

# Assessing Waterfowl Use of Agricultural Lands in Delta & Richmond, BC

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Winter 2022-2023



*Photo 1: A flock of Snow Geese foraging in forage field in Delta, November 2022*

## Project Background

The Fraser River Delta is a productive agricultural area and a significant region for migratory birds, especially waterfowl. The Delta Farmland & Wildlife Trust administers the Winter Cover Crop Stewardship Program to support farmers and wildlife. The WCC program helps farmers establish vegetative cover on their fields after harvest in late summer/early fall. The Winter Cover Crop program provides feeding habitat for waterfowl and shorebirds, reduces erosion and improves soil quality.

Since 2017, the Delta Farmland & Wildlife Trust has conducted a survey of wintering waterfowl abundance throughout the Delta and south Richmond regions. The waterfowl survey aims to estimate the distribution and population of migratory waterfowl in the Delta region and to evaluate the effectiveness of the Winter Cover Crop program in providing feeding habitat for these waterfowl.

## Survey Results

Surveys were conducted by the roadside along a standardized route and waterfowl populations were estimated visually using binoculars and a spotting scope. The survey route (Figure 1) was designed to efficiently survey agricultural fields across Delta, emphasizing surveying fields enrolled in the Winter Cover Crop program. Field technicians surveyed 317 fields, of which 118 were cover crop fields. Surveys were conducted weekly from October 16, 2022, to March 31, 2023, between 8:00 AM and 4:00 PM. A total of 23,530 waterfowl of 10 different species were observed (Figure 2).

Several changes to the survey were made this year to improve waterfowl detection and increase the survey area. The survey followed the same route that was established during the survey of 2021-2022, with the additional inclusion of monitoring hayfields in north-east Richmond. The survey window was also extended four weeks earlier and two weeks later to better capture waterfowl migration timing.

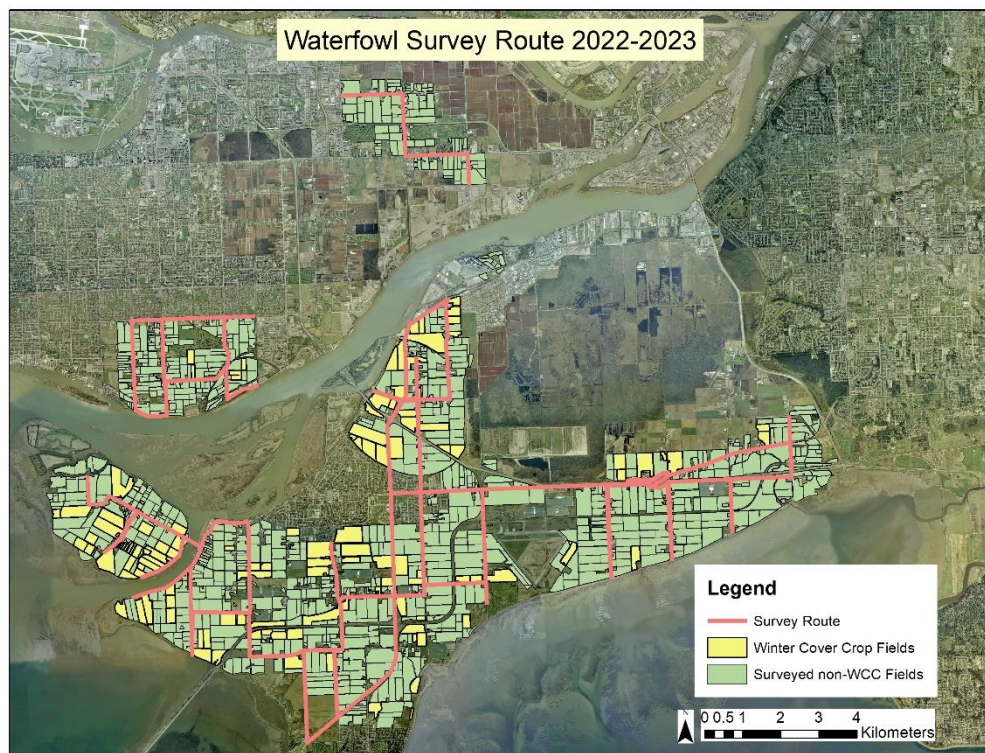


Figure 1. Waterfowl survey route in Delta and Richmond

## Results

From most to least abundant, the waterfowl observed were; Snow Goose (*Anser caerulescens*), Mallard (*Anas platyrhynchos*), American Wigeon (*Mareca americana*), Trumpeter Swan (*Cygnus buccinator*), Cackling Goose (*Branta hutchinsii*), Canada Goose (*Branta canadensis*), Green-winged Teal (*Anas crecca*), Gadwall (*Mareca strepera*), Northern Pintail (*Anas acuta*) and Eurasian Wigeon (*Mareca penelope*) (Figure 2).

Waterfowl observed (Total)	Snow Goose	Mallard	American Wigeon	Trumpeter Swan	Cackling Goose	Canada Goose	Green-winged Teal	Gadwall	Northern Pintail	Eurasian Wigeon
<b>23,530</b>	14,870	5,063	2,745	409	282	81	44	21	12	3
<b>100%</b>	63.2%	21.5%	11.7%	1.7%	1.2%	0.3%	0.2%	0.1%	0.1%	0.01%

Figure 2. Total number of waterfowl by species observed on agricultural fields between October 2022 and March 2023.

	Waterfowl observed (Total)	Snow Goose	Mallard	American Wigeon	Trumpeter Swan	Canada Goose	All other ducks
Total 2022-23	<b>23,530</b>	14,870	5,063	2,745	409	81	80
Total 2021-22	<b>28,815</b>	6,650	11,092	10,072	367	109	497
% change	<b>-18.3</b>	<b>+123.6</b>	<b>-54.4</b>	<b>-72.7</b>	<b>+11.4</b>	<b>-25.7</b>	<b>-83.9</b>

Figure 3. Change of waterfowl observations between the 2021-22 and 2022-23 seasons.

Other notable birds observed during the surveys were 106 Sandhill Cranes (*Grus canadensis*), 640 gulls (Family Laridae) and 70 Great Blue Herons (*Ardea Herodias*).

Compared with the waterfowl survey of 2021-2022, there were relatively fewer waterfowl observations (-18.3%), despite an increase of the survey window by six weeks and the expansion of the monitoring area into north-east Richmond. The largest declines in observations were with Mallards, Wigeon and other ducks (Figure 3). One possible explanation is that 2022-2023 was a poor season for establishment and development of fields participating in the winter cover crop program, due to the dry conditions in the fall.

Despite the lower number of ducks observed this year, Snow Geese were much more frequently observed compared to the 2021-2022 survey. The majority of the Snow Geese were observed during fall migration in late October and early November. In previous years, the waterfowl survey began in mid-November and would have missed these observations. However, Snow Geese continue to be difficult to monitor during the waterfowl due to their tendency to forage in foreshore marshland during the day and movement to agricultural fields at night.

## Season Summary

Despite a poor year for establishment and growth of cover crops, the Winter Cover Crop program continues to provide crucial grazing resources for migratory waterfowl including Snow Geese. The survey was modified this year to expand the area monitored as well and extending the season both earlier and later to capture more observations during waterfowl migration. Despite this, waterfowl observations were broadly lower this year, with observations of ducks being less than 50% compared with the previous year. Although there was an increase in Snow Goose observations, much of this was due to sampling earlier in the season during the high point of migration. Snow Geese continue to be difficult to monitor due to their presence on agricultural fields primarily overnight.

## Snow Goose Bioacoustics Pilot Project

For many years, farmers have been observing the increase in Snow Goose foraging activity at night, leaving fields empty during the day. Although winter cover crops provide foraging resources for Snow Geese, they also find foraging material in foreshore marshland where it is safer to forage during the day. With the waterfowl survey window between 8:00 AM and 4:00 PM, Snow Goose presence on farmland is largely missed during these surveys.

To fill in the gaps in monitoring, we started a pilot project which was a network of 12 autonomous recording units (“ARUs”) in Delta and Richmond from October 2022 to March 2023. The ARUs were Song Meter Mini units by Wildlife Acoustics and were programmed to record stereo at 44.1kHz for 24 hours a day. This project is ongoing as the analysis of the audio data continues to be completed.