

OCCUPANCY OF UNCONVENTIONAL NEST AND ROOST HABITATS BY THE CHIMNEY SWIFT (*CHAETURA PELAGICA*) IN MANITOBA

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The Chimney Swift (*Chaetura pelagica*, Figure 1) nests in chimneys throughout deciduous-dominated habitats east of the Rocky Mountains.¹ Manitoba and Saskatchewan are at the northwest periphery of the global breeding range of this species.² In Manitoba, swifts breed from the southeast of the province as far north as The Pas.³

This species has adapted to urbanisation by nesting in chimneys, although the Chimney Swift is still known to nest in large, hollowed out, dead trees in deciduous forest.¹ Nesting chimneys in Manitoba are usually at least 40 cm across inside although some are as small as 30 cm across.⁴ In the southern parts of their breeding range, Chimney Swifts have successfully nested in artificial towers.⁵ However, despite considerable efforts to replicate these artificial towers in Manitoba, there has been no recorded use of the original design, let alone successful breeding attempt observed.⁴ The reasons for such failure likely reflect the inability of these towers to maintain a relatively stable



FIGURE 1. Chimney Swift. Photo credit: Christian Artuso.

temperature when compared to chimneys, most notably in May and early June when swifts are selecting nest sites.⁴

Breeding Bird Survey estimates suggest that the Chimney Swift population has declined by 95 per cent between 1970 and 2005 in Canada.⁶ The reasons for such a decline are varied and complicated. In Manitoba, 14.5 per cent of 200 known chimney sites were either capped, lined or demolished between 2007 and 2016⁷, although studies suggest that loss of habitat is not significant in other jurisdictions.⁸ Chimney Swift rates of decline are similar to those experienced by

other long-distant aerial insectivores, bringing forward the suggestion that population declines are linked to the use of pesticides.^{1,9} Long-term nest monitoring in St. Adolphe, south of Winnipeg, suggests that hatching and fledging rates in Manitoba are low, and that severe summer storms increases the rate of nest failure.¹⁰

Since 2007, the Manitoba Chimney Swift Initiative (MCSI) has conducted regular monitoring of roost and nest sites in communities across Manitoba. The assumptions used to identify Chimney Swift habitat have been formalised in documents prepared by the Manitoba Chimney Swift Initiative



FIGURE 2. Damaged pest exclusion screen accessed by Chimney Swifts in Winnipeg. Note the spark arrestor is covering a lined flue and the exclusion cage is over an open flue. Photo credit: Timothy Poole.

from observations and analysis of data produced by around 100 annual volunteers.⁴ In identifying habitat for Chimney Swifts, MCSI has operated under the following general assumptions:

- Chimney Swifts only occupy unlined brick chimneys with internal dimensions of 30 cm square or more;
- Chimney Swifts avoid chimneys with any type of liner;
- obstacles on the chimney entrance are a hindrance to use by swifts;
- almost all communities containing Chimney Swifts are known to MCSI and its partners, but not all chimneys are known.

However, since 2016, the MCSI has documented numerous cases in which these assumptions do not hold.

Methods

MCSI volunteers participate in the National Roost Monitoring Program (NRMP) which takes place on four evenings each spring. While programs in other provinces focus on roosts in spring, MCSI focuses more on nest sites through the full season and volunteers are constantly on the lookout for new sites. MCSI volunteers are encouraged to search for new potential chimneys. Indeed, regular monitoring has built a cadre of observers who look everywhere and discover odd things.

Monitors watch the chimney for a set period, recording the times when swifts enter or leave the chimney site. Nesting chimneys are defined against roosting chimney via the level of daytime use. Volunteer monitors submit observations on monitoring forms. This information has been

used to identify Critical Habitat under the Manitoba Endangered Species and Ecosystems Act, and to inform stewardship activities by MCSI.⁷

The following observations are taken from reports by volunteers from MCSI.

Results

Use of 'Screened' Chimneys

It is commonplace for many building owners to restrict access to the interior of a chimney by installing a screen over the top. It is our supposition that most building managers target the exclusion of mammalian and larger avian species, especially Raccoons (*Procyon lotor*), and the Rock Pigeon (*Columba livia*). One type of screen takes on the form of a five-sided cage, which is attached to the top of the chimney, thus preventing access by larger animals, including the Chimney Swift.

On June 8, 2018, a volunteer was monitoring a known conventional brick roost chimney on Portage Avenue, Winnipeg. It became apparent during the evening that there were two distinct groups of swifts feeding in this area, one on the north side of Portage Avenue near the known roost, and one on the south side where there were no known Chimney Swift nest or roost sites. The volunteer investigated in the hopes of finding a new site on the south side. At 21:00 h, an adult swift was observed removing a twig from a Manitoba maple (*Acer negundo*) and appeared to drop into a previously unrecorded chimney on the south side of Portage Avenue (twig gathering is a sign of nest building¹¹). On closer inspection, the chimney appeared to have two flues, one being lined with metal and capped using a spark arrestor, and the other having a pest screen (Figure 2). At 21:36 h, two Chimney

Swifts entered the chimney through the screen. By doing so they revealed that there was a hole in the screen due to corrosion and age. Another swift attempting to enter through this screen at 21:40 h appeared to make contact, deflected off the screen, made a second pass, and entered the chimney.

While still watching the same group of birds, the volunteer noticed two Chimney Swifts entering a chimney on a taller apartment building nearby at 21:55 h. This chimney had two flues, one open, and one with a pest exclusion screen. The swifts were observed entering through a hole in the pest exclusion screen, and not into the apparently open chimney.

Both these chimneys were monitored later in the summer. At the first site where nest building behaviour had been noted, behaviour indicating the parents were tending young on August 5, 2018 confirmed this as a nesting site. The other screened chimney hosted 10 roosting Chimney Swifts on August 8, 2018. In addition, four other chimneys with broken pest exclusion screens were occupied by Chimney Swifts in 2018, all in Winnipeg, although detailed data are not available.

Removing the Cap from a Chimney

A large chimney on St. Avila School in Fort Richmond, Winnipeg had been used as a roost and nest site in 2009 and 2011 before it was capped with sheet metal c. 2014. The cap blew off in a windstorm in 2016 and a breeding attempt was made by swifts in 2016. Unfortunately, observations by MCSI volunteers suggested that the breeding attempt failed in August 2016.

In late April 2018, a chimney on the Fleetwood Apartments in

the Wolseley neighbourhood of Winnipeg was lined with a metal sleeve during upgrades to the boiler system. MCSI observations had recorded breeding attempts in this chimney from 2013 to 2017. Manitoba Sustainable Development discussed this loss of habitat for Chimney Swifts with the building owners and it was agreed removal of a pest exclusion screen from another chimney on the building would be appropriate mitigation. This screen was removed in May before Chimney Swifts returned to Manitoba. Follow-up monitoring on June 4 recorded a pair of Chimney Swifts entering the



FIGURE 3. Two chimneys at St. Ann's Church, Winnipeg. The chimney in the foreground has two flues. In the foreground is an open flue, and the spark arrestor covers a closed flue. The chimney to the right is two bricks wide only. Photo credit: Timothy Poole.

chimney. Observations made during the day on July 27 confirmed that a breeding attempt was underway inside the chimney. The chimney was also occupied by swifts in 2019.

Double-flues

Of the chimneys on churches and presbyteries in Quebec, over 50 per cent were closed to swifts by the installation of a spark arrestor or hat which prevents access to the chimney.⁶ Observers may assume that the presence of sheet metal on top of a chimney is indicative of capping but in some cases, a chimney may have a second open flue.

In July 2015, a Chimney Swift was observed using the second chimney at St. Ann's Roman Catholic Church on Hampton Street, Winnipeg, even though there appeared to be a spark arrestor and hat preventing access. On closer inspection, it was apparent that the top only covered one half of the chimney, leaving a separate flue open for swifts to access (Figure 3). There is also no suggestion that the presence of a tall object on the chimney was deterring swifts from accessing the open flue. This same pattern has been observed in several other chimneys in Winnipeg, Melita, and Portage la Prairie, and in London, Ontario.¹



FIGURE 4. Inside of clay-lined chimney at Trinity United Church. Photo credit: Gordon Ogilvie.

Clay-lined Chimneys

Clay-lined chimneys provide a poor substrate for Chimney Swifts to grip and are therefore considered as less suitable than brick chimneys.⁴

The clay-lined chimney on Trinity United Church in Portage la Prairie is no longer operational and is lined with a 35 cm by 35 cm square liner. An inspection through the chimney cleanout demonstrated that the clay-liner continued throughout the chimney and consisted of individual clay pots measuring approximately 90 centimetres tall. Each pot was fixed to the adjacent tube using mortar (Figure 4). This chimney sits adjacent to a second brick chimney on the church, which is regularly used by a breeding pair.

On May 29, 2016, a single Chimney Swift was observed entering a clay-lined chimney at Trinity United Church. A single bird was also observed roosting on June 1 and June 6, 2016. In 2017, one or two Chimney Swifts roosted in this same chimney throughout the breeding season, although no evidence was found to suggest that the birds are breeding.

On July 26, 2017, the same observer noted a single bird roosting

in another clay-lined chimney at Olina's Jewels on Saskatchewan Avenue, Portage la Prairie. On August 2, 2017, two birds roosted in this chimney. Unlike the Trinity United Church, this chimney is an outlet for the buildings current heating system and the clay pots are rounded. No evidence of a previous nesting attempt, including twigs, or parts of an old nest, was found in either chimney suggesting that they are being used as an alternative roosting site by non-breeding birds.

It is our belief that the mortar seams may act as a ledge for adult swifts to cling to, and possibly even to attach a nest.⁴

Potential roosting and nesting has been observed in other apparently clay-lined chimneys in Winnipeg (MCSI, unpublished data) and Orilla, Ontario (Robert Stewart. pers. comm.). However, it is our conjecture that for nesting to occur in these sites, there would need to be either a partial clay-liner that only inserts partway into the chimney, or sufficient deterioration of the clay-liner to render the surface of the chimney wall rough enough for pre-fledgling juveniles to 'walk' around.^{4,7}

Chimney Pots

On June 21 2016, a Chimney Swift was observed entering one of five clay pots on a chimney on the Granite Curling Club in Winnipeg. It was believed that the swift was part of a breeding attempt. This was the first observation in Manitoba of a swift using such a chimney (Figure 5) It is however known that Chimney Swifts often enter chimneys through smaller entrances than the internal dimensions, most notably using rain shields on artificial towers in the USA⁴⁻⁵.

Smaller Chimney Dimensions

Chimney Swifts were previously known to breed only in chimneys with a minimum internal of at least 30 cm square, which approximates to an external dimension of 2.5 bricks.⁴ The chimney on St. Ann's church on Hampton Street, Winnipeg, has been watched since 2014, and regularly hosts a breeding pair of swifts. In 2015, the chimney was condemned for demolition due to its poor state of repair. Instead, MCSI found the funds to have this chimney repaired.

The chimney had been surfaced with stucco. On removing the stucco, it was apparent that the chimney



FIGURE 5. Chimney at the Granite Curling Club with multiple clay pots. Photo credit: Timothy Poole.

POETRY

Correction

A Cooper's Hawk races
pell mell
across an open field
only eight, maybe ten
feet above the earth.

An updraft from an old
dried out slough
cants him nearly
onto his back.

With two powerful strokes
of his scimitar wings
he rights himself
to accipiter form

And continues
his headlong dash
for food, for fun.
Perhaps both.

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was only two bricks square, giving an internal dimension of 20 cm and an external dimension of 40 cm (Figure 3). Similar-sized chimneys have been used by swifts elsewhere in Manitoba, most notably in Souris.

Searching for Chimney Swifts in New Settlements

GIS analysis of MCSI data suggested that Chimney Swifts select human settlements within 2 km of running water, in areas subject to minimal insecticide use, and in which average house age was >50 years (built prior to 1970).¹³ This analysis generated a list of 145 settlements that had potential habitat for Chimney Swifts. In 2018, MCSI asked volunteers to check for potential Chimney Swift breeding habitat in these settlements, and for observations of swifts. In total, 46 towns were visited on at least one occasion, and of these, six were occupied by Chimney Swifts (Morden, Neepawa, Lockport, Pilot Mound, Baldur and Birtle). Chimney Swifts were also recorded in two additional settlements not previously known to host breeding swifts (Dominion City and Eriksdale). Potential breeding habitat was located in all these communities, although active sites were only identified in Morden, Lockport, Dominion City and Eriksdale.

Nesting Attempt on the Ledge of a Cleanout and Boiler Duct

Many chimneys are accessed through the cleanout trap.^{4,10} MCSI received a call from a building manager on Valhalla Drive in the North Kildonan neighbourhood of Winnipeg on July 24, 2018. Concern had been raised by the caretaker over the presence of Chimney Swifts found in the cleanout trap of the chimney. On arrival at the building, it

became apparent that the Chimney Swift adults had built their nest on the ledge of the cleanout trap near the base of the chimney. One chick remained in the nest, and a second was resting on the floor of the cleanout, which was situated at least one floor above the base of the chimney. The cleanout was resealed, and volunteers from the MCSI confirmed that adult swifts had continued with their feeding visits via direct observations.

Nesting material and guano had previously been found on the surface of a duct in a chimney in St. Adolphe (Barbara Stewart, pers. comm.). Our initial assumption was that swifts glue their nests to the vertical rough surface of the chimney. We speculate that a mortar ledge in a tiled chimney might provide suitable substrate for nesting.

Discussion and Conclusion

Our observations have provided new information on habitat selection, notably in relation to nest site chimneys. As a result, MCSI has been able to add numerous new sites to its database. In 2017, MCSI added 37 new chimneys to its database, of which 30 were occupied on at least one occasion by swifts. In 2018, 48 new sites were added, 33 of which were occupied on at least one occasion by swifts. Of these chimneys, five in 2018 were found in communities that had no previous records of Chimney Swifts (MCSI, unpublished data).

Of particular note, 348 Assiniboine Avenue in Winnipeg was a two-flue chimney. One flue was covered, with a damaged pest exclusion cage, and the other was clay-lined. In August 2018, Chimney Swifts were observed moving between the two flues. This type of behaviour has been observed in St. Adolphe, where a brood leaves

the natal chimney and takes up occupancy in a different chimney (Barbara Stewart, pers. comm.). In this case, we can speculate that the brood had left the natal flue, with the damaged pest control cage, and the young were exploring the clay-lined flue. Novel nesting habitat has been observed in other parts of this species range, for example, in Texas, where Chimney Swifts have nested in a shopping centre sign.⁵

These observations suggest that there is potentially more habitat available to breeding swifts in Manitoba than was previously assumed. The implications for the conservation of this species are significant, as this species can select what is likely to be many more nesting sites.

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POETRY

Prelude

The throngs Of house sparrows

Chirp so melodically

To the cadence of the chickadees

Percussive chip-chip-chip.

Their choirmaster a bold,

little, puffed-up cock

The last to flutter off

As I walk by.

Beyond the sighing windbreak

The red bull croons his

Strong, reverberating

bassoon pitch

To his many loves.

All in preparation for

The featured performers

The ever present, yet furtive

Coyote Chorus

And their constant and

Ever changing

Song Of The West.

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