Grassland Set-Aside Breeding Bird Survey 2025

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May – June 2025

Photo 1: Blueberry Rest Set-aside Habitat in Delta

Program background

Grasslands provide crucial nesting and foraging opportunities for many local birds, including Barn Owls, Northern Harriers and Barn Swallows. We collaborate with local farmers to establish grassland habitat in farmland through the grassland set-aside (GLSA) and blueberry rest set-aside (BRSA) stewardship programs.

Grassland set-asides are enrolled in the program for up to four years and are planted with many species, including grasses, clover, sunflower or other floral mixes. Blueberry Rest set-asides are comprised of a grass and flower mix in areas where blueberry plants have been removed.

The aim of this survey is to determine which birds are using GLSAs and BRSAs for foraging and breeding habitat. We are also interested in examining which aspects of set-asides (planting mix, seeding rate, etc.) effect songbird occupancy, which can inform our planting recommendations to better support species at risk.

Methods

Surveys were conducted at 8 grassland set-aside fields in Delta, BC. Distance-based point counts of 50 m were conducted to measure songbird abundance within GLSAs (Resources Inventory Committee 1999). Five-minute point counts were conducted weekly from May 5 to June 19, 2025. Surveys began at sunrise and were completed within four hours. Surveys were not conducted when winds exceeded 12 km/hr, temperatures were below 7 °C, or during rain.

Within the 8 GLSA fields sampled, 17 point count locations were randomly selected. Point counts were located at least 200 m apart when there were more than one per field. Point count locations were placed at least 100 m from the field edge where possible, and at least 50 m from the edge when the shape of the GLSA did not allow for a 100 m buffer.

Point counts were limited to all species seen and heard within a 50 m detection radius. Distances of each species were recorded in meters using a Nikon Prostaff 1000 rangefinder. Birds flying through the 50m detection radius were counted with a note indicating that they were flyovers.

We deployed one AudioMoth autonomous recording unit (ARU) per field, set to record continuously during the last week of the survey period. Audio recordings were processed with BirdNET v2.1.1 with confidence limit set to 0.25, location-based species list set at latitude 49 and longitude -123 with week of year set to 24, and all other settings set to default (Kahl et al. 2021). We then extracted 5-second segments of calls using BirdNET and manually verified all calls (n=1000).

Results and Discussion

Species richness and breeding birds

The primary goal of this project is to identify which songbirds are using grassland set-asides as breeding and foraging habitats. We considered a bird likely breeding in or adjacent to the set-aside if it was observed during the survey at least three times out of seven visits (Resources Inventory Committee 1999).

By these criteria, we observed the following 5 species that were using the GLSA for breeding habitat or were nesting nearby and regularly used the set-aside for foraging habitat: Savannah Sparrow, Common Yellowthroat, Red-winged Blackbird, Brewer's Blackbird and Killdeer.

A total of 31 species were observed across 116 individual point count surveys conducted throughout the season. The five presumed breeding birds are all locally common ground or near-ground nesting birds and were among the most frequently observed birds overall (*Figure 1*).

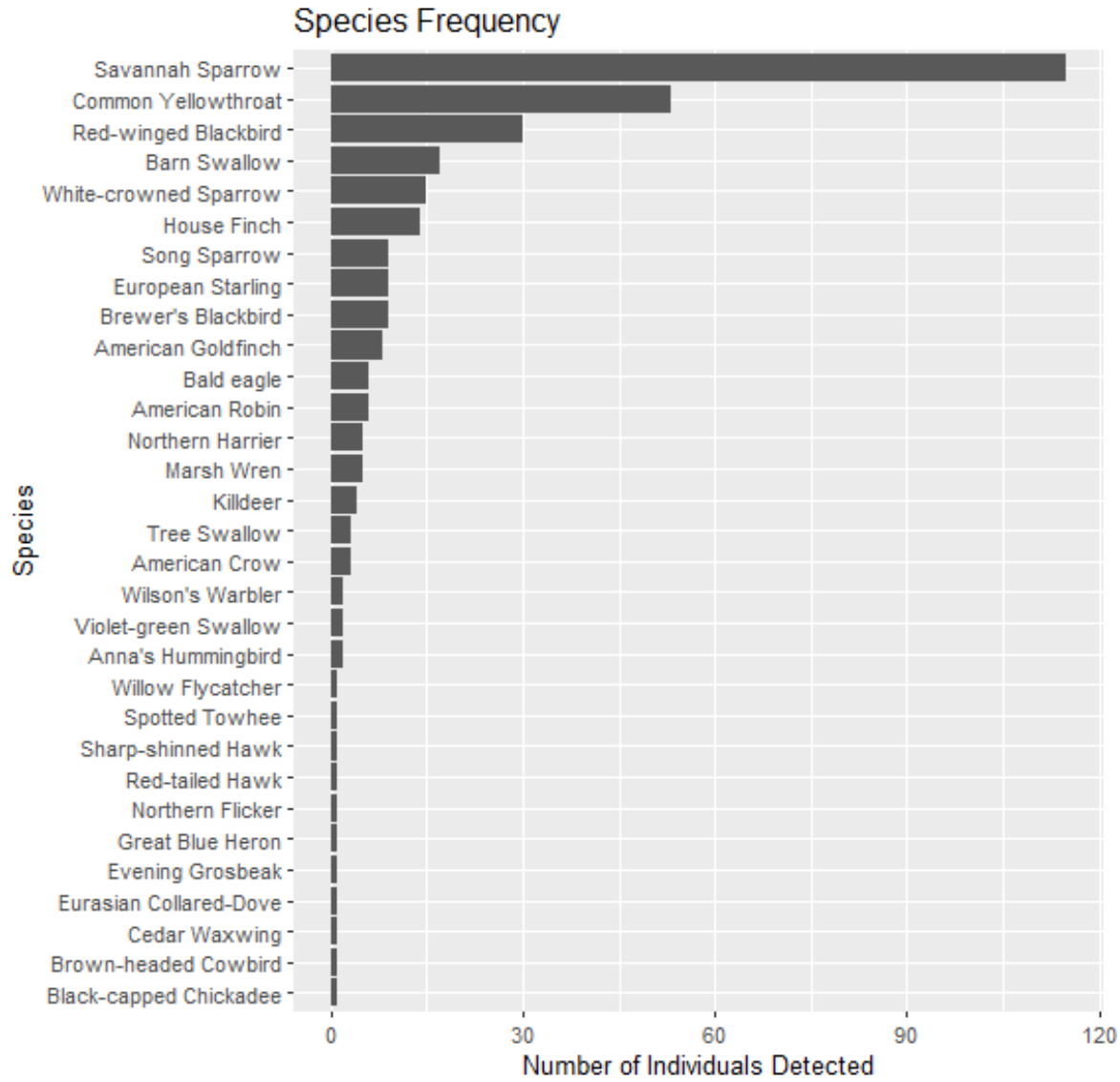

Figure 1. Cumulative species frequency across all grassland set-aside point count surveys (May-June 2025)

Other commonly observed birds such as White-crowned Sparrows, House Finches and Song Sparrows don't typically nest on the ground in grasslands in our area but are abundant in adjacent shrubs and hedgerows. Species that are observed uncommonly in grassland environments such as Wilson's Warblers, Northern Flickers, and Evening Grosbeaks were observed in special cases where there were trees or shrubs present within the centre of a field itself.

Across all sites, the ARUs identified 27 species, compared with 31 species observed during point count surveys. The ARUs were deployed for only the last week of the survey and likely would have detected incidental species observed earlier during point counts, such as Wilson's Warblers and Evening Grosbeaks. ARUs detected all species observed within GLSAs during the point count surveys with the exception of Northern Harriers. The recorders detected two additional species not observed during in person surveys: Red-breasted Nuthatch and Stellar's Jay; both of which were likely vocalizing from outside of the set-aside boundary.

In the 2024 grassland set-aside breeding bird survey report, we proposed deploying ARUs in future years to determine if our survey window is too early to accurately detect Barn Swallow presence. Across sites, we saw a regular pattern of high activity roughly between 3:00-9:00 and 13:00 to 21:00 (*Figure 2*). Although the particular site listed below had few observations at 5:00, the point count survey window of ~5:00-9:00 appears to be appropriate to accurately monitor Barn Swallow presence.

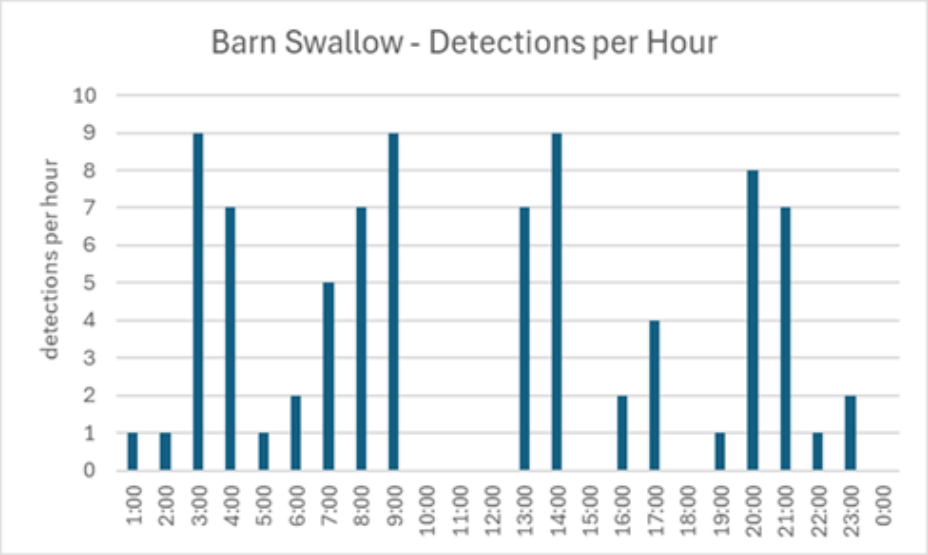

Figure 2. Typical Barn Swallow abundance per hour

Species of conservation concern

Barn Swallows use grassland set-aside habitat to forage on aerial insects and remain fairly commonly observed since this grassland bird survey started in 2022. In 2024, we noticed a dramatic decline in observations compared to the previous two years, which has continued this year (*Figure 2*).

In 2022, the first Barn Swallow was recorded on May 9th and 33% of all point count surveys had at least one swallow present. In 2023 43% of all surveys had a Barn Swallow observation and the first record was on May 3rd. In 2024 the first Barn Swallows were seen much later, on May 30th and only 8% of surveys recorded a swallow. This year, two Barn Swallows were observed on May 5th as flyovers, the first foraging Barn Swallows were seen on May 22nd, and they appeared on 14% of all surveys.

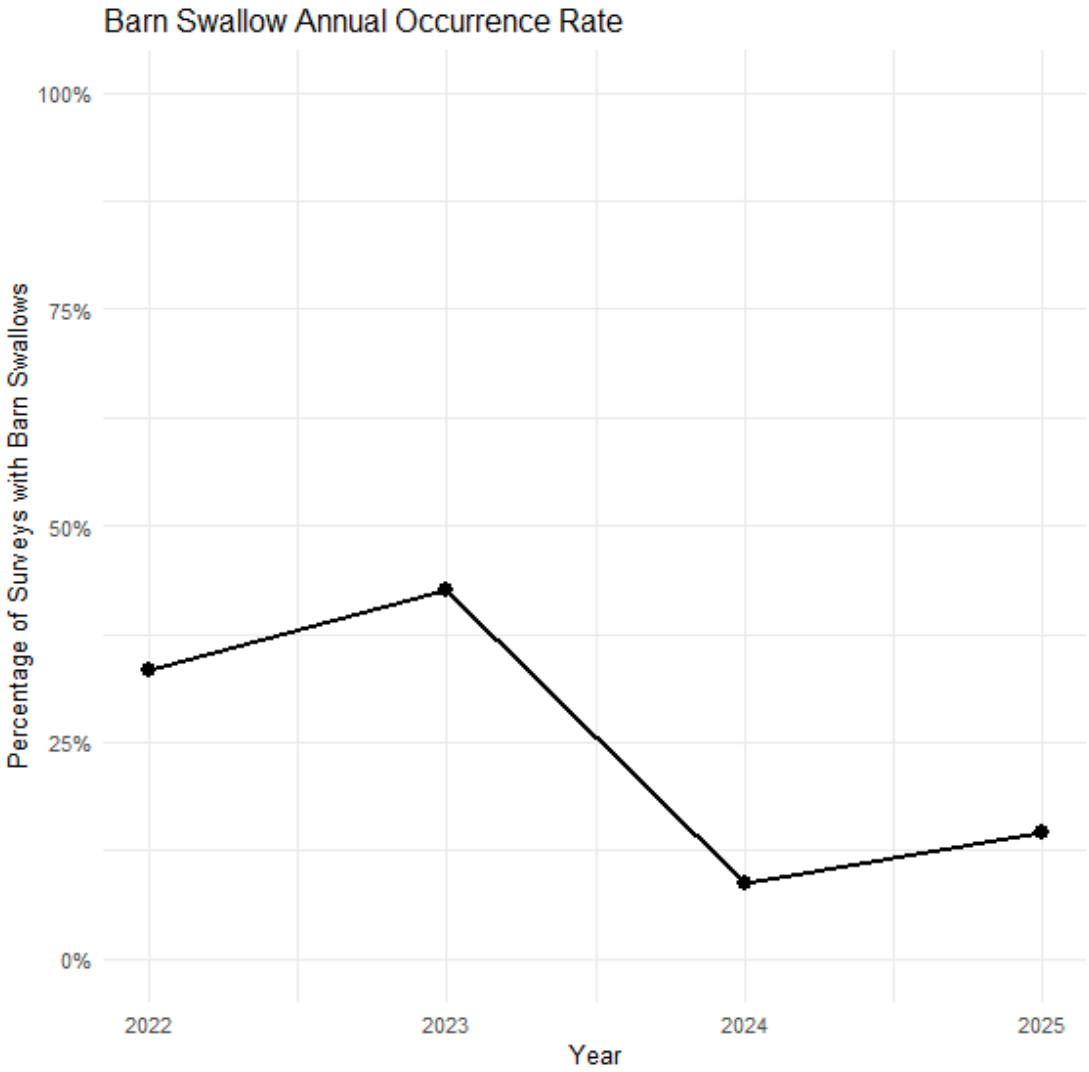

Figure 3. Proportion of point count surveys containing a Barn Swallow observation, by year.

Fields enrolled in the grassland set-aside program are typically in place for 4 years before returning to agricultural production. As a result, fields included in the songbird surveys change year to year. To see if the decline in Barn Swallow observations could be explained by changes in which fields were surveyed, we examined sites that were surveyed both before and after the 2024 Barn Swallow decline.

We identified 9 sites that were surveyed for at least 3 continuous years, 6 of which were surveyed for all 4 years of the project (*Figure 3*). At 8 of these sites, fields that supported Barn Swallows in 2022 and 2023 had no records in 2024 and few records in 2025 (field 541253 had no Barn Swallow records in any year of the survey).

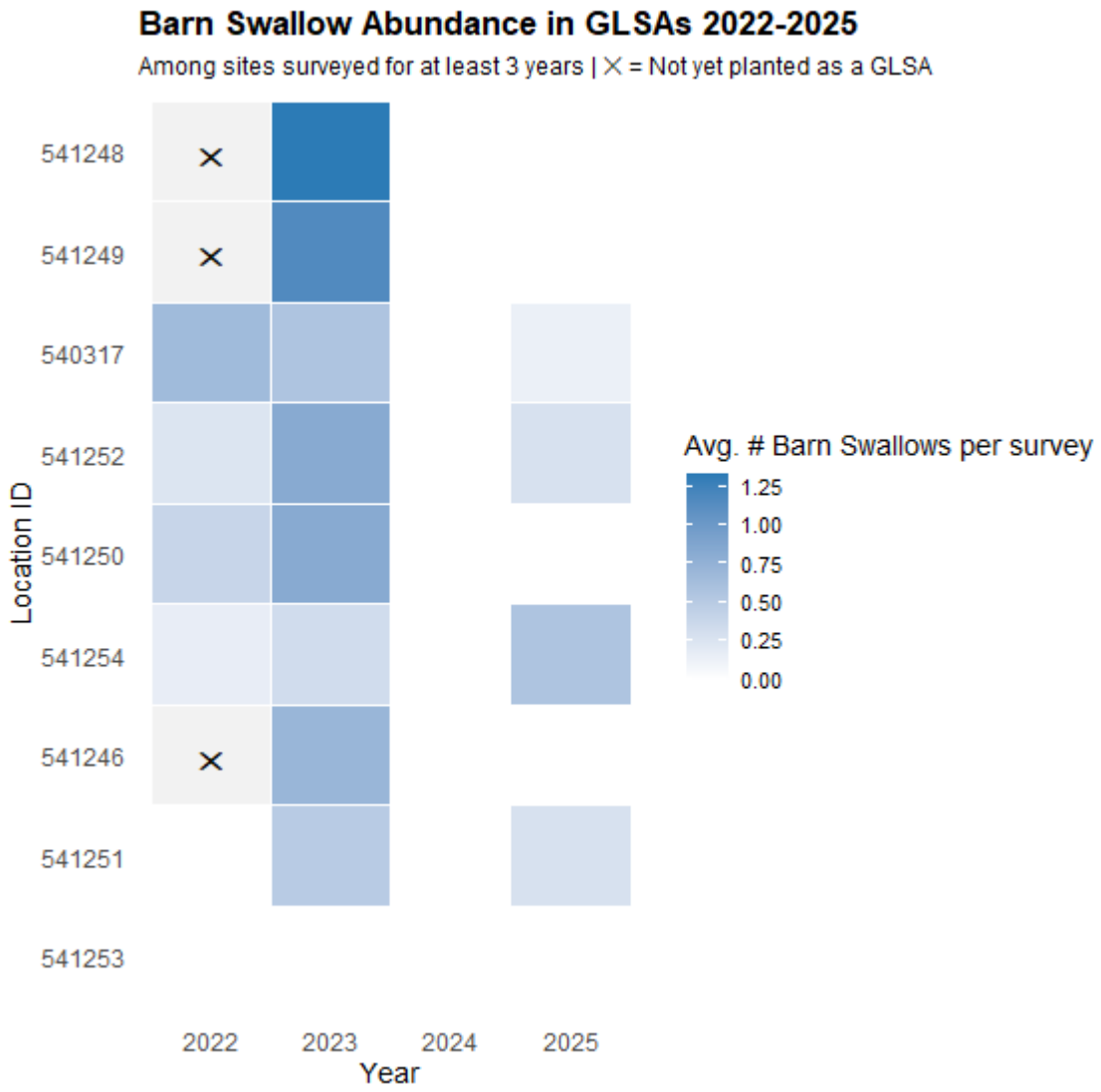

Figure 4. Barn Swallow successive presence by year

The decline in Barn Swallow observations in successively surveyed fields suggests that the decline is more likely due to shifts in Barn Swallow foraging behaviour or local population size than changes related to grassland set-aside management.

While the causes for the contemporary decline in Barn Swallow populations are not fully understood, the most likely causes that would affect our local population are declines in insect populations and spring cold snaps (COSEWIC 2011). It is also possible that previously used nesting sites have become unavailable, although this alone does not fully explain the uniform decline of Barn Swallow observations between 2023 and 2024.

Works cited

COSEWIC. 2011. COSEWIC assessment and status report on the Barn Swallow Hirundo rustica in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. ix + 37 pp. (www.sararegistry.gc.ca/status/status_e.cfm).

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