Manitoba Chimney Swift Initiative:

Final Report to Sustainable Development Innovations Fund

Project #28100

Phase II 2009 - 2011

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Introduction

In 2006, members of Nature Manitoba (formerly the Manitoba Naturalists Society) became aware of the rapidly declining population of Chimney Swift (*Chaetura pelagica*). In Canada, available data indicated a 95% reduction of this species within the last 40 years. In April 2007 the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) designated the species as threatened, as did the Canadian Species at Risk Act (SARA) in April 2009.

Interested in finding a solution to reverse the steep population decline, the Manitoba Chimney Swift Initiative (MCSI) was created, including a Steering Committee with representation from Nature Manitoba, municipal, provincial, and federal governments. The initial goals of the MCSI were focused on 1) Setting up a volunteer monitoring program to identify current nesting and roosting sites in Manitoba and to collect breeding data; 2) Using the data collected from phase 1, choose high potential sites to place nesting and roosting towers as a means of increasing Chimney Swift breeding and roosting habitat; and 3) Raising public awareness. In the third year of the program, the MCSI expanded its focus to also include the refurbishment of existing Chimney Swift habitat that is unsafe, inaccessible, or in a state of disrepair.

Funding for this program has been provided primarily by the Sustainable Development Innovations Fund (SDIF) and Environment Canada's EcoAction Community Funding Program, with in-kind support from the City of Winnipeg, Nature Manitoba, Manitoba Hydro, the Nature Conservancy of Canada, and numerous volunteers.

Phase 2 of the project involved the continuation and refinement of the monitoring program, the erection and monitoring of artificial towers (with the addition of interpretive signage at three sites), and public outreach about chimney swifts and procedures for monitoring their activity.

Results

1) Volunteer Monitoring Program

Since the inception of the program, over 80 volunteers have participated in the ongoing monitoring program. To date, over 120 chimneys, smoke stacks, and air shafts have been monitored in Winnipeg, St. Adolphe, Portage la Prairie, Selkirk, Carman, Vita, Starbuck, La Broquerie La Salle, Pine Falls, Ste. Anne, Brandon, St. Francois-Xavier, and Dauphin. Of these, over 60 have been found to be actively used by Chimney Swifts, and 14 have been found to be used as communal roosts, peaking at 70 birds or more.

At the inception of the program, monitoring efforts were focused on determining geographical nesting tendencies in Winnipeg and Manitoba in order to locate suitable sites for the construction of nesting towers. Several geographical nesting patterns were discovered, such as the tendency of swifts to nest near water and in close proximity to one another. Certain areas of Winnipeg with higher densities of Chimney Swifts have also been identified. These are typically older areas of town near water that still contain

uncapped brick chimneys. Results from casual reports and formal monitoring suggest that there are still roost and nest sites to be located.

Five experimental nesting towers have been constructed – two in Winnipeg, and individual towers in Saint Adolphe, Staruck, and Portage la Prairie-- and they are being monitored for visitation by swifts. So far, none of the towers has been used.

Since the inception of the project, the focus of the monitoring program has shifted somewhat. Although we are still interested in the distribution and density of Chimney Swifts in Manitoba, the primary monitoring goal has been the collection of data on the nesting, roosting, and migration behaviour of Chimney Swifts in Manitoba. This is important because evidence suggests that Chimney Swifts nesting in northern latitudes behave differently from those nesting in southern latitudes, where they have been studied more intensively. We are now applying results of our monitoring program to extract breeding success data. In the 2011 season, with record low mosquito counts and extreme temperatures (low initially and very high later in the season), swift behavior and the extraction of breeding success data from many sites was problematic.

2009 M0NITORING SEASON

Volunteer monitors:	30
Sites monitored:	53
Nest sites:	30
Roost sites:	10

		CHSW reported		
	Sites	over 4	4 or less	None
Dauphin	1	1	0	0
La Salle	1	0	0	0
Portage la Prairie	10	2	7	1
Selkirk	4	3	1	0
St. Adolphe	5	2	3	0
Starbuck	1	0	1	0
Vita	2	0	0	0
Winnipeg	29	2	18	23
	53	**10**	**30**	**24**

2010 M0NITORING SEASON

Volunteer monitors:	52
Sites monitored:	60
Nest sites:	25
Roost sites:	14

	Sites	CHSW reported over 4	CHSW reported 4 or less	None
Brandon	2	0	2	0
Carman	3	2	1	0
Dauphin	1	1	0	0
La Salle	1	0	0	0
Pine Falls	1	0	0	0
Portage la Prairie	8	1	5	2
Selkirk	4	3	1	0
St Francois Xavier	1	0	0	0
St. Adolphe	5	2	3	0
Starbuck	1	0	0	0
Ste Anne	1	0	0	0
Winnipeg	32	5	13	14
	60	**14**	**25**	**16**

2011 M0NITORING SEASON

Volunteer monitors:	30
Sites monitored:	52
Nest sites:	34
Roost sites:	9

		CHSW reported		
	Sites	over 4	4 or less	None
Brandon	2	0	2	0
Carman	3	1	1	1
Dauphin	1	1	0	0
La Broquerie	1	1	0	0
La Salle	1	0	0	0
Portage la Prairie	6	3	2	0
Selkirk	4	3	1	0
St. Adolphe	5	0	5	0
Winnipeg	29	0	23	6
	52	**9**	**34**	**7**

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- 2007 – 2011 SITE SUMMARY SPREADSHEET
- INCLUDE CASUAL REPORT SUMMARY
- MMBA MAP
- MAP WINNIPEG
- MAP NON-WINNIPEG

2) Nesting Towers

Using data from the volunteer monitoring program, the MCSI placed nesting towers in the vicinity of other nest sites in the hope that swifts will have a greater chance to discover and use the sites in future years. Based on studies of existing tower designs, the steering committee developed a design for a durable tower for the Manitoban climate. In 2008, five nesting towers were built in Manitoba: two in Winnipeg (behind the Assiniboine Park Conservatory and near the maintenance yard at Windsor Park Golf Course), and one each in Portage la Prairie (near the old CPR station), Starbuck (near a residence north of the town which has had chimney swift activity), and St. Adolphe (near the Church and cemetery and five active nest sites).

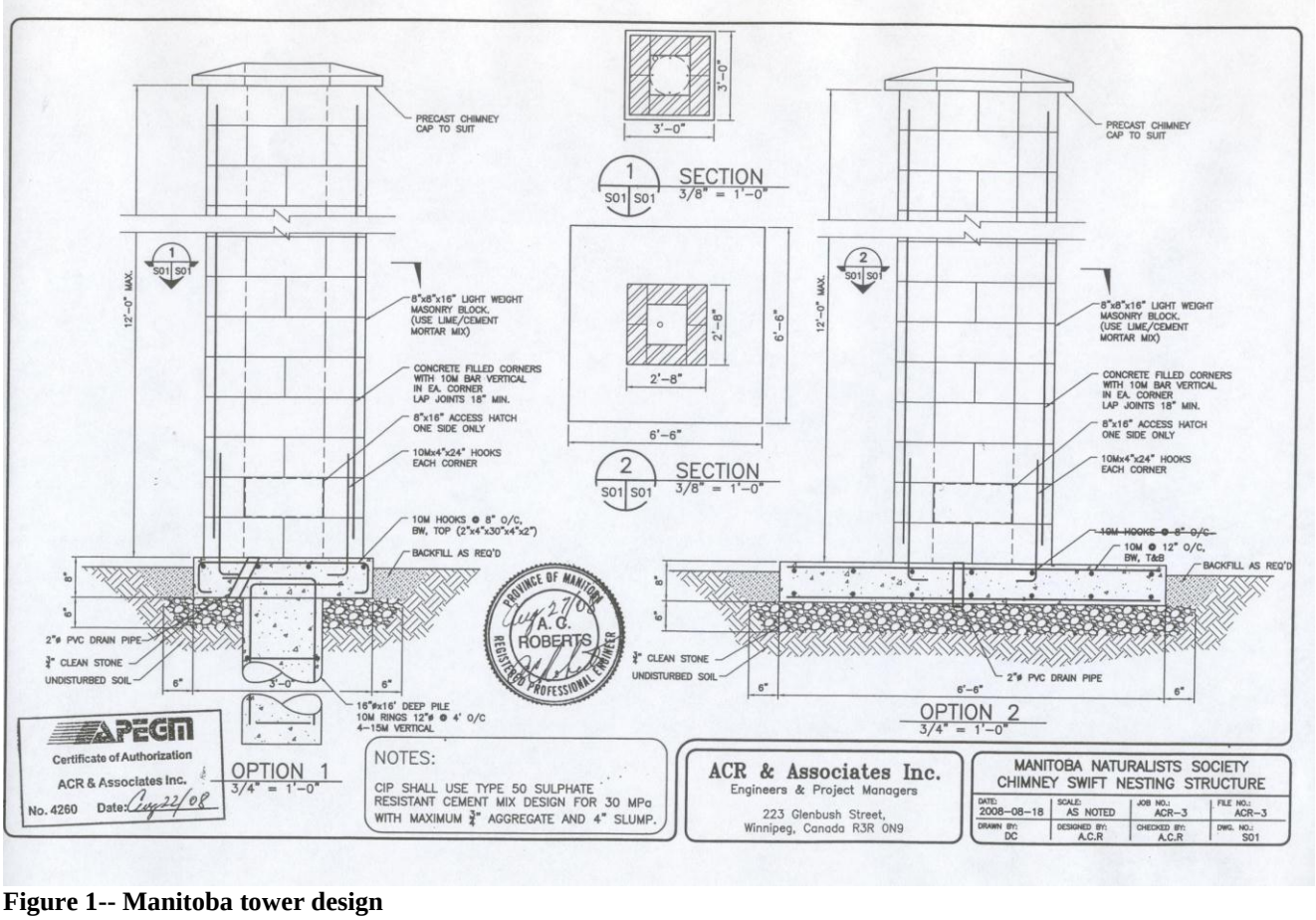

Figure 1-- Manitoba tower design

Starting in 2009, temperature probes were placed inside towers and other sites to determine the thermal properties of the towers and their suitability for nesting Chimney Swifts. In 2010, a temperature probe was also placed inside a known nesting chimney in order to compare the insulative properties of known, existing habitat with our towers. In 2011, two temperature probes were placed inside the Saint Adolphe tower, one inside a nearby residential chimney used by swifts, and two outside the tower for ambient readings. Interpretation of temperature data suggests that temperature regulation is significantly more stable in residential chimneys than the artificial towers, presumably making conventional chimneys more attractive as nest and roost sites.

Due to structural concerns and a possible re-use of the site by the R.M. of Ritchot, the Saint Adolphe tower was relocated in 2010 to a new location across the street. Brick cladding was added to the tower for aesthetics and to possibly improve thermal conditions. In 2011, a rain and sun shield was added to the top of the structure.

So far, we have not yet detected any use of the towers by swifts; however, nesting towers constructed in the United States have often sat vacant for extended periods before swifts become accustomed to their presence. We maintain hope that these structures will provide nesting habitat for Chimney Swifts at some point in the future. If necessary, modifications to the design and/or location of existing towers may be made in an effort to accommodate the Chimney Swifts' needs. We will continue to monitor these towers, and we may apply any lessons about tower construction learned from other projects.

3) Public Outreach

Public outreach and education activities have been a core part of our program, and this outreach has included presentations, written articles in various print and online media, brochures, and interviews. Permanent bilingual interpretive signs have been erected at the three most publicly-accessible towers (Saint Adolphe, Portage la Prairie, and Windsor Park). A poster-format display about the project was created for use at public events. Also, two informational brochures have produced to highlight the program and provide basic information about chimney swifts. Manitoba Hydro generously printed the second version of the brochure and has offered to help with future printed projects.

The MCSI was invited to and participated in a national conference on swift monitoring and research (Dartmouth NS, November 2010). The conference involved researchers from swift-related projects in the Maritimes, Ontario, and Quebec as well as representatives from Bird Studies Canada, Environment Canada, provincial government and other parties. All participants shared information about their respective projects or research.

In 2011 contact was initiated with researchers' at Queens University about the collection and study of guano samples from selected chimney swift roost sites. So far, material from the Dauphin roost site has been submitted for analysis. Results of the analysis of these samples has not yet been received. But analysis is intended to reveal information about possible changes in chimney swift diet over time.

Initially, the Nature Manitoba web site (http://www.naturemanitoba.ca/CHSW.html) was used to provide updates on the project and to share documents and resources with the public and members of the swift-monitoring community. Recently a dedicated web site was designed at www.mbchimneyswift.ca and launched to showcase the project and provide links to a variety of information sources about chimney swifts. A "Swift Notes" blog (http://swift-notes.blogspot.com/) was set up in summer 2011 to provide updates during the monitoring season.

Notices have been placed in *Nature Manitoba News* and on the Yahoo ManitobaBirds egroup to solicit reports of chimney swift sightings and to recruit volunteers. Dozens of

casual sighting reports from various communities have been obtained as a result of these notices. These casual reports have suggested new sites for formal monitoring.

Outreach activities for the project in this phase include presentations to:

Nature Conservancy staff and board of directors (10 participants)
Grade 9 and 10 students at West Kildonan Collegiate (100 participants)
Morden Friendship Centre for the A Rocha group (14 participants)
Portgae la Prairie Natural History Group (30 participants)
Grade 4 class at John Pritchard School (25 participants)
Volunteers at the Tall Grass Prairie Reserve (8 participants)
Visitors to Oak Hammock Marsh (13 participants)
Brandon Naturalists Society (20 participants)
Selkirk Birdwatchers Group (21 participants)—two presentations
Visitors to Fort Whyte Alive (13 participants)
Grade 4 classes at Assiniboine School (75 participants)
Grade 4 class at Carman Elementary School (25 participants)
Dartmouth Chimney Swift Conference (25 participants)
Lady Gray'l Breakfast (200 participants)
Saint Adolphe Mudfest (200 participants)
2011 Green Lifestyle and Natural Living Show (1000+ visitors)

Media coverage in this phase of the project includes:

Several articles in *Nature Manitoba News*
Yellowhead Flyway Birding Trail Association Newsletter
Interview with Radio Canada Manitoba
Item in National Audubon Society blog
Article in Portage la Prairie *Daily Graphic*
Letters to the editor of the *Dauphin Herald*
Article in *The Carillon* (Steinbach)
Blue Jay (publication of Nature Saskatchewan)
Press release submitted to 39 Manitoba weekly newspapers (2011)

MCSI has created and published a number of reports and resources. Copies of these are in the MCSI binder accompanying this report and are most are also available to the public from links on our website.

Resources for chimney monitoring volunteers:

- MONITORING PROTOCOL- This document outlines procedures for conducting "regular" site monitoring based on the recommended practice of performing at least one chimney observation per week. The document presents basic information about how to conduct observations and complete monitoring forms.

- "SIX-DAY" MONITORING PROTOCOL- This outlines procedures for conducting an abbreviated monitoring program based on six strategically-timed observations. This process was initially suggested by programs in other provinces as a means of reducing the demands on volunteers' time. The document outlines the rationale for choosing the six days of monitoring and describes how to conduct observations and complete the monitoring forms.

- QUICK REFERENCE GUIDE FOR MONITORING CHIMNEY SWIFTS- This is a brief reference outlining critical dates in the season based on observations at the cluster of active sites in Saint Adolphe.

- MANITOBA CHIMNEY SWIFT INITIATIVE GUIDE FOR MONIORING CHIMNEY SWIFTS NEST SITES: HOW TO IDENTIFY STAGES OF NESTING AND DETERMINE BREEDING SUCCESS. As its name implies, this is a thorough guide to best practices for site monitoring and data interpretation based on exhaustive, multi-year observations by dedicated volunteers at the five active sites in Saint Adolphe.

- HOW TO DETECT BREEDING CHIMNEY SWIFTS IN YOUR ATLAS SQUARE- This is a reference created in conjunction with the Manitoba Breeding Bird Atlas (MBBA) project and concerns how to derive breeding success reference codes from observations at chimney swift sites. This facilitates the sharing of data between the MCSI and MBBA projects.

- MONITORING REPORT FORM- This is the report form devised by the MCSI steering committee to collect common data from volunteers about sites under observation.

- CHIMNEY ASSESSMENT FORM- This is the report form devised by the committee to collect descriptive information about sites.

CHIMNEY REPAIR AGREEMENT- This is document , created in consultation with a prominent lawyer, is to be used when chimney refurbishment tasks are undertaken. It defines the nature of repairs being undertaken at a site and addresses liability issues among the parties in the repair project.

SUMMARIES OF ACTIVITY AT THE SAINT ADOLPHE SITES-2009, 2010, 2011
These are annual summaries and analyses of swift activity based on frequent observations at the five sites in Saint Adolphe. The summaries make use of extensive daytime and roost-hour observations of chimneys, but also reflect physical examination of some of the chimneys.

MONITORING OF A CHIMNEY SWIFT ROOST SITE IN DAUPHIN, MANITOBA, UTILIZING A RECONYX GAME TRAIL CAMERA- This exhaustive report was based on numerous trials at the Dauphin roost site in an attempt to use game-viewing cameras as an alternative to human observation of a roost site. The hope was that the automatic features of the game trail camera might ease the amount of time and effort required by monitors to document swift activity at a site. Various camera positions and camera modes were tested. Unfortunately, for a variety of factors (having to do with camera limitations and swifts' characteristics), the Reconyx camera was not found to be a practical alternative to human observation.

TEMPERATURE DATA STUDIES- These are analytical reports on data from temperature probes placed in active sites, artificial towers, and surrounding areas. The report for 2011 is still being prepared by a volunteer and will be submitted as soon as

possible. Preliminary results suggest that that the artificial towers do provide some moderation of ambient temperatures, but do not provide the same degree of thermal stability seen in conventional chimneys. The thermal environment inside the artificial structures is apparently not favourable to nesting swifts.

HAVE CHIMNEY SWIFTS BEEN NESTING IN MY CHIMNEY? This a brief descriptive document that provides information about chimney swift nests and assures the public about the lack of hazard by posed by nests in chimneys.

Articles related in the project:

NEST SITES USE AND BREEDING SUCCESS OF CHIMNEY SWIFTS IN ST ADOLPHE, MB, 2007-2009 (*Blue Jay, September, 2010*). This article looks at the manner in which chimney swifts used the various Saint Adolphe sites, and it identifies various stages of nesting activity based on exhaustive observations.

HISTORIC ST ADOLPHE: CHIMNEY SWIFT CAPITAL OF MANITOBA (*Nature Manitoba News, January/February, 2011*). This informational article reviews the MCSI project and the unique set of nesting sites in Saint Adolphe.

THE PLIGHT OF THE CHIMNEY SWIFT (*Nature Manitoba News*, July/August 2010). This is a brief article about the MCSI project and chimney swifts. It was meant to provide basic information about the project and encourage volunteers from the Nature Manitoba membership.

MANITOBA CHIMNEY SWIFT INITIATIVE BROCHURE—Two versions were produced by the steering committee, and the later version was printed by Manitoba Hydro. These are general informational pamphlets about chimney swifts and the MCSI project. These have been used as handouts at presentations and are available on line and from the Nature Manitoba office.

4) Refurbishments to Existing Habitat

Although we hope to eventually attract nesting and roosting Chimney Swifts to our towers, the MCSI also views the maintenance of existing habitat as critical to Chimney Swift conservation.

Prior to engaging is repairs and refurbishments to private properties, the MCSI engaged a law firm to produce a cost-sharing agreement (see binder). This agreement is legally binding, and is signed by both the property owner and the MCSI before any major repairs are done.

Since June of 2009, the following initiatives were undertaken to conserve and/or improve the safety of existing Chimney Swift habitat:

1. The repair of the St. Adolphe Catholic Church chimney: During the summer of 2009, the church was informed that, for safety reasons, the chimney must be either repaired or demolished. The church chimney has been used as a breeding

site for at least the past three seasons. In addition, it is regularly used as a communal fall roost. Therefore, we entered an agreement with the church that we would finance the repairs in return for their continued support of our project. The repairs were completed successfully, and did not deter the birds from returning to the site this spring.

2. One active nest was saved from destruction in 2009. A chimney we were monitoring was scheduled to be lined and capped mid-summer. The company owner was contacted, and he subsequently agreed to delay the lining and capping until the birds had left the chimney. The nest successfully fledged several young.

3. A screen was installed over a vent of the Victoria School chimney in Portage la Prairie in the spring of 2010. The maintenance staff had reported seeing dead birds in the boiler room on several occasions in the past. This screen will prevent Chimney Swifts from entering the boiler room and becoming entrapped.

4. The aging and damaged chimney of a private residence in St. Adolphe was refurbished in the spring of 2010. It will now provide a safer and more permanent nesting and roosting habitat for Chimney Swifts. This chimney was cleaned in 2011.

5. A building known to have hosted swifts, 146 Alexander Avenue, Winnipeg, was slated for demolition during the summer of 2010. Therefore, it was requested of the construction company that they place a screen over the chimney prior to the spring arrival of Chimney Swifts in order to ensure that none would be using the chimney when the demolition takes place. The company agreed, and promptly installed a screen.

6. A second building known to have hosted swifts, 124 Saskatchewan Ave. E., Portage la Prairie, was slated for demolition in July 2010. The site was monitored for swifts in mid-June, and on finding that none were present, the construction company responsible immediately installed a screen on the chimney in order that none would take up residence.

7. A sun and weather shield was designed for and installed on the Saint Adolphe artificial tower in 2011. The intent of the shield was to improve the protection from sunlight and rain inside the tower and foster a more favourable environment for swifts.

Discussion and Conclusion

As awareness of the plight of the Chimney Swift spreads, more and more organizations are joining the effort to study them, and hopefully slow their decline. Increased nation-wide interest in the plight of the swift is reflected in the arrangement of meetings such as the 2010 Dartmouth conference about swift programs and the existence of programs such as the Ontario Swiftwatch and various projects in the Maritimes. On a national level, the Species at Risk Recovery Strategy under the Canadian Wildlife Service is working on a program to stop the decline of the species and to maintain the distribution of the swifts in Canada.

Questions such as what factors are contributing to the Chimney Swift's decline, where the decline is primarily taking place, and how conservation strategies need to be modified across the chimney swift range, still abound. Amidst the plethora of recent interest, the Manitoba Chimney Swift Initiative (MCSI) is still in a unique position to contribute, due in part to our location in the extreme northwest corner of the Chimney Swift's range.

Funding for the Manitoba Chimney Swift Initiative has yielded results in three major areas:

1. The establishment and evolution of a volunteer-based chimney swift monitoring program throughout the province of Manitoba;
2. The design, construction, and placement of five artificial towers based on a robust design;
3. The creation and publication of numerous documents and resources about chimney swifts and swift monitoring.

Although more work remains to be done, the volunteer monitoring program has successfully produced a large amount of data on the migration, breeding behaviour, and geographical distribution of Chimney Swifts in Manitoba. This data is submitted annually to the Manitoba Conservation Data Center for safekeeping and potential future use by government, researchers, or the public. Since 2010, monitoring datra has also been submitted to the Manitoba Breeding Bird Atlas project (MBBA). Results of the monitoring program are also posted on our web site for public access. As a result of our "formal" monitoring and from more casual reports received from the birding community, a number of potential new nest and roost sites have been identified throughout the province. Comments by observers also suggest the existence of nest and roost sites that we have not yet identified.

The repairs and refurbishments made to existing roosts and nesting sites will provide Chimney Swifts with habitat for decades to come. Such repairs are also of benefit to the communities they occur in, as they provide both economic assistance, and the opportunity to maintain heritage. For example, the St. Adolphe Catholic Church is a historic building, and a centerpiece of the small community. Therefore, the repair of the church chimney, that would otherwise have been demolished, was valued and appreciated by both the congregation and the community at large.

Likewise, the sustainability of project results were kept in mind when designing the experimental nesting towers. In most locales, such towers are designed out of wood. However, cinder block and brick design of those built in Manitoba will ensure that they will last well into the future with little or no maintenance. Although the experimental towers have not yet, to our knowledge, been used by Chimney Swifts, we hope that the experience gained from their construction, and the subsequent collection of temperature data, will add to the knowledge base of those wishing to design Chimney Swift towers in the future.

While a significant amount of useful data has been collected through the MCSI program, there have been some inconsistencies in the quality of data received from individual monitors and the amount of volunteer effort directed to individual sites. In locations such as Saint Adolphe and some of the larger roost sites, frequent

observations by dedicated volunteers have yielded an excellent overview of year-to-year chimney swift visitation patterns and enable insightful analysis of data. In some other locations, erratic observation, unusual weather patterns, diminished insect populations or other factors have yielded a problematic view of chimney swift activity.

There is also an apparent need to refine the data intake and retrieval processes to facilitate sharing of information and aid interpretation of observations. The possibility of having on-line data entry and a common data entry/retrieval protocol between monitoring programs should be investigated.

Given the difficulty in securing and keeping volunteers, future monitoring programs need to reassess the focus of observation—whether to concentrate on detailed observation of breeding success or occupancy at individual roost or nest sites or pursue a broad approach to determine an inventory of chimney swift habitat throughout the province. Also, the frequency of monitoring needs to be reviewed—is a once-per-week observation protocol the minimal acceptable standard or is there no substitute for more frequent observation at sites? The monitoring process seems to be highly and unavoidably labour-intensive; this suggests a need to improve techniques for on-going volunteer recruitment, training, and retention.

The MCSI steering committee hopes to continue as a viable on-going project with new sources of funding. It is hoped that the national Species At Risk Recovery Strategy will lead the way in addressing the complex issues surrounding which sites to monitor, how to monitor them, and how best to ease the plight of chimney swifts. Future activities of the MCSI will strive to be consistent with the directives of the national strategy.

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