DATA REPORT

Bird Monitoring and Banding Project

at Buttertubs West Marsh, Nanaimo, BC

2025

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Table of Contents

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1. Introduction

In the summer of 2012, the City of Nanaimo and Ducks Unlimited Canada jointly acquired the 27-hectare Buttertubs West Marsh property. This property, which is located west of the Buttertubs Marsh Conservation Area and east of the Nanaimo Parkway (**Figure 1**), encompasses a mixture of ecosystem types, including marsh and shallow water, riparian areas, upland forest, and old-field habitats. Altogether, the Buttertubs West Marsh and adjacent Buttertubs Marsh represent approximately 53 hectares of productive parkland habitat with significant ecological value in an otherwise fragmented urban landscape (Lepczyk and Warren, 2012). These green spaces can provide important breeding, stopover, and wintering habitats for various bird species (NABCI, 2019).

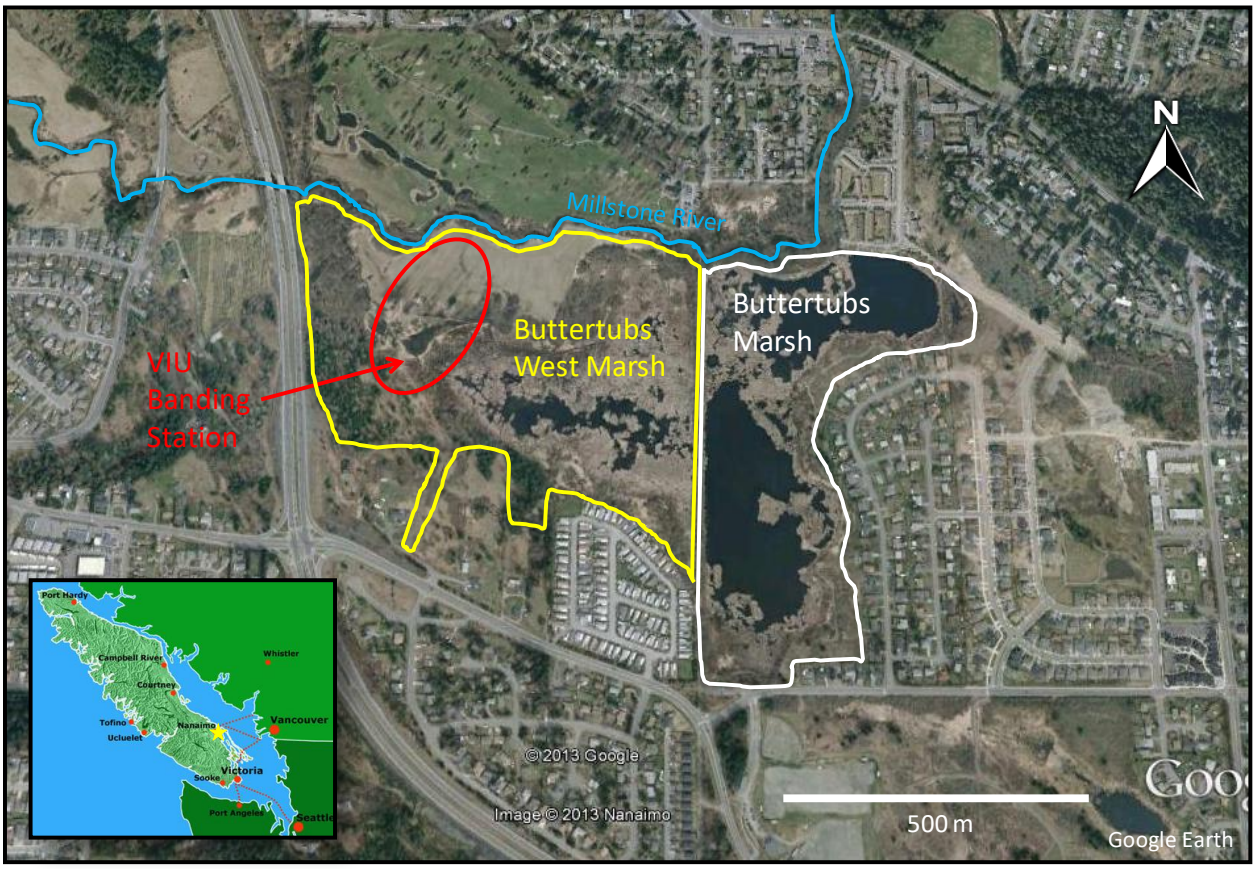

Figure 1. Aerial photograph of the Buttertubs West Marsh in Nanaimo, BC, including the location of the Vancouver Island University (VIU) bird monitoring and banding project.

Since 2013, Vancouver Island University (VIU) has operated a bird monitoring and banding project at Buttertubs West Marsh, with overall objectives to:

- Monitor migrant and resident birds to contribute to regional and continent-wide efforts to monitor changes in population levels of these species;

- Provide practical educational and training opportunities for VIU students and community volunteers; and,
- Conduct public demonstrations where people of all ages can learn about bird identification, ecology, evolution, and conservation.

This project was conducted in partnership with the City of Nanaimo, Ducks Unlimited Canada, and The Nature Trust of BC.

This report summarizes the activities and results of this project during 2025. Project activities are described in the sections below and included:

- Songbird monitoring and banding; and,
- Swallow nest box monitoring.

Summaries of volunteer effort / training and public demonstration / education are also included.

2. Songbird Monitoring and Banding

2.1. Methods

The general approach used for songbird monitoring and banding included a combination of two activities: bird banding and incidental observations.

2.1.1. Songbird Banding

Songbird banding activities were conducted in accordance with Canadian Wildlife Service Bird Banding Office Scientific Permit No. 10885, 10885B and 10885D, and following procedures and guidance established in the VIU Bird Monitoring and Banding Manual (Demers, 2024a), the North American Banding Council (NABC, 2001a,b), and the Institute for Bird Populations (IBP, 2012).

Between March and October 2025, 20 mist nets were installed for use at Buttertubs West Marsh. Each mist net consisted of a 12 m long by 2.6 m high panel, made of polyester yarn, with 30-mm mesh size. The location of these nets (unchanged since 2016) was stratified among the habitat types present at the site (**Figure 2**). Ten nets (nets no. 1-10) were located in old-field habitat dominated by open expanses of reed canarygrass (*Phalaris arundinacea*) and shrub / tree patches consisting of hardhack (*Spiraea douglasii*) and willows (*Salix* sp.). Five nets (nets no. 11-15) were located in upland forest habitat consisting of Douglas fir (*Pseudotsuga menziesii*), western red cedar (*Thuja plicata*), bigleaf maple (*Acer macrophyllum*), red alder (*Alnus rubra*), English oak (*Quercus robur*), and a shrubby understory consisting of thimbleberry (*Rubus parviflorus*), salmonberry (*R. spectabilis*), ocean spray (*Holodiscus discolor*), hardhack, and Himalayan blackberry (*R. armeniacus*). Five nets (nets no. R1-R5) were located in riparian habitat along the Millstone River consisting of Nootka rose (*Rosa nutkana*), hardhack, salmonberry, common hawthorn (*Crataegus monogyna*), and Himalayan blackberry.

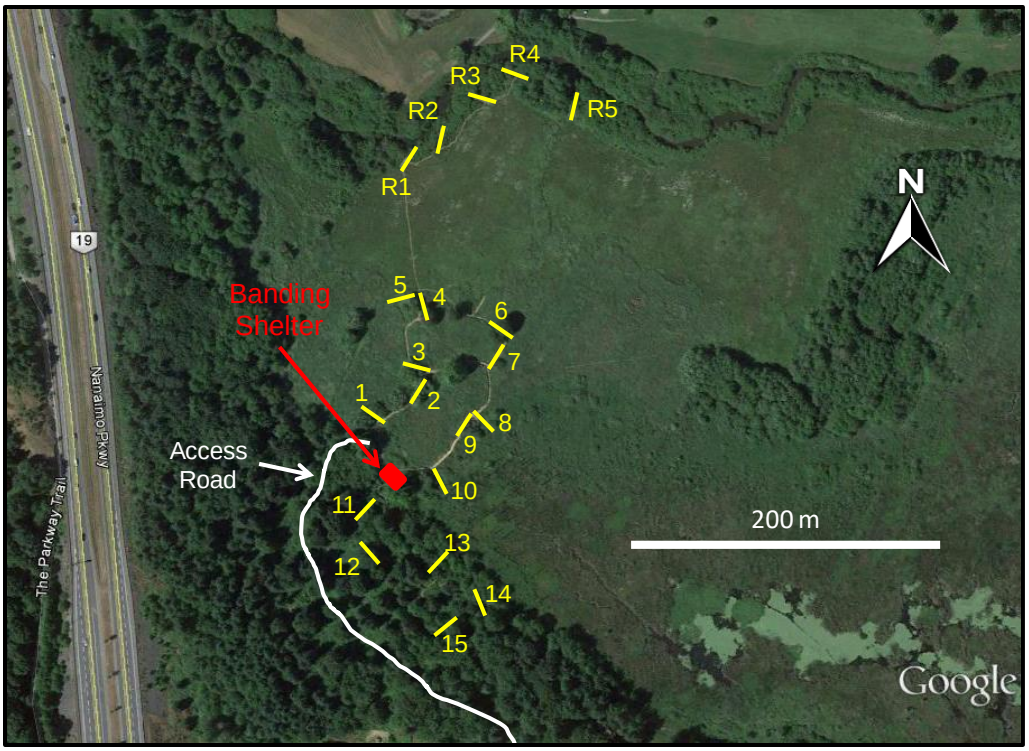

Figure 2. Locations of mist nets and banding shelter used for songbird banding at Buttertubs West Marsh during 2025.

Bird banding activities were conducted one day most of weeks between March 20 and October 30, 2025. During each banding day, nets were operated from 30 minutes before sunrise and for a period of up to 6 hours (i.e., until 5.5 hours after sunrise). Nets were checked every 15-20 minutes.

Each captured bird was extracted from the net and transferred into a cloth bag until further processing at the banding shelter. The banding process for most birds typically involved the following steps: species identification, band application (if unbanded), age and sex determination, fat score, biometrics (wing chord, tail length, weight), and photography (if applicable). Most birds were processed within about 1-2 minutes and then released.

In 2025, the VIU Bird Banding project participated in the following projects:

- Four Steller's Jays (*Cyanocitta stelleri*) were fitted with plastic colour bands to learn about their long-term survival and movements through community-science colour band reports. This is an irruptive species, and little is known about their dispersal movements.

- In June 2025, the VIU Bird Banding project assisted in the collection of blood samples from Swainson's Thrush for researchers at Quenn's University (Principal Investigator: K. Parno, MSc candidate). This project seeks to understand the role of gene flow on the genetic adaption of Swainson's Thrush breeding in western North America. It uses whole genome sequencing to examine the evolutionary histories of various western populations,

to map the adaptive potential of this species across the landscape, and to identify the genomic vulnerability to climate change. Four target Swainson's Thrush were captured banded, processed, and released. A blood sample was collected from each bird via brachial puncture by a trained bander (M. Hellicar) from the Rocky Point Bird Observatory.

- The Bird Genoscape Project (BGP), coordinated by researchers at Colorado State University, is an effort to map the population-specific migratory routes of 100 species of migratory songbirds by utilizing genomics. To help contribute to this project, feathers from up to 10 individuals were collected from the following 19 target species: American Robin (*Turdus migratorius*), Black-headed Grosbeak (*Pheucticus melanocephalus*), Brown Creeper (*Certhia americana*), Fox Sparrow (*Passerella iliaca*), Golden-crowned Kinglet (*Regulus satrapa*), Lincoln's Sparrow (*Melospiza lincolnii*), MacGillivray's Warbler (*Geothlypis tolmiei*), Orange-crowned Warbler (*Leiothlypis celata*), Pine Siskin (*Spinus pinus*), Ruby-crowned Kinglet (*Corthylio calendula*), Song Sparrow (*Melospiza melodia*), Warbling Vireo (*Vireo gilvus*), and White-crowned Sparrow (*Zonotrichia leucophrys*). For each individual, two rectrices (tail feathers) were sampled: one central (r1) and one outer (r6) rectrix. Feathers from each bird were placed in BGP-provided pre-printed envelope and filled out with the species name, band number, date, location, age, sex, breeding condition (as determined by brood patch or cloacal protuberance), and whether the bird was a recapture. Feather samples were shipped to the BGP at the end of the year.

- The Birds, Ticks, and Climate Change: a Citizen Science Surveillance Toolkit project, coordinated by researchers at the BC Centre for Disease Control (BCCDC), is an effort to identify ticks carried by birds and their pathogen, and to develop a surveillance program for bird banding stations. To help contribute to this project, individual birds were examined for the presence of ticks. When encountered, ticks were removed and stored in labelled vials with 95% ethanol. Ticks were subsequently identified through the eTick program (https://www.etick.ca/) and screened for pathogens by the BCCDC. Ticks were collected from 14 individuals from the following 6 species: Hermit Thrush (*Catharus guttatus*), Lincoln's Sparrow, Song Sparrow, Swainson's Thrush (*Catharus ustulatus*), Tree Swallow (*Tachycineta bicolor*), and Wilson's Warbler (*Cardellina pusilla*).

2.1.2. Incidental Observations

During bird banding days, all birds detected by sight and sound (other than those captured in mist nets) were counted and recorded as incidental observations. These observations were especially important to account for species that were not targeted by mist netting operations (e.g., waterfowl, raptors, etc.). The combination of banding totals (number of birds captured) and incidental observations provided an estimate of the number of species and individuals present at the site.

2.2. Results

2.2.1. Songbird banding

Songbird banding activities were conducted during 37 days between March 20 and October 30, 2025, with a total mist netting effort of 4,107 hours (average: 111.0 net hours / day) (**Table 1**). A

total of 1,624 birds were caught from 50 species. Of these, 1,184 birds were banded, and 440 birds (27.1%) were recaptures of previously banded birds. In addition, 12 Anna's Hummingbirds (*Calypte anna*) and 3 Rufous Hummingbirds (*Selasphorus rufus*) were banded in 2025. An additional 106 birds were captured and released unbanded (primarily hummingbirds). The average capture rate in 2025 was 39.5 birds / 100 net-hours.

Table 1. Mist net capture statistics at Buttertubs West Marsh during 2021-2025.

Parameter	Value				
	2021	**2022**	**2023**	**2024**	**2025**
Capture effort (net-hours)	3,776	3,461	3,621	3,186	**4,107**
Average daily effort (net-hours / day)	94.4	108.2	116.8	113.8	**111.0**
Number of birds banded	1,120	1,305	1,256	1,164	**1,184**
Number of recaptures	488	454	464	386	**440**
Total number of birds captured	1,608	1,759	1,720	1,550	**1,624**
Recapture rate (%)	30.3	25.8	27.0	24.9	**27.1**
Number of species	50	51	55	47	**50**
Capture rate (birds per 100 net-hours)	42.6	50.8	47.5	48.7	**39.5**

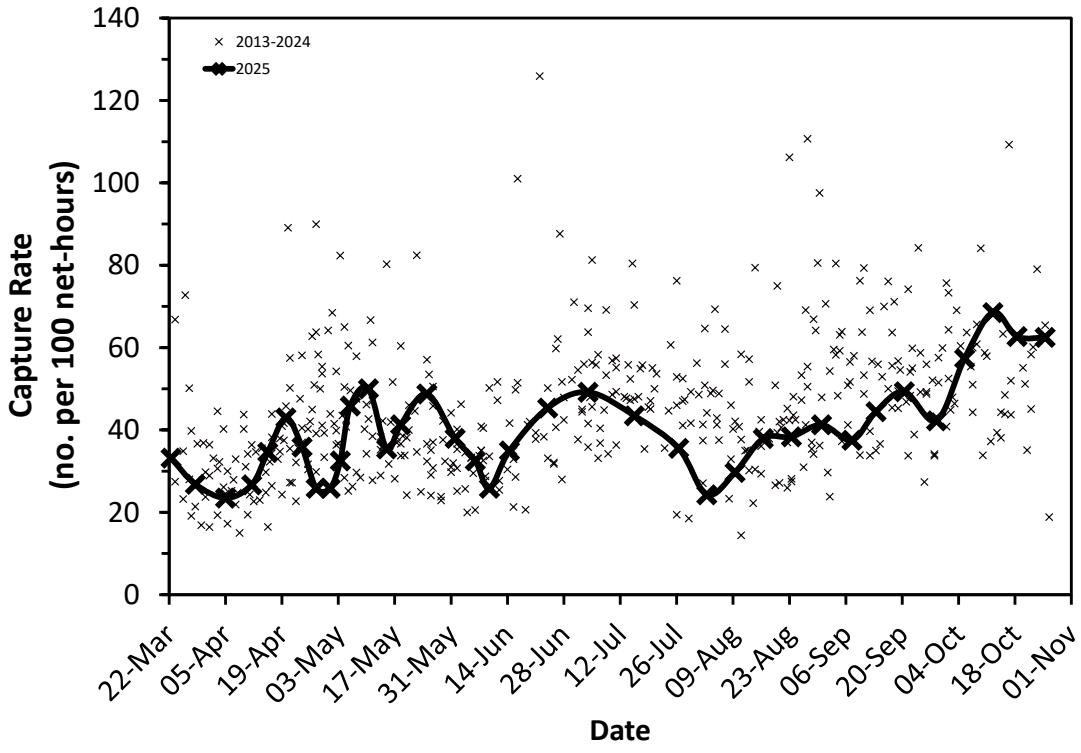

Figure 3. Weekly moving average of capture rate in mist nets at Buttertubs West Marsh during 2013-2025.

The total capture effort deployed in 2025 (4,107 net-hours) was the highest in the last 5 years (**Table 1**). Capture rate in 2025 (39.5 birds per 100 net-hours) was the lowest in the last 5 years. The total number of species captured in 2025 (50 species, excluding hummingbirds) was within the range for the last few years (47-55 species in 2021-2025).

Compared to previous years, capture rates were near average throughout the season with strong fluctuations during April-May, and above average rates during October (**Figure 3**). The highest number of captures (88 individuals) was recorded on October 9, 2025. Bushtit (*Psaltriparus minimus*) was the most captured species on that day.

Table 2. Capture statistics by net at Buttertubs West Marsh during 2025.

Net Number	Number Banded	Number Recaptured	Total Number Captured	Net Hours	Capture Rate (Birds / 100 Net hours)
1	62	30	92	205	44.9
2	39	22	61	206	29.6
3	41	17	58	206	28.1
4	44	26	70	206	34.0
5	34	13	47	205	23.0
6	44	19	63	206	30.6
7	45	27	72	209	34.4
8	102	26	128	209	61.2
9	63	16	79	208	37.9
10	60	23	83	202	41.1
11	24	20	44	201	21.9
12	35	18	53	201	26.4
13	27	13	40	198	20.2
14	27	20	47	200	23.5
15	28	23	51	198	25.8
R1	147	33	180	209	86.1
R2	186	38	224	209	107.1
R3	80	20	100	209	47.8
R4	56	18	74	209	35.4
R5	40	18	58	209	27.7
Totals	**1,184**	**440**	**1,624**	**4,107**	**39.5**

The capture rate of mist nets varied across the project site (**Table 2**). Overall, capture rate was the highest for net R2 located in the riparian habitat. This pattern was consistent with previous years.

Spotted Towhee was the most captured species and represented 8.1% of all birds caught during 2025 (**Table 3**). Song Sparrow and Common Yellowthroat were the second and third most common species, and they accounted for 8.1% and 7.5% of all birds caught, respectively. Most species listed in **Table 3** are local breeders at Buttertubs Marsh, except for Lincoln's Sparrow and Ruby-crowned Kinglet. **Tables A.1** and **A.2** in Appendix provide a complete summary of all species captured during 2025. Photos of some of the birds captured in 2025 are shown in **Photos B.1** in Appendix.

Table 3. Fifteen most common species captured in mist nets at Buttertubs West Marsh during 2025.

Common Name	Number Banded	Number Recaptured	Total Number Captured
Spotted Towhee	84	48	132
Song Sparrow	62	69	131
Common Yellowthroat	63	58	121
American Robin	93	22	115
Bushtit	64	29	93
Chestnut-backed Chickadee	43	49	92
Orange-crowned Warbler	71	8	79
Lincoln's Sparrow	69	4	73
Bewick's Wren	31	39	70
Swainson's Thrush	34	31	65
Savannah Sparrow	50	2	52
Ruby-crowned Kinglet	45	1	46
Purple Finch	38	7	45
Wilson's Warbler	45		45
Yellow Warbler	34	11	45

There were changes in the rankings for the top 10 species captured during 2025 (**Table 4**). Common Yellowthroat was no longer the most-captured species, while Spotted Towhee claimed top rank as the most commonly caught species. The remaining top 10 species ranked within the range of the previous 5 years. No new species were captured at Buttertubs West Marsh in 2025. A Swamp Sparrow (*Melospiza georgiana*) was captured on the last day of the season (October 30), and this was the third individual captured for the site and the first since 2018. The total number of species captured at Buttertubs West Marsh since the beginning of the project in 2013 remains at 81 species.

Table 4. Number captured and rank (in parentheses) of the ten species most captured in mist nets at Buttertubs West Marsh during 2021-2025.

Common Name	2021	2022	2023	2024	2025
Spotted Towhee	65 (10)	84 (7)	132 (4)	83 (6)	132 (1)
Song Sparrow	153 (1)	142 (3)	142 (3)	87 (5)	131 (2)
Common Yellowthroat	147 (2)	177 (2)	200 (1)	141 (1)	121 (3)
American Robin	90 (6)	125 (4)	148 (2)	100 (4)	115 (4)
Bushtit	63 (11)	67 (10)	113 (5)	115 (2)	93 (5)
Chestnut-backed Chickadee	76 (9)	91 (5)	83 (6)	76 (8)	92 (6)
Orange-crowned Warbler	101 (4)	81 (8)	75 (8)	108 (3)	79 (7)
Lincoln's Sparrow	109 (3)	199 (1)	47 (14)	75 (9)	73 (8)
Bewick's Wren	80 (8)	55 (13)	64 (9)	51 (11)	70 (9)
Swainson's Thrush	53 (12)	54 (14)	81 (7)	72 (10)	65 (10)

The age composition of birds captured varied between seasons and reflected the recruitment of young birds (hatch-year birds) to the population and changes in age assignment associated with the annual moult that occurs after the breeding season (**Table 5**). Second-year birds (hatched in 2025) were the dominant age group between March and June, while hatch-year birds (hatched in 2025) were the dominant age group between July and October. Overall, 46.3% of birds banded were birds hatched in 2025. This percentage was similar to previous years.

Birds store fat as a readily accessible source of energy, especially during migration. As expected, the proportion of birds that displayed any visible fat (i.e., fat score >0) was highest during spring (April-May) and fall migration (September-October) (**Table 6**). Overall, most birds banded (75.8%) did not display any visible fat (fat score = 0).

The 440 recapture events recorded in 2025 involved 289 banded birds (**Table 7**), of which 40 individuals were banded in 2013-2022, and 35, 75, and 139 individuals were originally banded in 2023, 2024 and 2025, respectively. Overall, 0.2% of individuals banded in 2013-2022 were recaptured in 2025, 2.1% of individuals banded in 2023 were recaptured in 2025, 5.4% of individuals banded in 2024 were recaptured in 2025, and 8.9% of individuals banded in 2025 were recaptured in 2025. These percentages provide crude estimates of between- and within-year survival and site fidelity, although they do not account for individuals which may have been at the site in 2025 but were not recaptured.

Table 5. Age structure of birds banded at Buttertubs West Marsh during 2025.

Month	Hatch Year (HY)	Second Year (SY)	After Hatch Year (AHY)	After Second Year (ASY)	Other Ages	Total
March	0	24	3	5	0	32
April	0	90	12	75	1	178
May	6	132	20	73	1	232
June	74	26	19	9	2	130
July	86	7	9	4	2	108
August	121	2	14	0	0	137
September	135	0	33	0	3	171
October	127	0	39	0	30	196
TOTAL	549	281	149	166	39	1,184

Table 6. Fat score of birds banded at Buttertubs West Marsh during 2025.

Month	0	1-2	≥3	Total
March	17	12	3	32
April	111	27	38	176
May	129	46	49	224
June	100	28	2	130
July	93	10	0	103
August	123	10	0	133
September	145	18	4	167
October	143	25	3	171
TOTAL	861	176	99	1,136

Most recapture events involved birds that were recaptured only once during 2025. However, 155 individuals have been recaptured more than once since the beginning of the project, and at least 34 individuals were recaptured 5 or more times. Some of these frequently recaptured and older individuals are listed in **Table 8**. The oldest recaptured bird was a Spotted Towhee which was at least 11 years old when last recaptured, which equals the current North American longevity record for the species.

Table 7. Number and percentage of individuals recaptured in 2025 which were originally banded in 2022 or before, 2023, 2024 or 2025 for ten most commonly recaptured species.

Species	Banded in 2022 or before		Banded in 2023		Banded in 2024		Banded in 2025	
	No.	%	No.	%	No.	%	No.	%
Song Sparrow	11	1.0	2	2.7	6	13.3	18	28.6
Common Yellowthroat	1	0.1	1	0.8	7	8.2	10	15.9
Chestnut-backed Chickadee	6	1.0	4	7.4	13	33.3	15	24.2
Spotted Towhee	3	0.4	3	3.4	8	14.0	15	17.0
Bewick's Wren	2	0.5	2	6.9	2	8.3	15	42.9
Swainson's Thrush	1	0.3	6	13.3	2	5.3	6	17.1
Bushtit	1	0.1	3	4.2	8	10.5	12	18.8
American Robin	5	0.5	3	2.5	2	2.4	5	5.3
Yellow Warbler	2	0.3	1	2.2	4	7.0	2	5.9
Orange-crowned Warbler	0	0.0	2	3.0	0	0.0	5	7.0
All Species	40	0.2	35	2.1	75	5.4	139	8.9

Table 8. List of selected individuals recaptured in 2025, which were originally banded at Buttertubs West Marsh at least 6 years earlier.

Band Number	Species	Sex	Number of Times Recaptured Since Banded	Date Banded	Date of Last Recapture	Estimated Age
2981-09717	DOWO	Male	13	Jun. 21, 2022	May 5, 2025	4
2561-03841	SPTO	Male	2	May 6, 2015	Jun. 18, 2025	11
2960-32552	COYE	Male	14	Apr. 14, 2025	Sep. 25, 2025	≥2
1352-03834	AMRO	Male	9	Jun. 14, 2017	May 16, 2025	8
2981-32298	SWTH	Male	17	Jun. 24, 2023	Jun. 18, 2025	≥3
2771-59132	SOSP	Male	17	Aug. 25, 2018	May 14, 2025	7
2960-07283	YEWA	Male	12	May 11, 2022	May 21, 2025	5
2200-70046	ORJU	Female	3	Oct. 7, 2019	Oct. 6, 2025	6
2531-27795	FOSP	Unknown	2	Sep. 20, 2018	Oct. 30, 2025	7

2.2.2. Overall Species Presence / Absence

Banding totals (number of birds captured) and incidental observations were compiled in the online eBird database (ebird.org). eBird is a public database of bird observations providing scientists, researchers, and amateur naturalists with real-time data about bird distribution and abundance. The

eBird database can be queried to obtain detailed accounts of species presence / absence and abundance for a given site.

A total of 90 species were observed at Buttertubs West Marsh during 2025 (**Table A.3** in Appendix). No new species was observed in 2025. A total of 143 species have been observed at Buttertubs West Marsh since the beginning of this project in 2013.

3. Swallow Nest Box Monitoring

3.1. Methods

Thirty nest boxes were available and monitored for use by swallow species in 2025 (**Figure 4**). Each nest box was installed approximately 1.5 m above ground and secured to a 2.4-m length of studded T-post. For each nest box, one of the side walls could be opened to allow for examination of its content. Nest boxes are cleaned out each year after the nesting season.

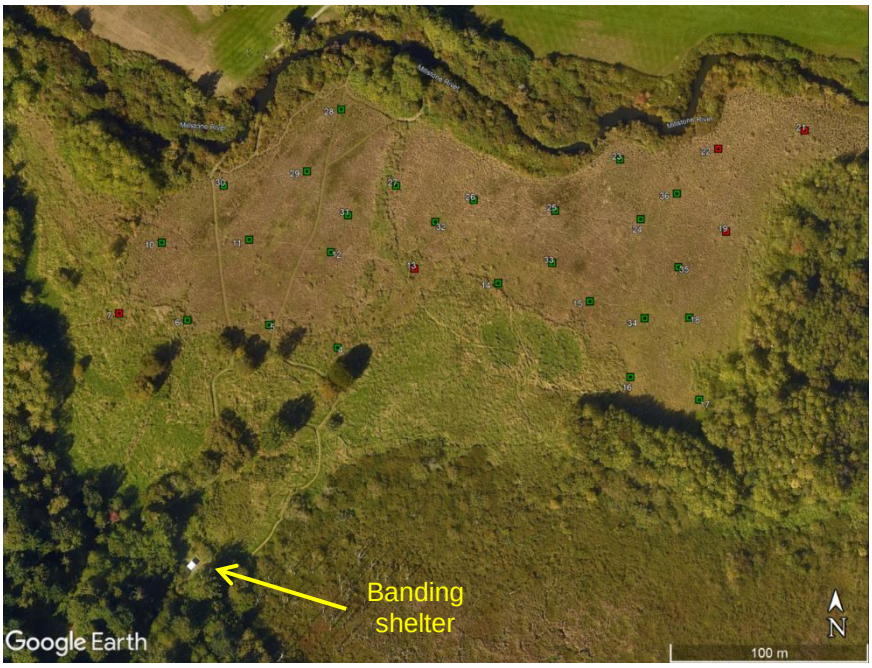

Figure 4. Locations of the 30 swallow nest boxes at Buttertubs West Marsh during 2025. Green and red squares indicate whether eggs were deposited in the nest box or not, respectively.

Nest box monitoring followed the procedures outlined in the VIU Swallow Nest Box Monitoring Manual (Demers, 2024b). Nest boxes were monitored every 3-5 days between April 20 and August 5, 2025. Nest boxes were examined for signs of nest building, amount and composition of nesting material, presence and number of eggs, and presence and number of nestlings. Nestlings were banded and weighed when they were approximately 12 days of age. In addition, adult females were captured during the nestling period by setting a trap door in their nest box. Each adult was

identified, banded (if unbanded), assessed for age, sex, fat score and biometrics (wing chord, tail length, weight), and released.

3.2. Results

Twenty-five of the 30 nest boxes were occupied in 2025 and had signs of nest building activities (**Table 9**). Most boxes were occupied by Tree Swallows although one box was occupied by Bewick's Wren (*Thryomanes bewickii*).

Clutch sizes for Tree Swallows ranged from 2-7 eggs with an average of 5.1 eggs per clutch (**Table 10**), which was slightly below average compared to previous years. Three nest boxes were the site of repeated nesting attempts, none of which involved the same female re-nesting in the same nest box. One female successfully re-nested in two different boxes and produced 5 fledglings in the first attempt and 2 fledglings in the second attempt. One female re-nested successfully after a first attempt that failed to fledge any young.

Fortunately, predation by black bear (*Ursus americanus*) was not as prevalent as in 2024, but one nest was lost to bear predation (box no. 23). In this case, the nest box was found partially broken with much of the contents spread on the ground nearby, resulting in the loss of 5 nestlings (4.0% of total).

Twenty-five individual adult females were captured. Only one male was captured in 2025 due to the significantly longer time required to capture males. Of the 25 adult female Tree Swallows captured, 8 individuals had nested at Buttertubs West Marsh in 2024, 4 individuals had nested in 2023, and 3 individuals had nested in 2022. Two females who nested at Buttertubs West Marsh in 2025 were hatched at the same location.

Out of 139 Tree Swallow eggs laid, 124 eggs hatched (hatching success: 89%), 114 nestlings were banded around day 12 (nestling survival to day 12: 89%), and 106 young birds fledged (nestling survival to fledging: 85%) (**Tables 9** and **10**). Fledging success in 2025 was the second highest since 2013. The average fledging rate for the entire nest box colony was 3.9 young per nesting pair.

Table 9. Results of nest box monitoring at Buttertubs West Marsh during 2025. Nest boxes no. 15, 29, and 35 received two clutches (see text). TRES = Tree Swallow, BEWR = Bewick's Wren, DNH = Did not hatch; F = Female; M = Male; N = Nestlings.

Nest Box	Nest Building	Species	Number of Eggs	Complete Clutch Date	Mean Hatch Date	Number Fledged	Individuals Banded / Processed
4	Yes	TRES	5	May 10	May 24	5	F, N
5	Yes	TRES	7	May 24	Jun. 07	2	F, N
6	Yes	TRES	5	May 17	Jun. 01	4	F, N
7	No						
10	Yes	TRES	2	---	DNH	0	
11	Yes	TRES	5	May 10	May 24	5	F, N
12	Yes	TRES	6	May 11	May 25	5	F, N
13	No						
14	Yes	TRES	5	May 19	Jun. 02	3	F, N
15	Yes	TRES TRES	Clutch 1: 6 Clutch 2: 5	May 7 Jun. 20	May 21 Jul. 4	6 5	F, N F, N
16	Yes	TRES	5	May 13	May 27	5	F, N
17	Yes	BEWR	5	Apr. 10	Apr. 24	4	N
18	Yes	TRES	4	Jun. 27	Jul. 11	4	F, N
19	No						
21	No						
22	No						
23	Yes	TRES	5	May 13	May 27	0	F
24	Yes	TRES	6	May 11	May 25	6	F, N
25	Yes	TRES	6	May 10	May 24	6	F, N
26	Yes	TRES	7	May 05	May 19	5	F, N
27	Yes	TRES	6	May 11	May 25	6	F, N
28	Yes	TRES	5	May 13	May 27	5	F, N
29	Yes	TRES TRES	Clutch 1: 6 Clutch 2: 3	May 7 ---	May 21 DNH	6 0	F, N F, N
30	Yes	TRES	6	May 09	May 23	6	F, N
31	Yes	TRES	4	Jun. 19	DNH	0	
32	Yes	TRES	5	May 12	May 26	5	F, N
33	Yes	TRES	4	Jun. 24	Jul. 08	2	F, N
34	Yes	TRES	5	May 12	May 26	0	F, M, N
35	Yes	TRES TRES	Clutch 1: 6 Clutch 2: 5	May 8 Jun. 20	May 22 Jul. 4	5 5	F, N F, N
36	Yes	TRES	5	May 18	Jun. 1	5	F, N
Total			144			110	

Table 10. Summary of Tree Swallow nesting productivity at Buttertubs West Marsh during 2021-2025.

Parameter	2021	2022	2023	2024	2025
Number of boxes	36	36	36	30	30
Number of boxes with eggs (% of boxes with eggs)	27 (75%)	20 (56%)	24 (67%)	25 (83%)	25 (83%)
Number of eggs laid	194	131	138	154	139
Mean clutch size (range)	5.1 (3-7)	5.7 (2-7)	5.3 (3-6)	5.5 (2-7)	5.1 (2-7)
Number of eggs hatched (% eggs hatched)	119 (61%)	116 (89%)	120 (87%)	104 (68%)	124 (89%)
Number of nestlings banded (% nestlings banded)	88 (74%)	115 (99%)	97 (81%)	82 (79%)	114 (92%)
Number fledged (% nestlings fledged)	50 (42%)	102 (88%)	83 (69%)	62 (60%)	106 (85%)
Fledging rate (young per pair)	1.3	4.4	3.2	2.2	3.9

4. Volunteer Effort and Training

As stated above, one of the main objectives of this project is to provide practical educational and training opportunities for Vancouver Island University students and community volunteers. Indeed, this project is only made possible with the participation of many dedicated volunteers. The tasks accomplished by volunteers included, but were not limited to:

- Site preparation and maintenance – vegetation clearing, grass cutting and trimming, footpath maintenance and improvements, net installation and removal, net maintenance.
- Bird monitoring – incidental observations, census.
- Songbird banding – net extraction, bird banding and processing, photography, data scribing, data entry.
- Swallow nest box monitoring – nest box building and installation, monitoring of nest box contents, banding, and processing of nestlings and adults, photography, data scribing.
- Training and public education – training of project volunteers and bird banders, providing public education for guests and visitors.

A total of 52 volunteers dedicated 2,854 hours to this project during 2025 (**Table 11**). Volunteers included students, graduates, and employees of Vancouver Island University, as well as members of the community. Volunteers are recognized by name in the Acknowledgements section of this report.

Table 11. Number of volunteers and hours volunteered for the bird monitoring and banding project at Buttertubs West Marsh during 2025.

Volunteer Grouping	Number of Volunteers	Hours on Project
VIU students	28	1,343
VIU graduates	8	312
VIU employees	1	265
Community volunteers	15	935
TOTAL	52	2,854

Volunteer training was overseen by Dr. Eric Demers, with assistance from many experienced banders. Volunteers received training in bird banding and monitoring activities and contributed to the processing of birds captured as part of this project (**Table 12**).

5. Public Demonstrations and Education

Public demonstrations and education are also main objectives of this project. This is achieved through public presentations about the project, through guided on-site visits by individual guests and groups, and off-site public demonstrations. The following public demonstrations and education events were conducted in 2025:

- Demonstration and training for 27 students (Buttertubs West Marsh, VIU Nanaimo Campus): VIU RMOT 275 - Wildlife Techniques (Sep. 22, 29; Oct. 6, 14).
- Guest lectures for BIOL 202 - Ecology (Mar. 5).
- Demonstration for guests from the Claro Learning Centre (May 14).

Social media plays a large part in public outreach and education of this project. Project news, results and photos are shared on the project website (http://wordpress.viu.ca/viubirdbanding/) and Facebook page (https://www.facebook.com/VIUBandingStation). This allows online followers to not only learn about the project, but to also gain insight on banding procedures, species identification, bird behaviour, and more.

Table 12. Volunteers (by bander code) who participated in the processing of birds captured as part of the bird monitoring and banding project at Buttertubs West Marsh during 2025. The numbers listed include birds processed as part of regular bird banding and swallow nest box monitoring.

Bander Code	Number of Birds Processed		
	Banded	**Recaptures**	**Total**
ACBO	8	1	9
ALBO	36	6	42
ANKE	74	29	103
ARSL	13	4	17
BEWA	174	32	206
BLAW	48	21	69
CHWA	60	19	79
DALA	64	20	84
DELL		2	2
ELHI	21	4	25
EMRI	53	15	68
EMWH	2	1	3
ERDE	33	21	54
GRCA	12	8	20
GRDO	31	12	43
GRLE	56	22	78
GUHA	1		1
GUHO	7	7	14
HEHO	114	33	147
HEVA	13	5	18
HIKI	22	8	30
ISLO	31	11	42
ISVI	32	19	51
JATI	12	2	14
JORO	4	5	9
KEDO	15	5	20
KIPA	11	6	17
LESC	5	5	10
LISU	3	1	4
MACU	4	5	9
MADP	5	1	6
MAHE	6	1	7
MPMB	8	7	15
NOKU	33	8	41
PECU	83	21	104
PHME	13	1	14
RYHA	29	11	40
SADE	19	10	29
SAHA	2		2
SAHU	33	11	44
SASP	13	1	14
SHAN	14	8	22
SHWA	84	36	120
SUKN	8	2	10
TAKI	1		1
TYGI	1		1
ULBU	12	7	19
VISU	5	2	7
TOTAL	**1,328**	**456**	**1,784**

6. Acknowledgements

This project would not be possible without a dedicated group of volunteers, contributors, and partners (any omission is unintended): A. Boudreau, A. Bozievich, M. Bromberg, R. Bucksteg-Neuhoff, R. Cairns, G. Campagnolo, J. Clark, M. Curtis, P. Curtis, E. Demers, S. Detillieux, G. Dodd, K. Dodds, M. Du Plessis, E. Eustis, T. Gill, S. Hann, R. Hardisty, G. Hartmann, M. Hellicar, E. Hillbrecht, G. Hodne, H. Holmes, S. Hunt, A. Kennedy, H. Kimura, T. King, S. Knoerr, N. Kumada, D. Lacasse, B. Lawson, G. Le, D. Lloyd, I. Loberiza, M. Matsuo, P. Mercier, K. Parno, E. Richardson, J. Robinson, L. Schaeffer, S. Simard-Provencal, A. Slack, L. Surry, V. Surry, J. Till, R. Townsley, H. Van Vliet, I. Vilchis, B. Walton, S. Wang, C. Watts, E. Wharin, J. Wickstrom, and R Wiwchar.

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8. Appendix

Table A.1. List of all species captured in mist nets at Buttertubs West Marsh during 2025. Subspecies or morphs are included in parentheses where applicable.

Common Name	Number banded	Number recaptured	Total number captured
Spotted Towhee	84	48	132
Song Sparrow	62	69	131
Common Yellowthroat	63	58	121
American Robin	93	22	115
Bushtit	64	29	93
Chestnut-backed Chickadee	43	49	92
Orange-crowned Warbler	71	8	79
Lincoln's Sparrow	69	4	73
Bewick's Wren	31	39	70
Swainson's Thrush	34	31	65
Savannah Sparrow	50	2	52
Ruby-crowned Kinglet	45	1	46
Purple Finch	38	7	45
Wilson's Warbler	45		45
Yellow Warbler	34	11	45
Fox Sparrow	26	7	33
Pine Siskin	29		29
Dark-eyed Junco (Oregon)	27		27
Cedar Waxwing	23	3	26
Tree Swallow	13	12	25
Marsh Wren	13	11	24
House Finch	22		22
Willow Flycatcher	19	2	21
Downy Woodpecker	12	7	19
Red-winged Blackbird	15	3	18
Golden-crowned Kinglet	15	2	17
Golden-crowned Sparrow	17		17
American Goldfinch	14	1	15
Brown Creeper	9	6	15
Chipping Sparrow	13		13
Hermit Thrush	13		13
Anna's Hummingbird	12		12
Pacific Wren	10	2	12
Brown-headed Cowbird	4	5	9
Yellow-rumped Warbler (Myrtle)	9		9
MacGillivray's Warbler	8		8
Warbling Vireo	7		7
White-crowned Sparrow (Puget Sound)	6		6
Pacific-slope Flycatcher	6		6
Steller's Jay	4		4
Red-breasted Sapsucker	3	1	4
Red-shafted Flicker	3		3
Rufous Hummingbird	3		3
Black-headed Grosbeak	3		3
Hutton's Vireo	2		2
Yellow-rumped Warbler (unknown subspecies)	2		2
Varied Thrush	2		2
Barn Swallow	2		2
Wilson's Snipe	2		2
Hairy Woodpecker	1		1
Hammond's Flycatcher	1		1
Red-breasted Nuthatch	1		1
Swamp Sparrow	1		1
Yellow-rumped Warbler (Audubon's)	1		1
TOTAL	**1,199**	**440**	**1,639**

Table A.2. Number of all species captured during each day of mist netting at Buttertubs West Marsh during 2025.

Date	American Goldfinch	American Robin	Anna's Hummingbird	Barn Swallow	Bewick's Wren	Black-headed Grosbeak	Brown Creeper	Brown-headed Cowbird	Bushtit	Cedar Waxwing	Chestnut-backed Chickadee	Chipping Sparrow	Common Yellowthroat	Downy Woodpecker	Fox Sparrow	Golden-crowned Kinglet	Golden-crowned Sparrow	Hairy Woodpecker	Hammond's Flycatcher	Hermit Thrush	House Finch	Hutton's Vireo	Lincoln's Sparrow	MacGillivray's Warbler	Marsh Wren	Orange-crowned Warbler	Oregon Junco	Pacific Wren	Pacific-slope Flycatcher	Pine Siskin	Puget Sound White-crowned	Purple Finch	Red-breasted Nuthatch	Red-breasted Sapsucker	Red-shafted Flicker	Red-winged Blackbird	Ruby-crowned Kinglet	Rufous Hummingbird	Savannah Sparrow	Song Sparrow	Spotted Towhee	Steller's Jay	Swainson's Thrush	Swamp Sparrow	Tree Swallow	Varied Thrush	Warbling Vireo	Willow Flycatcher	Wilson's Warbler	Wilson's Snipe	Yellow Warbler	Yellow-rumped Warbler	TOTAL
Mar. 20							2				5	3						2	1			4							1	2					4		1																10
Mar. 25			2				4			3	11						1	1				4							4	5	1		1	4		7			1													33
Apr. 01							2	1		2	7	1		1				3			1	3							6		1			2	10	2			9		3		2								29
Apr. 09							5			1	4			2				2			6	2		1			2		1	2	5		3	1	26	3			29		10		66								27
Apr. 14	1		2					1			1							1			8	3				4						4		2	1	3	2		1	10	1	7		3	3						37
Apr. 17			1			1	2	1										1			2	7	1	1			2					4		2	2	6		1	3	8	2	9	3		4						46
Apr. 23						1		1								1				5	1	4										2		16	2	1	1	1	3	12		3	20		5	5					57
Apr. 25				1										1		2		4		4		6			2	2		3				1			2		2	1	1	3		7	15		2	2					29
Apr. 30								2	1							2				8		8	3			3		1						1	3		1		1	3	1	1	17		1	1					33
May 02		1				1	1			1								1		4		4	5												3					1		3	3		1						29
May 05				1			2	2		3						1		1		5		4				1		1			1				1			5	1	1	1	3	3		3					49
May 07				1	2	1				5							1	1		2		3				1					1				3				1	3	1	4	1		2					61
May 14				2		1				4						6		1		3		7	1		6	1									2		3			1	1	3	1		1					59
May 16			1			1				2								3		2		2			1		3	1							9		4		2	2		4								26
May 21			2	1		6				13						1	2	6		8			3		3										7		3		1	4	1	9			1					73
May 29				1						2						1				6		2	2		1	1	1								6		4		1	1		11	1		1					44

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Table A.2. (continued)

Date	American Goldfinch	American Robin	Anna' s Hummingbird	Barn Swallow	Bewick' s Wren	Black-headed Grosbeak	Brown Creeper	Brown-headed Cowbird	Bushtit	Cedar Waxwing	Chestnut-backed Chickadee	Chipping Sparrow	Common Yellowthroat	Downy Woodpecker	Fox Sparrow	Golden-crowned Kinglet	Golden-crowned Sparrow	Hairy Woodpecker	Hammond's Flycatcher	Hermit Thrush	House Finch	Hutton's Vireo	Lincoln' s Sparrow	MacGillivray' s Warbler	Marsh Wren	Orange-crowned Warbler	Oregon Junco	Pacific Wren	Pacific-slope Flycatcher	Pine Siskin	Puget Sound White-crowned	Purple Finch	Red-breasted Nuthatch	Red-breasted Sapsucker	Red-shafted Flicker	Red-winged Blackbird	Ruby-crowned Kinglet	Rufous Hummingbird	Savannah Sparrow	Song Sparrow	Spotted Towhee	Steller's Jay	Swainson' s Thrush	Swamp Sparrow	Tree Swallow	Varied Thrush	Warbling Vireo	Willow Flycatcher	Wilson' s Warbler	Wilson's Snipe	Yellow Warbler	Yellow-rumped Warbler	Total
Jun. 04	1	4		1	4					2	1		5		1										1	1	1			1		3		2						3	2		4		2			1			5		45
Jun. 08		4			5	2			1	1	3		2																										3	3		4					3					31
Jun. 11	3	4			6				1	1	3		1													2			1		1								2	2		2					1			1		31
Jun. 18		2	7	1	2				4		6		3					1							1		1		1		3				1		2		3	2		3					1					44
Jun. 30		2			6		1	1	9		2		2												1				20		3							1	2	1		2					2			1		56
Jul. 08	1	6	5		3	1			4	4	1	1	10	1							1				2	1			1		2					1			5	5		5						1		1		62
Jul. 23		2			7				5			1	3	1							2			1	1						2									9	1		3					1	1	2		42
Jul. 30	1				5		2				1	1	4	5							1			1		1													3	1	4		3			1		1		2		43
Aug. 06		2			1							1									1					1													2				1				1		1		11
Aug. 13		1			2		2		6		2	8	8	1							2			1	1	3					3		1	1							2					7			5		56
Aug. 20		2			2				5		2		6	1							4				1		1				1								1	2	1		1					3			2		35
Aug. 27		4					1		1	1	9		8	1							8		3		1	3					1				1				1	3	4		4			3					57
Sep. 04		3									3		5								3		6		2						1								3	3	5		7							1		42
Sep. 11		4			2						1		4										10			2					2								10	7	5					1					48
Sep. 16		4			2		3		5		5		6		1		1						8			1					1								8	3	6		3								57
Sep. 25		7							1		5		2	1	1	1							2			2	3	1			1	1							1	9	14		1							1	4	58
Oct. 02															1	1							1			1													1	2	4											11
Oct. 09	2	1			5		3		24		7				4	3							4		1	2	2	2								13				6	8										1	88
Oct. 16		4			1				1		6				6	2							1				3	3			1					1				8	9	1			1							48
Oct. 21		3			2		1		8		4			1	4	3						1	1		5		8	3							1		6			10	20	1										82
Oct. 30		2							2		3				5	3									1		5	3								2				5	15	2		1		1						50
Total	15	115	12	2	70	3	15	9	93	26	92	13	121	19	33	17	17	1	1	13	22	2	73	8	24	79	27	12	6	29	6	45	1	4	3	18	46	3	52	131	132	4	65	1	25	2	7	21	45	2	45	12	1,639

Table A.3. List of all species observed at Buttertubs West Marsh during 2025 based on a combination of banding totals and incidental observations. Green rectangles indicate that a species was observed during a given time period. The size of the green rectangles represents the proportion of surveys for which a species was detected. Areas in gray checkerboard indicate that no data are available. Data compiled in and extracted from eBird database.

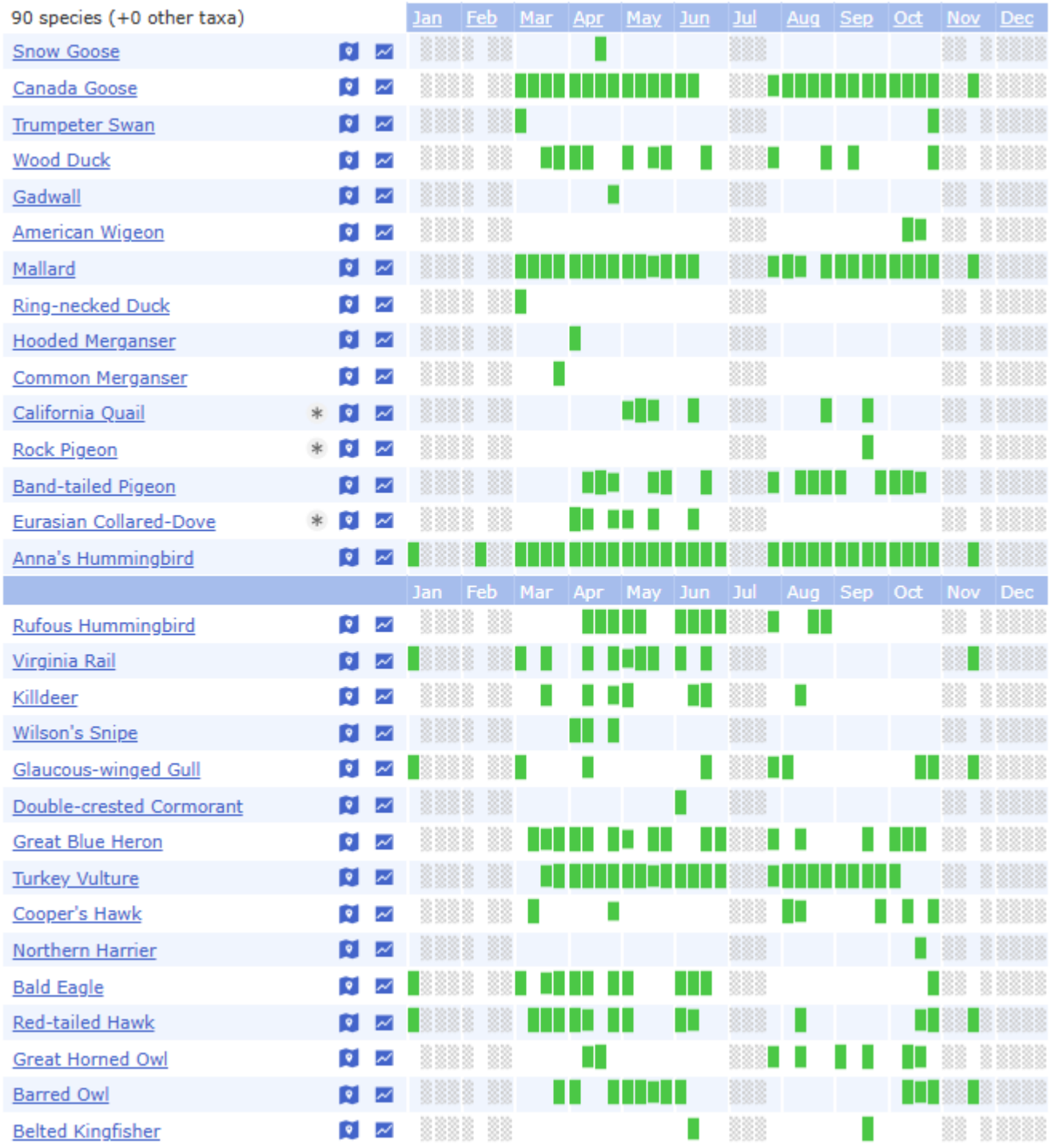

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Table A.3. (continued)

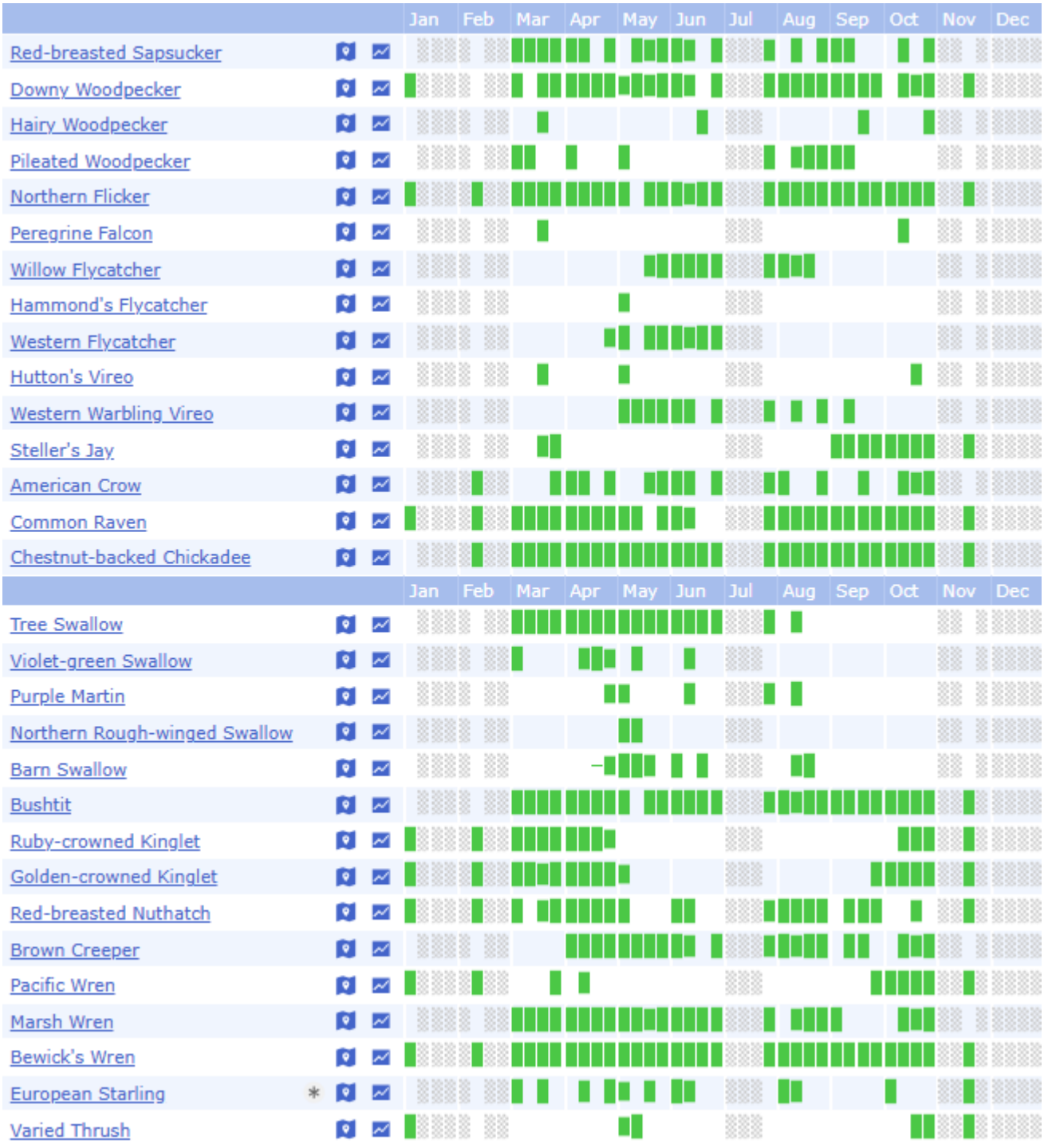

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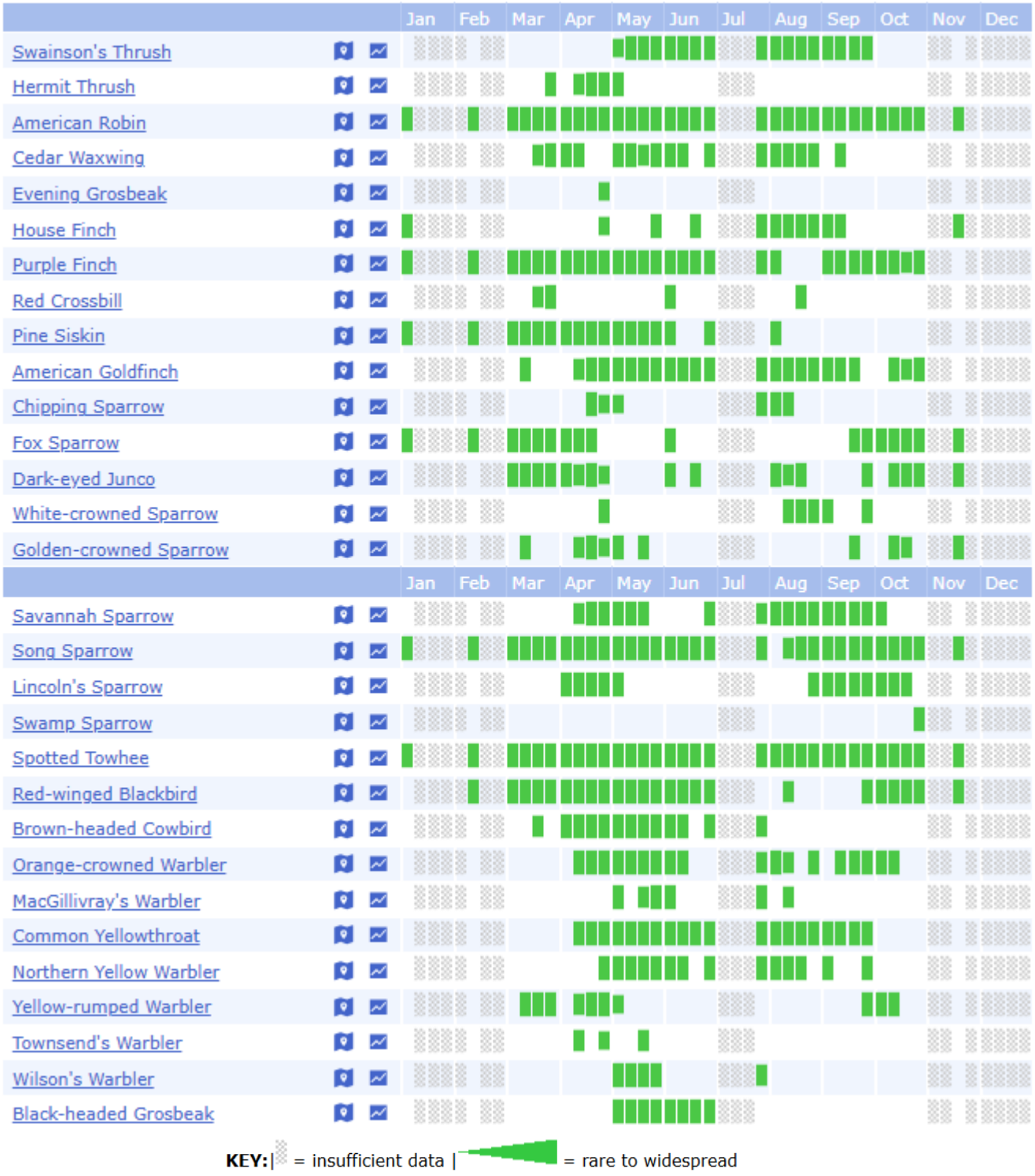
Table A.3. (continued)



Photos B.1. Sample photographs for the VIU Bird Monitoring and Banding Project at Buttertubs West Marsh during 2025. Photos courtesy of P. Curtis, D. Lacasse, and E. Demers.


Fox Sparrow


Yellow-rumped Warbler (Myrtle)


White-crowned Sparrow


Golden-crowned Kinglet

Photos B.1. (continued)


Northern Flicker


Anna's Hummingbird


Chipping Sparrow


Downy Woodpecker

Photos B.1. (continued)