Central Lake Ontario Conservation

2012

Wildlife Monitoring Report

What we do on the land is mirrored in the water

Working In Partnership:

DURHAM REGION

Conservation ONTARIO
Natural Champions

Report No.: 2013-01MR

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EXECUTIVE SUMMARY

Wildlife data was collected throughout the CLOCA jurisdiction in 2012, with a particular focus on the Oshawa Creek Watershed. Several of the Conservation Areas were surveyed as well, including Lynde Shores, Heber Down, Long Sault, Purple Woods, and Rahmani Tract. Numerous sensitive species were recorded during the surveys, indicating the presence of higher quality habitats, and several species at risk were identified; at Lynde Shores, Bobolink surveys uncovered the presence of multiple breeding pairs in the Cranberry West tract.

A long-term analysis of the forest bird communities within Heber Down and Long Sault was conducted following the 2012 monitoring season, and it showed them to be in good health. Long Sault scored higher than Heber Down due to its relative isolation from urban influences.

An analysis of the birds recorded in the Oshawa Creek Watershed during the Roadside Bird Surveys shows an abundance of generalist species, such as Song Sparrow, American Robin, and Red-winged Blackbird, reflecting the urban and rural matrix of this watershed and lower forest cover. Several habitats were identified as significant for amphibian breeding during the Roadside Amphibian Surveys, particularly for Wood Frog and Spring Peeper. Most of these were outside the urban envelope however, which likely represents the habitat loss that has occurred within the urban areas but may also be indicative of the negative influences that urban environments have on amphibians, e.g., increased road density and traffic, increased predators (cats), and increased disturbance (people/dogs). One owl was recorded during the Nocturnal Owl Surveys: an Eastern Screech-owl at Purple Woods.

Finally, CLOCA undertook several special projects in 2012, including monitoring road mortality along Victoria Rd at Lynde Shores, inventorying the resources at Rogers Tract, surveying the coastal wetlands for muskrats, and installing a wildlife camera at Long Sault.

Peregrine Falcon at Lynde Shores C.A.
Photo: Jim Skene

1.0 INTRODUCTION

Knowledge about watershed health, and the impacts that development may have on watershed health, is the backbone of all sound planning decisions. In order to facilitate such decisions, the Central Lake Ontario Conservation Authority (CLOCA) conducts long-term monitoring for aquatic and terrestrial conditions, as well as water quality and quantity. The information gathered through these programs enables CLOCA to better understand the existing conditions within a watershed, determine ecological trends over time, and provide guidance to planning agencies to assist them in making informed land-use decisions.

1.1 Background

The CLOCA jurisdiction is approximately 638 km^2 and its boundaries are defined by the 15 watersheds that drain this area into Lake Ontario. 7 of these watersheds are large, originating on the Oak Ridges Moraine. They are grouped into 4 planning watersheds which are:

- Lynde Creek
- Oshawa Creek
- Black-Harmony-Farewell Creeks
- Bowmanville-Soper Creeks

These watersheds, as they have been grouped, define the monitoring areas for watershed management and planning. The remaining watersheds are relatively small, and for monitoring purposes are generally grouped together and labeled “small watersheds”. This grouping, from west to east, includes:

- Cranberry
- Whitby Shores
- Pringle Creek
- Heydenshore
- Corbett Creek
- Goldpoint - Pumphouse
- McLaughlin Bay
- Robinson Creek
- Tooley Creek
- Osbourne
- Darlington Creek
- St. Marys
- Westside Creek
- Bennett Creek

Several unnamed waterfront watersheds are also included in this group (Figure 1).

Seven municipalities are located in whole or in part within the CLOCA jurisdiction. They are the Cities of Oshawa and Pickering, the Towns of Ajax and Whitby, the Municipality of Clarington, and the Townships of Scugog and Uxbridge. CLOCA is entirely located within the Regional Municipality of Durham. The Authority works in partnership with each of these planning agencies to provide information on the terrestrial and aquatic conditions within their boundaries, and assists them in making planning decisions that are consistent with the natural heritage values set out in the Provincial Policy Statement (2005).

Figure 1 depicts the CLOCA jurisdiction, its watersheds, and the lower tier municipalities within its boundaries.

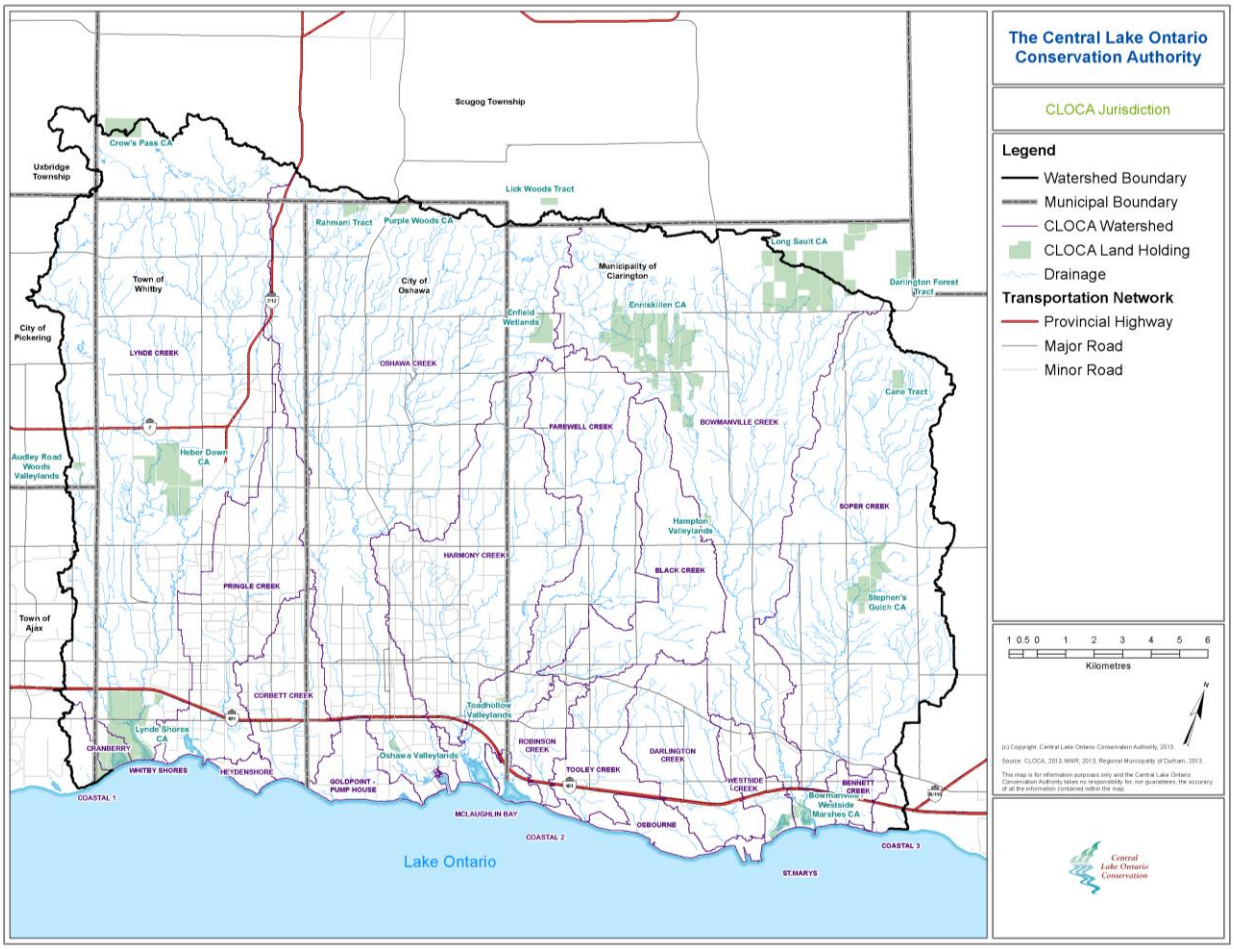


Figure 1: CLOCA jurisdiction.

1.2 Monitoring Wildlife

Wildlife occupy virtually every niche and habitat type in the CLOCA jurisdiction: some species are specialized to one habitat type and others can thrive in almost any habitat, but the presence or absence of any given species can offer some insight into the overall health of an ecosystem. This is the importance of monitoring wildlife in the CLOCA jurisdiction.

Birds and amphibians are the most commonly monitored wildlife because they attract mates using songs, and consequently can be readily counted and identified. Furthermore, both of these wildlife groups contain some individuals that are more sensitive to habitat change or degradation, and others that are more tolerant. The identification of certain species in a monitoring location, therefore, can be used to assess the overall quality of that habitat.

Knowing where high quality habitats exist in a watershed is important not only for assessing the overall health of each watershed, but also improving land management and guiding development. Without this knowledge, sensitive habitat and the wildlife that depend on them are at risk of being lost.

2.0 Bird Monitoring

2.1 Conservation Area Management

Bird monitoring has occurred in each of CLOCA's Conservation Areas in the past; however, due to resource constraints it is not possible to conduct bird monitoring annually at every location. Consequently, CLOCA's Conservation Area bird monitoring program is generally set up to coincide with the development of Conservation Area and Watershed Management Plans so that current data can be incorporated into these documents.

As Table 1 outlines, Lynde Shores, Heber Down, Long Sault, Purple Woods, Bowmanville-Westside Marshes, and Rahmani Tract were targeted for bird monitoring in 2012.

Table 1: Bird monitoring efforts within CLOCA's Conservation Areas

Conservation Area	2012 Bird Monitoring (Program*)
Audley Road Woods Valleylands	No
Bowmanville-Westside Marshes	Yes (MMP)
Cane Tract	No
Crow's Pass	No
Enniskillen Valley	No
Hampton Pond	No
Heber Down	Yes (FBMP)
Long Sault	Yes (FBMP)
Lynde Shores	Yes (MMP/Cranberry West Tract - CAMP)
Purple Woods	Yes (CAMP)
Rahmani Tract	Yes (CAMP)
Stephen's Gulch	No

*MMP (Marsh Monitoring Program); FBMP (Forest Bird Monitoring Program); CAMP (Conservation Area Management Planning)

The rationale for this monitoring schedule is as follows:

- The Lynde Creek and Cranberry Marshes, part of Lynde Shores C.A., and the Bowmanville and Westside Marshes, part of the Bowmanville-Westside Marshes C.A., are coastal wetlands; therefore, they are monitored annually as part of the Durham Coastal Wetland Monitoring Project (DRCWMP).
- Some terrestrial components of the Lynde Shores C.A, namely the lands west of Halls Rd (Cranberry West Tract) were monitored specifically for Bobolink in 2012.
- Heber Down and Long Sault C.A.s are monitored annually as part of Environment Canada's Forest Bird Monitoring Program (FBMP).
- The Oshawa Creek Watershed was targeted for monitoring in 2012, so Purple Woods and Rahmani Tract, which fall within this watershed, were monitored as well.

2.1.1 Durham Region Coastal Wetland Monitoring Project

Wildlife data collected through the DRCWM Project is published periodically by Environment Canada. Please refer to their website for publications relating to this project.

2.1.2 Forest Bird Monitoring Program

Every year, CLOCA participates in the Ontario Forest Bird Monitoring Program, which is run by Environment Canada – Canadian Wildlife Service (CWS). Two of CLOCA's Conservation Areas, Heber Down and Long Sault, are included in the program, and have been monitored annually since 2005 (see figures 2 and 3). Data collected at these sites is used by CWS to assess population trends and habitat associations of forest interior breeding birds across the province.

2.1.2.1 Heber Down Conservation Area

The results of the FBMP at Heber Down in 2012 are listed in Table 2, and do not differ greatly from the data gathered in previous years. As always, forest interior and area-sensitive species were recorded throughout the forest block, including Black-throated Green Warbler, Ovenbird, Broad-winged Hawk, Brown Creeper, Pileated Woodpecker, Winter Wren, and Northern Waterthrush. A Barred Owl was also observed in the forest, though not during any of the point counts.

No provincial Species at Risk (SAR) were observed at Heber Down; however, Wood Thrush and Eastern Wood-pewee, both listed federally, were recorded.

Table 2: Forest Bird Monitoring Program results for Heber Down C.A. (2012)

Common Name	Scientific Name	COSEWIC	COSSARO	NHIC
Station A				
American Robin	*Turdus migratorius*			
Black-capped Chickadee	*Poecile atricapillus*			
Black-throated Green Warbler*	*Dendroica virens*			
Ovenbird*	*Seiurus aurocapillus*			
Red-eyed Vireo	*Vireo olivaceus*			
Wood Thrush	*Hylocichla musteli*	T		
Station B				
American Robin	*Turdus migratorius*			
Black-capped Chickadee	*Poecile atricapillus*			
Black-throated Green Warbler*	*Dendroica virens*			
Blue Jay	*Cyanocitta cristata*			
Broad-winged Hawk*	*Buteo platypterus*			
Eastern Wood-pewee	*Contopus virens*	S		
Ovenbird*	*Seiurus aurocapillus*			
Red-eyed Vireo	*Vireo olivaceus*			
Wood Thrush	*Hylocichla musteli*	T		
Station C				
American Robin	*Turdus migratorius*			
Black-capped Chickadee	*Poecile atricapillus*			
Black-throated Green Warbler*	*Dendroica virens*			
Blue Jay	*Cyanocitta cristata*			

Common Name	Scientific Name	COSEWIC	COSSARO	NHIC
Broad-winged Hawk*	*Buteo platypterus*			
Brown Creeper*	*Certhia america*			
Cedar Waxwing	*Bombycilla cedrorum*			
Eastern Wood-pewee	*Contopus virens*	S		
Great Crested Flycatcher	*Myiarchus crinitus*			
Ovenbird*	*Seiurus aurocapillus*			
Red-eyed Vireo	*Vireo olivaceus*			
White-breasted Nuthatch*	*Sitta carolinensis*			
Wood Thrush	*Hylocichla musteli*	T		
Station D				
Great Crested Flycatcher	*Myiarchus crinitus*			
Northern Waterthrush*	*Seiurus noveboracensis*			
Black-capped Chickadee	*Poecile atricapillus*			
Blue Jay	*Cyanocitta cristata*			
Cedar Waxwing	*Bombycilla cedrorum*			
Great Crested Flycatcher	*Myiarchus crinitus*			
Ovenbird*	*Seiurus aurocapillus*			
Pileated Woodpecker*	*Dryocopus pileatus*			
Red-eyed Vireo	*Vireo olivaceus*			
Wood Thrush	*Hylocichla musteli*	T		
Station E				
American Goldfinch	*Carduelis tristis*			
Black-capped Chickadee	*Poecile atricapillus*			
American Robin	*Turdus migratorius*			
Blue Jay	*Cyanocitta cristata*			
Brown Creeper*	*Certhia america*			
Cedar Waxwing	*Bombycilla cedrorum*			
Eastern Wood-pewee	*Contopus virens*	S		
Great Crested Flycatcher	*Myiarchus crinitus*			
Northern Waterthrush*	*Seiurus noveboracensis*			
Ovenbird*	*Seiurus aurocapillus*			
Pileated Woodpecker*	*Dryocopus pileatus*			
Red-eyed Vireo	*Vireo olivaceus*			
Winter Wren*	*Troglodytes troglodytes*			
Wood Thrush	*Hylocichla musteli*	T		
Station F				
American Robin	*Turdus migratorius*			
Blue Jay	*Cyanocitta cristata*			
Brown Creeper*	*Certhia america*			
Cedar Waxwing	*Bombycilla cedrorum*			
Great Crested Flycatcher	*Myiarchus crinitus*			
Northern Waterthrush*	*Seiurus noveboracensis*			
Ovenbird*	*Seiurus aurocapillus*			
Red-eyed Vireo	*Vireo olivaceus*			
Winter Wren*	*Troglodytes troglodytes*			

*Species that are Area Sensitive/Forest Interior; Species in bold are considered *Probable Breeders*

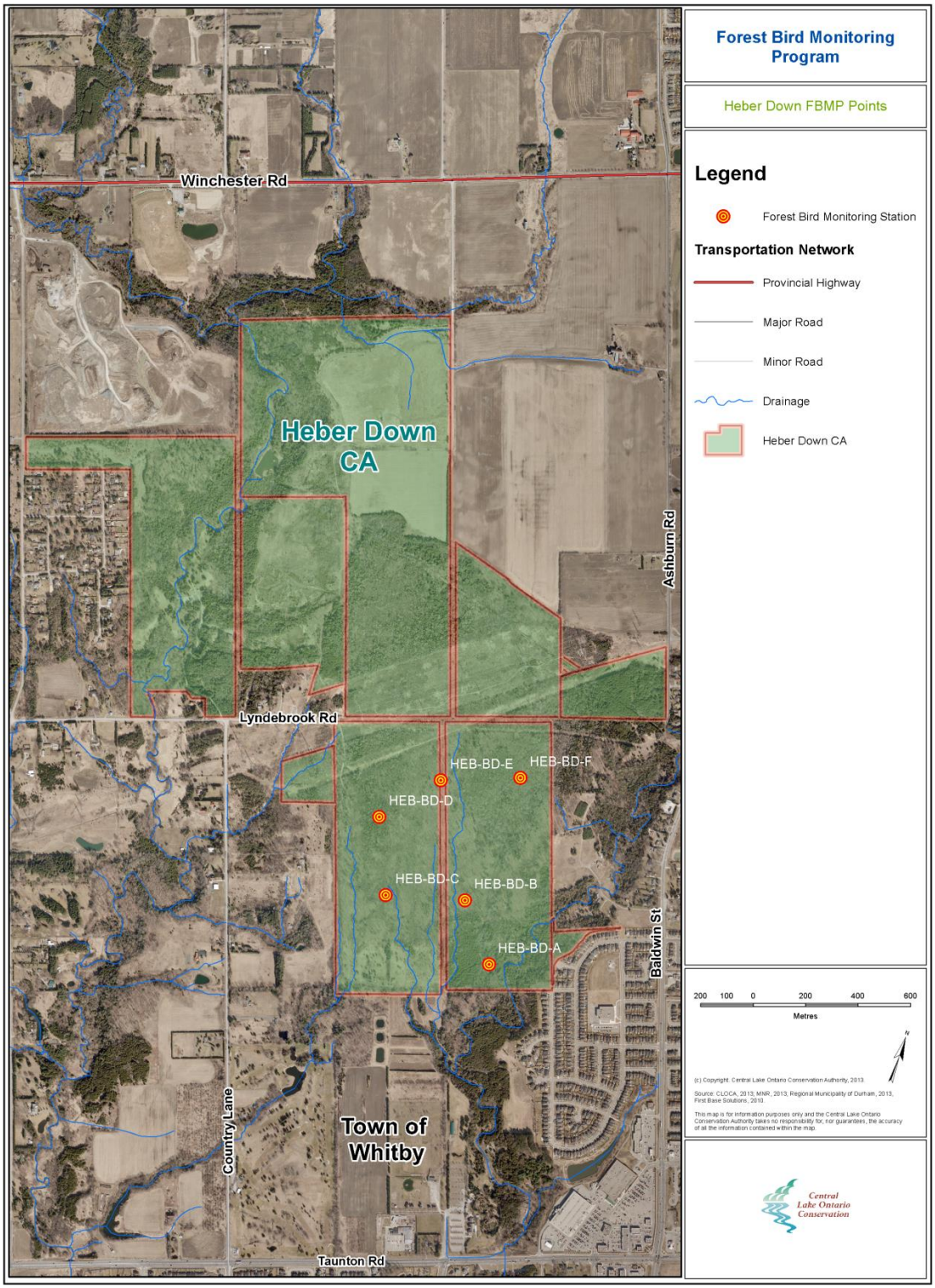


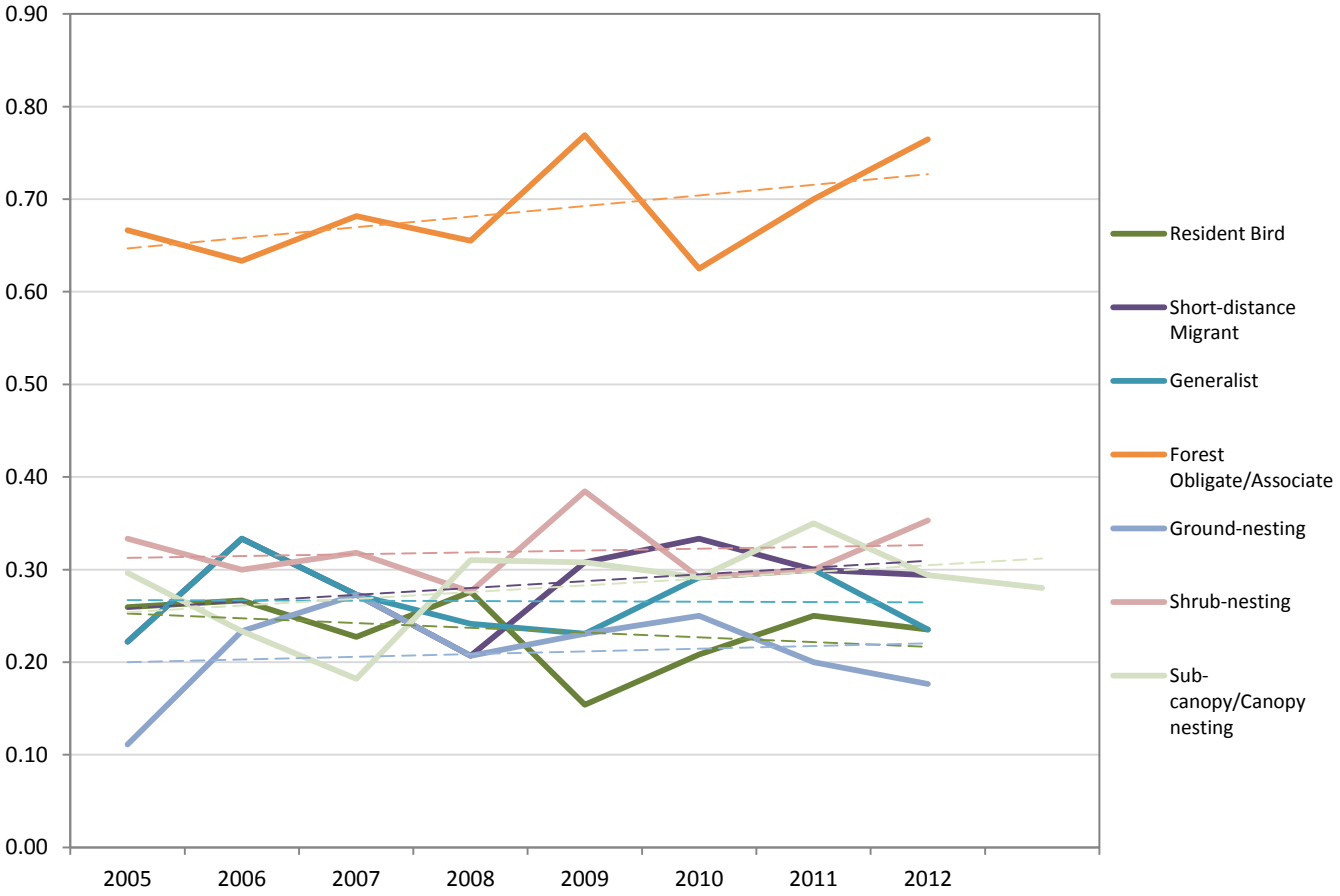
Figure 2: Forest Bird Monitoring Program point count locations at Heber Down C.A.

Evaluating Forest Health

An analysis of bird community integrity was undertaken for Heber Down, following a draft methodology developed by Credit Valley Conservation (K. Bavlric, pers. comm). This analysis, which groups bird species into 7 guilds and uses proportional abundance to assign scores (0-2) to the guilds, shows the bird communities at Heber Down to be in Good health. Over the past 8 years, the bird community scores for the forest have ranged between 64 and 79 out of 100; a score of 66 or greater being good.

The 7 guilds for the analysis are as follows: Resident Birds, Short-distance Migrants, Generalists, Forest Obligates/Associates, Ground Nesting, Shrub Nesting, and Sub-canopy/Canopy Nesting. When the proportional abundance of the species in each guild is graphed over the 8 years that Heber Down has been monitored, it shows that there is a slight increase in forest obligate/associate species, but little change in the proportional abundance of the other guilds over time (figure 3).

Figure 3: Graph showing proportional abundance of species in each guild between 2005 and 2012.

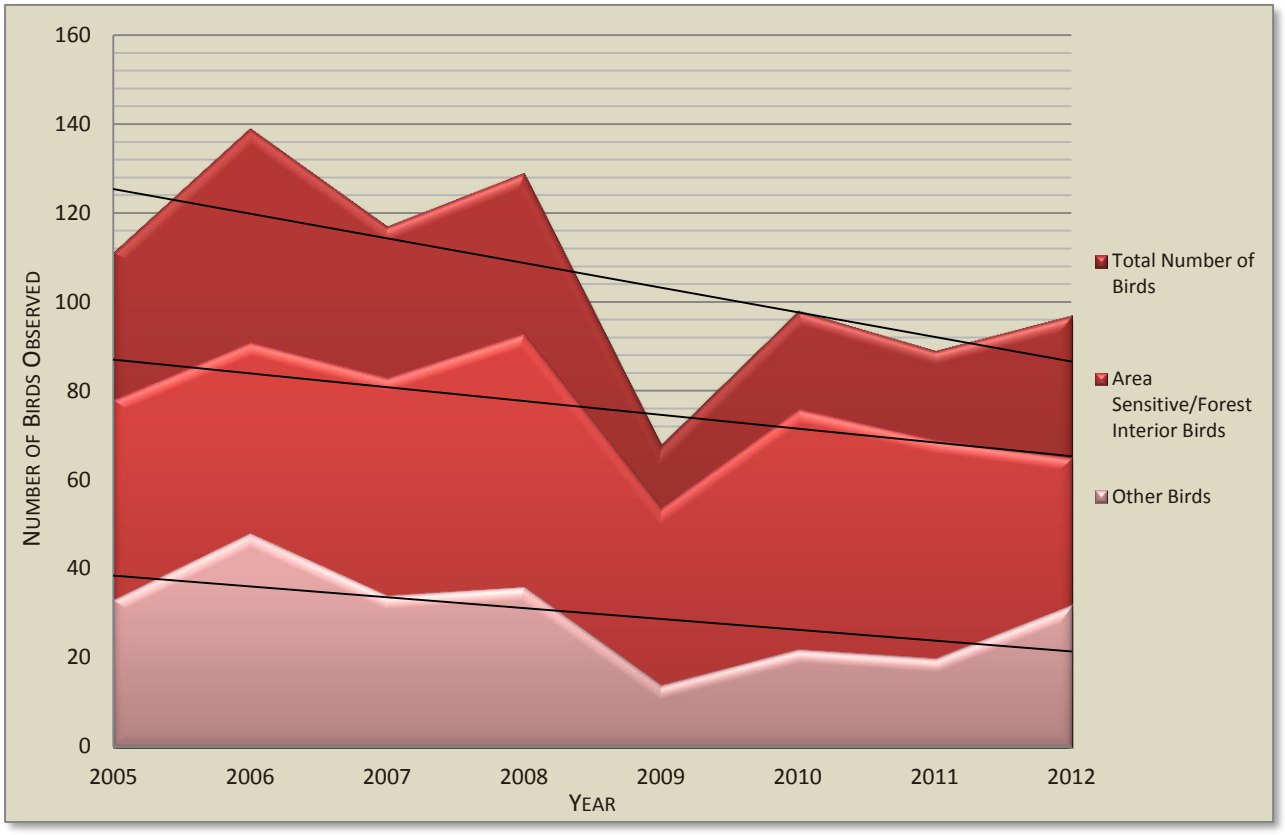


Conversely, a graph of the total number of area sensitive/forest interior and other birds observed at Heber Down over the past 8 years shows a slight decline (figure 4). Area sensitive/forest interior birds are species that only breed in larger forests or in forests with forest interior conditions; as such, they

represent a forest's ability to provide specialized habitat. At Heber Down, these species consistently outnumber non-area sensitive and non-forest interior species, which is good; however, for both groups, and consequently for the total, decreased numbers of individuals were recorded over time. The declines appear to be similar for both area sensitive/forest interior and non-area sensitive/non-forest interior species, which may imply that the declines are not related to Heber Down specifically, e.g., result of local or regional changes. Unfortunately this cannot be verified as there are no nearby sites with which to compare this data.

One dataset of note is 2009, as it appears that there was a marked drop in the number of individuals recorded in that year. This happens to be the same year that a change in observers occurred, so this 'blip' is most likely the result of that change. A new observer may be unfamiliar with the site or less experienced with bird monitoring, which can affect the number or species of birds that are recorded, and it is for this reason that monitoring protocols encourage long-term monitoring routes to be visited by the same person every year.

Figure 4: Graph showing area sensitive/forest interior, generalist, and total number of birds observed for each FBMP year at Heber Down C.A. (2005-2012).

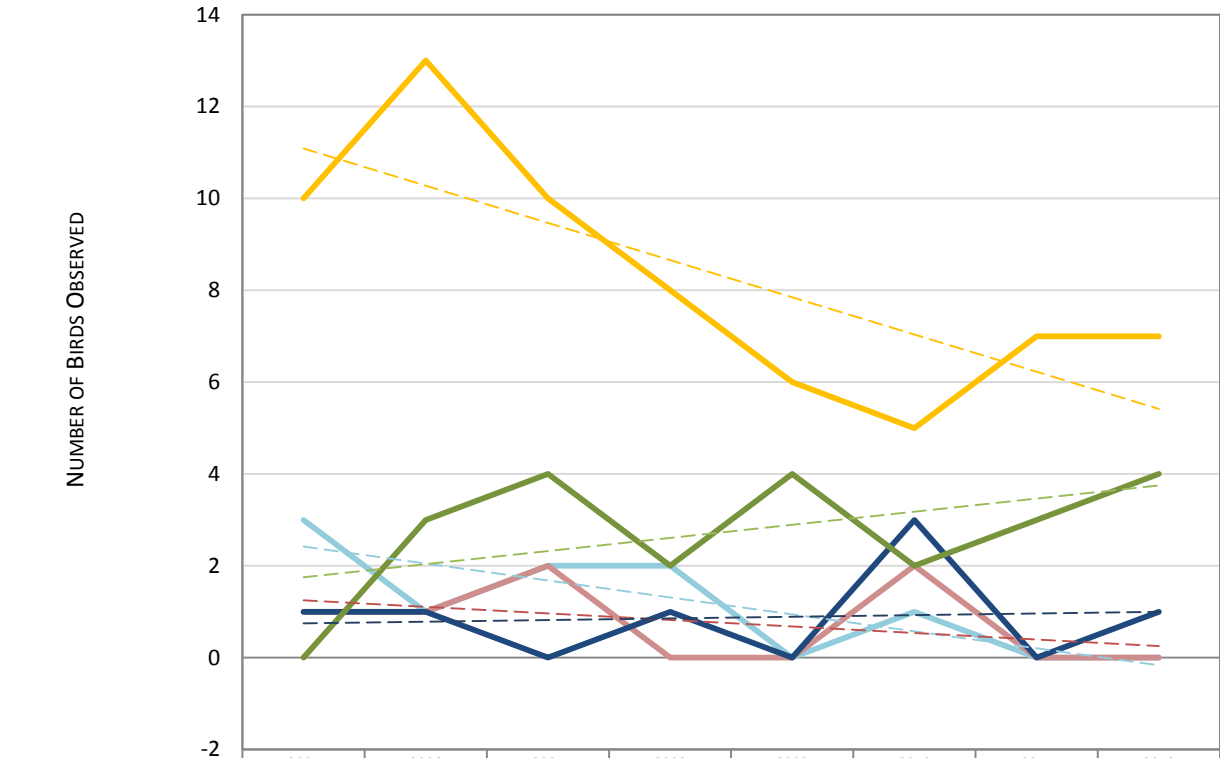


Although the trendlines displayed in figures 3 and 4 are interesting, and do provide insight into changes over time, they have not been statistically evaluated; therefore, it is unknown if the changes in

proportional abundance or number of birds observed are significant. The data collected through the FBMP is statistically analyzed by CWS, however, and they note in their 2008 newsletter that between 1987 and 2006, numerous species showed significant declines including Black-capped Chickadee, Downy Woodpecker, Northern Flicker, White-breasted Nuthatch, and Winter Wren (EC, 2008).

Figure 5 shows the abundance of these 5 species between 2005 and 2012 for Heber Down. As before, no significance can be associated with the dashed trendlines shown, but they do demonstrate a decline in the number of Black-capped Chickadees, as well as a slight decrease in the observation incidence of Downy Woodpecker. Northern Flicker and White-breasted Nuthatch numbers appear to have changed very little over time, while Winter Wren numbers seem to be increasing at Heber Down.

Figure 5: Observation trends at Heber Down for species identified as declining in Ontario by E.C.

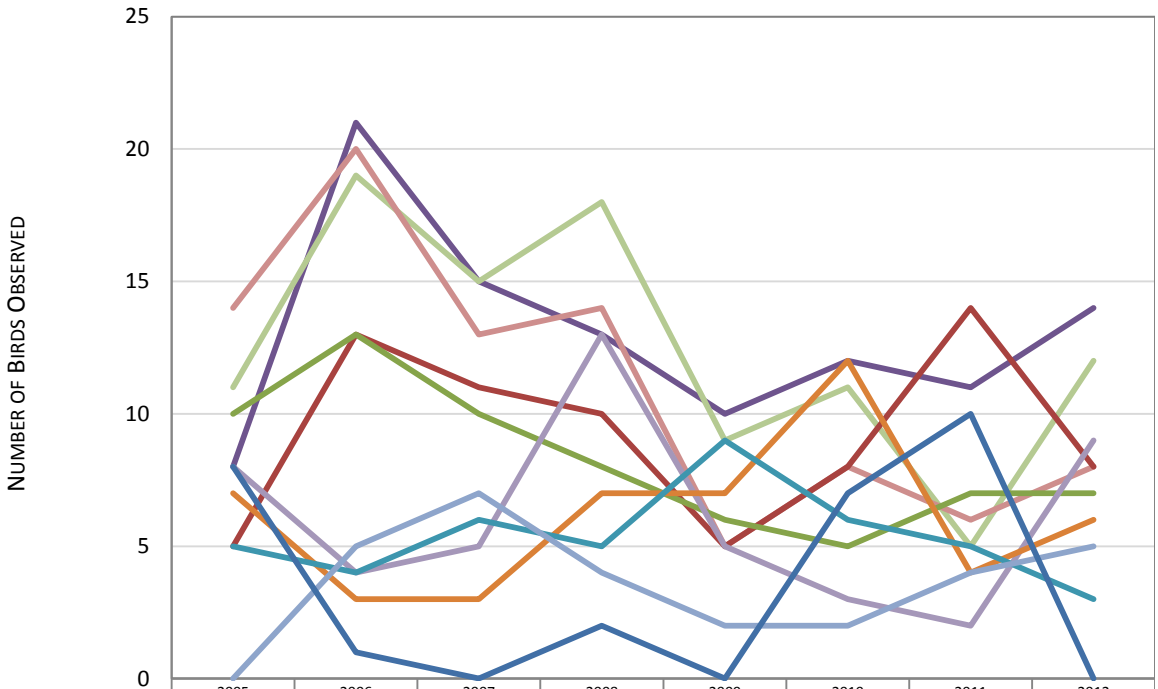


	2005	2006	2007	2008	2009	2010	2011	2012
Black-capped Chickadee	10	13	10	8	6	5	7	7
Downy Woodpecker	3	1	2	2	0	1	0	0
Northern Flicker	1	1	2	0	0	2	0	0
White-breasted Nuthatch	1	1	0	1	0	3	0	1
Winter Wren	0	3	4	2	4	2	3	4

In 2007, the ten most common species recorded across the province were Red-eyed Vireo, Ovenbird, Black-capped Chickadee, Blue Jay, American Robin, American Crow, Veery, Great Crested Flycatcher, Eastern Wood-pewee, and American Goldfinch (EC, 2008). All of these species have been recorded at Heber Down C.A. in the past, and the top 10 species recorded at Heber Down (in terms of abundance)

over the last 8 years is very similar. Wood Thrush and Northern Waterthrush replace American Goldfinch and Veery on the list, but this is not concerning, as forest types vary and not every forest will have the same species represented.

Figure 6: Graph depicting the top ten species observed at Heber Down C.A. between 2005 and 2012.



	2005	2006	2007	2008	2009	2010	2011	2012
Blue Jay	8	21	15	13	10	12	11	14
Red-eyed Vireo	11	19	15	18	9	11	5	12
Ovenbird	14	20	13	14	5	8	6	8
American Robin	5	13	11	10	5	8	14	8
Black-capped Chickadee	10	13	10	8	6	5	7	7
Wood Thrush	8	4	5	13	5	3	2	9
Great Crested Flycatcher	7	3	3	7	7	12	4	6
Eastern Wood-pewee	5	4	6	5	9	6	5	3
Northern Waterthrush	0	5	7	4	2	2	4	5
American Crow	8	1	0	2	0	7	10	0

Overall, the bird community health at Heber Down C.A. seems to be good, and the overall health scores do not show this to be declining. It continues to support a diversity of area sensitive and forest interior birds, many of which are probable breeders, and the declines that are observed in the number of species observed may be amplified as a result of a change in surveyor as opposed to an actual decline in species abundance.

2.1.2.2 Long Sault Conservation Area

Table 3 lists the results of the FBMP at Long Sault in 2012, and once again, the species observed this year do not differ greatly from the species observed in previous years. Forest interior and area-sensitive species are recorded throughout the forest block, including Ovenbird, Black-throated Blue Warbler, Scarlet Tanager, Red-breasted Nuthatch, Pine Warbler, and Veery. This list varies significantly from the list of species observed at Heber Down (table 2), but is not surprising since it is an upland forest in a much less urban-influenced area.

No provincial Species at Risk (SAR) were observed at Long Sault; however, Wood Thrush and Eastern Wood-pewee, both listed federally, were recorded.

Table 3: Forest Bird Monitoring Program results for Long Sault C.A. (2012)

Common Name	Scientific Name	COSEWIC	COSSARO	NHIC
Station A				
American Goldfinch	*Carduelis tristis*			
Black-throated Blue Warbler*	*Dendroica caerulescens*			
Black-throated Green Warbler*	*Dendroica virens*			
Blue Jay	*Cyanocitta cristata*			
Eastern Wood-pewee	*Contopus virens*	S		
Ovenbird*	*Seiurus aurocapillus*			
Red-eyed Vireo	*Vireo olivaceus*			
Station B				
American Crow	*Corvus brachyrhynchos*			
American Goldfinch	*Carduelis tristis*			
Black-throated Blue Warbler*	*Dendroica caerulescens*			
Black-throated Green Warbler*	*Dendroica virens*			
Eastern Wood-pewee	*Contopus virens*	S		
Ovenbird*	*Seiurus aurocapillus*			
Red-eyed Vireo	*Vireo olivaceus*			
Scarlet Tanager*	*Piranga olivacea*			
Station C				
American Goldfinch	*Carduelis tristis*			
Black-throated Blue Warbler*	*Dendroica caerulescens*			
Black-throated Green Warbler*	*Dendroica virens*			
Eastern Wood-pewee	*Contopus virens*	S		
Ovenbird*	*Seiurus aurocapillus*			
Pine Warbler*	*Dendroica pinus*			
Red-breasted Nuthatch*	*Sitta cadensis*			
Red-eyed Vireo	*Vireo olivaceus*			
Scarlet Tanager*	*Piranga olivacea*			
Wood Thrush	*Hylocichla musteli*	T		
Station D				
American Crow	*Corvus brachyrhynchos*			
Black-capped Chickadee	*Poecile atricapillus*			
Black-throated Green Warbler*	*Dendroica virens*			
Blue Jay	*Cyanocitta cristata*			

Common Name	Scientific Name	COSEWIC	COSSARO	NHIC
Eastern Wood-pewee	*Contopus virens*	S		
Great Crested Flycatcher	*Myiarchus crinitus*			
Ovenbird*	*Seiurus aurocapillus*			
Pine Warbler*	*Dendroica pinus*			
Red-eyed Vireo	*Vireo olivaceus*			
Scarlet Tanager*	*Piranga olivacea*			
Wood Thrush	*Hylocichla musteli*	T		
Station E				
American Robin	*Turdus migratorius*			
Eastern Wood-pewee	*Contopus virens*	S		
Ovenbird*	*Seiurus aurocapillus*			
Philadelphia Vireo	*Vireo philadelphicus*			
Pileated Woodpecker*	*Dryocopus pileatus*			
Red-breasted Nuthatch*	*Sitta cadensis*			
Red-eyed Vireo	*Vireo olivaceus*			
Scarlet Tanager*	*Piranga olivacea*			
Station F				
American Crow	*Corvus brachyrhynchos*			
American Goldfinch	*Carduelis tristis*			
Blue Jay	*Cyanocitta cristata*			
Chestnut-sided Warbler	*Dendroica pensylvanica*			
Eastern Wood-pewee	*Contopus virens*	S		
Great Crested Flycatcher	*Myiarchus crinitus*			
Mourning Dove	*Zeida macroura*			
Mourning Warbler	*Oporornis philadelphia*			
Nashville Warbler	*Vermivora ruficapilla*			
Ovenbird*	*Seiurus aurocapillus*			
Pileated Woodpecker*	*Dryocopus pileatus*			
Pine Warbler*	*Dendroica pinus*			
Red-breasted Nuthatch*	*Sitta cadensis*			
Red-eyed Vireo	*Vireo olivaceus*			
Veery*	*Catharus fuscescens*			
Wood Thrush	*Hylocichla musteli*	T		

*Species that are Area Sensitive/Forest Interior; Species in bold are considered *Probable Breeders*

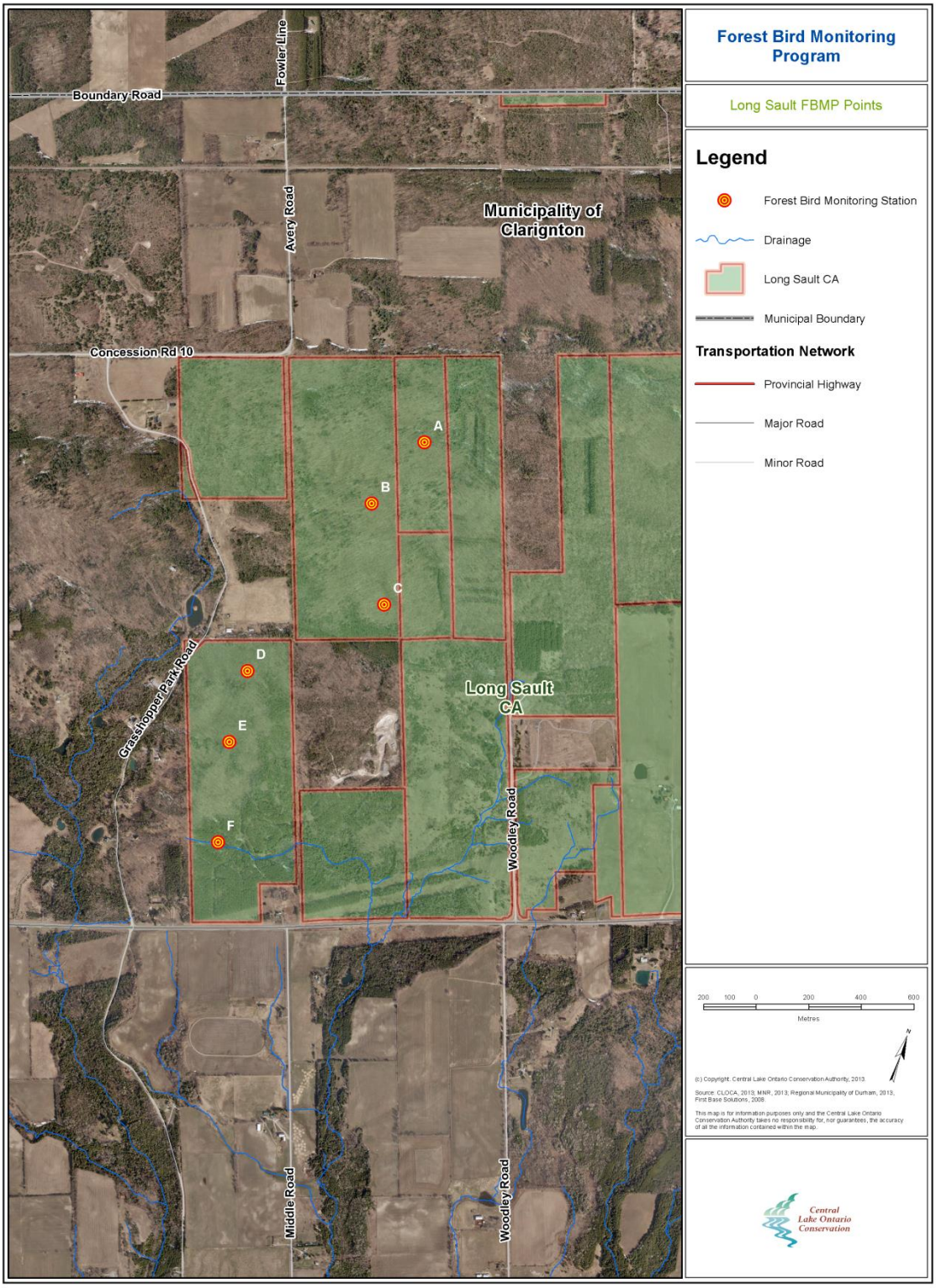


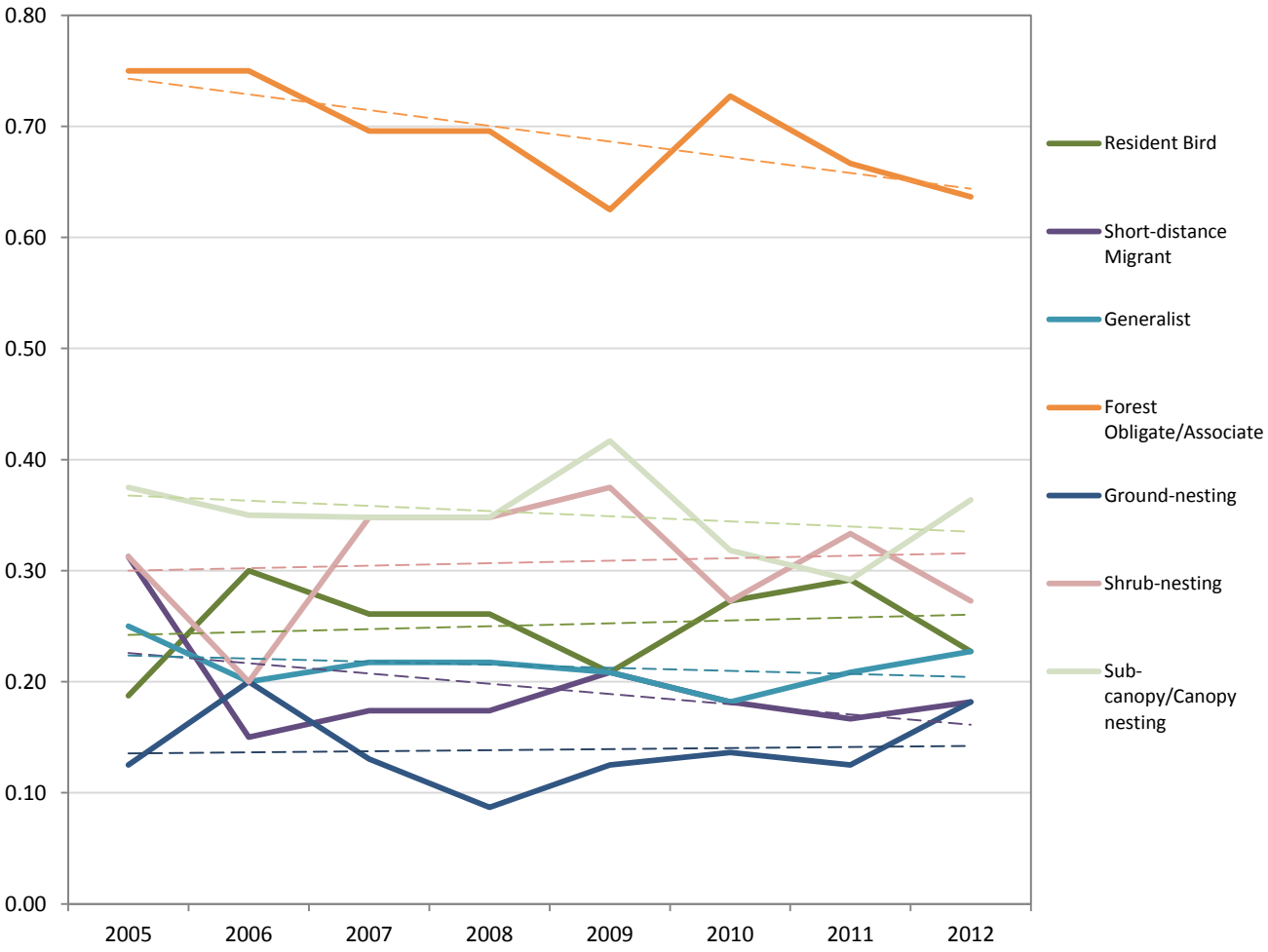
Figure 7: Forest Bird Monitoring Program point count locations at Long Sault C.A.

Evaluating Forest Health

The same analysis of bird community integrity, as described in section 2.1.2.1, was also undertaken for Long Sault, and it shows the bird communities at Long Sault to be in good health as well. The bird community scores ranged from 71 to 93 out of 100; a score of 66 or greater being good. Compared to Heber Down, the overall scores at Long Sault are higher, and this likely reflects the size of Long Sault, its proximity to other natural areas, such as Ganaraska Forest, and the lack of urban influences in the area.

A graph of the 7 guilds used to assess bird community integrity is featured in figure 8: it shows a decline in the proportional abundance of forest obligate/associate species, but, like Heber Down, shows little change in the remaining guilds over time. It is unknown if the change in proportion of forest obligate/associates is significant, but this decline is not reflected in species abundance as shown in figure 9.

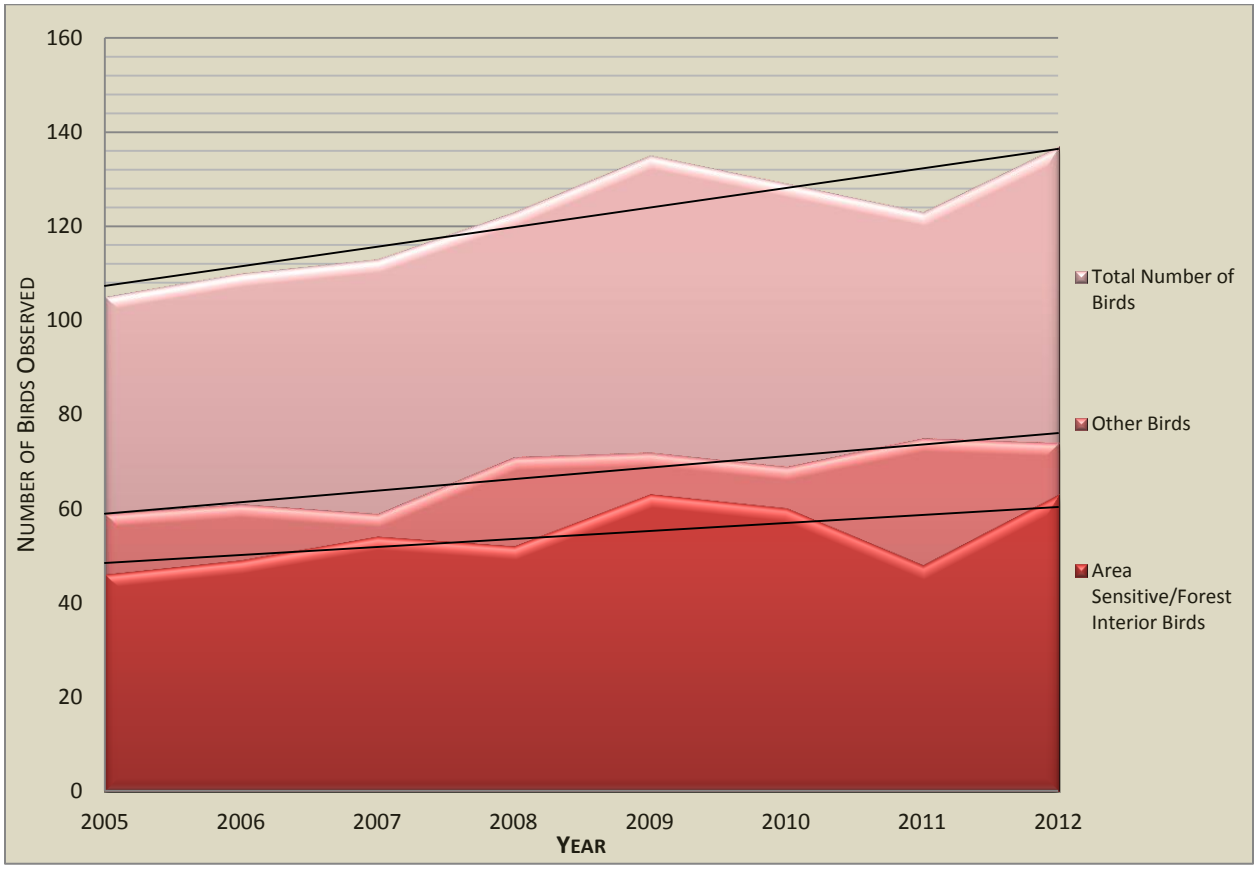
Figure 8: Graph showing proportional abundance of species in each guild between 2005 and 2012.



Unlike the graph for Heber Down, the numbers for both area sensitive/forest interior and non-area sensitive/non-forest interior birds at Long Sault appear to be increasing over time. Also unlike Heber Down, the number of non-area sensitive and non-forest interior species recorded is higher than the number of area sensitive/forest interior species recorded. This is somewhat surprising, but may simply be a reflection of the different forest communities that are present at Long Sault. In particular, plantations, which do not exist at the Heber Down FBMP site, tend to be less structurally diverse and may not provide the forest interior conditions required by forest interior birds. This would reduce the overall number of forest specialists present, and may even increase the abundance of birds in the other category if suitable habitat is present in such vegetation communities.

It is also worth noting that forest obligate/associate species, as used in figure 8, are not necessarily area sensitive or forest interior birds, so the differences between figures 8 and 9 are not unexpected. Area sensitive/forest interior birds have more specific habitat requirements than forest obligate/associate species, and are a subset of the forest obligate/associate category. In a habitat quality analysis, they provide additional insight into how a forest is functioning, e.g., confirmation that the forest interior conditions expected in a habitat patch are in fact present.

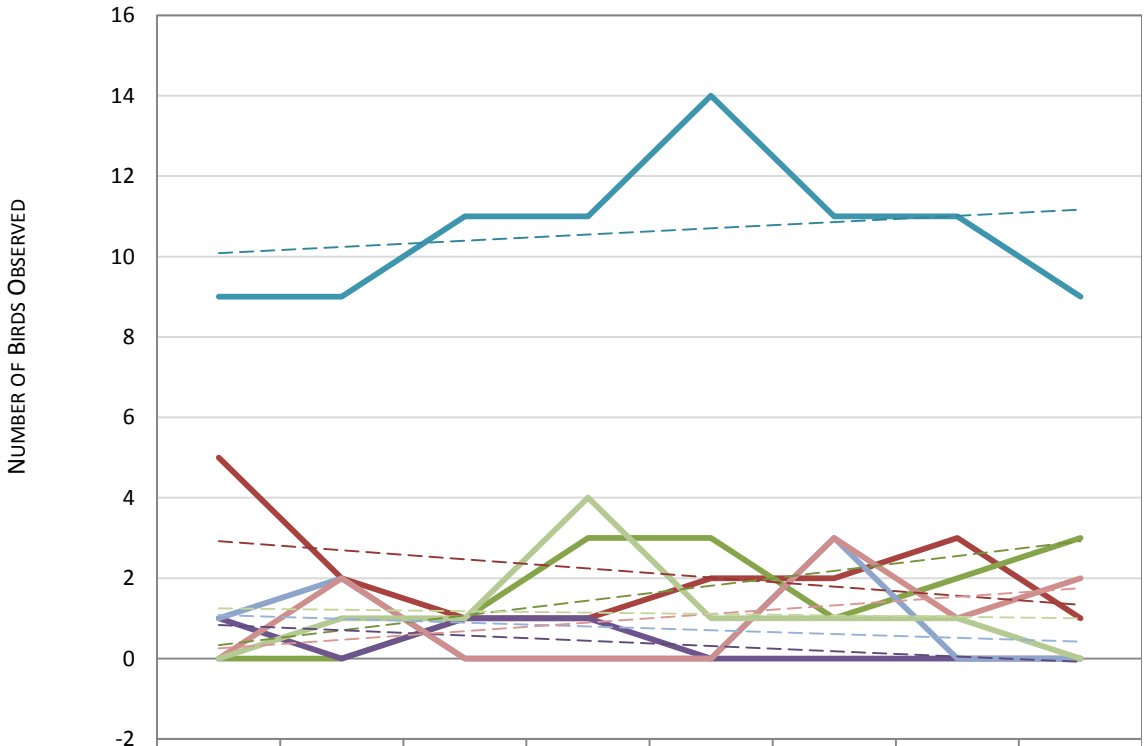
Figure 9: Graph showing area sensitive/forest interior, generalist, and total number of birds observed for each FBMP year at Long Sault C.A. (2005-2012).



Seven species that have been identified as declining in Ontario by Environment Canada (2008) have been observed regularly at Long Sault. A graph of their abundance for each year between 2005 and 2012 is shown in figure 10.

Although the statistical significance of the trends at Long Sault have not been calculated, the linear trendlines in figure 10 suggest that declines in Black-capped Chickadee, Northern Flicker, and Downy Woodpecker are occurring, whereas the numbers of Pileated Woodpecker, Eastern Wood-pewee, and Chestnut-sided Warbler have increased over time. For Black-capped Chickadee and Downy Woodpecker, the trends mirror those observed at Heber Down C.A. (figure 5).

Figure 10: Observation trends at Long Sault for species identified as declining in Ontario by E.C.

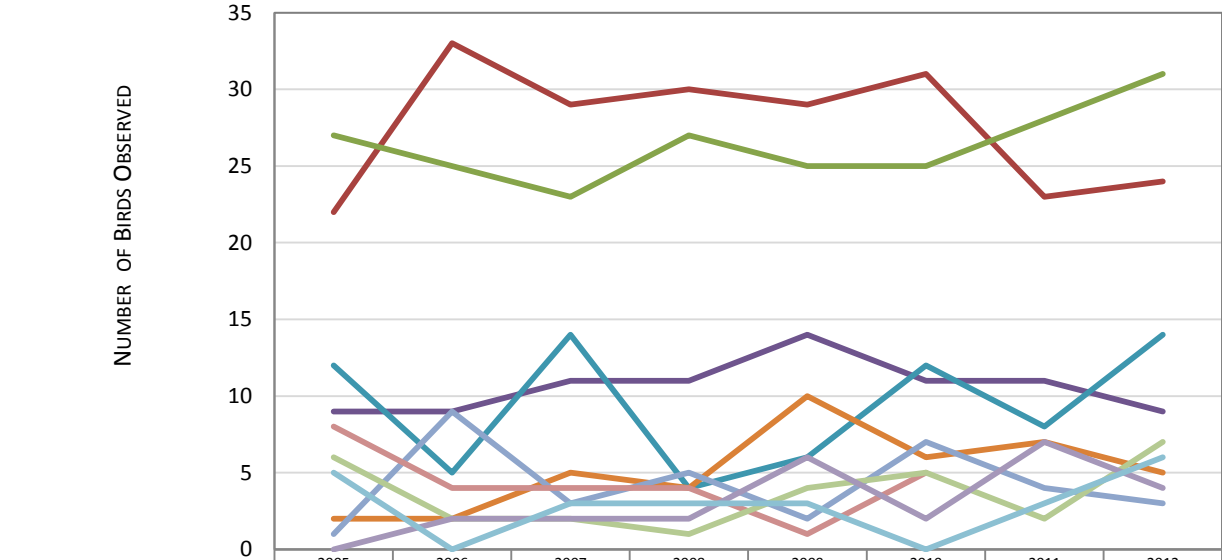


	2005	2006	2007	2008	2009	2010	2011	2012
Black-capped Chickadee	5	2	1	1	2	2	3	1
Chestnut-sided Warbler	0	0	1	3	3	1	2	3
Downy Woodpecker	1	0	1	1	0	0	0	0
Eastern Wood-pewee	9	9	11	11	14	11	11	9
Northern Flicker	1	2	0	0	0	3	0	0
Pileated Woodpecker	0	2	0	0	0	3	1	2
Rose-breasted Grosbeak	0	1	1	4	1	1	1	0

All of the ten most common species recorded in Ontario by Environment Canada in 2007, have been recorded at Long Sault C.A. at some time in the past, but they do not all appear on the overall top ten list for this site. Most notably, Black-throated Green Warbler, Wood Thrush, and Scarlet Tanager are abundant species at Long Sault, while Black-capped Chickadee, Veery, and Great Crested Flycatcher are

less prevalent. As was noted for Heber Down, the difference in species abundance between sites across Ontario and this one is not concerning as different bird communities will occupy different forests, depending on the vegetation mix, location, and resources available. It is also clear from the graph that even within this group of top 10 over time, there are shifts from year to year in which species are on the list.

Figure 11: Graph depicting the top ten species observed at Long Sault C.A. between 2005 and 2012.



	2005	2006	2007	2008	2009	2010	2011	2012
Ovenbird	22	33	29	30	29	31	23	24
Red-eyed Vireo	27	25	23	27	25	25	28	31
Eastern Wood-pewee	9	9	11	11	14	11	11	9
Black-throated Green Warbler	12	5	14	4	6	12	8	14
Blue Jay	2	2	5	4	10	6	7	5
American Robin	1	9	3	5	2	7	4	3
Wood Thrush	8	4	4	4	1	5		5
Scarlet Tanager	6	2	2	1	4	5	2	7
American Crow	0	2	2	2	6	2	7	4
American Goldfinch	5	0	3	3	3	0	3	6

2.1.3 Conservation Area Management Planning

2.1.3.1 Lynde Shores Conservation Area – Cranberry West Tract Bobolink Surveys

Bobolink surveys were undertaken at Lynde Shores C.A. in 2012 in an effort to develop a species-specific management strategy for this property. Specifically, monitoring efforts were focused on the lands west of Halls Rd., also known as the Cranberry West Tract, where evidence of Bobolink breeding has been observed in the past. Several individuals were recorded in the north end of the tract, and the monitoring stations, which were set up as transects, are shown in figure 12.

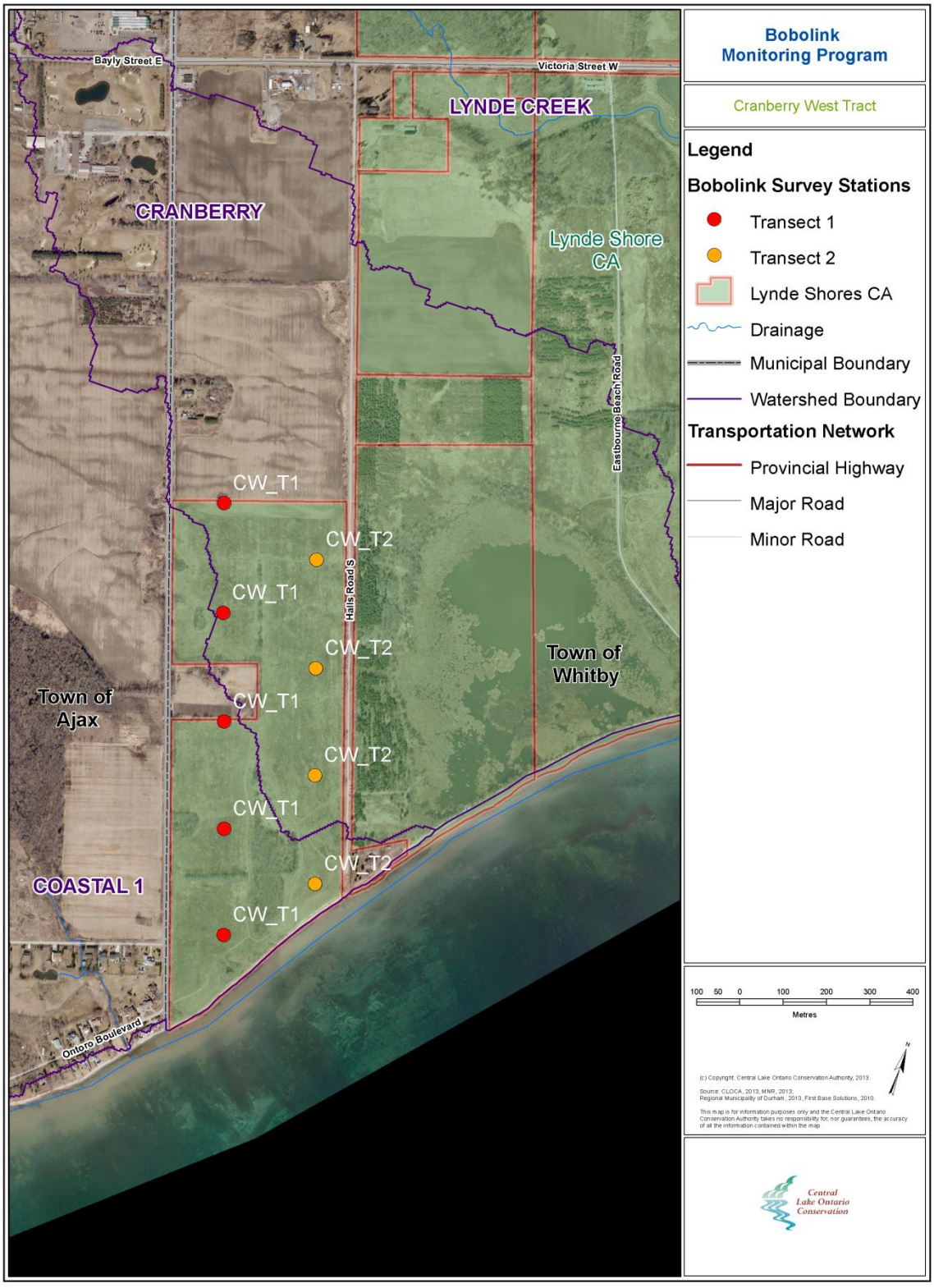


Figure 12: Bobolink monitoring stations at Lynde Shores C.A. – Cranberry West Tract.

2.1.3.2 Purple Woods Conservation Area

Purple Woods, being a small conservation area, has 2 survey stations (figure 13), and accordingly, the list of species observed is smaller than at many of the other conservation areas (table 4). The property consists of 2 main habitat types: open field and Sugar Maple forest. As such, the species recorded for the area includes grassland birds, such as Eastern Meadowlark and Savannah Sparrow, as well as forest interior birds such as Ovenbird.

Three species at risk were identified: Eastern Meadowlark, Eastern Wood-pewee, and Wood Thrush. Two of these, Eastern Meadowlark and Eastern Wood-pewee, were considered to be probable breeders at the site, as they were recorded at the same station on both visits.

Table 4: Bird monitoring results for Purple Woods C.A.

Common Name	Scientific Name	COSEWIC	COSSARO	NHIC
Station B1				
American Crow	*Corvus brachyrhynchos*			
American Goldfinch	*Carduelis tristis*			
Clay-colored Sparrow	*Spizella pallida*			
Eastern Kingbird	*Tyrannus tyrannus*			
Eastern Meadowlark*	*Sturnella magna*	T	T	Yes
Field Sparrow	*Spizella pusilla*			
Killdeer	*Charadrius vociferus*			
Ovenbird*	*Seiurus aurocapillus*			
Red-eyed Vireo	*Vireo olivaceus*			
Savannah Sparrow*	*Passerculus sandwichensis*			
Song Sparrow	*Melospiza melodia*			
Station B2				
American Crow	*Corvus brachyrhynchos*			
American Robin	*Turdus migratorius*			
Eastern Wood-pewee	*Contopus virens*	S		
Ovenbird*	*Seiurus aurocapillus*			
Red-eyed Vireo	*Vireo olivaceus*			
Wood Thrush	*Hylocichla mustelina*	T		

*Species that are Area Sensitive and/or Forest Interior; Species in bold are considered *Probable Breeders*

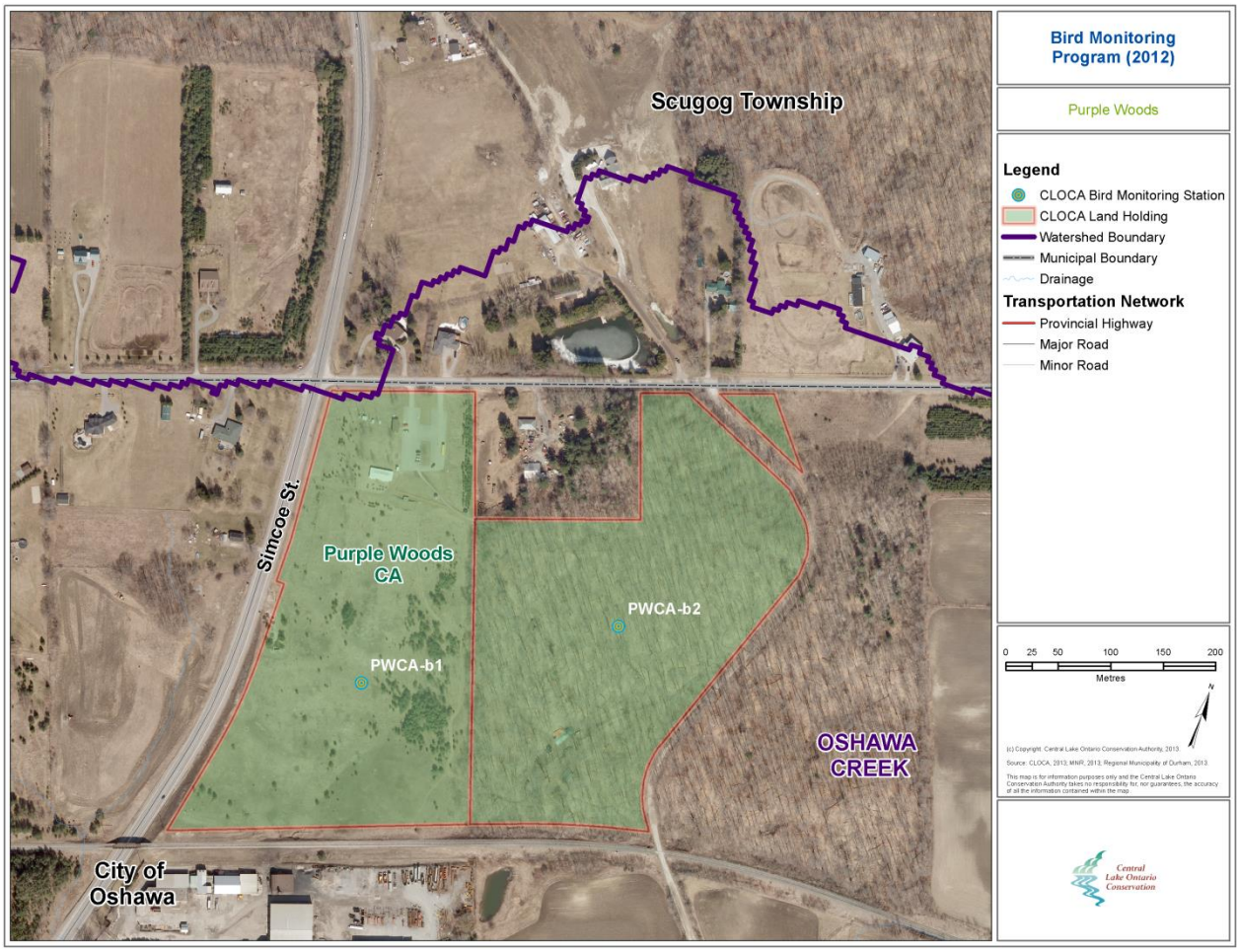


Figure 13: Bird monitoring stations at Purple Woods C.A.

2.1.3.3 Rahmani Tract

Rahmani Tract, which is located at the north end of the Oshawa Creek watershed, just west of Purple Woods C.A., is composed of forest, regenerating, and open habitats. Three survey stations have been set up on this property (figure 14).

As with Purple Woods, the species recorded at Rahmani Tract during the breeding bird surveys reflects the different habitat types. Furthermore, area sensitive species of both open and forested habitats were present, indicating that the quality of the habitats is suitable for supporting some of the more sensitive species in the jurisdiction. Ovenbird and Red-breasted Nuthatch are both forest interior birds, suggesting that the forest patches on the property are providing the cover and protection that are needed to support these species. Savannah Sparrow, Sharp-shinned Hawk, and Bobolink are area-sensitive birds that occupy open habitats. Although the habitats on the property are not particularly high quality, as the area has been anthropogenically altered in the recent past, they are likely positively influenced by the relative lack of urban influences in this part of the watershed.

Bobolink, which is provincially and federally Threatened, and Eastern Wood-pewee, which is federally listed as Special Concern, were the only two species at risk identified at Rahmani Tract during the 2012 breeding surveys.

Table 5: Bird monitoring results for Rahmani Tract.

Common Name	Scientific Name	COSEWIC	COSSARO	NHIC
Station B1				
American Crow	*Corvus brachyrhynchos*			
American Goldfinch	*Carduelis tristis*			
Black-capped Chickadee	*Poecile atricapillus*			
Blue Jay	*Cyanocitta cristata*			
Great Crested Flycatcher	*Myiarchus crinitus*			
Indigo Bunting	*Passerina cyanea*			
Mourning Warbler	*Oporornis philadelphia*			
Nashville Warbler	*Vermivora ruficapilla*			
Northern Flicker	*Colaptes auratus*			
Pine Warbler*	*Dendroica pinus*			
Red-breasted Nuthatch*	*Sitta canadensis*			
Rose-breasted Grosbeak	*Pheucticus ludovicianus*			
Station B2				
American Crow	*Corvus brachyrhynchos*			
American Goldfinch	*Carduelis tristis*			
Black-capped Chickadee	*Poecile atricapillus*			
Blue Jay	*Cyanocitta cristata*			
Clay-colored Sparrow	*Spizella pallida*			
Eastern Kingbird	*Tyrannus tyrannus*			
Eastern Wood-pewee	*Contopus virens*	S		
Field Sparrow	*Spizella pusilla*			
Great Crested Flycatcher	*Myiarchus crinitus*			
Indigo Bunting	*Passerina cyanea*			
Northern Cardinal	*Cardinalis cardinalis*			
Northern Flicker	*Colaptes auratus*			
Ovenbird*	*Seiurus aurocapillus*			
Red-winged Blackbird	*Agelaius phoeniceus*			
Red-tailed Hawk	*Buteo jamaicensis*			
Rose-breasted Grosbeak	*Pheucticus ludovicianus*			
Savannah Sparrow*	*Passerculus sandwichensis*			
Sharp-shinned Hawk*	*Accipiter striatus*			
Song Sparrow	*Melospiza melodia*			
Yellow Warbler	*Dendroica petechia*			
Station B3				
American Crow	*Corvus brachyrhynchos*			
American Goldfinch	*Carduelis tristis*			
Blue Jay	*Cyanocitta cristata*			
Bobolink*	*Dolichonyx oryzivorus*	T	T	Yes
Clay-colored Sparrow	*Spizella pallida*			
Field Sparrow	*Spizella pusilla*			
Indigo Bunting	*Passerina cyanea*			

Common Name	Scientific Name	COSEWIC	COSSARO	NHIC
Mourning Warbler	*Oporornis philadelphia*			
Red-winged Blackbird	*Agelaius phoeniceus*			
Rose-breasted Grosbeak	*Pheucticus ludovicianus*			
Savannah Sparrow*	*Passerculus sandwichensis*			
Song Sparrow	*Melospiza melodia*			

*Species that are Area Sensitive and/or Forest Interior; Species in bold are considered *Probable Breeders*

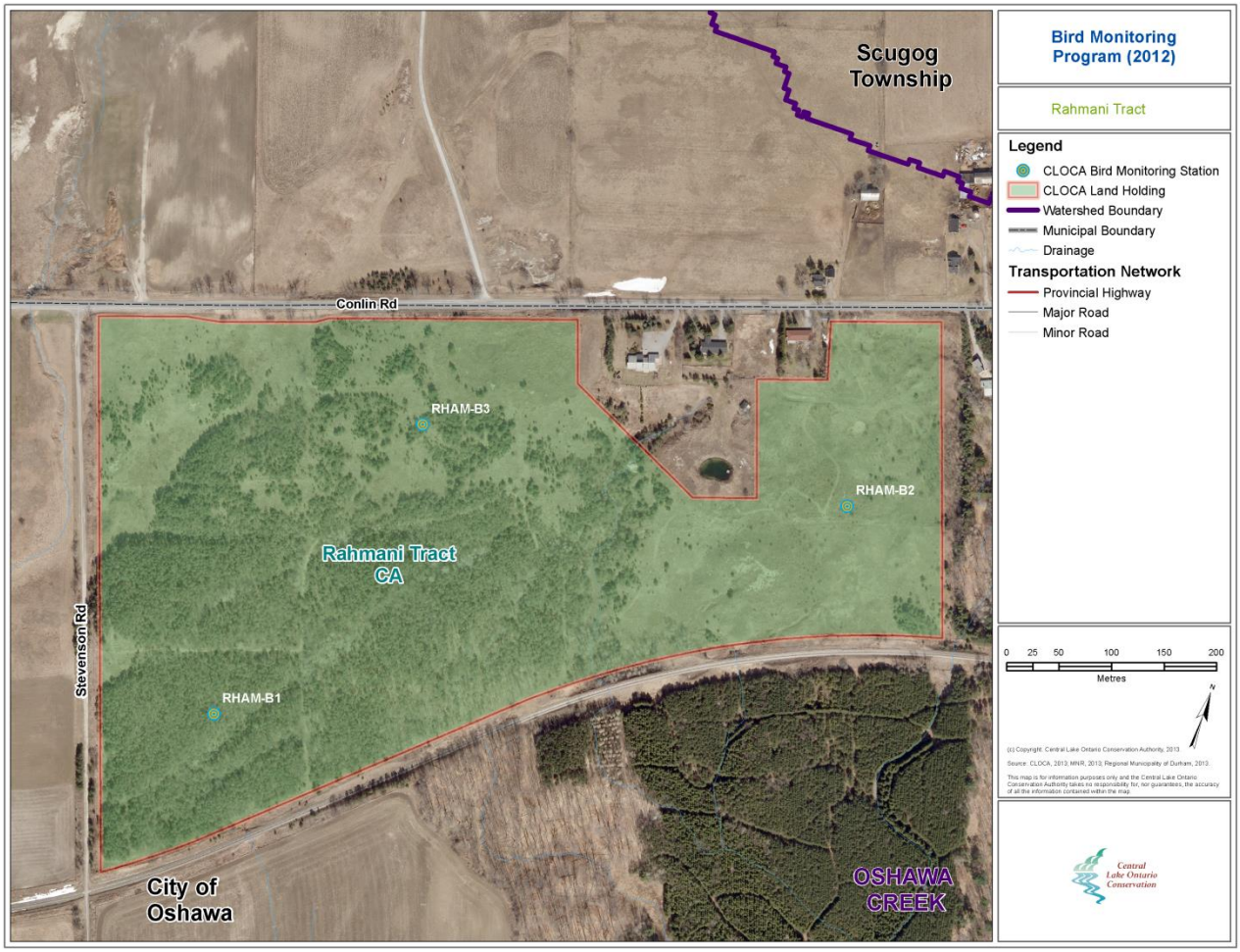


Figure 14: Bird monitoring stations at Rahmani Tract.

2.2 Watershed Management

In 2012, watershed-wide bird monitoring was undertaken in the Oshawa Creek Watershed. Bird surveys, which are road-based, include monitoring for nocturnal owls as well as breeding birds (figure 15). Incidental observations of amphibians, mammals, and reptiles were also recorded during the surveys, and this information has been included in table 6 along with the birds identified during the surveys.

Roadside amphibian surveys were conducted in the watershed as well, and the species identified during the monitoring is included in table 6; however, details about the results of these surveys are discussed in section 3.1.2.

2.2.1 Nocturnal Owl Surveys

Recordings of Eastern Screech-owl and Boreal/Barred Owl calls were played at several sites across the watershed, but a response was only received at one site: Purple Woods C.A. A single Eastern Screech-owl was identified within the forest block in the conservation area.

Outside of the owl survey, an incidental observation of a pair of calling Great Horned Owls was made during the roadside amphibian surveys from a woodlot at the corner of Columbus Rd and Harmony Rd.

2.2.2 Roadside Bird Surveys

As table 6 shows, a high diversity of species was recorded for the Oshawa Creek watershed, which is reasonable given the range of habitat types available within the watershed. This list does not include the species recorded at Purple Woods or Rahmani Tract during their breeding bird surveys.

Species listed in bold in the table are considered probable breeders, which means that there was evidence noted during the survey, such as observing an individual carrying nest-building material or food, to suggest that a pair is nesting at the site. In some instances, breeding at a site could be confirmed as a nest was found, e.g., Barn Swallow, or adult birds were seen with young, e.g., Wild Turkey. For amphibians, the bold font in table 6 indicates species for which a full chorus was heard. A full chorus, or calling code of 3, is recorded when so many individuals are calling that they cannot be counted.

As with the other tables, an asterisk indicates a species that is considered to be area sensitive and/or forest interior, and offers some insight into the habitat quality within the watershed.

Table 6: Wildlife observed in the Oshawa Creek Watershed in 2012.

Common Name	Scientific Name	COSEWIC	COSSARO	NHIC
Amphibians				
American Toad	*Bufo americanus*			
Gray Treefrog	*Hyla versicolor*			
Green Frog	*Rana clamitans*			
Northern Leopard Frog	*Rana pipiens*			
Spring Peeper	*Pseudacris crucifer*			
Wood Frog	*Rana sylvatica*			
Birds				
Alder Flycatcher	*Empidonax alnorum*			
American Crow	*Corvus brachyrhynchos*			
American Goldfinch	*Carduelis tristis*			
American Kestrel	*Falco sparverius*			
American Robin	*Turdus migratorius*			
American Woodcock	*Scolopax minor*			
Baltimore Oriole	*Icterus galbula*			
Bank Swallow	*Riparia riparia*			
Barn Swallow	*Hirundo rustica*	T	T	Yes
Belted Kingfisher	*Ceryle alcyon*			
Black-and-white Warbler*	*Mniotilta varia*			
Black-capped Chickadee	*Poecile atricapillus*			
Blackpoll Warbler	*Dendroica striata*			
Black-throated Green Warbler*	*Dendroica virens*			
Blue Jay	*Cyanocitta cristata*			
Bobolink*	*Dolichonyx oryzivorus*	T	T	Yes
Brown Thrasher	*Toxostoma rufum*			
Brown-headed Cowbird	*Molothrus ater*			
Canada Goose	*Branta canadensis*			
Canada Warbler*	*Wilsonia canadensis*	T	S	Yes
Cedar Waxwing	*Bombycilla cedrorum*			
Chestnut-sided Warbler	*Dendroica pensylvanica*			
Chipping Sparrow	*Spizella passerina*			
Clay-colored Sparrow	*Spizella pallida*			
Common Grackle	*Quiscalus quiscula*			
Common Yellowthroat	*Geothlypis trichas*			
Cooper's Hawk*	*Accipiter cooperii*			
Downy Woodpecker	*Picoides pubescens*			
Eastern Kingbird	*Tyrannus tyrannus*			
Eastern Meadowlark*	*Sturnella magna*	T	T	Yes
Eastern Phoebe	*Sayornis phoebe*			
Eastern Screech-owl	*Otus asio*			
Eastern Wood-pewee	*Contopus virens*	S		
European Starling	*Sturnus vulgaris*			
Field Sparrow	*Spizella pusilla*			
Gray Catbird	*Dumetella carolinensis*			
Great Blue Heron	*Ardea herodias*			
Great Crested Flycatcher	*Myiarchus crinitus*			

Common Name	Scientific Name	COSEWIC	COSSARO	NHIC
Great Horned Owl*	*Bubo virginianus*			
Green Heron	*Butorides virescens*			
Hairy Woodpecker*	*Picoides villosus*			
House Sparrow	*Passer domesticus*			
House Wren	*Troglodytes aedon*			
Indigo Bunting	*Passerina cyanea*			
Killdeer	*Charadrius vociferus*			
Mallard	*Anas platyrhynchos*			
Mallard	*Anas platyrhynchos*			
Mourning Dove	*Zenaida macroura*			
Mourning Warbler	*Oporornis philadelphia*			
Northern Cardinal	*Cardinalis cardinalis*			
Northern Flicker	*Colaptes auratus*			
Ovenbird*	*Seiurus aurocapillus*			
Red-breasted Nuthatch*	*Sitta canadensis*			
Red-eyed Vireo	*Vireo olivaceus*			
Red-winged Blackbird	*Agelaius phoeniceus*			
Ring-billed Gull	*Larus delawarensis*			
Rock Dove	*Columba livia*			
Savannah Sparrow*	*Passerculus sandwichensis*			
Sharp-shinned Hawk	*Accipiter striatus*			
Song Sparrow	*Melospiza melodia*			
Swamp Sparrow	*Melospiza georgiana*			
Tree Swallow	*Tachycineta bicolor*			
Warbling Vireo	*Vireo gilvus*			
White-breasted Nuthatch*	*Sitta carolinensis*			
Wild Turkey	*Meleagris gallopavo*			
Willow Flycatcher	*Empidonax traillii*			
Winter Wren*	*Troglodytes troglodytes*			
Wood Duck	*Aix sponsa*			
Wood Thrush	*Hylocichla mustelina*	T		
Yellow Warbler	*Dendroica petechia*			
Mammals				
Coyote	*Canis latrans*			
Eastern Chipmunk	*Tamias striatus*			
Eastern Cottontail	*Sylvilagus floridanus*			
Red Fox	*Vulpes vulpes*			
Red Squirrel	*Tamiasciurus hudsonicus*			
White-tailed Deer	*Odocoileus virginianus*			
Reptiles				
Eastern Gartersnake	*Thamnophis sirtalis sirtalis*			

*Species that are Area Sensitive and/or Forest Interior

Bird species in bold are considered *Probable Breeders: A*amphibians species in bold indicate full chorus count observations

Several species at risk were identified during the surveys: Barn Swallow, Bobolink, Canada Warbler, Eastern Meadowlark, Eastern Wood-pewee, and Wood Thrush.

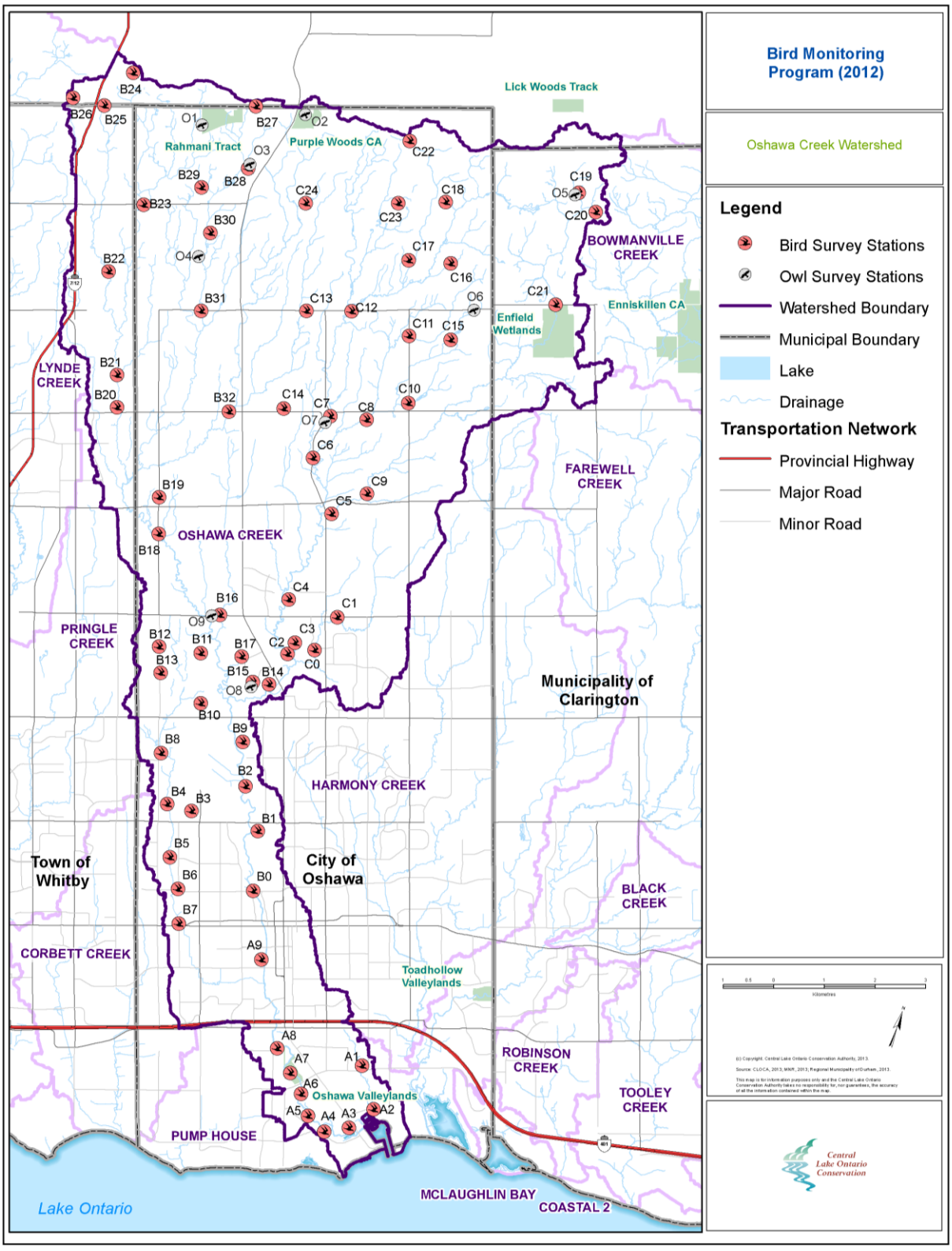
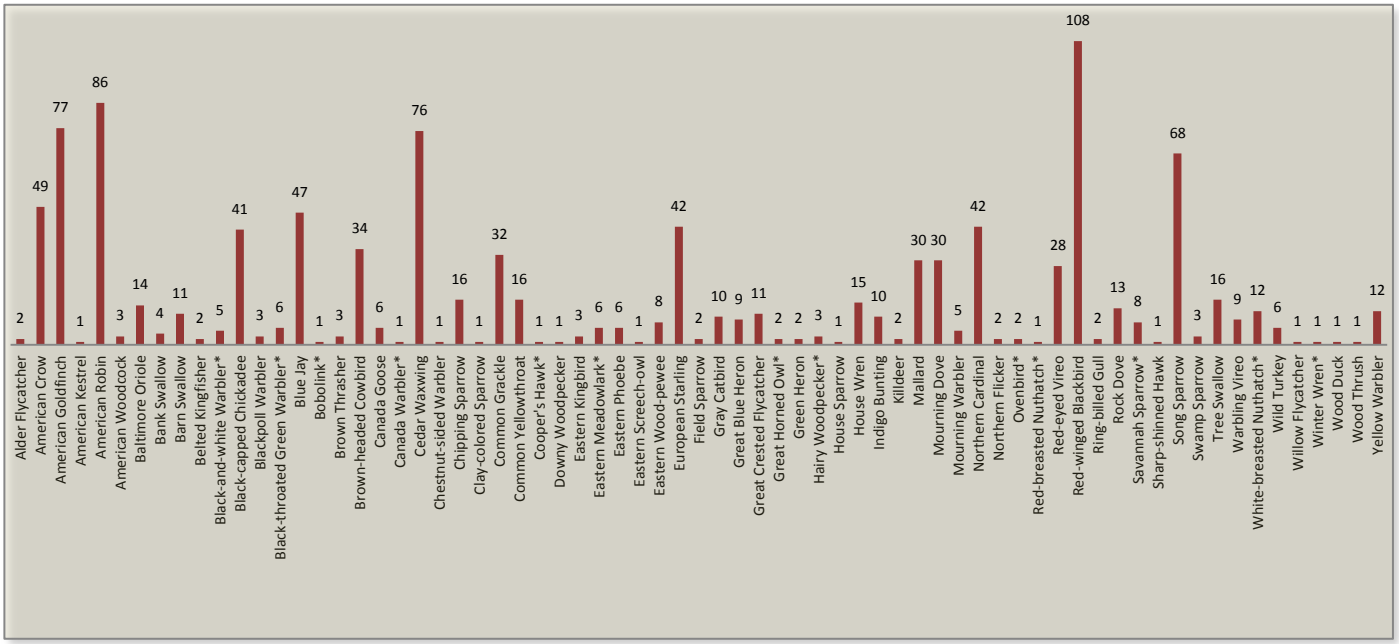


Figure 15: Bird survey stations in the Oshawa Creek Watershed.

Of all of the birds observed throughout the watershed, Red-winged Blackbird was the most abundantly recorded, followed by American Robin, American Goldfinch, Cedar Waxwing, and Song Sparrow (figure 16). This is consistent with the landuse in the watershed, having a high proportion of urban and agricultural uses, as these birds are generalists and are able to occupy and exploit a wide variety of habitats.

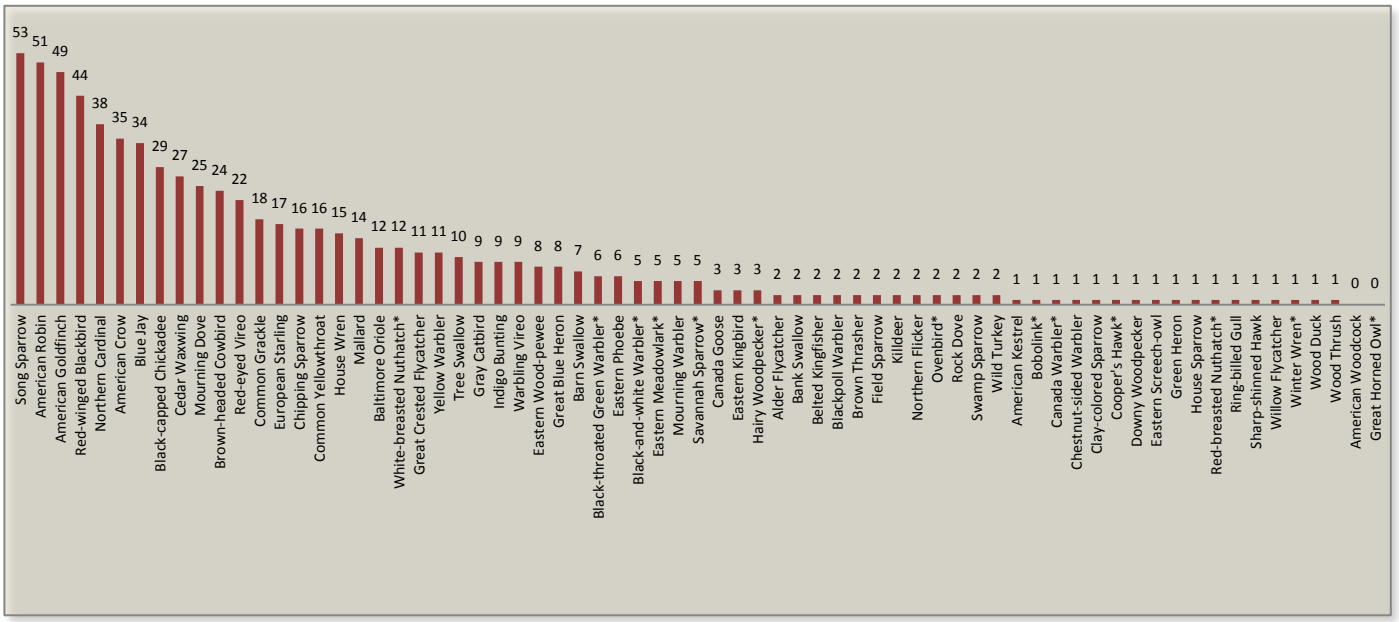
Forest interior species, such as Black-throated Green Warbler, Ovenbird, and Red-breasted Nuthatch are less abundant in the watershed, according to the results of the surveys. This may be representative of the landuse in the watershed, but may also be a result of the fact that the surveys are, for the most part, road-based, and the chance of detecting forest interior species from the edge of a forest block is reduced; not to mention that on busier roads, the background noise of passing cars inhibits the ability to hear birds singing at a distance.

Figure 16: Graph showing abundance of bird species observed.



The frequency with which these bird were observed, i.e., the number of stations at which each species was recorded, is similar, with Song Sparrow, American Robin, American Goldfinch, Red-winged Blackbird, and Northern Cardinal making up the top 5 most frequently observed species (figure 17). Cedar Waxwing, which was in the top 5 list for abundance but not for frequency, is a flock species, and as such is generally observed in large groups, which explains why there can be a high number of them recorded over a smaller number of stations. The presence of Song Sparrow, American Robin, American Goldfinch, and Red-winged Blackbird on both lists, however, indicates a watershed with a large number of habitats that support generalists and few habitats that support specialists, and reaffirms what the landuse mapping suggests: that there is not enough forest cover in the watershed.

Figure 17: Graph showing observation frequency for each bird species.



3.0 Amphibian Monitoring

3.1 Frogs & Toads

3.1.1 Durham Region Coastal Wetland Monitoring Project

Amphibian data for all of the coastal wetlands in the CLOCA jurisdiction is collected annually through the DRCWM Project, and is published periodically by Environment Canada. Please refer to their website for publications relating to this project.

3.1.2 Roadside Amphibian Surveys

Amphibian surveys throughout the Oshawa Creek watershed were conducted in 2012, and many of the habitats surveyed proved to be highly productive. Sensitive species, such as Wood Frog and Spring Peeper, were identified at more than half of the sites surveyed, and full choruses were heard at many of them (table 7). Generally, a full chorus count for a sensitive species indicates a high quality amphibian habitat.

Figure 18 shows the locations of the roadside amphibian survey stations. Adjacent habitats highlighted in purple identify the locations where a full chorus of at least one species was recorded, and for the purposes of this report, are considered to be significant amphibian breeding habitat in the Oshawa Creek watershed.

Spring Peeper and Gray Treefrog were heard most frequently, followed by American Toad, Green Frog, and Wood Frog. Northern Leopard Frog was only recorded at 2 stations.

Table 7: Roadside amphibian results for Oshawa Creek Watershed (2012).

Common Name	Scientific Name	COSSARO	COSEWIC	NHIC	No. Stations Recorded
American Toad	*Bufo americanus*				18
Gray Treefrog	*Hyla versicolor*				21
Green Frog	*Rana clamitans*				17
Northern Leopard Frog	*Rana pipiens*				2
Spring Peeper	*Pseudacris crucifer*				23
Wood Frog	*Rana sylvatica*				16

Note: Species in bold recorded calling counts of 3 at one or more stations.

Of particular interest is the distribution of amphibian habitat in the watershed (figure 18). Very little amphibian activity was recorded at any stations south of Taunton Rd., and only one significant habitat was identified in this part of the watershed. The distribution of significant habitats generally coincides with development in the City of Oshawa, and reinforces the negative influence that urbanization has on sensitive amphibian populations.

Furthermore, the impact of roads on amphibians should not be overlooked, particularly in the rural areas of the watershed. Frogs and toads were regularly observed dead on the road during the surveys, and the long-term impact of these mortalities on local populations is not known.

Wood Frog (CLOCA)

3.2 Salamanders

No salamanders were found at either Lynde Shores or Heber Down in 2012.

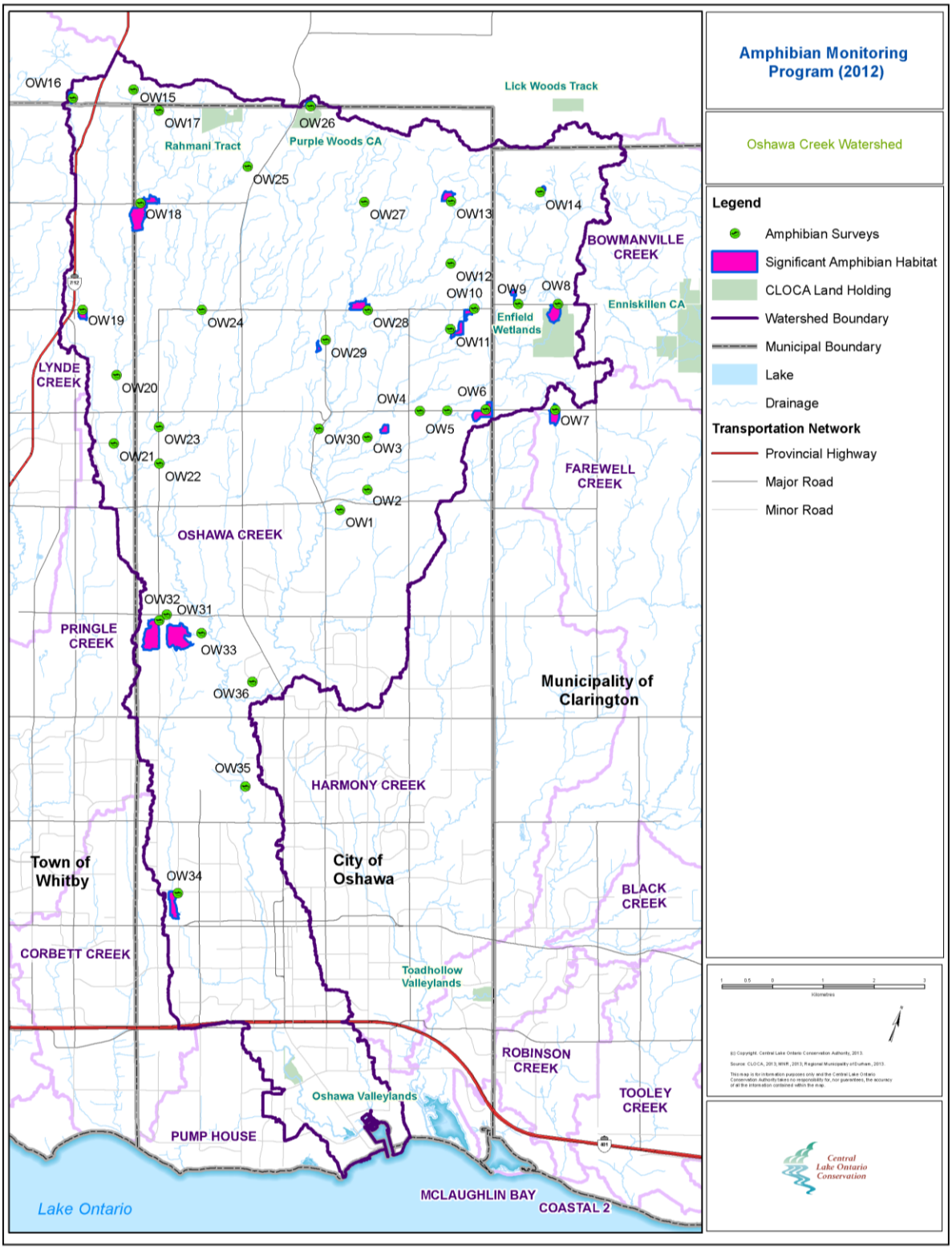


Figure 18: Amphibian survey stations and significant amphibian breeding habitat in the Oshawa Creek Watershed.

4.0 Special Projects

4.1 Victoria Road Mortality Surveys

As a follow up to the mortality surveys conducted along Victoria Rd. in Whitby in 2007 and 2008, additional surveys were done in 2012. The span of road that was surveyed, as shown in figure 19, is bounded by Halls Rd. to the west and Seaboard Gate Rd. to the east, and is the same area as was surveyed in 2008.

In total, 39 different species were identified as being killed by cars along the road, not including several unidentified species, and 553 individual amphibians, birds, insects, mammals, and reptiles were recorded (table 8).

By far, amphibians were the most commonly encountered, with a total of 289 observations. Insects, which includes mostly butterflies, bumblebees, and dragonflies, was the second most abundant group found. Although the number of reptiles found was smaller than any of the other groups, it is known to be the group that is most acutely affected by road mortality because it includes turtles. Turtles are long-lived and do not become sexually mature for several years, so they are slow to reproduce: individual losses, particularly of sexually mature females – the most commonly killed adult turtle found on roads – has severe impacts on local populations and can lead to local extinction over time.

Table 8: Results of Victoria Rd. mortality surveys (2012).

Common Name	Scientific Name	COSEWIC	COSSARO	NHIC	Number
Amphibians					
American Toad	*Bufo americanus*				36
Green Frog	*Rana clamitans*				96
Northern Leopard Frog	*Rana pipiens*				48
Unidentified Amphibians					109
				Total Amphibians	**289**
Birds					
American Goldfinch	*Carduelis tristis*				4
American Robin	*Turdus migratorius*				3
Barn Swallow	*Hirundo rustica*	T	T	Yes	1
Belted Kingfisher	*Ceryle alcyon*				1
Black-capped Chickadee	*Poecile atricapillus*				1
Canada Goose	*Branta canadensis*				4
Cedar Waxwing	*Bombycilla cedrorum*				1
Eastern Phoebe	*Sayornis phoebe*				1
European Starling	*Sturnus vulgaris*				1
Gull	*Larus spp.*				1
Magnolia Warbler*	*Dendroica magnolia*				1
Mallard	*Anas platyrhynchos*				1
Marsh Wren	*Cistothorus palustris*				1

Common Name	Scientific Name	COSEWIC	COSSARO	NHIC	Number
Mourning Dove	*Zenaida macroura*				1
Red-winged Blackbird	*Agelaius phoeniceus*				4
Song Sparrow	*Melospiza melodia*				1
Swainson's Thrush*	*Catharus ustulatus*				1
Swamp Sparrow	*Melospiza georgiana*				2
Unidentified Birds					12
				Total Birds	**42**
Insects					
Bumblebees					46
Butterflies/Dragonflies					76
Unidentified Insects					1
				Total Insects	**123**
Mammals					
Domestic Cat					1
Eastern Cottontail	*Sylvilagus floridanus*				2
Grey Squirrel	*Sciurus carolinensis*				16
Hairy-tailed Mole	*Parascalops breweri*				1
Mink	*Mustela vison*				2
Moles/Voles					6
Muskrat	*Ondatra zibethicus*				2
Raccoon	*Procyon lotor*				17
Red Bat	*Lasiurus borealis*				2
Striped Skunk	*Mephitis mephitis*				2
Virginia Opossum	*Didelphis virginiana*				4
Unidentified Mammals					13
				Total Mammals	**68**
Reptiles					
Eastern Gartersnake	*Thamnophis sirtalis sirtalis*				8
Midland Painted Turtle	*Chrysemys picta marginata*				13
Northern Red-bellied Snake	*Storeria occipitomaculata occipitomaculata*				3
Snapping Turtle	*Chelydra serpentina*	S	S	Yes	4
Unidentified Snake					1
				Total Reptiles	**29**
TOTAL NUMBER OF ROAD MORTALITIES					**551**

*Species that are Area Sensitive and/or Forest Interior

When the data is compared between the 3 years that surveying has been conducted, it is clear that the mortality rates are not consistent. There could be any number of explanations for these differences, including weather, breeding success from the previous year, availability of resources within the habitat patches around the road, and monitoring effort, so the exact reason for the differences is not easy to pinpoint. What is consistent between the years is that amphibians are the most abundant group found on the road, not surprising given the wetland habitat on either side of the road, and that all wildlife is affected by road mortality at Lynde Shores.

Table 9: Comparison of Victoria Rd. mortality summaries (2007, 2008, and 2012).

	2007	2008	2012	TOTAL
Amphibians	830	280	289	**1,399**
Birds	37	67	42	**146**
Insects	147	61	123	**331**
Mammals	41	68	68	**177**
Reptiles	15	37	29	**81**
Snakes	*5*	*22*	*12*	***39***
Turtles	*10*	*15*	*17*	***42***
TOTAL	**1070**	**513**	**551**	**2,134**
Monitoring Days	*48*	*58*	*47*	

Over the 3 years that data has been collected, 2134 animals have been found dead along Victoria Rd. This is a staggering number, and it is hoped that when the road is widened in the next several years, the plans of which include an exclusion barrier for amphibians and reptiles as well as terrestrial wildlife passages, that the number of individuals killed by cars on the road will be significantly reduced.

Photos (clockwise): Red-bellied Snake, Great Blue Heron, Eastern Red bat, Eastern Midland Painted turtle (hatchling), Muskrat, Monarch butterfly, American Toad, Virginia Rail.

Figure 19: Spatial distribution of roadkill on Victoria Rd (2012)

4.2 Long Sault Wildlife Camera

In early 2012, a wildlife camera was installed along a small creek in the Long Sault Conservation Area in an effort to capture photos of the wildlife present in the area. Over the course of 10 months, images of Coyote, White-tailed Deer, Fox, Raccoon, Mink, Porcupine, and Wild Turkey, among other birds and mammals, were captured crossing over the creek. Table 10 lists the species photographed, and includes some unknown species as the pictures were unclear at times.

The results of the camera installation were very interesting, and it is expected that in future years it will be placed in other conservation areas to see what wildlife inhabits those CLOCA lands.

Table 10: List of species captured by the wildlife camera at Long Sault C.A.

Barred Owl	Northern Goshawk	Ruffed Grouse
Black-capped Chickadee	Porcupine	Striped Skunk
Coyote	Racoon	White-tailed Deer
Grey Squirrel	Red Fox	Wild Turkey
Mink	Red Squirrel	

Photos:

White tailed-deer, Raptor (poss. Northern Goshawk), Coyote

Porcupine, Owl (poss. Barred Owl), Red Fox

Black-capped Chickadee, White-tailed Deer, Wild Turkey

4.3 Rogers Tract

Preparation of a management plan for the Rogers Tract, located just north of Crow's Pass Conservation Area, began in 2012, and wildlife monitoring for the property was undertaken to facilitate the management planning process. Breeding bird, amphibian, and salamander surveys were all conducted, in addition to the collection of incidental wildlife sightings, and the results are listed in table 11. A wildlife camera was installed at this property as well, and images of River Otter, bats, Beaver, Great Blue Heron, Mallards, and Coyote were captured.

Wildlife habitat within Rogers Tract is mixed: there are areas of high quality forest present, as well as lower quality plantation, and these are interspersed by pockets of open habitat. A large wetland community is also present on the property. As a result of the various habitat types, a diversity of wildlife is also present. Birds that were identified as probable breeders following the breeding bird surveys include Blue Jay, Eastern Towhee, Indigo Bunting, Ovenbird, and Red-eyed Vireo (bold in table 11). Area-sensitive and/or forest interior birds, such as Black-and-white Warbler, Red-breasted Nuthatch, and Northern Waterthrush, (shown with an asterisk in table 11), were also identified on the property, and generally indicate the presence of large, higher-quality habitats.

Only one provincially-listed Species at Risk was identified during the surveys – Bobolink, which is listed as Threatened in Ontario. Three federally-listed Species at Risk, Bobolink, Eastern Wood-pewee, and Wood Thrush, were also recorded. Table 11 identifies their respective at risk categories.

Table 11: Species identified at Rogers Tract in 2012.

Common Name	Scientific Name	COSEWIC	COSSARO	NHIC
Amphibians				
American Toad	*Bufo americanus*			No
Gray Treefrog	*Hyla versicolor*			No
Green Frog	*Rana clamitans*			No
Northern Leopard Frog	*Rana pipiens*			No
Spring Peeper	*Pseudacris crucifer*			No
Wood Frog	*Rana sylvatica*			No
Birds				
Alder Flycatcher	*Empidonax alnorum*			No
American Crow	*Corvus brachyrhynchos*			No
American Goldfinch	*Carduelis tristis*			No
American Robin	*Turdus migratorius*			No
Black-and-white Warbler*	*Mniotilta varia*			No
Black-capped Chickadee	*Poecile atricapillus*			No
Black-throated Green Warbler*	*Dendroica virens*			No
Blue Jay	*Cyanocitta cristata*			No
Bobolink*	*Dolichonyx oryzivorus*	T	T	Yes
Brown Thrasher	*Toxostoma rufum*			No
Chestnut-sided Warbler	*Dendroica pensylvanica*			No
Chipping Sparrow	*Spizella passerina*			No
Common Yellowthroat	*Geothlypis trichas*			No

Common Name	Scientific Name	COSEWIC	COSSARO	NHIC
Eastern Towhee	*Pipilo erythrophthalmus*			No
Eastern Wood-pewee	*Contopus virens*	S		No
Field Sparrow	*Spizella pusilla*			No
Gray Catbird	*Dumetella carolinensis*			No
Great Crested Flycatcher	*Myiarchus crinitus*			No
Indigo Bunting	*Passerina cyanea*			No
Mallard	*Anas platyrhynchos*			No
Mourning Warbler	*Oporornis philadelphia*			No
Nashville Warbler	*Vermivora ruficapilla*			No
Northern Flicker	*Colaptes auratus*			No
Northern Waterthrush*	*Seiurus noveboracensis*			No
Ovenbird*	*Seiurus aurocapillus*			No
Red-breasted Nuthatch*	*Sitta canadensis*			No
Red-eyed Vireo	*Vireo olivaceus*			No
Red-winged Blackbird	*Agelaius phoeniceus*			No
Rose-breasted Grosbeak	*Pheucticus ludovicianus*			No
Scarlet Tanager*	*Piranga olivacea*			No
Song Sparrow	*Melospiza melodia*			No
Swamp Sparrow	*Melospiza georgiana*			No
Veery*	*Catharus fuscescens*			No
Winter Wren*	*Troglodytes troglodytes*			No
Wood Duck	*Aix sponsa*			No
Wood Thrush	*Hylocichla mustelina*	T		No
Yellow Warbler	*Dendroica petechia*			No
Mammals				
Beaver	*Castor canadensis*			No
Bats	(unkown species)			No
Coyote	*Canis latrans*			No
Fisher	*Martes pennanti*			No
Mink	*Mustela vison*			No
Porcupine	*Erethizon dorsatum*			No
Red Fox	*Vulpes vulpes*			No
Red Squirrel	*Tamiasciurus hudsonicus*			No
River Otter	*Lutra canadensis*			No
White-tailed Deer	*Odocoileus virginianus*			No

Analysis of the bird communities on the property reveals that some of the forest patches present are good quality and are supporting a good diversity of forest bird species; however, the forest bird community for the property as a whole is fair, as there are a number of openings within the forest that reduce its overall quality. One of the recommendations of the management plan will be to restore forest to these openings, thereby improving forest interior conditions over time and increasing the habitat available for sensitive forest birds.

Mammals of note include River Otter, which has been seen increasingly in the CLOCA jurisdiction, and Fisher, which is uncommonly reported.

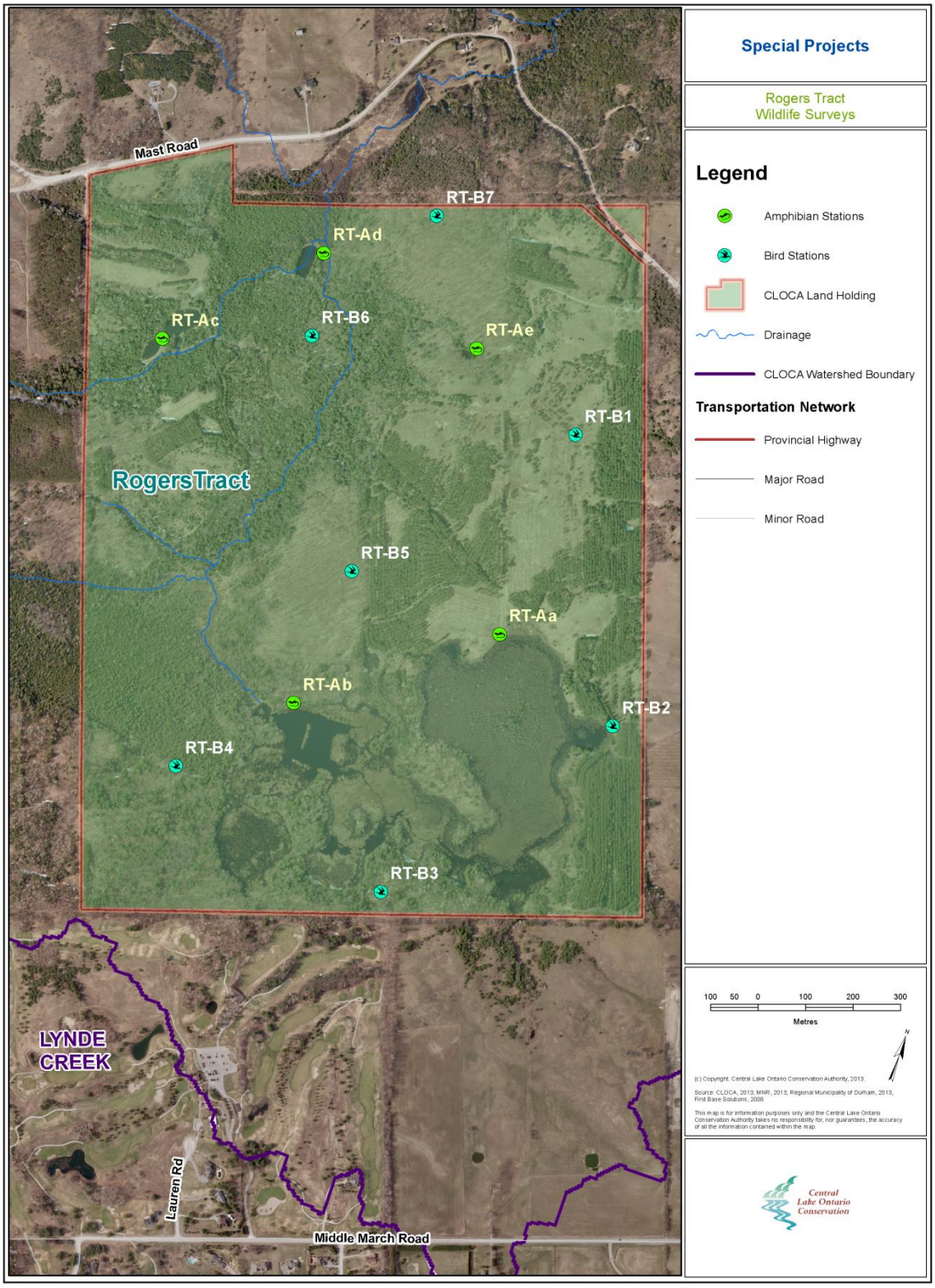


Figure 20: Wildlife monitoring stations at Rogers Tract.

4.4 Muskrat Surveys

In the fall of 2012, CLOCA was contracted by the Ministry of Natural Resources to conduct Muskrat House Surveys in 12 Durham Region Coastal Wetlands. Muskrats have the ability to manipulate ecosystems and promote wetland diversity, through influences associated with their foraging, house construction, and transportation systems. Muskrats are sensitive to environmental conditions, particularly wetland water depth conditions. The objectives of this survey were to assess the muskrat populations and their relationship to water levels in selected wetlands.

Muskrat house surveys were completed in the following wetlands in February 2013, when ice conditions were safe for work (according to MNR Working on Ice Policy) and snow depth did not limit the detection of muskrat houses:

- Rouge River Marsh
- Frenchman's Bay Marsh
- Hydro Marsh
- Duffins Creek Marsh
- Carruthers Creek Marsh
- Cranberry Marsh
- Lynde Creek Marsh
- Pumphouse Marsh
- Oshawa Second Marsh
- McLaughlin Bay Marsh
- Westside Marsh
- Bowmanville Marsh

4.4.1 Surveys

A complete inventory of muskrat houses within 10 randomly selected cells was conducted within each wetland. Within each cell habitat characteristics were assessed, including the % emergent vegetation, % cattail, % *Phragmites*, % open water, % land, and any evidence of muskrat activity. The entire wetland was surveyed in locations where there were 10 or fewer cells, or where the number of houses was low and time permitted.

For each muskrat house identified the UTM coordinates were recorded using a hand held GPS unit. A number of house characteristics were recorded for each house. These characteristics include:

- Height
- Length and Width
- Snow accumulation on or around house
- Distance to open water
- Muskrat presence or activity
- Dominant construction material
- Predation

House characteristics were then used to evaluate its occupancy status ("active" or "abandoned"). Activity information for each house was estimated based on size, water levels, snow cover on house and distance to water. Without seeing inside the house we could not definitively say whether it is active or not. Muskrat houses were not opened to assess house characteristics and verify occupancy to prevent invasion by predators.

4.4.2 Results

The following table summarizes the house counts for each wetland as well as the number of active houses and occurrences of house predation.

Wetland	Number of Houses (observed in 10 random cells)	Total Number of Houses (if entire wetland surveyed)	Activity (Number of Houses presumed active)	Predation (Number of Houses with tunnels burrowed into them)
Rouge River Marsh	8	15	13	1
Frenchman's Bay Marsh	0	0	N/A	N/A
Hydro Marsh	0	0	N/A	
Duffins Creek Marsh	98	N/A	90	2
Carruthers Creek Marsh	0	0	N/A	N/A
Cranberry Marsh	78	N/A	77	1
Lynde Creek Marsh	0	0	N/A	N/A
Pumphouse Marsh	10	10	9	2
Oshawa Second Marsh	13	24	24	2
McLaughlin Bay Marsh	5	14	12	1
Westside Marsh	6	11	6	2
Bowmanville Marsh	0	1	0	0

4.4.3 Findings

Overall muskrat houses were only found in wetlands or portions of wetlands that are disconnected from, and therefore perched above, Lake Ontario. In these cases water levels were high enough to support muskrat movement under the ice. The wetlands in general had very low water levels in 2013 and many areas that might have been suitable habitat, were not conducive to muskrat houses this season. From the surveys it was evident that higher winter water levels are necessary to support muskrat populations.

While it was rare to observe muskrat tracks outside the houses, it was common to see tracks of their predators, primarily mink and coyote. Several houses in various wetlands were found to have been predated upon, with obvious tunnels into the houses. Mild temperatures between freezes may have made the houses more vulnerable to predation.

Many of the wetlands, including Rouge River, Frenchman's Bay, Hydro, Carruthers Creek, Lynde Creek and Bowmanville Marshes had hard cattail edges on dry land. These areas are unlikely to be suitable habitat for muskrat houses even in high water level years, but may be more suited to bank dens when under water access to banks is available.

Muskrats play an important ecological role in coastal wetlands through the control of cattail growth through herbivory (muskrats feed on cattails). In this way they create and maintain habitat complexity

by creating more open water areas and maintaining more of a hemi-marsh environment. This environment is beneficial for a variety of wildlife including birds, fish, invertebrates and other vegetation species. Muskrats are also food for a variety of predators including mink, coyote, fox, owls, hawks, river otter, snapping turtle, and northern pike.

The results of this study highlight the importance of maintaining higher winter water levels to support muskrat populations. This information can be used to inform future management decisions regarding Lake Ontario water levels.

5.0 Species at Risk

Several species at risk were identified in the CLOCA jurisdiction this year: Barn Swallow, Bobolink, Canada Warbler, Eastern Meadowlark, Eastern Wood-pewee, Snapping turtle, and Wood Thrush.

6.0 Summary

The wildlife monitoring program was completed successfully in 2012, and valuable data on the resources in several of the conservation areas, as well as in the Oshawa Creek watershed, was gathered. In particular, important insights were gained regarding the abundance and distribution of amphibian breeding habitat in the watershed, as 2012 was the first year for the roadside amphibian monitoring program there. Similarly, owls, which were surveyed for the first time in the watershed as well, were identified at Purple Woods C.A.

Also for the first time, forest bird data from Heber Down C.A. and Long Sault C.A. was analyzed over the 8 years that the program has been running in the CLOCA jurisdiction; results confirm that the forest bird communities in both of these conservation areas are in good health. Long Sault, being removed from urban influences however, scored higher in its bird community health.

Several special projects were undertaken in 2012 that provided insight into the state of wildlife resources in particular areas, such as along Victoria Rd and within Long Sault C.A, as well as the status of specific wildlife populations, i.e., muskrat surveys. In addition, numerous species at risk were observed throughout the jurisdiction.

The data collected through the CLOCA wildlife monitoring program, as well as through its various special projects, is key to the successful management of CLOCA's natural heritage resources overall. It is used to ensure that CLOCA's conservation areas continue to be managed responsibly, and it is a critical tool for CLOCA's municipal planning partners to use to help them make informed landuse decisions within their watersheds. As such, it is important to continue monitoring wildlife in the jurisidiction.

7.0 RESOURCES

Atlas of the Breeding Birds of Ontario. March 2002. Standardized Owl Surveys: Instruction Manual.

Cadman, M.D., D.A. Sutherland, G.G. Beck, D. Lepage, and A.R. Couturier (eds.). 2007. Atlas of the Breeding Birds of Ontario, 2001-2005. Bird Studies Canada, Environment Canada, Ontario Field Ornithologists, Ontario Ministry of Natural Resources, and Ontario Nature, Toronto, xxi + 706 pp.

CLOCA, 2008-01MM. Central Lake Ontario Conservation Authority, Wildlife Monitoring Program. August 2008.

Environment Canada. Spring 2008. Ontario Forest Bird Monitoring Program Newletter. Volume 18, Issue 1. 4 pages. Published by Environment Canada. Accessed online 2 February 2013. [http://www.ec.gc.ca/Publications/962C2423-43FF-4447-9522-DF23C78876DF/EcogiftsFBMP2008NewsletterEN.pdf]

Marsh Monitoring Program Participant's Handbook for Surveying Amphibians. 2008 Edition. 13 pages. Published by Bird Studies Canada in cooperation with Environment Canada and the U.S. Environmental Protection Agency. February 2008.

Parks Canada/EMAN. July 2004. Joint EMAN/Parks Canada National Monitoring Protocol for Plethodontid Salamanders. Accessed online 29 October 29. [http://www.eman-rese.ca/eman/ecotools/protocols/terrestrial/salamanders/salamander.pdf]