

# The role of urban conservation programs in enhancing wildlife habitat and engaging citizens

Lois Webster Final Report – November 2018

**Project Summary:** Rapid human population growth has led to increasingly prominent global urbanization. Because this drastic shift to human-dominated land use is recognized as a major threat to biodiversity, identifying promising pathways to enhance habitat quality for urban wildlife and connect urban citizens to nature has become a major conservation priority. In response, many urban conservation programs have emerged as a means to engage the public in addressing these objectives.

Urban habitat enhancement programs often focus on residential green spaces and aim to protect biodiversity by restoring and maintaining available urban habitat. My research project evaluates whether one such program, The City of Fort Collins' Certified Natural Area Program, successfully enhances residential space to create quality habitat for local birds and butterflies.

Additionally, many urban institutions seek to create programs that monitor local biodiversity. However, when creating these programs, many institutions are forced to make decisions regarding how those data are collected. In order to provide institutions with a tool that can assist their program development based on the goals of their research, I've developed a framework for assessing the relative tradeoffs between paid technician and citizen scientist data collection. As a coordinator of the Nature in the City (NIC) Biodiversity Project, a citizen science ecological monitoring program in Fort Collins, I use this framework to quantify these potential tradeoffs.

## Project Objectives:

The goals of this project are to:

- 1) determine the factors that are driving urban-sensitive bird and butterfly occupancy, and
- 2) develop a framework for quantifying and assessing the relative tradeoffs associated with citizen science and traditional data collection.



**Fig. 1.** Project manager, Mikko Jimenez, training a citizen scientist to conduct an avian point count.

## 2018 Field Season

From mid-May through mid-August, we monitored birds and butterflies in Fort Collins with paid technicians in parallel with our citizen science monitoring program. We were able to hire three paid technicians and recruit and train a group of 56 citizen scientists. As a full team, we conducted over 1,500 bird surveys and 900 butterfly surveys at 166 urban green spaces throughout Fort Collins. Our surveys yielded over 3,300 detections of 75 bird species and 1,100 butterfly detections of 34 butterfly species. Additionally, our technicians surveyed vegetation at 32 urban green spaces that addressed vegetation structure, percent native cover and richness of flowering plants.

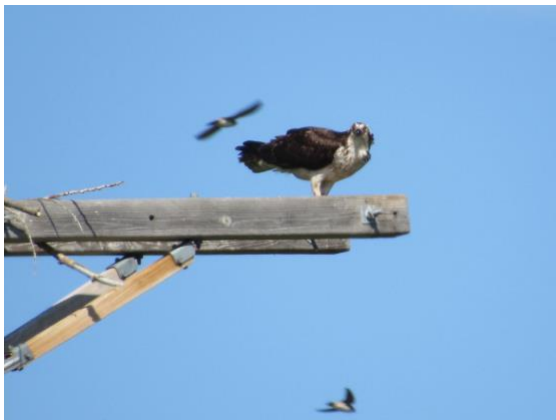
## Data Analysis and Dissemination Plan

Currently, I am analyzing the bird and butterfly data in an occupancy modeling framework in order to understand the extent to which The City of Fort Collins' Certified Natural

Area Program is able to enhance habitat for local birds and butterflies. More specifically, I am using this framework to assess what factors drive bird and butterfly diversity. My results will inform management recommendations to the City of Fort Collins Natural Areas Department, which they can then use to more effectively run their program.

Similarly, I am currently analyzing the data to quantify and assess the benefits and tradeoffs of adopting a citizen science monitoring program in place of paid technician monitoring. Preliminary results suggest that citizen scientists saw significant increases in their ability to identify local birds and butterflies and that citizen scientists collected more data per work-hour. My next analytical step is to address potential differences in data quality between citizen scientist and paid technician datasets.

I will present more specific results in future communications. In addition to presenting this research at the Lois Webster Fund spring meeting, I plan to present this research at the 2018 Front Range Student Ecology Symposium this spring and at a research conference this summer.



**Fig. 2.** (Left) An osprey perched on an old telephone pole near Cottonwood Hollows Natural Area in east Fort Collins. (Right) A barn swallow perched on a “Protected Area” sign at Fossil Creek Meadows Certified Natural Area in south Fort Collins.

### **Lois Webster Fund**

The support provided by the Lois Webster Fund played an integral role in the success of our 2018 field season. The funding allowed us to hire an extra technician who conducted 151 bird surveys, 195 butterfly surveys, and helped survey vegetation at 32 urban green spaces. The level of productivity during our 2018 field season would not have been possible without the support of the Lois Webster Fund and we are extremely grateful for your contribution.

Thank you so much for your support!

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