



COMMUNITY SCIENCE BIRD MONITORING AT LIBERTY PARK

2021 Project Report

PROJECT OVERVIEW

Liberty Park is an 80 acre urban park in downtown Salt Lake City, UT. The park has a variety of recreation amenities and natural features, including a jogging path, pond with several islands, and 8-acre Tracy Aviary. As a large green space with multiple habitat types located within a highly urbanized matrix, Liberty Park is used by a variety of bird species throughout the year. Since 2013, Tracy Aviary has conducted a community science bird monitoring project in Liberty Park. Here, we summarize results from our 2021 field season.

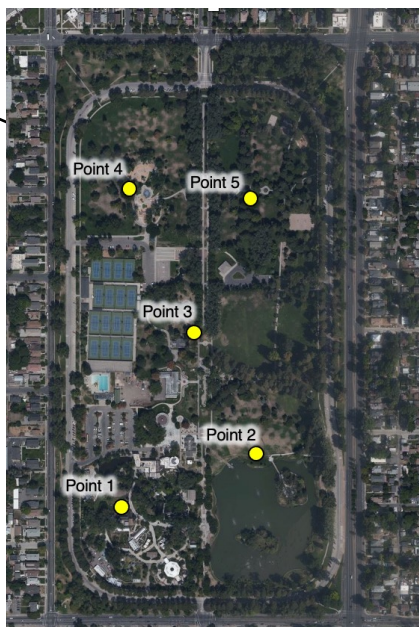
STUDY SITES

We generated five sampling points across Liberty Park where we conducted bird and vegetation surveys. These surveys are part of a larger community science bird monitoring program that includes twelve other study sites in the Salt Lake region. Using information from other study sites, we can gain inference about larger scale patterns and trends in urban and riparian birds communities.

Bird Monitoring Sites



Liberty Park Sampling Points



BIRD SURVEY METHODS

Breeding season point count surveys



During May – July of 2021, 10 community scientists and Tracy Aviary staff conducted 9 breeding season point count surveys at Liberty Park. Point counts were conducted by pairs of community scientists between dawn and 10am. The ‘observer’ identified all birds seen and heard during six minutes, and noted the number of individuals, distance, and direction. The ‘recorder’ wrote all of the observations on the datasheet, and also noted weather and site variables, such as wind speed.

Non-breeding season group surveys

Information from point count surveys was supplemented by non-breeding group surveys conducted in January, February, March, August, September, October, November, and December 2021. During non-breeding surveys, groups of volunteers led by a trained Tracy Aviary staff person walked a transect through the site and noted all birds seen and heard in the area.

Owl survey

Because owls are less likely to be detected by traditional survey methods, we also conducted 3 owl surveys at Liberty Park during 2021. During February, March, and May, when owls are most likely to be vocalizing, groups of volunteers led by a trained Tracy Aviary staff person walked the site in the evening listening for owls, stopping periodically to play owl calls and listen for responses.

LIBERTY PARK - 2021 RESULTS

2021 SURVEY SUMMARY

During 9 breeding season surveys Liberty Park in 2021, we had 1,257 bird observations and detected 37 species. During 8 non-breeding season surveys, we had 3,381 bird observations and detected 50 species. We had one Great Horned Owl detection and 5 Western Screech Owl detections during our owl survey. With our combined surveys, we had a total species list of 64 species at Liberty Park in 2021.

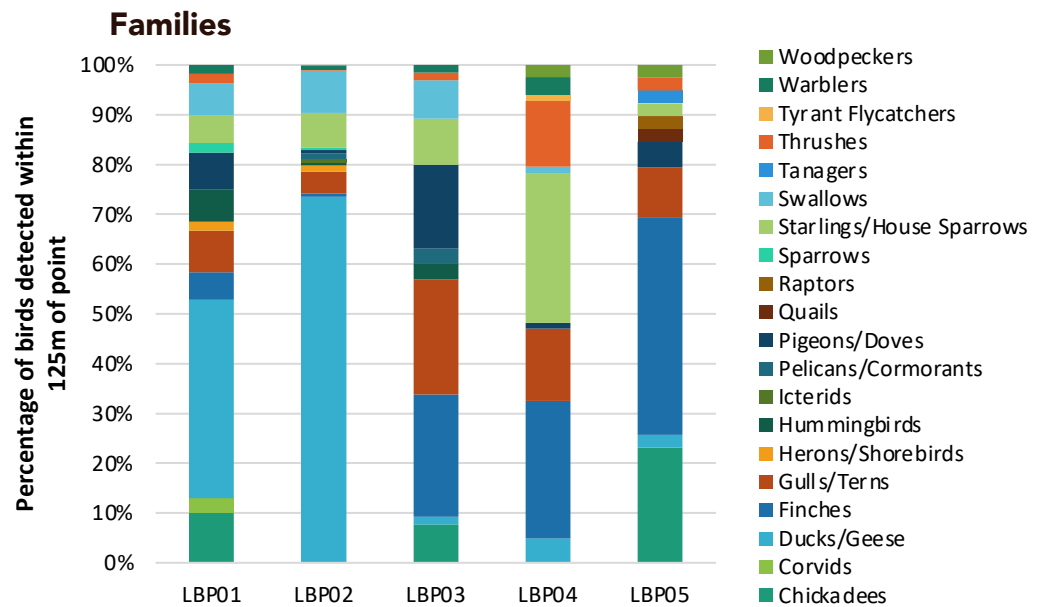
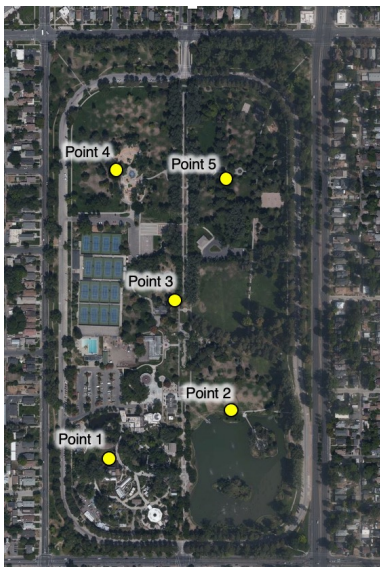


Song Sparrows are one of the bird species that use habitat at Liberty Park.

Since we began monitoring surveys in 2013, there have been 160 bird species that have been documented using habitat at Liberty Park throughout the year.

BREEDING SEASON COMMUNITY COMPOSITION

We examined the composition of bird communities across sampling points at Liberty Park by comparing relative proportions of bird families and habitat guilds for species detected within 125m of each point during the breeding season.



Families

Overall, the bird community at the Liberty Park varies quite a bit between points. Points 01 and 02, located within Tracy Aviary and near the pond, have a high proportion of ducks and geese. The other three points in the park have high proportions of finches, gulls, and starlings.

Habitat Guilds

We documented a high proportion of birds that use primarily water/marsh habitat at points 01 and 02. In the other sections of the park, there were large proportions of birds associated with urban habitat.

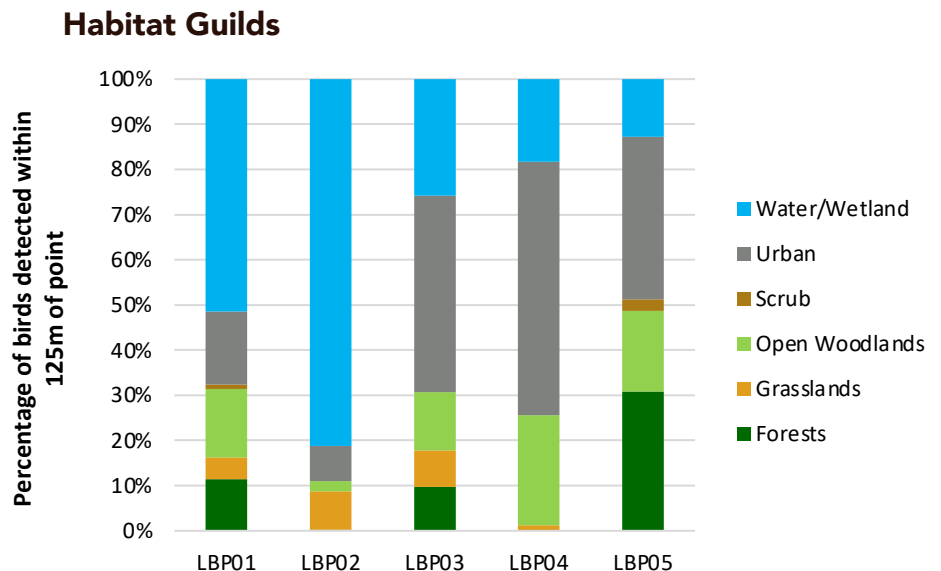


Figure 1. Graphs the community composition of birds within different family groups and habitat guilds at each of the sampling points within Liberty Park during 2021 breeding season surveys.

LIBERTY PARK - 2021 RESULTS

COMPARISON TO OTHER LOCAL BIRD MONITORING SITES

Species Richness, native, urban-sensitive, and riparian species

We can measure the health of an urban riparian site such as Liberty Park by looking at several metrics, including species richness (the number of species detected), and the proportion of native, urban-sensitive, and riparian-associated birds that use the site. When comparing Liberty Park (light blue) to other monitoring sites (dark blue), we found average riparian-associated birds, and below-average breeding season species richness, and proportions of native and urban-sensitive bird species.

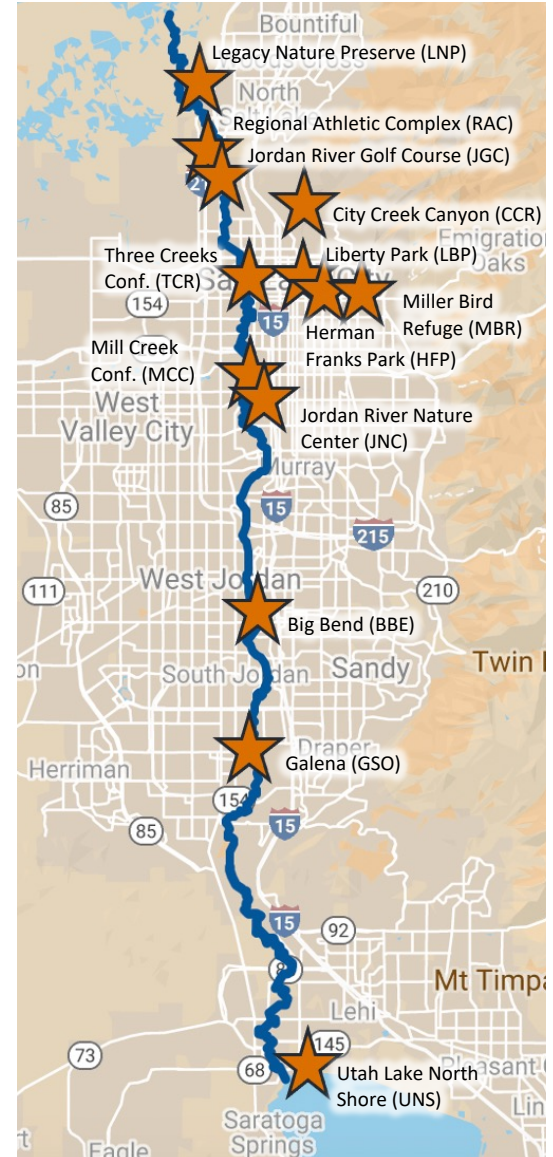
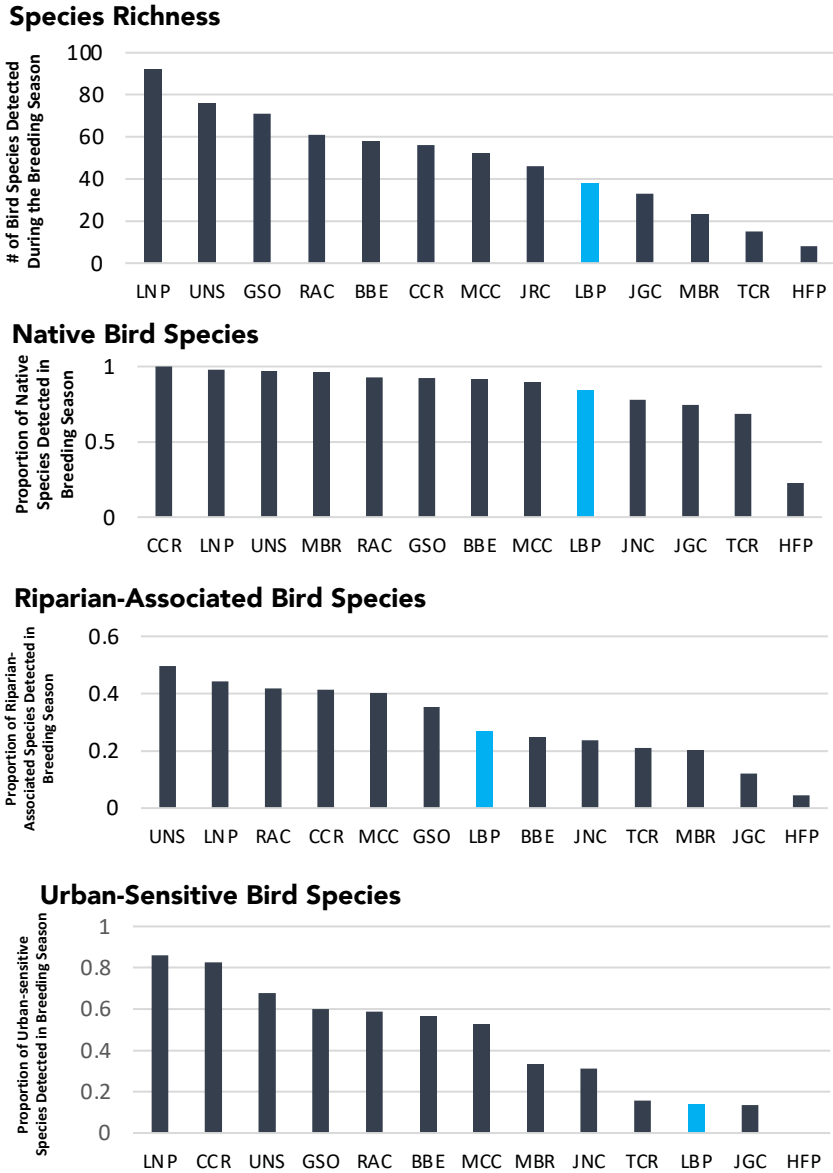


Figure 2. Graphs showing a comparison of species richness and the proportion of native, riparian-associated, and urban-sensitive bird species at Liberty Park (light blue) and other bird monitoring sites (dark blue).

LIBERTY PARK
COMPLETE LIST OF BIRDS DETECTED DURING
BREEDING SEASON SURVEYS (DETECTIONS PER SURVEY)

Species	Year								
	2013	2014	2015	2016	2017	2018	2019	2020	2021
American Coot	0	0.13	0	0	0	0	0.5	0	0
American Crow	0.17	1.88	1.67	0.75	0	0.33	0.5	0.25	0
American Goldfinch	0.83	1	0.33	0.5	0.4	0	0.33	0	0.33
American Robin	1	2.5	1.33	2.25	0.8	3	1.67	1.75	2.11
American White Pelican	0.17	0	0	0	0	0	0.17	2.25	0.33
Bank Swallow	0	0	0	0	1	0	0	0	0
Barn Swallow	3.83	3.38	2.33	3.75	8.2	16.5	5.17	9.75	7.56
Black-billed Magpie	0	0.13	0	0	0	0	0.17	0	0.11
Black-capped Chickadee	2.67	4.13	2.33	6	3	3.5	6.33	6.25	3.56
Black-chinned Hummingbird	0	0	0.67	0	0	0.33	0.67	1.25	1.22
Black-crowned Night Heron	0	0	0	0	0	0.17	0	0	0.67
Brown-headed Cowbird	0.17	0	0	0	0	0	0.17	0	0.11
Black-headed Grosbeak	0	0.38	0.33	0	0.2	0	0.17	0.25	0
Brewer's Blackbird	0.83	1.13	1.67	1.5	3.6	3.33	1	0.25	0
Broad-tailed Hummingbird	0	0.38	0	0	0	0	0	0	0
Bullock's Oriole	0	0.13	0	0	0	0	0	0.75	0
California Gull	1.83	2.5	1.33	1.5	2	1.33	0.5	0.5	8.44
Canada Goose	0	2	1.67	2.75	50.2	32.83	24.33	30.25	36.11
California Quail	0.5	0.25	1	0.75	1	0.33	0	3.5	0.56
Cedar Waxwing	0.83	0.88	0	0	0.4	7.33	0	0.5	0
Cliff Swallow	0.17	0	0	0	0	0	0	0.25	0.11
Cooper's Hawk	1.67	0.13	0.33	0	0.8	0	0.33	0.75	0.22
Common Merganser	0	0	0	0	0.4	0	0	0	0
Common Nighthawk	0.17	0	1.33	0	0	0	0	0	0
Common Raven	0	0	0	0	0	0	0	0	0.11
Double-crested Cormorant	0.17	1.13	1.33	0.5	0	0.17	2	0.75	0.89
Domestic Duck sp.	0	0	0	0	0	0	0	1.75	0
Downy Woodpecker	0.17	0	0.33	0.75	0.4	0.5	0.17	0.75	0.33
Eurasian Collared-dove	0.83	2.25	1.67	4	3	3.5	1.5	2.75	0.78
European Starling	6.33	13.38	10.67	17.5	33	17.83	6.67	9.75	7.33
Evening Grosbeak	0	0	0	0	0	0	0	1.75	0
Great Blue Heron	0	0.13	0	0.25	0.2	0.17	0	0	0
Great Horned Owl	0	0	0	0	0	0	0.17	0	0.33
House Finch	3.33	4	4.33	3	2.4	6.17	3.33	3.25	5.33
Hooded Merganser	0	0	0	0	0.2	0	0	0	0
House Sparrow	1.33	3.63	1	2.5	4	3.33	2.67	5.75	3.44
Killdeer	0.17	0.5	0.33	0.75	0.4	0.33	0.5	0	0
Lazuli Bunting	0	0	0	0	0	0	0	0.25	0
Lesser Goldfinch	0.17	0.75	1.67	1.75	1.8	1.33	0.67	3.25	1.67
Mallard	5.5	8	7	8.75	19.6	46	28.67	33.5	36
Mourning Dove	0.5	1	0.67	0.5	0.6	2.33	1.5	1.5	0.33
Northern Flicker	0.33	1.38	1.67	0.25	0	0.17	0.33	0.5	0.44
Northern Rough-winged Swallow	0.17	0.13	0	0	0.2	0.17	0	0	0
Osprey	0	0	0	0	0	0.17	0	0	0

LIBERTY PARK

COMPLETE LIST OF BIRDS DETECTED DURING BREEDING SEASON SURVEYS (DETECTIONS PER SURVEY)

Species	Year								
	2013	2014	2015	2016	2017	2018	2019	2020	2021
Pine Siskin	0.33	1.25	0.33	0	0	0	0	0.5	0.22
Ring-billed Gull	0	0.38	0	0	0	0	0	0.5	0.67
Red-breasted Nuthatch	0	0	0	0.25	0	0	0	0	0
Ruby-crowned Kinglet	0	0	1	1	0.2	0	1.67	0.5	0
Rock Pigeon	0	0.13	0	0.25	0	0	0.67	8.25	6.44
Red-winged Blackbird	0	0	0	0	0	0	0	0	1.22
Say's Phoebe	0	0	0	0	0.6	0	0	0	0
Song Sparrow	0	0	0	1.75	1.4	1.83	3.33	1.5	0.67
Spotted Sandpiper	0.83	1.38	0.67	0.75	1	1.5	1.17	1.5	1.22
Tree Swallow	0	0	0	0	0	0	0	0	0.11
Violet-green Swallow	1	0.63	0	0	0	0.17	0.17	0.25	0
Warbling Vireo	0	0.13	0.33	0	0	0.17	0.17	0.5	0
Western Kingbird	0	0	0.33	0	0	0	0.5	0	0
Western Screech-owl	0	0	0	0	0	0	0	1	1.67
Western Tanager	0	0.13	0.67	0	0.8	1	0	0.25	0.11
Western Wood-pewee	0	0	0	0	0	0	0.33	0.25	0.11
Wilson's Warbler	0	0	0	0	0	0	0	0.25	0
Woodhouse's Scrub-jay	0	0	0	0	0	0	0	0	0.11
Yellow Warbler	2.33	2.88	2	2.75	2	2	2	1.25	1.44
Yellow-rumped Warbler	0	0.13	0	0	0	0.17	0.17	0	0.11

Photos from the field:



Acknowledgements: We'd like to thank the extremely dedicated team of volunteers from Tracy Aviary's Community Science Program who braved early mornings and long hours to collect these data. Thanks also to the Liberty Park project partners.