

2018 Aspen Forest Breeding Bird Census at the Beaverhill Lake Natural Area

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Introduction:

Just east of Tofield, Alberta is Beaverhill Lake which was 139 km² and had a maximum depth of 3 m. Since about 2003 the lake has been mostly dry (Beaverhill Bird Observatory), changing from mainly marshland and mud flats to more grassland. The Beaverhill Natural Area is located on the south shore of Beaverhill Lake. With the drying of the lake and lowering of the water table, the grassland on the old shoreline has been invaded by willow shrubs and aspen forest. Along with the changing landscape, the variety of bird populations have also been changing. More forest-dwelling species such as Least Flycatcher, House Wren, Downy Woodpecker can be found in the maturing aspen forest. To have a better understanding of not only the changing diversity of birds, but to also give us a better idea of the population density of each species, mapping and other information-gathering are done so that we have a record of the bird population, distribution, survival-rate, and migratory routes.

The Beaverhill Bird Observatory use breeding bird censuses along with mist-netting and nest monitoring to create a record of all the different bird populations. This information can be used to in planning bird population management. The breeding bird census works by using territory behaviour in mapping the different birds within the habitat. This is done by listening to the different bird songs and mapping their locations. Males will sing and call to not only to find a potential mate, but to also let other males know not to pass into their territories. When hearing two or more calls of the same species, indicates the edge of a territory. This information can be used to map out the distribution of the populations. This method is used in the grassland and

aspen forest areas in the Beaverhill Lake Natural area. This report provides the results for the aspen forest which was initiated in 2013.

Methods:

From June 4 to July 5, 2018, twice a week a census was conducted on a 25 ha of aspen forest in the Beaverhill Lake Natural Area (Baldwin, 2017) from 5:30 am to 12:30 pm. This was done by following a marked grid that is transected into rows marked from 0-11 and columns marked from A-K. Each point on the grid is marked with a metal tag and trail tape to visually find the point, having each point 50 m from each other. One census covered rows 11 to 7 and the second census covered rows 0 to 6, walking even rows from west to east and odd rows east to west, leading to a total of 12 census to cover the whole census area. The method used to record the information is by using a territory mapping technique that looks at the behaviour of birds with it comes to making territory. This was done by listening and identifying bird songs for 2-4 minutes at each grid marker. This information was recorded on grided record sheets using the alpha coding system. Not only to record the different bird calls, but also any visual sightings and nests that were found within the forest section. This was analyzed to find out the number of territories and to calculate the territory density.

Results:

Table 1: Census of Bird Species that were found in the census area and the density of territories in the Beaverhill Lake Natural Area. Species with no territories were recorded during the censuses but specific territories could not be identified.

Bird Species	Total number of territories	Density (Territories per ha)
American Crow	0	0.00
American Goldfinch	0	0.00
American Robin	9	0.36
Baltimore Oriole	3	0.12
Black-capped Chickadee	3	0.12
Brown-headed Cowbird	0	0.00
Brewer's Blackbird	0	0.00
Clay-colored Sparrow	4	0.16
Chipping Sparrow	1	0.04
Downy Woodpecker	2	0.08
Dark-eyed Junco	0	0.00
Hermit Thrush	0	0.00
House Wren	32	1.28
Least Flycatcher	217	8.68
Mallard	0	0.00
Philadelphia or Red-eyed Vireo	1	0.04
Rose-breasted Grosbeak	0	0.00
Ruby-throated Hummingbird	0	0.00
Ruffed Grouse	0	0.00
Red-winged Blackbird	0	0.00
Warbling Vireo	5	0.20
Yellow Warbler	20	0.80
Total	297	11.88

There was a total of 297 territories found within the aspen forest section with the Least Flycatcher had the highest of 217 followed by House Wren, Yellow Warbler, and American Robin. The Least Flycatcher had the largest population density of 8.68 as they were commonly found in mixed deciduous forest of aspen and balsam trees. They are known to be very territorial, chasing out larger birds like Brown-headed Cowbirds and Blue Jays (Cornell Lab). They are also known to nest in clusters containing anywhere from 2 to 30 territories. The higher concentration of House Wren population was found around the points that were close to House Wren boxes.

This could be due to already having the House Wren boxes established before the forest grid census were first done in 2013. Black-capped Chickadees and Clay-colored Sparrows were found on the border of the forest and grassland section as they do prefer trees and large bush coverage for nesting. Though Mallards were seen, there didn't have a known territory as all the sightings were found by coming upon a nest. Other species of songbirds were also recorded but had very few or zero territories.

Discussion:

Territories for certain species like the Least Flycatcher may have been over counted due to weather conditions such as wind or rain. Another factor that could influence the count is if the same individual was counted more than once due to them flying from perch to perch or moving through the area. Also, time of day would also have an influence on the census for as you go later in the morning, the less active the songbirds are. This information could be used to look at the earlier censuses and analyze the migration and nesting areas. Another factor that can also influence the results is the person running the census as each person has different levels of identification skills that may or may not be able to identify every species of songbird in the area. More censuses need to be done to have a larger data set for interpretation.

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