

2022 Minnesota Aerial Elk Survey

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Thief River Falls, Minnesota
18 August 2022

Introduction

This report summarizes the 2022 Minnesota Aerial Elk Survey (AES). Since the mid 1990's, Minnesota Department of Natural Resources (MN DNR) Section of Wildlife and MN DNR Enforcement (ENF) personnel have conducted the annual AES from mid-January to early March in Northwest Minnesota. The primary objective of this annual survey is to record a minimum count of antlerless and antlered elk. This data enables the Department to monitor the elk population's long-term trend, document changes in spatial distribution and sex ratios, and to help set harvest quotas for potential hunting seasons in accordance with the [2016-2019 interim elk management plan](#) and [Minnesota Statute 97B.516](#).

Methods

The AES survey area is divided into three separate blocks: Kittson Central, Caribou-Vita, and Grygla (Figure 1). The Kittson Central survey block encompasses 166 mi² in Kittson County and includes two subgroups of elk (Kittson Central North and Kittson Central South). The Caribou-Vita survey block incorporates approximately 35 mi² in Kittson and Roseau Counties and includes one elk herd that frequently alternates on either side of the U.S.-Canadian border. A Caribou-Vita survey is only conducted in years when DNR staff can coordinate with Manitoba Conservation staff to complete concurrent surveys on both sides of the border. The Grygla survey block covers 122 mi² in Marshall and Beltrami counties and includes one subgroup of elk. This survey is currently completed every other year since the recent elk population has been below the population goal range (30 – 38) to warrant a hunting season and does not justify the cost and safety risk to fly every year. Annual flights could resume if ground observations or damage complaints indicate an increasing population trend.

Each survey block is flown using a single DNR-owned fixed-wing aircraft (e.g., Cessna 185 Skywagon) piloted by an ENF or natural resource (NR) pilot and two Section of Wildlife observers. The aircraft is flown at an altitude of 300 to 400 feet and at speeds of 80-90 mph. Each survey block is subdivided into consecutive linear transects spaced 0.2 miles apart. When elk are observed, the aircraft exits the transect line and circles the observed animal(s) to record location and classify antlerless (cow, calf) and antlered animals. Differentiation between cow and calf elk is difficult at current survey altitude and airspeed protocol and is not attempted. Antlered elk are recorded as either branch antlered or spike. Elk observations are recorded using a GPS-linked laptop with DNRSurvey software (an ESRI ArcMap AddIn (toolbar) developed by MNDNR Wildlife and Minnesota Information Technology (MNIT) Services, as well as a hard copy datasheet. Anticipated ground coverage is 100% within each survey block. To maximize sightability, surveys are completed between 1 January and 15 March when snow cover measures at least 8 inches.

Results and Discussion

The 2022 AES included the Grygla and Kittson Central survey blocks (the Caribou-Vita survey block was not completed since Manitoba Conservation (MB Conservation) staff did not fly the Canadian side). Observation conditions (snow depth and coverage) were considered very good this year for both elk survey blocks. Snow depths averaged 15 inches across the Grygla block and ranged from 15 to 20 inches in the Kittson Central block. Snow (precipitation and blowing), high winds, and cold temperatures caused a nine-day delay between the completion of the Grygla survey and the start to the Kittson Central survey. There were also two weather delays (one and two-days) during the Kittson Central survey. Temperatures ranged from a low of -30°F to a high of 0°F with sunny to cloudy skies.

Grygla Survey Block

This survey started on 2 February and was completed on 3 February with no weather delays. Total aircraft engine time to complete this survey (takeoff to landing) was 10.7 hours. Elk were recorded at five separate locations within the survey block--all elk were observed on the second day. Total elk observed was 29 (Table 1) and included 16 antlerless and 13 antlered (11 branch antlered and 2 spike). Of special note is that all but one of the elk were located on State Wildlife Management Area land at the time of the survey.

Kittson Central Survey Block

This survey started on 12 February and was completed on 17 February. The area surveyed was the same 166 mi² area that has been flown the past several years. Total aircraft time to complete the survey was 16.4 hours (takeoff to landing). Elk were recorded at eight separate locations within the survey block. Total elk recorded within the survey block was 84 (Table 2) and included 51 antlerless and 33 antlered (28 branch antlered and 5 spike).

- The Kittson Central North subgroup had 28 antlerless elk and was located approximately 1.3 miles north of the wintering locations observed from 2017 to 2020. In addition, there were 9 branch antlered elk located within 0.75 to 6 miles of the antlerless group.
- The Kittson Central South subgroup had 23 antlerless elk that were located just north and south of the Percy WMA. As observed in 2020, the antlerless elk were again split into two smaller groups (16 and 7) spread 3 miles apart. Historically, antlerless elk for each subgroup have stayed in close proximity and have been observed together during winter months. In addition, there were 19 branch antlered and 5 spike elk observed within 2 to 4 miles north of the antlerless groups.

Caribou-Vita Survey Block

Although this survey block was not completed in 2022, there were 6 branch antlered elk (Table 3) recorded outside of the Kittson Central survey block when the aircraft was turning. These elk were located within the hunt zone established for the Caribou-Vita elk subgroup. Therefore, these elk were recorded as occurring in the Caribou-Vita survey block. Historical survey results for the years with concurrent surveys (MB Conservation and MN DNR) of the Caribou-Vita subgroup are listed in Table 4.

Acknowledgments

Special thanks to all those that helped with the survey this year, especially the fixed-wing pilot Bob Geving who provided safe flying for all onboard. Observers this year included Kyle Arola (Thief Lake Area Wildlife Supervisor), Jason Wollin (Karlstad Area Wildlife Supervisor), and Doug Franke (Thief River Falls Area Wildlife Supervisor). Special thanks to Brian Haroldson who helped put together all the survey materials. This work was funded in part through the Federal Aid in Wildlife Restoration Act.



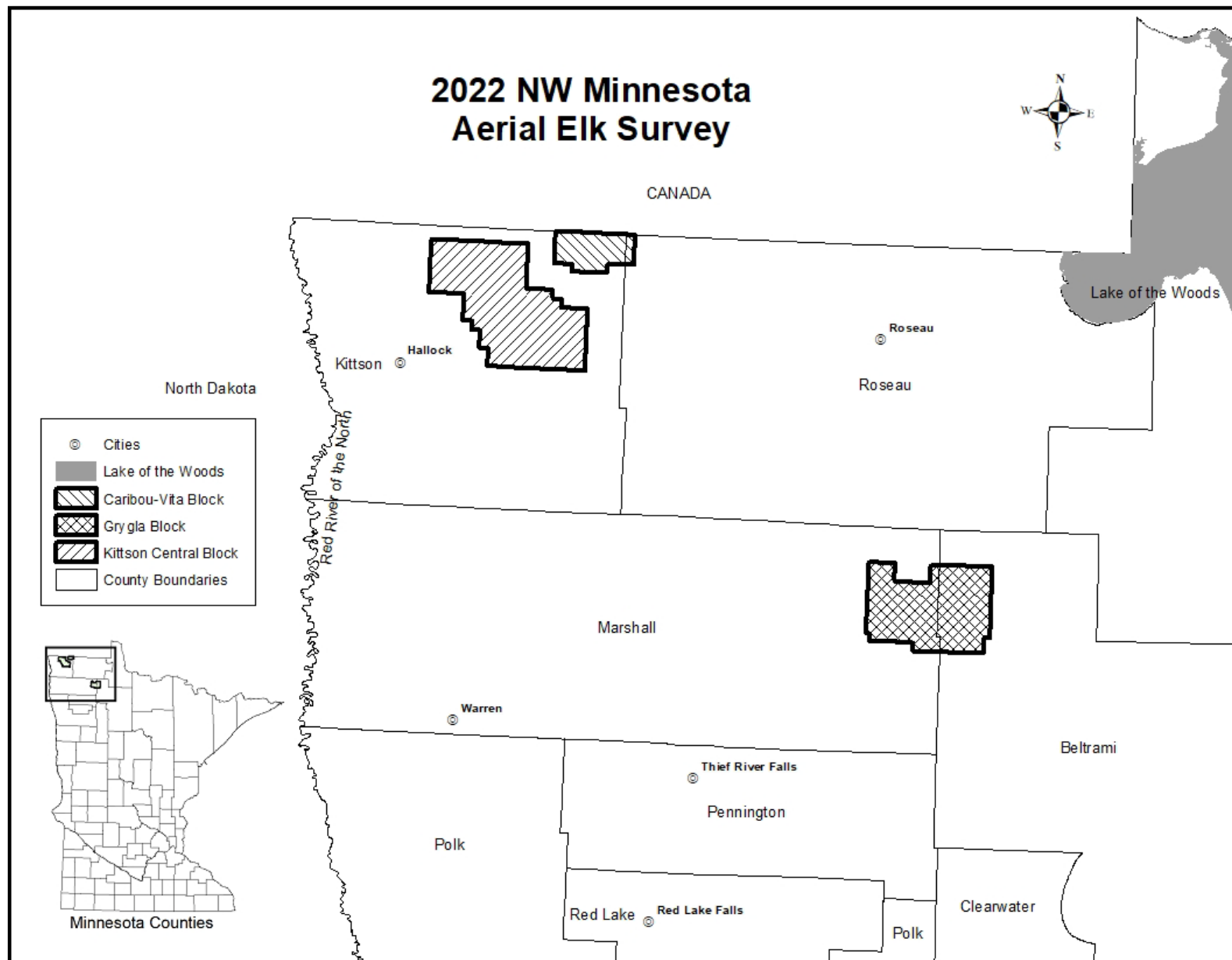


Figure 1. 2022 Northwest Minnesota Aerial Elk Survey Blocks

Table 1. Grygla Block aerial elk survey observations 2013 to 2022.

Survey	Spike Bull	Branch Antlered Bull	Antlerless	Total Elk	Antlered:Anterless Ratio
2013	2	10	16	28	0.75
2014	2	4	14	20	0.43
2015	3	6	9	18	1.00
2016	2	9	10	21	1.10
2017	4	6	7	17	1.43
2018	2	6	7	15	1.14
2019	1	10	8	19	1.38
2020	1	9	14	24	0.71
2021 ^a	-	-	-	-	-
2022	2	12	15	29	0.93

Table 2. Kittson Central Block aerial elk survey observations 2013 to 2022.

Survey	Spike Bull	Branch Antlered Bull	Antlerless	Total Elk	Antlered:Anterless Ratio
2013	3	14	15	32	1.13
2014	3	14	20	37	0.85
2015	2	16	16	34	1.13
2016	6	12	34	52	0.53
2017	2	14	45	61	0.36
2018	5	13	57	75	0.32
2019	11	22	61	94	0.54
2020	6	27	69	102	0.48
2021 ^a	-	-	-	-	-
2022	5	28	51	84	0.65

a Survey not completed due to Department COVID-19 restrictions

Table 3. Caribou-Vita Block aerial elk survey observations 2013 to 2022.

Survey	Spike Bull	Branch Antlered Bull	Antlerless	Total Elk	Antlered:Anterless Ratio
2013	0	15	2	17	7.50
2014	10	7	34	51	0.50
2015	5	9	57	79	0.25
2016	0	6	4	10	1.50
2017	0	1	0	1	-
2018	1	6	0	7	-
2019 ^a	-	-	-	-	-
2020 ^a	-	-	-	-	-
2021 ^b	-	-	-	-	-
2022 ^a	-	-	-	-	-

Table 4. Manitoba Conservation elk observations for the Caribou-Vita subgroup 2013 to 2022. MN DNR elk observations for the Caribou-Vita survey block are included parenthetically in the corresponding columns.

Survey	Spike Bull	Branch Antlered Bull	Antlerless	Total Elk	Antlered:Anterless Ratio
2017	6 (0)	24 (0)	133 (1)	163 (164)	0.23
2018	5 (1)	17 (6)	104 (0)	126 (133)	0.28
2019 ^a	-	-	-	-	-
2020 ^a	-	-	-	-	-
2021 ^b	-	-	-	-	-
2022 ^a	-	-	-	-	-

a Survey not completed—MB Conservation was not able to fly Canadian side of border.

b Survey not completed due to Department COVID-19 restrictions