

Ottawa Chimney Swift Nesting/Roosting Survey and Public Outreach Project

Final Report – 2011



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Introduction

The Chimney Swift (*Chaetura pelagica*) is an aerial foraging insectivore that inhabits urban areas. It has also been described as a cigar shaped aerial acrobat that can be heard overhead in the evening hours around sunset. The population of this migrating bird has been in general decline over the past few decades, with some estimates coming in at an over 95% decline since 1968 (COSEWIC, 2007). As such, the familiar sound of these birds at dusk may become less and less common in the Ottawa area. The 2007 Chimney Swift Assessment and Status Report developed by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) cites one of this species' main threats as a loss of nest and roost sites, initially through logging of old-growth forests, more recently through loss of chimneys suitable for nests and roosts (COSEWIC, 2007). The report also indicates that this species is part of an aerial insectivore guild that is showing significant declines for unknown reasons throughout the Americas (COSEWIC, 2007). The City of Ottawa is within the Canadian breeding range of the Chimney Swift, which includes select areas in east-central Saskatchewan, southern Manitoba, southern Ontario, southern Quebec, as well as New Brunswick, Nova Scotia, and possibly Prince Edward Island and Southwestern Newfoundland (COSEWIC, 2007).



Photo courtesy of Bruce Di Labio

Study Area

The general target study area was the City of Ottawa. Given the primary habitat of the species, focus was placed on the urban part of the city as well as the villages and hamlets contained within the city boundaries. These villages and hamlets included: Cumberland, Sarsfield, Navan, Carlsbad Springs, Vars, Edwards, Greely, Metcalfe, Vernon, Osgoode, Kars, Manotick, North Gower, Burritts Rapids, Richmond, Munster, Stittsville, Carp, Kinburn, Galetta, Fitzroy Harbour, Constance Bay, and Dunrobin.



Source: <http://en.wikipedia.org/wiki/Ottawa>

Project Purpose

The goals of this project were:

- 1) To strategically at a landscape level, identify potential Chimney Swift nesting/roosting sites/areas within the “urban” City of Ottawa and its villages/hamlets.
- 2) To develop an understanding of the Chimney Swift population in the City of Ottawa by monitoring a selection of potential nesting/roosting sites using an established monitoring protocol.
- 3) To develop and implement a public outreach strategy to increase awareness of the species and its status as a threatened species in Canada and Ontario.

In addition, this project created a framework which will allow Chimney Swift surveying and monitoring in the City of Ottawa to continue in the future.

Background

Status

In 2007 and 2009 correspondingly, the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) and the Committee on the Status of Species At Risk in Ontario (COSSARO) designated the Chimney Swift *Chaetura Pelagica* as a Threatened species both federally and provincially mainly due to their steady population and area of occupancy decline. Both of these designations resulted in the species being added to the federal *Species at Risk Act* (SARA) list of wildlife species at risk as well as the provincial Species at Risk in Ontario (SARO) list.

Description

The Chimney Swift is a small, soot-colored bird that is commonly seen and heard in groups darting overhead around dusk. They can be identified by their cigar-like shape and long thin pointed wings that form a crescent shape when they fly, as well as by their high pitched chatter. This species is part of a guild of aerial insectivores.

The Chimney Swift typically migrates into southern Ontario around the end of April, and by mid-May they have reached the more northern ranges (COSEWIC, 2007). In Canada, swifts are reported migrating south towards their winter range in the Amazon basin sometime between the middle of August to the middle of September (COSEWIC, 2007).



Habitat

Chimney Swifts are known to almost exclusively inhabit chimneys in urban and suburban areas, although they have been occasionally found in silos, wells and barns, and they still occupy hollow trees in remote areas (COSEWIC, 2007). This species requires chimneys with rough interior surfaces such as those constructed with brick and mortar, stucco, stone or concrete. In addition they require an interior diameter that is large enough to accommodate their wingspan (roughly 25-30cm or 1 foot).



Reproduction

Typically two to six eggs are laid in each nest (COSEWIC, 2007). Approximately 19 to 21 days of incubation are carried out by both parents before the eggs hatch (Dexter, 1969). It is common for not all of the eggs in a nest to hatch, but hatching success is generally high for this species. In the northern areas of their breeding range (northeastern U.S and south eastern Canada) swifts only raise one brood of young per year. Chimney Swift young develop quickly, and within three weeks of hatching they leave the nest and begin climbing the wall of the chimney and learning how to fly (Nature London, 2010).



Photos courtesy of Bruce Di Labio

Threats

Chimney Swifts are part of a guild of aerial insectivores that appears to be undergoing widespread declines across North America (COSEWIC, 2007). One of the foremost limiting factors affecting aerial insectivores is likely a decline in the availability of flying insects, their primary food source (Nature London, 2010). Out of all the species included in the guild of aerial insectivores, the Chimney Swift has had the most serious known decline (COSEWIC, 2007). This rapid decline has been attributed to the fact that the Chimney Swift is also faced a reduction in the availability of suitable habitat as possible nesting and roosting sites in older chimneys are becoming scarce and many chimneys have undergone renovations and upgrades (COSEWIC, 2007). Finally, climate change is also cited as a contributing factor in the decline in Chimney Swift numbers as the changing climate is causing extreme and unpredictable weather events thereby affecting the timing and availability of food sources (Nature London, 2010). Additional limiting factors may also include: decrease in natural nesting and roosting sites, competition for nest sites, harassment from other species, predation, disturbance from human activity, pesticide contamination, nest destruction, and the perils of migration and overwintering.



Benefits

1. Insect Control: As part of the guild of aerial insectivores, Chimney Swifts can have a significant role to play in the control of insect populations in cities as they are capable of eating more than 1,000 insects a day (COSEWIC, 2007).
2. Part of the food chain: As Chimney Swifts spend most of their time in the air and choose nesting/roosting locations (chimneys) that are largely inaccessible by most other animals, there are very few known predators for this species. Chimney Swifts are however part of the local food chain, and as such they support natural predators in the areas they inhabit. Reports indicate that birds of prey (ex. Merlins) have been known to prey on Chimney Swifts (COSEWIC, 2007).

Method

Potential site selection

1) The City of Ottawa was divided into areas based on neighborhood divisions and villages/hamlets. 2) Each area was rated for surveying priority, from no priority to high priority. 3) Specific sites were located (potential nesting/roosting sites) in each area where the Chimney Swift's preferred habitat was located.

Observation site selection

1) Potential nesting/roosting sites were plotted on a map using GIS software. 2) Sites for observation were chosen based on their relation to areas with a high priority rating.

Observation site preparation

Site observation was conducted from public property (i.e. from sidewalk, roadside, etc). No site preparation was necessary.

Public outreach preparation

1) Online research was conducted to determine all extermination, chimney sweeping and home inspection companies operating in the Ottawa area. 2) A title search was conducted at the Land Registry Office for those properties with confirmed nesting sites.

Methods of data collection

- 1) Potential nesting/roosting sites in the “urban” areas of the City of Ottawa were found by visually scanning through online aerial images (<http://www.bing.com/maps/?FORM=Z9LH4>) of the city for habitat (chimney’s) that appeared suitable. As online aerial images were unavailable for the rural areas of the city, potential nesting/roosting sites in the villages/hamlets were found through observations on-site. Potential sites were associated with a civic address using the City of Ottawa’s online mapping service Emap (<http://apps104.ottawa.ca/emap/>).
- 2) Monitoring was based on the Chimney Swift evening surveying protocol developed by Bird Studies Canada (BSC) (appendix 1). The protocol involves observing potential nesting/roosting sites for a period of approximately one hour (half an hour before sunset and half an hour after sunset), recording the number of Chimney Swifts entering and exiting the chimney as well as recording Chimney Swift activity in the area (number of Chimney Swifts flying).

To ensure that a maximum number of sites were monitored during the time available for this study, minor deviations from the Bird Studies Canada evening surveying protocol were made. Surveyors were asked to monitor each site once, instead of the protocols recommended three times. In addition, surveyors were asked to record their general observations of the site and estimate overall chimney swift numbers in an area rather than be concerned with completing all the information on the protocol form.

Results and Analysis

Strategic identification of potential sites

The City of Ottawa was divided into 29 areas. Each of these areas received a surveying priority rating ranging from no priority to high priority. The rating was based on a subjective assessment of the areas potential to support Chimney Swift habitat considering anecdotal and historical evidence of Chimney Swift activity as well as the age and construction type of buildings.

135 potential nesting/roosting sites were identified and mapped using GIS software (appendix 2).

Monitoring

Potential sites were monitored by the Project Coordinator or by a Stewardship Council member. Results were recorded on Bird Studies Canada's evening chimney observation form (appendix 3).

Of the 135 potential nesting/roosting sites mapped, 29 sites in 11 different areas of the city were monitored (appendix 5). The following table summarizes the results collected from the monitored sites:

Table 1: Observations of Chimney Swift Activity at Surveyed Sites

Site	<i>Estimated Number of Birds using Chimney at site</i>	<i>Estimated number of Birds observed in surrounding area</i>	<i>Area of the city</i>
1	2	N/A	Carp
2	None	8	Centertown
3(a)	None	None	Experimental Farm
3(b)	None	None	Experimental Farm
3(c)	None	None	Experimental Farm
4	None	20	Glebe
5	None	None	Glebe
6	None	10	Glebe
7	None	None	Hintonburg
8	None	None	Hintonburg
9	4	20	Hintonburg
10	None	5	Hintonburg
11	None	None	Hintonburg
12	None	None	Hintonburg
13	None	6	Hintonburg
14	2	6	Hintonburg
15	None	2	Hintonburg
16	None	None	Nepean
17	1	N/A	Ottawa South
18	None	None	Rockcliffe
19	None	20	Sandy Hill
20	4	20	Sandy Hill
21	None	6	Sandy Hill
22	1	20	Sandy Hill
23	None	None	Stittsville
24	None	None	Westboro
25	None	None	Westboro
26	None	None	Westboro
27	None	None	Westboro

Public outreach

Two documents were created as part of the public outreach strategy for this project. The Chimney Swift fact sheet (appendix 10) is a quick reference document summarizing facts about the Chimney Swift and its status as a provincially and nationally threatened species; as well as legislation that exists to protect species at risk in Canada and Ontario; and best practices. The second document is a more in depth literature review (appendix 11), including sections on Chimney Swift biology, habitat, threats, legislation and best practices to help protect the species.

These documents became part of an information package that was mailed out to businesses in the Ottawa area that may have contact with the species or its habitat. The goal of the information package mail out was to increase awareness of the Chimney Swift and its status as a threatened species especially for residents of the Ottawa area who are most likely to come into contact with the species. The businesses included in the mail out were: chimney sweepers, exterminators, and home inspectors (appendix 7). In addition, the Chimney Swift information package was sent to property owners of the sites where confirmed Chimney Swift habitat was found. The following table summarizes the results of the public outreach component of the project:

Table 2: Number of Information Packages Sent

<i>Recipient Type</i>	<i>Number of Packages mailed</i>	<i>Number of Packages returned undelivered</i>
Chimney sweeping companies	12	1
Extermination companies	22	None
Home inspection companies	30	3
Property Owners	6	1
<i>Total</i>	70	5

Summary/Discussion

Field verification was conducted between July 7 and September 1, 2010 which corresponds to the second half of the Chimney Swifts active nesting/roosting season in the area. Surveyors noticed a significant change in Chimney Swift numbers/activity the week of August 16, 2010. At this point in the season, the number of Chimney Swifts observed declined and Chimney Swifts were no longer observed in areas that had been active earlier in the season.

Chimney Swifts were found nesting/roosting in six (6) of the 29 sites monitored (20.7%). Five (5) of the confirmed



nesting/roosting sites were located in the “urban” City of Ottawa and one (1) site was in a rural village. Although only 6 nesting/roosting sites were found, it is important to note that relatively large groups of Chimney Swifts were seen flying in the areas surrounding 12 of the 29 sites surveyed (41.4%). Focus on these areas should be considered in future studies that aim to uncover more nesting/roosting sites.

Photo courtesy of Bruce Di Labio

Limiting factors encountered in this study include the following:

1. Potential Site Identification: There were potentially a number of suitable sites that were not discovered during this project due to the use of online aerial views for site identification. Online aerial views of the City were valuable tools for finding large easily visible chimneys in the City, but surveyors found that once on-site a number of additional suitable chimneys could be identified that were not previously visible and had therefore not been mapped and included in the study. Although on-site identification of suitable sites may have been more accurate, the timeline of this study did not allow for potential site identification to take place in this way.

2. Limitations of Online data: Field verification showed that 11 of the 29 surveyed sites (37.9%) were actually unsuitable habitat due to alterations to the chimney or due to the fact that they were in use by the building’s operational system (Table 3). These variables could not be accurately verified with the use of online aerial views for site identification.

Table 3: Observations of Habitat Suitability On-Site

<i>Site</i>	<i>Chimney (habitat) Characteristics</i>	<i>Suitability</i>	<i>Reason/Observation on Site</i>
1	Square brick	Suitable	
2	Square brick	Suitable	
3(a)	Square brick	Not suitable	In use by buildings operational system
3(b)	Square brick	Not suitable	In use by buildings operational system
3(c)	Square brick	Not suitable	Flues installed
4	Square brick	Suitable	
5	Square brick	Suitable	
6	Square brick	Suitable	
7	Square brick	Not suitable	Structure surrounding chimney under renovation
8	Square stone	Suitable	
9	Square brick	Suitable	
10	Square brick	Not suitable	Chimney capped
11	Brick smokestack	Not suitable	In use by buildings operational system
12	Brick smokestack	Not suitable	In use by buildings operational system
13	Square brick	Suitable	
14	Square stucco	Suitable	
15	Square brick	Not suitable	Chimney surrounded by seagulls
16	Square stone	Suitable	
17	Square brick	Suitable	
18	Square brick	Suitable	
19	Square brick	Not suitable	Chimney capped
20	Square brick	Suitable	
21	Square brick	Not suitable	Chimney being repaired
22	Square brick	Suitable	
23	Square brick	Suitable	
24	Square brick	Suitable	
25	smokestack	Not suitable	In use by buildings operational system
26	Square brick	Suitable	
27	None	Not suitable	Building demolished

3. Late start for surveying season: Reports indicate that depending on the weather, Chimney Swifts generally arrive in the region in late spring and begin their migration south late in summer (late August-early September). Monitoring of potential sites was conducted between July 7, 2010 and September 1, 2010 (due to MNR's late notification of funding approval). To have a complete understanding of the Chimney Swift population in the City of Ottawa it would be critical to have the surveying season span the full nesting/roosting season of the Chimney Swift in the region.

Management Recommendations

1. Complete the survey of all 135 potential/suitable sites identified through this project.
2. Continue with the public outreach initiative developed by this project.
3. Consider expanding the public outreach initiative to include the involvement of community groups in surveying efforts to increase awareness.
4. Consider monitoring any confirmed nesting/roosting sites on an annual basis. This will allow for a greater understanding of Chimney Swift habits over time, thereby informing recovery strategies.
5. Consider “blitzing” areas where no Chimney Swifts were seen nesting/roosting, but where several were seen flying in the area, to locate potential/suitable chimneys to survey in these high priority areas.
6. Explore construction designs for artificial chimneys in colder climates, and consider their implementation in areas frequented by Chimney Swifts.

References

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