

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

Connor Hawey

Winter 2021-2022



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

Program 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 methods

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. 216 fields were surveyed, of which 68 were cover crop fields. Surveys were conducted weekly from November 16, 2021, to March 16, 2022, between 8:00 AM and 4:00 PM. A total of 28,815 waterfowl of 10 different species were observed (Figure 2).

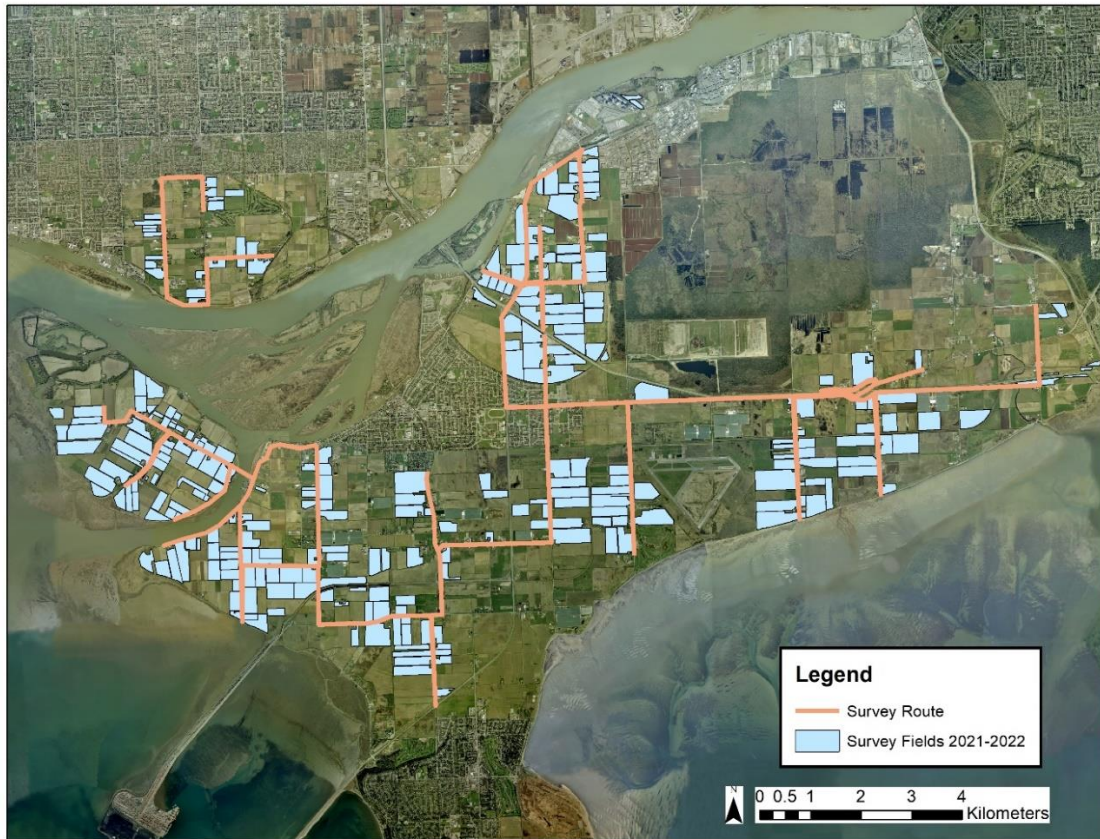


Figure 1. Waterfowl survey route in Delta and south Richmond

Results | Waterfowl survey

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

Waterfowl observed (Total)	Mallard	American Wigeon	Snow Goose	Northern Pintail	Trumpeter Swan	Canada Goose	Gadwall	Northern Shoveler	Eurasian Wigeon	Green-winged Teal
28,815	11092	10072	6650	434	367	109	40	28	12	11
100%	38.5%	35.0%	23.0%	1.5%	1.3%	0.4%	0.1%	0.1%	0.05%	0.05%

Figure 2. Total number of waterfowl by species observed on agricultural fields between November 2021 and March 2022.

Other notable birds observed during the surveys were approximately 12,250 shorebirds, including 10,000 Dunlin (*Calidris alpina*), 2,250 Black-bellied Plovers (*Pluvialis squatarola*), 3,800 gulls (Family Laridae), 113 Bald Eagles (*Haliaeetus leucocephalus*) and 83 Great Blue Herons (*Ardea Herodias*).

Many waterfowl including Snow Geese move between agricultural fields and off shore to marshland and estuary environments throughout the day. We found that fields relatively close to shore (0-1,400m; n = 605) had more waterfowl observed per acre than fields further from shore. (Figure 3). There was also a trend of more waterfowl observed during high tide (0.95 waterfowl per acre) than during low or medium tide (0.52, 0.54 waterfowl per acre) (Figure 4).

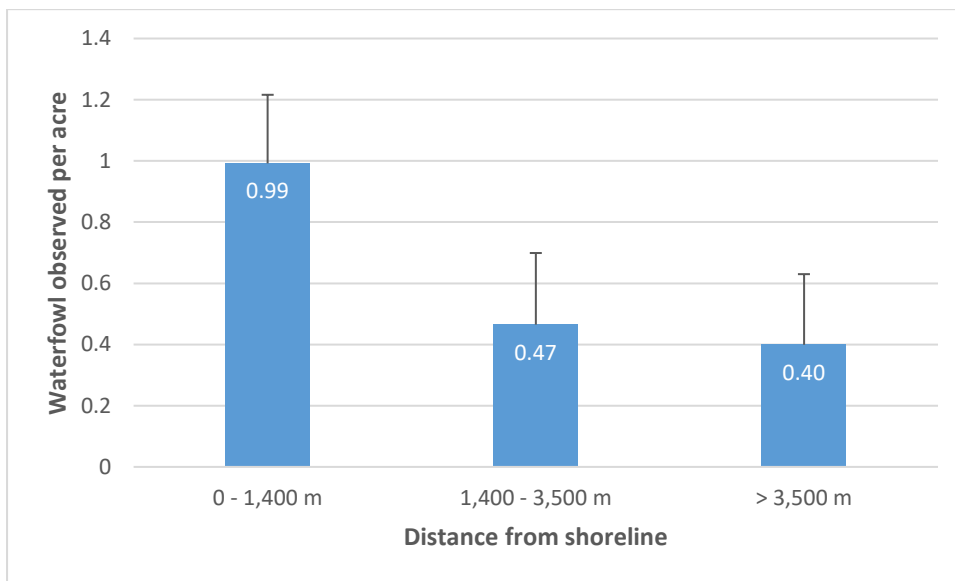


Figure 3. Waterfowl observations by distance to shoreline

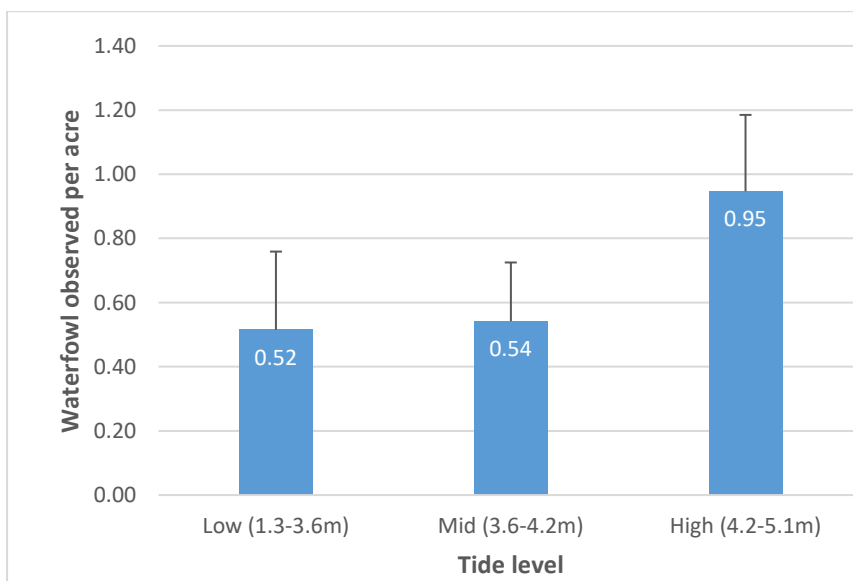


Figure 4. Waterfowl observations by tide level

Results | Snow Goose

Snow Goose observations were relatively low in the winter 2021-2022 season compared to previous years (*Figure 3*). A total of 6,650 Snow Geese were observed, which was isolated to just three fields throughout the season. Surveys of Snow Geese are limited as they are not frequently observed foraging during the daytime, instead preferring to forage at fields after sunset and before sunrise. Snow Goose grazing continues to be observed by farmers during these times and evidence of grazing is seen in cover crop fields.

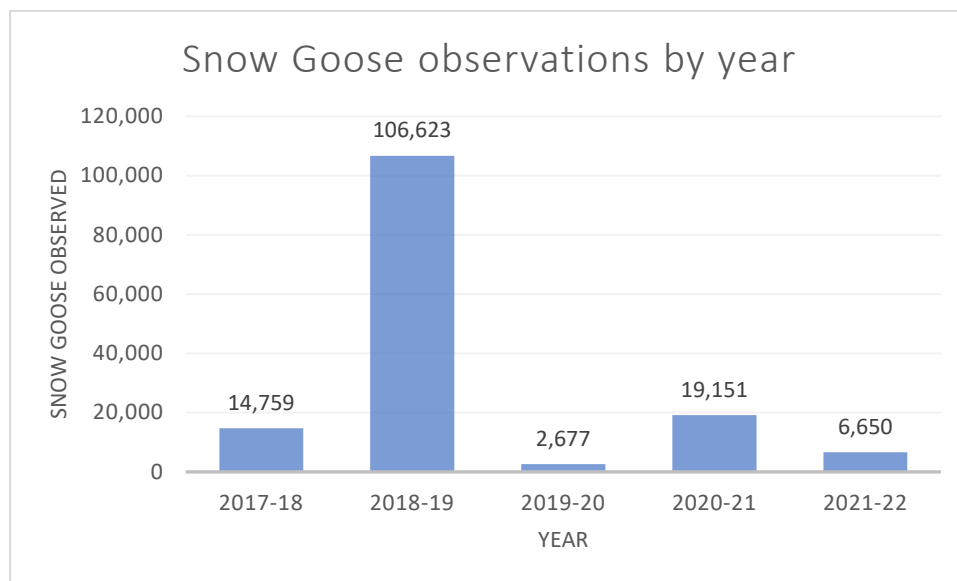


Figure 5. Snow Goose observations during the DF&WT waterfowl survey from 2017-2021.

Results | Cover crop fields

A total of 216 fields were surveyed. 68 of the monitored fields were enrolled in DF&WT's Winter Cover Crop (WCC) stewardship program. These WCC enrolled fields covered 34.4% of the area observed by the waterfowl survey (*Table 1*). WCC fields supported a greater waterfowl density (0.73 waterfowl per acre) than non-cover crop fields (0.61 waterfowl per acre). Waterfowl were also frequently observed on potato fields (1.86 waterfowl per acre) and uncultivated areas (1.02), both of which provide material for waterfowl to forage.

Field cover	Number of fields	Waterfowl per acre	Area (acres)	Waterfowl observed	Area (%)	Waterfowl observed (%)
Winter Cover Crop	68	0.73	1578	9405	34.43	32.64
Grass/ forage	34	0.39	750	3036	16.37	10.54
Cereal Habitat Enhancement Program	26	0.33	486	1334	10.59	4.63
Uncultivated/ fallow	27	1.02	440	6125	9.60	21.26
Vegetable	19	0.38	336	816	7.34	2.83
Potato	15	1.86	372	7098	8.11	24.63
Corn	13	0.28	437	911	9.54	3.16
Berry	12	0.02	184	90	4.02	0.31

Table 1. Summary of Waterfowl density and total by field cover

Season summary and 2022-2023 season

The Winter Cover Crop program continues to provide crucial grazing resources for migratory waterfowl including Snow Geese. Waterfowl were observed throughout Delta and Richmond with a preference for fields covered with Winter Cover Crop, potato residue, fallow, and grass/ forage fields. The relative number of Snow Geese observed were low, which may be due partially to yearly variation. However, it is more likely that waterfowl survey window (8:00-16:00) misses the majority of Snow Goose observations on fields, which starts at dusk and continues overnight according to local farmers. For the upcoming waterfowl survey season, additional dusk waterfowl surveys are planned for a more accurate survey of Snow Goose distribution throughout Delta and Richmond.