

Project Overview

City Creek Canyon is a large and intact natural area adjacent to downtown Salt Lake City, UT, and its ecological health needs to be maintained to provide drinking water, wildlife habitat, and natural space for people to enjoy. Evaluating the bird community can provide information about the health of the ecosystem as a whole, and also help us better understand how the canyon provides habitat to species of interest. Since 2011, Tracy Aviary has conducted a citizen science bird monitoring project in City Creek Canyon. Here, we summarize results from our 2017 and 2018 field seasons.

Breeding season point count surveys:

During May – July of 2017 and 2018, 11 citizen scientists conducted 5 breeding season point count surveys at 31 survey points in City Creek (Figure 2). Point count surveys were conducted by pairs of citizen scientists between dawn and 10am. The ‘observer’ identified all birds seen and heard during a 6-minute period, and noted the number of individuals, distance, and direction. The ‘recorder’ wrote all of the observations on the datasheet, noted the minute during the survey (1-6) when the observation was made, and also noted weather and site variables, such as wind speed and cloud cover.

Non-breeding season group surveys:

Information from point count surveys was supplemented by 16 non-breeding group surveys conducted in January, February, March, April, August, September, October, November, and December 2017- 2018. During non-breeding surveys, groups of citizen scientists lead by a trained Tracy Aviary staff person walked a transect through the site and noted all birds seen and heard in the area.

2017-2018 Results

During 5 breeding season surveys in 2017-2018 we had 1,454 bird observations and detected 53 species (Figure 3, 4). During 16 non-breeding season surveys, we had 1,586 bird observations and detected 75 species. 7 species were detected exclusively during the breeding season, and 29 species were detected exclusively during the non-breeding season, resulting in a total species list of 82 species for the two years.

We’ve detected a total of 115 bird species at City Creek Canyon between 2013 and 2018. See the complete breeding season and non-breeding season species lists for City Creek Canyon on pages 3 - 5.

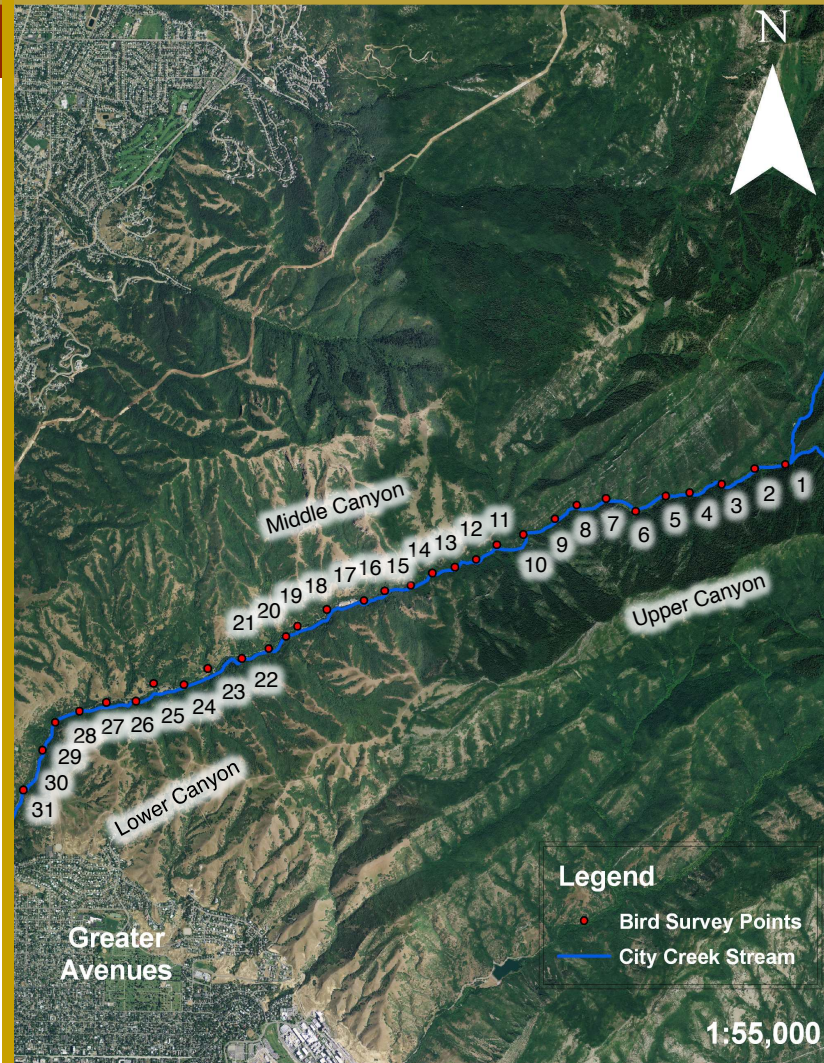


Figure 1. Map of 31 bird sampling points at City Creek Canyon.



Figure 2. Tracy Aviary citizen scientists conducting breeding season and non-breeding season bird surveys at City Creek.

PATTERNS OF BIRD COMMUNITY COMPOSITION ACROSS SAMPLING POINTS THROUGHOUT CITY CREEK CANYON

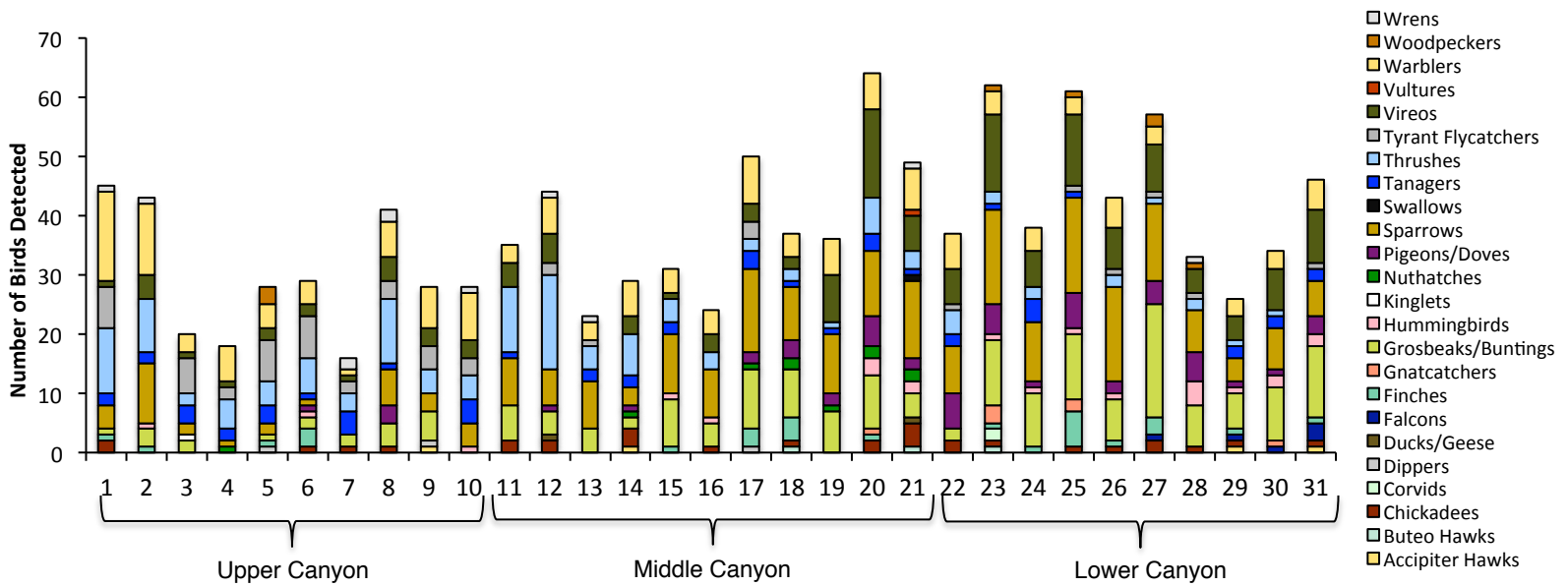


Figure 3. Number of birds from different families detected during 2017-2018 breeding season surveys at City Creek Canyon.

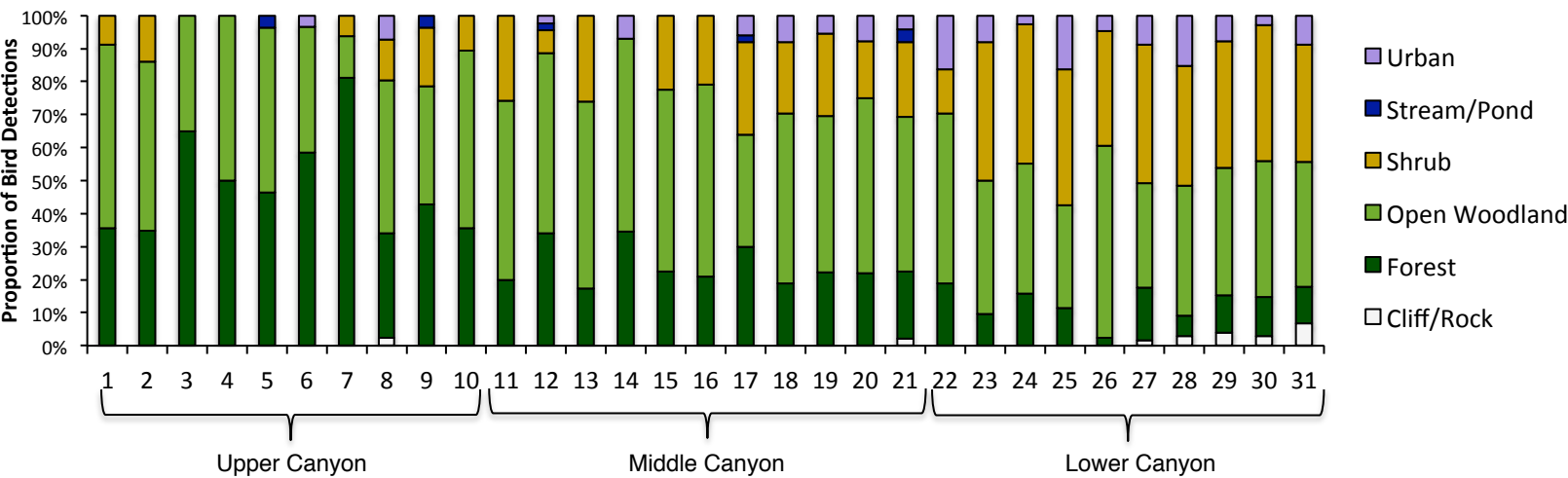


Figure 4. Proportion of birds from different habitat guilds detected during 2017-2018 breeding season surveys at City Creek Canyon.

NOTEABLE BIRD SPECIES DETECTED IN CITY CREEK CANYON IN 2017-2018

- **Northern Goshawk:** In 2017 we had our first detection of a Northern Goshawk during the breeding season. We've also detected this species regularly during non-breeding season surveys since 2014. Goshawks have declining populations and prefer large and intact mature forest patches; their presence indicates healthy and large forest habitat in the area.
- **Winter Wren:** On the November 2018 non-breeding season survey, we found a Winter Wren just above mile market 1 in the canyon. With a typical range throughout the eastern United States and Canada, this species is considered rare in Utah.
- **Broad-tailed Hummingbird:** We have been regularly detecting Broad-tailed Hummingbirds in City Creek since 2013. This species is listed as a Utah Partners in Flight Priority Species because it is understudied and has declined 55% since 1966.
- **Peregrine Falcon:** In 2017 and 2018, we have had multiple sightings of two Peregrine Falcons that appear to be nesting in the canyon. This pair was first detected in City Creek in 2016, and it is hypothesized that one of the Peregrine Falcons that previously nested in downtown Salt Lake City moved into the canyon and found another mate after its previous mate had died.
- **Olive-sided Flycatcher:** This flycatcher has had a cumulative decline of about 81% since 1966, and has been designated a Tri-National Concern species. We detected Olive-sided Flycatchers in City Creek Canyon during breeding season surveys in both 2016 and 2018.
- **Virginia's Warbler:** This warbler is a Utah Partners in Flight Priority Species because the ecology, threats, management requirements are largely unknown. We regularly detect Virginia's Warblers in City Creek Canyon during both breeding and non-breeding surveys.

**COMPLETE LIST OF BIRDS DETECTED DURING BREEDING SEASON
SURVEYS (BSS) AND NON-BREEDING SEASON SURVEYS (NBS)
AT CITY CREEK CANYON IN 2013-2018**

Species	Number of Observations (detections/survey)											
	2013		2014		2015		2016		2017		2018	
	BSS	NBS	BSS	NBS	BSS	NBS	BSS	NBS	BSS	NBS	BSS	NBS
Warbling Vireo	32.1	0.7	31.3	0.3	23.8	0.2	35.3	1	19	0.3	30.3	1.1
Yellow Warbler	29.1	0	35	0	36.3	0.1	28.8	0	16.5	0.7	27.7	0.9
Lazuli Bunting	20.9	0.6	25.6	0	29.3	0.9	23	1.3	28.5	1	27.7	0.1
Spotted Towhee	18.9	4.2	23.9	7.6	20.3	2.2	26	4.4	19.5	2	25.7	3.7
Western Tanager	11.9	0.4	9.4	0.1	11	0.2	10	0.3	10.5	0	10.3	0.1
American Robin	11.5	10	31.9	27.2	18.3	1.8	28.3	4	11	10.2	15.3	3.4
Swainson's Thrush	11.4	0.3	9.9	0	11.8	0	16.3	0	7.5	0	12.3	0
MacGillivray's Warbler	10.8	0.4	7.1	0	6	0	8.5	0	3	0.1	7	0
Song Sparrow	10.3	2.4	11	3.8	8	3	17.3	2.4	9.5	2.9	20.7	1.7
Black-capped Chickadee	9.5	18.1	12.4	19.8	4	13.8	8.5	12	3.5	13.7	6.3	17.7
Cordilleran Flycatcher	9.5	0	9.7	0	8	0	12	0	8.5	0	9.3	0.1
Black-headed Grosbeak	7.9	0	3.4	0	10.3	0.2	6	0	3.5	0	10.7	0
Mourning Dove	5.8	0.4	7.1	0	6.5	0.1	16.5	0.2	3	0.3	16	0.4
Chipping Sparrow	3.6	0.1	8.1	0	8.5	0	6.8	0.3	2	0.8	7.3	0
Fox Sparrow	3.4	0	2.3	0	2.5	0	0.5	0	2	0.2	1.3	0.1
Broad-tailed Hummingbird	2.6	0.3	5.4	0.3	1.8	0.2	3	0.3	1.5	0.3	3.7	0.4
Pine Siskin	1.9	0.3	1.3	0.9	1	3	4.8	0	0	2.2	2.3	2.6
Orange-crowned Warbler	1.8	0.3	2	0.3	2.8	0	2	0.3	1	0.2	2.7	0
Mountain Chickadee	1.3	6.2	3.6	3.7	1.3	1.1	0.5	0.1	0.5	0.1	1	2
American Dipper	1.1	2.1	1.7	1.6	2.5	1.4	1.3	0.6	0	0.8	1	1
Dusky Flycatcher	1.1	0	0.9	0	1	0	1.3	0.1	0.5	0	0	0.1
Northern Flicker	1	8.2	1.6	6.8	1.5	4.4	0.5	4.4	3	3.1	0.3	4.6
House Finch	0.9	4.1	2.1	3.1	1.8	5	5.3	4.2	1.5	6.7	1	4.6
Green-tailed Towhee	0.8	0.1	0.1	0	0	0	0.3	0	0	0	0.7	0
Plumbeous Vireo	0.6	0.2	3.6	0.2	2.3	0.4	3.5	0.8	2	0.3	5	0
Black-chinned Hummingbird	0.6	0	3.1	0.1	1.5	0.1	1.5	0	2.5	0.2	1.3	0.3
Red-tailed Hawk	0.5	1	0.6	1.6	0.5	3	1.3	1.4	1.5	1.1	0	0.6
Red-breasted Nuthatch	0.4	3.8	1.1	1.3	1.3	0.1	0.3	0	0.5	1.1	3	2.1
Wild Turkey	0.4	1	0.1	0	0.8	0	1.5	0	0	2.4	0	0.6
Dark-eyed Junco	0.3	10.7	0.4	6.6	1.8	4.7	0	6.7	0	4	0.7	4.4
Steller's Jay	0.3	9.4	1.1	11.7	1.8	1.1	0.3	0.1	0	5.7	0	0.9
Common Raven	0.3	1.9	0	0.9	0	1.1	0	0.6	0	0.9	0	0.7
Townsend's Solitaire	0.3	1.8	1	1.2	0.3	0.4	0.8	0.3	3.5	0.6	1	0.6
Downy Woodpecker	0.3	0.9	0.7	1.8	0.3	0.8	0.3	0.4	0	0.2	0.3	0.6
Virginia's Warbler	0.3	0.3	1.4	0.6	0	0.1	0	0.7	0.5	0.1	0	0
Yellow-breasted Chat	0.3	0	0	0	0	0	0	0	0	0	0	0
Woodhouse's (Western) Scrub-Jay	0.1	5	0.6	7.1	0.3	3.1	0	3.2	1	3.7	0	1.9
Ruby-crowned Kinglet	0.1	1.7	0.1	5.2	0	2.1	0.3	3.7	0	0.8	0.3	2.3
Mallard	0.1	1.2	1	2.6	1.8	0.4	0.5	3	0	0.6	0.7	1.1
Cooper's Hawk	0.1	0.7	0.9	1.1	0.3	0.7	0.3	0.3	0	0.3	1	0.4
Yellow-rumped Warbler	0.1	0.4	0.1	1.8	0	2.7	0	2	1	0.1	0	2.4
Hammond's Flycatcher	0.1	0.2	1.1	0	0.5	0	0.3	0.1	0	0.4	1	0.1
Western Wood-pewee	0.1	0	0.4	0	0.3	0.1	0.3	0.1	1	0.1	0.3	0.1
Wilson's Warbler	0.1	0	0	0.1	0	0	0	0	0	0.1	1	0

COMPLETE LIST OF BIRDS DETECTED DURING BREEDING SEASON SURVEYS (BSS) AND NON-BREEDING SEASON SURVEYS (NBS) AT CITY CREEK CANYON IN 2013-2018 (CONT.)

Species	Number of Observations (detections/survey)											
	2013		2014		2015		2016		2017		2018	
	BSS	NBS	BSS	NBS	BSS	NBS	BSS	NBS	BSS	NBS	BSS	NBS
Black-billed Magpie	0	5.2	0.7	5.6	0	12.3	0	6.9	0	15.8	0	4
American Crow	0	3.6	0	0.8	0.8	0	0	0	0	0	0	1.1
Pinyon Jay	0	3.3	0	0	0	0	0	0	0	0	0	0
European Starling	0	2.2	0	0.3	0	0.8	0	0.6	0	0	0	0
Golden-crowned Kinglet	0	1.8	0.1	2	0	0.2	0	1	0	0.3	0	0.6
Clark's Nutcracker	0	1.6	0	1.8	0	0.1	0	0	0	0	0	0
Golden Eagle	0	1.1	0	0.4	0	0.3	0	0.4	0	0.4	0	0.4
Mountain Bluebird	0	1.1	0	0	0	0	0	0	0	0	0	0
Northern Rough-winged Swallow	0	1	0.3	0	0	0.1	0	0	0	0	0.3	0
Brown Creeper	0	0.9	0.1	2	0	3.2	0	0.8	0	1.3	0	1
Townsend's Warbler	0	0.9	0	0.1	0	0	0	0	0	0	0	0.4
American Goldfinch	0	0.8	0.6	0.1	1	0.3	1.8	0.8	1.5	0.2	0.3	0.6
American Kestrel	0	0.7	0	0.4	0	0.6	0.3	0.3	0	0.2	0	0.3
Gadwall	0	0.7	0	0	0	0	0	0	0	0	0	0
Blue-gray Gnatcatcher	0	0.6	1.1	0.8	1	0.3	0.5	1.7	1.5	1.7	1.3	0.1
Turkey Vulture	0	0.6	0.1	1.2	0	1	0	0.8	0	1.4	0.3	0
Belted Kingfisher	0	0.6	0.1	0.4	0.8	0	0	0.2	0	0	0	0.3
Canyon Wren	0	0.6	0	0.2	0	0.2	0	0.9	0	0.6	1	1
Lesser Goldfinch	0	0.4	1	0.3	2	0.6	2.8	2	1.5	1.2	2.7	2.3
Sharp-shinned Hawk	0	0.4	0	0.2	0.3	0.3	0.3	0.3	0	0.3	0	0.3
Bald Eagle	0	0.3	0	0.2	0	0.3	0	0	0	0.1	0	0
Hermit Thrush	0	0.2	1.9	0.2	0	0	0.3	0.6	0	0.3	1	0.1
California Quail	0	0.2	0.1	0.1	0.3	0	0.3	0.2	0	0.2	0	0
Cassin's Finch	0	0.2	0	0	0.3	0	0.3	0	0	0	0.3	0
Rufous Hummingbird	0	0.2	0	0	0	0	0	0.1	0	0	0	0.3
Barn Swallow	0	0.2	0	0	0	0	0	0	0	0	0	0
Wilson's Snipe	0	0.2	0	0	0	0	0	0	0	0	0	0
White-throated Swift	0	0.1	0.1	0	0	0	0	0	0	0	0	0
Pacific Wren	0	0.1	0	0.8	0.3	0.4	0.5	0.4	1	0.4	1.7	0.6
Eurasian Collared-Dove	0	0.1	0	0.7	0	0	0	0.1	0	0	0	0
Chukar	0	0.1	0	0	0	1.3	0	0.4	0	0.1	0	0
Olive-sided Flycatcher	0	0.1	0	0	0	0	0.3	0	0	0	0.3	0
Swainson's Hawk	0	0.1	0	0	0	0	0	0	0	0.2	0	0
American Pipit	0	0.1	0	0	0	0	0	0	0	0	0	0
Great-blue Heron	0	0.1	0	0	0	0	0	0	0	0	0	0
Tree Swallow	0	0.1	0	0	0	0	0	0	0	0	0	0
Western Kingbird	0	0	0.7	0	0	0	0	0	0	0	0	0
Violet-green Swallow	0	0	0.6	0	0.3	0	0.3	0.2	0	0	0	0
Ruffed Grouse	0	0	0.4	0.2	0.5	0	0.3	0	0	0	0	0
House Wren	0	0	0.1	0	0	0	0	0	0	0	0.3	0
Canada Warbler	0	0	0.1	0	0	0	0	0	0	0	0	0
Cedar Waxwing	0	0	0	3.1	0	0	0.8	0	0	4.4	0	0
Hairy Woodpecker	0	0	0	0.2	0	0.1	0	0	0	0	0	0.1
White-crowned Sparrow	0	0	0	0.2	0	0	0	0	0	0.1	0	0.1

COMPLETE LIST OF BIRDS DETECTED DURING BREEDING SEASON SURVEYS (BSS) AND NON-BREEDING SEASON SURVEYS (NBS) AT CITY CREEK CANYON IN 2013-2018 (CONT.)

Species	Number of Observations (detections/survey)											
	2013		2014		2015		2016		2017		2018	
	BSS	NBS	BSS	NBS	BSS	NBS	BSS	NBS	BSS	NBS	BSS	NBS
Osprey	0	0	0	0.2	0	0	0	0	0	0	0	0
Northern Goshawk	0	0	0	0.1	0	0.1	0	0.1	0.5	0.2	0	0.1
Northern Pygmy-Owl	0	0	0	0.1	0	0.1	0	0	0	0	0	0.1
White-breasted Nuthatch	0	0	0	0.1	0	0	0.3	0	0	0	0	0
Cassin's Vireo	0	0	0	0.1	0	0	0	0.2	0	0	0	0
Red-naped Sapsucker	0	0	0	0.1	0	0	0	0.1	0	0	0	0
Black-throated Gray Warbler	0	0	0	0.1	0	0	0	0	0	0	0	0
Lincoln's Sparrow	0	0	0	0.1	0	0	0	0	0	0	0	0
Northern Shrike	0	0	0	0.1	0	0	0	0	0	0	0	0
Ring-billed Gull	0	0	0	0.1	0	0	0	0	0	0	0	0
Western Screech-Owl	0	0	0	0.1	0	0	0	0	0	0	0	0
Bullock's Oriole	0	0	0	0	0.5	0	0.3	0	0	0	0	0
Common Yellowthroat	0	0	0	0	0.5	0	0	0	0	0	0	0
Red Crossbill	0	0	0	0	0.3	0	0	0	0	0.1	0	0
Brown-headed Cowbird	0	0	0	0	0.3	0	0	0	0	0	0	0
Long-eared Owl	0	0	0	0	0	0.3	0	0	0	0	0	0
Merlin	0	0	0	0	0	0.2	0	0	0	0.1	0	0
Rock Pigeon	0	0	0	0	0	0.1	2	1.4	0	0.2	0	6
Prairie Falcon	0	0	0	0	0	0.1	0	0.1	0	0	0	0
Peregrine Falcon	0	0	0	0	0	0	3	0.1	1	0.4	1.3	0.6
Gray-crowned Rosy-finch	0	0	0	0	0	0	0	5.6	0	0	0	0
Evening Grosbeak	0	0	0	0	0	0	0	1.1	0	0.3	0	0
Western Meadowlark	0	0	0	0	0	0	0	0.2	0	0.2	0	0
Nashville Warbler	0	0	0	0	0	0	0	0.1	0	0	0	0
House Sparrow	0	0	0	0	0	0	0	0	0	0.2	0	0
Black-and-white Warbler	0	0	0	0	0	0	0	0	0	0	0	0.1
Winter Wren	0	0	0	0	0	0	0	0	0	0	0	0.1



Acknowledgements: We'd like to thank the extremely dedicated team of volunteers from Tracy Aviary's Citizen Science Program who braved early mornings and long hours to collect these data. Thanks also to the Salt Lake City Department of Public Utilities and the Utah Division of Wildlife for many years of partnership and support.