

# FINAL REPORT

---

## 2011 Ottawa Chimney Swift (*Chaetura pelagica*) Monitoring and Property Owner Outreach Project



Emily Schwager, Project Coordinator Intern, Ottawa Stewardship Council (OSC)

---



Ottawa Stewardship Council (OSC)  
3889 Rideau Valley Dr Box 599 Manotick, ON K4M 1A5



*Assistance for this project was provided by the Ministry of Natural Resources*

# Table of Contents

---

<b>Acknowledgments</b> .....	<b>3</b>
<b>Executive Summary</b> .....	<b>4</b>
<b>1. Introduction</b> .....	<b>5</b>
1.1 Project Objectives.....	5
1.2 Partnership Involvement.....	5
<b>2. Methods</b> .....	<b>6</b>
2.1 Study Area.....	6
2.2 Study ‘Sites’ .....	7
2.3 Surveying .....	7
2.4 Monitoring.....	9
2.5 Chimney Assessments .....	11
2.6 Property Owner Outreach.....	11
<b>3. Results</b> .....	<b>11</b>
3.1 Surveying .....	11
3.2 Monitoring.....	13
3.3 Chimney Assessments .....	15
3.4 Property Owner Outreach.....	17
<b>4. Discussion</b> .....	<b>17</b>
<b>5. Recommendations</b> .....	<b>18</b>
<b>6. References</b> .....	<b>19</b>

## List of Figures

Figure 1. Chimney swift distribution maps of Ontario and Canada.....	6
Figure 2. Probable areas within the urban city of Ottawa .....	7
Figure 3. Site map example .....	8
Figure 4. Photo-link feature.....	10
Figure 5. Chimney widths of confirmed sites .....	16
Figure 6. Chimney material of confirmed sites .....	16
Figure 7. Surrounding habitat type of confirmed sites .....	16

## List of Tables

Table 1. Additional potential sites identified in 2011 .....	12
Table 2. Number of monitored sites in each probable area .....	14
Table 3. Sites determined unsuitable.....	14
Table 4. Confirmed nesting/roosting sites.....	15

## Acknowledgments

---

We gratefully acknowledge the Ottawa Stewardship Council (OSC) coordinators and members, Bird Studies Canada (BSC), and Rideau Valley Conservation Authority (RVCA) for their contributions to this project. In particular, Joffre Cote, Stewardship Coordinator, OMNR/OSC; Chelsey Ellis, Acting Stewardship Coordinator, OMNR/OSC; Raymond Pierce, Council Member, OSC; Crispin Wood, Council Member, OSC; and Kristyn Richardson, Stewardship Biologist, BSC. A special thanks to the volunteers that monitored potential sites for chimney swift activity and the community members that provided us with possible habitat sites. Their efforts greatly contributed to the success of this project. We also thank Bruce Di Labio for sharing his wonderful images of chimney swifts with us. More images can be viewed from his website at: <http://www.dilabiobirding.ca/>.

# Executive Summary

---

In 2007, the chimney swift (*Chaetura pelagica*) was added to the federal *Species at Risk Act*, S.C. 2002, c. 29 (SARA) list as *Threatened*. The same designation followed in 2009 under the Species at Risk in Ontario (SARO) list. The addition of this species under both the federal and provincial lists of wildlife species at risk follows significant chimney swift population declines in recent decades.

A number of factors have been attributed to chimney swift population declines including: habitat loss, climate change, pesticide use, and a decrease in available food. Perhaps the most significant of these factors is habitat loss, through the modification and destruction of available nesting and roosting sites.

Chimney swifts primarily use unmodified, older chimneys for nesting and roosting. However, these habitats are being altered through the use of metal liners, narrower flues, caps and animal guards. Such chimney alterations make these critical habitats unavailable to chimney swifts thereby limiting their ability to carry out important biological processes. Hence, the survival of this species depends on the identification and protection of chimney swift habitats.

This project addresses the need to identify and protect such habitat through the continuation of the work initiated in 2010 by the Ottawa Stewardship Council's, *Ottawa Chimney Swift Nesting/Roosting Site Survey and Public Outreach Project*. That project accomplished the identification and mapping of potential and confirmed chimney swift habitats throughout the city of Ottawa and the development of a public outreach strategy that includes an information package for affected property owners. With the framework for that project in place, this 2011 project was able to efficiently carry out similar objectives including: the implementation of the chimney swift survey protocol, the recording of chimney swift nesting and roosting sites in the city of Ottawa, the implementation of a property owner specific outreach strategy and an information package mail out to affected property owners.

This report describes the methods used to achieve these objectives and provides the data resulting from the project activities. Copies of the project deliverables including: large scale maps that document all of the 'potential', 'monitored' and 'confirmed' chimney swift habitats within the city of Ottawa; completed monitoring forms, chimney assessment forms and database spreadsheets are also included in this report.

The data collected from this project indicates that the city of Ottawa has a significant number of potential and confirmed chimney swift habitats. Of the 76 monitored sites this year, 16 (21%) were confirmed to be a chimney swift nesting or roosting site, increasing the total number of confirmed nesting/roosting sites within the city of Ottawa to 22. In addition, chimney assessments conducted at all of the confirmed sites support evidence that chimney swifts prefer certain habitat characteristics including chimneys with: a rough surface building material, a minimum width of 30cm and a residential surrounding habitat.

Overall, this project was very successful. Monitoring was conducted throughout the nesting/roosting season, new nesting/roosting sites were identified; volunteer participation increased and the educational outreach to affected property owners was accomplished.

# 1. Introduction

---

Neotropical migrant birds have experienced significant population declines since the 19<sup>th</sup> and early 20<sup>th</sup> century (Peterjohn, 1995). More specifically, aerial insectivores are especially showing widespread declines across North America (COSEWIC, 2007). However, it has only been in the last 30 years that biologists have conducted extensive research into the reasons for such dramatic declines (Peterjohn, 1995). Factors thought to contribute to these population declines include: climate change, human activity, pesticide contamination, and a decline in insect availability (OCSP, 2010). However, one of the most significant factors considered to be affecting migrant bird species, is the destruction and fragmentation of critical habitat. As such, there is an urgent need to identify critical habitats that require protection. Chimney swifts (*Chaetura pelagica*) are an excellent example of a neotropical migrant bird species facing population declines due in part to habitat alteration and destruction.

Chimney swifts are small, cigar shaped, soot-colored birds that almost exclusively inhabit urban and suburban areas. Their nesting and roosting habitats mainly include: older chimneys and other hollow artificial structures like silos, wells and open cisterns with rough interior surfaces (OCSP, 2010). However, with ongoing urban development and modifications to older buildings these critical habitats are being lost, contributing to the decrease in chimney swift populations.

According to the 2007 Chimney Swift Assessment and Status Report, prepared by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC), some estimates of chimney swift population decline are more than 95% since 1968 (COSEWIC, 2007). As such, the COSEWIC and the Committee on the Status of Species at Risk in Ontario (COSSARO) designated the chimney swift as a *Threatened* species both federally and provincially leading to the addition of this species to the federal Species at Risk Act (SARA) list as well as the provincial species at risk in Ontario (SARO) list (OCSP, 2010). This project is a response to such designations and aims to provide critical habitat information needed to address the recovery of this species.

## 1.1 Project Objectives

This project builds upon the work carried out by the ‘*Ottawa Chimney Swift Nesting/Roosting Site Survey and Public Outreach Project*’ initiated by the Ottawa Stewardship Council in 2010. That project accomplished the identification and mapping of 136 potential nesting/roosting sites, the monitoring of a portion of such sites and the implementation of a public outreach strategy. Similar objectives were met in this year’s project and include:

- Implementing the chimney swift survey protocol
- Monitoring potential sites and recording confirmed nesting/roosting sites in the city of Ottawa
- Implementing the property owner specific outreach strategy
- Contacting affected property owners

## 1.2 Partnership Involvement

The objectives for this project were met in part through the contributions of the Rideau Valley Conservation Authority (RVCA) and Bird Studies Canada (BSC). The RVCA provided GIS support, which made the recording and analysis of surveying and monitoring data possible. BSC provided the surveying and monitoring protocols used for identifying chimney swift habitat. They

also helped in the recruitment of volunteers to our project through their Ontario SwiftWatch Workshop hosted in partnership with the OSC on May 4<sup>th</sup> 2011. The volunteer participation greatly increased monitoring efforts and subsequently led to more potential sites being confirmed as nesting or roosting habitat in 2011. This increase in community involvement will be extremely important in the success of potential projects in the future and will help to promote increased awareness of this species within the city of Ottawa. In return for BSC's contributions, copies of the relevant project data were provided to support their national survey and outreach efforts.

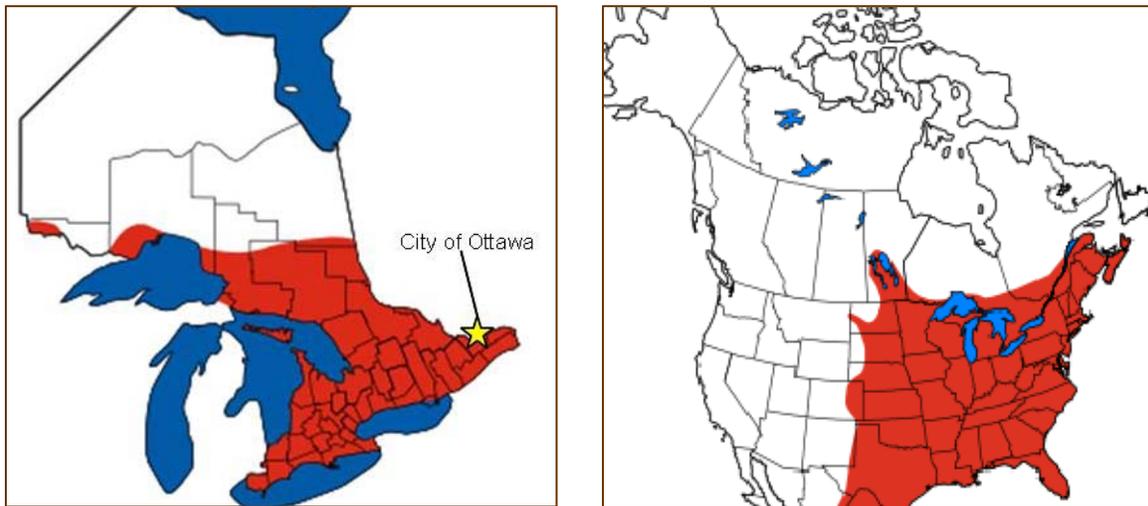
## 2. Methods

---

The materials, methods and procedures used to conduct potential site surveys, monitoring and property owner outreach activities were established in the 2010 project, and implemented again to achieve this year's project objectives. However, a few additions and amendments were made in order to accommodate the desired outcomes of this project: surveying and monitoring activities were mainly conducted in high and medium probable areas within the urban city of Ottawa, site recording methods were adjusted to include photographs and additional information, site databases were adjusted to accommodate future chimney swift monitoring projects and habitat assessments were conducted at all confirmed sites to provide additional information on the characteristics of chimney swift nesting/roosting habitat.

### 2.1 Study Area

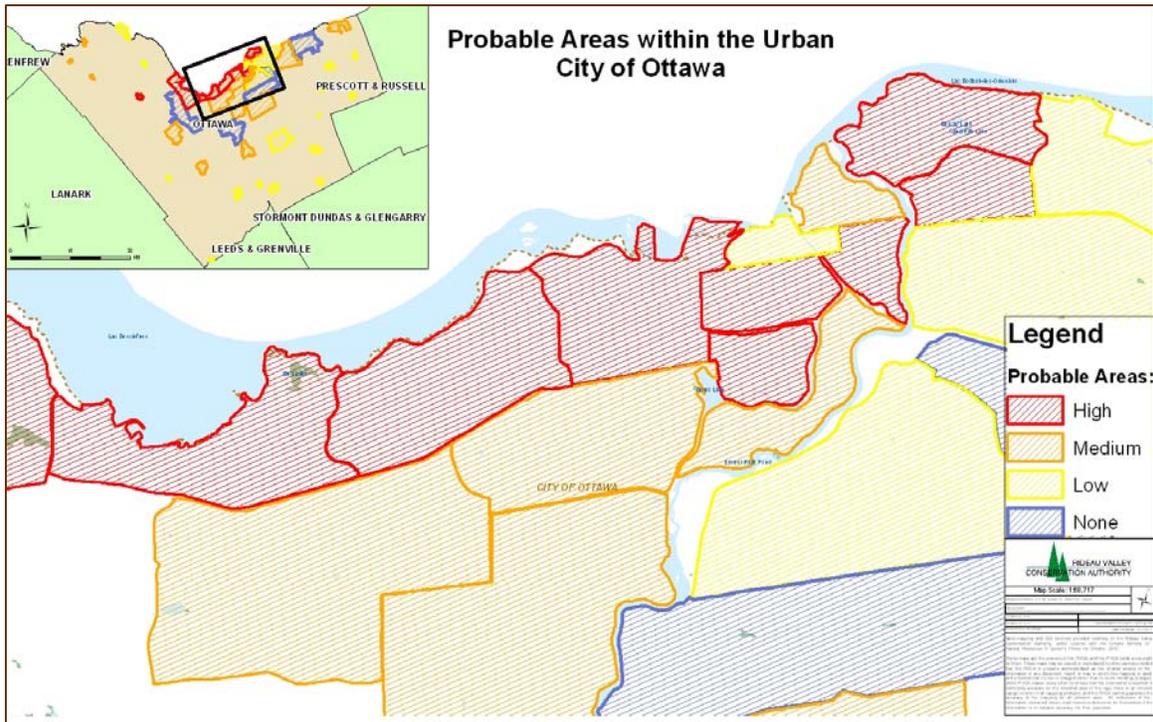
The Canadian breeding range of the chimney swift includes select areas in east-central Saskatchewan, southern Manitoba, southern Ontario, southern Quebec, New Brunswick, Nova Scotia, and potentially Prince Edward Island and Newfoundland (COSEWIC, 2007). Indeed, the city of Ottawa is within the chimney swift Canadian breeding range and was the area of study for this project (**Figure 1**).



**Figure 1. Chimney swift distribution maps of Ontario and Canada.** These maps were taken and modified from: [http://www.rom.on.ca/ontario/risk.php?doc\\_type=map&id=322](http://www.rom.on.ca/ontario/risk.php?doc_type=map&id=322)

To identify and monitor the most suitable chimney swift habitats efficiently, the majority of site surveying and monitoring was conducted in the high and medium probable areas within the urban city of Ottawa (**Figure 2**). These areas were established in the 2010 project and were considered

more likely to have suitable habitat because of their close proximity to water, building characteristics, frequency of previously identified potential sites, records of anecdotal evidence and present observations of chimney swift activity.



**Figure 2. Probable areas within the urban city of Ottawa.** The majority of chimney swift site surveying and monitoring activities were conducted in the red and orange colored areas. The inset map displays the extent of the city of Ottawa with an extent rectangle outlining the urban city of Ottawa.

## 2.2 Study ‘Sites’

For the purpose of this project ‘site’ is defined as any individual chimney that has been identified through surveying and monitoring activities as either a ‘potential’, ‘monitored’ or ‘confirmed’ nesting/roosting habitat.

A ‘potential site’ is defined as an individual chimney determined to be a probable nesting/roosting habitat without having been monitored for chimney swift activity. A ‘monitored site’ is defined as an individual chimney that has been observed in the field but has not been identified as nesting or roosting habitat. A ‘monitored site’ also includes sites that were determined unsuitable upon field observation usually due to the modifications or demolition of chimneys. A ‘confirmed site’ is defined as an individual chimney that has been identified as chimney swift nesting or roosting habitat either by monitoring or by anecdotal evidence that will be re-confirmed in future monitoring.

## 2.3 Surveying

The identification of additional potential sites in the city of Ottawa was conducted by implementing the site survey strategy developed in the 2010 project and by following the Chimney Swift Monitoring Protocol created by Bird Studies Canada (BSC) (**Appendix I**). The site survey strategy involved both online and field survey methods for locating suitable chimneys

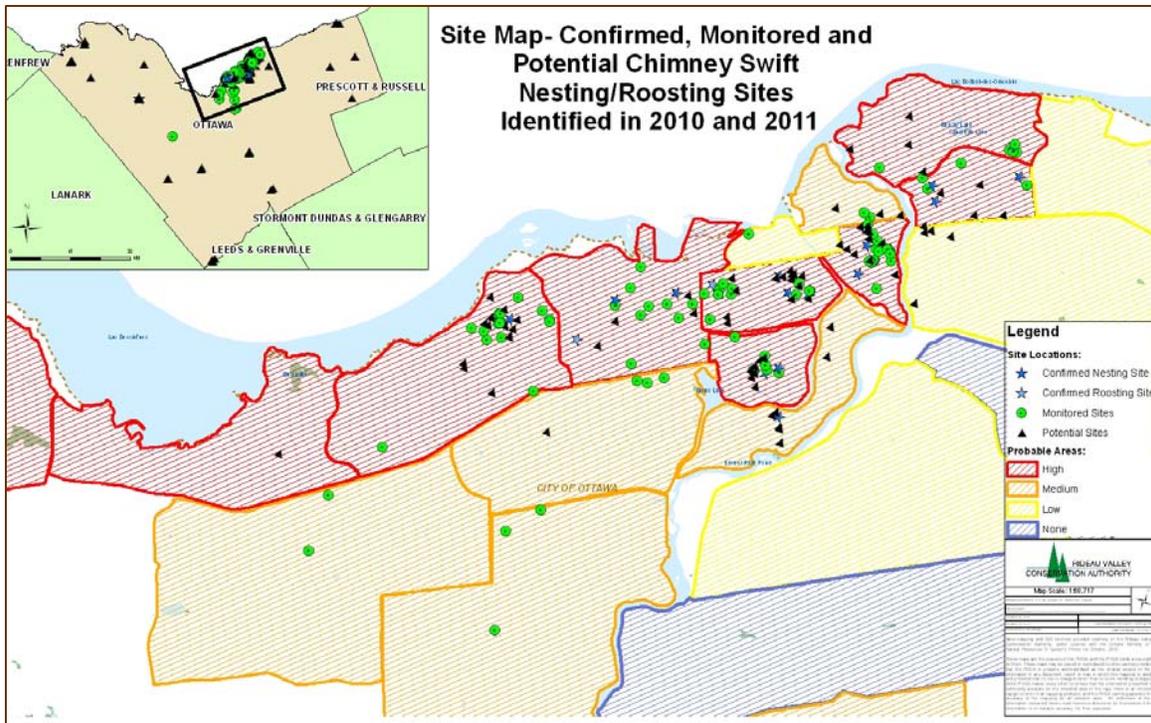
that could be recorded as 'potential sites'. Online surveys were conducted by scanning online aerial views of the urban city of Ottawa for large, open chimneys (OCSP, 2010). These online views are accessible at: <http://www.bing.com/maps/?FORM=Z9LH3>. Field surveys were conducted by driving or walking within communities and visually identifying suitable nesting/roosting sites based on chimney criteria outlined in the Chimney Swift Monitoring Protocol. This criteria included: chimneys at least 2.5 bricks wide, chimneys built of brick, stucco, stone or concrete and chimneys with no visible barriers.

A combination of field and online surveys were conducted in 7 of the 10 high probable areas and 2 of the 14 medium probable areas within the urban city of Ottawa. These probable areas included: Centertown, Glebe, Hintonburg, Rockcliffe, Sandy Hill, Vanier, Westboro, Lowertown and Ottawa South.

In addition to deliberate searches, potential nesting/roosting sites were also identified while monitoring for chimney swift activity at a previously identified site. In some cases, additional potential sites were identified by volunteers or community members who observed chimney swift activity near a particular building. Once the locations for the potential sites were described to the project coordinator, the suitability of the chimney was verified using either the online or field survey method.

When a potential site was identified, a site code was assigned and the location was added to the site database (**Appendix II**). Site codes consisted of the abbreviation of the probable area, the identification number in sequence of site discovery and the chimney number (if there was more than one chimney on the same building). This method of site coding is an adjustment from the method used in 2010, to eliminate any confusion about the status of sites located on the same building. The site database is a collection of raw site data from both the 2010 and 2011 projects. In addition to entering the site locations of potential sites, chimney characteristics and the year the potential site was identified was also entered following surveying activities.

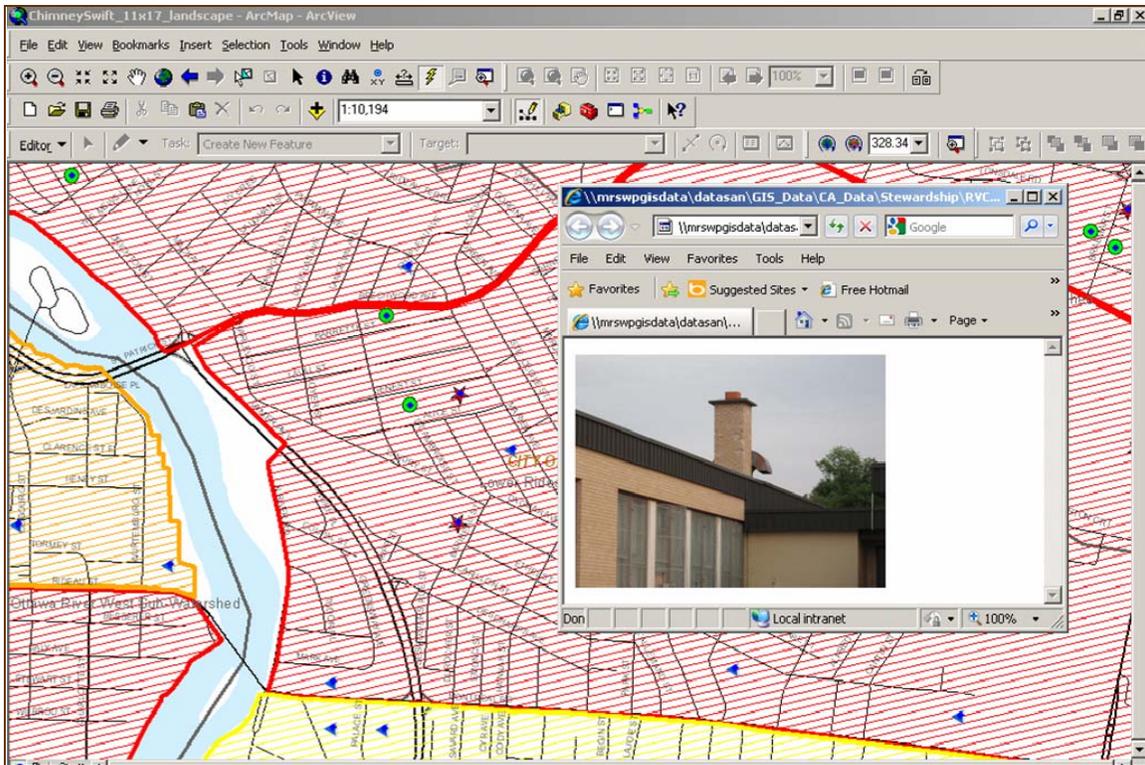
The locations of potential sites were also plotted on the site map (**Appendix VIII**). The site map is a digital representation of all the site locations and probable areas within the city of Ottawa, created using ArcGIS software. It includes the potential, monitored and confirmed sites identified during both the 2010 and 2011 projects. An example of the site map is shown in **Figure 3**.



**Figure 3. Site map example.** Showing sites surveyed and monitored from both the 2010 and 2011 projects. Sites were plotted on the map using the address locator tool and attributes associated with each site were entered for future data analysis. The inset map displays the entire study area (the city of Ottawa).

## 2.4 Monitoring

Monitoring was closely based on the Chimney Swift Monitoring Protocol and Evening Observation Form created by BSC (**Appendix I**). In accordance with the protocol, evening observations of a single potential site were conducted 20 minutes before and 20 minutes after sunset and all observations, including the presence or absence of chimney swifts in the surrounding area were recorded on an Evening Observation Form. In addition to the protocol requirements, photographs were taken at each monitored site to record the characteristics of each chimney. The photographs were then added to the site map as a site feature link for future reference to identified chimney swift habitats (**Figure 4**).



**Figure 4. Photo-link feature.** Example of the interactive feature added to the site map. When the 'Hyperlink' tool is selected, users can select any site to see a photograph of the chimney through a link to a URL.

Similar to the surveying method, the majority of potential site monitoring was conducted within the high and medium probable areas of the urban city of Ottawa (**Figure 2**). Potential sites located within these areas were chosen for monitoring by the project coordinator based on previous observations of chimney swift activity. Evening observations of potential sites were conducted by the project coordinator or BSC volunteers on as many days as possible in the 2011 breeding season and fall migration. As such, monitoring continued until no chimney swifts were seen in highly probable areas for two consecutive evenings later in the monitoring season.

Due to the time constraints of the project, some deviations were made from the BSC protocol and evening observation form. For example, each site was monitored once instead of the suggested three times, one evening observation form was completed based on anecdotal evidence to be re-confirmed in future monitoring and some monitoring was concluded prematurely to observe a more suitable site nearby.

At times, monitoring of more than one potential site per evening was possible if the observer's standpoint provided a clear view of multiple sites. In other instances, a chimney was not observed for any length of time if it was determined to be an unsuitable site upon arrival. Chimneys were considered unsuitable if there was an obvious barrier to chimney swift use, such as: animal guards, metal flues, caps, or demolished chimneys.

Collected data from the observation forms was entered into the site database and the potential site was updated to a 'monitored' or 'confirmed' site status on the site map. Following the monitoring activities, data from the Evening Observation Form was entered into the site database. This data included: the name of the observer, date and year monitored, updated site status and additional

notes. Additional notes usually expressed the number of chimney swifts estimated to be using the chimney and/or the number of chimney swifts observed in the surrounding area.

## **2.5 Chimney Assessments**

Once a chimney was confirmed a nesting/roosting site, a chimney assessment was conducted. Following the BSC protocol, chimney assessments involved re-visiting confirmed sites and recording important habitat characteristics on a Chimney Assessment Form (**Appendix 1**). Some of the recorded habitat characteristics included: surrounding habitat type, building materials, chimney modifications, chimney shape and estimated chimney measurements. Aerial and/or landscape level photographs were also added to the form for a reference to each chimney's characteristics and location on the building.

Once all of the chimney assessment data was collected, it was entered into a chimney assessment database for analysis and transferred to the site map document as a non spatial table. This collected data will be useful for a future analysis of habitat suitability and may provide useful information on chimney swift biology. A spreadsheet of the chimney assessment database is provided in **Appendix III**.

## **2.6 Property Owner Outreach**

The property owner outreach strategy involved sending an information package to property owners that had a chimney swift nesting or roosting site located on their property. The information package was created as part of the *Chimney Swift Nesting/Roosting Survey and Public Outreach Project* in 2010. In addition to a letter describing the project and its research outcomes, this package included two documents, a chimney swift fact sheet and a literature review. These documents contained information on provincial and federal legislation, general information about the species as well as best management/stewardship practices. Changes were not made to the information package and the documents were mailed to affected property owners as they had been prepared in 2010.

Mailing information for affected property owners was obtained by conducting title searches and document views through the Land Registry Office and Client Service Center in the city of Ottawa (see **Appendix IV**). Following the investigation for property owner addresses, information packages were mailed by postage in mid October to the affected property owners. An example of the complete mail out package is provided in **Appendix V**.

# **3. Results**

---

Following all surveying, monitoring, and chimney assessment activities, collected data was recorded and analyzed using ArcGIS mapping and spatial data analysis tools. These tools were used to make calculations based on the information added to the attribute table of the 'site locations' layer in the site map. Few results were obtained from the property owner outreach activities as there has been minimal property owner response to date.

## **3.1 Surveying**

The total number of additional potential sites identified in 2011 was tallied. As such, 82 sites were added to the site database throughout the course of this project, 2 of which had already been

confirmed as a nesting/roosting site when added, resulting in 80 additional potential sites (**Table 1**). As a result of the additional sites identified during this project, the Sandy Hill and Vanier probable area extents illustrated in the site map (**Appendix VIII**) were expanded to include additional potential sites identified within close range.

**Table 1. Additional potential sites identified in 2011**

<b>Probable Area</b>	<b>Site code</b>	<b>Address</b>	<b>Site Description</b>	
Centertown	CT-09			
	CT-10			
	CT-11			
	CT-12			
	CT-13			
	CT-14			
	CT-15			
	CT-16			
	CT-17			
	CT-18			
	CT-19			
	CT-20			
	CT-21			
	CT-22			
	CT-23			
	CT-24			
	CT-25			
	CT-26			
	CT-27			
	CT-28			
	Glebe	GL-10	Sensitive Internal Information	Sensitive Internal Information
		GL-11		
		GL-12		
		GL-13		
		GL-14		
		GL-15		
	Hintonburg	HN-10		
		HN-11		
HN-12				
HN-13				
HN-14				
HN-15				
HN-16				
Lowertown	HN-17			
	LT-01			
	LT-02			
	LT-03			
	LT-04			
Ottawa South	LT-05			
	OS-06			
Rockcliffe	OS-07			
	RC-04-01			
	RC-04-02			
	RC-05-01			
	RC-05-02			
	RC-06			
	RC-07			

Sandy Hill	SH-14					
	SH-15					
	SH-16					
	SH-17					
	SH-18					
	SH-19					
	SH-20					
	SH-21	Sensitive Internal Information	Sensitive Internal Information			
	SH-22					
	SH-23					
	SH-24					
	SH-25					
	SH-27-01					
	SH-27-02					
	SH-28					
	SH-29					
	SH-30					
	Vanier			VN-10		
				VN-11		
				VN-12		
VN-13						
Westboro	WB-16					
	WB-17					
	WB-18					
	WB-19					
	WB-20					
	WB-21					
	WB-22					
	WB-23					
	WB-24					
	WB-25					
WB-26						
WB-27						

### 3.2 Monitoring

Monitoring started on June 27 and continued on a regular basis until September 1 based on the timing of funding approval and chimney swift fall migration. Throughout the duration of this project, 76 sites were monitored within 10 medium or high probable areas and 1 low probable area all located within the urban city of Ottawa (**Table 2**).

The majority of sites monitored were within high probable areas. In fact, 16 sites were monitored in the Sandy Hill area alone, 14 sites were monitored in the Centertown area and 12 sites were monitored in the Westboro area. Each of these areas had high chimney swift activity and multiple confirmed nesting or roosting sites.

No chimney swift activity was observed in the medium or low probable areas that were monitored. However, there was significant volunteer participation in the Merivale area which greatly contributed to narrowing down the number of potential sites in medium probable areas. Chimney swift activity was neither observed in the Nepean, Downtown or Lowertown probable areas. In total, 7 of the 11 probable areas monitored had some chimney swift activity, all of which are considered high probable areas.

**Table 2. Number of monitored sites in each probable area**

Probable Area	Probable Area Ranking	# of Monitored Sites
Sandy Hill	High	16
Centertown	High	14
Westboro	High	12
Glebe	High	8
Vanier	High	7
Rockcliffe	High	5
Hintonburg	High	4
Merivale	Medium	6
Lowertown	Medium	2
Nepean	Medium	1
Downtown	Low	1

Of the 76 sites that were monitored, 52 were conducted by project coordinator and 24 by a BSC volunteer, an OSC member or a community member. Each monitored site was accounted for on an Evening Observation Form regardless of any deviations from the protocol. Consequently, some observation forms include data from multiple sites or data from sites that were not observed for the recommended monitoring time. In total, 79 observation forms were completed in 2011, more than the number of individual sites monitored because some sites were monitored more than once due to an overlap of monitoring efforts between volunteers and the project coordinator (**Appendix VI**). Due to this overlap, a new field was added to the attribute table of the site locations layer in the site map to track the number of times each site had been monitored. As such, six potential sites were monitored more than once in 2011 and only one site was monitored in both 2010 and 2011.

Due to the unsuitability of some chimneys, inclement weather or the observation of a more suitable chimney nearby, monitoring was concluded prematurely for a number of potential sites. In fact, 11 sites were determined unsuitable upon site arrival and were not monitored for any length of time (**Table 3**). Most often, chimneys that were determined unsuitable had been modified through the addition of a chimney cap or narrow aluminum flue. Only one potential site was determined unsuitable due to the demolition of a building.

**Table 3. Sites determined unsuitable**

Probable area	Site code	Chimney modification
Hintonburg	HN-13	Capped
	HN-14	Capped
	HN-15	Capped
Nepean	NP-02	Animal Guard
Sandy Hill	SH-02	Aluminum flue
	SH-09	Capped
Vanier	VN-03	Aluminum Flue
Westboro	WB-07	No chimney
	WB-08	Building demolished
	WB-20	Capped

Of the 76 sites monitored in 2011, 21% (16) were confirmed as nesting or roosting habitat. Similarly, 21% (6) of the 29 sites monitored in 2010 were also confirmed as nesting/roosting habitat. Nesting and roosting sites were confirmed through monitoring and one was confirmed through anecdotal evidence which will be re-confirmed in future monitoring (**Table 4**). Of the

monitored sites 5 were monitored by volunteers and 9 were monitored by the project coordinator. As a result of the identification of these confirmed sites, two of the originally designated ‘medium’ probable areas (Vanier and Rockcliffe), were upgraded to ‘high’ probable areas on the site map. One site was confirmed in the Rockcliffe area and 3 sites were confirmed in the Vanier area.

**Table 4. Confirmed nesting/roosting sites**

Probable area	Address	Building type	Chimney material	Type of site	Surrounding habitat	Monitored by:
Centertown			N/A	Nesting	Commercial	Volunteer
			Brick	Nesting	Residential	Volunteer
			Brick	Nesting	Residential	Volunteer
Vanier			Brick	Roosting	Residential	Volunteer
			Brick	Nesting	Residential	P.C.*
			Brick	Nesting	Residential	P.C.
Sandy Hill	Sensitive Internal Information	Sensitive Internal Information	Brick	Nesting	Residential	P.C.
			Brick	Nesting	Residential	A.E.*
			Stucco	Nesting	Residential	P.C.
Westboro			Stucco	Nesting	Residential	P.C.
			Brick	Nesting	Residential	P.C.
Glebe			Stucco	Nesting	Commercial	P.C.
			Brick	Nesting	Residential	Volunteer
Hintonburg			Brick	Nesting	Residential	Volunteer
			Brick	Roosting	Residential	P.C.
Rockcliffe			Brick	Nesting	Residential	P.C.

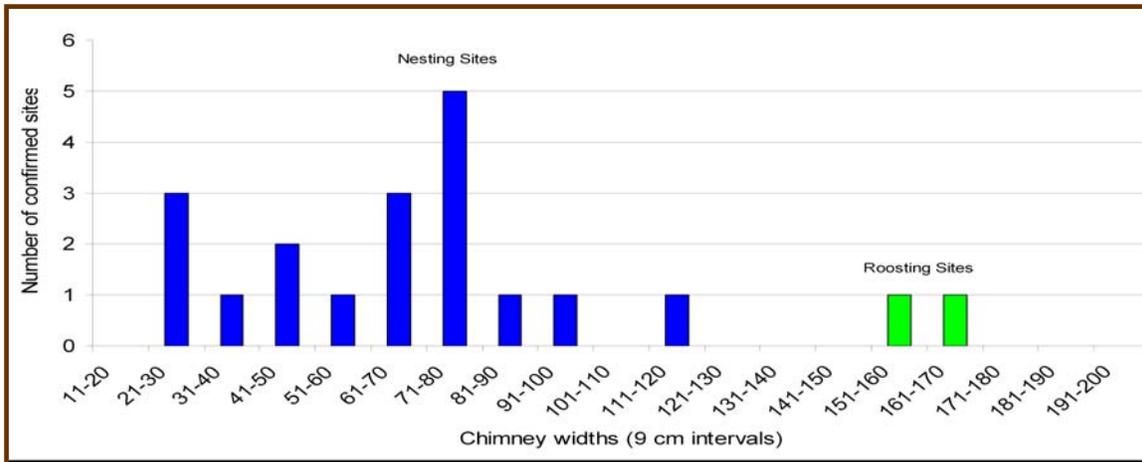
\* A.E. is the abbreviation for anecdotal evidence

\* P.C. is the abbreviation for project coordinator

### 3.3 Chimney Assessments

Chimney assessments were conducted for all 22 confirmed sites recorded in the city of Ottawa from 2010 and 2011 (**Appendix VII**). However, limited information was gathered for one of those sites as it had been completely demolished for newer development. The data collected from the assessments suggests that chimney swifts do prefer a particular habitat type with obvious requirements/preferences for rough surface building material, wide chimney entrances, and a residential surrounding habitat.

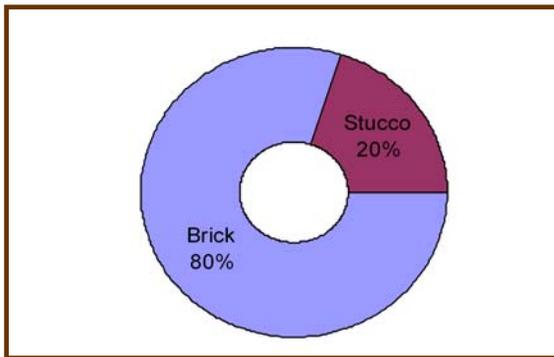
Although the statistical significance of the data is unknown, there were some patterns that arose from a simple data analysis. For example, of the 20 confirmed sites available for approximated chimney measurements, 5 (25%) had a chimney width of 80 cm (4 standard bricks). The majority of nesting sites (83%) had chimney widths ranging from 30-80 cm and the roosting sites ranged in width from 160-170 cm (**Figure 5**). Such data supports evidence that chimney swifts require chimney entrances to be 30 cm or wider in diameter.



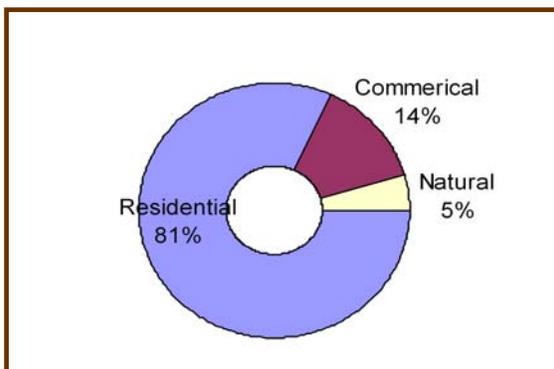
**Figure 5. Chimney widths of confirmed sites**

The collected chimney assessment data also supports evidence that chimney swifts require a rough surface chimney material. Although the chimney materials listed on the Chimney Assessment Form included stone and concrete, neither described the material for any of the confirmed sites identified in 2010 or 2011. In fact, brick and stucco were the only types of chimney materials recorded at confirmed sites (**Figure 6**). Interestingly, most of confirmed sites were made of brick chimney material which was associated with both roosting sites (**Table 4**).

In addition to evidence supporting chimney swift habitat requirements, a possible preference for a residential surrounding habitat was also demonstrated from the data analysis (**Figure 7**). Of the different habitat types described on the chimney assessment form, the majority (81%) of confirmed sites were located within a residential area. Conversely, none of the confirmed sites were located in an industrial surrounding habitat.



**Figure 6. Chimney material of confirmed sites**



**Figure 7. Surrounding habitat type of confirmed sites**

### 3.4 Property Owner Outreach

To date, one affected property owner has responded to the information package mail out. The response was positive and the owner assured the Ottawa Stewardship Council that nothing would be done to harm the resident chimney swifts. In fact, this property owner has been monitoring and recording the chimney swifts at this site for a number of years. In addition, they are willing to continue monitoring the population in the future. This response suggests that important data can be gained from property owners following the implementation of the property owner outreach strategy.

## 4. Discussion

---

The implementations of the surveying and monitoring protocols have proved to be effective methods for determining the locations of chimney swift nesting/roosting habitats. Sixteen sites were confirmed throughout this monitoring season alone, increasing the total number of confirmed chimney swift habitats in the city of Ottawa to 22. More specifically, 7 of the 82 additional potential sites identified this year were later identified as nesting/roosting sites, proving the site survey method to be an excellent starting point for efficiently identifying chimney swift habitat. Similarly, surveying and monitoring activities increased the total number of all recorded sites to 229. Of those, 105 have been monitored to date, 76 of which were monitored throughout the duration of this project. As a result, there are still 124 potential sites located in the city of Ottawa and are recorded on the site database and site map for future chimney swift monitoring projects.

Although the achievement of the surveying, monitoring and recording objectives has provided important information about chimney swift habitat locations and characteristics within the city of Ottawa, the urgency to manage these habitats is still increasingly evident. Chimney swift habitat is especially vulnerable to human activities such as chimney maintenance, modification and destruction. Indeed, chimney modifications and the construction of new buildings will continue, causing fewer available habitats for chimney swifts. Of the 16 confirmed sites identified this year, one has already been demolished due to new construction in the Centertown area. There is a definite need to identify more nesting/roosting sites in a timely manner and inform affected property owners, if the protection of chimney swift habitat is to be accomplished. Therefore, it is important that the public is aware of this species status as *Threatened* and understands what they can do to prevent chimney swift habitat loss.

As such, the third and fourth objectives of this project (the implementation of the property owner outreach strategy and the information package mail out) were achieved to encourage the protection and management of chimney swift habitats. This was an important step in promoting increased awareness of the species as it informs affected property owners of chimney swift ecology and the best management practices they can use to ensure the protection of critical chimney swift habitat. Furthermore, this outreach is an additional way to connect with community members who may be interested in contributing to the project.

This project demonstrates that the city of Ottawa has a number of potential and confirmed chimney swift habitats. It also provides additional information on the habitat characteristics that are most common to chimney swift nesting and roosting sites. Such information has been shared with Bird Studies Canada and will be useful in the continuation of monitoring and research activities. In addition, a number of committed volunteers have been recruited to the project,

increasing the potential for future success. Overall, the objectives of this project have been successfully met, contributing to the recovery and protection of the chimney swift population.

## 5. Recommendations

---

Throughout the course of this project the potential for improvements were recognized and the importance of continued and increased efforts were apparent. One of the most important lessons learned during the course of this project was to increase monitoring through both time and resources. With more volunteers and longer monitoring periods the rate of identifying nesting and roosting sites can be significantly increased. As such, it is especially important that the commencement of the project starts earlier in the monitoring season. However, this is dependent upon the timing of funding approval.

To increase and sustain volunteer participation it is recommended that confirmed sites be routinely monitored by volunteers to gather further information on the number of swifts using each site. Monitoring of previously confirmed sites by volunteers may spike their interest in the project and make them more likely to continue with their efforts. New monitoring techniques could also be adopted to increase volunteer participation, including a “chimney swift blitz” held once every few weeks in a high probable area where a group of volunteers commit to an evening of chimney swift observation. Similarly, the presence/absence monitoring technique outlined in the BSC protocol could also be adopted in addition to the evening observation monitoring method which may prove to be more efficient at different periods within the monitoring season.

It is also recommended that affected property owners be contacted soon after the confirmation of a nesting/roosting site has been established. This is especially important for preventing potential modifications to chimneys during the monitoring season. Similarly, following up with affected property owners to gauge their reaction and consideration of the suggested best management practices could be useful in determining the outcome of the property owner outreach strategy.

## 6. References

---

- COSEWIC 2007. COSEWIC assessment and status report on the Chimney Swift *Chaetura pelagica* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. Vii + 49pp. ([www.sararegistry.gc.ca/status/status\\_e.cfm](http://www.sararegistry.gc.ca/status/status_e.cfm))
- MNR 2009. Chimney Swift Factsheet. Ontario Ministry of Natural Resources. ([www.mnr.gov.on.ca/stdprodconsume/groups/lr/@mnr/.../276680.pdf](http://www.mnr.gov.on.ca/stdprodconsume/groups/lr/@mnr/.../276680.pdf))
- OCSP 2010. Ottawa Chimney Swift Nesting/Roosting Survey and Public Outreach Project- Final Report 2011. Chelsey Ellis, Ottawa Stewardship Council. ([www.ottawastewardship.org/CS\\_2011\\_PublicVersion\\_finalreport.pdf](http://www.ottawastewardship.org/CS_2011_PublicVersion_finalreport.pdf))
- Peterjohn 1995. Population trends from the North American Breeding Bird Survey. Bruce G. Peterjohn, John R.Sauer and Chandler S. Robbins. Pages 3-39 in T.E. Martin and D.M. Finch, eds. Ecology and Management of Neotropical Migratory Birds. Oxford Univ. Press, New York, NY.