

The conservation of chimneys used by Chimney Swifts in London, Ontario, 2004 to 2015

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Introduction

From 1970 to 2012, populations of Chimney Swifts (*Chaetura pelagica*) in Canada declined by 95%, the average annual decline in Ontario being 7.77% (North American Bird Conservation Initiative 2012, Environment Canada 2014). In 2007, the Chimney Swift was assessed as “Threatened” by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC). The species was subsequently accorded the same assessment by the Committee on the Status of Species at Risk in Ontario (COSSARO). In 2009, the Threatened designation became official under both Ontario and Canadian legislation to protect species at risk. The Ontario Ministry of Natural Resources (2009) indicated that habitat of the Chimney Swift in Ontario was protected “from damage and destruction” and identified chimneys used by swifts as a component of their habitat. In June 2013, the provincial cabinet approved regulations that detailed new approaches for the Chimney Swift: protection of chimneys used by swifts

was exempted from legislative requirements, provided that certain conditions of compensatory mitigation were met (Government of Ontario 2013). A key component of the new regulations was that protection of chimneys and/or mitigation was to be proponent-led (i.e., it was up to the chimney owner to note the presence of swifts and to initiate and undertake mitigation if the owner intended to damage or destroy habitat). The current approach is described in Ontario Ministry of Natural Resources and Forestry (2017).

Chimney Swifts are present in Ontario from late April to early October. They nest and roost inside hollow shafts that have relatively low light levels and a rough interior surface to which they cling by their strong claws (Figure 1). In earlier times, swifts relied primarily on large-diameter hollow trees for nesting and roosting. With the arrival of European settlers, swifts began using built edifices, especially unlined brick chimneys, for these purposes. As old-growth forests and large, aging trees became less common,



Figure 1. Adult Chimney Swift clinging to a vertical brick surface, London, Ontario, 21 June 2015.

Photo: David Wake.

swifts increasingly came to depend on human-made structures. Swifts mate for life and return to the same chimney each year to nest — one pair per chimney (Kyle and Kyle 2005). Non-breeding individuals often spend the night in large communal roosts, particularly during migration.

A significant factor behind the decline of swifts is believed to be problems with the food supply — insects captured during flight. Following the post-war introduction of DDT (dichlorodiphenyl-trichloro-ethane), the structure of insect communities was substantially altered, a situation that did not reverse itself after DDT was banned in Canada in the 1970s (Nocera *et al.* 2012). Consequently, for many decades, swifts may have been surviving on a less-than-optimal diet. In more recent times, many other factors, including habitat loss, pesticide use, timing of peak insect abundance and extreme and changing weather patterns associated with climate change, may also be exacerbating the swifts' problems and contributing to the continued downward slide in numbers.

A scarcity of chimneys for nesting and roosting is often mentioned as a possible cause of population losses in swifts. Indeed, very few suitable chimneys have been built since the 1960s, while older chimneys are increasingly falling into states of disrepair or becoming victims of capping or demolition. A shortage of chimneys is, however, not limiting swift numbers in this province at present, with just 24.4% of apparently suitable chimneys being occupied by swifts (Fitzgerald *et al.* 2014). Nevertheless, Ontario's swifts

currently depend heavily on chimneys and will do so into the foreseeable future. Even as the stock of suitable chimneys dwindles, accommodation continues to be required by swifts occupying still-extant chimneys, swifts displaced from newly capped or demolished chimneys and recently paired young swifts. Retaining existing chimneys used by swifts (hereinafter called swift chimneys) may also reduce stress and increase productivity for established pairs.

It has been suggested that artificial swift towers might replace chimneys that are being lost. Yet, out of more than 60 such structures erected in five provinces, only a single heated shaft in Quebec was successful in attracting nesting swifts (Steeves *et al.* 2014). At least in the near future, it seems that preserving known swift chimneys is the most viable way to ensure availability of optimal nesting and roosting sites for Ontario swifts.

From 2004 to 2013, volunteers from Nature London (McIlwraith Field Naturalists) identified 162 active swift chimneys in London. The bulk of the search effort was carried out from 2007 to 2009, when 108 (67%) of the chimneys were discovered. In the quest to find active chimneys, no comprehensive survey of potential swift chimneys was undertaken. Nature London focused mainly on a sampling of business, institutional and industrial buildings. Chimneys on private residences and on many other types of buildings were not targeted for checks. Therefore, numerous additional London chimneys are likely also seasonally occupied by swifts.

During the second half of 2015, Nature London's Chimney Swift Liaison revisited the 162 chimneys referred to above to document their then-current status. Results are presented in Wake (2016) and are briefly summarized here. One hundred and fifteen chimneys (71%) were considered to be still suitable for occupancy by swifts. The remaining 47 chimneys (29%) had been capped or demolished (with approximately equal numbers experiencing each fate). Unfortunately, limitations in the assessment methodology made it difficult to determine whether some chimneys remained open or had been capped. Thus, the 29% loss of swift chimneys is likely an underestimate. Of 31 active chimneys found from 2004 to 2006, 16 (52%) remained available to swifts. Of 108 chimneys located from 2007 to 2009, 80 (74%) were accessible to swifts. For the 2010-to-2013 period, 19 (83%) of 23 chimneys could still accommodate swifts.

Realizing that old brick chimneys used by Chimney Swifts were disappearing from Ontario's built landscape, Nature London carried out several initiatives in the hope of helping to conserve these chimneys. Addresses of known swift chimneys were passed on to relevant agencies thought to be in a position to take action towards their preservation. Nature London undertook numerous educational outreach endeavours aimed at the general public. From 2007 to 2009, the club operated an appreciation and education program for owners of swift chimneys. When opportunities arose or when Nature London became aware that particular swift chimneys might face

demolition or other threats, representations were made to appropriate government and other authorities. This paper reports on the successes and failures of Nature London's efforts to promote the conservation of swift chimneys during the 12-year period from 2004 to 2015.

Methods

Beginning in 2004, Nature London began developing and refining protocols for detecting and monitoring chimneys used by Chimney Swifts in London. When Bird Studies Canada (BSC) launched Ontario SwiftWatch in 2010, London volunteers adopted BSC protocols, which varied slightly from those pioneered by Nature London. In general, with the targeted chimney silhouetted (if possible) against the northwest sky, a person on the ground carefully observed and noted all swift entries and exits during the 40-to-60-minute-period bracketing official sunset. Rarely were building owners or occupants aware their chimneys were being monitored. In conjunction with its program to identify and selectively monitor a sampling of London swift chimneys, Nature London undertook a number of initiatives whose ultimate goal was the protection of such chimneys. All swift-related activities were carried out under the auspices of the club's volunteer Chimney Swift Liaison. Chimney conservation efforts are described below, in four categories.

Sharing of data with relevant agencies

At regular intervals, data collected on the activity of swifts in London chimneys were forwarded to selected recipients.

These consisted of municipalities, agencies, organizations and other entities that were believed to have the potential to use the information in ways that would assist in the conservation of Chimney Swifts and/or the chimneys they were occupying. Addresses of swift chimney locations were forwarded to relevant employees at the City of London Planning Department (heritage or ecological planner), the Ministry of Natural Resources (MNR) in Aylmer (species-at-risk biologist), and the Canadian Wildlife Service (CWS) (species-at-risk biologist). The hope was that possession of knowledge of some London chimneys used by swifts might encourage these civil servants to act proactively if an issue or threat arose concerning any of the chimneys on the list. Nature London also regularly urged City of London officials to check all promising-looking chimneys (especially those not yet known to Nature London) for activity by swifts prior to issuing permits for demolition or alteration of older buildings. All chimney-monitoring data were submitted to Bird Studies Canada.

Education aimed at the general public

Nature London carried out a number of initiatives to inform the general public about local Chimney Swifts and their conservation needs. These efforts included reports, pamphlets, newspaper and magazine articles, materials posted on the Nature London website, PowerPoint presentations delivered to schools and community groups, guided walks in parts of the city where populations of swifts tended to be highest, displays set up in public spaces such as libraries and

neighbourhood fairs and provision of information on conservation of swifts. The hope was that greater community awareness of swifts, their needs and Threatened status would lead to better protection of swifts and their chimneys.

Recognition and education program for owners of swift chimneys

From 2007 to 2009, Nature London operated a stewardship program aimed at landlords (owners, managers or other representatives) of swift chimneys. In general, landlords chosen for contact were thought likely to be sympathetic to the concept of protecting Chimney Swifts on their premises. Two categories were particularly targeted: educational institutions (in the knowledge that environmental science was a component of their curriculum) and religious institutions (ones known to have an interest in environmental issues). Other landlords were selected on the basis of personal knowledge; for example a swift monitor was aware that her apartment superintendent would respond positively. In one case, a business owner who discovered a monitor observing his chimney was included in the stewardship program.

A representative of Nature London approached each selected landlord, advising of the presence of swifts in the chimney and explaining that the birds posed no health or fire hazard. It was suggested that it was an honour to provide accommodation for an unobtrusive but charismatic species whose numbers were in steep decline. Nature London then expressed the desire to present the business or institution with a framed certificate of appreciation for its contribution

to the conservation of the Chimney Swift. Almost all landlords responded positively, although a few chose not to participate. One business owner declined to accept a certificate because, although he was happy to accommodate swifts at that time, he did not wish to be embarrassed if he changed his mind later. His building has since been sold and demolished.

When feasible, a thank-you-certificate-presentation event was organized where a Nature London representative gave a five-minute talk about the conservation of swifts and left behind locally produced pamphlets about swifts. In addition, customized information about the owner's chimney and on how to be a good landlord to swifts was usually provided (e.g., information on chimney cleaning). Whenever it could be arranged, certificate-presentation events were held in the buildings in which the swift chimneys were located and with a number of people in attendance (e.g., during a gathering of staff, a church service, or a school assembly). Owners were encouraged to hang certificates in a highly visible or well-trafficked part of their premises.

Certificates were presented to 22 Chimney Swift landlords representing 38 chimneys. The locations of chimneys involved in the program fell into the following categories: high-rise apartments (2), businesses/offices (8), churches (10) and educational institutions (18). The duration of Nature London's landowner-contact program approximately coincided with the interval between the assessment of the Chimney Swift as Threatened in 2007 and the official designation in 2009. The program ended at a time when many Nature London initiatives for swifts

were being wound down to make way for expected new swift programs under the auspices of Bird Studies Canada. At that point, it was also anticipated that federal and provincial governments and other partners would soon be adopting strategies to protect the Chimney Swift and its habitat and that a recovery plan for the species would be in place by 2011.

Representations to government or other authorities

In an effort to protect known swift chimneys, Nature London made direct contact with head personnel at selected public institutions, and with elected federal, provincial and municipal officials, as well as with relevant employees. Sometimes the contact involved advocacy on behalf of swifts in general, and at other times on behalf of specific swift chimneys. An overview of such activities follows.

In the spring of 2013, a delegation from Nature London met with Deputy Premier Deb Matthews to urge strengthening rather than weakening of provincial legislation and regulations relating to the protection of the Chimney Swift and its habitat. Nature London made submissions to London City Hall and MNR (Aylmer office) when it learned that renovation, demolition or zoning changes were being considered for specific London buildings that were on record for harbouring swifts. In this manner, Nature London made representations (in writing, by telephone, and/or at public meetings) to the appropriate authorities on behalf of 16 swift chimneys after the Chimney Swift was officially designated as Threatened in 2009. In two of the 16 cases, the chimney had just been cut down and

capped when Nature London contacted MNR. For the other 14 chimneys, Nature London made representations, sometimes a number of times for a particular chimney, to authorities well before any action was taken to demolish or cap the chimney. Two examples are highlighted here. In 2009, the public was invited to make input regarding the future of the old London Psychiatric Hospital complex and grounds on Highbury Avenue, which was owned by Ontario Realty Corporation (later by Infrastructure Ontario). Because, at the time, the public was not permitted on the property at dusk, volunteers could not assess the chimneys for swift occupancy. Therefore, early in the process, at the urging of Nature London, a consultant was retained and the buildings investigated for use by swifts. In 2014, Nature London made representations to staff and elected officials at City Hall, as well as the CEO of a large public institution, which owned a building whose chimney annually harboured a successful swift nest and a significant fall roost of up to 250 birds. The case for preserving the chimney was also publicized in the print news media and on social media.

Results

During the 12-year period, Nature London was not aware that any of the government agencies with which it had shared swift data ever used such information to proactively protect a swift chimney. It was not possible to quantify the effectiveness of Nature London's diverse array of public outreach initiatives on behalf of Chimney Swifts. Generally,

however, in the cases of direct-contact activities (e.g., talks, walks, staffed displays, and responses to e-mailed inquiries), information seems to have been positively received.

Recognition and education program for owners of swift chimneys

Although owners were not specifically requested to do so, at the time of the certificate presentations most made voluntary verbal commitments to continue to maintain and protect their chimneys for future use by swifts. Information (as of late 2015) on the status of the 38 chimneys whose owners received framed certificates and stewardship information is presented in Table 1. Twenty-three chimneys (61%), representing 16 owners, remain intact and accessible to swifts. Of the other 15 chimneys (39%), seven were capped or taken down relatively soon after the certificate presentations (though one demolished chimney was subsequently replaced following intervention by Nature London with MNR). One institutional owner of eight chimneys demolished one a few years after receiving a certificate and capped five in the past few years, leaving just two of the original chimneys available to swifts. In at least a few cases, receipt of a certificate and educational materials caused some landlords to take better care of their chimneys and to ensure swifts continued to be accommodated; e.g., one owner refurbished a deteriorating chimney (Figures 2 and 3). Another continues to contact Nature London for advice relating to the timing and appropriateness of roof and chimney maintenance.

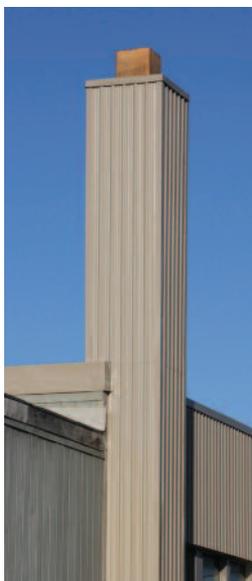


Figure 2. A swift chimney not long after a November 2009 certificate presentation, showing upper portion of the shaft in very poor condition, with missing mortar, loose bricks and lime deposits, London, Ontario, 21 April 2010.

Figure 3. The chimney in Figure 2, now externally clad in metal, emergent tile liner retained, annually used by nesting swifts, London, Ontario, 11 December 2015.

Photos: Winifred Wake.

Since all chimneys receiving certificates were identified in 2009 or earlier, it is instructive to examine the status, in 2015, of all 139 chimneys first identified during this period (Table 1). Forty-three (31%) of the 139 chimneys have been lost. For the 101 chimneys that were not recognized with certificates, 28% were lost compared to 39% (15 of 38) for chimneys whose owners received certificates.

Table 1. Status in 2015 of 139 London swift chimneys first identified in 2009 or earlier.

Total chimneys	Building demolished	Chimney cut down and capped	Chimney extant and capped	Chimneys (%) intact and available to swifts	Chimneys (%) unavailable to swifts
Certificate recipients (38)	2	5	8	23 (61%)	15 (39%)
Non-recipients of certificates (101)	5	8	15	73 (72%)	28 (28%)
All chimneys (139)	7 ¹	13 ²	23 ³	96 ⁴ (69%)	43 (31%)

¹ Three buildings including chimneys, one free-standing chimney, plus three free-standing silos, were razed to ground

² Chimney removed to approximately roof level and capped

³ Chimney covered in a way that renders it inaccessible to swifts (11 chimneys blocked by installation of visible metal superstructures, eight by flat metal coverings, two by wire mesh animal guards, and two blocked internally)

⁴ Includes one chimney that was demolished to roofline and later replaced; may include an unknown number of chimneys that are blocked internally

Table 2. Status in 2015 of 124 London swift chimneys identified from 2004 to 2013 whose owners did not receive thank-you certificates.

Total chimneys	Building demolished	Chimney cut down and capped	Chimney extant and capped	Chimneys intact and available to swifts	Chimneys unavailable to swifts
124	4	10	14	96 (77%)	28 (23% loss rate)

A look at the status of all swift chimneys identified from 2004 to 2013 reveals an even greater disparity in rate of loss between chimneys whose owners received certificates and those whose owners did not (Table 2). By 2015, of 124 chimneys whose owners did not receive certificates, 28 (23%) had been lost, compared to 15 of 38 chimneys (39%) whose owners had received certificates.

One positive long-term outcome of Nature London’s chimney-owner stewardship initiative is noteworthy. King’s University College, whose two active swift chimneys annually host a nesting pair and a large roost (up to 1600 swifts), respectively, has enthusiastically embraced the swift presence on campus. In addition to welcoming volunteer swift monitors, the college often serves as the release site for orphaned swifts raised by wildlife rehabilitation centres that specialize in the care of aerial insectivores (birds, including swifts, that feed by capturing insects on the wing). Dozens of hand-reared swifts from London-based Swift Care Ontario and elsewhere have

been released from the King’s University College rooftop adjacent to the roost chimney.

Representations to government or other authorities

Nature London has been unable to discern any positive actions to protect swifts or their chimneys as a result of its communications with elected municipal, provincial or federal officials. Nature London’s representations to civil servants yielded few positive results, with one notable exception. Before revised regulations were implemented in 2013, in two cases, Nature London contacted MNR (Aylmer) about chimneys that had just been cut down and capped. In the first instance, in the autumn of 2009, MNR compelled one owner, a certificate recipient aware of the implications of the swift’s Threatened status, to build a replacement structure above the original chimney shaft. In the second instance, however, a freshly capped swift chimney reported by Nature London to MNR in early August of 2011 remains capped.

Table 3. Status in 2015 of 14 London swift chimneys for which Nature London made early representations to the City of London and/or the Ministry of Natural Resources requesting they be protected (2009 or later).

Total chimneys identified	Building demolished	Chimney partly torn down and capped	Chimney extant and capped	Chimneys available to swifts	Chimneys unavailable to swifts
14	2	1	7	4 (29%)	10 (71% loss rate)



Figure 4. A swift chimney occupied annually by swifts during the nesting season, London, Ontario, 19 July 2007.



Figure 5. The chimney in Figure 4 after it was cut down and covered by the roof of the building, rendering the shaft inaccessible to swifts, London, Ontario, 12 December 2015.

Photos: Winifred Wake.

The status in 2015 of 14 chimneys for which Nature London made early requests for protection is shown in Table 3. Just four chimneys (29%) are currently available to swifts. A synopsis of the fates of the 14 chimneys follows. Two buildings, along with their chimneys, were razed prior to 2013, leaving behind empty spaces. One of these demolished chimneys was among five known swift chimneys located within a defined city planning area; the remaining four chimneys will likely be protected. One chimney was cut down to roof level and the roof extended over it (Figures 4 and 5). One chimney reported as “extant and capped” has since been demolished (2016), with the owner, at Nature London’s urging, undertaking voluntary reporting to provincial authorities and follow-up mitigation. Six other capped chimneys are located on the old London Psychiatric Hospital infirmary. Identified

as active swift chimneys during the summer of 2009, they were capped prior to the 2010 nesting season and remain so.

Discussion

It will require a stronger commitment from political leaders or government officials before the conservation of swifts and their chimneys becomes a higher priority for civil servants. Nature London remains hopeful that 13 years of London swift-monitoring data submitted to Birds Studies Canada will help to inform conservation action on behalf of the Chimney Swift.

While their effectiveness cannot be quantified, outreach activities directed towards the general public have been considered to be useful, even though London’s stock of swift chimneys continues to dwindle. It might have proved more productive, however, to have also targeted specific audiences that may hold more

potential for actual action to conserve chimneys. Included among these are home and commercial building renovators, brick layers, stone masons, chimney cleaners, furnace installation and maintenance companies, and planners, consultants and others who facilitate zoning changes and/or building alterations and demolitions. Groups interested in historic buildings and architectural heritage, and business and community associations in older urban areas might also have been receptive to learning about Chimney Swifts and their conservation needs.

Recognition and education program for owners of swift chimneys

The higher rate of loss of viable swift chimneys on buildings whose owners received certificates invites attempts at explanation. Given the relatively small number of chimneys involved, the difference might be random. It is also possible the result was influenced by the fact that more than half the chimneys lost had just two owners or by an inherent bias in the selection of swift landlords. For the most part, chimneys in the certificate program were located on buildings that were well maintained, while many chimneys whose owners did not receive certificates were found on less-well-maintained buildings. The lower rate of capping or demolition for less-well-maintained buildings might be an artefact of neglect.

It is useful to reflect on other possible reasons why landowner recognition seems to be associated with higher losses of swift chimneys and to identify weaknesses in the program that might be

addressed in any future undertakings of this sort. Prior to contact by Nature London, almost all owners of swift chimneys were unaware they were harbouring swifts. Upon so learning, some welcomed or tolerated the swifts, while others took action to exclude them. It is assumed that owners of swift chimneys not contacted by Nature London were equally likely to be oblivious to the presence of swifts in their chimneys. In the absence of such knowledge, they would, by definition, not take action to eliminate any birds using chimneys from their premises.

Given that Nature London took considerable care to try to contact only landlords whom it had reason to believe would exhibit positive attitudes towards swifts, the results of the certificate program are particularly disappointing. Had Nature London contacted additional landlords who were considered more likely to react negatively to news of birds in their chimneys, it is possible the chimney-loss rate associated with the landowner-contact program might have been even higher.

When certificates were presented, efforts were made, as much as possible, to ensure they were given to the actual owner or CEO of the institution or business. The hope was that buy-in at the top level would be more likely to ensure cooperation from other arms of an organization. Within a relatively short time, Nature London discovered that this expectation did not necessarily hold. In the case of two large institutions that each owned a number of chimneys, the club learned that facilities management personnel did not agree with having

swifts in chimneys, and their views tended to prevail. One CEO, who had been very positive about accepting a certificate and committing to chimney conservation a short time earlier, when contacted about a pending swift chimney demolition, indicated he had no interest in or jurisdiction over building maintenance issues.

The most frequent reason for the later loss of chimneys owned by certificate recipients related to furnace upgrades to improve energy efficiency, which resulted in a lined and capped chimney. Some unused and/or unstable chimneys were cut down and capped. Some chimneys were demolished to make way for urban renewal. One chimney was covered with wire mesh to keep out raccoons and squirrels, while another was covered specifically to exclude swifts. Most of these losses occurred after the Chimney Swift was designated as Threatened.

From 2007 to 2009, when Nature London's chimney-owner contact program was in operation, swift chimneys had not yet acquired protection under species-at-risk legislation. Thus, when volunteers approached swift chimney landlords, they were trading totally on their ability to generate lasting goodwill from owners towards swifts. Although Nature London advised swift landlords of the pending designation of the Chimney Swift as Threatened, it had no incentives to offer, no authority to require long-term cooperation from owners and no possibility of back-up enforcement from government officials.

A very significant shortcoming of the Nature London chimney-owner contact program was a lack of follow-up. Annual contact (e.g., providing updated information on swift presence and protection policies, advice as needed, and perhaps opportunities for people frequenting the building to actually see swifts) might have helped keep owner interest and commitment high. Two owners that maintain regular contact with Nature London (for different reasons) continue to be committed to preserving their chimneys for swifts.

Nature London's owner-contact program was conceived and delivered entirely by volunteers. The program was very time consuming to operate and, even if there had not been other reasons for terminating it in 2009, it is unlikely it could have been sustained indefinitely by volunteer labour. Nature London was disappointed that, after its chimney-owner contact program ended, no other player picked up the ball on any similar project. No recovery plan or strategy has yet been unveiled.

In the years following the official designation of the Chimney Swift as Threatened in September 2009, had there been a consistent, effective program of enforcement by provincial authorities, it is possible Nature London's initial two-year-long effort to preserve swift chimneys through landowner contact might have yielded more positive long-term results. For example, later in the fall of 2009, a certificate recipient, aware of the protection recently afforded the Chimney Swift, took down a swift chimney. Following a tip from Nature London, MNR required that the chimney be replaced.

Representations to government or other authorities

An assessment of Nature London's interventions to the London Planning Department and/or MNR shows the rate of success to be relatively low, with one significant exception in which MNR required the construction of a replacement chimney. Nature London has been unable to learn of any other significant enforcement action by MNR relating to London swift chimneys. Of 14 chimneys for which Nature London made early representations to municipal authorities, four survive; these are thought likely to be protected during future development. All exhibit signs of deterioration and maintenance issues will need to be addressed if they are to survive in the long term.

Nature London's request that chimneys on the buildings of the old London Psychiatric Hospital be checked for swift occupancy may have abetted the loss of six chimneys, which were capped soon after it was learned they were being used by swifts. Had Nature London not alerted the land managers to the potential of swifts in these chimneys, it is possible they might still be available to swifts.

At Nature London's urging, the institutional owner of one chimney that the club's efforts failed to save undertook voluntary compensatory mitigation. The artificial chimney, constructed at great expense on the roof of a nearby building, did not attract swifts during its first two seasons (2015 and 2016). MNR has declined to share data regarding other mitigation that may have taken place in London, indicating that information related to capping, removal and alteration

of swift chimneys is confidential. To date, volunteers for conservation of London's swifts have failed to detect evidence of compensatory mitigation of other lost swift chimneys and it is possible that no mitigation has been undertaken for the remaining nine chimneys on Table 3. For more information about the mitigation process, see <https://www.ontario.ca/page/alter-chimney-habitat-chimney-swift>.

Nature London is aware of 33 London swift chimneys that have been demolished or capped since the 2009 provincial designation of the Chimney Swift as Threatened. Although the species and its habitat (including chimneys) are protected by federal and provincial species-at-risk legislation, in practice, it appears that known nest and roost sites rarely receive any protection beyond that which applies to any migratory bird, i.e., the prohibition of destruction of nesting sites when occupied. It is unclear, however, how frequently even that basic tenet is enforced. Observations by London swift volunteers during the period in question suggest that, in the face of weak or no enforcement of legislation, owners of chimneys used by swifts are almost always free to cap or demolish swift chimneys with impunity.

It is of interest to look at losses of swift chimneys during three somewhat arbitrarily and approximately defined periods of time, when differing protection approaches were in place (Table 4). The first period covers six years, starting in 2004, when Nature London began developing an inventory of swift chimneys, and continuing to the end of 2009, shortly after the Chimney Swift was designated as Threatened under provincial

Table 4. Number of London swift chimneys lost during three periods of differing protection approaches.

	2004 to 2009 (prior to SARA designation)	2010 to 2013 (approx between SARA designation and Ontario regulations)	2014 and 2015 (after Ontario regulations and compensatory mitigation implemented)
Cumulative number of chimneys known by end of period	139	162	166
Total number of chimneys lost (n = 47)	14	16	17
Average loss of chimneys per year	2.3 (n = 6 yr)	4 (n = 6 yr)	8.5 (n = 2 yr)

legislation. The average rate of loss was 2.3 chimneys/year (Table 4). The second period runs for four years from 2010 to the end of 2013, the year in which new regulations were implemented; the average rate of loss was 4.0 chimneys/year. The third period encompasses two years, 2014 and 2015, during which the 2013 regulations, including proponent-led compensatory mitigation for harmed swift chimneys, were in effect during both entire years; the average rate of loss during this period was 8.0 chimneys/year. It appears that the rate of loss of swift chimneys in London may be higher now than it was before the Chimney Swift and its habitat were protected under species-at-risk legislation and that the loss may have accelerated since the implementation of cabinet-approved regulations in 2013. In total, 47 swift chimneys were lost during the 12 years presented in Table 4. An additional chimney that was cut down and capped but later replaced is not included. Despite hundreds of hours of dedicated observations at and around London's known swift chimneys over many years, evidence of compensatory mitigation has been detected for only one of the 47 chimneys.

General Summary and Conclusions

With few exceptions, Nature London's various endeavours aimed at promoting the conservation of Chimney Swifts and their chimneys in London appear to have been largely ineffective or even counter-productive. During most of the 12 years under consideration, Nature London was essentially working alone in its efforts to advance the conservation of swift chimneys in London. Without meaningful enforcement from regulatory agencies since swifts were designated as Threatened in 2009, the club, despite being well-intentioned, was unable to make significant progress in achieving the kinds of outcomes it sought.

As no viable designs for artificial chimney structures are currently available, swifts must continue to rely on real chimneys in the near/foreseeable future. Mechanisms or incentives for effectively preserving traditionally used chimneys are needed. Old, unlined, open-topped brick chimneys are becoming obsolete in the modern world. They are expensive to maintain and often do not meet the needs of present-day heating systems. Chimneys that currently survive likely do so only because they do not yet require significant structural work or alterations.

Observations made in 2015 suggest that the majority of chimneys used by swifts in London need repairs. Without intervention (possibly including financial assistance), it can be expected that many of these will disappear, likely at an accelerating rate.

Swift populations in Ontario currently appear to be declining more rapidly than swift chimneys are, but this may not hold true indefinitely. Bird Studies Canada (2017) expects that “without conservation efforts, there may not be many, if any, swift-appropriate chimneys left in Canada in the next 25 years.”

One current impediment to the protection of swift chimneys appears to be the lack of an appropriate protocol for determining when it can be concluded that a chimney is no longer being used by swifts. This is complicated by a scarcity of data on two particular patterns of chimney usage by swifts that have been observed in London: occupancy during a limited portion of the nesting season (e.g., late returning spring migrants, temporary residents and swifts that experience early nest failure) and intermittent annual occupancy (e.g., chimney occupied some years but occasionally empty for a year).

With current mitigation procedures seemingly rarely adhered to and, when followed, of questionable benefit to swifts, a re-examination of the mitigation process is in order. Swift conservation is in urgent need of research and action at provincial, national and international levels. Locally, if swift numbers keep declining and the stock of old brick chimneys continues to dwindle, the days in which swifts soar and chatter over the streets of downtown London and other Ontario

cities may well be finite. For meaningful action to happen, a compatible political climate must be in place and organizations equipped with greater resources and authority than Nature London will need to vigorously pursue the cause.

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