

# Automating the Collection of Bird Data from Video Footage

Colby Timm, Sam Taylor, Tim Salomonsson, Cyrus Erfani

Supervisor: Dr. Alexandra Branzan Albu

## Background

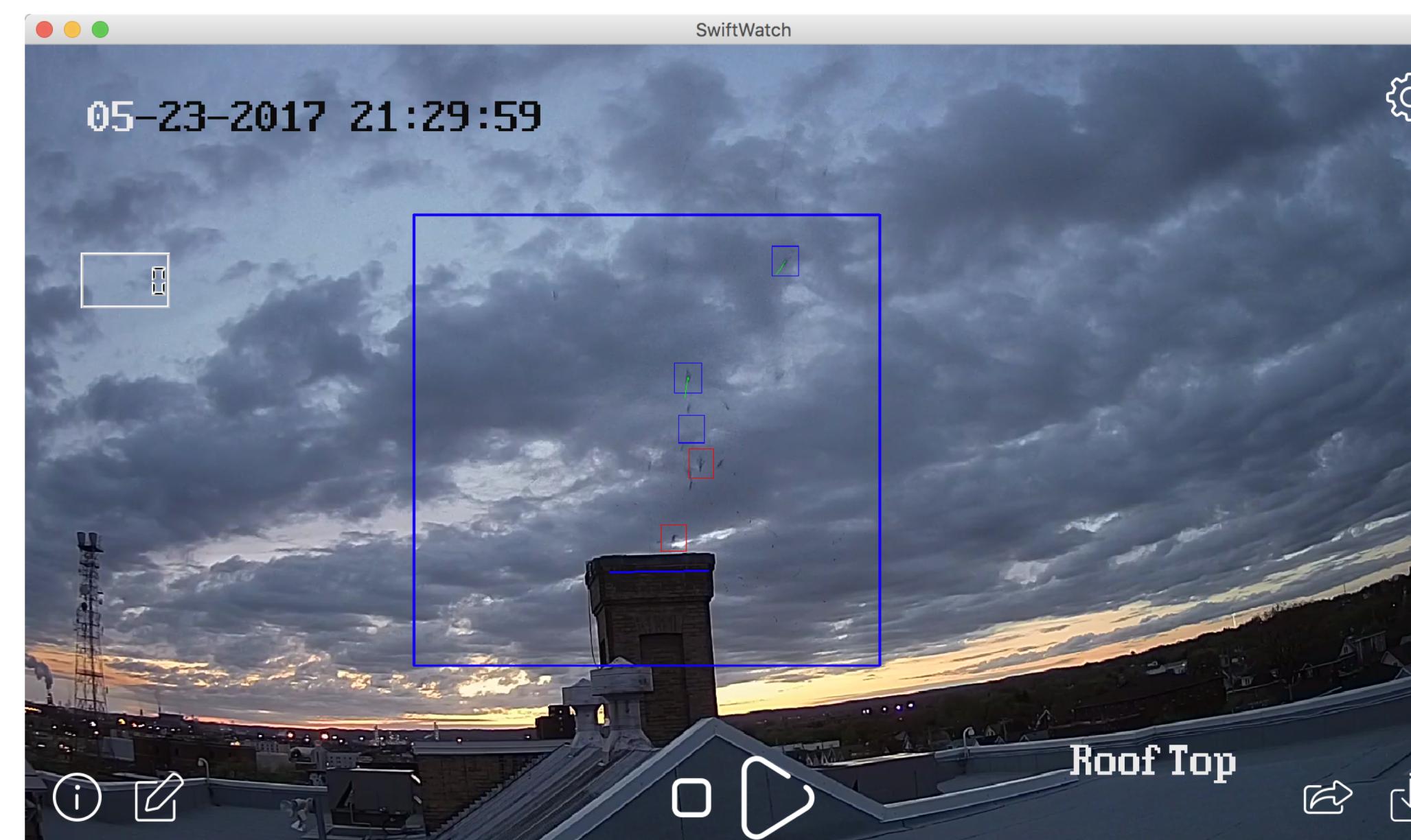
The chimney swift, a bird native to Ontario, has been designated as a threatened species by the province of Ontario as of September, 2009 [1]. These birds naturally nest and roost on cave walls and in hollow trees, but following the emergence of the man-made chimney, utilize open-ended chimneys for this purpose. Video feed is used to track chimney swift populations, with several cameras installed at two main nesting sites in Sault Ste Marie, Ontario. Two high-definition colour and IR supporting cameras have been set up to run during migration season, one inside the chimney and one at a distance, to capture the birds entering and exiting.

## Trackers and Bounding Boxes



## Graphical User Interface

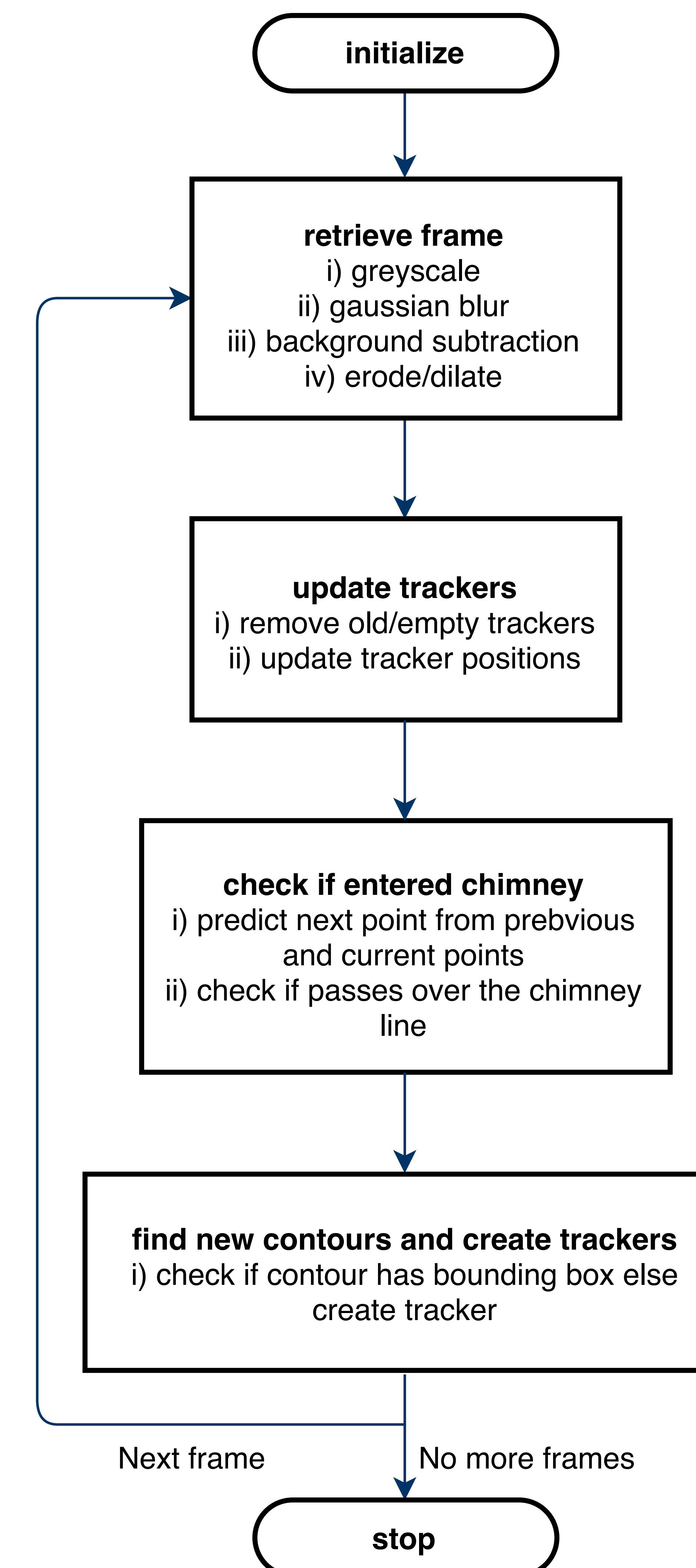
The GUI was built using PyQt, a binding for the Qt application framework and supports Linux, macOS, and Windows [2].



## Objective

The proposed objective of this project is to eliminate the reliance on manual counting and replace it with an automated system, utilizing a computer vision approach. The completed approach writes each count to a CSV file with a timestamp in hours:minutes:seconds, mimicking the spreadsheets used by Algoma SwiftWatch, who is the nonprofit organization that tracks chimney swifts in Sault Ste Marie. Algoma is the targeted audience for this approach, which will allow Algoma a considerable amount of time saved by eliminating manual counting altogether.

## Schematic



## Acknowledgements

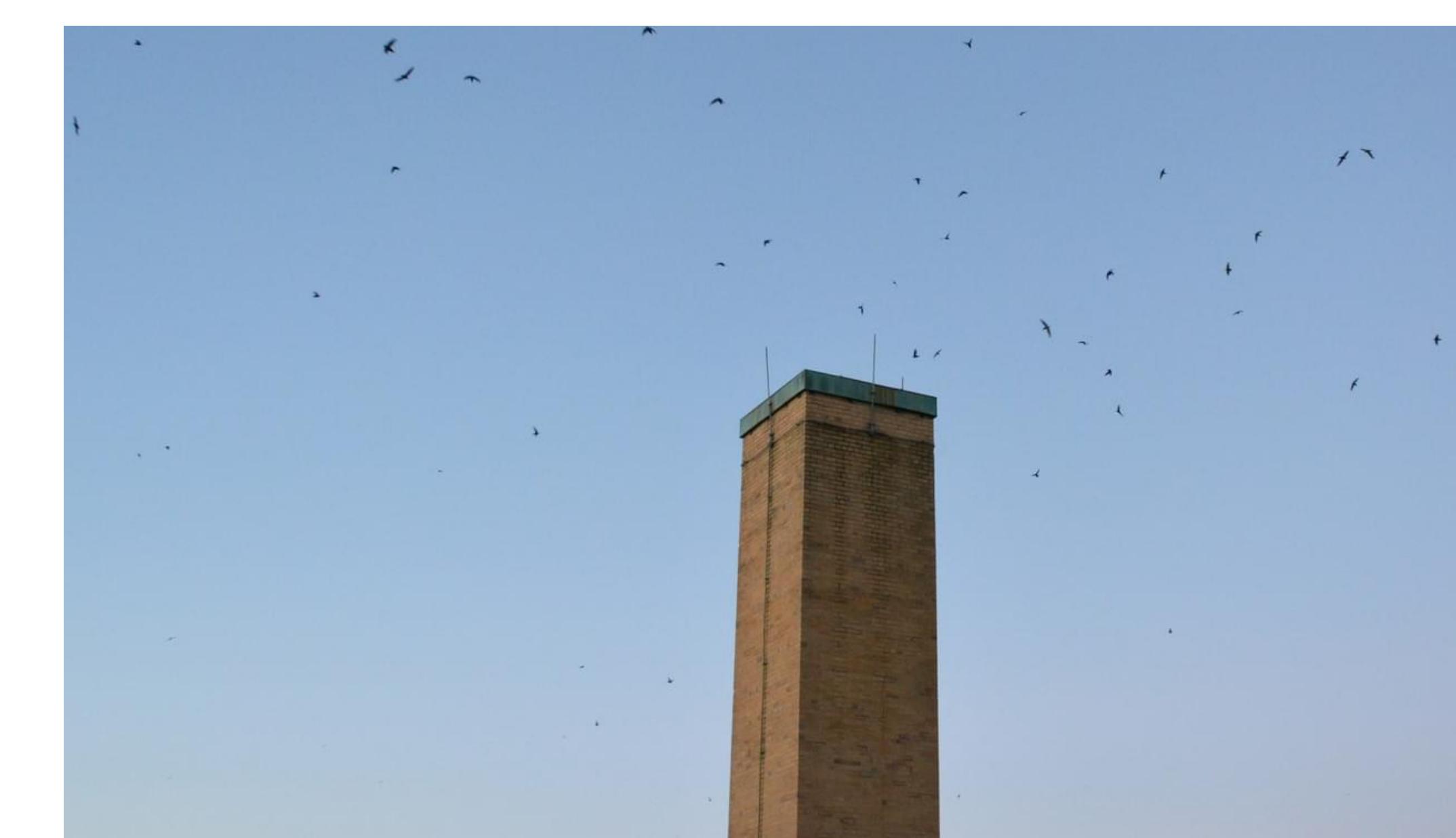
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## The Chimney Swift (*Chaetura pelagica*) [3]



## Nesting Chimney [3]



## References

1. Chimney swift. (2018). Retrieved from <https://www.ontario.ca/page/chimney-swift>
2. Riverbank | Software | PyQt | What is PyQt?. (2018). Retrieved from <https://riverbankcomputing.com/software/pyqt/intro>
3. 2016 Ontario SwiftWatch Report. (2017). Retrieved from [https://www.birdscanada.org/volunteer/ai/resources/2016\\_Ontario\\_SwiftWatch\\_Annual\\_Report\\_EN.pdf](https://www.birdscanada.org/volunteer/ai/resources/2016_Ontario_SwiftWatch_Annual_Report_EN.pdf)