIFICANT AREA
CONSERVATION MASTER PLAN**

SECTION 2 – NATURAL HERITAGE FEATURES AND FUNCTIONS IN THE COVES

Section 2 provides a comprehensive summary of what is currently known about the natural heritage features and functions present within the Coves ESA, including an assessment of their significance. The field methods used to as part of this study are also outlined and provide direction for future studies that may further our understanding of natural heritage features and functions. Complete lists for flora and fauna are provided in tables at the end of Section 2.1

Methods to Use for Field Inventory in the Coves

The following table outlines field inventory methods for major species groups that may be used to conduct field studies in the Coves. The locations of significant species should be recorded preferably with a GPS receiver and/or recorded on an aerial photograph.

FIELD INVENTORY METHODS FOR MAJOR SPECIES GROUPS	
Species Group	Field Inventory Method
Mammals	<ul style="list-style-type: none"> • record sightings, tracks, scat, hair, calls, dens, sign, trails, etc.
Breeding Birds	<ul style="list-style-type: none"> • point counts (10 min) in suitable blocks of habitat following Canadian Wildlife Service Ontario Forest Bird Monitoring Protocol (2011) • Area searches using Breeding Bird Atlas protocols; location mapping • Nocturnal bird surveys for whippoorwill, common nighthawk, etc.
Seasonal Bird Habitat	<ul style="list-style-type: none"> • active searching of appropriate habitat including perching and foraging habitat for winter species such as bald eagle • targeted survey of aquatic habitat for migrating waterfowl
Reptiles	<ul style="list-style-type: none"> • searching under debris • searching of basking habitat in and around ponds
Amphibians - salamanders	<ul style="list-style-type: none"> • active searching of ponds for breeding salamanders during first spring thaw & rain • non-intrusive egg mass surveys • active searching upland habitat under rocks, logs etc.
Amphibians - frogs	<ul style="list-style-type: none"> • frog call identification using Marsh Monitoring protocols in areas of suitable breeding habitat
Butterflies	<ul style="list-style-type: none"> • visual identification • sweep net capture and release
Dragonflies & Damselflies	<ul style="list-style-type: none"> • visual identification • sweep net capture and release
Flora Inventory	<ul style="list-style-type: none"> • stratified searching targeting micro-habitat variations within each vegetation type in the appropriate season including peak flowering periods for spring ephemerals, summer flora and late summer/early fall plant species
Ecological Land Classification	<ul style="list-style-type: none"> • vegetation communities are classified using ELC methods developed by the Ontario Ministry of Natural Resources (OMNR) for southern Ontario (Lee <i>et al.</i> 1998).



Organization, Storage and Analysis of Data

Plant and animal species recorded within the Coves are organized in a Microsoft Access database, including species names and observation records for location, date, habitat type, etc. Species lists are provided in tabular form below and these may be updated as new species are recorded.

Plant communities within the Coves are identified mapped using the methods outlined in Ecological Land Classification (ELC) for Southern Ontario guide (Lee et al. 1998). Descriptions for each ELC Vegetation Type are provided below.

Plant species are analyzed using the Floristic Quality Index (FQI) (Oldham *et al.* 1995) which is based on a measure of the Native Mean Coefficient of Conservatism (Native Mean CC) and percentages of native and non-native species composition for each vegetation community. Each plant species has been assigned a Coefficient of Conservatism (CC), which is a number between 1 and 10 that represents the degree of tolerance to disturbance and the specialized habitat requirements that a plant species requires to persist (Swink and Wilhelm 1979). FQI is calculated by taking the sum of all CC values for the community divided by the square root of the number of native plant species present in the community ($FQI = \sum CC / \sqrt{N}$). FQI provides a measure of both “habitat conservatism” and “species richness” and is considered an indicator of vegetation community quality (Oldham *et al.* 1995).

Plant and animal species may also be screened for national and provincial significance. Provincial flora and faunal rarity is based on rankings provided by the NHIC (identified as S1-S3) or species identified as endangered, threatened or special concern by COSEWIC¹ and/or COSSARO².

Regional floral rarity is based on listings provided by Oldham (1993), and local floral rarity is based on listings provided by Bowles (2005).

Regional faunal significance is determined using Priority Landbird Species in Ontario Bird Conservation Region (BCR) 13, identified by Ontario Partners in Flight (Ontario Partners in Flight 2005), which identified priority species based on the following priority categories:

- continental concern;
- regional concern;
- continental stewardship;
- regional stewardship;
- at risk – Canada;
- at risk – Ontario; and
- Management Interest.

Fauna area-sensitivity is based on species reported as area-sensitive in the Ministry of Natural Resources Significant Wildlife Habitat Technical Guide Appendix C (OMNR 2000).

¹ Nationally rare species are designated by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) and are subject to the Federal Species at Risk Act.

² Provincially rare species are designated by the Committee on the Status of Species at Risk in Ontario (COSSARO) and are subject to the Ontario Endangered Species Act.



Ecological Land Classification for the Coves ESA



Ecological Land Classification for the Coves ESA

Fourteen vegetation communities are present within the Coves ESA including a variety of forest, wetland, and cultural communities. Each of these communities is described below, including the dominant species, special environmental conditions and past and recent disturbances. The floral and faunal species present in each of the major vegetation community groups is provided in tabular form at the end of Section 2.

Forested Vegetation Communities

Dry-Fresh Red Oak Deciduous Forest Type (FOD1-1)

This vegetation community occurs in two locations. A small patch is located on tableland, east of Ridgewood Crescent, and a larger patch is location on tableland and along the steep ravines located at the west end of Briscoe Street West and Forbes Street. The canopy of this community is dominated by Red Oak (*Quercus rubra*), Sugar Maple (*Acer saccharum* ssp. *saccharum*), American Beech (*Fagus grandifolia*), and White Ash (*Fraxinus americana*). This layer is approximately 25 m in height and covers greater than 60%. The sub-canopy consists of Sugar Maple, American Beech, Red Oak and Sweet Cherry (*Prunus avium*). This layer is between 10-25 m in height and covers between 35-60%. The understory is dominated by American Beech, American Witch-hazel (*Hamamelis virginiana*), Maple-leaved Viburnum (*Viburnum acerifolium*), and Sugar Maple saplings. This layer is between 1-2 m in height and covers 25-35%. The ground layer is dominated by sedges (*Carex* spp.), Blue-stemmed Goldenrod (*Solidago caesia*), False Solomon's Seal (*Maianthemum racemosum* ssp. *racemosum*), and White lettuce (*Prenanthes alba*). This layer is between 0.2-0.5 m in height and covers between 10-25%.

Evidence of tree cutting was noted at the edge of this community, which likely occurred within the last ten years. At the north end of the patch located east of Ridgewood Crescent, a channel was noted to have eroded down the slope, which appeared to be the result of surface drainage entering the natural area from the adjacent subdivision. Seepages were noted along the ravine banks, and a small population of Skunk Cabbage (*Symplocarpus foetidus*) was noted in association with a large seepage area on the west side of the ravine.

Dry-Fresh Sugar Maple Deciduous Forest Type (FOD5-1)

This vegetation community occurs in three locations. A large patch is located to the south of Southcrest Drive, and two smaller patches are located along the steep banks of the East and West Coves Ponds. In all three patches, the canopy is dominated by Sugar Maple, with American Beech, White Ash, and Red Oak as common associates. This layer is approximately 25 m in height, and covers greater than 60%. The sub-canopy is dominated by Sugar Maple, Eastern Hop-hornbeam (*Ostrya virginiana*), White Ash, and American Basswood (*Tilia americana*). This layer is between 10-25 m in height and covers between 35-60%. The understory was dominated by Buckthorn (*Rhamnus cathartica*), Choke Cherry (*P. virginiana*), Alternate-leaf Dogwood (*Cornus alternifolia*), American Hornbeam (*Carpinus caroliniana*), and Virginia Creeper (*Parthenocissus vitacea*). This layer is between 1-2 m in height and covers greater than 60%. The ground layer consists of Running Strawberry-bush (*Euonymus obovatus*), False Solomon's Seal, Calico Aster (*Symphyotrichum lateriflorum*), Wild Crane's-bill (*Geranium maculatum*), and Broad-leaved Goldenrod (*S. flexicaulis*). This layer is between 0.5-1 m in height, and covers between 35-60%.

Well-used *ad hoc* trails run throughout the large patch of this community, south of Southcrest Drive. Dumping was noted in several locations along the edges, and erosion along the banks of



the watercourse and steep slopes was noted in several places. Buckthorn was more prevalent in some areas compared with others, usually in association with disturbed areas where other cultural or non-native species were also higher in abundance. Some large standing snags with large cavities were noted within this community, which may provide important nesting habitat for cavity-nesting bird species. In general, American Beech trees appeared to be in poor health within this community, possibly due to Beech Bark Disease. Vegetation characteristic of wetlands was noted in small pockets within the floodplain of the watercourse that passes through the southern patch of this forest community, including Fowl Manna-grass (*Glyceria striata*), Ditch-stonecrop (*Penthorum sedoides*), and Fringed Loosestrife (*Lysimachia ciliata*).

Dry-Fresh Sugar Maple – Beech Forest Type (FOD5-2)

This community is located north of Southcrest Drive, along the steep banks of the watercourse and small portion of tableland at the western end of Briscoe Street West. The canopy of this community is dominated by Sugar Maple and American Beech, with Wild Black Cherry (*P. serotina*) and Red Oak as common associates. This layer is approximately 25 m in height, and covers greater than 60%. The sub-canopy is dominated by Sugar Maple, American Beech, White Ash and Red Oak. This layer is between 10-25 m in height and covers between 35-60%. The understory consists of Sugar Maple and American Beech saplings, and Alternate-leaf Dogwood and American Witch-hazel. This layer is between 1-2 m in height and covers between 10-25%. The ground layer consists of sedges (*Carex spp.*), False Solomon's Seal, Blue-stemmed Goldenrod, and Broad-leaved Goldenrod. This layer is between 0.2-0.5 m in height and covers between 10-25%. The understory of this community contained abundant spring ephemerals, such as Narrow-leaved Spring Beauty (*Claytonia virginica*) and Wood Anemone (*Anemone quinquefolia*).

Seepages were noted in several locations along the steep banks of the ravine, and abundant downed woody debris was noted within this community. *Ad hoc* trails were noted throughout the tableland portion of this community, and trampling of vegetation was evident. Yard waste and dumping was noted along the edges of this community, and evidence of erosion was noted in several locations. A retaining wall, approximately 10 m in length was noted in the ravine on the east bank, north of Soutcrest Drive. A large population of English Ivy (*Hedera helix*) was observed growing underneath a fence into the natural area from an adjacent backyard.

Dry-Fresh Sugar Maple – Oak Deciduous Forest Type (FOD5-3)

This deciduous forest is located on valley slopes along the southeastern side of the study area. Sugar Maple dominates the canopy with American Beech and Red Oak as associate canopy species. The canopy is 10-25 m in height and these trees cover greater than 60% of the forest community. The sub-canopy is almost entirely dominated by Sugar Maple. Associate sub-canopy species are rare in occurrence and include Hop-hornbeam, Blue Beech (*Carpinus caroliniana*), and European Buckthorn. This layer is 2-10 m in height and covers greater than 60% of the community. The understory vegetation is 1-2 m in height and covers 35-60% of the community. Such understory vegetation includes: American Witch-hazel, Round-leaved Dogwood (*Cornus rugosa*), and Choke Cherry. The ground layer is densely vegetated (greater than 60% cover of species 0.2-0.5 m in height) with a variety of species including: Running Strawberry-bush, Blue-stemmed Goldenrod, Zig-Zag goldenrod (*Solidago flexicaulis*), and Large-leaved Aster (*Eurybia macrophylla*).

Dry-Fresh Hackberry Deciduous Forest Type (FOD4-3)

This community is listed as an Imperiled (S2) vegetation community by the Natural Heritage Information Centre (NHIC). According to NHIC, S2 communities are at high risk of extinction due to a very restricted range, very few populations (often 20 or fewer), steep declines, or other



factors. This community is present in two locations within the Coves ESA, a small patch located to the east of Greenwood Avenue and south of Springbank Drive and a second patch located west of Orchard Street, on floodplain and valley slopes. A few large Black Walnut (*Juglans nigra*) emerge above the canopy, reaching heights of approximately 25 m. The canopy is dominated by Common Hackberry (*Celtis occidentalis*), Black Walnut, White Ash, and Manitoba Maple (*A. negundo*). This layer is between 10-25 m in height and covers greater than 60%. The sub-canopy consists of smaller Common Hackberry, Manitoba Maple, White Ash, and Alternate-leaf Dogwood. This layer is between 2-10 m in height and covers between 25-35%. The understory is dominated by Virginia Creeper, raspberry (*Rubus spp.*), Manitoba Maple saplings, European Buckthorn, and Multiflora Rosa (*Rosa multiflora*). This layer is between 1-2 m in height and covers greater than 60%. The ground layer consists of Yellow Avens (*Geum aleppicum*), Garlic Mustard (*Alliaria petiolata*), Enchanter's Nightshade (*Circaea lutetiana*), and Calico Aster. This layer is between 0.2-0.5 m in height and covers between 25-35%.

In general, this community is quite disturbed, especially near the northern edge, where Black Locust (*Robinia pseudoacacia*) becomes more dominant. Dumping was noted in several locations along the edge, and erosion was widespread along the slopes leading down to the west pond. Non-native species dominated the ground and understory layers, and Manitoba Maple and Black Locust appear to be invading this community.

Fresh-Moist Willow Lowland Deciduous Forest Type (FOD7-3)

This vegetation community is located in three different areas. A large patch is located in the floodplain of the watercourse, at the base of the east and west ponds. Two smaller patches are located along the eastern and western edges of the pond located north of Springbank Drive. The canopy of this community is dominated by Hybrid Willow (*Salix x rubens*), Freeman's Maple (*A. x freemanii*), Manitoba Maple, and Green Ash (*F. pennsylvanica*). This layer is approximately 25 m in height and covers greater than 60%. The sub-canopy is dominated by Manitoba Maple, Sugar Maple, and Green Ash. This layer is between 10-25 m in height and covers between 10-25%. The understory is dominated by Multiflora Rose, Glossy Buckthorn (*R. frangula*), Buckthorn, and Riverbank Grape (*Vitis riparia*). Red-osier Dogwood (*C. stolonifera*) was more abundant along the edge of the water. This layer is between 1-2 m in height and covers greater than 60%. The ground layer is dominated by Forget-me-not (*Myosotis sp.*), Colt's Foot (*Tussilago farfara*), Rice Cut-grass (*Leersia oryzoides*), Fowl Manna-grass, American Hog-peanut (*Amphicarpaea bracteata*), and Swamp Buttercup (*Ranunculus hispidus var. caricetorum*). This layer is between 0.2-0.5 m in height, and covers greater than 60%.

A few meadow marsh inclusions occur within this community, where Reed Canary Grass (*Phalaris arundinacea*), Purple Loosestrife (*Lythrum salicaria*), and Spotted Joe-pye Weed (*Eupatorium maculatum ssp. maculatum*) dominate. Non-native species were abundant within this community, and the understory was dominated by non-native buckthorn shrubs and Multiflora Rose. Several animal tracks (Raccoon and White-tailed Deer) were noted within this community.

Fresh-Moist Black Walnut Lowland Deciduous Forest Type (FOD7-4)

This vegetation community is considered Imperiled/Vulnerable (S2S3) by NHIC, meaning that it is at risk of extinction (high to moderate risk) due to a very restricted range, few populations (between six and eighty), declines in populations, or other factors. This community occurs north of Springbank Drive, west of the pond. Black Walnut was often planted as a food source, especially settlement areas. Based on the prevalence and spacing of trees within this community, Black Walnut appeared to have been planted in the area. The canopy was dominated by Black Walnut, Manitoba Maple, Common Hackberry, and Green Ash. This layer



was between 10-25 m in height and covered greater than 60%. The sub-canopy consisted mainly of Manitoba Maple, with a few smaller Black Walnut. This layer was between 2-10 m in height and covered between 35-60%. The understory consisted of Manitoba Maple, Alternate-leaf Dogwood, Buckthorn, and Glossy Buckthorn. This layer was between 1-2 m in height and covered between 25-35%. The ground layer was dominated by Virginia Creeper, Garlic Mustard, Dame's-rocket (*Hesperis matronalis*), and Enchanter's Nightshade. This layer was between 0.5-1 m in height, and covered greater than 60%.

A wet swale is located along the western boundary of this community, at the base of a slope. This area supported wetland species, such as Fowl Manna-grass, Fringed Loosestrife, and Ostrich Fern (*Matteuccia struthiopteris* var. *pennsylvanica*). Several seepage areas were also noted along the slope leading down to the wet swale. Several piles of building materials and concrete tiling were found, as were several non-native and invasive species, including buckthorn (*R. cathartica* and *R. frangula*) and Garlic Mustard.

Wetland Vegetation Communities

Swamp Maple Mineral Deciduous Swamp Type (SWD3-3)

This community type is located in two small patches at the south end of McAlpine Avenue. The canopy is dominated by Freeman's Maple (*Acer x freemanii*). Associate canopy species, Eastern Cottonwood (*Populus deltoides*), is rare in the canopy. The canopy trees are 10-25 m in height and cover greater than 60% of the community. The sub-canopy is less densely vegetated than the canopy with only 35-60% cover of tree species growing 2-10 m in height. The sub-canopy contains the occasional Freeman's Maple, Manitoba Maple, Slender Willow (*Salix petiolaris*), and Pussy Willow (*Salix discolor*). The understory contains an abundance of Pussy Willow which covers 35-60% of the community and is 1-2 m in height. The ground layer is densely vegetated with False Nettle (*Boehmeria cylindrica*), as well as the occasional Bittersweet Nightshade, Spotted Water-hemlock (*Cicuta maculata*), Riverbank Grape, Field Horsetail (*Equisetum arvense*), and Spotted Jewelweed (*Impatiens capensis*). The ground layer vegetation covers greater than 60% of the swamp community and includes vegetation which is 0.2-0.5 m in height. The centre of these swamp communities is permanently flooded throughout the season with 30-50 cm of water.

Willow Mineral Deciduous Swamp Type (SWD4-1)

A small patch of this community is located at the base of the slope on the west side of the west pond, south of Springbank Drive and east of Greenwood Avenue. The canopy was dominated by Hybrid Willow, Freeman's Maple, Sweet Cherry, and American Basswood. This layer was approximately 30 m in height, and covered greater than 60%. The sub-canopy consisted of Freeman's Maple, Manitoba Maple, and willow (*Salix* spp.). This layer was between 2-10 m in height and covered between 10-25%. The understory was dominated by Buckthorn and Manitoba Maple, which were between 1-2 m in height and covered between 10-25%. The ground layer consisted of Creeping Jenny (*Lysimachia nummularia*), Large Bur-reed (*Sparganium eurycarpum*), Rice Cut-grass, and Broadleaf Arrowhead (*Sagittaria latifolia*). This layer was between 0.2-0.5 m in height, and covered between 25-35%.

This community captures the transition between aquatic and upland habitats, and understory vegetation ranges from species that typically occur in shallow marshes (e.g., Large Bur-reed, to species more commonly found in swamps and lowland forest (e.g., Spotted Water-hemlock and Yellow Trout Lily (e.g., *Erythronium americanum*) respectively).



Mineral Meadow Marsh Ecosite / Mineral Cultural Meadow Ecosite (MAM2/CUM1)

This marsh/meadow community complex is located along the eastern bank of the eastern pond. Due to seasonal fluctuating water levels in pond, this area is periodically flooded during times of high water levels (*i.e.* spring), and dry during the summer when water levels are lower. Therefore, this area is a complex of meadow marsh and cultural meadow plant species. The canopy is sparsely vegetated with Black Walnut which cover less than 10% of the community. These tree species are 3-10 m in height. The sub-canopy is densely vegetated (greater than 60% cover) with vegetation which is 1-2 m in height. The predominant species in this layer include: Tall Coneflower (*Rudbeckia laciniata*), Canada Blue-joint (*Calamagrostis canadensis*), and Canada Goldenrod (*Solidago canadensis*). The understory contains an abundance of wetland species including Tussock Sedge (*Carex stricta*), Spotted Joe-pye Weed, and Purple Loosestrife. The understory is 0.5-1 m in height and covers greater than 60% of the community. The ground layer is also densely vegetated (greater than 60% cover) with plant species which are 0.2-0.5 m in height. The predominant species in the ground layer include American Bugleweed (*Lycopus americanus*), Red-top (*Agrostis gigantea*), and False Nettle.

Rice Cut-grass Mineral Meadow Marsh Type (MAM2-3)

This community is located south of the west pond, east of Ridgewood Crescent, at the base of the Sugar Maple forest. A small patch of this community also occurs at the northern tip of the pond located to the north of Springbank Drive. A narrow channel passes through this community, which enters the Willow Lowland Forest to the south. The canopy of this community is dominated by Rice Cut-grass, Reed Canary Grass, Purple Loosestrife, Yellow Iris (*Iris pseudoacorus*), and American Stinging Nettle (*Urtica dioica ssp. gracilis*). This layer is between 1-2 m in height and covers greater than 60%. The ground layer consists of Spotted Jewelweed, Peppermint (*Mentha x piperita*), Mad Dog Skullcap (*Scutellaria lateriflora*), and American Bugleweed (*Lycopus americanus*). This layer is between 0.2-0.5 m in height and covers between 25-35%.

Soils in this community were mineral; however, a greater depth of organic soils (20 cm) was noted within the larger patch of this community. The small patch contained a higher proportion of Reed Canary Grass and an organic layer of approximately 10 cm.

Open Aquatic (OAO)

The open aquatic communities were generally quite turbid, and as such contained no vegetation. Small patches of Lesser Duckweed (*Lemna minor*) and Greater Duckweed (*Spirodela polyrhiza*) were noted floating on the surface of the water in some locations, covering less than 10% of the community. Floral species were also noted around the edges of this community, such as: Purple Loosestrife, Reed Canary Grass, and Yellow Iris (*Iris pseudoacorus*). Small inclusions of Water Lily – Bullhead Lily Floating-leaved Aquatic Type (SAF1-1) were noted within this community in the eastern pond. These small, inclusion-sized, communities were dominated by Bullhead Pond-lily (*Nuphar variegata*).

Cultural Vegetation Communities

Mineral Cultural Meadow Ecosite (CUM1)

This old field community has a very sparse canopy of scattered trees. This canopy covers less than 10% of the meadow and consists primarily of Black Walnut and Cottonwood. The canopy trees are 10-25 m in height. The sub-canopy vegetation is 2-10 m in height and covers less than 10% of the community. Young Green Ash saplings are the predominant species in the



sub-canopy as well as the occasional European Buckthorn. The understory and ground layers are the most densely vegetated; each with greater than 60% community cover. The understory is 0.5-2 m in height and contains an abundance of open meadow species including: Wild Carrot (*Daucus carota*), Gray Dogwood (*Cornus foemina* ssp. *racemosa*), and Orchard Grass (*Dactylis glomerata*). The ground layer vegetation is 0.2-0.5 m in height and consists of a variety of old field species including Kentucky Bluegrass (*Poa pratensis*), Red-top, and Timothy (*Phleum pratense*).

Mineral Cultural Thicket Ecosite (CUT1)

This vegetation community is located in the central portion of site, which was once operated as an orchard, and in a long linear strip along the watercourse at the northern end of the site (Figure 1). Permission to access the central portion of the site was not granted, and thus species lists for this area were completed using binoculars. The canopy and sub-canopy of this community is dominated by Manitoba Maple and hawthorn, which range in height from 2-10 m and cover between 25-35%. The ground layer is dominated by a variety of cultural meadow species, including Wild Carrot, Orchard Grass, and Canada Goldenrod. Riverbank Grape and Virginia Creeper form dense mats in some locations.

Mineral Cultural Woodland Ecosite (CUW1)

This vegetation community is located in several locations within the Coves ESA, on private land. Access to this portion of the site was not permitted, and therefore, inventories of this area were completed using binoculars and aerial photography. The edges of this community are dominated by Manitoba Maple. Based on aerial photography, tree cover appears to be between 35-60%, which would classify this area as cultural woodland. Based on the signature of the aerial photography which indicates a high degree of disturbance and cultural modification, this site is likely dominated by vegetation that is tolerant of disturbance, often found in associated with cultural landscapes, such as Wild Carrot, Asters and Goldenrods.



Significant Species and Habitats in Coves ESA



Flora of the Coves ESA

A total of 301 species of vascular plants have been identified within the Coves ESA (see table at end of Section 2). Of these 213 (71%) species are native and 88 (29%) species are considered non-native. This represents a high proportion of native plants present for an urban natural area is similar to what has been reported for the flora of Ontario as a whole, which has approximately 73% native plant species (Kaiser 1983).

The Floristic Quality Index (FQI) for plant communities in the Coves has been calculated by lumping plant communities by ELC Community Series, “ecosite” (e.g. FOD – all deciduous forests). Plant communities with lower FQI’s are characterized by plants that occupy a wide variety of habitats which often grow in more disturbed habitats; these are species with lower Coefficient of Conservatism (CC) values such as Kentucky Bluegrass, Canada Goldenrod, and Red Raspberry (*Rubus idaeus ssp. strigosus*). Plant communities with higher FQI’s have plants that have more specific habitat requirements which grow in less disturbed habitats; these are species with higher CC values such as Chinquapin Oak (*Q. muhlenbergii*) and Large-leaved Avens (*Geum macrophyllum*).

The table below provides a summary of plant community characteristics in the Coves. Higher numbers of native plants, higher FQI values and higher Native Mean CC values all represent plant communities of higher quality which are generally less disturbed and which may be considered more significant and potentially more sensitive native plant communities.

Floristics of the Coves ESA for ELC Vegetation Community Series						
Ecosite	Number of Plant Species				FQI	Native Mean CC
	Native	Non-Native	Unknown	Total		
FOD	174	74	5	253	57.26	4.34
SWD	28	10	0	38	18.52	3.50
MAM	21	8	1	30	17.64	3.85
MAM/CUM	38	16	1	55	25.86	4.19
CUW	44	14	2	60	23.60	3.56
CUT	7	12	1	20	2.12	0.80
CUM	32	28	0	60	16.79	2.97
OAD	22	5	0	27	17.48	3.73

Overall, FQIs reported from vegetation communities at the Coves ESA are in line with what is expected from a natural area located in an urbanized setting, with the deciduous forest communities reporting a higher-than-average FQI (57.26). For comparison the FQIs in the City of Mississauga generally range from 10 to 30 (NSE 2010). Many of the other vegetation communities in the Coves were quite small in extent compared to the deciduous forest communities, and these smaller patches generally had comparatively fewer native species. The early successional cultural communities (CUM, CUT) have lower FQI and Native Mean CC due



to the fact that these vegetation communities have been highly influenced by past land use histories resulting in a higher proportion of non-native and habitat-generalist floral species.

Significant Flora of the Coves ESA

Species lists have been screened for provincial, regional and local significance as shown in the table below. One provincially rare floral species, Butternut (*Juglans cinerea*), which is a nationally and provincially endangered (S3?) species, was noted at the edge of the Sugar Maple Deciduous Forest Type (FOD5-1) south of Southcrest Avenue (see figure showing Significant Species and Habitats in the Coves ESA). Two Butternut trees have been recorded in the Coves, both showed evidence of Butternut Canker, a disease responsible for the widespread decline of this species across its range in North America. Sooty cankers and crown dieback were noted on both trees, and no Butternut nuts or seedlings were noted in the understory suggesting natural Butternut regeneration and the long term survival of this species may depend on active restoration programs replanting this species.

A total of five regionally rare floral species are recorded in the Coves (see table below), they include:

- Redbud (*Cercis canadensis*);
- Northern Mountain-Ash (*Sorbus decora*);
- Philadelphia Fleabane (*Erigeron philadelphicus*);
- Large-leaved Avens (*Geum macrophyllum*); and
- Woolly Blue Violet (*Viola sororia*).

Redbud and Northern Mountain-Ash were located at the edge of a deciduous forest community and not likely naturally occurring. Both of these species are widely cultivated and are often planted within urban areas. Philadelphia Fleabane was recorded in deciduous forest and cultural woodland communities, Large-leaved Avens was recorded within deciduous forest, and Woolly Blue Violet was recorded within deciduous forest and cultural meadow communities.

One locally rare floral species was also recorded, Stiff Marsh Bedstraw (*Galium tinctorium*). This species was located within the meadow marsh community, and is listed as R3 in Middlesex County.

Provincially, regionally, and locally rare plant species recorded in the Coves ESA					
Scientific Name	Common Name	COSSARO/ COSEWIC	S-Rank	SW Ontario	Middlesex
<i>Cercis canadensis</i>	Redbud			x	
<i>Erigeron philadelphicus</i>	Philadelphia Fleabane			x	
<i>Galium tinctorium</i>	Stiff Marsh Bedstraw				R3
<i>Geum macrophyllum</i>	Large-leaved Avens			x	
<i>Juglans cinerea</i>	Butternut	END	S3?		
<i>Sorbus decora</i>	Northern Mountain-ash			x	
<i>Viola sororia</i>	Woolly Blue Violet			x	



Fauna of the Coves ESA

One hundred and one fauna species were recorded within the Coves ESA (excluding fish species): 18 insects (dragonflies, damselflies and butterflies), 67 birds (59 for which there was evidence of breeding), four frogs, one salamander, one turtle, two snakes and eight mammals. From the perspective of wildlife habitat, the Coves ESA is relatively linear and narrow, with no forest-interior or grassland-interior habitat. Consequently there were few area-sensitive or forest-interior-dependent wildlife species (with a few exceptions, which will be discussed further). One area that may be of significance to the Coves, the old orchard (mapped as ELC community CUT1) at the end of Duke Street, has not yet been comprehensively assessed as this is an area of private property. This CUT1 community is unusual in the City of London as it represents a broad area of thicket vegetation types, that may have the potential to support area-sensitive thicket-nesting species.

A deer bedding area was noted within the Rice Cut-grass Mineral Meadow Marsh (MAM2-3) community, at the southern end of the west pond. Several well-used deer trails cross through this community, and areas of heavy browse have been observed.

Amphibians

The most common amphibian within the Coves ESA is American Toad: a species that is capable of breeding in a wide variety of small and large water bodies and is relatively tolerant of urban habitat, though it is constrained by the requirement for soils in which it can burrow beneath the frost line in winter. Most of the toads seen within the Coves have been noted during the non-breeding season, generally in forested habitat. It is likely that forested areas of the Coves are used as foraging areas during the summer and as hibernacula during winter (areas where this species can dig below the frost line to survive). One breeding location is present within a shallow pond at the end of Elmwood Avenue was full of tadpoles (this pond also contained Green Frog tadpoles).

One woodland-dependent frog species is recorded within the Coves ESA, Spring Peeper. Two Spring Peepers and one Green Frog were noted in the east pond. Spring Peepers are unusual in urban habitat. No other woodland-dependent amphibian species were noted (for example Wood Frog, Gray Treefrog or Spotted Salamander have not been recorded in the Coves), even though suitable breeding habitat exists for these species in vernal pools south of McAlpine Avenue. These vernal pools were specifically visited to record breeding frogs and salamanders on an evening in early April when frogs were calling elsewhere in the London area.

Two aquatic frog species have been recorded for the Coves, Green Frog and American Bullfrog. Both these species need water that persists later in the season than other frogs. Green Frogs require semi-permanent or permanent water (tadpoles may transform in the year the eggs are deposited, but may also overwinter as tadpoles). American Bullfrog is area-sensitive (MNR 2000), and requires permanent water to complete its life cycle, as larvae take more than one year to transform. American Bullfrog is present in two locations: three were heard in the east pond and one was heard in a small inlet adjacent to the Thames River. Green Frogs were heard calling from the east pond, and tadpoles were noted in the small pond at the end of Elmwood Avenue.

Red-backed salamanders were reported to be found on slopes in the northern part of the Coves (at the backs of residences off Forest Hill Avenue) by a neighbouring resident (Brian Farmer



pers. comm., 2011). This species is not dependent on aquatic habitat but occurs under logs in moist forest habitats and is considered an indicator of interior forest conditions (Welsh and Droege 2001).

Significant Amphibian Species

American bullfrogs are considered area-sensitive by MNR. Breeding habitat for American Bullfrog is considered Significant Wildlife Habitat by MNR.

Reptiles

Four reptile species were noted within the Coves ESA, two within the vicinity of the south-east cove pond and two within the vicinity of the northeast pond. Two snakes were noted in upland areas near the pond: Red-bellied Snake, an unusual snake in urban areas, noted in an open area just south of the German-Canadian Club and Northern Brownsnake, noted on the forested slope above the south-east pond. Eastern Gartersnake was noted in the cultural woodland community south of McAlpine Avenue as well as in the red oak forest south of Springbank Drive. Painted Turtles were noted only in the south-east cove pond, where three were seen basking on a log.

Dragonflies and Damselflies

The dragonflies and damselflies (Odonates) within the study area are primarily located along the edges of the ponds, in the floodplain vegetation. The areas with the highest abundance of Odonates were open communities with minimal shade (*i.e.* CUM and MAM communities). Fifteen species of Odonates were documented from the study area: five damselfly species and ten dragonfly species (Appendix 5).

Significant Dragonfly and Damselfly Species

The Provincially significant, Unicorn Clubtail (dragonfly) designated as S2S3 within Ontario has been documented from the MAM2/CUM1 community along the eastern bank of the eastern pond. This dragonfly was noted foraging along the banks of the pond.

Butterflies

Five butterfly species were documented from the study area: Giant Swallowtail, Cabbage White, Spring Azure, Monarch, and White Admiral (Appendix 5). Cabbage White was located in an abundance of vegetation communities including forests, meadow marshes, cultural meadows, and flying over open aquatic communities. Monarch was also located in multiple locations (MAM2/CUM1, MAM3-3, and CUW1). The remaining three species Giant Swallowtail, Spring Azure, and White Admiral were each found at only one location. Giant Swallowtail was observed in an FOD5-1 community along the southeastern pond. Spring Azure was located at the base of the ponds within the FOD7-3 community. The White Admiral was noted within the FOD5-1 community at the south end of the study area.

Significant Butterfly Species

Giant Swallowtail is designated as an S3 species within Ontario. This species of butterfly was documented from the FOD5-1 community located along the banks of the southeastern pond.



One of the Giant Swallowtail's food plants, Swamp Milkweed (*Asclepias incarnata*) is occasionally located along the banks of the Coves ponds.

One fauna species at risk documented from the study area, Monarch butterfly, is considered to be of Special Concern as designated by the Committee of Species at Risk in Ontario (COSARO). This designation is supported by the Ontario Ministry of Natural Resources (MNR) and the Committee on the Status of Endangered Wildlife in Canada (COSEWIC). Monarch butterflies were documented from three vegetation communities within the study area: MAM2/CUM1 along the eastern pond, MAM3-3 along the western pond, and within a CUW1 at the north end of the study area.

Birds

Fifty-nine species of breeding birds were noted during breeding bird surveys in 2011. Most of the species recorded are characteristic of a variety of habitats in urban settings, such as American Robin, Northern Cardinal and Black-capped Chickadee (see fauna table at end of section 2). Forest-dependent species were the most common habitat-specific species noted within the Coves, including Great Crested Flycatcher, Eastern Wood-pewee, Red-eyed Vireo, Wood Thrush and Rose-breasted Grosbeak. Few wetland-dependent species were noted including only Red-winged Blackbird, a species that can utilize the narrow meadow marsh areas present within the Coves, Common Yellowthroat, noted only within the mosaic of thicket and marsh along the northeast cove pond, and Willow Flycatcher, which was noted within a small ravine at the south end of the ESA (adjacent to Euston Meadows). Notable species of thicket habitats occurred within the eastern end of Euston Meadows and the apple orchard within the paint factory property, including Eastern Towhee and Field Sparrow, respectively, which are seldom found in urban habitats (personal experience) and may have been late migrants as they were heard only on the first breeding bird survey in late May. Species of open field habitats were most common in Euston Meadows, including Savannah Sparrow and Eastern Meadowlark, a threatened species discussed in the next section.

Seven cavity-nesting species were noted: Great Crested Flycatcher, House Wren, Hairy and Downy Woodpecker, Northern Flicker, Red-bellied Woodpecker and Black-capped Chickadee. Numerous nest boxes installed at the north end of the Coves (in Greenway Park and its vicinity) have the potential to provide habitat for additional cavity-nesting species such as swallows but almost all were occupied by House Sparrows, a non-native species that often out-competes native species and is considered a factor in some cavity-nesting species' declines.

Significant Bird Species

Thirty of the bird species noted within the Coves ESA are considered significant at a provincial, regional and/or local level, and/or because they have sensitive habitat requirements (see table of Significant birds within the Coves ESA). Four of the species noted are considered Species at Risk both nationally and provincially. Two of these (Chimney Swift and Barn Swallow) are birds that nest on buildings, and were likely not nesting within the ESA itself but were nesting on a shed or other building immediately adjacent, and using the Coves as a foraging area. These species were particularly noted in open areas such as the ponds and Euston Meadows at the south end of the ESA.

Eastern Meadowlark, is a nationally and provincially threatened species, which nests within Euston Meadows. The meadowlark was noted on all three visits to survey breeding birds, and has also been noted in this location for several years by a local birder (Len Manning, 2011 pers.



comm.). This species is a ground-nester, is area-sensitive, and is highly specific to grassland habitats. It is intolerant of habitat change: meadows where shrubs have invaded are no longer used as habitat by this species. Its area-sensitivity may stem partly from its reluctance to nest within 100 m of wooded areas.

Manning (2011 pers. comm) noted that Whip-poor-will, a species now considered threatened in Ontario, used to nest in the Coves many years ago, before it was surrounded by development. However, this species no longer breeds in this area.

Two species were noted that are considered rare in Ecoregion 7 (the Carolinian Region) by MNR (MNR 1993): Magnolia Warbler and Ovenbird. These warbler species are highly area-sensitive, and Magnolia Warbler is generally associated with coniferous habitat. Ovenbird is a ground-nesting species and is very rare in urban environments. They were noted only on the first breeding bird survey, and were not heard in subsequent surveys, and so may have been late migrants.

Thirteen of the species noted on the site are of conservation concern in Bird Conservation Region 13 (Ontario south of the Canadian Shield). These species have not yet been designated as Species at Risk (with the exception of Eastern Meadowlark), but all are of conservation concern because their populations are declining and/or because a large proportion of the species' habitat occurs in southern Ontario. Two of these species, Wood Thrush and Willow Flycatcher, are of the highest priority status because they are of continental and regional conservation concern. A primary objective for these species is to reverse the population decline, or to maintain populations, highlighting the importance of maintaining remnant habitat within urban areas for bird conservation.

Twenty species are birds considered a conservation priority in Middlesex County by Bird Studies Canada (Couturier 1999). These bird species are not rare *per se*, but the level of conservation priority (L1 to L4) represents their vulnerability to decline. This is derived by calculating a cumulative score that incorporates individual scores for factors that contribute to the species' vulnerability, such as regional and local population trends, habitat specificity, sensitivity to development and jurisdictional responsibility (whether the species' breeding habitat is concentrated in Middlesex). Most of these species were only possible breeders within the Coves (and many were considered unlikely to be breeding by Manning (2011, pers. comm.), a local birder who has been studying birds of the Coves for many years). However, the fact that they were heard in the breeding season indicates that they were advertising for a mate in this location, and there is potential for them to breed here.

Eleven area-sensitive species were noted in the Coves. However, most of these species, particularly those that are forest-dependent and at the higher end of the spectrum with regard to area-sensitivity, were noted only as possible breeding species. They were likely late migrants as they were seen on the first visit in late May but not heard during the second visit two weeks later. Examples of these included Black-throated Green Warbler, Black-throated Blue Warbler, Ovenbird and Scarlet Tanager: species generally found in large forest tracts in rural areas, and very seldom found in urban areas. Evidence of probable breeding was obtained for three species: American Redstart, Blue-gray Gnatcatcher and Eastern Meadowlark. These are species of successional habitats and Euston Meadows and other areas of young woodlands provide breeding habitat.



Significant birds within the Coves ESA [*additional species record provided by Len Manning (2011 pers. comm.)]									
Scientific Name	Common Name	S Rank	COSEWIC/MNR	Bird Conservation Region 13	Middlesex	Eco-region 7	Area Sensitive	Breeding	Habitat
<i>Carduelis tristis</i>	American Goldfinch	S5B			L3	No	No	PR	Thickets, young woodlands
<i>Setophaga ruticilla</i>	American Redstart	S5B			L2	No	Yes	PR	Young forest
<i>Icterus galbula</i>	Baltimore Oriole	S4B		Regional Concern		No	No	PR	Young forest
<i>Riparia riparia</i>	Bank Swallow	S4B		Stewardship Concern	L1	No	No	PR	Bluffs near water
<i>Hirundo rustica</i>	Barn Swallow	S4B	THR/THR		L3	No	No	O	Farm buildings
<i>Ceryle alcyon</i>	Belted Kingfisher	S4B		Regional Concern		No	No	O	Riparian areas
<i>Poecile atricapillus</i>	Black-capped Chickadee	S5			L4	No	No	PO	Forest
<i>Dendroica caerulescens</i>	Black-throated Blue Warbler	S5B				No	Yes	PO	Forest
<i>Dendroica virens</i>	Black-throated Green Warbler	S5B			L2	No	Yes	PO	Forest, usually coniferous
<i>Poliophtila caerulea</i>	Blue-gray Gnatcatcher	S4B			L4	No	Yes	PR	Young forest
<i>Thryothorus ludovicianus</i>	Carolina Wren	S4			L3	No	No	PO	Forest, young forest
<i>Dendroica pensylvanica</i> *	Chestnut-sided Warbler*	S5B			L1	No	No	PR	Young forest
<i>Chaetura pelagica</i>	Chimney Swift	S4B, S4N	THR/THR			No	No	O	Old chimneys
<i>Tyrannus tyrannus</i>	Eastern Kingbird	S4B		Regional Concern	L3	No	No	O	Thicket



Significant birds within the Coves ESA [*additional species record provided by Len Manning (2011 pers. comm.)]									
Scientific Name	Common Name	S Rank	COSEWIC/MNR	Bird Conservation Region 13	Middlesex	Eco-region 7	Area Sensitive	Breeding	Habitat
<i>Sturnella magna</i>	Eastern Meadowlark	S4B	THR/THR	Regional Concern	L2	No	Yes	PR	Grassland
<i>Sayornis phoebe</i>	Eastern Phoebe	S5B			L3	No	No	PO	Riparian forest
<i>Pipilo erythrophthalmus</i>	Eastern Towhee	S4B		Regional Concern	L2	No	No	PO	Thicket
<i>Contopus virens</i>	Eastern Wood-pewee	S4B		Regional Concern		No	No	PO	Forest
<i>Spizella pusilla</i>	Field Sparrow	S4B		Regional Concern	L3	No	No	PO	Thicket
<i>Picoides villosus</i>	Hairy Woodpecker	S5				No	Yes	PO	Forest (cavities)
<i>Dendroica magnolia</i>	Magnolia Warbler	S5B			L1	Yes	Yes	PO	Forest, usually coniferous
<i>Colaptes auratus</i>	Northern Flicker	S4B		Regional Concern		No	No	PO	Forest (cavities)
<i>Seiurus aurocapillus</i>	Ovenbird	S4B			L4	Yes	Yes	PO	Forest
<i>Sitta canadensis</i>	Red-breasted Nuthatch	S5			L3	No	Yes	PO	Forest, usually coniferous (cavities)
<i>Pheucticus ludovicianus</i>	Rose-breasted Grosbeak	S4B		Stewardship Concern		No	No	PR	Forest
<i>Passerculus sandwichensis</i>	Savannah Sparrow	S4B		Regional Concern	L1	No	Yes	PO	Grasslands
<i>Piranga olivacea</i>	Scarlet Tanager	S4B			L2	No	Yes	PO	Forest
<i>Sitta carolinensis</i>	White-breasted Nuthatch	S5				No	Yes	PO	Forest (cavities)



Significant birds within the Coves ESA [*additional species record provided by Len Manning (2011 pers. comm.)]									
Scientific Name	Common Name	S Rank	COSEWIC/ MNR	Bird Conservation Region 13	Middlesex	Eco-region 7	Area Sensitive	Breeding	Habitat
<i>Empidonax trailii</i>	Willow Flycatcher	S5B		Continental & Regional Concern		No	No	PO	Shrubby wetlands
<i>Hylocichla Mustelina</i>	Wood Thrush	S5B		Regional Concern	L4	No	No		Forest



Migrating Birds

Studies for migrating birds were not conducted within the Coves. However, Len Manning (2011, pers. comm.) has studied birds within the Coves (including migrants and breeding birds) for approximately five years and has observed abundant migrating songbirds within forested areas of the Coves. He has also observed concentrations of migrant Common Nighthawks, a Species at Risk, over Euston Meadows every evening in September. In addition, he has noted concentrations of migrating shorebirds within the west Cove pond, north of Springbank Road. Water levels decline in the fall and so mudflats develop in this area. Great Egret roost here in the fall, and he has seen many shorebirds such as Pectoral Sandpiper, Least Sandpiper, Greater and Lesser Yellowlegs, Stilt Sandpiper, 10-11 Solitary Sandpiper, phalarope, American Coot, both teal species and one vagrant (very rare): Little Blue Heron. It is also a roost and foraging area for Green Heron and Black-crowned Night Heron, though they are not known to breed here.

Fish

A total of 16 fish species have been captured and recorded in the Coves including cool and warm water sportfish such as largemouth bass, pumpkinseed, yellow perch, black crappie and bluegill. The presence of non-native common carp and goldfish is of particular concern due to the negative environmental impact these species have on aquatic ecosystems. The Coves ponds exhibit the impact of common carp as noted by the lack of aquatic plants and turbid water conditions. The presence of common carp results in a reduction of native plant and animal biodiversity.

Significant Wildlife Habitat

Criteria for designation of Significant Wildlife Habitat (SWH) have been provided by OMNR (2000). More detailed guidelines for evaluating habitat within Ecoregions 6E and 7E, including thresholds of numbers of species that designate an area as SWH, have been provided in draft form (OMNR 2012). They include two types of habitat found in the Coves, both of which fall into the category of Seasonal Concentration Areas for Wildlife.

Breeding Habitat for American Bullfrog (Confirmed)

Two areas supported calling American Bullfrogs, and so should be considered breeding habitat for this species. These were the small inlet on the Thames River at the extreme north end of the ESA, and the southeast Coves Pond.

Habitat for Migrating Shorebirds (Candidate)

14 species of migrating shorebirds and wading birds have been recorded within the western Coves pond (Manning, pers. comm., 2011). Sites are considered SWH where the presence of three or more of listed species is documented and there are more than 1000 Shorebird Use Days recorded during spring or fall migration period (Shorebird Use Days are the accumulated number of shorebirds counted per day over the course of the fall or spring migration period). The west pond within the Coves should be considered candidate SWH until numbers and species richness of shorebirds are documented to meet the criteria for designation as SWH.



FLORA OF THE COVES ESA



Flora documented from the Coves ESA in 2011.(* indicates an introduced species)													
Scientific Name	Common Name	Rarity Status				Vegetation Community							
		G Rank	S Rank	Southwestern ON	Middlesex	FOD	SWD	MAM	CUW	CUT	CUM	MAM/CUM	OAO
Equisetaceae													
Equisetum arvense L.	Field Horsetail	G5	S5			x	x						
Dryopteridaceae													
Dryopteris carthusiana (Vill.) H.P. Fuchs	Spinulose Wood Fern	G5	S5			x							
Matteuccia struthiopteris (L.) Tod. var. pensylvanica (Willd.) C.V. Morton	Ostrich Fern	G5	S5			x			x				
Onoclea sensibilis L.	Sensitive Fern	G5	S5			x							
Pinaceae													
Tsuga canadensis (L.) Carrière	Eastern Hemlock	G5	S5			x							
* Pinus sylvestris L.	Scotch Pine	GNR	SNA			x							
Cupressaceae													
Thuja occidentalis L.	Eastern White Cedar	G5	S5			x							
Nymphaeaceae													
Nuphar variegata Durand in Clinton	Yellow Cowlily	G5T5	S5										x
Ranunculaceae													
Ranunculus hispidus Michx. var. caricetorum (Greene) T. Duncan	Swamp Buttercup	G5T5	S5			x							x
Anemone virginiana L.	Virginia Anemone	G5	S5			x							
Aquilegia canadensis L.	Wild Columbine	G5	S5			x							
Ranunculus abortivus L.	Kidney-leaved Buttercup	G5	S5			x							
Anemone quinquefolia L.	Wood Anemone	G5	S5			x							
Actaea pachypoda Elliott	White Baneberry	G5	S5			x							
Actaea rubra (Aiton) Willd.	Red Baneberry	G5	S5			x							
Anemone canadensis L.	Canada Anemone	G5	S5						x			x	
Ranunculus recurvatus Poir. var. recurvatus	Rough Crowfoot	G5	S5			x							
Thalictrum dioicum L.	Early Meadow-rue	G5	S5			x							
* Ranunculus acris L.	Tall Butter-cup	G5	SNA			x					x		
* Ranunculus repens L.	Creeping Buttercup	GNR	SNA			x							



Flora documented from the Coves ESA in 2011.(* indicates an introduced species)													
Scientific Name	Common Name	Rarity Status				Vegetation Community							
		G Rank	S Rank	Southwestern ON	Middlesex	FOD	SWD	MAM	CUW	CUT	CUM	MAM/CUM	OAO
Berberidaceae													
Podophyllum peltatum L.	May Apple	G5	S5			x							
* Berberis vulgaris L.	European Barberry	GNR	SNA			x							
* Berberis thunbergii DC.	Japanese Barberry	GNR	SNA			x							
Papaveraceae													
Sanguinaria canadensis L.	Bloodroot	G5	S5			x							
Platanaceae													
Platanus occidentalis L.	Sycamore	G5	S4									x	
Hamamelidaceae													
Hamamelis virginiana L.	Witch-hazel	G5	S5			x							
Ulmaceae													
Ulmus americana L.	American Elm	G5?	S5			x							
Celtis occidentalis L.	Hackberry	G5	S4			x							
* Ulmus pumila L.	Siberian Elm	GNR	SNA			x					x		
* Ulmus glabra Hudson	Wych Elm	GNR	SNA			x							
Moraceae													
* Morus alba L.	White Mulberry	GNR	SNA			x							
Urticaceae													
Laportea canadensis (L.) Wedd.	Wood Nettle	G5	S5			x		x					
Pilea pumila (L.) A. Gray	Canada Clearweed	G5	S5			x		x					
Urtica dioica L. ssp. gracilis (Aiton) Selander	American Stinging Nettle	G5T5	S5			x		x					
Boehmeria cylindrica (L.) Sw.	False Nettle	G5	S5			x	x					x	
* Urtica dioica L. ssp. dioica	European Stinging Nettle	G5T5?	SNA									x	
Juglandaceae													
Carya cordiformis (Wangenh.) K. Koch	Bitternut Hickory	G5	S5			x							
Carya ovata (Miller) K. Koch	Shagbark Hickory	G5	S5			x							
Juglans cinerea L.	Butternut	G4	S3?			x							



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Scientific Name	Common Name	Rarity Status				Vegetation Community							
		G Rank	S Rank	Southwestern ON	Middlesex	FOD	SWD	MAM	CUW	CUT	CUM	MAM/CUM	OAO
Juglans nigra L.	Black Walnut	G5	S4			x			x		x	x	
Fagaceae													
Quercus alba L.	White Oak	G5	S5			x					x		
Quercus macrocarpa Michx.	Bur Oak	G5	S5			x							
Quercus muhlenbergii Engelm.	Chinquapin Oak	G5	S4			x							
Quercus rubra L.	Red Oak	G5	S5			x					x		
Fagus grandifolia Ehrh.	American Beech	G5	S4			x							
Betulaceae													
Betula alleghaniensis Britton	Yellow Birch	G5	S5			x							
Carpinus caroliniana Walter ssp. virginiana (Marshall) Furlow	Blue Beech	G5	S5			x							
Ostrya virginiana (Miller) K. Koch	Hop Hornbeam	G5	S5			x							
Portulacaceae													
Claytonia virginica L.	Narrow-leaved Spring Beauty	G5	S5			x							
Caryophyllaceae													
* Silene latifolia Poir.	Bladder Campion	GNR	SNA			x							
Polygonaceae													
Polygonum virginianum L.	Virginia Knotweed	G5	S4						x				
Polygonum amphibium L.	Water Smartweed	G5	S5			x						x	x
Rumex orbiculatus A. Gray	Water Dock	G5	S4S5			x							x
* Polygonum persicaria L.	Lady's Thumb	G3G5	SNA			x							x
* Rumex crispus L.	Curly Dock	GNR	SNA			x					x		
Guttiferae													
Triadenum fraseri (Spach) Gleason	Marsh St. John's-wort	G5	S5			x	x						
* Hypericum perforatum L.	Common St. John's-wort	GNR	SNA			x					x		
Tiliaceae													
Tilia americana L.	American Basswood	G5	S5			x			x				
* Tilia cordata Miller	Little-leaf Linden	GNR	SNA			x							



Flora documented from the Coves ESA in 2011.(* indicates an introduced species)													
Scientific Name	Common Name	Rarity Status				Vegetation Community							
		G Rank	S Rank	Southwestern ON	Middlesex	FOD	SWD	MAM	CUW	CUT	CUM	MAM/CUM	OAO
Malvaceae													
* Malva neglecta Wallr.	Common Mallow	GNR	SNA			x							
Violaceae													
Viola pubescens Aiton	Downy Yellow Violet	G5TNR	S5			x							
Viola sororia Willd.	Woolly Blue Violet	G5	S5	Yes		x						x	
Viola cucullata Aiton	Marsh Blue Violet	G4G5	S5			x	x		x		x		
Cucurbitaceae													
Echinocystis lobata (Michx.) Torr. & A. Gray	Wild Cucumber	G5	S5			x							
Salicaceae													
Salix exigua Nutt.	Sandbar Willow	G5	S5						x				
Populus balsamifera L. ssp. balsamifera	Balsam Poplar	G5	S5			x							
Populus deltoides Bartram ex Marshall ssp. deltoides	Eastern Cottonwood	G5T5	SU			x	x		x		x		
Populus tremuloides Michx.	Trembling Aspen	G5	S5			x					x		
Salix bebbiana Sarg.	Beaked Willow	G5	S5								x		
Salix discolor Muhlenb.	Pussy Willow	G5	S5				x						
Salix eriocephala Michx.	Heart-leaved Willow	G5	S5			x	x						
Salix petiolaris Sm.	Slender Willow	G5	S5				x					x	
* Populus alba L.	White Poplar	G5	SNA			x							
* Salix x rubens Schrank	Hybrid Willow	GNA	SNA			x	x						
* Salix fragilis L.	Crack Willow	GNR	SNA			x					x		x
Brassicaceae													
* Nasturtium officinale R. Br.	True Watercress	G?	SNA			x	x						
* Hesperis matronalis L.	Dame's Rocket	G4G5	SNA			x	x			x		x	
* Barbarea vulgaris R. Br.	Yellow Rocket	GNR	SNA			x		x	x		x	x	
* Alliaria petiolata (M. Bieb.) Cavara & Grande	Garlic Mustard	GNR	SNA			x	x		x	x	x	x	
Primulaceae													
Lysimachia ciliata L.	Fringed Loosestrife	G5	S5			x		x					x



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Scientific Name	Common Name	Rarity Status				Vegetation Community							
		G Rank	S Rank	Southwestern ON	Middlesex	FOD	SWD	MAM	CUW	CUT	CUM	MAM/CUM	OAO
* Lysimachia nummularia L.	Creeping Jennie	GNR	SNA			x	x						
Grossulariaceae													
Ribes triste Pall.	Swamp Red Currant	G5	S5			x							x
Ribes cynosbati L.	Prickly Gooseberry	G5	S5			x							
Ribes americanum Miller	Wild Black Currant	G5	S5			x							
* Ribes rubrum L.	Northern Red Currant	G4G5	SNA			x							
Saxifragaceae													
Penthorum sedoides L.	Ditch-stonecrop	G5	S5			x							
Rosaceae													
Crataegus sp.	Hawthorn	GNR	S?		?	x				x			
Geum sp.	Geum	GNR	S?		?	x			x				
Rosa sp.	Rose	GNR	S?		?	x							
Prunus virginiana L.	Choke Cherry	G5	S5			x	x						
Prunus serotina Ehrh.	Black Cherry	G5	S5			x							
Physocarpus opulifolius (L.) Maxim.	Ninebark	G5	S5								x		
Geum macrophyllum Willd.	Large-leaved Avens	G5	S5	Yes		x							
Geum aleppicum Jacq.	Yellow Avens	G5T5	S5			x				x			
Fragaria virginiana Miller ssp. virginiana	Virginia Strawberry	G5	SU			x					x		
Fragaria vesca L. ssp. americana (Porter) Staudt	Woodland Strawberry	G5	S5			x							
Crataegus succulenta Schrad. ex Link	Fleshy Hawthorn	G5	S4S5						x				
Agrimonia gryposepala Wallr.	Tall Hairy Groovebur	G5	S5			x						x	
Sorbus decora (Sarg.) C.K. Schneid.	Northern Mountain-ash	G4G5	S5	Yes		x							
Amelanchier arborea (Michx. f.) Fern.	Downy Serviceberry	G5	S5			x							
Rubus idaeus L. ssp. melanolasius (Dieck) Focke	Red Raspberry	G5T5	S5			x			x			x	
Rubus occidentalis L.	Black Raspberry	G5	S5			x							
Spiraea alba Du Roi	Narrow-leaved Meadow-sweet	G5	S5								x		
* Malus pumila Miller	Common Crabapple	G5	SNA			x							



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Scientific Name	Common Name	Rarity Status				Vegetation Community							
		G Rank	S Rank	Southwestern ON	Middlesex	FOD	SWD	MAM	CUW	CUT	CUM	MAM/CUM	OAD
* Prunus avium (L.) L.	Sweet Cherry	GNR	SNA			x	x						
* Rosa multiflora Thunb. ex Murray	Multiflora Rose	GNR	SNA			x			x		x		
Fabaceae													
Desmodium canadense (L.) DC.	Showy Tick-trefoil	G5	S4			x			x			x	
Cercis canadensis L.	Redbud	G5	SX	Yes		x							
Amphicarpaea bracteata (L.) Fern.	American Hog-peanut	G5	S5			x						x	
* Robinia pseudo-acacia L.	Black Locust	G5	SNA			x							
* Melilotus alba Medik.	White Sweet Clover	G5	SNA			x							
* Medicago lupulina L.	Black Medic	GNR	SNA								x		
* Lotus corniculatus L.	Birds-foot Trefoil	GNR	SNA			x							
* Coronilla varia L.	Crown-vetch	GNR	SNA							x			
* Vicia cracca L.	Tufted Vetch	GNR	SNA							x			
* Trifolium pratense L.	Red Clover	GNR	SNA								x		
Lythraceae													
* Lythrum salicaria L.	Purple Loosestrife	G5	SNA			x	x	x				x	x
Thymelaeaceae													
Dirca palustris L.	Leatherwood	G4	S4?			x							
Onagraceae													
Epilobium ciliatum Raf. ssp. ciliatum	Hairy Willow-herb	G5	S5			x						x	
Circaea lutetiana L. ssp. canadensis (L.) Aschers. & Magnusson	Enchanter's Nightshade	G5	S5			x			x				
* Epilobium hirsutum L.	Great-hairy Willow-herb	GNR	SNA						x				
Cornaceae													
Cornus stolonifera Michx.	Red-osier Dogwood	G5	S5			x			x		x		
Cornus rugosa Lam.	Round-leaved Dogwood	G5	S5			x							
Cornus foemina Miller ssp. racemosa (Lam.) J.S. Wilson	Grey Dogwood	G5	S5			x			x		x	x	
Cornus drummondii C.A. Mey.	Drummond's Dogwood	G5	S4								x		
Cornus alternifolia L. f.	Alternate-leaf Dogwood	G5	S5			x			x				



Flora documented from the Coves ESA in 2011.(* indicates an introduced species)													
Scientific Name	Common Name	Rarity Status				Vegetation Community							
		G Rank	S Rank	Southwestern ON	Middlesex	FOD	SWD	MAM	CUW	CUT	CUM	MAM/CUM	OAO
Cornus amomum Miller ssp. obliqua (Raf.) J.S. Wilson	Silky Dogwood	G5T5	S5			x							
Celastraceae													
Euonymus obovata Nutt.	Running Strawberry-bush	G5	S5			x							
* Euonymus alata (Thunb.) Siebold	Winged Burning Bush	GNR	SNA			x							
Euphorbiaceae													
* Euphorbia esula L.	Leafy Spurge	G5	SNA								x		
Rhamnaceae													
Rhamnus alnifolia L'Hér.	Alder-leaved Buckthorn	G5	S5			x	x		x				
* Rhamnus frangula L.	Glossy Buckthorn	GNR	SNA			x		x					
* Rhamnus cathartica L.	European Buckthorn	GNR	SNA			x	x		x	x	x		
Vitaceae													
Parthenocissus vitacea (Knerr) Hitchc.	Inserted Virginia Creeper	G5	S5			x		x		x		x	
Vitis riparia Michx.	Riverbank Grape	G5	S5			x	x		x	x		x	x
Staphyleaceae													
Staphylea trifolia L.	American Bladdernut	G5	S4			x							
Hippocastanaceae													
* Aesculus hippocastanum L.	Horse Chestnut	GNR	SNA			x							
Aceraceae													
Acer x freemanii E. Murr.	Hybrid Soft Maple	GNA	SNR			x	x		x				
Acer saccharum Marshall ssp. saccharum	Sugar Maple	G5T5	S5			x	x		x		x		
Acer saccharum Marshall ssp. nigrum (Michx. f.) Desmarais	Black Maple	G5T5	S4?			x							
Acer saccharinum L.	Silver Maple	G5	S4S5			x	x						
Acer negundo L.	Manitoba Maple	G5	S5			x	x		x	x	x		
* Acer platanoides L.	Norway Maple	GNR	SE5			x							
Anacardiaceae													
Rhus typhina L.	Staghorn Sumac	G5	S5			x			x		x		
Rhus rydbergii Small ex Rydb.	Western Poison-ivy	G5	S5			x							



Flora documented from the Coves ESA in 2011.(* indicates an introduced species)													
Scientific Name	Common Name	Rarity Status				Vegetation Community							
		G Rank	S Rank	Southwestern ON	Middlesex	FOD	SWD	MAM	CUW	CUT	CUM	MAM/CUM	OAO
Rhus radicans L. ssp. negundo (Greene) McNeill	Climbing Poison-ivy	G5T5	S5			x							
Oxalidaceae													
Oxalis stricta L.	Upright Yellow Wood-sorrel	G5	S5			x							
Geraniaceae													
Geranium maculatum L.	Wild Crane's-bill	G5	S5			x							
* Geranium robertianum L.	Herb-robert	G5	SNA			x							
Balsaminaceae													
Impatiens capensis Meerb.	Spotted Jewel-weed	G5	S5			x	x	x				x	x
Araliaceae													
Aralia nudicaulis L.	Wild Sarsaparilla	G5	S5			x							
* Hedera helix L.	English Ivy	GNR	SNA			x							
Apiaceae													
Sium suave Walter	Water-parsnip	G5	S5			x	x	x					
Sanicula marilandica L.	Black Snakeroot	G5	S5			x							
Cryptotaenia canadensis (L.) DC.	Canada Honewort	G5	S5			x							
Cicuta maculata L.	Spotted Water-hemlock	G5	S5			x	x	x	x			x	x
Cicuta bulbifera L.	Bulb-bearing Water-hemlock	G5	S5					x					
* Daucus carota L.	Wild Carrot	GNR	SNA			x				x	x	x	
* Aegopodium podagraria L.	Goutweed	GNR	SNA			x							
Apocynaceae													
Apocynum cannabinum L.	Indian Hemp	G5	S5			x							
Apocynum androsaemifolium L.	Spreading Dogbane	G5	S5						x				
* Vinca minor L.	Periwinkle	GNR	SNA			x						x	
Asclepiadaceae													
Asclepias incarnata L.	Swamp Milkweed	G5	S5									x	
Asclepias syriaca L.	Common Milkweed	G5	S5			x		x	x		x		
Solanaceae													



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Scientific Name	Common Name	Rarity Status				Vegetation Community							
		G Rank	S Rank	Southwestern ON	Middlesex	FOD	SWD	MAM	CUW	CUT	CUM	MAM/CUM	OAO
* Solanum dulcamara L.	Climbing Nightshade	GNR	SNA			x	x						x
Convolvulaceae													
Cuscuta gronovii Willd. ex Schultz	Swamp Dodder	G5	S5			x							
* Convolvulus arvensis L.	Field Bindweed	GNR	SNA			x		x		x	x	x	
Hydrophyllaceae													
Hydrophyllum virginianum L.	Virginia Waterleaf	G5	S5			x							
Boraginaceae													
Myosotis sp.	Forget-me-not	GNR	S?		?	x		x					
Myosotis laxa Lehm.	Small Forget-me-not	G5	S5			x							x
Verbenaceae													
Verbena urticifolia L.	White Vervain	G5	S5			x						x	
Verbena hastata L.	Blue Vervain	G5	S5									x	
Lamiaceae													
Mentha arvensis L.	Field Mint	G5	S5				x						x
Scutellaria lateriflora L.	Mad Dog Skullcap	G5	S5					x				x	
Scutellaria galericulata L.	Hooded Skullcap	G5	S5									x	
Pycnanthemum virginianum (L.) Durand & Jackson ex Fern. & Robinson	Virginia Mountain-mint	G5	S4						x				
Prunella vulgaris L. ssp. lanceolata (W.C. Barton) Hultén	Heal-all	G5T5	S5			x					x		
Lycopus americanus Muhlenb. ex Bartram	American Bugleweed	G5	S5					x				x	x
Clinopodium vulgare L.	Field Basil	G5	S5			x							
Monarda fistulosa L.	Wild Bergamot	G5	S5						x		x	x	
* Mentha x piperita L.	Pepper Mint	GNA	SNA			x		x					
* Melissa officinalis L. ssp. officinalis	Lemon-balm	GNR	SNA			x							
* Glechoma hederacea L.	Ground Ivy	GNR	SNA			x							
Plantaginaceae													
Plantago rugelii Decne.	Black-seed Plantain	G5	S5			x					x		



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		G Rank	S Rank	Southwestern ON	Middlesex	FOD	SWD	MAM	CUW	CUT	CUM	MAM/CUM	OAO
* Plantago lanceolata L.	English Plantain	G5	SNA								x		
* Plantago major L.	Nipple-seed Plantain	G5	SNA			x					x	x	
Oleaceae													
Fraxinus americana L.	White Ash	G5	S5			x					x		
Fraxinus pennsylvanica Marshall	Green Ash	G5	S5			x	x		x				
* Ligustrum vulgare L.	European Privet	GNR	SNA			x			x				
Scrophulariaceae													
Chelone glabra L.	Turtlehead	G5	S5			x							
* Veronica serpyllifolia L. ssp. serpyllifolia	Thyme-leaved Speedwell	G5TNR	SNA			x			x			x	
* Veronica officinalis L.	Gypsy-weed	G5	SNA			x			x				
* Linaria vulgaris Miller	Butter-and-eggs	GNR	SNA								x		
Campanulaceae													
Lobelia siphilitica L.	Great Blue Lobelia	G5	S5			x							
Lobelia inflata L.	Indian-tobacco	G5	S5			x							
Rubiaceae													
Galium tinctorium L.	Stiff Marsh Bedstraw	G5	S5		R3			x					
Galium circaezans Michx.	Wild Licorice	G5	S5			x							
* Galium mollugo L.	White Bedstraw	GNR	SNA			x		x					
Caprifoliaceae													
Viburnum trilobum Marshall	Highbush Cranberry	G5T5	S5			x	x				x	x	
Viburnum rafinesquianum Schult.	Downy Arrow-wood	G5	S5			x							
Viburnum lentago L.	Nannyberry	G5	S5			x							
Viburnum acerifolium L.	Maple-leaved Viburnum	G5	S5			x							
Triosteum aurantiacum E.P. Bicknell	Wild Coffee	G5	S5			x							
Sambucus canadensis L.	Common Elderberry	G5T5	S5								x		
Lonicera dioica L.	Mountain Honeysuckle	G5	S5			x							
Diervilla lonicera Miller	Bush Honeysuckle	G5	S5			x							



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Scientific Name	Common Name	Rarity Status				Vegetation Community							
		G Rank	S Rank	Southwestern ON	Middlesex	FOD	SWD	MAM	CUW	CUT	CUM	MAM/CUM	OAO
* Lonicera tatarica L.	Tartarian Honeysuckle	GNR	SNA			x			x				
Dipsacaceae													
* Dipsacus fullonum L. ssp. sylvestris (Hudson) Clapham	Wild Teasel	GNR	SNA							x	x		
Asteraceae													
Xanthium strumarium L.	Rough Cockle-bur	G5	S5			x							
Eupatorium maculatum L. ssp. maculatum	Spotted Joe-pye-weed	G5TNR	S5			x	x	x				x	x
Erigeron annuus (L.) Pers.	White-top Fleabane	G5	S5			x					x		
Bidens frondosa L.	Devil's Beggar-ticks	G5	S5			x			x				
Antennaria neglecta Greene	Field Pussy-toes	G5	S5			x							
Ambrosia trifida L.	Great Ragweed	G5	S5			x			x				
Ambrosia artemisiifolia L.	Annual Ragweed	G5	S5			x							
Eupatorium perfoliatum L.	Common Boneset	G5	S5			x							
Erigeron philadelphicus L.	Philadelphia Fleabane	G5	S5	Yes		x			x				
Achillea millefolium L. ssp. lanulosa (Nutt.) Piper	Woolly Yarrow	G5T5	S5								x		
Solidago canadensis var. canadensis	Canada Goldenrod	G5T5	S5			x			x		x		
Symphyotrichum urophyllum (Lindl. in DC.) Nesom	Arrow-leaved Aster	G4G5	S4			x							
Symphyotrichum pilosum (Willd.) Nesom var. pilosum	Hairy Aster	G5T5	S5			x			x				
Symphyotrichum pilosum	White Heath Aster	G5T5	S5			x							
Symphyotrichum novae-angliae (L.) Nesom	New England Aster	G5	S5			x				x	x		
Symphyotrichum lateriflorum (L.) Löve & Löve var. lateriflorum	One-sided Aster	G5T5	S5			x			x				
Symphyotrichum lanceolatum (Willd.) Nesom ssp. lanceolatum	Panicled Aster	G5T5	S5				x				x	x	x
Symphyotrichum ericoides (L.) Nesom var. ericoides	White Heath Aster	G5T5	S5								x		
Symphyotrichum cordifolium (L.) Nesom	Heart-leaved Aster	G5	S5			x							
Conyza canadensis (L.) Cronquist	Canada Fleabane	G5	S5			x							
Solidago flexicaulis L.	Broad-leaved Goldenrod	G5	S5			x							
Eurybia macrophylla (L.) Cass in Cuvier	Large-leaved Aster	G5	S5			x							
Solidago canadensis	Canada Goldenrod	G5	S5							x			



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Scientific Name	Common Name	Rarity Status				Vegetation Community							
		G Rank	S Rank	Southwestern ON	Middlesex	FOD	SWD	MAM	CUW	CUT	CUM	MAM/CUM	OAO
Solidago caesia L.	Bluestem Goldenrod	G5	S5			x							
Prenanthes alba L.	White Lettuce	G5	S5			x							
Euthamia graminifolia (L.) Nutt.	Flat-top Fragrant-golden-rod	G5	S5			x					x		
Helianthus tuberosus L.	Jerusalem Artichoke	G5	S5			x						x	
Helianthus giganteus L.	Tall Sunflower	G5	S5									x	
Rudbeckia laciniata L.	Cut-leaved Coneflower	G5	S5			x			x			x	
Solidago gigantea Aiton	Smooth Goldenrod	G5	S5			x							
* Cirsium vulgare (Savi) Ten.	Bull Thistle	GNR	SNA			x			x				
* Cirsium arvense (L.) Scop.	Canada Thistle	GNR	SNA			x		x		x	x	x	
* Cichorium intybus L.	Chicory	GNR	SNA			x					x		
* Chrysanthemum leucanthemum L.	Oxeye Daisy	GNR	SNA			x							
* Arctium minus (Hill) Bernh. ssp. nemorosum (Lej. & Courtois) Syme	Woodland Burdock	GNRTNR	SNA			x							
* Sonchus arvensis L. ssp. arvensis	Field Sow-thistle	GNRTNR	SNA			x					x		
* Achillea millefolium L.	Common Yarrow	G5T?	SNA			x							
* Taraxacum officinale G. Weber	Common Dandelion	G5	SNA			x			x	x	x		
* Arctium minus (Hill) Bernh.	Common Burdock	GNA	SNA			x							
* Lapsana communis L.	Common Nipplewort	GNR	SNA			x							
* Tussilago farfara L.	Colt's Foot	GNR	SNA			x							
Alismataceae													
Sagittaria latifolia Willd.	Broadleaf Arrowhead	G5	S5			x	x	x					x
Araceae													
Symplocarpus foetidus (L.) Salisb. ex Nutt.	Skunk Cabbage	G5	S5			x		x					
Arisaema triphyllum (L.) Schott	Jack-in-the-pulpit	G5	S5			x			x			x	
Lemnaceae													
Spirodela polyrhiza (L.) Schleid.	Greater Duckweed	G5	S5										x
Lemna minor L.	Lesser Duckweed	G5	S5										x



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Scientific Name	Common Name	Rarity Status				Vegetation Community							
		G Rank	S Rank	Southwestern ON	Middlesex	FOD	SWD	MAM	CUW	CUT	CUM	MAM/CUM	OAD
Juncaceae													
Luzula acuminata Raf.	Hairy Woodrush	G5	S5			x							
Juncus tenuis Willd.	Path Rush	G5	S5	Yes		x			x			x	
Juncus dudleyi Wiegelb	Dudley's Rush	G5	S5						x				
Juncus bufonius L.	Toad Rush	G5	S5			x							
Cyperaceae													
Carex sp.	Sedge	GNR	S?		?	x			x			x	
Carex laxiculmis Schwein.	Spreading Sedge	G5T4T5	S4			x							
Scirpus atrovirens Willd.	Dark-green Bulrush	G5?	S5			x							
Carex stricta Lam.	Tussock Sedge	G5	S5					x	x			x	x
Carex stipata Muhlenb. ex Willd.	Stalk-grain Sedge	G5	S5			x							
Carex rosea Schkuhr ex Willd.	Rosy Sedge	G5	S5			x							
Carex pedunculata Muhlenb. ex Willd.	Longstalk Sedge	G5	S5			x							
Carex gracillima Schwein.	Graceful Sedge	G5	S5			x			x				
Carex blanda Dewey	Woodland Sedge	G5?	S5			x							
Carex pensylvanica Lam.	Pennsylvania Sedge	G5	S5			x							
Poaceae													
Elymus canadensis L.	Canada Wild-rye	G5	S4S5						x			x	
Calamagrostis canadensis (Michx.) Beauv.	Canada Blue-joint	G5	S5									x	
Agrostis stolonifera L.	Spreading Bentgrass	G5	S5						x				
Elymus virginicus L.	Virginia Wild-rye	G5T5	S5			x							
Elymus hystrix L.	Bottlebrush Grass	G5	S5			x							
Poa pratensis L. ssp. pratensis	Kentucky Bluegrass	G5T5	S5						x	x	x		
Phalaris arundinacea L.	Reed Canary Grass	G5	S5			x	x	x			x	x	x
Muhlenbergia mexicana (L.) Trin var. mexicana	Mexican Satin Grass	G5	S5			x							
Leersia oryzoides (L.) Sw.	Rice Cutgrass	G5	S5			x	x	x					x
Glyceria striata (Lam.) A. Hitchc.	Fowl Manna-grass	G5T5	S4S5			x							



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		G Rank	S Rank	Southwestern ON	Middlesex	FOD	SWD	MAM	CUW	CUT	CUM	MAM/CUM	OAO
* Phleum pratense L.	Meadow Timothy	GNR	SNA			x					x	x	
* Triticum aestivum L.	Cultivated Wheat	GNR	SNA			x							
* Poa compressa L.	Canada Bluegrass	GNR	SNA			x							
* Festuca arundinacea Schreb.	Kentucky Fescue	GNR	SNA						x		x	x	
* Elymus repens (L.) Gould	Quack Grass	GNR	SNA								x		
* Echinochloa crusgalli (L.) P. Beauv.	Barnyard Grass	GNR	SNA			x							
* Dactylis glomerata L.	Orchard Grass	GNR	SNA			x	x		x	x	x	x	
* Bromus inermis Leyss. ssp. inermis	Smooth Brome	G5TNR	SNA						x	x	x	x	
* Agrostis gigantea Roth	Red-top	G4G5	SNA								x	x	
* Setaria faberi R.A.W. Herrm.	Giant Foxtail	GNR	SNA			x							
Sparganiaceae													
Sparganium eurycarpum Engelm. ex A. Gray	Large Bur-reed	G5	S5				x	x					x
Typhaceae													
Typha latifolia L.	Broad-leaf Cattail	G5	S5					x					x
Liliaceae													
Allium canadense L.	Canada Wild Onion	G5	S5			x			x			x	
Trillium grandiflorum (Michx.) Salisb.	White Trillium	G5	S5			x							
Trillium cernuum L.	Nodding Trillium	G5	S5			x							
Polygonatum pubescens (Willd.) Pursh	Downy Solomon's-seal	G5	S5			x						x	
Maianthemum stellatum (L.) Link	Starflower False Solomon's-seal	G5	S5			x			x				
Maianthemum racemosum (L.) Link ssp. racemosum	False Solomon's Seal	G5	S5			x							
Maianthemum canadense Desf.	Wild-lily-of-the-valley	G5	S5			x							
Erythronium americanum Ker Gawl.	Yellow Trout Lily	G5	S5			x	x						
Erythronium albidum Nutt.	White Trout Lily	G5	S4			x							
* Narcissus pseudonarcissus L.	Common Daffodil	GNR	SNA			x							
* Hemerocallis fulva (L.) L.	Orange Daylily	GNA	SNA			x							



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		G Rank	S Rank	Southwestern ON	Middlesex	FOD	SWD	MAM	CUW	CUT	CUM	MAM/CUM	OAO
* Convallaria majalis L.	Lily-of-the-valley	G5	SNA			x							
* Allium schoenoprasum L. var. schoenoprasum	Chives	G5T5	SNA			x							
Iridaceae													
* Iris pseudacorus L.	Yellow Iris	GNR	SNA			x		x					x
Smilacaceae													
Smilax herbacea L.	Smooth Herbaceous Greenbrier	G5	S4			x							
Orchidaceae													
* Epipactis helleborine (L.) Crantz	Eastern Helleborine	GNR	SNA			x							



FAUNA OF THE COVES ESA



Fauna documented from the Coves ESA in 2011. (* indicates and introduced species)																
Scientific Name	Common Name	Rarity Status						Area Sensitive	Evidence	Vegetation Community						
		G Rank	S Rank	COSEWIC	MNR	Middlesex	BCR 13			FOD	SWD	MAM	CUW	CUM	MAM/CUM	OAD
Bird																
Branta canadensis	Canada Goose	G5	S5						PR	x			x		x	x
Aix sponsa	Wood Duck	G5	S5			L4			PO	x						
Anas platyrhynchos	Mallard	G5	S5						PR	x			x			x
Ardea herodias	Great Blue Heron	G5	S5						OB	x		x				x
Butorides virescens	Green Heron	G5	S4B			L3			PO	x			x			
Pandion haliaetus	Osprey	G5	S5B	NAR	NAR				OB				x			
Buteo jamaicensis	Red-tailed Hawk	G5	S5	NAR	NAR				OB	x						
Porzana carolina	Sora	G5	S4B			L1			PO	x						
Charadrius vociferus	Killdeer	G5	S5B,S5N						PO	x			x			
Tringa solitaria	Solitary Sandpiper	G5	S4B						OB							x
Actitis macularia	Spotted Sandpiper	G5	S5			L3			PO	x						
Larus marinus	Great Black-backed Gull	G5	S2B						OB	x						
* Columba livia	Rock Pigeon	G5	SNA						OB	x						
Zenaida macroura	Mourning Dove	G5	S5						PO	x			x	x		
Bubo virginianus	Great Horned Owl	G5	S5						PO	x						
Chaetura pelagica	Chimney Swift	G5	S4B,S4N	THR	THR				PO	x			x	x		
Ceryle alcyon	Belted Kingfisher	G5	S4B						OB	x		x				
Melanerpes carolinus	Red-bellied Woodpecker	G5	S4			L1			PO	x			x			
Picoides pubescens	Downy Woodpecker	G5	S5						PO	x			x	x		x
Picoides villosus	Hairy Woodpecker	G5	S5					Yes	PO	x						
Colaptes auratus	Northern Flicker	G5	S4B						PO	x	x		x			
Contopus virens	Eastern Wood-pewee	G5	S4B						PO	x				x		
Empidonax traillii	Willow Flycatcher	G5	S5B						PO	x						
Sayornis phoebe	Eastern Phoebe	G5	S5B			L3			PO	x			x			
Tyrannus tyrannus	Eastern Kingbird	G5	S4B			L3			OB							x



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		G Rank	S Rank	COSEWIC	MNR	Middlesex	BCR 13			FOD	SWD	MAM	CUW	CUM	MAM/CUM	OAO
Myiarchus crinitus	Great Crested Flycatcher	G5	S4B						C	x			x	x		x
Vireo gilvus	Warbling Vireo	G5	S5B						PO	x			x	x		
Vireo olivaceus	Red-eyed Vireo	G5	S5B						PO	x			x	x		
Cyanocitta cristata	Blue Jay	G5	S5						PR	x			x			
Corvus brachyrhynchos	American Crow	G5	S5B						PO	x				x		
Riparia riparia	Bank Swallow	G5	S4B	THR	THR	L1			PR	x						
Hirundo rustica	Barn Swallow	G5	S4B	THR	THR	L3			PO				x	x		
Poecile atricapillus	Black-capped Chickadee	G5	S5			L4			PO	x	x		x	x	x	
Sitta canadensis	Red-breasted Nuthatch	G5	S5			L3		Yes	PO	x						
Sitta carolinensis	White-breasted Nuthatch	G5	S5					Yes	PO	x		x	x	x		
Thryothorus ludovicianus	Carolina Wren	G5	S4			L3			PO	x				x		
Troglodytes aedon	House Wren	G5	S5B						PO	x			x	x		
Poliophtila caerulea	Blue-gray Gnatcatcher	G5	S4B			L4		Yes	PR	x			x	x		
Hylocichla mustelina	Wood Thrush	G5	S4B			L4			PR	x						
Turdus migratorius	American Robin	G5	S5B						PR	x	x		x	x		
Dumetella carolinensis	Gray Catbird	G5	S4B			L4			PR	x		x	x	x		
* Sturnus vulgaris	European Starling	G5	SNA						C	x				x		
Bombycilla cedrorum	Cedar Waxwing	G5	S5B						PO	x				x		
Dendroica petechia	Yellow Warbler	G5	S5B						PR	x			x	x	x	
Dendroica magnolia	Magnolia Warbler	G5	S5B			L1		Yes	PO	x			x			
Dendroica caerulescens	Black-throated Blue Warbler	G5	S5B					Yes	PO	x						
Dendroica virens	Black-throated Green Warbler	G5	S5B			L2		Yes	PO	x						
Setophaga ruticilla	American Redstart	G5	S5B			L2		Yes	PO	x			x			
Seiurus aurocapillus	Ovenbird	G5	S4B			L4		Yes	PO	x						
Geothlypis trichas	Common Yellowthroat	G5	S5B						PO	x			x			
Piranga olivacea	Scarlet Tanager	G5	S4B			L2		Yes	PO	x						



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		G Rank	S Rank	COSEWIC	MNR	Middlesex	BCR 13			FOD	SWD	MAM	CUW	CUM	MAM/CUM	OAO
Pipilo erythrophthalmus	Eastern Towhee	G5	S4B			L2			PO					x		
Spizella passerina	Chipping Sparrow	G5	S5B						PO	x			x	x		
Spizella pusilla	Field Sparrow	G5	S4B			L3			PO				x			
Passerculus sandwichensis	Savannah Sparrow	G5	S4B			L1		Yes	PO					x		
Melospiza melodia	Song Sparrow	G5	S5B						PR	x			x	x	x	
Cardinalis cardinalis	Northern Cardinal	G5	S5						PO	x		x	x	x		
Pheucticus ludovicianus	Rose-breasted Grosbeak	G5	S4B						PR	x			x			x
Passerina cyanea	Indigo Bunting	G5	S4B						PO	x			x			
Agelaius phoeniceus	Red-winged Blackbird	G5	S5						PR	x			x	x		
Sturnella magna	Eastern Meadowlark	G5	S4B	THR	THR	L2		Yes	PR					x		
Quiscalus quiscula	Common Grackle	G5	S5B						C	x			x		x	x
Molothrus ater	Brown-headed Cowbird	G5	S4B						PO	x			x			
Icterus galbula	Baltimore Oriole	G5	S4B						PR	x	x		x			
* Carpodacus mexicanus	House Finch	G5	SNA						PO	x				x		
Carduelis tristis	American Goldfinch	G5	S5B			L3			PR	x		x	x	x		x
* Passer domesticus	House Sparrow	G5	SNA						PO	x			x	x		
Mammal																
Condylura cristata	Star-nosed Mole	G5	S5						HO	x						
Sciurus carolinensis	Grey Squirrel	G5	S5						OB	x			x			
Tamias striatus	Eastern Chipmunk	G5	S5						OB		x					
Castor canadensis	Beaver	G5	S5						FE	x						
Microtus pennsylvanicus	Meadow Vole	G5	S5						HO				x			
Vulpes vulpes	Red Fox	G5	S5						HO	x						
Procyon lotor	Raccoon	G5	S5						TK/SC	x				x		
Odocoileus virginianus	White-tailed Deer	G5	S5						OB/TK/SC	x	x			x		
Amphibian																



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Plethodon cinereus	Eastern Red-backed Salamander	G5	S5						OB	x						
Bufo americanus	American Toad	G5	S5						OB	x			x			x
Rana catesbeiana	American Bullfrog	G5	S4					Yes	VO	x						
Rana clamitans	Green Frog	G5	S5						VO	x						
Rana pipiens	Northern Leopard Frog	G5	S5	NAR	NAR				VO							x
Reptile																
Chrysemys picta marginata	Midland Painted Turtle	G5T5	S5						OB							x
Storeria dekayi	Dekay's Brownsnake	G5	S5	NAR	NAR				OB	x						
Storeria occipitomaculata occipitomacula	Northern Red-bellied Snake	G5T5	S5						OB	x						
Thamnophis sirtalis sirtalis	Eastern Garter Snake	G5T5	S5						OB	x			x			
Fish																
* Cyprinus carpio	Common Carp	G5	SNA						OB	x						
Dragonfly/ Damselfly																
Arigomphus villosipes	Unicorn Clubtail	G5	S2S3						OB						x	
Anax junius	Common Green Darner	G5	S5						OB					x		
Libellula luctuosa	Widow Skimmer	G5	S5						OB						x	
Libellula pulchella	Twelve-spotted Skimmer	G5	S5						OB	x		x		x		
Pachydiplax longipennis	Blue Dasher	G5	S5						OB						x	
Perithemis tenera	Eastern Amberwing	G5	S4						OB						x	
Plathemis lydia	Common Whitetail	G5	S5						OB	x		x			x	
Sympetrum internum	Cherry-faced Meadowhawk	G5	S5						OB		x				x	
Sympetrum obtrusum	White-faced Meadowhawk	G5	S5						OB			x			x	
Sympetrum semicinctum	Band-winged Meadowhawk	G5	S4						OB	x						
Calopteryx maculata	Ebony Jewelwing	G5	S5						OB	x		x				
Argia moesta	Powdered Dancer	G5	S5						OB			x				



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		G Rank	S Rank	COSEWIC	MNR	Middlesex	BCR 13			FOD	SWD	MAM	CUW	CUM	MAM/CUM	OAO
Enallagma ebrium	Marsh Bluet	G5	S5						OB					x		
Enallagma exsulans	Stream Bluet	G5	S5						OB			x			x	
Ischnura verticalis	Eastern Forktail	G5	S5						OB			x			x	
Butterfly/ Moth																
Papilio cresphontes	Giant Swallowtail	G5	S3						OB	x						
* Pieris rapae	Cabbage White	G5	SNA						OB	x		x		x	x	x
Celastrina ladon	Spring Azure	G5	S5						OB	x						
Danaus plexippus	Monarch	G5	S2N,S4B	SC	SC				OB			x	x		x	
Limenitis arthemis	White Admiral	G5	S5						OB	x						



THE COVES ENVIRONMENTALLY SIGNIFICANT AREA CONSERVATION MASTER PLAN

Section 3 –Ecological Management of the Coves ESA



Eastern Screech Owl

Photo Credit – Andrew Jackson (www.ontariowildlife.net)



THE COVES ENVIRONMENTALLY SIGNIFICANT AREA CONSERVATION MASTER PLAN

SECTION 3 – ECOLOGICAL MANAGEMENT OF THE COVES ESA

Management Needs of Urban Environmentally Significant Areas

The primary purpose of an ESA is protection of the natural features and ecological functions that support ecological integrity and ecosystem health. Human uses should be permitted only when they can be demonstrated to be compatible with conservation of the native biota and natural processes. In order to achieve the primary purpose of ESAs and to enable selective uses by the public, management and recreation activities must be carefully planned and designed, and integrated in an adaptive management regime.

Managers of urban conservation lands are often challenged by physical constraints (e.g. small size, irregular shape, lack of ecological connectivity, microclimatic changes, changes to natural hydrology/flooding) and ecological constraints (e.g. invasive species, altered natural disturbance processes, changes in wildlife behavior) due to the impacts of human settlement which fundamentally alters historical ecological processes that maintained healthy functioning ecosystems. For example, human settlements are often a source of exotic and/or invasive plants and animals that compete with, prey upon or displace native wildlife, resulting in the loss of native plant and animal biodiversity through biotic simplification.

Urban natural areas are often relatively small islands surrounded by diverse and heavily populated urban and suburban development. These areas are subject to the increasing demands and preferences for recreation use, and the impacts of heavy and often incompatible uses, including encroachment, trail widening and erosion, ad hoc trail creation, dogs off leash, mountain biking, vandalism and campfire party activities after dark. The very nature of urban natural areas assures often vigorous public involvement with an often crowded and conflicting roster of neighbours, recreationists, and environmentalists.

The CMP for the Coves outlines realistic strategies, achievable objectives, and actionable items to manage the multitude of disturbances that threaten a natural area, and identifies key indicators that can be monitored to detect change over time, in order to maintain and protect irreplaceable natural habitat values, including earth and life science interests, and sensitive cultural and archaeological resources.

Protecting ESAs against damaging or excessive visitor use requires that the types of recreational activities permitted be generally restricted to passive, nature-based uses and that visitor impacts are managed through appropriate placement of trails, signs and facilities to maintain the natural features and functions that characterize the area.



The Proposed Boundary for the Coves ESA

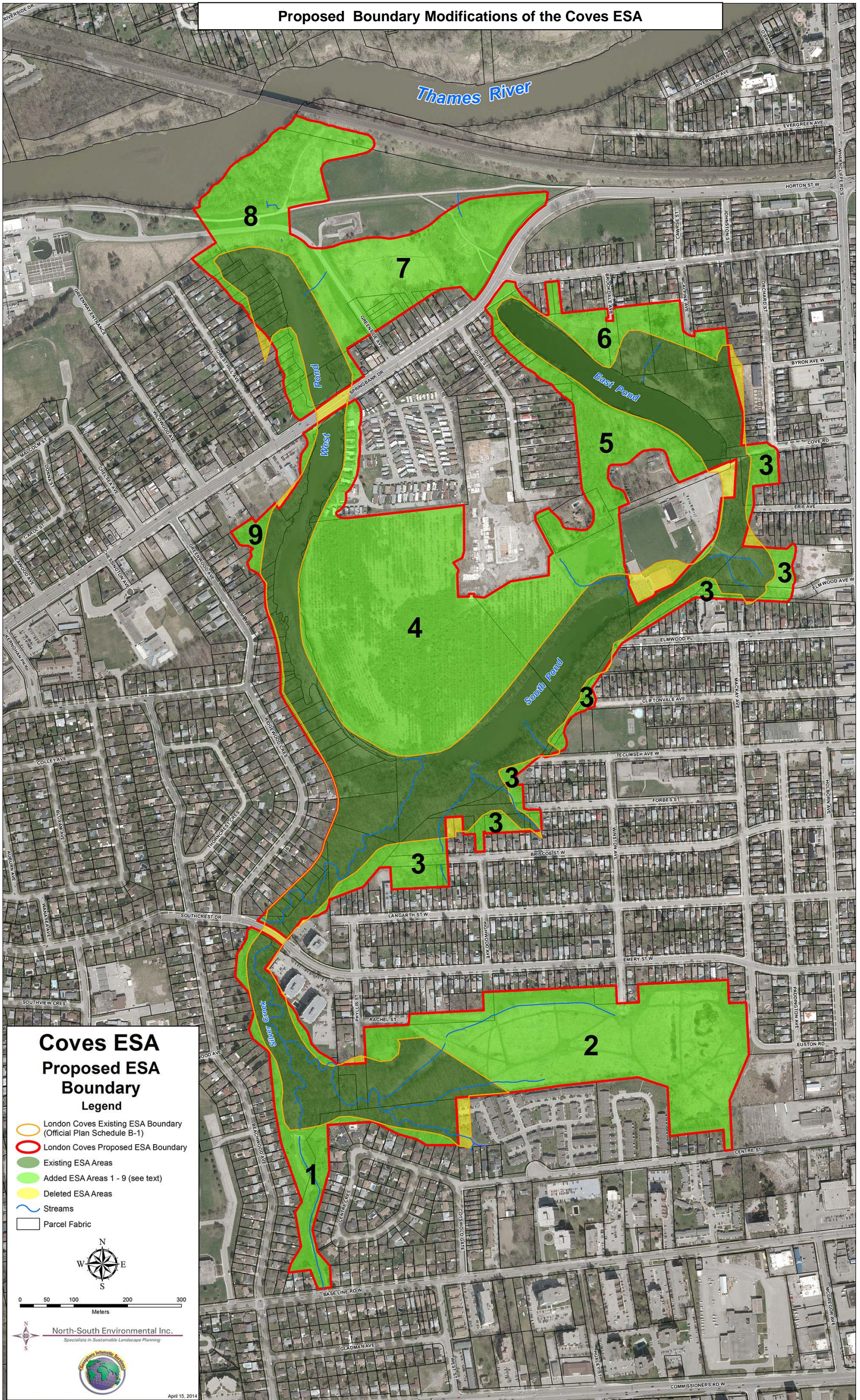
The Coves ESA boundary was reviewed and refined based on the City of London Guidelines Documents for Environmentally Significant Areas Identification, Evaluation and Boundary Delineation (London 1997). The figure below provides an overlay of the existing Coves ESA boundary taken from the City of London Official Plan Schedule B-1 and a new revised boundary proposed for the Coves ESA. Boundary changes have been proposed based on the inclusion of contiguous natural heritage areas and to protect ecological linkage functions as identified through Ecological Land Classification that meet the ecological criteria as outlined in the City of London Guideline Documents.

Future land use planning applications located adjacent to the Coves ESA which are submitted to the City for site plan approval should be evaluated in terms of their potential contribution to the ecological features and functions of the Coves ESA. Where a significant ecological contribution can be made, the protection and acquisition of additional ESA lands may be considered resulting in further refinement of the proposed boundary.

The major changes to the existing boundary and the rationale for these are as follows (refer to figure for areas discussed below):

- Area 1 Includes areas of contiguous woodland, a watercourse which flows in to Silver Creek along with the associated adjacent areas to this watercourse some of which are currently being restored and/or which have the potential to be restored to native woodland (see City of London Boundary Guidelines 4 & 7).
- Area 2 Includes contiguous woodland and areas of a former landfill site being restored to native woodland and open habitat associated with Euston Meadows. Buried infrastructure managing off-gassing of the former landfill remains in place in some areas and requires special consideration for management. Of particular note is the presence of the threatened bird species, eastern meadowlark, recorded as “probable breeding” within the open habitat that characterizes Euston Meadows (see City of London Boundary Guideline 1).
- Area 3 Includes contiguous woodland along the eastern Coves boundary including, steep slopes, top of slope and adjacent tableland areas extending from Biscoe Woods Park to Murray Park, Elmwood Gateway and East Pond (see City of London Boundary Guidelines 1,2 &3).
- Area 4 Includes a large area (>15 ha) of successional woodland and open habitat within an old apple orchard on a floodplain of the Thames River with evidence of old Thames River meander channels (see City of London Boundary Guideline 7).
- Area 5 Includes areas of woodland, shoreline areas of East Pond and an enhanced ecological linkage internal to the Coves ESA from natural areas associated with the East Pond to natural areas located to the south (see City of London Boundary Guidelines 5 & 7).
- Area 6 Includes areas on the east side of the East Pond including contiguous woodland, wetland and areas currently being restored and/or which have the potential to be restored to native woodland and wetland (see City of London Boundary Guidelines 5 & 7).
- Area 7 Includes woodland and managed open habitat (see City of London Boundary Guidelines 5 & 7).
- Area 8 Includes woodland and ecological linkage of Coves ESA to the Thames River (see City of London Boundary Guidelines 5 & 7).
- Area 9 Includes rare Hackberry woodland (see City of London Boundary Guideline 7).





Management Zones within the Coves ESA

The CMP for the Coves ESA includes management zones that have been identified based on the City of London draft Planning and Design Standards for Trails in Environmentally Significant Areas (London 2012). The management zones identified for the Coves ESA shown on the figure below and each management is described below:

Nature Reserve Zone (NR) – For the protection of areas of highest sensitivity which sustain important ecological features and functions that meet the minimum standard of significance for one or more ESA criteria. Nature Reserve Zones includes Species at Risk habitat; provincially rare communities; communities with unique species assemblages; critical wildlife habitat areas; areas of forest interior; special features within evaluated wetlands; groundwater discharge and seepage areas; areas of unique regional geology; aboriginal burial grounds or spiritual sites that are considered highly sensitive to disturbance in which access and recreational uses are not permitted.

Nature Reserve Zone a NRa is the least disturbed area of the Coves ESA due to presence of steep slopes and due to a general lack of access through private property. Significant species and habitat identified in report Section 2 include American Bladdernut, Chinquapin Oak, Hackberry, Black-throated Green Warbler, Ovenbird, a deer bedding area, a vernal pool and a groundwater discharge area. Also present is the ELC community FOD4-3 Dry-Fresh Hackberry Deciduous Forest is a rare community listed as an Imperiled (S2) by the Natural Heritage Information Centre (NHIC).

Nature Reserve Zone b NRb is a relatively undisturbed area characterized by the rare community (S2 imperiled) FOD4-3 Dry-Fresh Hackberry Deciduous Forest, SWD3-3 Maple Mineral Deciduous Swamp and vernal pool.

Nature Reserve Zone c NRc is an area of open habitat that provides nesting and foraging habitat for Eastern Meadowlark, a nationally and provincially threatened species. Eastern Meadowlark is a ground-nester, is area-sensitive, and is highly specific to grassland habitats.

Natural Area Zone 1 – For the protection of areas of moderate to high sensitivity which sustain important ecological features and functions that meet the minimum standard of significance for one or more ESA criteria. Natural Area Zone 1 includes natural terrestrial, wetland and aquatic landscapes and waterscapes with moderate to high sensitivity in which a minimum level of trail development is permitted in support of low-intensity nature-based recreation.

Natural Area Zone 1a NA1a includes a large, diverse and relatively highly used area that includes woodland (FOD5-1 Dry-Fresh Sugar Maple Deciduous Forest), open habitat (CUM1-1 Dry-Moist Old Field Meadow) and manicured areas that are regularly mowed. This zone also includes areas of steep slopes with the main branch and tributary of Silver Creek (also known as Spring Creek), a vernal pool and areas of groundwater discharge. There a number of significant species present including Butternut, Hackberry, Showy Tick-trefoil, Black-throated Green Warbler, Eastern Towhee and Magnolia Warbler,



and of note are open habitat species Eastern Meadowlark and Savannah Sparrow.

Natural Area Zone 1b NA1b includes an area of Cultural Woodland (CUW1) on tableland adjacent to steep slopes associated with Silver Creek. The area is accessible from Briscoe Street West.

Natural Area Zone 1c NA1c is a large area that includes woodland on slopes, natural areas around the East Pond, an enhanced ecological linkage corridor from the East Pond to the South Pond, a large abandoned orchard undergoing natural succession, and open water areas of the East, South and West Ponds.

Natural Area Zone 1d NA1d includes areas of woodland, cultural meadow and open water areas of the West Pond north of Springbank Drive. This area provides a terrestrial linkage from the West Pond of the Coves ESA to the Thames River. NA1d also includes areas currently being restored to woodland and areas managed as open habitat.

Natural Area Zone 2 – For the protection of supporting habitat areas such as shrub thickets, old fields, younger woodlands, and plantations that contribute to diversity, connectivity, internal linkages, visual and spatial buffers, restoration opportunities and ecological integrity of the whole ESA. In general, supporting habitat areas may be expected to have lower sensitivity than Nature Reserve or Natural Area Zone 1. Supporting habitat areas, when directly adjacent to an Access Zone may provide an opportunity for introduction of trails that permit use by persons with disabilities.

Natural Area Zone 2a NA2a includes areas of woodland and open areas on slopes associated with the proposed Elmwood Park Gateway and a buried stormwater utility corridor with an outlet to the South Pond. This area also provides an access point for the Coves ESA.

Natural Area Zone 2b NA2b includes an open mowed area with an existing hiking trail. Restoration area R8 is overlaid on this area to reduce future mowing and restore and enhance natural features and functions.

Natural Area Zone 2c NA2c is a large area in Euston Meadows that supports open habitat classified as Cultural Meadow (CUM1). This area has a restoration overlay (R1) that is intended to maintain open habitat.

Natural Area Zones 2d-f NA2d-f includes open mowed areas with restoration overlays (R3, R4, R5 and R9) which are intended to reduce future mowing and restore and enhance the natural features and functions of these areas.

Cultural Heritage Zone – The protection of cultural heritage landscapes within natural settings is important to safeguard the human–nature interaction. These may include farm complexes which contain important cultural heritage landscapes, historically significant buildings or structures, archaeological sites, mill sites, aboriginal sites, views and vistas. Cultural Heritage Zone applies where a cultural heritage feature is located inside an ESA, but is distinct from the



natural area and/or large enough to warrant a separate zone. Small, isolated cultural heritage features would be recognized and managed within other zones.

Cultural Heritage Zone a CHa is a large abandoned orchard undergoing natural succession, it represents an area of historic agricultural use within the City of London. It also represents an area previously used as a rifle range.

Access Zone – For the provision of controlled access to an ESA locations and/or staging areas are identified for visitors. Key access locations generally include designated parking areas and bike racks with information kiosks to direct users to appropriate trail segments. Secondary access locations have nearby on-street parking and smaller information signs and structures at the trailheads. Access Zones are ideally be located outside of the ESA boundary wherever possible on adjacent parkland. Where an Access Zone must be located within the ESA, every effort should be made to place it close to the edge of the ESA and/or in the area of lowest sensitivity, in order to minimize any impact on ecosystem features and functions.

Access Zone a Aa located at the west end of Euston Meadows provides access to proposed trails from Phyllis Street westward to Beachwood Avenue and eastward to Euston Meadows.

Access Zone b Ab located on the north side of Euston Meadows provides access to proposed trails within the park from Winston Ave and trail connections to Centre Avenue and Euston Road.

Access Zone c Ac located at the west end of Briscoe Street West provides access to an area of tableland woodland within NA2b.

Access Zone d Ad located at Elmwood Gateway provides access to proposed trails extending southward to Elmwood Place and northward to the East Pond.

Access Zone e Ae located at the south end of the East Pond provides access from Cove Road southward to Elmwood Gateway, westward to NA2c and northward to the East Pond.

Access Zone f Af located on the north side of the East Pond provides access from Brookdale Avenue to proposed trails and canoe launch for the East Pond.

Access Zone g Ag located at large parking area in Greenway Park provides access to Coves ESA trails in areas north of Springbank Drive

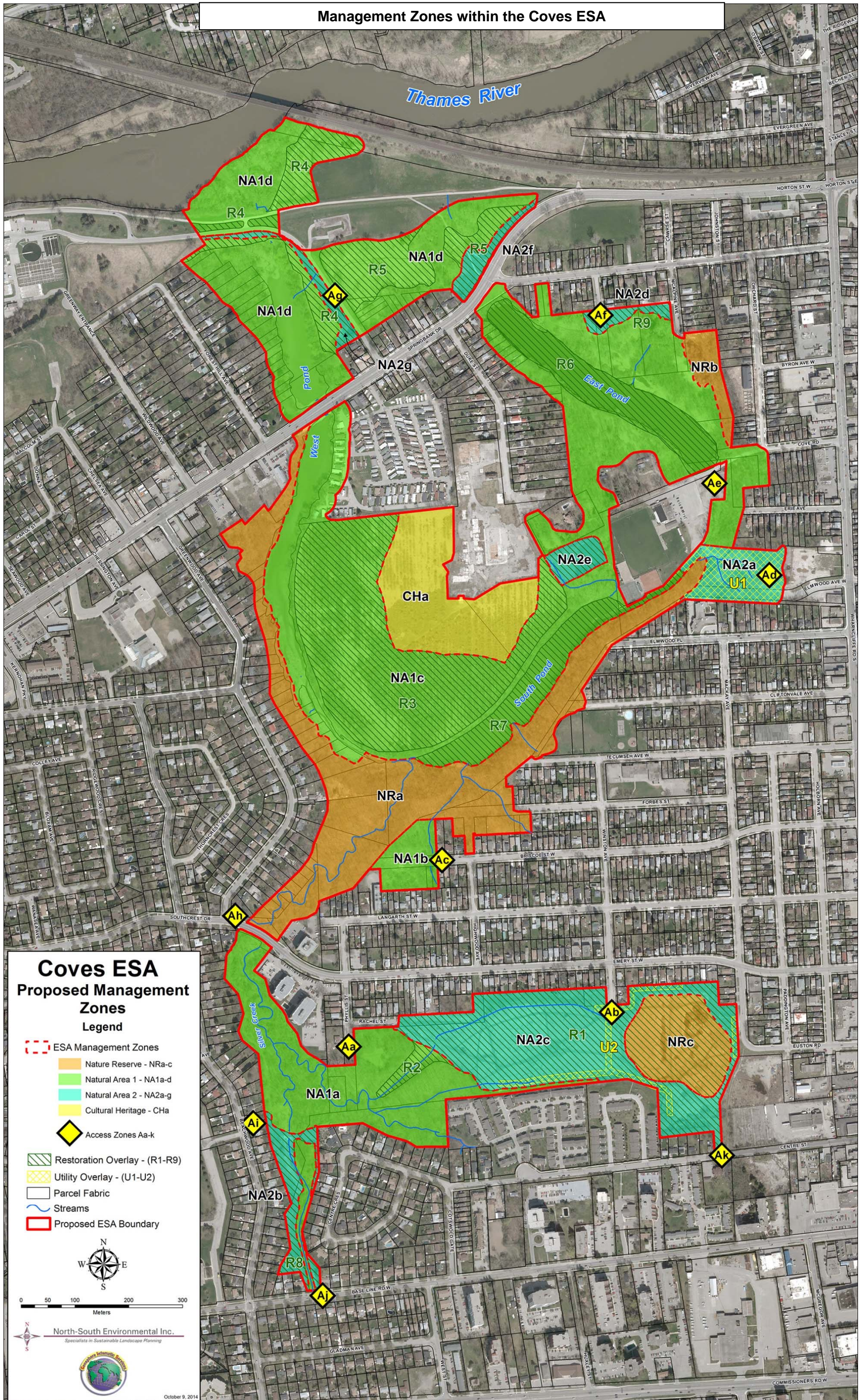
Access Zone h Ah located on Southcrest Drive provides access to the Coves ESA on a trail that runs south from Southcrest Drive

Access Zone i Ai located between residential homes on Beachwood Avenue provides access to the southwest Coves ESA



- Access Zone j** Aj located on Baseline Road West provides access to the Coves ESA on a trail that runs north from Baseline Road West
- Access Zone k** Ak located on Centre Street provides access to the southeast Coves ESA





Management Activities within the Coves ESA

Urban natural areas are not self-sustaining, they require ongoing ecological management and the enforcement of protection by-laws in order to ensure they are maintained as healthy, diverse natural communities and management of public use to provide appropriate and safe recreation opportunities. The long term protection of the Coves ESA is best achieved through the implementation of adaptive management strategies that include issue identification, strategic actions which are prioritized and follow-up monitoring to assess the success and to recommend adjustment to strategic actions as required.

Ecological Restoration within the Coves ESA

There are areas within the Coves ESA that have been identified for active management. These may be areas that require intervention for a variety of reasons such as:

- habitat creation or restoration (e.g. woodland restoration, open habitat restoration, etc.);
- the control of nuisance wildlife (e.g. managing habitat for Canada Geese);
- invasive species control (e.g. removal of European Buckthorn)
- managing open habitat through mowing or prescribed burns; or
- creating or enhancing of specific habitat structures such as nest boxes or platforms, amphibian breeding habitat, snake hibernacula, etc.

Managing Invasive Plant and Animal Species within the Coves ESA

The severity of the threat posed by invasive plants and animals deserves special mention given the widespread occurrence of invasive species and the considerable impact they have on native species and habitats. The removal of aggressive invasive species should be recognized as a priority within all areas of the Coves ESA and is included as an integral part of many of the restoration and trail management recommendations.

Early recognition and removal of invasive species is the most effective and cost efficient method to address invasive species invasions. Where invasive species are well established comprehensive invasive species management plans are required to successfully achieve their removal and restore of affected areas.

On the pages below individual restoration areas are discussed and mapped. These pages should be updated as appropriate to record ongoing management.

Managing Areas with a Utility Overlay within the Coves ESA

Within some areas of the Coves ESA there is a requirement to acknowledge existing infrastructure such as in-ground infrastructure associated landfill off-gassing collection systems, stormwater and sanitary sewer pipes, natural gas pipelines, etc. and above-ground utilities such as hydro-corridors. Areas with a Utility Overlay may require ongoing vehicular access and periodic maintenance that may preclude restoration to the original ecological condition.

On the pages below individual utility overlay areas are discussed and mapped. These pages should be updated as appropriate to record ongoing management.



Managing Encroachment within the Coves ESA

The Coves ESA includes both public and private lands (see figure showing public land ownership in Coves CMP Section 6) within an older area of the City characterized by mixed residential development. Where private yards back on to public natural areas, private land owners may “develop” and/or “manage” natural areas in a variety of different ways for a variety of different reasons. Typical examples include mowing and the removal of understory vegetation, dumping of yard waste, the establishment of ornamental and vegetable garden plots, installation of storage sheds, storage of boats, trailers, the creation of trails, etc., and in extreme cases the construction of more permanent structures such as fences, buildings, decks, swimming pools, and docks on Coves ponds, etc.

The direct impact of encroachment is loss/displacement of habitat and the disruption of natural growth and succession processes. In addition, there often are indirect impacts associated with encroachment, such as the introduction on non-native, invasive species.

There is a need to begin and sustain a broad campaign to prevent, identify, reduce, and correct encroachment. This will include monitoring, reporting, public communication, and enforcement. The monitoring program for the Coves ESA identifies the need to regularly assess the boundary of the ESA to identify all encroachment issues, some of the known encroachment areas within the Coves ESA are identified on the figure provided in Section 2. The Upper Thames River Conservation Authority (UTRCA) will play an important future role in managing the Coves ESA and as such will assist with identifying and reporting encroachment issues and in public education to reduce encroachment.

Pages are provided below to record the location of encroachment and management efforts to address encroachment. These pages should be updated as appropriate to record ongoing management.

Management of Stormwater in the Subwatershed of the Coves ESA

The Coves ESA is located within an older urban neighborhood which was developed without substantial stormwater infrastructure such as stormwater management ponds or the implementation of Low Impact Development initiatives intended to mitigate the negative impact of development on the water cycle (i.e. reduced groundwater infiltration, increased surface water runoff and reduced evapotranspiration). As a result there are significant erosion issues associated with the tributaries of Silver Creek as well as increased sedimentation and poor water quality issues arising from stormwater outlets to the East, South and West Ponds.

Substantial portions of the Coves ESA are regulated by the Upper Thames River Conservation Authority (UTRCA) in accordance with Ontario Regulation 157/06 made pursuant to Section 28 of the *Conservation Authorities Act* (see figure included below). The Regulation Limit is comprised of riverine flooding and erosion hazards as well as wetland features. The UTRCA has jurisdiction over lands within the regulated area and requires that landowners obtain written approval from the Authority prior to undertaking any site alteration or development within this area including filling, grading, construction, alteration to a watercourse and/or interference with a wetland.



Areas of the Coves ESA that are located within floodplain are identified as a “special policy” area within the City’s Official Plan for land use planning. Within the special policy area, existing uses may continue within the Duke Street / Brookdale / McAlpine neighbourhoods but no new development is permitted.

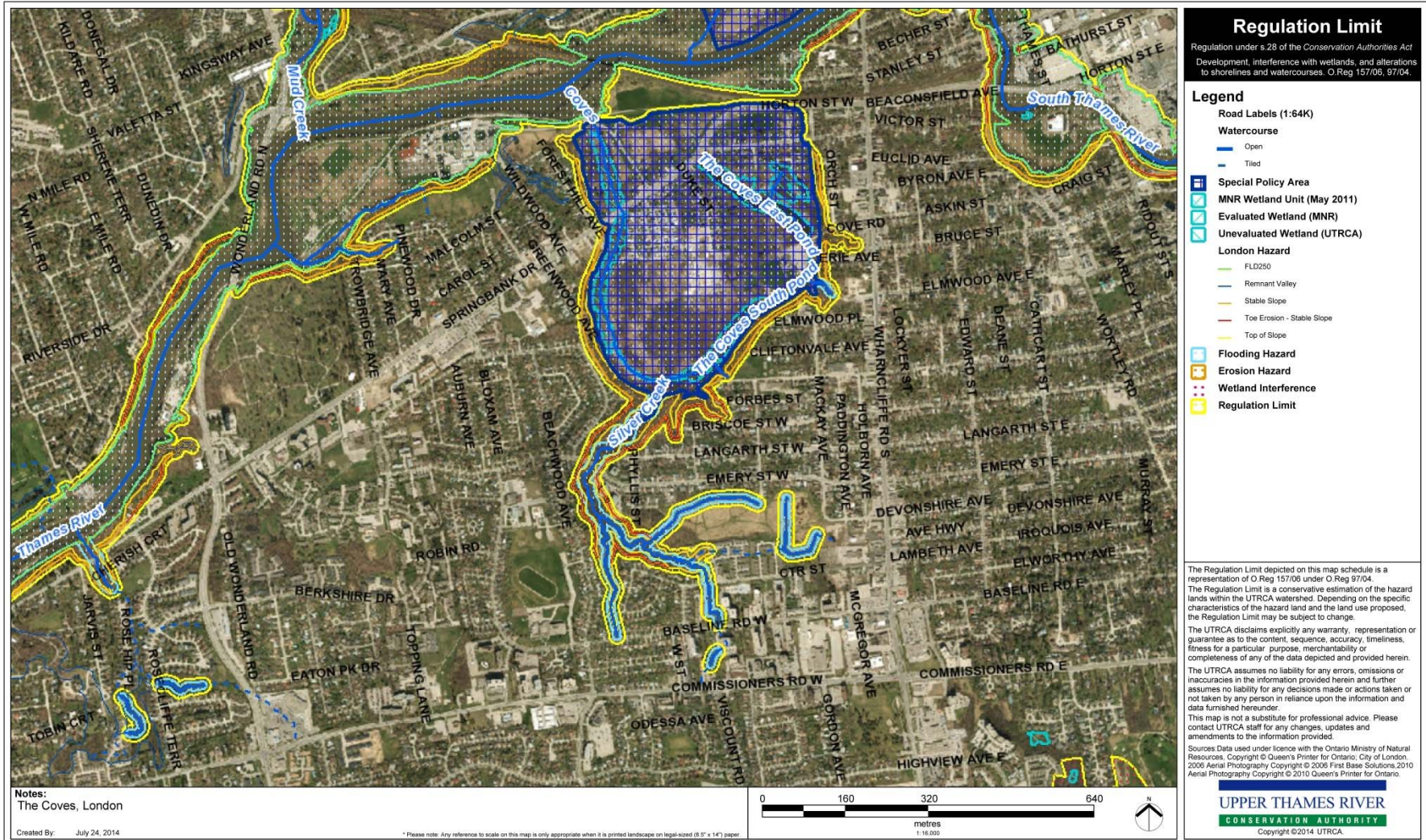
Two important studies have been undertaken within the larger Coves Subwatershed, which includes the Coves ESA and surrounding the surrounding urban neighborhoods, these are:

- Coves Subwatershed Plan (PEIL 2004); and
- Coves Drainage and Remediation Master Plan (Dillon 2003, 2004)

These reports identify stormwater management issues within the Coves subwatershed and provide numerous recommendations that can make an important contribution to an improvement of the aquatic and terrestrial environments of the Coves ESA. The recommendations include both large scale municipal works projects (e.g. upgrades to existing storm sewers, installation of oil/grit separators, etc.) and local initiatives aimed at individual landowners (e.g. homeowner best management practices educational materials, promotion of the use of rain barrels, etc.).

The Coves CMP recognizes and supports the implementation of recommendations provided in these reports.





Management Priorities within the Coves ESA

There are a number of management needs in the Coves ESA that must be phased in over time due to the cost of implementation. The table below identifies the priorities and estimated costs for each management area identified for the Coves ESA. The Upper Thames River Conservation Authority (UTRCA) should be consulted in the development of detailed management plans and prior to implementation as some activities will require approvals pursuant to the *Conservation Authorities Act*.

Management Area	Key Management Issues	Priority for Implementation	Estimated Cost*
R1 Euston Meadow	<ul style="list-style-type: none"> management to maintain open habitat removal of exotic species 	<ul style="list-style-type: none"> high 	Low
R2 Silver Creek Woods	<ul style="list-style-type: none"> restoration of native woodland removal of exotic species 	<ul style="list-style-type: none"> low 	Low
R3 Old Orchard	<ul style="list-style-type: none"> restoration of native woodland removal of exotic species 	<ul style="list-style-type: none"> low 	Medium
R4 Thames River Linkage	<ul style="list-style-type: none"> restoration of native woodland linkage to Thames River 	<ul style="list-style-type: none"> medium 	Medium
R5 Swallowtail Grove	<ul style="list-style-type: none"> management of open habitat 	<ul style="list-style-type: none"> medium 	Low
R6 East Pond	<ul style="list-style-type: none"> enhancement of aquatic habitat shoreline restoration 	<ul style="list-style-type: none"> medium 	High
R7 South Pond	<ul style="list-style-type: none"> enhancement of aquatic habitat removal of silt accumulation 	<ul style="list-style-type: none"> low 	High
U1 Elmwood Stormwater	<ul style="list-style-type: none"> periodic maintenance of stormwater infrastructure periodic maintenance of landfill infrastructure 	<ul style="list-style-type: none"> as required 	High
U2 Euston Meadow Landfill	<ul style="list-style-type: none"> periodic maintenance of landfill infrastructure 	<ul style="list-style-type: none"> as required 	High
Areas of Encroachment	<ul style="list-style-type: none"> education to prevent encroachment bylaw enforcement 	<ul style="list-style-type: none"> high 	Medium

* Estimated cost represents the follow approximate costs: Low <\$20K; Medium \$20 to 100K; High >\$100K

The following pages and the accompanying figures provide detailed information on the environmental features and issues for management areas prioritized for the Coves ESA.



Restoration Overlay R1

Intent of Management for R1

R1 located in association with Euston Meadows is an area of Dry-Moist Old Field Meadow (CUM1-1) habitat which has developed on a reclaimed landfill. This open habitat community supports breeding Eastern Meadowlark, a threatened species that is highly specific to grassland habitats. The long term management objective is to maintain open habitat. Over the long term monitoring and adaptive management will be required to determine when management is required to maintain open habitat, control invasive species and to encourage and supplement native grassland species.

An example management approach and actions for open habitat is provided on the pages below, this presents information on a similar species of concern and management issues.

Management Actions Required for R1

A special note for all management actions within R1 is to ensure any action taken must ensure there is no negative impact on Eastern Meadowlark, including direct impacts during the breeding bird season or indirect impacts that may affect habitat quality.

Also note management actions should be undertaken in consultation with the City of London Park Maintenance Department to ensure the required boulevard mowing is maintained and to ensure maintenance staff are aware of areas identified for restoration where no mowing is required.

The following are the key management actions identified for R1

- Removal of invasive species, particularly European Buckthorn
- Periodic mowing of all areas to reduce the establishment of woody tree and shrub growth
- Adopt an adaptive management approach should be implemented that includes ongoing monitoring of the establishment of woody plants and research to determine the best method(s) for their removal (e.g. mowing, prescribed burning, selective removal).

