



Sandhill Crane surveys on the Douglas Lake Plateau in 2024

Progress report – May 2024

By Alan E. Burger, PhD

For the Nicola Naturalist Society, Merritt, BC

<http://www.nicolanaturalists.ca/> Email: nicolanaturalists@gmail.com



Photo: Leanne Cleaveley

Abstract

The Douglas Lake Plateau near Merritt is a key stop-over for thousands of Sandhill Cranes on their spring northward migration. In 2024 the Nicola Naturalist Society undertook twice daily counts (morning and evening) between 7 April and 7 May along a 62 km fixed survey route on Douglas Lake Road. With funding from the BC Nature IBA program we hired a contractor living at the Upper Nicola Band Reserve within the study area to do week-day surveys while club volunteers covered the weekends. We completed 29 morning and 23 evening surveys. Total counts (minimum numbers) were 11,557 cranes in morning surveys and 6,342 in the evenings, with the bulk of the cranes passing through between 10 and 22 April. Out of 8 road sections along the survey route, 92% of the cranes on the ground were in one section containing a wet meadow near Chapperon Lake which the Douglas Lake Ranch floods each spring. This is the most comprehensive survey of Sandhill Cranes to be done on the Douglas Lake Plateau and confirms its status as an Important Bird & Biodiversity Area (IBA) and a candidate Key Biodiversity Area (KBA). This year's project provides key information for improving future monitoring of the cranes and identifies the most frequently used habitats.

Introduction

The Douglas Lake Plateau has been identified as an Important Bird and Biodiversity Area (IBA) since 1995 and is currently being considered for inclusion as a Key Biodiversity Area (KBA). Both of these international designations recognize key areas for significant populations of breeding, migrating or overwintering wild organisms. Sandhill Cranes (*Antigone canadensis*) were one of the key bird species triggering the IBA designation for the Douglas Lake Plateau. The wetlands and hayfields in this area have long been recognized as one of the most important stop-over locations in all of British Columbia during the spring migration of these cranes. The Nicola Naturalist Society monitors the southern half of the IBA, the largest terrestrial IBA in British Columbia, and the Kamloops Naturalist Club monitors the northern half. The southern portion includes most of the preferred stop-over sites for cranes. This report considers only the southern portion of the IBA.

In past years, counts of cranes were made opportunistically and provided ongoing information on the value of this land to migrating Sandhill Cranes. For example, in 2023 members of the Nicola Naturalist Society tallied over 10,000 cranes but there were many days when no surveys were done. In 2024, with funding from the BC Nature IBA/KBA program our club undertook more systematic counts to get a better understanding of the number of cranes using the area, the timing of their passage through the area, and quantified information on the areas most used by the cranes within the Douglas Lake Plateau. Surveys were done daily, both in the evenings when most cranes arrived for an overnight stay and in the mornings before they resumed their northward migration. All of this information will help to establish more reliable survey protocols for ongoing monitoring of the cranes – which are a charismatic emblem of the Douglas Lake Plateau and an important indicator of the environmental health of its grasslands and wetlands.

Methods

Based on our club's previous monitoring experience we established a 62 km survey route along the public Douglas Lake Road, starting at the southwest corner of Douglas Lake (Spax'mn village on the Upper Nicola Band Reserve) and ending at the wetlands northeast of Salmon Lake (see Appendix 1 – map of the route). This route was divided into eight sections, with readily recognizable landmarks as boundaries (see Appendix 2 – field data sheet). The land bordering the route is primarily private ranchland owned by the Douglas Lake Cattle Company but areas bordering Douglas Lake and Chapperon Lake are within the Upper Nicola Band Reserve.

Surveyors were provided with a standard survey protocol (see Appendix 3). Surveys involved driving slowly along the route, stopping to scan hayfields, wetlands and open grasslands with binoculars. Cranes on the ground were recorded separately from those flying, but flying cranes that landed were included with those on the ground. Small groups of cranes were counted manually but large flocks (generally >100 birds) were counted from photographs. For large flocks a sequence of photos covering the flock was taken, stitched together in Photoshop and the cranes then counted by zooming in on the panorama photo (e.g., Figure 1). Some cranes on the ground were hidden by vegetation and our tallies are therefore minimum estimates of the actual numbers using the area.



Figure 1. An example of multiple photos stitched together to count a large flock of Sandhill Cranes. The upper panorama shows a section of a flock that contained 1,014 cranes; the lower photo is an enlarged portion of the same photo showing the divisions used to count cranes. Photos taken 15 April 2024 by Opal Charters.

Funding from BC Nature allowed the club to hire a contractor, Opal Charters from the Upper Nicola Band, to do the morning and evening surveys on week-days for four weeks. She lives in the Spax'mn village within the survey area. The weekend surveys were covered by 20 volunteers from the Nicola Naturalist Society and on a couple of occasions by members of the Central Okanagan Naturalist Club (see Appendix 4 for the list of surveyors).

Results

We completed 29 morning and 23 evening surveys within the period 7 April to 7 May, 2024. The bulk of the cranes were encountered between 10 and 22 April (Figure 2). In total we counted 11,557 cranes on morning surveys and 6,342 on evening surveys. On the morning surveys 10,924 cranes (95%) were on the ground and 633 (5%) were passing by overhead. Based on the trends seen in Figure 1, it is likely that our surveys missed some birds early in the migration and future surveys should begin before 7 April.

Morning surveys are the most reliable source of crane numbers. On only seven occasions out of 23 paired surveys were there more cranes in the evening than on the following morning. Only one of these seven occasions was during the peak migration period: on 10 April, 516 cranes were counted in the evening but only 77 the next morning on 11 April. On this night the cranes were probably disturbed and moved away (coyotes were often seen on our surveys and black bears on two surveys; both are potential predators). Excluding these seven days, on average the evening surveys tallied only 52% of the cranes found the next morning. Most evening surveys ended at

dark indicating that almost half the incoming cranes landed after dark. A few cranes were seen departing in the mornings before 09:00 but most took off between 09:30 and 10:30. Future surveys should focus on morning surveys covering the primary resting areas before 09:00.

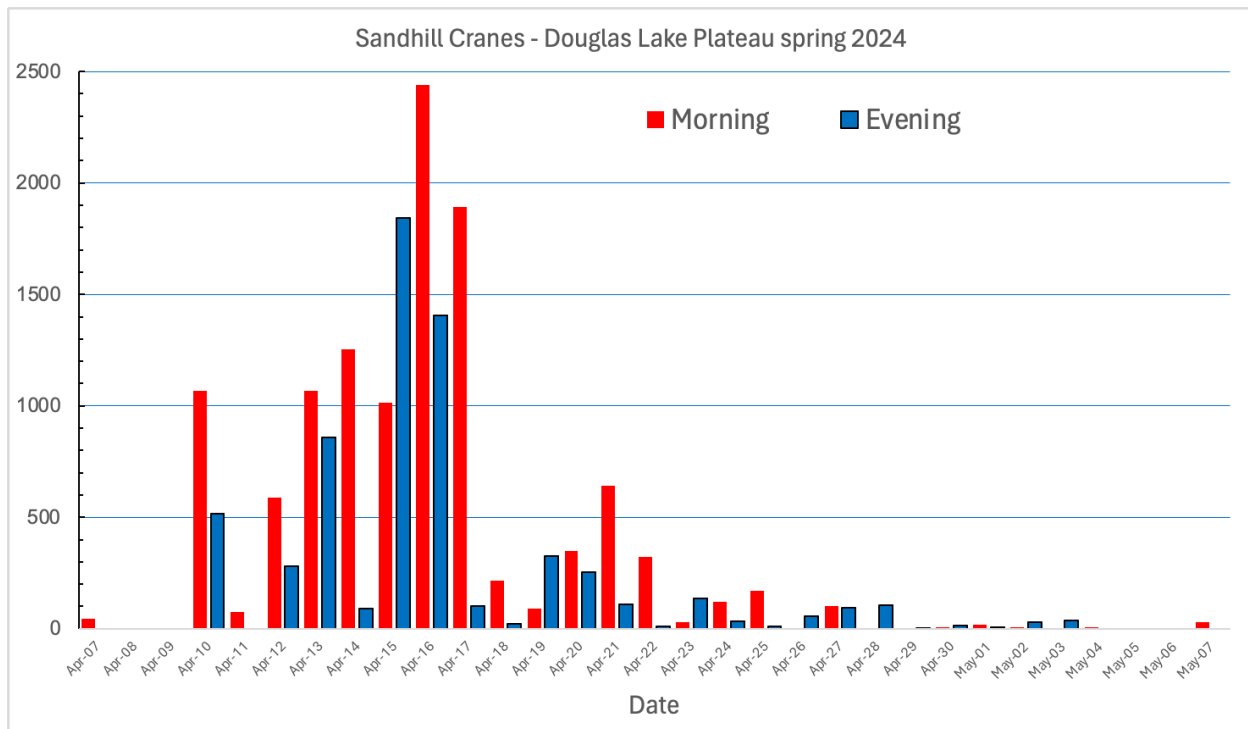


Figure 2. Counts of Sandhill Cranes on the Douglas Lake Plateau southern survey route between 7 April and 7 May 2024. No surveys were done on 8 and 9 April and 5 and 6 May.

Spatially, the cranes on the ground were highly concentrated, with 92% of the cranes located in Section 5 (Table 1; see the map Appendix 1). This area includes an extensive flooded pasture, known as the “Big Meadow” by Douglas Lake Ranch staff. The ranch management floods this meadow each spring to promote growth of grass during the summer and this mix of wetlands and pasture evidently provides ideal resting and foraging conditions for the cranes. The cranes often forage among the grazing cows (Figure 3). Large hayfields in sections 3 and 4 also supported several hundred cranes (Table 1), and in previous years we have found several thousand cranes on those fields.

Table 1. Distribution of Sandhill Cranes on the ground in 2024 within the eight sections of the survey route.

Section	Sum of cranes	%
1	0	0.00
2	2	0.02
3	534	4.89
4	340	3.11
5	10,044	91.94
6	0	0.00
7	0	0.00
8	4	0.04
Total	10,924	100.0



Figure 3. Sandhill Cranes on the “Big Meadow”, Douglas Lake Ranch. Upper photo: 13 April 2024 (Alan Burger); Lower photo: 16 April 2024 (Opal Charters).

During the migration season, Sandhill Cranes were also recorded at three locations within the southern Douglas Lake Plateau but outside of our regular survey route. On 20 April the Central Okanagan Naturalist Club group recorded two flocks near the Quilchena Hotel with 54 and 106 cranes (<https://ebird.org/checklist/S169563901>; <https://ebird.org/checklist/S169563896>). On 21 April two cranes were seen in the alkali pond under the power lines along Minnie Lake Road (<https://ebird.org/checklist/S169705279>). On 7 May a single crane (missing its right foot) was seen along Minnie Lake Road (<https://ebird.org/checklist/S172679078>). Other observers reported a few flocks of cranes flying over the IBA area which were not included in our surveys.

Discussion

It is likely that over 12,000 Sandhill Cranes passed through the Douglas Lake Plateau IBA in the 2024 spring migration. We probably missed some flocks in early April before regular surveys began. This tally might actually be a lower number than in some previous years. For example, in 2023 our club members reported over 10,000 cranes on only nine visits to the survey area (<http://www.nicolanaturalists.ca/2023/05/24/sandhill-crane-surveys-2023/>). On 22 April 2019 there were over 8,000 cranes on the Big Meadow at one time (Figure 4). Multi-year surveys would give a better understanding of the average numbers using the IBA, and our club will continue with surveys in future years.

The information gathered in 2024 will help to refine our survey protocols. The most reliable counts will come from morning surveys covering the preferred crane habitats before 09:00, before most cranes take off to resume their migration. We now also have a better understanding of where to look for cranes on the ground. We were surprised that so few cranes were using the

extensive wetlands, hayfield and natural lowland pasture in section 8 (northeast of Salmon Lake – see Appendix 1). Only 4 cranes were found on the ground here, and an additional 4 cranes flew over. It is likely that this area is outside the main migration flyway that the cranes use across the Douglas Lake Plateau.



Figure 4. Some of the 8,000 Sandhill Cranes on the Douglas Lake Ranch “Big Meadow” on 22 April 2019. Photo: Alan Burger

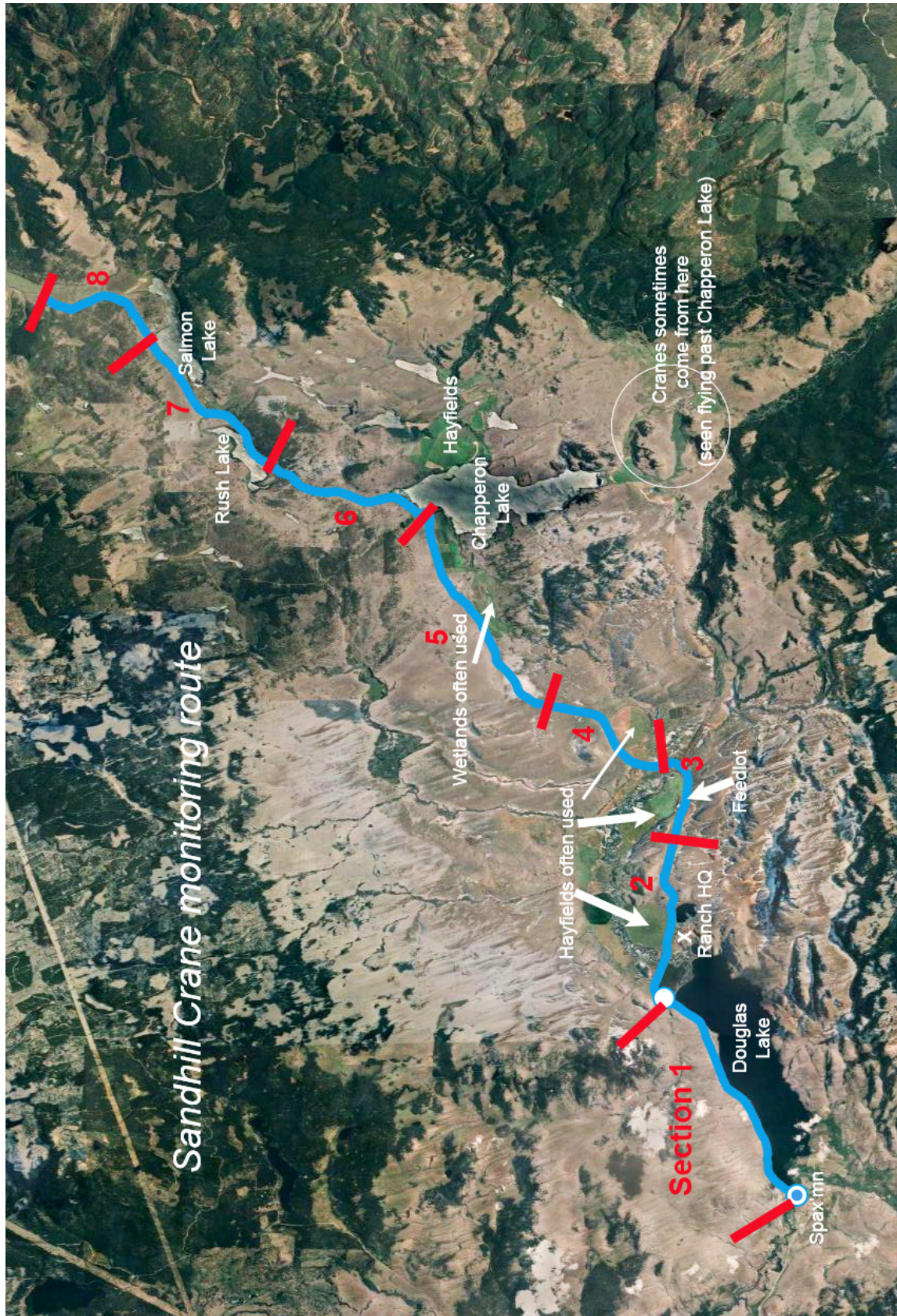
The continuing use of these habitats by thousands of Sandhill Cranes is a tribute to the range management by the Douglas Lake Cattle Company on their ranch. The ranch is strict about keeping uninvited public off their property and consequently there is little or no disturbance from dirt-bikes, off-road vehicles, loose dogs and other human activities. The cranes are tolerant of cattle, horses and even ranch-hands on horseback passing close by. The spring flooding of the Big Meadow combined with the large areas of hayfield and natural pasture provides excellent habitat for the cranes.

Acknowledgements

The Nicola Naturalist Society is grateful for the financial support from the BC Nature IBA program, and we thank BC Nature Executive Director Stewart Guy and IBA Coordinator Liam Ragan for arranging this funding. Most of this funding comes from grants to BC Nature from Environment and Climate Change Canada. We thank our contractor Opal Charters for her good work and willingness to learn. We thank the many volunteers from our naturalist club and the Central Okanagan Naturalist Club for their important contributions.



Appendix 1 – Map of the survey route



Appendix 2 – Crane survey field data sheet

Nicola Naturalist Society

Sandhill Crane Monitoring 2024

Observer name(s): Date:.....

START Time Cloud cover% Temp (C) Wind strength:Direction Ppt.....

END Time Cloud cover% Temp (C) Wind strength:Direction Ppt.....

Report each flock/group of Sandhill Cranes separately (use a comma to separate flocks)

Section 1 start time Spax'mn to top end of Douglas Lake (look for pelicans on the lake)

SaCranes: On ground:Flying: Photos:

Other wildlife of interest:

Section 2 start time End Douglas Lake to airfield (includes hayfields around ranch HQ)

SaCranes: On ground:Flying: Photos:

Other wildlife of interest:

Section 3 start time Airfield to bridge Nicola River (includes feedlot & big hayfields towards the river)

SaCranes: On ground:Flying: Photos:

Other wildlife of interest:

Section 4 start time Nicola River to end of paved road (includes hayfields both sides of the road)

SaCranes: On ground:Flying: Photos:

Other wildlife of interest:

Section 5 start time end of paved road to Chapperon Lake (includes wetlands & hayfields south of the road)

SaCranes: On ground:Flying: Photos:

Other wildlife of interest:

Section 6 start time Chapperon Lake area and road to Rush Lake (includes hayfields across the lake)

SaCranes: On ground:Flying: Photos:

Other wildlife of interest:

Section 7 start time Rush Lake to Salmon Lake Lodge

SaCranes: On ground:Flying: Photos:

Other wildlife of interest:

Section 8 start time Salmon Lake Lodge to wetlands beyond

SaCranes: On ground:Flying: Photos:

Other wildlife of interest: **End time**

Appendix 3 – Crane survey protocol 2024

Nicola Naturalist Society

Sandhill Crane Monitoring Protocol 2024

1. Timing

In the morning it is important to do the survey well before 10 AM (e.g., between 07:30 & 10:00) By 9:15 AM some of the cranes are starting to take off to resume their northward migration. Late afternoon/evening surveys are probably best after 6 PM. Record the start and end time of your survey on the data sheet and the time that you start each section. For evening surveys as the cranes are coming in it is useful to do two data sheets for the route – one on the way up and the other on the way home.

2. Route sections

The survey route goes from the bridge at Spx'mn village (bottom end of Douglas Lake) to the wetlands beyond Salmon Lake. There are 8 sections along this route with fairly obvious boundaries (see the data sheet and map). Try to survey all 8 sections on your survey. Report cranes (and other wildlife of interest) for each section. Put a zero (0) if no cranes are seen, to indicate that this section was covered but no cranes found. Record flying cranes in the section that they cross, but indicate where they are coming from. Write notes on the location and numbers of cranes found outside these sections.

3. Photos

Try to get photos of all the crane flocks. For large flocks take a sequence of photos that can be stitched together to count each bird. Zoom in as needed but don't change the zoom while taking sequences to be stitched together. Note on the sheet if photos are taken.

4. Weather

At the start and end of your survey record the weather:

- Temperature (°C) – carry a thermometer or read the temperature from your vehicle.
- Cloud cover – record as tenths of the sky (e.g., 30% is approximately a third of the sky).
- Wind strength – use the Beaufort Scale:

Wind Force	Description	Wind Speed	
		km/h	Indicators
0	Calm	<1	Smoke rises vertically.
1	Light Air	1-5	Direction shown by smoke drift but not by wind vanes. Lake rippled
2	Light Breeze	6-11	Wind felt on face; leaves rustle; wind vane moved by wind.
3	Gentle Breeze	12-19	Leaves and small twigs in constant motion; light flags extended.
4	Moderate Breeze	20-28	Raises dust & loose paper; small branches move. A few whitecaps on lake
5	Fresh Breeze	29-38	Small trees in leaf begin to sway; crested wavelets form on lake.
6	Strong Breeze	38-49	Large branches in motion; whistling heard in telegraph wires.

- Wind direction – approximate compass quadrant from where the wind is coming.
- Precipitation – report: None; Light Rain; Mod. Rain; Heavy Rain; Light Snow; Mod. Snow; Heavy Snow.

5. Other wildlife of interest

Note the species and number of interesting wildlife, especially rare and species at risk. In this area these are of special interest:

Badgers	White Pelicans	Lewis's Woodpeckers
Olive-sided Flycatchers	Burrowing Owls	

6. Other notes

Please record any other information that might be of interest regarding the cranes or other wildlife.

Appendix 4 – List of surveyors in 2024

Contractor – Opal (Lorraine) Charters

Nicola Naturalist Society volunteers

- Alan Burger
- Margaret Carlson
- Aaron Cleaveley
- Leanne Cleaveley
- Janet Harper
- Karen Hatch
- Liis Jeffries
- Yvonne Lord
- Susan Newton
- Vic Newton
- Frank Ritcey
- Raven Ritcey
- Gerry Sanford
- Jill Sanford
- Bev Scafe
- Bob Scafe
- Henrik van der Wal
- Loekie van der Wal
- Joan Willms
- Paul Willms

Central Okanagan Naturalist Club volunteers

- Mike Howard
- Ian Walker
- Linda Walker
- And others from their club