

2022 Grassland Breeding Bird Census in the Beaverhill Natural Area

Raegan Giesbrecht

Beaverhill Bird Observatory

INTRODUCTION

Ecosystems are constantly growing and changing. Environmental studies, such as this breeding bird census, allow biologists to learn what changes are happening and what effects that might have. Long-term ecological data is useful to learn about the trends of bird species within an area. The breeding bird census is useful for monitoring the populations and territories for the species living in the Beaverhill Natural Area. Comparing the data from year to year offers insight into the differences in bird populations and the environment between this year's observations and historic observations. This year's data shows increasing numbers of territories for forest-dwelling birds as the forest continues to grow and push further north into the grassland. Assessing the current bird populations, territories, and diversity is also useful to assess specific changes at Beaverhill Lake, as birds are an important indicator species in analyzing the health of an overall ecosystem. Looking through the years of data gained from these surveys can show changes in habitat, such as the growth of the forest.

METHODS

The survey area is divided into a grid with points spaced fifty meters apart. The points are numbered A through H, with rows A-F containing points 0-11, row G containing points 0-9, and row H containing points 0-8. The point A0 is in the far southwest corner and H8 is in the northeast corner. Surveys began at approximately 5:30 each morning and took between 3 and 4 hours to complete. Surveys took place on June 5, 10, 19, 28, July 1, 12, 13, and 14. Surveys were initially planned to end on July 10, but frequent rainy weather caused the survey window to be increased. Each survey was started at A0 and data was collected as the survey was completed, moving east and west. A Garmin GPS was used for navigation, having each point marked before

the first survey. Birds were identified mainly by song and occasionally by sight and recorded on a grid sheet. Counter singing was marked by a dotted line between two singing birds. This was identified by listening for two birds singing at the same time or successively. Data was collected at every point during stops that lasted from 2 to 6 minutes, depending on the amount of bird activity.

After the surveys were completed, species-specific maps were made. Each map had all the encounters of one species marked throughout the entire study. Birds from the first survey were marked with an A, the second with a B, and so on. These maps were used to roughly mark the location of breeding territories. A bird marked as singing in the same place several times would be defined as a territory. When counter-singing was identified, a territory border was drawn somewhere between the two singing birds. When only a few sightings of a species were marked, they were mapped onto a miscellaneous map including several infrequently seen species.

SURVEY AREA

The Beaverhill Bird Observatory Grassland Grid is located between the edge of the forest and the historical shore of Beaverhill Lake. The grid consists of several different environments. Rows A and B are primarily forest habitat, with A7 and A8 being practically within Sora Pond. During the later surveys past June 19, water levels rose, making these points, as well as adjacent points, inaccessible. The forest transitioned to willow thickets at row C and parts of row D. From row D through H, the habitat is entirely grassland with a few scattered shrubs. Rain throughout the summer increased the amount of water in the grassland area, making most of the ground waterlogged.

RESULTS

A total of 170 territories were recorded this year. The most abundant species recorded in the Beaverhill Lake grassland area was the Clay-colored Sparrow with 31 territories. Other frequently encountered species included the Yellow Warbler (26), Least Flycatcher (24), and Common Yellowthroat (21). Throughout the forest (mainly rows A and B), Yellow Warblers and Least Flycatchers were by far the most prominent species. Many of the grassland dwelling birds, such as the Clay-colored Sparrow, Common Yellowthroat, and LeConte's Sparrow, preferred to hide among the willows and the shrubs within the grassland area.

Table 1. Number of territories by species for the 2022 study. Density calculated using an area of 43.8 acres.

Species	Number of Territories	Density (territories per acre)
Clay-colored Sparrow	31	0.71
Yellow Warbler	26	0.59
Least Flycatcher	24	0.55
Common Yellowthroat	21	0.48
Red-winged Blackbird	17	0.39
LeConte's Sparrow	12	0.27
Savannah Sparrow	12	0.27
Nelson's Sparrow	9	0.21
Sedge Wren	5	0.11
House Wren	4	0.09
Warbling Vireo	4	0.09
Black-capped Chickadee	2	0.05

Alder Flycatcher	1	0.02
Song Sparrow	1	0.02
Gray Catbird	1	0.02

Table 2. Number of territories by species compared to previous years

Species	2016	2017	2018	2019	2020	2021	2022
Alder Flycatcher	13	5	12	10	0	6	1
Least Flycatcher	27	3	2	16	15	21	24
House Wren	1	4	1	2	4	1	4
Sedge Wren	0	0	0	5	12	6	5
Gray Catbird	0	0	3	0	0	0	1
Yellow Warbler	43	24	20	25	24	41	26
Common Yellowthroat	0	1	9	19	24	49	21
Savannah Sparrow	52	32	6	14	8	7	12
Clay-colored Sparrow	83	42	23	49	32	48	31
LeConte's Sparrow	7	0	0	39	31	24	12
Nelson's Sparrow	0	0	0	0	19	13	9
Song Sparrow	0	3	4	7	3	0	1
Red-winged Blackbird	1	4	2	16	20	18	17
Black-capped Chickadee	3	0	0	7	0	0	2
Warbling Vireo	0	0	0	3	0	0	4

DISCUSSION

This year's results show a slight increase in the number of territories of several forest-dwelling birds. The commonly encountered Least Flycatcher has increased its number of territories since 2017; initially having 3 territories. The number decreased by one territory the next year, then rose to 16 and 15 territories the following two years. Last year, 21 territories were mapped. This year, that number rose to 24. Warbling Vireos and Black-capped Chickadees had 4 and 2 territories, respectively, this year, making this the first year since 2019 that territories have been marked for these species. Gray Catbirds also made a small come-back with this year's territory being the first one since 2018. Following the wetland drying up, the deciduous forest began to push forward. The changes in the bird populations are the result of forest succession and an increase of forest habitat for these birds to breed and nest in. Red-winged Blackbirds continued showing a similar number of territories compared with the last 3 years. This is likely due to consistent water level in Sora's Pond remaining within the survey area.

The accuracy of this study could have been affected by perception of the observer as well as difficulty in identifying a species when a song was not heard. When listening to a bird song and attempting to plot its position on a grid, there will be a margin of error. This will have an impact on the way that the final territories were drawn when analyzing the points. Birds may also have not been plotted when they were unable to be identified. For example, birds quickly flushing and not being located again or birds that were too far away to be seen properly. Because these birds were unable to be plotted on the grid, they did not contribute to forming the territories.

CONCLUSION

This year's survey continues to supply data that is used to track the trends seen in the bird species at Beaverhill Bird Observatory. This survey shows how different bird species are adapting to the changing environment and which species are decreasing, maintaining, or increasing their populations within the survey area.

ACKNOWLEDGEMENTS

I would like to thank all the staff and volunteers at Beaverhill Bird Observatory for creating the opportunity for me to take part in this internship and gain so much experience and knowledge throughout the summer. I would also like to thank my mentor, Jon Van Arragon, for assisting me throughout my internship, answering my questions, and editing my report.