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Reference: Field Survey Report – Lake Winnipeg East System Improvement Project – Mammals Monitoring- Aerial Survey

OBJECTIVE

The objective of this field survey report is to outline the results of an intensive minimum count moose population survey at the Lake Winnipeg East System Improvement Transmission Project. The study design followed the intensive survey technique utilized in Gassaway style moose surveys and replicates the same survey conducted in 2017. This survey was conducted on February 11th to 14th while final tower construction work and conductor stringing was completed for the project.

METHODS

Manitoba Hydro identified 47 survey blocks ('3 minute grid' – 3.5km x 5.5km) (908 km²) that intersect a five kilometer buffer of the LWESI project. These survey blocks were derived from the spatial grid Manitoba Sustainable Development utilizes in conducting modified Gassaway-style moose population surveys in Game Hunting Area 26.

A Bell 206 Jet Ranger helicopter was used to fly intensive grid survey at 500 meter spacing at a 122 meter altitude with an average air speed of 100km/hr. Pre-loaded GPS flight lines ensured complete coverage on east to west orientation. Two experienced observers recorded observations of moose, white-tailed deer, wolves, and tracks of moose, deer, wolves and snowmobiles. If not immediately identifiable, moose were circled to identify age and sex. Sex was determined using the presence of antlers or the presence of a vulval patch (Mitchell 1970), nose coloration, and bell size and shape. Calves were identified on the basis of size and behavior. In some cases, where very fresh moose tracks were encountered, the immediate area was circled for no more than 30 seconds to identify the age and sex of moose. A Garmin GPS 67x and notepads were used to record survey data. Further information is included in Appendix A.

RESULTS

Data from the surveys are stored in the MH Environmental Protection Information Management System.

Weather conditions on: February 11th: -13.6 C, clear visibility, no precipitation
February 12th: -17.6 C, clear visibility, no precipitation
February 13th: - 5.6 C, clear visibility, minimal precipitation, gusting winds
February 14th: - 3.2 C, clear visibility, minimal precipitation

Snow cover was greater than 25cm in depth.

As outlined in Table 1, a total of 94 moose were detected during the survey with a bull:cow:calf ratio of 35:40:19. The percentage of cows with twins was 7.5%. Moose density equated to 10 moose/100 km². No collared moose were detected within the study area. Moose appeared to have an uneven distribution in the survey area, and were generally found in higher numbers to the east of the project area.

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Table 1. Comparative moose population data from the 2016, 2017, 2018 LWESI mammal monitoring aerial survey.

	Bull	Cow	Calf	Total	% cows w/twins	Density/km²
2016	16	60	24	100	7	11
2017	30	58	38	128	10	14
2018	35	40	19	94	7.5	10

Table 2. Comparative moose distance data from the 2016 and 2017 LWESI mammal monitoring aerial survey.

2016 (n=100)						
Distance To (m)	Min	Max	Median	Mean	SD	
Right of Way	294	9207	3817	3915	2219	
PTH 304	303	8631	3549	3525	2080	
Snowmobile Tracks	237	10782	3216	3703	2466	
Wolf Activity	953	33302	18037	17330	8066	

2017 (n=128)						
Distance To (m)	Min	Max	Median	Mean	SD	
Right of Way	197	11520	3752	3753	2228	
PTH 304	138	11834	2684	3093	2169	
Snowmobile Tracks	87	7241	2454	2752	1989	
Wolf Activity	61	8134	2925	3122	1961	

2018 (n=94)						
Distance To (m)	Min	Max	Median	Mean	SD	
Right of Way	149	8264	3483	3914	2338	
PTH 304	249	7547	3064	3418	2066	
Snowmobile Tracks	543	10524	4075	4368	2657	
Wolf Activity	620	9010	3521	3824	1743	

Change 2016 vs. 2017						
Distance To (m)	Min	Max	Median	Mean	SD	
Right of Way	-97	2312	-66	-162	9	
PTH 304	-165	3202	-865	-432	88	
Snowmobile Tracks	-150	-3541	-762	-951	-477	
Wolf Activity	-892	-25168	-15111	-14208	-6105	

Change 2017 vs. 2018					
Distance To (m)	Min	Max	Median	Mean	SD
Right of Way	-48	-3256	-268	161	110
PTH 304	111	-4287	380	325	-103
Snowmobile Tracks	456	3283	1621	1616	668
Wolf Activity	559	875	596	702	-218

As outlined in Table 2, average distance of moose to the LWESI ROW was 3,915m, a small increase from 3,753m in 2017, but similar to 3,915m detected in 2016. Average distance to PTH 304 was 3,483m, also a small increase from 3,093m in 2017 but similar to 3,525m detected in 2016. Approximately 25% of moose exhibited moderate hair loss due to winter tick.

Similar to 2017, a total of nine white-tailed deer and two wolves were detected during the survey. Otter, fox, and coyote were also detected. No woodland caribou or woodland caribou tracks were detected. Construction workers were stringing conductors and finishing tower construction on the ROW, and people riding snowmobiles near the community of Pine Falls were also observed.

INFORMATION AND RECOMMENDATIONS

This survey provided a valuable snapshot of distribution and relative abundance of moose near the project area. The results show a decline in total moose numbers between 2018 and 2017. Although a higher number of moose were detected in 2017 than 2016, comparison of total moose numbers between years is not appropriate due to differing survey techniques (Alaskan Trackers vs. helicopter total count).

Moose detection locations between 2017 and 2018 indicate that moose appeared to avoiding the project area to a greater degree in 2018 than 2017; however this is likely a function of overall lower density of total moose.

As identified in 2016, and 2017 it appears that whitetail deer are not plentiful in the project area, with the exception of the southernmost blocks. Snowmobile tracks were common throughout the study area, in 2016, 2017, and 2018.

This survey helps in understanding changes in moose distribution and provide some inferences on relative abundance of both moose and white-tailed deer over time.

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**APPENDIX A – LAKE WINNIPEG EAST SYSTEM IMPROVEMENT PROJECT SURVEY
PROTOCOL, WINTER 2018**

Helicopter Survey Protocols – Winter 2018
Lake Winnipeg East System Improvement Project - Mammal Monitoring Project

Transects:

500 meter transect spacing flying east to west

Flight Conditions:

Altitude should be 122 meters (400 ft) above ground level (AGL).

Delay the survey under the following conditions:

- Less than 25cm of snow
- -30C (not including wind chill)
- Ceiling below 500 feet
- Wind speed 30 km/hr +
- Snowing/blowing snow
- Fog
- Hoar frost

Conduct an intensive population survey for moose and deer using Gassaway technique (intensive)

Record the following GPS waypoint files and track files during the survey:

Flying Conditions:

- Visibility
- Temperature
- Wind Speed and Direction
- Ceiling

Wildlife:

- Moose; (Bull, Cow, Calf)
- White-tailed deer;
- Any incidental wolves or wolf kills.

Humans:

- Access Trails (Snowmobile trails) – Disregard project construction equipment and related access trails.