

Marsh Monitoring Program Report 2026

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Introduction

The Beaverhill Lake wetlands are important to study, as they provide habitat for numerous wildlife species and offer other benefits to surrounding ecosystems and to us. These benefits include naturally filtering our water and acting as flood protection. These wetlands are known to contain breeding habitat for several threatened bird species. For instance, the Yellow Rail is considered a species of special concern (Government of Canada, 2026), and American Bittern populations have dropped by 50% in as many years (NatureCounts, 2026). The significance of this wetland has led to it being declared a wetland of international importance by RAMSAR.

To study these, and more, wetland birds, the Beaverhill Bird Observatory (BBO) implemented the Marsh Monitoring Program (MMP) five years ago. Though the MMP is used to monitor all wetland birds, it is designed around ten target species: Yellow Rail, Sora, Virginia Rail, American Bittern, Pied-billed Grebe, Eared Grebe, Horned Grebe, Nelson's Sparrow, Red-necked Grebe, and Least Bittern.

When deciding how to study birds, time of day is of significant concern. Many bird species tend to be more active in the morning. This especially applies to songbirds and is the reason that the bird banding effort at the BBO is concentrated in the morning. However, it is less clear whether this trend holds true for the target species in the MMP. Among the target species, only the Nelson's Sparrow is a songbird; in addition, several species are primarily nocturnal, including the Yellow Rail, Virginia Rail, and American Bittern. So, expanding our understanding of the activity cycles of these birds may help us study these species.

Weather is another factor that can affect bird activities, and the 2026 breeding season certainly had exceptional weather. For instance, more than 500mm of rain fell in June and July of 2026. In addition, Beaverhill Lake sits at the bottom of the local watershed. These factors meant that by the end of June, the water levels of Lister Lake, which feeds into Beaverhill Lake, had risen significantly. Notably, all target species of the MMP build nests at or just above the water level, leaving their nests susceptible to inundation.

Methods

The BBO's MMP is based on the Prairie & Parkland Marsh Monitoring Program (PPMMP) created by Birds Studies Canada (2010). There are two sets of MMP points in the Lister Lake wetlands at the BBO. One set, the west-side, has been used since Jana established them in 2022 and is located along the west shore of Lister Lake (Figure 1, Teefy 2022). The second set, the east-side, was introduced in 2025 by Willow and is located on the east shore of Lister Lake (Figure 1, Zilliox 2025). The west-side and east-side sets are each composed of eight individual points. These points are each intended to be surveyed four times between May 20th and June 30th.

A survey consists of a 15-minute point count with both silent observation and playback periods (Table 1). These surveys can be conducted in either a morning or an evening time window. The morning window starts 30 minutes before sunrise and ends at 10:00 AM, while the evening window starts at 6:00 PM and ends 30 minutes after sunset. At the end of the breeding season, after all surveys have been completed, a habitat assessment is typically conducted at each point to assist in determining the habitat preferences of the target species.

Because the number of surveys successfully completed each year varies, using the total number of detections is not an accurate method to compare years. To solve this problem, detection rate will be used instead. In this report, detection rate is defined as the mean number of individuals detected per survey.

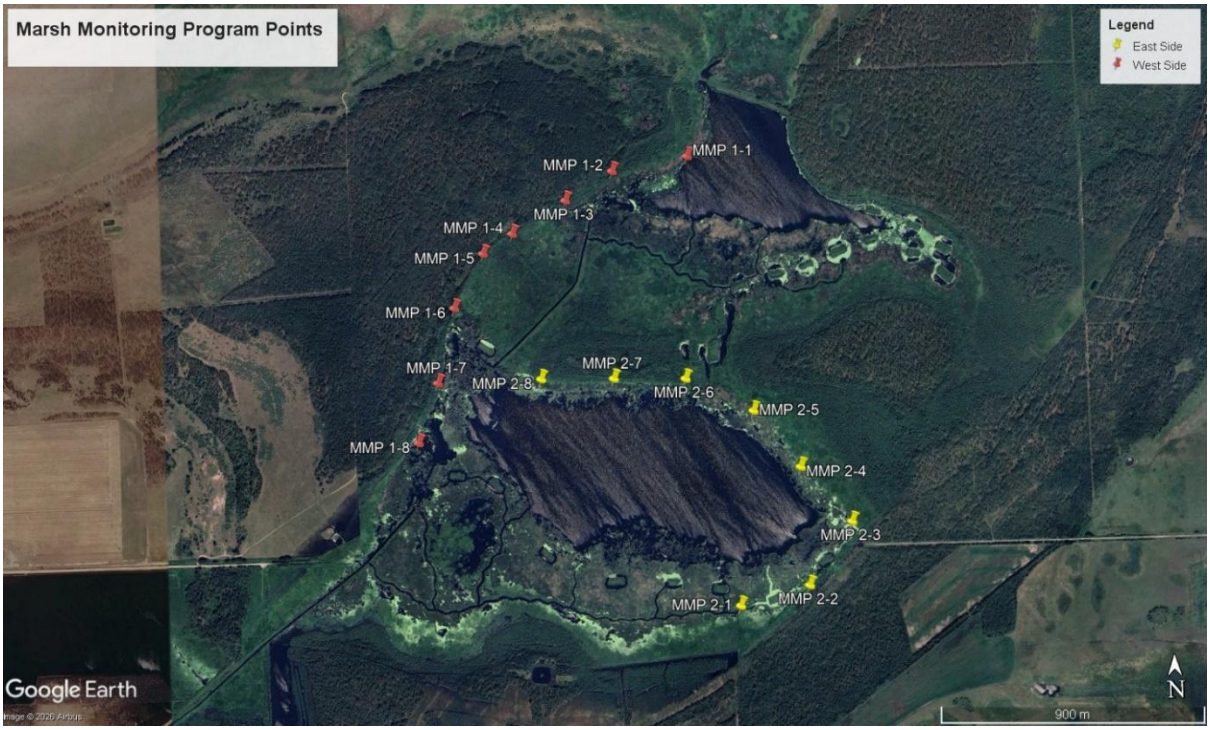

Figure 1. Map showing the wetlands of the Beaverhill Natural Area and the locations of the eight west-side and eight east-side points included in the MMP.

Table 1. Minute-by-minute breakdown of an MMP survey. Minutes 6-10 each start with 30 seconds of playback followed by 30 seconds of silence.

Survey Minute	Playback
1-5	None
6	Yellow Rail
7	Sora
8	Virginia Rail
9	American Bittern
10	Pied-billed Grebe
11-15	None

Results & Discussion

The flooding caused by heavy rains made accessing and surveying the Beaverhill Natural Area difficult for several months. As a result, the MMP surveys were unavoidably truncated this year. Only three west-side and two east-side surveys were completed. The west-side surveys were conducted on May 27th, June 5th, and June 16th, with the first two being in the evening window and the third in the morning window. The east-side surveys were completed on May 28th and June 13th with both being in the evening window. In addition, no habitat assessments could be done. While the flooding likely altered the habitat to some degree, the pre-flooding habitat was very similar to last year. The lack of surveys after the heavy rains of July meant that I could not assess the impact of the higher water levels on the nesting marsh birds.

Besides preventing surveys, flooding affected the habitat use of several species. For instance, Soras, Yellow Rails, and Nelson's Sparrows seemed to become less common in the sedge meadows where they were found in previous years and instead preferred the flooded grasslands on the north side of the natural area. One unstandardized survey of this habitat revealed at least 48 individual Soras. Water depth may help explain this change in habitat use, as the depth in the grassland was likely closer to the usual depth of the sedge meadow. However, no MMP surveys were completed during this time, so it is possible that these species were still using their typical habitats in addition to the grassland.

Before the flooding, habitat use among the target species largely followed trends set in previous years. Yellow Rails were exclusively detected in sedge meadows, Soras commonly used any wetland with dense emergent vegetation, Virginia Rails preferred stands of cattails, Grebe species were always found on shallow open water, and Nelson's Sparrows used graminoid dominated wetlands. Unfortunately, the distance from which American Bitterns were heard made determining their habitat preferences difficult. While habitat use largely remained consistent, there were exceptions. For instance, only a single Virginia Rail was detected on the west-side. Whether this represents a change to the west-side habitat or a result of truncated surveys is unknown.

Table 2. Year to year detection rates of the eight target species that have been identified during MMP surveys on the west-side.

Species	2022	2023	2024	2025	2026
Yellow Rail	0.00	0.00	0.22	0.22	0.58
Sora	2.29	1.22	2.84	2.69	2.75
Virginia Rail	0.33	0.13	0.09	0.38	0.04
American Bittern	0.33	0.38	0.09	0.22	0.29
Pied-billed Grebe	0.67	0.38	0.91	0.47	0.17
Eared Grebe	0.00	0.00	0.09	0.06	1.96
Horned Grebe	0.00	0.00	0.00	0.00	0.08
Nelson Sparrow	0.58	0.19	0.44	0.13	0.04

Table 3. Year to year detection rates of the eight target species that have been identified during MMP surveys on the east-side.

Species	2025	2026
Yellow Rail	0.06	0.13
Sora	2.41	2.94
Virginia Rail	0.38	0.63
American Bittern	0.13	0.06
Pied-billed Grebe	0.53	0.25
Eared Grebe	0.91	4.75
Horned Grebe	0.16	0.00
Nelson Sparrow	0.16	0.19

The Yellow Rail, Sora, and Virginia Rail all fall within the same family, Rallidae, and yet the detection trends between these species vary significantly. For instance, Yellow Rails had the highest detection rate this year on both the west- and east-side (Tables 2 & 3). Furthermore, detection rates seem to be increasing, potentially signifying that the habitat has been improving in quality. For Soras, detection rates on both sides fall in a fairly narrow range between 2.29 and 2.94, with the exception of 2023 (Tables 2&3). This discrepancy may be due to an unsuccessful previous breeding season, variability between observers, or something else entirely. If the former is true, it will be interesting to see if Soras and other species follow this trend in future MMP surveys due to the flooding this year. Unlike Soras and Yellow rails, Virginia Rail detections never remain consistent year to year, nor do they follow an obvious trend (Tables 2 & 3). On the west-side, this species had the lowest detection rate, and on the east-side the highest. This may be explained by their furtive nature and low population density, though Yellow Rails suffer from these same issues.

For the first time in any year of the MMP, a species had a higher detection rate than Soras: the Eared Grebe. While this is only true on the east-side, Eared Grebes have the second-highest detection rate on the west-side. Oddly, not all grebe species followed this trend. Pied-billed Grebes had their lowest detection rates out of any year, on both sides. Direct competition between these Grebe species may help to explain the shift in detection rates, though they typically occupy separate parts of the wetland. Horned Grebes were detected for the third year, but their detection rate continues to reflect what seems to be a small population in the natural area.

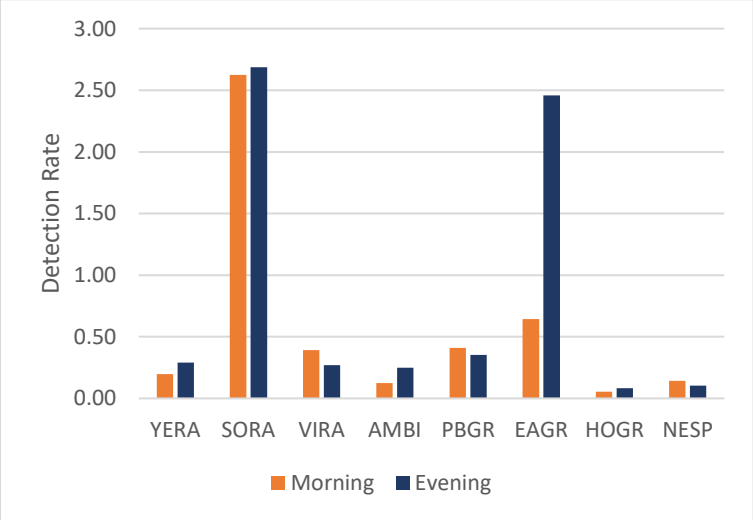

Figure 2. Comparison of detection rates of eight target species between the morning and evening windows. Surveys from 2025 and 2026 were included.

Figure 2 helps shed light on whether the morning and evening windows are equivalent. For all target species, except one, the differences in detection rate are minor and could easily be explained by the small sample size. The exception to this rule is the Eared Grebes, which are detected during the evening window at a rate almost four times higher than morning surveys. While this may imply that this species is more active in the evening, there is a simpler explanation. A higher proportion of the evening surveys were conducted in 2026, and Tables 2 & 3 show that the detection rate for this species was exceptionally high this year, providing a methodological explanation for the results. However, other species had less variation in detection rates between years, meaning the other results of Figure 2 are more likely to be accurate. Overall, these results support the flexibility in survey timing provided in the MMP.

Conclusion

The outcomes from this year's surveys have revealed a fact that should be considered in future iterations of this program: two target species, for which playback is not used, weren't detected for the fifth year in a row. These species are the Red-necked Grebe and the Least Bittern. While Red-necked Grebes are common in Alberta, they are rarely seen in the wetlands around the BBO, and Least Bitterns have never been recorded in the province. Considering the rarity of these species, the MMP may reveal more useful data if two new target species are chosen to replace them. My recommendations are LeConte's Sparrow and Song Sparrow, given their confirmed presence and declining populations. Sedge Wren and Western Marsh Wren should also be considered.

The overarching theme of this year was competing with the weather to collect data and make conclusions. The lack of surveys after the flooding resulted in no information about the impact of the flooding on nesting birds. Despite this struggle, enough work was done to ensure that the trends of our wetland birds can be followed. This fact means that 2026 was another successful, though tumultuous, year for the Marsh Monitoring Program at the Beaverhill Bird Observatory.

References

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Appendix 1. Non-target bird species detected during the 2026 MMP surveys. To contribute to citizen science initiatives, each survey was entered into eBird.

Species	West-side	East-side
Ruddy Duck	✓	✓
Canada Goose	✓	✓
Blue-winged Teal	✓	✓
Cinnamon Teal		✓
Northern Shoveler	✓	✓
Eurasian Wigeon	✓	
American Wigeon	✓	
Gadwall	✓	✓
Northern Pintail	✓	✓
Mallard	✓	✓
Green-winged Teal	✓	✓
Canvasback	✓	✓
Redhead	✓	✓
Ring-necked Duck	✓	
Lesser Scaup	✓	
Bufflehead	✓	
Common Goldeneye	✓	
Unidentified Duck	✓	✓
Ruffed Grouse	✓	✓
American Coot	✓	✓
Black-necked Stilt	✓	✓
American Avocet	✓	✓
Wilson's Snipe	✓	✓
Wilson's Phalarope	✓	✓
Willet	✓	
Sabines Gull		✓
Franklin's Gull	✓	✓
Ring-billed Gull		✓
California Gull	✓	✓
Unidentified Gull	✓	✓
Black Tern	✓	✓
Forster's Tern	✓	✓
Common Tern		✓
Common Nighthawk	✓	
Ruby-throated Hummingbird		✓

Species	West-side	East-side
White-faced Ibis	✓	✓
Black-crowned Night Heron	✓	
Great Blue Heron	✓	
Northern Harrier	✓	✓
Least Flycatcher	✓	✓
Eastern Warbling Vireo	✓	✓
Common Raven	✓	✓
Black-capped Chickadee	✓	
Bank Swallow	✓	✓
Tree Swallow	✓	✓
Purple Martin	✓	
Barn Swallow		✓
Northern House Wren		✓
Sedge Wren	✓	✓
Marsh Wren	✓	✓
European Starling	✓	✓
Gray Catbird	✓	
Veery	✓	
Swainson's Thrush		✓
American Robin	✓	✓
Cedar Waxwing	✓	
American Goldfinch	✓	✓
Clay-colored Sparrow	✓	✓
White-throated Sparrow	✓	
LeConte's Sparrow	✓	✓
Song Sparrow	✓	✓
Swamp Sparrow	✓	✓
Yellow-headed Blackbird	✓	✓
Baltimore Oriole	✓	✓
Red-winged Blackbird	✓	✓
Brown-headed Blackbird	✓	✓
Common Grackle	✓	
Common Yellowthroat	✓	✓
American Redstart	✓	
Northern Yellow Warbler	✓	✓
Rose-breasted Grosbeak	✓	