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# Proposed Point Grey Tidal Marsh Project
# Standwatch Bird Surveys – December 1, 2014 to January 26, 2015

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| **Report Date** | February 12, 2015 |
| **Survey Dates & Times** | Nine weekly standwatch bird surveys were conducted at Point Grey, from December 1, 2014 to January 26, 2015. The objective of these surveys was to characterize overwintering bird use of the proposed Point Grey Tidal Marsh Project site during the first half of winter 2014/15, with surveys focusing primarily on overwintering species such as snow geese and other waterfowl. Previous winter surveys, conducted between February 20, 2014 and March 26, 2014, focused on the latter half of winter coinciding with daytime low tides.<br><br>The following is a summary of the survey dates and associated times:<br><br>• December 1, 2014 – 12:38 to 16:03<br>• December 8, 2014 – 10:31 to 14:15<br>• December 15, 2014 – 10:22 to 14:07<br>• December 22, 2014 – 10:06 to 13:27<br>• December 29, 2014 – 10:12 to 13:53<br>• January 5, 2015 – 10:20 to 13:44<br>• January 12, 2015 – 11:03 to 14:47<br>• January 20, 2015 – 10:35 to 14:08<br>• January 26, 2015 – 10:37 to 14:07 |
| **Weather & Tidal Conditions** | All surveys were conducted when wind speeds were less than 19 km/hour. Surveys were generally conducted in the absence of rain, with the exception of light rain on December 8, 2014 and January 5, 2015. Low tides generally do not occur during daylight hours during the first half of winter. Survey areas were flooded for the majority of surveys, with the exception of a few small exposed strips of mudflat on January 5, January 12, and January 20, 2015.<br><br>The following is a more detailed summary of the weather conditions (general conditions and temperature) and tides on each of the survey dates, for the associated times:<br><br>• December 1, 2014 – mainly clear; average temperature: 1.3 °C; high tide of 4.6 m at 12:40 and low tide of 1.7 m at 19:54<br>• December 8, 2014 – cloudy with rain; average temperature: 12.0 °C; high tide of 4.7 m at 07:38, falling to low tide of 3.4 m at 13:01 and rising to high tide of 4.0 m at 17:25.<br>• December 15, 2014 – mostly cloudy; average temperature: 4.3 °C; low tide of 2.7 m at 04:27, rising to high tide of 4.3 m at 11:36 and falling to low tide of 2.1 m at 19:09. |

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| | • December 22, 2014 – cloudy; average temperature: 5.7 °C; high tide of 4.6 m at 06:36, falling to low tide of 3.5 m at 11:37 and rising to high tide of 4.3 m at 16:17.<br>• December 29, 2014 – mainly clear; average temperature 4.2 °C; low tide of 2.5 m at 04:22, rising to high tide of 4.7 m at 11:11 and falling to low tide of 1.8 m at 18:34.<br>• January 5, 2015 – fog with rain, clearing to cloudy skies; average temperature: 5.1 °C; high tide of 4.6 m at 06:45, falling to low tide of 3.5 m at 11:56 and rising to high tide of 4.1 m at 16:29.<br>• January 12, 2015 – fog; average temperature: 7.6 °C; high tide of 4.4 m at 09:58 and low tide of 2.3 m at 17:13.<br>• January 20, 2015 – cloudy: average temperature: 7.7 °C; high tide of 4.6 m at 06:10, falling to low tide of 3.4 m at 11:18 and rising to high tide of 4.3 m at 16:11.<br>• January 26, 2015 – clearing fog: average temperature: 8.5 °C; high tide of 4.7 m and low tide of 1.8 m at 16:53.<br><br>Weather data from Government of Canada hourly climate data for Vancouver International Airport: http://climate.weather.gc.ca/climateData/hourlydata_e.html?timeframe=1&Prov=BC&StationID=51442&hlyRange=2013-06-11%7C2014-0611&cmdB1=Go&Year=2014&Month=12&Day=1&cmdB1=Go#<br><br>Tide data from Government of Canada 7 days tidal predictions for Sand Heads: http://www.waterlevels.gc.ca/eng/station?type=0&date=2014%2F12%2F01&sid=7594&tz=PST&pres=1 |
| **Survey Areas** | Port Metro Vancouver's (PMV's) Habitat Enhancement Program – Point Grey Tidal Marsh, Vancouver, BC.<br><br>The proposed enhancement site is located on the north side of the most northern arm of the Fraser River. The site is located northwest of Vancouver International Airport (YVR) and south of University Endowment Lands Ecological Reserve. The site was divided into six standwatch survey areas, which were assessed from standwatch stations located at the shoreline: Control West, Control East, Treatment West, and Treatment East, Marsh West, Marsh East (**Figure 1**). |
| **Survey Team** | Andrew Venning, Biologist (Hemmera) |
| **Scope of Work** | As part of Port Metro Vancouver's Habitat Enhancement Program, the creation of a brackish tidal marsh is proposed at the historic Point Grey Booming Grounds site in Vancouver, B.C. The historic booming grounds where the project will be located consist of mudflats which have been impacted to some extent by years of log boom storage (e.g., woodwaste, sediment compaction and scoured channels from prop wash). The project will help restore tidal marsh habitats within the North Arm of the Fraser River, where considerable areas of natural brackish marsh have been lost over the past 70 to 80 years through land development activities. The proposed project is located between a natural brackish marsh to the southeast and extensive mudflats to the northwest.<br><br>In order to better understand the use of mudflats and existing marsh which overlap with the project site, standwatch bird surveys were conducted at various times of the year:<br><br>1. Six (6) late-winter surveys were conducted between February 20 and March 26, 2014. Mudflats were exposed during the day and survey times were centered on daytime low tides (Hemmera 2014A). Surveys focused primarily on waterbirds and raptors. |

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| | 2. Twenty-three (23) spring/summer surveys were conducted during northward and southward Western Sandpiper migrations between April 22, 2014 and September 10, 2014. Mudflats were exposed during the day and survey times were centered on daytime low tides (Hemmera 2014B). Surveys focused primarily on shorebirds.<br>3. Nine (9) early-winter surveys were conducted between December 1, 2014 and January 26, 2015. Mudflats were not exposed during the day and survey times were centered on mid-day (current report). Surveys focused on snow geese and other waterfowl. |
| **Survey Methods** | A single surveyor conducted 30-minute long standwatches at each station. Standwatch locations used for previous surveys (Winter 2013/14) were flooded and inaccessible during this period of the winter due to daytime high tides. Standwatch locations were therefore relocated to the south side of the river as depicted in **Figure 1** (see **Photos 1 and 2** for observer's view). As a result, auditory detections were limited and the narrow fringe marsh along mudflat areas northeast of the study (previously behind observer) was not surveyed. Study area polygons illustrated on **Figure 1** were fully visible with the exception of limited visibility in marsh stations due to vegetation.<br><br>All detectable bird species were documented in survey areas. Binoculars and spotting scope were used to identify birds located near or interacting with the proposed marsh creation (treatment), reference (control), and existing marsh sites. For each bird documented, the following information was recorded: species, number, time, distance from observer, and behavior. |
| **Results** | Cumulative abundance of each bird species documented is presented in **Table 1**. The five most abundance species accounted for 72% of all birds observed: snow goose (n=1,855), mew gull (n=909), mallard (n=717), dunlin (n=500), and American wigeon (n=480). Geese (n=1,859) were the most abundant species group observed, followed by dabbling waterbirds (n=1,492), and 'gulls and terns' (n=1,398), respectively.<br><br>At control sites, diving waterbirds were the most abundant species group, followed by shorebirds, and 'gulls and terns', respectively (**Figure 2**). At treatment sites, 'gulls and terns' were the most abundant species group (**Photo 3**), followed by dabbling waterbirds, and shorebirds, respectively (**Figure 3**). At existing mudflat sites, geese were the most abundant species group, followed by dabbling waterbirds, and 'gulls and terns', respectively (**Figure 4**).<br><br>Snow geese were observed primarily on the edge (riverward side) of existing marsh sites (**Figure 5, Photo 4**). They were typically observed walking on mudflats and through marsh, and feeding on marsh vegetation. Snow geese were often observed flocking between the existing marsh sites and unidentified offsite areas further south in the estuary. Raptor presence, such as bald eagle flyovers, often resulted in snow geese taking flight and flocking/circling for several minutes before returning to the marsh. The largest flock of snow geese observed was 530 birds in 'Marsh West' on January 20, 2015.<br><br>During these early winter (2014/15) surveys, geese (mainly snow geese) and dabbling waterbirds made up the majority of birds observed (**Figure 5**). In contrast, during surveys conducted in late winter of 2014, shorebirds and dabbling waterbirds were the most abundant species groups recorded (Hemmera, 2014A). These observed differences are likely due to different 'tidal seasons': these early-winter surveys were conducted when mudflats were flooded, whereas late-winter surveys were conducted when mudflats were exposed. Different habitat conditions are present depending on whether mudflats are exposed or flooded, and therefore different species can be |

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| | expected depending on tidal conditions (i.e. exposed mudflat supports shorebird use). The absence of snow geese during late-winter surveys in 2014/15 may be attributed to their migration pattern, as they are known to spend late-winter further south on the Skagit River.<br><br>This period of survey is not directly comparable to winter 2013/14 surveys given the different tidal conditions that apply during different winter months. However, both survey periods add to the understanding of the winter habitat values for birds associated with the project area. |
| **References:** | Hemmera 2014A. Proposed Point Grey Tidal Marsh Project – Standwatch Surveys – February 20, 2014 to March 26, 2014.<br><br>Hemmera 2014B. Proposed Point Grey Tidal Marsh Project – Standwatch Bird Surveys – Spring/Summer 2014.<br><br>Both reports available online at <http://porttalk.ca/HabitatEnhancement/documents> |

# Tables

**Table 1.** Species observed at Point Grey during winter 2015 standwatch surveys, Vancouver, BC.

| Species Group | Common Name | Latin Name | Abundance of Species | | | | | | | Abundance of Species Group |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Control West | Control East | Treatment West | Treatment East | Marsh West | Marsh East | Total | |
| Cormorants | Double-crested Cormorant | *Phalacrocorax auritus* | 15 | 20 | 5 | 0 | 1 | 37 | 78 | 83 |
| | Pelagic Cormorant | *Phalacrocorax pelagicus* | 1 | 2 | 0 | 0 | 0 | 0 | 3 | |
| | Unidentified Cormorant | *Phalacrocorax sp* | 2 | 0 | 0 | 0 | 0 | 0 | 2 | |
| Dabbling waterbirds | American Wigeon | *Anas americana* | 4 | 4 | 3 | 217 | 88 | 164 | 480 | 1492 |
| | Gadwall | *Anas strepera* | 0 | 0 | 0 | 17 | 7 | 4 | 28 | |
| | Green-winged Teal | *Anas crecca* | 0 | 0 | 0 | 2 | 6 | 0 | 8 | |
| | Mallard | *Anas platyrhynchos* | 0 | 50 | 55 | 49 | 272 | 291 | 717 | |
| | Northern Pintail | *Anas acuta* | 1 | 0 | 1 | 102 | 43 | 110 | 257 | |
| | Northern Shoveler | *Anas clypeata* | 0 | 0 | 0 | 0 | 2 | 0 | 2 | |
| Diving waterbirds | Bufflehead | *Bucephala albeola* | 26 | 55 | 31 | 34 | 16 | 7 | 169 | 535 |
| | Common Goldeneye | *Bucephala clangula* | 1 | 0 | 0 | 0 | 0 | 0 | 1 | |
| | Common Merganser | *Mergus merganser* | 56 | 47 | 0 | 8 | 0 | 0 | 111 | |
| | Red-breasted Merganser | *Mergus serrator* | 76 | 124 | 25 | 15 | 11 | 2 | 253 | |
| | Ring-necked Duck | *Aythya collaris* | 0 | 0 | 1 | 0 | 0 | 0 | 1 | |
| Geese | Canada Goose | *Branta canadensis* | 0 | 2 | 0 | 0 | 2 | 0 | 4 | 1859 |
| | Snow Goose | *Chen caerulescens* | 0 | 0 | 11 | 80 | 1555 | 209 | 1855 | |
| Gull and Terns | Bonaparte's Gull | *Chroicocephalus philadelphia* | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1398 |
| | Glaucous-winged Gull | *Larus glaucescens* | 34 | 67 | 26 | 25 | 129 | 6 | 287 | |
| | Herring Gull | *Larus argentatus* | 0 | 2 | 0 | 0 | 2 | 0 | 4 | |
| | Mew Gull | *Larus canus* | 33 | 58 | 74 | 276 | 439 | 29 | 909 | |
| | Ring-billed Gull | *Larus delawarensis* | 23 | 6 | 5 | 1 | 5 | 0 | 40 | |
| | Unidentified Gull | *Larus sp.* | 4 | 11 | 5 | 123 | 10 | 2 | 155 | |
| | Western Gull | *Larus occidentalis* | 0 | 1 | 0 | 0 | 1 | 0 | 2 | |

| Species Group | Common Name | Latin Name | Abundance of Species | | | | | | | Abundance of Species Group |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Control West | Control East | Treatment West | Treatment East | Marsh West | Marsh East | Total | |
| Herons | Great Blue Heron | *Ardea herodias* | 1 | 0 | 0 | 0 | 1 | 0 | 2 | 2 |
| Passerines | Common Raven | *Corvus corax* | 0 | 0 | 0 | 0 | 1 | 2 | 3 | 3 |
| Owls | Short-eared Owl | *Asio flammeus* | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 |
| Raptors | Bald Eagle | *Haliaeetus leucocephalus* | 5 | 2 | 1 | 5 | 5 | 3 | 21 | 26 |
| | Merlin | *Falco columbarius* | 0 | 0 | 0 | 1 | 0 | 0 | 1 | |
| | Peregrine Falcon | *Falco peregrinus* | 0 | 0 | 2 | 0 | 0 | 0 | 2 | |
| | Sharp-shinned Hawk | *Accipiter striatus* | 0 | 0 | 1 | 0 | 0 | 1 | 2 | |
| Shorebirds | Dunlin | *Calidris alpina* | 0 | 300 | 150 | 30 | 20 | 0 | 500 | 501 |
| | Sanderling | *Calidris alba* | 0 | 0 | 0 | 1 | 0 | 0 | 1 | |
| Swans | Trumpeter Swan | *Cygnus buccinator* | 0 | 0 | 0 | 11 | 21 | 5 | 37 | 117 |
| | Unidentified Swan | *Cygnus sp.* | 0 | 0 | 4 | 13 | 47 | 16 | 80 | |
| Unidentified Duck | Unidentified Duck | - | 0 | 7 | 0 | 152 | 0 | 38 | 197 | 197 |
| Grand Total | | | 282 | 758 | 401 | 1163 | 2684 | 926 | 6214 | 6214 |

# Figures

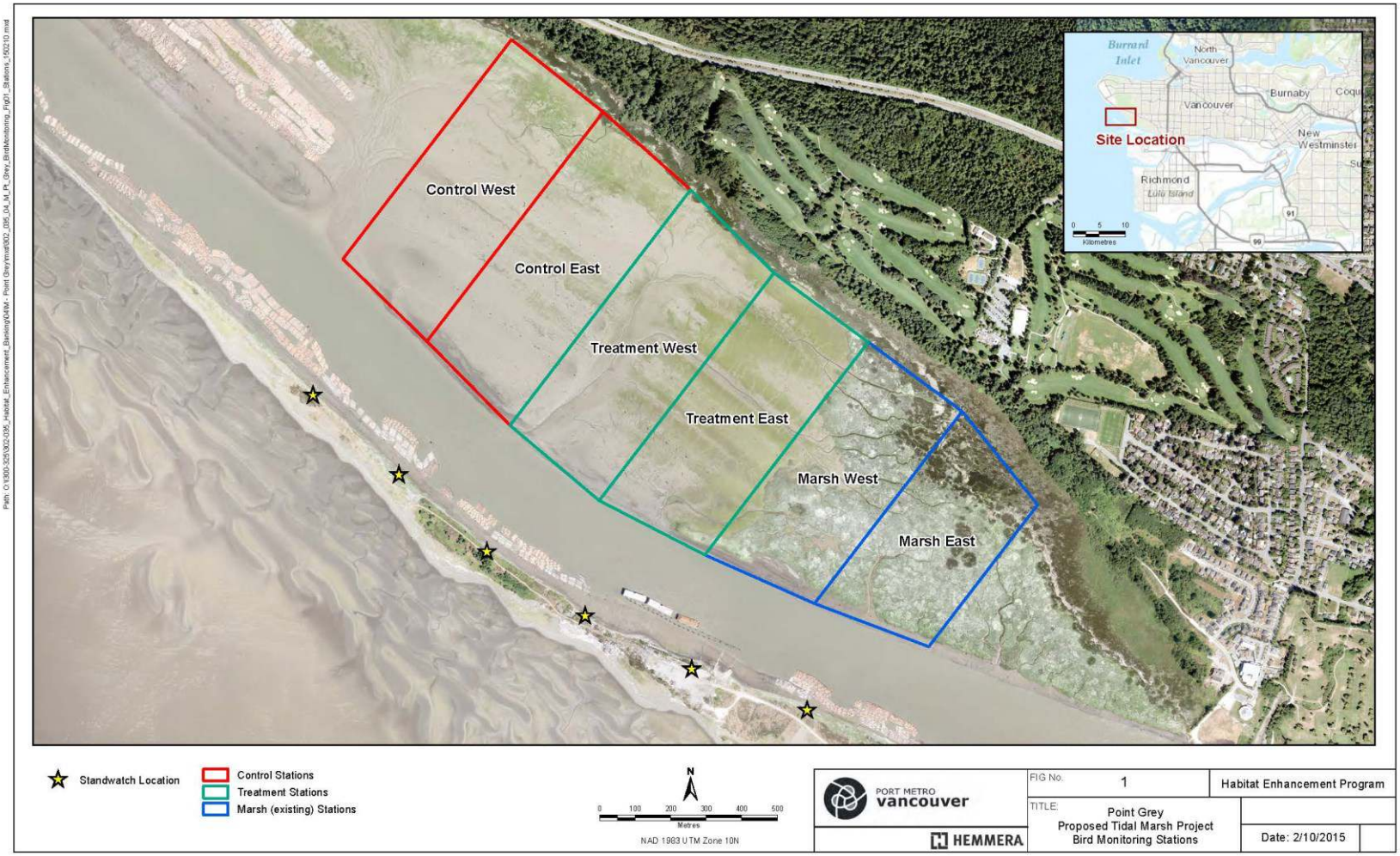


**Figure 1.** Point Grey Tidal Marsh Project – Standwatch Bird Survey areas assessed during winter 2015 standwatch surveys; Vancouver, BC.

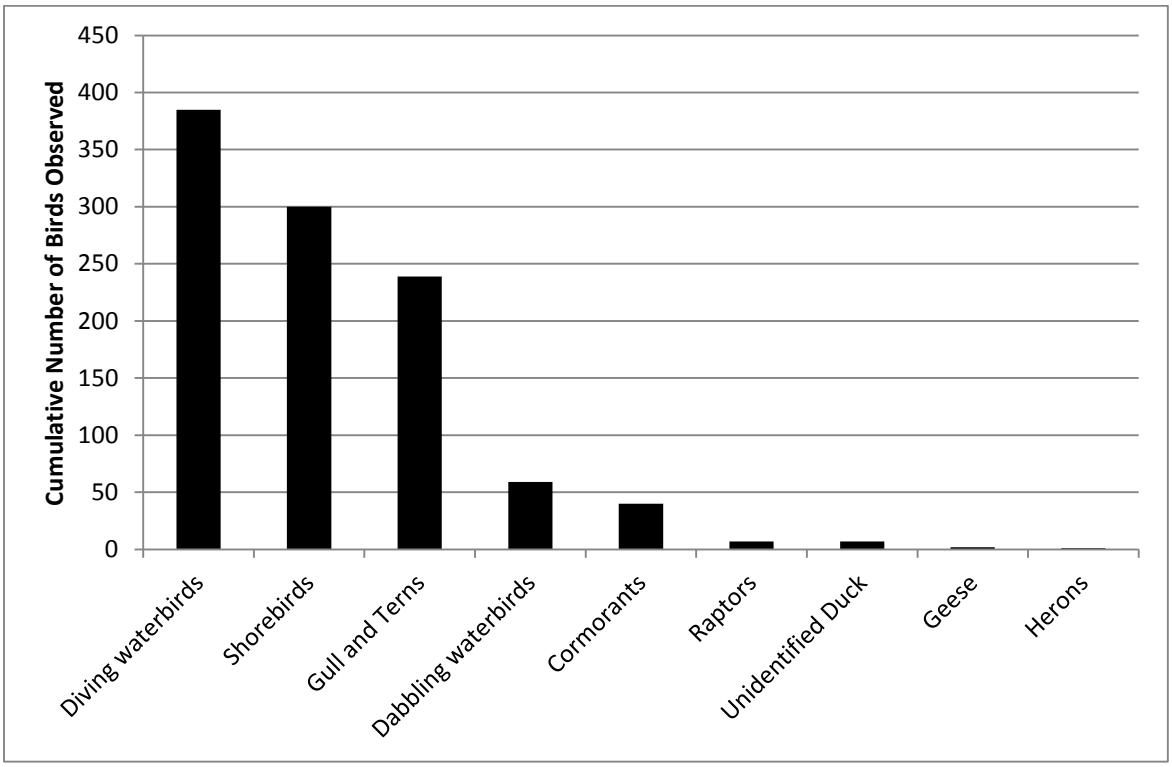


**Figure 2.** Abundance of species groups observed at Point Grey control sites during winter 2014/15; Vancouver, BC.

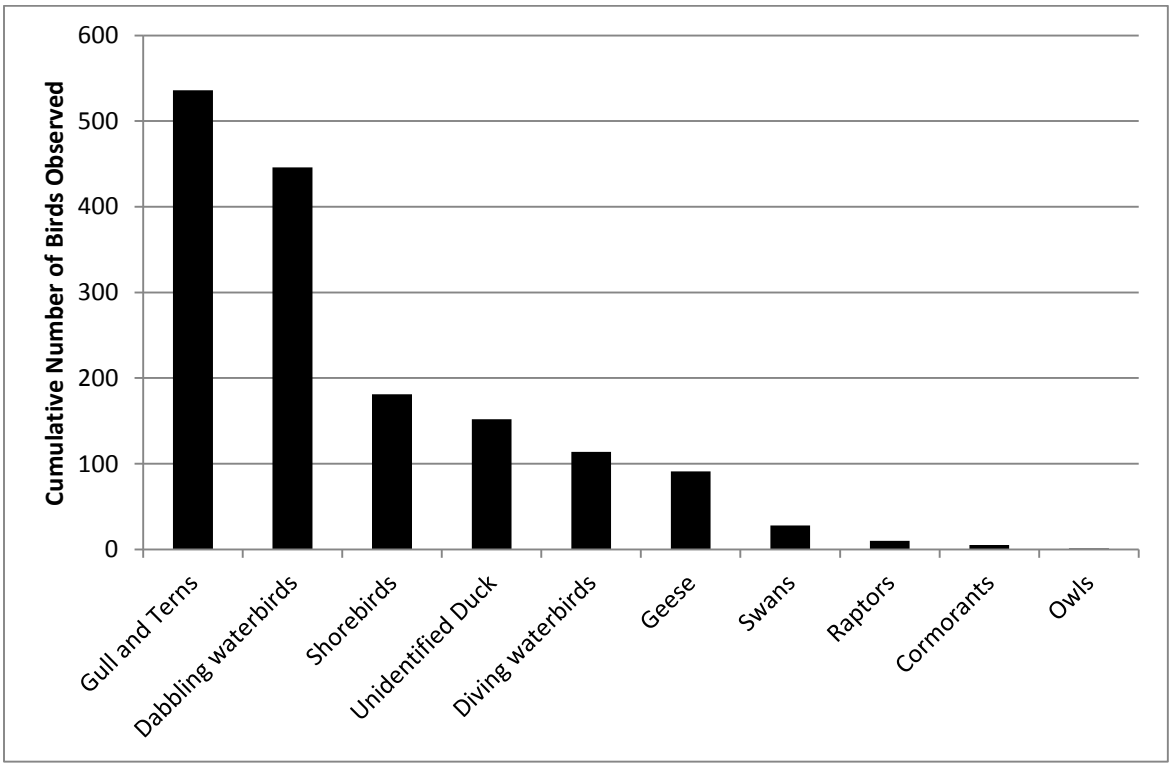


**Figure 3.** Abundance of species groups observed at Point Grey treatment sites during winter 2014/15; Vancouver, BC.

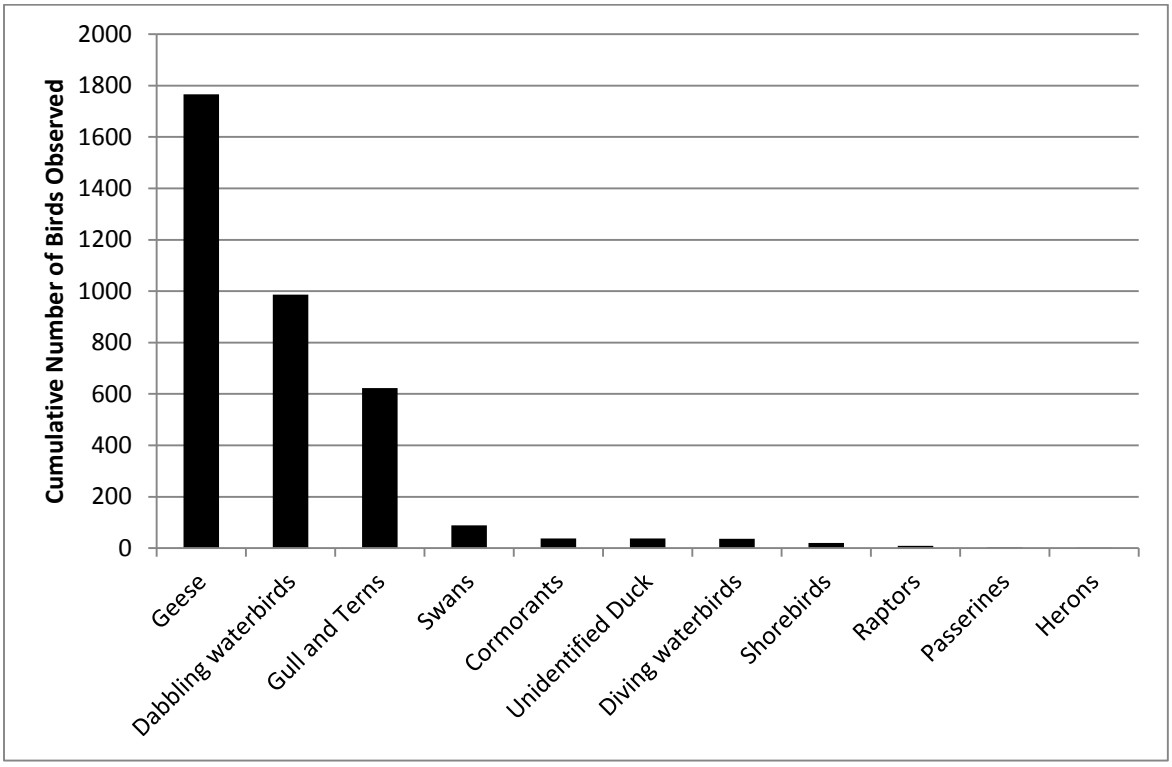


**Figure 4.** Abundance of species groups observed at Point Grey marsh sites during winter 2014/15; Vancouver, BC.

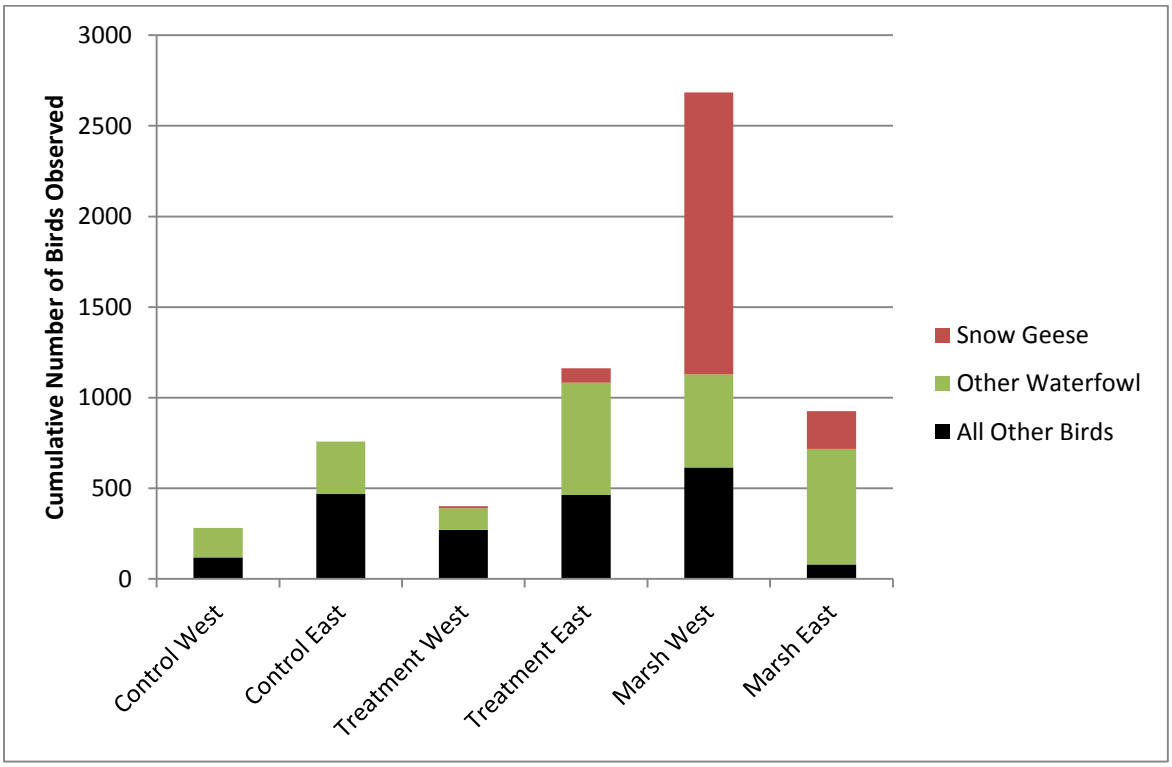


**Figure 5.** Abundance of snow geese, other waterfowl and all other birds observed at Point Grey during winter 2014/15; Vancouver, BC. "Other Waterfowl" includes dabbling and diving waterbirds, unidentified ducks, Canada geese, and swans.

# Photos

**Photo 1.** Observer's view (without optics) of control sites at Point Grey, looking across river facing northeast (December 8, 2014).

**Photo 2.** Observer's view (without optics) of existing marsh at Point Grey, looking across river facing northeast (December 8, 2014).

**Photo 3.** Waterfowl, gulls, and raptors in treatment site at Point Grey (January 12, 2015).

**Photo 4.** Snow geese and swans in existing marsh at Point Grey (January 12, 2015).