Beaverhill Bird Observatory Marshland Monitoring Program

Jana Teefy

Beaverhill Lake, its inlet, Lister Lake, and the surrounding uplands are important breeding grounds and migration staging areas for over 270 bird species each year. The lake was listed as a wetland of international importance under the RAMSAR Convention in 1987 due to the variety and abundance of bird species utilizing the habitats and resources provided by the lake and surrounding wetlands. Species of significance that utilize these habitats include sensitive species like the rail family - Yellow Rail, Virginia Rail, and Sora. Rails are secretive wetland birds that skulk amongst the emergent vegetation, walk on top of vegetation with their large, specialized feet, and easily squeeze through vegetation, thanks to their narrow bodies. Their secretive nature and physiological adaptations make them difficult to observe and study; consequently, rail species are not well documented, and their population demographics are not well known. Their populations are declining, as with many other bird species, and the population loss is likely due to wetland habitat loss. The Beaverhill Marsh Monitoring surveys were implemented to better document the presence of wetland bird species, especially rails, in the Beaverhill Natural Area with a standardized protocol. The protocol used was modified from Bird Studies Canada's Prairie and Parkland Marsh Monitoring Program. The protocol uses a series of callbacks as rails, and other wetland species are secretive and difficult to observe but will reply to the callback, making them easier to document.

The Beaverhill Marsh Monitoring protocol was modified from Bird Studies Canada's Prairie and Parkland Marsh Monitoring Program and the survey points were adapted from a previous study completed by a prior BBO staff member, Jeremy Lamb. The Bird Studies Canada protocol calls for three surveys completed between May 20 to July 30, 2022, with a minimum of 3 days between. The surveys are to be conducted sometime between sunrise and 10:00 am, and during ideal weather conditions - temperatures above 0 °C, wind below a 3 on the Beaufort Scale, and no precipitation (see appendix); anything outside of these weather conditions interferes with breeding bird behaviour and affects the ability to detect callbacks. The Beaverhill Marshland protocol consists of eight survey points in the marshlands of Lister Lake between the weir and the lookout to the south. The survey points are 100 - 200 m apart, with a variety of habitats and navigable terrain considered. The 2022 surveys were completed in alternating directions on May 25 from 7:16 am and 9:35 am, June 1 between 6:24 am and 9:02 am, and June 28 between 6:23 am and 9:13 am.

The 10 priority species for the surveys include Eared Grebe (EAGR), Horned Grebe (HOGR), Red-necked Grebe (RNGR), Pied-billed Grebe (PBGR), American Bittern (AMBI), Least Bittern (LIBI), Sora (SORA), Virginia Rail (VIRA), Yellow Rail (YEAR), Nelson's Sharp-tailed Sparrow (NSTS). Additional species noted were American Coot (AMCO) and Wilson's Snipe (WISN).

A 15-minute survey playback was used at each survey point, consisting of 5 minutes of silence for passive observation, then 1 minute for each target species (30 seconds playback of the breeding call and 30 seconds for observations), followed by 5 minutes of passive observation. The playback included Yellow Rail, Sora, Virginia Rail, American Bittern, and Pied-billed Grebe, in sequence. Individual observations of the 10 priority species, American Coot, and Wilson's Snipe were counted and recorded with distance (0-50 m, 50-100 m, or > 100 m), type of observation (visual vs auditory), timing (pre, post,

or minutes during callback) and individuals were plotted on the site map. All other species were recorded with estimated numbers observed and if they were active foragers or flew overhead of the survey zone. Habitat analysis for each survey point was completed in July and included vegetation type, dominant emergent vegetation, water depth, and emergent vegetation height and sketched onto a site map for each survey point.

Of the 10 priority species, 6 were observed during the surveys, including Sora, Virginia Rail, American Bittern, Pied-billed Grebe, and Nelson's Sharp-tailed Sparrow. Most importantly, 12 observations and an estimated 9 individual Virginia Rails were documented at 5 of the 8 survey points and always after the playback. They were observed in areas dominated by emergent sedges and found most frequently in habitats with cattails bordered by sedges. Yellow Rail was unfortunately not detected this year, though they have been documented in the natural area in recent and past years. However, Sora were observed in abundance at every survey point with 48 total observations, both during and without playback. Sora were found in higher abundance in areas dominated by emergent vegetation.
Pied-billed grebes were observed in areas with open water and cattails, with 14 total observations. Although Horned Grebe and Eared Grebe have been observed in the natural area this year, they were not detected during the surveys. Ten American Bitterns observations were documented in distant cattails. Nelson Sharp-tailed Sparrow were observed to be counter singing well into early July in areas with emergent vegetation and willows, with a higher density noted later in the season.
Additional species, like Wilson Snipe and American Coot were documented in abundance at each survey point with both audio and visual observations. Red-winged Blackbird, Yellow-headed Blackbird, Common Grackle, numerous duck and passerine species, Franklins Gull and Black Tern were frequently observed actively foraging or flying overhead. These species were excluded from the analysis as there were simply too many to document.

Continuing the Marshland Monitoring Protocol in future breeding seasons is an important tool to document the presence of rail species in the Beaverhill Natural area with a standardized protocol. Additionally, the playback is integral for detecting secretive species like the Virginia and Yellow Rail. It is crucial to better understand the habitat requirements and breeding needs of these understudied species in order to initiate recovery programs.

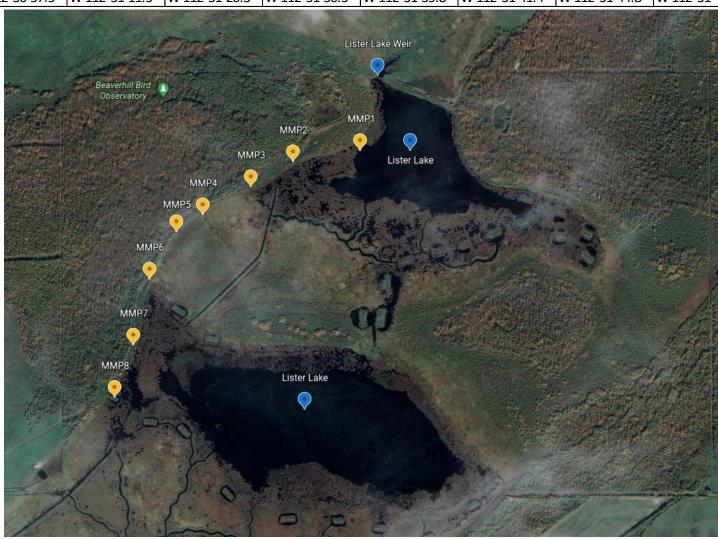| MMP 1	MMP 2	MMP 3	MMP 4	MMP 5	MMP 6	MMP 7	MMP 8
N 53°22'43.6"	N 53°22'42.2"	N 53°22'39.1"	N 53°22'35.6"	N 53°22'33.5"	N 53°22'27.6"	N 53°22'19.4"	N 53°22'12.9"
W 112°30'57.5"	W 112°31'11.5"	W 112°31'20.3"	W 112°31'30.3"	W 112°31'35.8"	W 112°31'41.4"	W 112°31'44.8"	W 112°31'48.7"

Figure 1 Map of the Beaverhill Bird Observatory Marshland Monitoring Program's eight survey points used in the 2022 protocol
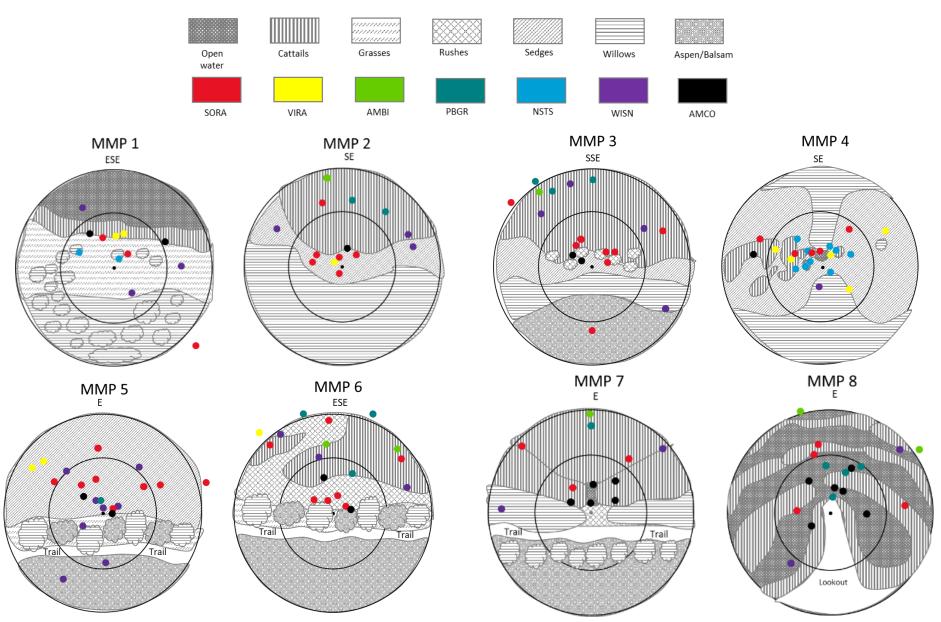
Figure 2 Plot maps of habitat and total species observations in the Beaverhill Bird Observatory Marshland Monitoring Program at 8 points surveyed in 2022
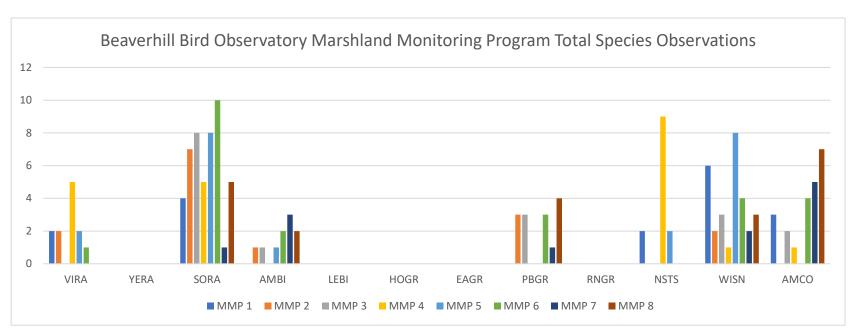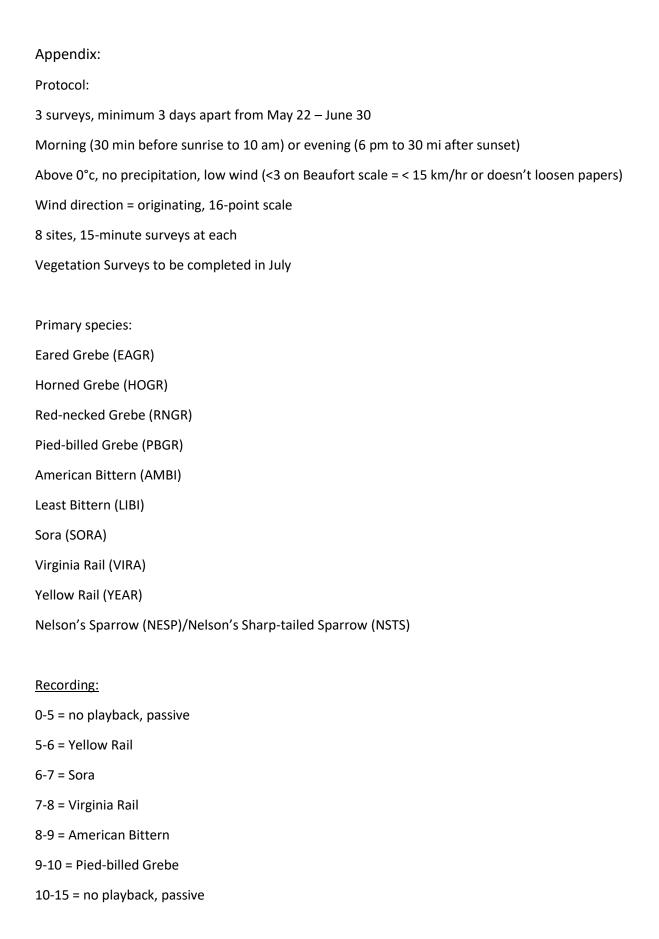
Figure 3 Total species observations at 8 survey points of the Beaverhill Bird Observatory Marshland Monitoring Program in 2022

Table 1 Total observations and estimated individuals at 8 survey points in the Beaverhill Bird Observatory Marshland Monitoring Program in 2022

| Species | MMP 1 | | MMP 2 | | MMP 3 | | MMP 4 | | MMP 5 | | MMP 6 | | MMP 7 | | MMP 8 | | Total | |
	Individuals	Observations	Individuals	Observations	Individuals	Observations	Individuals	Observations	Individuals	Observations	Individuals	Observations	Individuals	Observations	Individuals	Observations	Individuals	Observations
VIRA	2	2	1	2	0	0	3	5	1	2	1	1	0	0	0	0	8	12
SORA	2	4	3	7	4	8	2	5	3	8	5	10	1	1	3	5	23	48
AMBI	0	0	1	1	1	1	0	0	1	1	1	2	2	3	2	2	8	10
PBGR	0	0	1	3	1	3	0	0	0	0	2	3	1	1	2	4	7	14
NSTS	1	2	0	0	0	0	4	9	2	2	0	0	0	0	0	0	7	13
WISN	3	6	2	2	2	3	1	1	3	8	2	4	1	2	1	3	15	29
AMCO	2	3	0	0	1	2	1	1	0	0	2	4	3	5	3	7	12	22
YERA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HOGR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EAGR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RNGR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LEBI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Appendix:

Protocol:

3 surveys, minimum 3 days apart from May 22 – June 30

Morning (30 min before sunrise to 10 am) or evening (6 pm to 30 mi after sunset)

Above 0°c, no precipitation, low wind (<3 on Beaufort scale = < 15 km/hr or doesn't loosen papers)

Wind direction = originating, 16-point scale

8 sites, 15-minute surveys at each

Vegetation Surveys to be completed in July

Primary species:

Eared Grebe (EAGR)

Horned Grebe (HOGR)

Red-necked Grebe (RNGR)

Pied-billed Grebe (PBGR)

American Bittern (AMBI)

Least Bittern (LIBI)

Sora (SORA)

Virginia Rail (VIRA)

Yellow Rail (YEAR)

Nelson's Sparrow (NESP)/Nelson's Sharp-tailed Sparrow (NSTS)

Recording:

0-5 = no playback, passive

5-6 = Yellow Rail

6-7 = Sora

7-8 = Virginia Rail

8-9 = American Bittern

9-10 = Pied-billed Grebe

10-15 = no playback, passive

Equipment:

Survey forms/data sheets

Compass

Thermometer

Speaker and player/phone

Tripod

Binoculars

GPS and spare batteries