WHAT CAN BE LEARNED FROM HISTORIC RECORDS OF CHIMNEY SWIFTS IN LONDON, ONTARIO?

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Introduction

In recent years, the effect of a warming climate on native plants and animals has been a topic of study and concern for both scientists and naturalists. Birds figure prominently in such discussions.

Alterations in bird behaviour and ecology may well be happening under the influence of a changing climate. For example, if spring conditions are arriving earlier in the calendar year, it might be expected that some species of birds will return from their wintering grounds sooner than happened formerly. Conversely, if the onset of autumn comes later, some birds may delay their departure for the south. As the climate changes, shifts in habitat use or population size may be occurring. An examination of historic bird records offers the potential for shedding some light on some of these possibilities.

This article represents a preliminary investigation of the historic records available for one species. It will serve as an introduction to the kind of information and analysis that can result from such an effort. The Chimney Swift has been chosen, as this species has been the object of considerable attention by Nature London members in recent years.

Information from the Breeding Bird Survey indicates that the Chimney Swift has declined by some 96% in Canada since the mid-1960s. (Data on population trends prior to that time are not available.) Though of more recent advent, climate change may be playing a role in the swifts' problems. It is anticipated that the historic record might show that modern-day roosts are getting smaller and that swifts are arriving earlier in spring and departing later in fall than in former times.

Let us see what story the actual records will reveal.

Assembling Historic Records

Because of the extensive body of information available, London is an ideal location for carrying out research based on historical bird records. Many sightings are preserved in the archives of Nature London, housed in the London Room of the downtown London Public Library. Available material includes minute books, club bird records, personal bird diaries, and columns on nature that appeared in London newspapers from the 1920s to the 1960s. Indexed catalogues prepared by W.W. Judd, former archivist, assist the researcher in finding pertinent records.

Further sources of information are bird diaries and sightings lists held by Pete Read, current custodian of bird records on behalf of Nature London. Relevant papers (1870s to 1930s) of W.E. Saunders are preserved in the archives of the Royal Ontario Museum. *The Cardinal* is an important source of data from 1950 onward. By delving into all sources, a fairly continuous record going back to the 1870s can be obtained.

Unfortunately all the data viewed have their limitations, as there were no controls on collection methods. Much depended on who was out birding and who wrote down observations on any particular day. Chance also played a role in which records found their way into permanent repositories where they could be accessed many decades later.

Spring Records

The earliest swift records extant, going back to the 1870s, come from W.E. Saunders. While most represent his own sightings, his dates of earliest arrival sometimes also incorporate the observations of others such as Elliott, Balkwill, Beck, and Smith.

From early in the existence of the McIlwraith Ornithological Club (established in 1890 as an offshoot of the Entomological Society), assembling an annual club list of the earliest arrival date for each migratory bird species in Middlesex County was a high priority. For more than three decades, beginning in 1910, E.M.S. Dale served as the compiler of the annual bird list. Later compilers included Jim Leach and Bill Jarmain. Unfortunately, these lists were not retained in the club minutes and many of them have been lost.

See Table 1 for first-arrival-of-the-year dates for Chimney Swifts in Middlesex County for 128 of the 134 years from 1876 to 2009.

In creating the table, the preferred sources used were club minutes and other club records, as well as newspaper columns on nature (which were prepared by club members and often included a pooling of individual sightings). A search of old bird diaries turned up additional records. Beginning with the 1950 records, the club's official annual bird list was printed in *The Cardinal*, and henceforth, that publication served as the source of data appearing on the table. Unfortunately, prior to 1950, many of the dates given on the table are not as early as the official club dates would be, but the latter are not now extant for those years.

In addition to the data for individual years that appear in Table 1, there are three summary dates for early arriving swifts:

1) "Observations for 40 Years by Members of the MOC" was compiled in 1919 (probably by E.M.S. Dale). Based on 40 years of spring arrival data for the Chimney Swift (1879 to 1918), the list gave an average first-sighting date of April 28, the earliest being April 16, 1912. [This 40-year compilation included data from five years – 1879 to 1882, and 1910 – for which no data could be found when Table 1 was being assembled. Using data for the 35 of 40 years for which dates could be found to insert in Table 1, the average arrival date was April 27. This raises the possibility that, to achieve an official average of April 28 for 40 years, either the now-missing official list contained some dates that were actually later than some of those appearing in Table 1 or that the dates for the five missing years were unusually late.]

2) A "Schedule of Bird Arrivals"/"Spring Arrival Dates of Birds of London District" compiled by E.M.S. Dale in 1927 used swift records from 1910 to 1926 (17 years) to

Table 1. First known spring date for Chimney Swifts in Middlesex County, 1876–2009

1876-1899	1900-1919	1920-1939	1940-1959	1960-1979	1980-1999	2000-2009
76-My 13[4]	00-Ap 25[2=4]	20-Ap 22[2,3]	40-My 5[5,10]	60-Ap 23[11]	80-My 5[11]	00-Ap 21[11]
77-Ap 26[4]	01-Ap 28[2=4]	21-Ap 25[2=3]	41-Ap 20[5*]	61-Ap 26[11]	81-My 6[11]	01-My 5[11]
	02-Ap 28[4]	22-Ap 24[2=3]	42-Ap 20[1,5*,5]	62-Ap 29[11]	82-Ap 25[11]	02-Ap 20[11]
83-My 3[4]	03-My 5[2=4]	23-Ap 26[2,7]	43-Ap 26[1]	63-Ap 21[11]	83-Ap 28[11]	03-My 3[11]
84-My 1[4]	04-Ap 27[4]	24-Ap 24[1=7,4]	44-Ap 24[1]	64-Ap 12[11]	84-My 12[11]	04-My 21[11]
85-Ap 21[4]	05-Ap 25[4]	25-Ap 23[4*]	45-Ap 18[1]	65-Ap 20[11]	85-My 3[11]	05-My 30[11]
86-Ap 19[4*]	06-Ap 20[4*,4]	26-Ap 24[4,8]	46-Ap 30[8,10]	66-Ap 18[11]	86-Ap 23[11]	06-My 6[11]
87-Ap 15[4*,4]	07-My 2[4,6]	27-Ap 30[8]	47-Ap 23[1,8=10]	67-Ap 2[11]	87-Ap 24[11]	07-Ap 27[11]
88-Ap 25[4*,4]	08-Ap 25[4,6]	28-My 3[8]	48-Ap 26[1=8]	68-Ap 13[11]	88-Ap 9[11]	08-Ap 27[11]
89-My 4[4]	09-Ap 25[4,6]	29-Ap 27[8]	49-Ap 30[1=8]	69-Ap 29[11]	89-Ap 26[11]	09-My 3[11]
90-My 3[4]	10-	30-Ap 27[1,8]	50-My 2[11]	70-Ap 24[11]	90-My 3[11]	
91-Ap 28[4*,4]	11-My 9[4]	31-My 1[3,8]	51-Ap 20[11]	71-My 3[11]	91-My 12[11]	
92-Ap 28[4*,4]	12-Ap 16[3,4]	32-Ap 29[3=8]	52-Ap 19[11]	72-Ap 28[11]	92-My 3[11]	
93-My 8[4]	13-My 5[4=6]	33-Ap 29[3,8]	53-Ap 24[11]	73-Ap 21[11]	93-My 2[11]	
94-Ap 27[4]	14-Ap 24[4,6]	34-Ap 30[5*,8,5]	54-Ap 8[11]	74-Ap 30[11]	94-Ap 29[11]	
95-Ap 29[4]	15-Ap 23[2,4]	35-Ap 25[3,8,5]	55-Ap 14[11]	75-Ap 30[11]	95-Ap 24[11]	
96-Ap 25[4]	16-Ap 21[2=3,4]	36-Ap 30[8=9]	56-Ap 22[11]	76-Ap 29[11]	96-Ap 24[11]	
97-Ap 25[4]	17-Ap 20[2,4]	37-Ap 24[1=3=5,8]	57-Ap 23[11]	77-My 1[11]	97-My 8[11]	
98-Ap 28[4]	18-My 1[4]	38-Ap 21[5*,8,5]	58-My 1[11]	78-Ap 29[11]	98-Ap 26[11]	
99-Ap 27[4]	19-Ap 28[2,4]	39-Ap 25[5*,5]	59-Ap 26[11]	79-Ap 25[11]	99-My 1[11]	

1 = official McIlwraith Ornithological Club bird records notebooks (currently in the possession of Pete Read, Bird Sightings Recording Secretary for Nature London; older records passed on to him have many gaps)

2 = minutes of MOC (Nature London archives; also available in publications by W.W. Judd)

3 = newspaper columns written individually or on behalf of MOC and incorporating records from members (authors include E.M.S. Dale, C.G. Watson, and J.R. McLeod [pre-1930], and W.E. Saunders [post-1930]) (newspapers available on microfilm at London Public Library; indexes to bird columns available in publications by W.W. Judd)

4 = bird records and notes of W.E. Saunders; * indicates a record that definitely or probably came from another observer (fonds held in archives of Royal Ontario Museum)

5 = bird records of E.M.S. Dale; * indicates a date that was probably the earliest among two or more observers (Nature London archives)

6 = diary of John Clifford Higgins (Nature London archives; also available in publication by W.W. Judd)

7 = diary of C.G. Watson (Nature London archives)

8 = bird records of W.G. Girling (held by Pete Read)

9 = bird records of W. Jarmain (held by Pete Read)

10 = bird records of J.K. Reynolds (Nature London archives)

11 = *The Cardinal* (contains official club records from 1950 onward; available at London Public Library)

Where records are available from more than one source, all are listed, with the one given first containing the earliest date. If two or more sources give the same date, an equals sign (=) is employed.

create an average first-arrival date of April 24 for that period (the earliest date was still April 16, 1912). [Using data from Table 1, the average of the 16 available years is April 25. This suggests that some of the sightings on the official list must have been earlier than those used in the compilation of Table 1.]

3) A third summary table appears in *The Cardinal* in June of 1963. Compiled by Bill Jarmain and Jim Leach, it gives an average early swift date of April 24, based on 52 years of records. The authors indicate that, at that time, the complete set of official club annual bird lists from 1910 to 1961 (with the exception of the four years from 1938 to 1941, data for which were filled in from other sources) was still extant and that the average early arrival date for swifts had not changed from that calculated in 1927. [Using data from the 51 equivalent years on Table 1, an average of April 25 is obtained, again showing that the official list (not extant prior to 1950) included some earlier dates than those available for the table.]

Fall Records

From perusing minute books, bird diaries, nature columns in newspapers, and seasonal and annual bird reports appearing in *The Cardinal*, it is obvious that London birders have never had a strong interest in recording and submitting late fall dates for departing migrants. Many of the autumn swift records found were from a single observer and do not represent an extreme date assembled from amongst a number of birders, as is the case for many of the spring records in Table 1. For many decades there are no fall records at all.

W.E. Saunders always stands out as the exceptional London birdwatcher and record keeper. His notes are almost the only source of fall swift records prior to the 1930s. They provide a list of last dates for swifts for each of the 43 years from 1884 to 1926. Of these, one date falls in July, 10 in August, 10 in the first half of September, 10 in the second half of September, 11 in October, and one in December. The fact that half his late dates come before mid-September implies that even Saunders did not put

Table 2. Historic records of roost chimneys in London (active prior to 2003)

Chimney Site	Notes	Source
Carling's Brewery, Ann St at Thames R, west of Talbot	Records of swifts entering the chimney to roost: Jul 12, 1906 – 700; Jul 11, 1907 – 500; Sep 15, 1907 – 500 [building no longer extant]	W.E. Saunders fonds at Royal Ontario Museum
Hunt Brothers Mill, Talbot St at Thames R	"The large chimney at Hunt Bros. old mill, razed a few years ago, used to be a favourite [fall] rendezvous."	J.R. McLeod, *London Free Press*, Apr 26, 1922
Ontario Hospital, Dundas at Highbury	"Another favourite gathering place is the large chimney at the Ontario Hospital."	J.R. McLeod, *LFP*, Apr 26, 1922
Dundas Street	"A tall unused chimney in downtown London, behind a store on the south side of Dundas Street" (top was 100 ft above ground); perhaps >1000 swifts entered, late Sep 1947	Keith Reynolds, *LFP*, Oct 11, 1947
Springbank pumphouse	A tall unused chimney near the pumphouse at the east end of Springbank Park, annually housed a great many swifts in migration [ca 1939–1940] [chimney no longer extant]	Keith Reynolds, *LFP*, Oct 18, 1947
Queen Alexandra Sanatorium	Chimney housed a fall migratory roost ca 1939–1940 [chimney appears to no longer be extant]	Keith Reynolds, *LFP*, Oct 18, 1947
Grand Theatre, 471 Richmond	120 swifts banded Sep 18, 1940 [a chimney of size sufficient for roosting appears to no longer be extant]	Keith Reynolds, *LFP*, Oct 18, 1947; H.R. Hitchcock, *LFP*, Sep 25, 1943
Ryerson School, 940 Waterloo	A known roost site in 1943; still used as a roost	H.R. Hitchcock, *LFP*, Sep 25, 1943
St Paul's Church, 472 Richmond	A known roost site in 1943; now used only for nesting	H.R. Hitchcock, *LFP*, Sep 25, 1943
Metropolitan United Church, 468 Wellington	725 swifts banded, Sep 28, 1940 [a chimney of size sufficient for roosting appears to no longer be accessible]	H.R. Hitchcock, *LFP*, Sep 25, 1943
Central Collegiate, 509 Waterloo	A known roost site in 1943; 400+ swifts entered to roost on Aug 25, 2001; chimney top subsequently altered and access prevented	H.R. Hitchcock, *LFP*, Sep 25, 1943; *The Cardinal*
Flour mill at Talbot St at CNR tracks	Flock of 800+? observed entering; no date given [building no longer extant]	W.E. Saunders, *London Advertiser*, Jul 18, 1931
Victoria School, 130 Wharncliffe	Used as a roost in the 1950s; last used as a roost in 2003 (e.g., 620 entered Sep 28, 2003)	W. Wake files
Smith Fruit, 22 Maitland	Roost monitored since 2004; in 2008 a passerby stated that much larger numbers of swifts roosted before the chimney was cut down in height many years earlier	W. Wake files
Phoenix Building, 300 Wellington, NE corner of Horton	200 entered chimney Sep 2, 1996; currently used as a roost in some fall seasons	*The Cardinal*; W. Wake files

much effort into noticing late dates for this species.

A few unusually extreme late-fall swift records pop up in the various sources searched. For example, in the fall of 1908, Saunders's records indicate that swifts lingered unseasonably late: October 31 (1), November 2 (2), November 9 (2), November 21 (2), and December 3 (1). In a few other years, swift sightings are noted from mid-October or later: October 16, 1894 (50) [R. Elliott, fide Saunders]; October 15, 1914 (9) [Saunders]; October 21, 1937 [MOC minutes]; October 25, 1969 (1) [*The Cardinal*]; October 22 (100), and November 10 (1), 1972 [*The Cardinal*].

Because late fall departure dates for Chimney Swifts were recorded so inconsistently from 1884 to 2009, it is not considered useful to assemble the available data into a table.

Swift Roosts

Although watching swifts enter a chimney en masse to roost for the night is a breathtaking sight, the phenomenon seems to have been given barely any notice by London birders until almost the end of the twentieth century. Only very rarely are roost sites mentioned in any of the documents consulted, and even more rarely were numbers of swifts entering roosts reported.

See Table 2 for a listing of all records of Middlesex County roosts that could be found in the materials examined (sites that were identified after 2003 are not included, as these locations have been well documented in Swift-Watch reports in *The Cardinal*).

An examination of Saunders's papers reveals a number of records that likely pertain to swifts entering roosts or at least gathering in preparation to do so, but, unfortunately, no further details or locations are given to confirm this supposition. Saunders's sightings referring to 100 swifts or more are as follows: August 26, 1890 (160); May 18, 1891 (100); July 16, 1893 (500); August 17, 1896 (200); August 20, 1901 (2000); September 9, 1901 (200); August 2, 1905 (200); May 12, 1906 (3000); May 28, 1908 (200); May 20, 1909 (300); May 22, 1915 (300); October 10, 1915 (100, near Normal School). Not included in this list are records from Carling's Brewery, the only location Saunders identified as a roost.

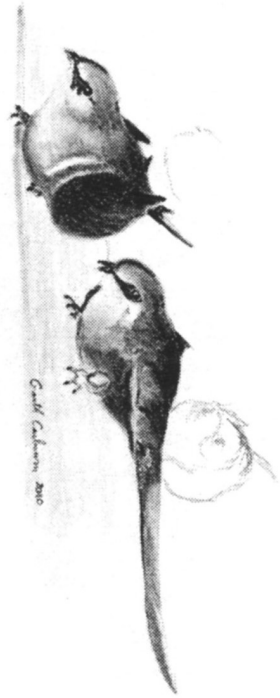
The records of 3000 swifts during spring migration in 1906 and 2000 swifts during fall migration in 1901 are of particular interest. Since 2003, when London naturalists first began monitoring roosting swifts, the largest assemblage counted at a spring roost was fewer than 400 (2008) and at a fall roost somewhat over 1200 (2006). The biggest roost found in the fall of 2009 held 500 swifts.

It has been proposed that the phenomenon of communal roosting by non-breeding swifts during the summer is of relatively recent occurrence and related to a shortage of available nesting chimneys. Yet, in London, the chimney at Carling's Brewery was hosting 500 to 700 swifts during the second week of July in both 1906 and 1907. Another 500 reported on July 16, 1893 were probably also roosting birds. The maximum number of swifts at a summer roost in recent years peaked at fewer than 300 swifts (2008).

What Can Be Learned from Historic Records?

Population Size. Historic records provide little insight into population changes, though roost sizes appear to be smaller today than a century ago. We know there are approximately 25 times fewer swifts in Canada today than in the late 1960s, but not whether swift populations then were stable, already in decline, or to what extent they may have been fluctuating in previous decades.

Changes in Spring Arrival Patterns. In an effort to identify patterns in the timing of the swifts' return in the spring, data from Table 1 have been grouped and summarized in Table 3. Because a complete set of dates is not available until the decade beginning in 1890, that date has been chosen as the starting point. Note that the three summary documents reported in Table 3 give slightly different average spring arrival dates than do the data from Table 1.



The three dates for which the compilers used official club records are worth scrutiny. The 40-year list (1879 to 1918) determined an average early arrival date of April 28; the 17-year list (1910 to 1926) gave April 24; and the 52-year list (1910 to 1961) also gave April 24.

When the average first-arrival date is calculated for the 48-year period from 1962 to 2009, the result is April 28. This is four days later than the April 24 date, found by both the 17-year average from the 1920s (up to 1926) and the 52-year average from the early 1960s (up to 1961). Thus it would seem that swifts are returning about four days later in the most recent half century (1962–2009), compared to the previous one (1910–1961).

More insight can be gained by examining data in 10-year increments. Because a complete set of official club data is available after 1950, it is most worthwhile to look at this 60-year period. During the 1950s and '60s, swifts returned, on average, two (1950s) and five days (1960s) earlier than predicted by the 52-year average date of April 24. Then, in the 1970s and '80s, there was a sharp swing to a later return date, the average being April 28 for both decades. The trend to later spring arrivals continued in the next two decades, adding a three-day delay in the 1990s and another three days in the first decade of the 21st century. This is 10 days later than the long-term average of April 24. Not surprisingly, the number of first-return dates coming in May, rather than the traditional swift-arrival month of April, increased, particularly from the 1980s onward.

Why Are Swifts Returning to the London Area Later in the Spring than They Formerly Did?

One manifestation of global warming and climate change is the earlier arrival of spring weather. It would thus seem reasonable to expect that swifts should be returning to London earlier, not later, than in former times. What appears to be a gradual shifting of spring migration to a later time interval may ultimately prove to be simply a random but natural fluctuation. Perhaps, in the future, swifts

Table 3. Average and extreme dates for early swift arrivals in Middlesex County from 1890 to 2009

Decade or Time Period	Average first arrival date	Extreme early date	Extreme late date	Number of May dates	Number of years of data
1890s	Ap 29	Ap 25	My 8	2	10
1900s	Ap 27	Ap 20	My 5	2	10
1910s	Ap 26	Ap 16	My 9	3	9
1920s	Ap 26	Ap 22	My 3	1	10
1930s	Ap 27	Ap 21	My 1	1	10
1940s	Ap 25	Ap 18	My 5	1	10
1950s	Ap 22	Ap 8	My 2	2	10
1960s	Ap 19	Ap 2	Ap 29	0	10
1970s	Ap 28	Ap 21	My 1	2	10
1980s	Ap 28	Ap 9	My 12	4	10
1990s	My 1	Ap 24	My 12	6	10
2000s	My 4	Ap 20	My 30	6	10
1879–1918	Ap 28	Ap 16			40
1910–1926	Ap 24	Ap 16			17
1910–1961	Ap 24				52

will again start showing earlier average return dates.

On the other hand, based on the data, it seems plausible that the delay of swift return is a very real phenomenon. If this is the case, a consideration of potential causes that might be driving this trend is warranted.

It is possible that frequency of extreme weather events associated with climate change is on the rise and is influencing swift arrival dates. If the severity and unpredictability of weather is increasing during spring migration, swifts may be delaying their northward travels until there is a greater certainty of moderate temperatures and a secure food supply.

The shrinking swift population may offer another explanation for the gradual shifting of spring arrival dates to later in the season. Forty years ago, when swifts were 25 times more abundant than they are today, an observer would have a 25 times greater chance of spotting an early returning bird. Similarly, when swifts were more numerous, it is likely that more would be in the vanguard of returnees and thus more prone to detection.

Another variable may be the level of effort put out by the birding community. In earlier times, local birders expended substantial energy on assembling dates of early returns. How that effort may have risen and fallen over the decades is not known.

A problem for those who analyze their records is that swifts have never had a very prominent profile. Until the past few years, when their plummeting numbers propelled them into the limelight, many naturalists may have failed to note and report sightings.

It has been suggested that birders in general may be less diligent about submitting swift sightings for the club records. In the seven-year period from 2003 to 2009, five early swift dates are in May (one being the unprecedentedly late date of May 30). The two April records (both on the 27th of the month) came in 2007 and 2008, when local swift-watchers were particularly challenged to find the first returning swifts. This implies that, when a concerted effort is made, it is still possible to obtain relatively early dates.

Conclusions

Data seem to show that swifts are returning to London up to 10 days later than they did in the first half of the last 100 years. This seems counterintuitive to expectations, in light of global warming causing spring conditions to arrive earlier now than in former times. Because swift populations are in a state of rapid decline and because local observers may be under-reporting swift sightings, it is not possible to determine whether the delay in arrival by spring swifts is a real phenomenon or the product of reduced swift numbers and observer effort (or some other cause). The situation demonstrates the importance of naturalists being alert for early arriving Chimney Swifts and reporting their sightings. Pete Read (519-472-2887, psread@xplornet.com), Nature London's official keeper of bird records, encourages and welcomes records of all avian species.

This article illustrates that archival bird records can be a useful tool in the documentation and understanding of wild bird populations over time. In addition to revealing changing patterns of swift movements during spring migration, the material examined showed that swift roosts a century ago were present during spring, summer, and fall and could be substantially larger than today. Despite limitations, the more than 130 years of London bird data hold considerable potential for the study of historical trends in other bird species besides Chimney Swifts.

(Winifred Wake started SwiftWatch in London in 2004. The program has now been absorbed into Ontario SwiftWatch [see page 29], but Winnie continues to devote many hours to the cause of the threatened Chimney Swift.)

Acknowledgements

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References: Available on request.

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