

Migration Monitoring at Rocky Point Bird Observatory

Fall 2024

David Bell



Acknowledgements

Rocky Point Bird Observatory acknowledges with respect Scia'new and T'Sou-ke First Nations on whose territory we work, as well as the many other Lekwungen and WSÁNEĆ peoples of the region. We recognize their leadership, and that of all indigenous peoples, for time immemorial to protect the land and water for the benefit of birds and people alike.

The support from the massive volunteer base is the cornerstone of Rocky Point's fall migration monitoring program. We are very much indebted to the scribes, extractors, census people, net menders, education program aides, bird walk leaders, bird bag washers and the many others that work so diligently to ensure RPBOs effective operation.

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Summary

The 2024 fall migration monitoring season marked the 30th year of operation at the Rocky Point Bird Observatory (RPBO). Except for 2007, volunteers and staff have conducted monitoring of birds migrating through the most southerly point of Vancouver Island each fall since 1994. In 2024, 6870 birds were banded and 1357 recaptured between the two stations, Rocky Point and Pedder Bay.

While monitoring is focused on migratory songbirds, all birds noted passing through the two study sites are recorded. In addition to songbirds, significant numbers of Turkey Vultures (*Cathartes aura*), diurnal raptors, alcids, gulls, waterfowl, and shorebirds are recorded on an annual basis. Considering all birds recorded in the Daily Estimated Totals (DET) at both sites, 468,946 individual birds of 195 species were recorded over the course of the 2024 season.

In 2024, David Bell was the Bander-in-charge, with Evan Lewis, Emma Radziul, and Mara Hanneson joining as our other banders. We also had three interns: Evan Larson and Heather Tocher for July and August, and Gaelin Armstrong for September and October. An incredible 95 volunteers donated 5913 hours of their time and experience between the stations throughout the season.

Table 1. 2024 season totals by station.

	Total Banded	Species Banded	Total Recaptures	Species recaptured	Total birds DET	Total species DET
Rocky Point	4051	64	686	41	401,485	189
Pedder Bay	2819	57	671	38	67,461	129
Total	6870	70	1357	47	468,946	195

*Note on nomenclature: All bird names follow the standard naming system as per the American Ornithological Society Checklist of North and Middle American Birds.

Cover photo: *Western Meadowlark (Sturnella neglecta)* at Rocky Point. Photo: David Bell.

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Part A - Rocky Point

1.0 Introduction

The Rocky Point field station is located at the southernmost tip of Vancouver Island, British Columbia, on Department of National Defense property at Rocky Point. This property contains threatened Garry oak (*Quercus garryana*) meadow habitat, which is among the most diverse terrestrial ecosystems in British Columbia. Detailed site specifics can be found in Melcer and Nightingale (2009) and Murray (2006). A member of the Canadian Migration Monitoring Network (CMMN), RPBO is unique in being the only station located along the Canadian Pacific coast.

Migration monitoring commences on 21 July and ends after 90 days on 18 October annually. This period encompasses the majority of neotropical passerine migration through the southern portion of Vancouver Island along with the latter stages of the nesting season and the arrival of most overwintering species. Monitoring consists of a daily census along a standardized route at a set time, a standardized banding protocol, and the collection of general observations. Details of the monitoring protocol, which follow CMMN guidelines, can be found in RPBO (2022).



Dawn at Rocky Point. Photo: David Bell.

2.0 Banding Results

2.1 Coverage

In keeping with the protocol from previous years, 13 mist nets were operated in their standard locations. Of note, the even-numbered nets were swapped this year from SpiderTech nets to Avinet nets, which have a smaller strand size, while the odd-numbered nets went back to the standard SpiderTech nets. How this affects our capture rates is being studied (Appendix 3). Over the course of the season, Rocky Point had four full closure days for ships in port: 11, 16, and 17 September, and 16 October, and three partial closure days for military activities on Bentinck Island: 1-3 October, resulting in a total of 458.5 lost net hours. These closure days were put to good use, however; see Appendix 4. The controlled burns this year were outside of our study area, resulting in no losses of monitoring hours. Two days were significantly affected by weather (>1/3 net hours lost): 25 September and 4 October. In total, an additional 279.8 net hours were lost over the course of the season due to wind, rain, and other factors. Overall, the total of 6203.7 net hours was the tenth highest since standardization in 2000, and 441.4 above the average for this period (Table 2).

The high number of net hours were appreciated by our volunteers, who put in a phenomenal 2879.9 hours of their time to assist the banders and receive training in handling, banding, extracting, and identifying birds. Factoring in staff hours, the total personnel hours for the season were 4146.7.

Table 2. Coverage and banding totals for Rocky Point by year since standardization.

Year	Coverage period	Days Banded	Total Banded	Species	Net Hours	Birds/100 Net Hours
2024	21 July – 18 October	86	4051	64	6204	65.30
2023	21 July – 18 October	87	4220	63	6474	65.19
2022	21 July – 18 October	90	3790	62	6691	56.64
2021	21 July – 18 October	88	3576	63	6283	56.92
2020	21 July – 18 October	90	3624	63	6493	55.81
2019	21 July – 18 October	90	4378	59	6722	65.13
2018	21 July – 18 October	81	2929	68	5832	50.22
2017	21 July – 18 October	79	2791	61	4978	56.07
2016	21 July – 18 October	81	2761	57	5282	52.27
2015	21 July – 18 October	86	2938	59	5907	49.74
2014	21 July – 18 October	85	2694	65	5830	46.21
2013	21 July – 18 October	82	3189	59	5304	60.12
2012	21 July – 18 October	83	3191	63	5899	54.09
2011	21 July – 18 October	71	2734	59	5121	53.39
2010	21 July – 18 October	79	3193	64	5775	55.29
2009	21 July – 18 October	66	2801	59	4693	67.44
2008	21 July – 18 October	64	3211	56	4604	69.74
2006	21 July – 18 October	78	3068	60	5383	56.99
2005	21 July – 18 October	88	4615	58	6377	72.43
2004	21 July – 18 October	90	4001	57	6286	63.65
2003	20 July – 18 October	91	3716	61	6689	55.55
2002	20 July – 21 October	90	3153	56	6501	48.50
2001	23 July – 7 October	75	2576	64	4296	59.96
2000	21 July – 21 October	90	2723	57	5113	53.26
Average 2000-2023		83	3299	61	5762	57.59

2.2 Banding Totals

With the high number of net hours came a higher number of birds, with totals well above the long-term average. A total of 4051 birds were banded, for a ratio of 65.30 birds/100 net hours, the fourth highest total and ratio since standardization in 2000 (Table 2). Average numbers for fall monitoring since standardization are 3299 birds banded and a ratio of 57.59 birds/100 net hours.

Of the 4051 new birds banded, the top five most common species were Ruby-crowned Kinglet (*Corthylio calendula*) – 364, Western Flycatcher (*Empidonax difficilis*) – 321, White-crowned Sparrow (*Zonotrichia leucophrys*) - 279, Wilson’s Warbler (*Cardellina pusilla*) – 253, and Orange-crowned Warbler (*Leiothlypis celata*) – 196. For a full account of birds banded see Table 3.

With an above-average year in terms of total numbers of birds in the nets, it is to be expected that several species were caught in well-above average numbers. These included Anna’s (*Calypte anna*) and Rufous (*Selasphorus rufus*) hummingbirds, Cooper’s Hawk (*Astur cooperii*), Hairy Woodpecker (*Dryobates villosus*), Northern Flicker (*Colaptes auratus*), Olive-sided (*Contopus cooperi*) and Willow (*Empidonax traillii*) flycatchers, Barn Swallow (*Hirundo rustica*), Northern House Wren (*Troglodytes aedon*), Cedar Waxwing (*Bombycilla cedrorum*), Purple Finch (*Haemorhous purpureus*), Pine Siskin (*Spinus pinus*), and Western Tanager (*Piranga ludoviciana*). Overall, hummingbirds, raptors, woodpeckers, flycatchers, bushtits, kinglets, nuthatches, finches, tanagers, and grosbeaks had an above-average year in 2024, with a few exceptions.

Species that were significantly below average included Hutton’s Vireo (*Vireo huttoni*), Varied Thrush (*Ixoreus naevius*), White-throated Sparrow (*Zonotrichia albicollis*), and Townsend’s Warbler (*Setophaga townsendi*). Additionally, Steller’s Jay (*Cyanocitta stelleri*, average 17.2 per year, caught in 21 of the last 23 years) was notable for its absence from the nets. Overall, chickadees, wrens, sparrows, and blackbirds were below average, with a few exceptions.



Pine Siskins were caught in record numbers this year at Rocky Point. Photo: David Bell.

Table 3. Number of individuals banded at Rocky Point in 2024 compared with average annual catch. Species in bold represent first banding records for the site, totals with an asterisk are record highs.

Species	2024	Average (2000-2023)	% of Average
Anna's Hummingbird	4	1.2	340.7%
Rufous Hummingbird	46*	10.8	424.9%
Least Sandpiper	3	n/a	1 st -3 rd banding records
Sharp-shinned Hawk	6	3.9	155.1%
Cooper's Hawk	2*	0.6	328.6%
Barred Owl	3	1.8	164.3%
Northern Saw-whet Owl	2	1.6	124.3%
Downy Woodpecker	4	2.7	146.0%
Hairy Woodpecker	2	1.0	200.0%
Northern Flicker (Red-shafted)	4	1.8	219.0%
Northern Flicker (intergrade)	2	0.4	460.0%
Merlin	1	n/a	2 nd banding record
Olive-sided Flycatcher	5*	0.8	638.9%
Western Wood-Pewee	2	n/a	12 th -13 th banding records
Willow Flycatcher	167*	62.5	267.1%
"Traill's" Flycatcher	1	4.3	23.5%
Hammond's Flycatcher	14	20.6	67.9%
Western Flycatcher	321	271.3	118.3%
Hutton's Vireo	3	5.0	60.0%
Cassin's Vireo	2	1.1	176.9%
Warbling Vireo	20	18.1	110.3%
Chestnut-backed Chickadee	55	60.3	91.2%
Violet-green Swallow	2	1.2	164.3%
Barn Swallow	5	0.9	575.0%
Bushtit	44	23.8	184.7%
Ruby-crowned Kinglet	364	335.7	108.4%
Golden-crowned Kinglet	114	100.5	113.4%
Red-breasted Nuthatch	13	6.6	196.7%
Brown Creeper	18	14.7	122.1%
Northern House Wren	45*	15.8	284.3%
Pacific Wren	121	155.1	78.0%
Marsh Wren	5	6.7	74.2%
Bewick's Wren	36	34.4	104.5%
Varied Thrush	1	5.6	18.0%
Swainson's Thrush	120	88.9	135.0%
Hermit Thrush	89	91.3	97.5%
American Robin	33	22.0	150.3%
Cedar Waxwing	30*	8.3	361.3%
Purple Finch	134*	32.5	412.0%
Pine Siskin	87*	7.5	1163.4%
American Goldfinch	153	78.3	195.3%
Chipping Sparrow	18	14.7	122.5%
Lark Sparrow	1	n/a	1 st banding record
Fox Sparrow	119	152.5	78.0%
Dark-eyed Junco (Slate-colored)	1	n/a	7 th banding record
Dark-eyed Junco (Oregon)	75	69.0	108.6%
White-crowned Sparrow (Gambel's)	3	4.1	73.4%
White-crowned Sparrow (Puget Sound)	276	151.3	182.4%

Species	2024	Average (2000-2023)	% of Average
Song Sparrow	120	136.2	88.1%
Golden-crowned Sparrow	100	128.7	77.7%
White-throated Sparrow	4	7.3	54.8%
Savannah Sparrow	85	70.7	120.2%
Lincoln's Sparrow	178	153.2	116.2%
Spotted Towhee	147	145.8	100.8%
Western Meadowlark	1	n/a	1 st banding record
Red-winged Blackbird	6	6.5	92.0%
Brown-headed Cowbird	8	8.9	90.2%
Black-and-white Warbler	1	n/a	1 st banding record
Orange-crowned Warbler	196	165.5	118.4%
MacGillivray's Warbler	74*	46.8	158.2%
Common Yellowthroat	96	73.9	129.9%
Yellow Warbler	141	144.9	97.3%
Yellow-rumped Warbler (Audubon's)	21	11.6	181.6%
Yellow-rumped Warbler (Myrtle)	18	18.3	98.3%
Yellow-rumped Warbler (Unknown)	3	4.3	69.7%
Black-throated Gray Warbler	5	5.1	97.5%
Townsend's Warbler	2	5.9	34.1%
Wilson's Warbler	253	235.3	107.5%
Western Tanager	12	3.3	363.2%
Black-headed Grosbeak	3	2.1	140.8%
Hybrid Passerine	1	n/a	3 rd banding record
Total	4051	3298.5	122.8%



Cedar Waxwings also had a record year for individuals banded at Rocky Point. Photo: David Bell.

2.3 Recaptures

In addition to the new birds banded, Rocky Point had a total of 686 recaptures of 462 distinct individuals. Of these, 221 were from previous years, including a seven-year-old Spotted Towhee (*Pipilo maculatus*) originally banded in 2017 (Table 4). The number of total recaptures in 2024 and the ratio of distinct to new recaptures were approximately the same as last year, perhaps indicating similar behaviours in stopover timing.

Table 4. Oldest recaptures from Rocky Point in 2024; hatch-years are in yellow, adults in green. Checkmarks indicate recapture of the bird in subsequent years.

Band #	Species	2017	2018	2019	2020	2021	2022	2023	2024	Age
2651-77716	Spotted Towhee	HY	✓		✓				✓	7
2810-74798	Chestnut-backed Chickadee		HY	✓	✓	✓		✓	✓	6
2951-16640	Swainson's Thrush			SY					✓	6
2920-50015	Chestnut-backed Chickadee			HY	✓	✓	✓	✓	✓	5
2721-84595	Purple Finch			HY		✓	✓		✓	5
2951-16761	Song Sparrow			HY	✓	✓	✓		✓	5
2951-18102	Song Sparrow			HY	✓				✓	5

The most recaptured individual was a Song Sparrow (*Melospiza melodia*) caught on six different days. A complete list of all recaptures from 2024, sorted by species, can be found in Table 5.

Table 5. Total recaptures at Rocky Point in 2024 by species.

Species	Total Recaptures	Species	Total Recaptures
Barred Owl	3	Purple Finch	21
Northern Saw-whet Owl	1	Pine Siskin	9
Downy Woodpecker	1	American Goldfinch	5
Northern Flicker	2	Chipping Sparrow	1
Olive-sided Flycatcher	1	Fox Sparrow	34
Willow Flycatcher	13	Dark-eyed Junco	5
Western Flycatcher	2	White-crowned Sparrow	113
Chestnut-backed Chickadee	34	Golden-crowned Sparrow	6
Bushtit	6	White-throated Sparrow	1
Ruby-crowned Kinglet	8	Savannah Sparrow	4
Golden-crowned Kinglet	7	Song Sparrow	73
Red-breasted Nuthatch	1	Lincoln's Sparrow	52
Brown Creeper	3	Spotted Towhee	45
Northern House Wren	23	Red-winged Blackbird	1
Pacific Wren	20	Brown-headed Cowbird	1
Marsh Wren	2	Orange-crowned Warbler	15
Bewick's Wren	37	MacGillivray's Warbler	13
Swainson's Thrush	30	Common Yellowthroat	55
Hermit Thrush	4	Yellow Warbler	7
American Robin	2	Wilson's Warbler	22
Cedar Waxwing	1	Hybrid Passerine	1

2.4 Capture Rate per Mist Net

Net placement is an important part of any mist netting operation, and in a passive migration monitoring setup, encompassing a variety of habitats is important. Nets such as 3, 4, 6, or 7 that are along edge habitats or that bisect narrow tracts of low-medium height vegetation, however, are more likely to provide higher capture rates than those in open areas (Nets 1 and 2), or that have a higher canopy and limited understory (Net 5).

As usual, the best net at Rocky Point in 2024 for new captures was Net 4 with 933; Net 7 reclaimed second spot this year with 454 (Table 6). Net 5 had the lowest number of new captures this year.

Table 6. Capture rates by net at Rocky Point in 2024.

RPBO Net	New captures	Recaptures	Total	% of Total	Species banded
1	394	65	459	9.7%	35
2	168	18	186	3.9%	25
3	326	66	392	8.3%	37
4	933	207	1140	24.1%	45
5	113	26	139	2.9%	30
6	429	41	470	9.9%	37
7	454	58	512	10.8%	37
8	158	38	196	4.1%	31
9	136	21	157	3.3%	33
10	189	34	223	4.7%	31
11	140	35	175	3.7%	31
12	346	44	390	8.2%	36
13	264	29	293	6.2%	30
blank ¹	1	3	4	0.1%	1



Sunrise at Rocky Point. Photo: Evan Lewis.

¹ Net number not recorded in raw data

2.5 Peak Numbers

After a record-setting first day, with 92 new bands (our third-busiest day of the season), capture rates remained well above average through to the end of August, with our earliest-ever 100+ new bird day coming on 23 August (Figure 1). This early push of post-breeding birds led us to surpass 1000 birds banded on the earliest date ever: 12 August, and what is traditionally the slowest part of the season was quite busy. This changed in September, as warm weather and south winds seemed to slow migration, and most of the month was below average in terms of captures, exacerbated by closures during two of the busiest migration days of the season as seen on radar imagery (16 and 17 September). With rain and military activity hampering monitoring efforts, numbers remained mostly below average until the last week of the season, when a surge of migrants led to our latest-ever 100+ new bird day on 15 October. The relatively even spread of birds through the season led to no clear leader for the busiest two-week period, with the periods of 18 September to 1 October and 5 to 18 October each seeing 725 birds banded (25.7% of the season total), and the period of 13 to 26 August seeing 721 birds banded (25.6% of the season total).

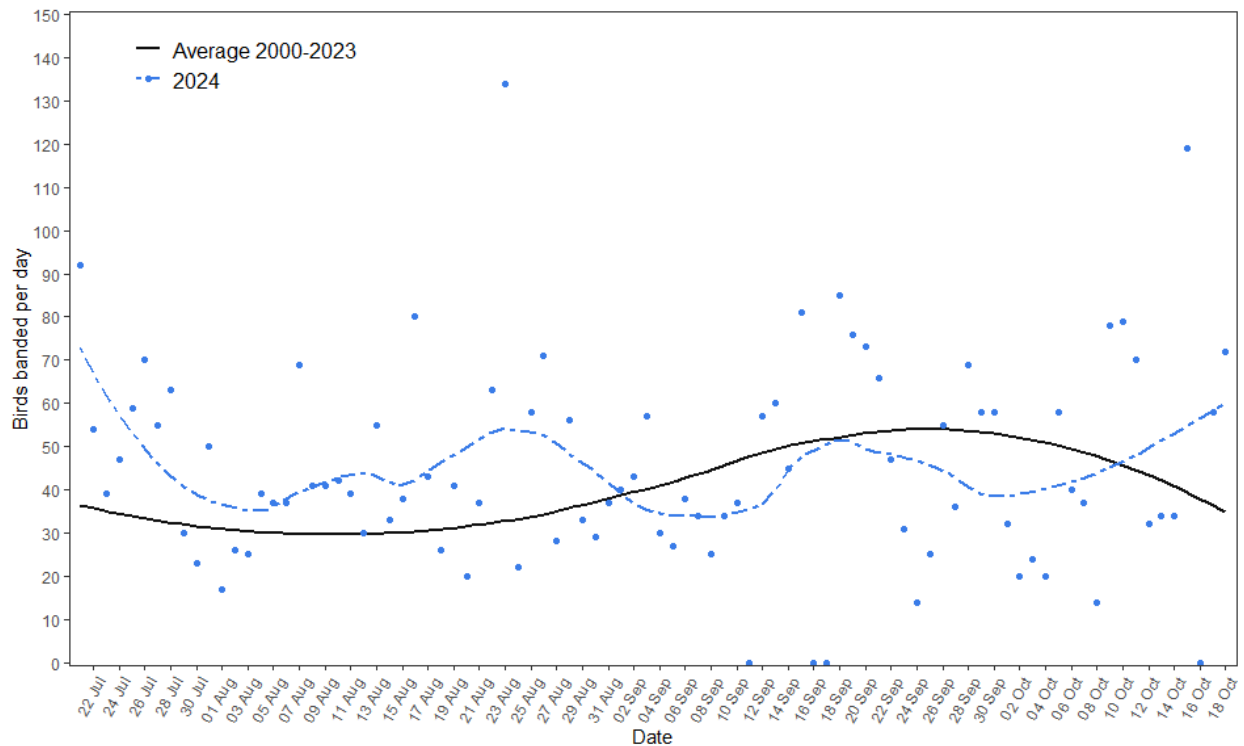


Figure 1. Scatterplot of total number of birds banded per day at Rocky Point in 2024. The dashed blue line represents a smoothed average of birds banded per day in 2024, while the solid, dark gray line represents a smoothed average of birds banded per day across all years. 11, 16, and 17 September, and 16 October represent total closure days, while 1-3 October represent partial closure days for military activities. Additionally, 25 September and 4 October represent days significantly impacted by weather.

3.0 Daily Estimated Totals

In addition to mist netting, Rocky Point staff and volunteers conduct a morning census and keep track of observations of all birds during the sampling period, which are then combined into the Daily Estimated Totals (DET) for each species. This provides a more thorough coverage of migration monitoring than can be achieved by banding alone. Over the course of the season, 401,485 individual birds of 189 species were recorded at Rocky Point. Breaking this down into loosely structured categories, Table 7 illustrates the numbers for six principal bird groups recorded at RPBO.

Table 7. Detections by bird grouping at Rocky Point in 2024.

Bird Grouping	Total Detections
Saltwater species (diving ducks, cormorants, grebes, gulls, alcids, etc.)	291,118
Freshwater waterfowl (dabbling ducks, geese)	8810
Diurnal raptors and vultures	12,125
Shorebirds	7194
Aerial insectivores (swifts and swallows)	4056
Passerines and other landbirds (excluding aerial insectivores)	77,003

The “most abundant species” of 2024 were again topped by a non-species, with 99,053 detections of unidentified gulls; most of these were distant on Race Rocks or in the strait. Of the identified birds, California Gull (*Larus californicus*) came in at number one, with 76,940 detections. Common Murre (*Uria aalge*) – 25,543, Short-tailed Shearwater (*Ardenna tenuirostris*) – 23,476, Glaucous-winged Gull (*Larus glaucescens*) – 17,213, and Turkey Vulture – 11,140 rounded out the top five. Also notable were 24,430 detections of Sooty/Short-tailed Shearwaters (*Ardenna grisea/tenuirostris*); it is probable that most of these were also Short-tailed Shearwaters based on numbers of identified individuals.

Sixteen species were detected on all 86 days of migration monitoring in 2024. These were: Canada Goose (*Branta canadensis*), Glaucous-winged Gull, Great Blue Heron (*Ardea herodias*), Belted Kingfisher (*Megaceryle alcyon*), Downy Woodpecker (*Dryobates pubescens*), Northern Flicker, Chestnut-backed Chickadee (*Poecile rufescens*), Red-breasted Nuthatch (*Sitta canadensis*), Brown Creeper (*Certhia americana*), Bewick’s Wren (*Thryomanes bewickii*), American Robin (*Turdus migratorius*), Purple Finch, Red Crossbill (*Loxia curvirostra*), Song Sparrow, Spotted Towhee, and Common Yellowthroat (*Geothlypis trichas*). A further six were detected on all but one day: California Gull, Turkey Vulture, Hairy Woodpecker, Pacific Wren (*Troglodytes pacificus*), and Pine Siskin. At the other end of the spectrum, 19 species were recorded on just a single day, some of which appear in the highlights section later in this report.

A full breakdown of the DETs can be found in Appendix A.

Part B – Pedder Bay

4.0 Introduction

In 2024, RPBO operated the monitoring site at Pedder Bay for a 13th consecutive season. This station is located on the Pedder Bay Marina property and is situated within the boundary of Rocky Point Road, the RV resort and marina, a riparian area to the north in the vicinity of the Galloping Goose Trail, and estuarine habitat to the south. The area contains a diverse variety of habitats, including mixed woodland, old field, broom-dominated scrub, riparian, and estuarine.

The CMMN monitoring protocol is followed at Pedder Bay, and the monitoring period is identical to that of Rocky Point as stated above.

5.0 Banding Results

5.1 Coverage

With only the weather influencing operations at Pedder Bay, coverage was somewhat better than at Rocky Point. Over the course of the season, no full days were lost to weather, however two days (24 August and 4 October) were significantly affected by wind and/or rain (>1/3 net hours lost). In total, 126.3 net hours were lost due to weather and other factors.

In keeping with past seasons, 15 mist nets were operated in their standard locations. In total, 7973.7 net hours accounted for the fifth-highest season total since Pedder Bay began operations, and the third-highest excluding the canopy net, which was only in operation for 2015 and 2016 (Table 8).

Over the 90 days of operation, volunteers contributed 3070.0 hours of their time; factoring in staff hours, the total personnel hours for Pedder Bay in 2024 came to 4235.4.

Table 8. Coverage and banding totals for Pedder Bay by year since inception. Asterisks indicate years in which the canopy net was used, accounting for the higher number of net hours.

Year	Coverage period	Days Banded	Total Banded	Species	Net Hours	Birds/100 Net Hours
2024	21 July – 18 October	90	2819	57	7974	35.35
2023	21 July – 18 October	90	3163	62	8006	39.51
2022	21 July – 18 October	90	3928	54	7999	49.10
2021	21 July – 18 October	89	2987	60	7832	38.14
2020	21 July – 18 October	90	3257	57	7623	42.73
2019	21 July – 18 October	90	3040	61	7872	38.62
2018	21 July – 18 October	90	2776	58	7833	35.44
2017	21 July – 18 October	88	3558	58	7390	48.14
2016	21 July – 18 October	86	2927	55	7152	40.93
2015	21 July – 18 October	89	3073	63	8218*	37.39
2014	21 July – 18 October	89	3074	61	8274*	37.15
2013	21 July – 18 October	87	3311	56	7673	43.15
2012	21 July – 18 October	87	2702	57	7621	35.45
Average 2012-2023		89	3150	59	7791	40.48

5.2 Banding Totals

As with the Rocky Point station, the total number of birds banded was down this year compared to last, albeit by a greater margin, with 2819 new bands, the second-lowest total in 13 years of monitoring. The birds per net hour ratio was also down, with 35.35 birds per 100 net hours representing the lowest-ever total (Table 8). Average numbers for fall monitoring are 3150 new bands and a ratio of 40.48 birds per 100 net hours. The top five species banded were: Dark-eyed Junco (*Junco hyemalis*) – 223, Fox Sparrow (*Passerella iliaca*) – 213, Ruby-crowned Kinglet – 194, Hermit Thrush (*Catharus guttatus*) – 167, and Swainson’s Thrush (*Catharus ustulatus*) – 161. For a full account of birds banded, see Table 9.

Despite the below-average year for birds banded, several species were caught in well above-average numbers, including Purple Finch, Pine Siskin, American Goldfinch (*Spinus tristis*), and Brown-headed Cowbird (*Molothrus ater*). Overall, flycatchers, kinglets, and finches were above average in 2024, with a few exceptions.

As expected in a low year, several species were caught in well below-average numbers this year, including Warbling Vireo (*Vireo gilvus* – new record low), Red-breasted Nuthatch, Varied Thrush, Cedar Waxwing (new record low), House Finch (*Haemorhous mexicanus*), Golden-crowned Sparrow (*Zonotrichia atricapilla* – new record low), Savannah Sparrow (*Passerculus sandwichensis* – new record low), and Black-headed Grosbeak (*Pheucticus melanocephalus*). In addition, Cooper’s Hawk (average 1.4 per year, caught in 10 of the past 12 years), Hutton’s Vireo (average 3.2 per year, caught in 10 of the past 12 years), and Steller’s Jay (average 6.0 per year, caught in 10 of the past 12 years) were notable for their absence from the nets. Overall, raptors, woodpeckers, vireos, chickadees, nuthatches, creepers, thrushes, sparrows, and warblers were below average this year, with a few exceptions.



*Purple Finch was the only species to be caught in record numbers this year at Pedder Bay.
Photo: David Bell.*

Table 9. Number of individuals banded at Pedder Bay in 2024 compared with average annual catch. Species in bold represent first banding records for the site, totals with an asterisk are record highs.

Species	2024	Average (2012-2023)	% of Average
Anna's Hummingbird	41	30.9	106.7%
Rufous Hummingbird	39	39.6	98.5%
Sharp-shinned Hawk	1	1.2	85.7%
Belted Kingfisher	1	1.5	66.7%
Red-breasted Sapsucker	6	6.5	92.3%
Downy Woodpecker	6	4.4	135.8%
Hairy Woodpecker	2	3.0	66.7%
Pileated Woodpecker	1	n/a	4 th banding record
Northern Flicker (Red-shafted)	3	4.5	66.7%
Northern Flicker (Intergrade)	1	1.2	85.7%
Willow Flycatcher	44	37.3	117.9%
Hammond's Flycatcher	19	13.2	144.3%
Western Flycatcher	98	96.0	102.1%
Cassin's Vireo	2	1.8	109.1%
Warbling Vireo	4	14.5	27.6%
Chestnut-backed Chickadee	48	53.5	89.7%
Barn Swallow	1	n/a	8 th banding record
Bushtit	33	33.1	99.7%
Ruby-crowned Kinglet	194	188.3	103.0%
Golden-crowned Kinglet	91	47.7	190.9%
Red-breasted Nuthatch	3	6.3	48.0%
Brown Creeper	7	11.8	59.2%
Northern House Wren	36	21.8	164.9%
Pacific Wren	45	57.0	78.9%
Marsh Wren	1	n/a	5 th banding record
Bewick's Wren	34	32.1	106.0%
Varied Thrush	1	5.6	17.9%
Swainson's Thrush	161	198.5	81.1%
Hermit Thrush	167	173.8	96.1%
American Robin	41	76.9	53.3%
Cedar Waxwing	1	12.6	7.9%
Evening Grosbeak	2	n/a	1 st -2 nd banding records
House Finch	1	6.7	15.0%
Purple Finch	153*	55.9	273.6%
Pine Siskin	19	5.2	367.7%
American Goldfinch	20	8.3	242.4%
Chipping Sparrow	9	16.2	55.7%
Fox Sparrow	213	311.1	68.5%
Dark-eyed Junco (Slate-colored)	1	n/a	5 th banding record
Dark-eyed Junco (Oregon)	222	184.1	120.6%
White-crowned Sparrow (Puget Sound)	149	220.8	67.5%
White-crowned Sparrow (Gambel's)	5	4.2	120.0%
Golden-crowned Sparrow	80	184.5	43.4%
White-throated Sparrow	4	6.7	60.0%
Savannah Sparrow	2	7.2	27.9%
Song Sparrow	123	152.8	80.5%
Lincoln's Sparrow	142	161.0	88.2%
Spotted Towhee	135	153.5	87.9%

Species	2024	Average (2012-2023)	% of Average
Brown-headed Cowbird	5	2.5	200.0%
Orange-crowned Warbler	81	105.3	77.0%
Nashville Warbler	1	n/a	4 th banding record
MacGillivray's Warbler	52	49.7	104.7%
Common Yellowthroat	47	55.1	85.3%
Yellow Warbler	45	47.1	95.6%
Yellow-rumped Warbler (Audubon's)	9	12.4	72.5%
Yellow-rumped Warbler (Myrtle)	7	9.2	76.4%
Yellow-rumped Warbler (Unknown)	1	3.3	30.0%
Black-throated Gray Warbler	3	5.2	58.1%
Townsend's Warbler	8	7.0	114.3%
Wilson's Warbler	137	147.1	93.1%
Western Tanager	16	25.1	63.8%
Black-headed Grosbeak	3	6.1	49.3%
Total	2819	3150	89.5%



Hutton's Vireos were conspicuously absent from the nets at Pedder Bay this year; this is one of the three that were banded at Rocky Point. Photo: David Bell.

5.3 Recaptures

In contrast to previous years, Pedder Bay had a lower number of recaptures than Rocky Point, however the ratio of recaptures to new bands was much higher than at Rocky Point, again suggesting that this site is more suitable as a stopover site for migrating birds. In 2024 there were 671 recaptures of 412 distinct individuals. Of these, 176 were inter-annual recaptures (banded in a previous year). These included a White-crowned Sparrow originally banded in 2018, making it eight years old (Table 10).

Table 10. Oldest recaptures from Pedder Bay in 2024; hatch-years are in yellow, adults in green. Checkmarks indicate recapture of the bird in subsequent years.

Band #	Species	2018	2019	2020	2021	2022	2023	2024	Age
2791-35966	White-crowned Sparrow	HY			✓	✓		✓	6
2920-01623	Orange-crowned Warbler		AHY	✓				✓	6+
2920-01667	Chestnut-backed Chickadee		HY	✓				✓	5
2791-50867	White-crowned Sparrow		HY				✓	✓	5
1372-14223	Spotted Towhee		HY	✓			✓	✓	5

The most recaptured individual was a Spotted Towhee that was caught on 12 different days, followed by another Spotted Towhee that was caught on 11 different days. A complete list of all recaptures from 2024, sorted by species, can be found in Table 11.

Table 11. Total recaptures by species at Pedder Bay in 2024.

Species	Total Recaptures	Species	Total Recaptures
Anna's Hummingbird	3	Hermit Thrush	36
Northern Saw-whet Owl	1	American Robin	2
Red-breasted Sapsucker	2	Purple Finch	45
Hairy Woodpecker	1	American Goldfinch	1
Northern Flicker	1	Chipping Sparrow	1
Willow Flycatcher	5	Fox Sparrow	51
Western Flycatcher	4	Dark-eyed Junco	8
Cassin's Vireo	1	White-crowned Sparrow	27
Chestnut-backed Chickadee	33	Golden-crowned Sparrow	10
Bushtit	36	Song Sparrow	61
Ruby-crowned Kinglet	4	Lincoln's Sparrow	31
Golden-crowned Kinglet	4	Spotted Towhee	94
Brown Creeper	2	Orange-crowned Warbler	16
Northern House Wren	9	MacGillivray's Warbler	15
Pacific Wren	14	Common Yellowthroat	11
Bewick's Wren	27	Yellow-rumped Warbler	1
Varied Thrush	2	Yellow Warbler	1
Swainson's Thrush	90	Wilson's Warbler	16

5.4 Capture Rate per Mist Net

As in previous years, Nets 7, 8, 14, and 15 were the most productive, accounting for 53.7% of new captures. These nets are all located in broom scrub with blackberries or other shrubs nearby. In 2024, Net 8 claimed top spot, with 516 total captures, while Net 15 came second with 415. Nets 1, 4, and 13, all located under tall trees, were once again our least productive nets (Table 12).

Table 12. Capture rate by net at Pedder Bay in 2024.

PEBA Net	New captures	Recaptures	Total	% of Total	Species banded
1	69	21	90	2.6%	25
2	89	35	124	3.6%	25
3	218	58	276	7.9%	33
4	45	27	72	2.1%	18
5	128	57	185	5.3%	25
6	154	64	218	6.2%	28
7	346	59	405	11.6%	34
8	464	52	516	14.8%	39
9	103	27	130	3.7%	26
10	182	50	232	6.6%	28
11	86	46	132	3.8%	20
12	150	38	188	5.4%	27
13	79	13	92	2.6%	25
14	332	81	413	11.8%	33
15	372	43	415	11.9%	36
blank ²	2	0	2	0.1%	2



Pedder Bay had a few spectacular sunrises this year. Photo: David Bell

² Net number not recorded in raw data

5.5 Peak Numbers

Contrary to Rocky Point, the season started off relatively slow at Pedder Bay, with the second-lowest first day total ever of 54 birds kicking off a trend that would last throughout the season (Figure 2). Numbers of new birds remained below average through all of August and September, leading to one of the latest dates to hit 1000 new birds banded (30 August). Numbers finally picked up toward the end of September and surpassed the average in the last two weeks of the season, with the busiest day of the season coming on 15 October, with 79 new bands. This uptick meant that the two-week period from 5 to 18 October was the busiest of the season, with 626 new birds banded (22.2% of the season total).

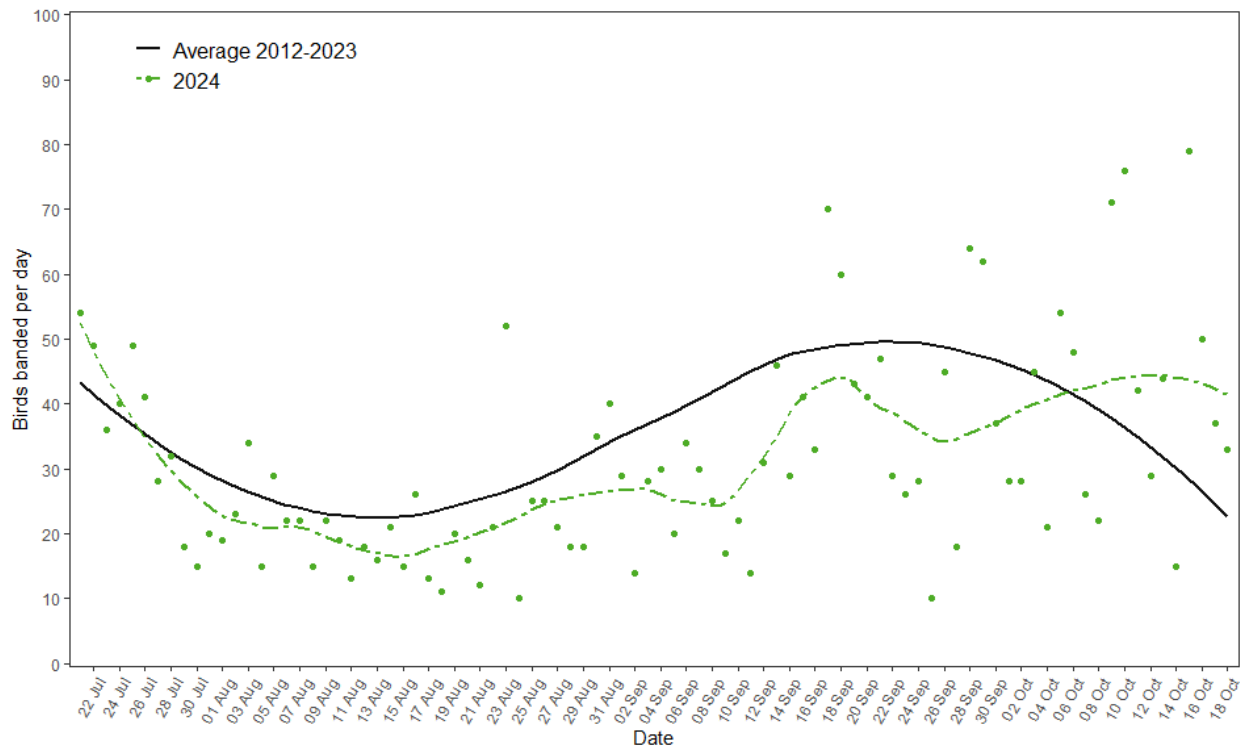


Figure 2. Scatterplot of total number of birds banded per day at Pedder Bay in 2024. The dashed green line represents a smoothed average of birds banded per day in 2024, while the solid, dark gray line represents a smoothed average of birds banded per day across all years. 24 August and 4 October represent days which were significantly impacted by weather this year.

6.0 Daily Estimated Totals

The volume and diversity of birds are much lower at Pedder Bay than at Rocky Point, as it lacks the funnel effect of the point that concentrates birds, along with the shorebird and seabird opportunities that provide additional diversity. Still, it remains a good site for songbird monitoring, and over the course of the season, 67,461 birds of 129 species were recorded. A breakdown of detections by bird grouping can be found in Table 13.

Table 13. Detections by bird grouping at Pedder Bay in 2024.

Bird Grouping	Total Detections
Saltwater species (diving ducks, cormorants, grebes, gulls, alcids, etc.)	2541
Freshwater waterfowl (dabbling ducks, geese)	1634
Diurnal raptors and vultures	2464
Shorebirds	380
Aerial insectivores (swifts and swallows)	2385
Passerines and other landbirds (excluding aerial insectivores)	55,500

The most numerous species recorded at Pedder Bay in 2024 was once again American Robin with 3930 detections. Pine Siskin – 3493, Chestnut-backed Chickadee – 3009, European Starling (*Sturnus vulgaris*) – 2318, and California Quail (*Callipepla californica*) – 2282 made up the rest of the top five.

Sixteen species were recorded on all 90 days that migration monitoring took place. These were California Quail, Anna’s Hummingbird, Belted Kingfisher, Downy Woodpecker, Northern Flicker, Common Raven (*Corvus corax*), Chestnut-backed Chickadee, Red-breasted Nuthatch, Bewick’s Wren, American Robin, House Finch, Purple Finch, Red Crossbill, White-crowned Sparrow, Song Sparrow, and Spotted Towhee. At the other end of the spectrum, 15 species were recorded on just a single day, some of which are detailed in the highlights section below.

A complete list of totals for all species detected can be found in Appendix B.



California Quail was one of our most numerous species at Pedder Bay this year, encountered on all 90 days of migration monitoring. Photo: David Bell.

Part C

7.0 A Comparison of the Two Sites

While geographic and habitat differences make a direct comparison between the two sites difficult, a few basic conclusions can be drawn from the data collected at each site. Consistent with multiple recent publications (e.g., Woodworth et al. 2014), birds seem to favour the inland location (Pedder Bay) over the coastal environment of Rocky Point as a stopover site, as shown by the percentage of recaptures at each site. In 2024, Pedder Bay had 2.2% fewer recaptures than Rocky Point, while banding 35.9% fewer birds. This discrepancy in the ratio of recaptures to new birds has been relatively consistent over the 13 years that Pedder Bay has been in operation.

Comparing the overall age ratios between the sites showed a slight difference in 2024, with 16.6% of known-age birds at Rocky Point and 14.2% at Pedder Bay being adults; usually Pedder Bay has a higher ratio of adult birds than Rocky Point.

Overall capture rates have been consistently higher at Rocky Point than Pedder Bay since the inception of the latter site in 2012, and 2024 was no different. Rocky Point had a capture rate of 65.30 birds/100 net hours, while Pedder Bay had a rate of 35.35 birds/100 net hours. At 54.1% of the capture rate at Rocky Point, Pedder Bay had the lowest ratio recorded, well below the 12-year average of 73.2% of the Rocky Point capture rate.

A brief outline of species considered by the Canadian Wildlife Service as priorities for monitoring that were banded at the two sites in 2024 can be found in Table 14.



Early morning light on a section of the census and netting area at Rocky Point (left) and Pedder Bay (right). Photos: David Bell.

Table 14. Comparison of priority species: total number of birds banded, and number of birds banded per 100 net hours at each site in 2024.

Species	Banded		Banded/100NH		Species	Banded		Banded/100NH	
	RP	PB	RP	PB		RP	PB	RP	PB
Downy Woodpecker	4	6	0.06	0.08	Cedar Waxwing	30	1	0.48	0.01
Hairy Woodpecker	2	2	0.03	0.03	Purple Finch	134	153	2.16	1.92
Northern Flicker	6	4	0.10	0.05	Pine Siskin	87	19	1.40	0.24
Olive-sided Flycatcher	5	0	0.08	0.00	American Goldfinch	0	0	0.00	0.00
Western Wood-Pewee	2	0	0.03	0.00	Chipping Sparrow	18	9	0.29	0.11
Willow Flycatcher	167	44	2.69	0.55	Fox Sparrow	119	213	1.92	2.67
Western Flycatcher	321	98	5.17	1.23	Dark-eyed Junco	76	223	1.23	2.80
Hutton's Vireo	3	0	0.05	0.00	White-crowned Sparrow	279	154	4.50	1.93
Cassin's Vireo	2	2	0.03	0.03	Golden-crowned Sparrow	100	80	1.61	1.00
Warbling Vireo	20	4	0.32	0.05	White-throated Sparrow	4	4	0.06	0.05
Northern Rough-winged Swallow	0	0	0.00	0.00	Savannah Sparrow	85	2	1.37	0.03
Violet-green Swallow	2	0	0.03	0.00	Song Sparrow	120	123	1.93	1.54
Barn Swallow	5	1	0.08	0.01	Lincoln's Sparrow	178	142	2.87	1.78
Red-breasted Nuthatch	13	3	0.21	0.04	Spotted Towhee	147	135	2.37	1.69
Brown Creeper	18	7	0.29	0.09	Brown-headed Cowbird	8	5	0.13	0.06
Northern House Wren	45	36	0.73	0.45	Orange-crowned Warbler	196	81	3.16	1.02
Pacific Wren	121	45	1.95	0.56	Common Yellowthroat	96	47	1.55	0.59
Marsh Wren	5	1	0.08	0.01	Yellow Warbler	141	45	2.27	0.56
Bewick's Wren	36	34	0.58	0.43	Yellow-rumped Warbler	42	17	0.68	0.21
Golden-crowned Kinglet	114	91	1.84	1.14	Black-throated Gray Warbler	5	3	0.08	0.04
Ruby-crowned Kinglet	364	194	5.87	2.43	Townsend's Warbler	2	8	0.03	0.10
Swainson's Thrush	120	161	1.93	2.02	Wilson's Warbler	253	137	4.08	1.72
Hermit Thrush	89	167	1.43	2.09	Western Tanager	12	16	0.19	0.20
American Robin	33	41	0.53	0.51	Black-headed Grosbeak	3	3	0.05	0.04

8.0 Temporal Changes in Diversity and Composition

Early in the season, most of the birds caught were local breeders undergoing their post-fledging (for hatch-years) dispersal, which accounts for high turnover. This high turnover rate is similar to true migration, which in late July is limited to just a few species. The “Puget Sound” subspecies of White-crowned Sparrows (*Zonotrichia leucophrys pugetensis*) are a good example of this, as they were among our most-caught birds during this early period. A few other species that were common in our nets during this dispersal phase included Song Sparrows and Swainson’s Thrushes. Early true migrants included Rufous Hummingbirds, Western Flycatchers and Wilson’s Warblers.

Later in August, warbler and flycatcher movement peaked as post-fledging dispersal gave way to true migratory movements. These species passed through quickly, and by the second week in September, many of the warblers and flycatchers were almost gone, giving way to peak movements of Swainson’s and Hermit thrushes and Lincoln’s Sparrows (*Melospiza lincolni*). Late September through mid-October gave us big sparrow movements, with Fox, Song, and Golden-crowned sparrows, and Spotted Towhees, along with some lingering neotropical migrants. Later in October saw increased movements of Ruby- and Golden-crowned (*Regulus satrapa*) kinglets and Dark-eyed Juncos, although numbers of these species were likely still moving after the monitoring season was over, based on the trends shown in Figures 3 and 4.

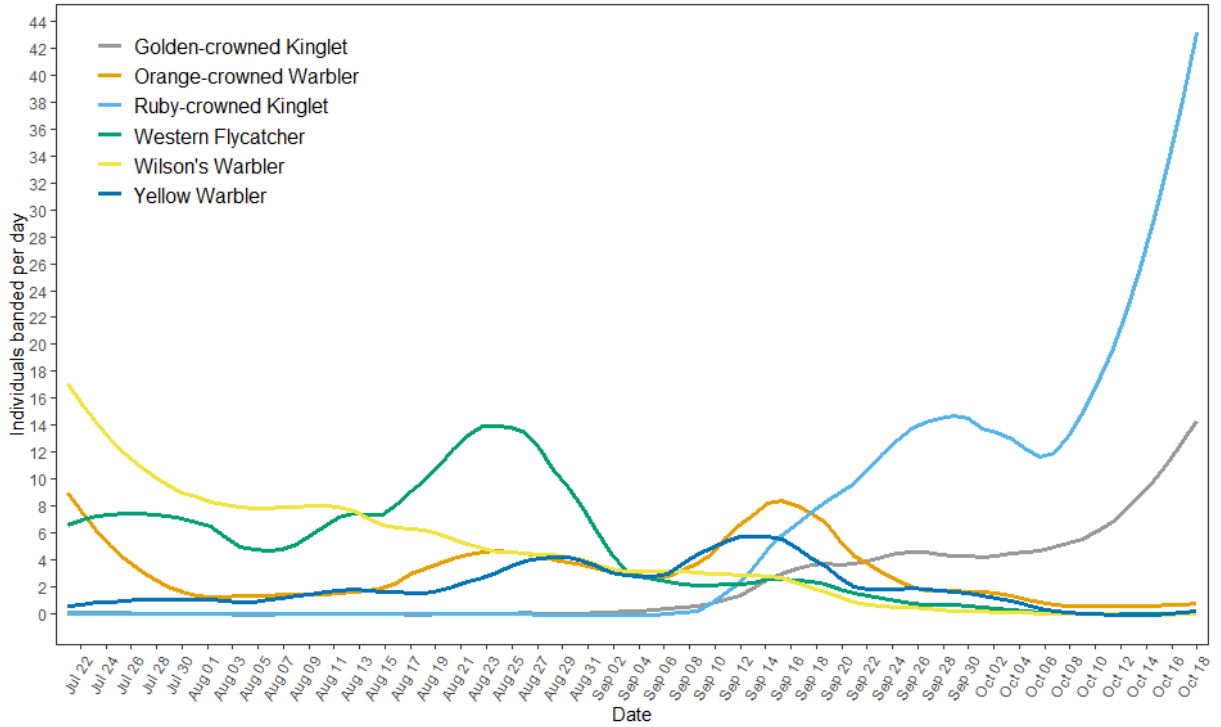


Figure 3. Migratory timing of six common insectivores, represented by smoothed averages of birds banded per day at both sites in 2024.

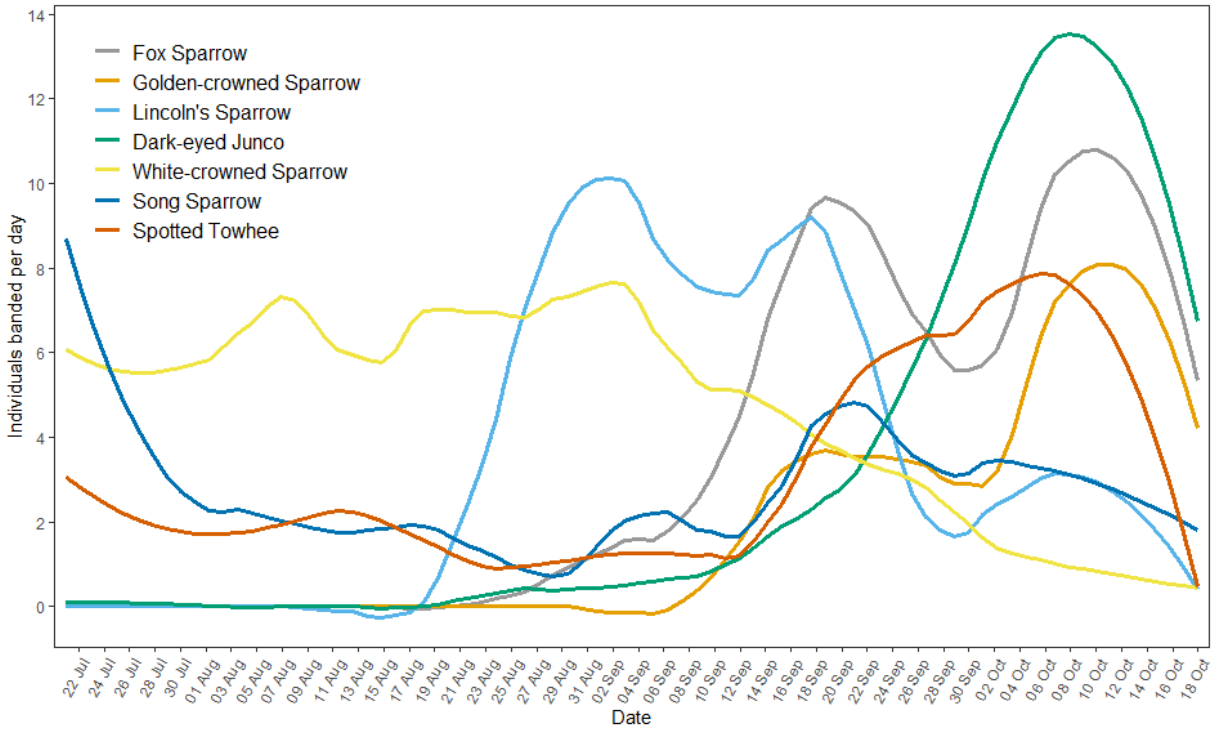


Figure 4. Migratory timing of seven common sparrows, represented by smoothed averages of birds banded per day at both sites in 2024.

9.0 Highlights

Each year at the stations is slightly different, and while 2024 had a lower species diversity than last year, there were still quite a few interesting birds and migration phenomena to keep the volunteers and staff engaged. Following the trend of recent years, the first rarity of the season was a summering eastern warbler, with a female Black-and-white Warbler (*Mniotilta varia*) first spotted on 22 July. The identity of this individual was confirmed on 31 July, and after another sighting on 2 August she was captured and banded on 7 August, and last seen on 21 August, providing a second site record for Rocky Point and the first banding record for the migration program. On 27 July, the migration program got another first (and second) banding record with an adult female and juvenile Evening Grosbeak (*Coccothraustes vespertinus*) captured simultaneously at Pedder Bay. On 29 July, an after-second-year male Merlin (*Falco columbarius*) was captured at Rocky Point, providing a second banding record for the program.



July and early August had several banding highlights; from left to right, Black-and-white Warbler, Evening Grosbeak, Merlin. Photos: David Bell.

While the August doldrums hit hard at Pedder Bay this year, Rocky Point bucked the trend with good numbers of birds moving throughout the month, and several interesting species seen as a result. On 7 August, a Least Sandpiper (*Calidris minutilla*) ended up in a net at Rocky Point, providing a first banding record for RPBO. Two more Least Sandpipers were captured on 22 August, in the same net as the first. The first Baird's Sandpiper (*Calidris bairdii*) of the season was also seen at Rocky Point on 7 August; other individuals of this species were seen there on 8, 14, and 23 August, and on 18 August, one seen at Pedder Bay was a third site record. Pedder Bay's fifth banding record of Marsh Wren (*Cistothorus palustris*) came on 9 August, while two other juveniles were seen near the nets; somewhat of a bizarre sighting and capture as there is no good habitat for them nearby. Another very bizarre sighting came from Rocky Point on 10 August, when an odd dove heard on census made its way to the station, and actually landed inside the station(!), confirming its identity as a White-winged Dove (*Zenaida asiatica*), the second record for the site. On 14 August, the first Bank Swallow (*Riparia riparia*) of the season was sighted at Rocky Point, followed by the first Black Swift (*Cypseloides niger*) there on 15 August. This season seemed good for Black Swifts, with further sightings on 24 and 26 August at Pedder Bay and on 10 different days in September between the two sites. A Franklin's Gull (*Leucophaeus pipixcan*) at Rocky Point on 20 August provided a fifth site record; either another or the same bird was seen there on 28 August as well. A duo of scarce shorebirds was seen on 22 August, with a Pectoral Sandpiper (*Calidris melanotos*) at Pedder Bay (fourth site record, and the only one seen this fall between the stations), and a Semipalmated Sandpiper (*Calidris pusilla*) at Rocky Point. An influx of Sabine's Gulls (*Xema sabini*) also

began on 22 August, with 60 individuals seen heading east past Rocky Point; further sightings of this species were on 23 August (100), 26 August (823), 27 August (85), 28 August (1250), 29 August (45), 30 August (38), 1 September (90), and 9 September (498). These were part of an unprecedented movement of seabirds into the Strait of Juan de Fuca this autumn. On 23 August, a Lazuli Bunting (*Passerina amoena*) was seen at Rocky Point, while Pedder Bay got its fourth banding record of Pileated Woodpecker (*Dryocopus pileatus*) and eighth banding record of Barn Swallow. Another scarce seabird made an appearance on 26 August, when a Pink-footed Shearwater (*Ardenna creatopus*) was seen at Rocky Point. A further 17 Pink-footed Shearwaters were seen there on 28 August, along with a Cassin's Auklet (*Ptychoramphus aleuticus*), three Pomarine Jaegers (*Stercorarius pomarinus*), and the season high count of 1532 Red-necked Phalaropes (*Phalaropus lobatus*).



A trio of rarities at Rocky Point; from left to right: White-winged Dove, Mississippi Kite, Lark Sparrow. Photos: Cathy Reader (left), David Bell (centre), Emma Radziul (right).

September is generally known as 'rarity month' at RPBO, and this season proved yet again why it has earned that moniker. A Cassin's Auklet was seen at Rocky Point on 2 September, while Pedder Bay added a new species to the site list with a Dusky Flycatcher (*Empidonax oberholseri*) on 5 September. Undoubtedly the biggest highlight of the season came at Rocky Point on 6 September, when the season's first two Broad-winged Hawks (*Buteo platypterus*), a Lewis's Woodpecker (*Melanerpes lewis* – seventh site record), and three Arctic Terns (*Sterna paradisaea* – third site record) were overshadowed by a **Mississippi Kite** (*Ictinia mississippiensis*), the first record for RPBO and for the entire province. Remarkably, this same individual (confirmed through unique plumage details) was seen six weeks earlier in Sitka, Alaska, where it was a first state record. Following the first Broad-winged Hawk sighting, individuals were seen almost daily at Rocky Point throughout September, with highs of eight on 18 September and seven on 21 September. The only sighting of this species at Pedder Bay this year came on 24 September. A Lark Sparrow (*Chondestes grammacus*) was banded at Rocky Point on 8 September, for a first banding record for RPBO, and second site record. Another interesting sparrow was banded on 10 September at Rocky Point; this one a hybrid White-throated x Golden-crowned Sparrow. On 12 September, an Upland Sandpiper (*Bartramia longicauda*) flew over Pedder Bay, adding another new species to the site list there. A Bank Swallow was seen at Rocky Point on 14 September, and on 20 September a Nashville Warbler (*Leiothlypis ruficapilla*) was banded at Pedder Bay for a fourth banding record there. After a few weeks' hiatus, the seabird show kicked into high gear again on 22 September,

with a Northern Fulmar (*Fulmarus glacialis*), two Pink-footed Shearwaters, and an estimated 1000 Short-tailed Shearwaters on seawatch at Rocky Point. Numbers of seabirds remained high through the rest of the month, with further sightings of Pink-footed Shearwater on 29 and 30 September, a Fork-tailed Storm-Petrel (*Hydrobates furcatus*), Black-legged Kittiwake (*Rissa tridactyla*), and Common Tern (*Sterna hirundo*) on 30 September, high counts of six Pomarine Jaegers on 27 September and nine on 30 September, and huge numbers of Short-tailed Shearwaters, with a high count of 8000 on 30 September. Non-seabird highlights through the rest of September at Rocky Point included a Blue-winged Teal (*Spatula discors*) on 25 September, the season's only Golden Eagle (*Aquila chrysaetos*) on 29 September, and the seventh banding record of "Slate-colored" Junco (*Junco hyemalis hyemalis/cismontanus*) for the site on 30 September. At Pedder Bay, an American Barn Owl (*Tyto furcata*) heard on 29 September was possibly the first for the migration program there.



Nashville Warbler (left), Short-tailed Shearwater (centre), and White-throated x Golden-crowned Sparrow hybrid (right) Photos left to right: Evan Lewis, David Bell, Evan Lewis.

With migration and the seabird show still going strong, October had a few highlights in store for both stations this year, starting with a Long-billed Dowitcher (*Limnodromus scolopaceus*) at Pedder Bay on 3 October, the sixth record for the site. Sightings of Pomarine Jaegers continued into October, with individuals seen on 4, 9, and 18 October. The first Western Meadowlark of the season at Rocky Point on 9 October became a highlight when it went into a net, providing a first banding record for RPBO. Two very late Black Swifts were seen at Rocky Point on 10 October, while both stations banded a "Red" Fox Sparrow (*Passerella iliaca iliaca/zaboria*) that day as well, an interior subspecies that is rarely seen on the coast. A Pygmy Nuthatch (*Sitta pygmaea*) was seen at Rocky Point on 11 October, for a second site record, while the first Swamp Sparrow and a secondary high count of 6500 Short-tailed Shearwaters were also seen there that day. The last Broad-winged Hawk of the season was seen at Rocky Point on 13 October. On 17 October, the penultimate day of the season, Pedder Bay banded its fifth Slate-colored Junco, while a good flight of ducks provided the fifth site record of Lesser Scaup (*Aythya affinis*) and sixth of Greater Scaup (*Aythya marila*).

10.0 Notes

A. Wild food crop: As usual in recent years, the blackberry (*Rubus spp.*) crop was abundant at Pedder Bay, and numbers of this plant are increasing at Rocky Point. The blackberries started ripening shortly after the season commenced and peaked in late August through mid-September. Ripe berries were present through to the end of the season, providing an important food source for sparrows, thrushes, and other lingering migrants. The arbutus (*Arbutus menziesii*) berry crop was almost non-existent this year, while conifer cone crops were above average, and the Garry oak acorn crop was poor.

B. Invasive plants: In both the front field (near the banding station and Nets 1-5) and the back field (north end of census area) at Rocky Point, the Scotch broom (*Cytisus scoparius*) and gorse (*Ulex europaeus*) are making a comeback after removal efforts by the DND during 2011-2015 and in 2023. Two other invasives, the Canada thistle (*Cirsium arvense*) and coast tarweed (*Madia sativa*) were somewhat more abundant than in the last few years, with large patches scattered throughout the front field.

C. Other wildlife sightings: The Rocky Point property provides excellent habitat for a wide variety of wildlife. In 2024, in addition to the common mammal species, we had sightings of several Coastal Grey Wolves (*Canis lupus crassodon*) and Sea Otters (*Enhydra lutris*). Offshore, transient Orca (*Orcinus orca*) pods were seen regularly, including in Eemdyk Passage. Humpback Whales (*Megaptera novaeangliae*) were also regular throughout the season, becoming more common in October. Rare insect sightings included good numbers of Black Saddlebags (*Tramea lacerata*), a species of migratory dragonfly that has been recorded breeding at this site in the past. European Mantises (*Mantis religiosa*) were again a regular fixture at both sites on sunny days in September and early October.



This Sea Otter swam through Eemdyk Passage one morning. Photo: David Bell.

11.0 Education Program

In 2024, Lead Educator Ashlea Veldhoen was able to organize one school group visit, with a total of 22 participants. The station was once again open for visits from the general public, and over the course of the season, 324 people were able to see live birds up close, learn about the banding process and bird conservation, and enjoy bird walks to see the local avifauna. Additionally, the school group had access to a specimen table where they could handle prepared specimens and learn about bird anatomy.



Evan demonstrating the banding process to a visiting nature club at Pedder Bay. Photo: Mara Hanneson.

12.0 Northern Saw-whet Owl Migration Monitoring Program

A more comprehensive look at results from the Northern Saw-whet Owl (*Aegolius acadicus*) monitoring program can be found in a separate report at <https://rpbo.org/resources/reports-publications/>. The following is a brief summary of the season.

Beginning on 15 September and ending 31 October each year, this program started at Rocky Point in 2002 and at Pedder Bay in 2014. The population of these small owls is cyclical, usually following a four-year pattern in response to small mammal populations. Owl numbers were down slightly from last year, with Rocky Point banding 716 Northern Saw-whet Owls and Pedder Bay banding 536, for a total of 1252, the third-highest combined season total ever. Among the banded birds were two foreign recaptures: one from each of Cobble Hill, BC, and Tatlayoko Lake, BC. Barred Owls (*Strix varia*) were also down slightly from last year, with nine banded at Rocky Point and two at Pedder Bay for a total of 11. Two scarce owls were banded at Rocky Point this year: an American Barn Owl and a Long-eared Owl (*Asio otus*). Six bats were caught in the nets this year, all of them Little Brown Myotis (*Myotis lucifugus*). The owl banders were happy to welcome visitors this year and a total of 525 visitors were able to enjoy close-up views of the owls.



Northern Saw-whet Owl. Photo: Jannaca Chick.

13.0 Recommendations

As the only member of the Canadian Migration Monitoring Network on the Pacific coast, Rocky Point Bird Observatory collects valuable data on the fall migration of western bird species. It is recommended that RPBO continue its migration monitoring program at Rocky Point and Pedder Bay in 2025. Future projects to consider that would complement the current program include an official hawk watch and/or a general visible migration count at Rocky Point, similar to those of other stations in North America and elsewhere (see Appendix 4).

Part of the migration monitoring program involves training volunteers and potential future banders. As part of this, RPBO hired three interns in 2024; two for July and August and one for September and October, giving them an opportunity to hone their skills and learn more advanced techniques and methods for running a station. As in past years with internships, this was a great success in 2024 with all three interns greatly improving their skills in bird banding and identification. It is recommended that this program continue in the future, with a staffing total of four full-time banders and one to two interns. These staffing totals are recommended to ensure sufficient coverage during migration monitoring, and to ensure that enough experienced personnel are on hand to train volunteers and interact with the public.

Over the past few years, the typical ‘winding-down’ of migration in early to mid-October has been less pronounced, with several species still moving through in numbers at the end of the season, and potentially having a significant portion of their numbers missed as a result (Figures 3 and 4). With climate change potentially changing many species’ migration timing and patterns, it is recommended that RPBO conduct an analysis on migration timing of common species at the sites, to see if it is worthwhile extending the season past 18 October. This could provide valuable data on migratory movements of late-season species, and as these data would not interfere with the standard season, they could easily be removed from analyses comparing all years.

During the 2024 migration season, the process to change the nets at Rocky Point from SpiderTech brand to Avinet brand was continued, with the even numbered nets being switched this year. It is recommended that this process continue following the process outlined by the Canadian Migration Monitoring Network (Appendix 3).

A final recommendation is to look through reports from previous years for any unaddressed recommendations that could help RPBO improve its operations.

14.0 References

Bell, D. 2023. Migration Monitoring at the Rocky Point Bird Observatory: Fall 2023. Technical Report. Rocky Point Bird Observatory, Victoria, BC. 40pp.

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Woodworth, B.K., C.M. Francis, and P.D. Taylor. 2014. Inland flights of Red-eyed Vireos *Vireo olivaceus* in relation to survival and habitat in a coastal stopover landscape. *Journal of Avian Biology* 45:387–395.

Appendix 1: Daily Estimated Totals for Rocky Point

Totals are in taxonomic order; total detections do not necessarily equate total individuals. Species in bold represent first site records.

Species	Total detections 2024	Days detected	Max count	Total detections by month			
				Jul.	Aug.	Sep.	Oct.
Snow Goose	20	2	16				20
Greater White-fronted Goose	989	24	460			621	368
Cackling Goose	1800	25	445			1071	729
Canada Goose	3452	86	136	322	1110	1325	695
Unidentified goose	50	1	50				50
Blue-winged Teal	2	1	2			2	
Northern Shoveler	90	7	75		2	80	8
Gadwall	10	2	6			10	
American Wigeon	411	12	300			332	79
Mallard	549	58	80	12	121	280	136
Northern Pintail	617	37	500		8	569	40
Green-winged Teal	690	35	400		35	540	115
Unidentified dabbling duck	130	2	100			130	
Ring-necked Duck	1	1	1				1
Greater Scaup	9	3	6			3	6
Lesser Scaup	5	2	3				5
Harlequin Duck	83	16	15		4	12	67
Surf Scoter	1051	48	157	4	150	451	446
White-winged Scoter	169	23	21		2	61	106
Bufflehead	15	2	12				15
Hooded Merganser	73	19	10		3	31	39
Common Merganser	8	1	8				8
Red-breasted Merganser	9	3	4		4		5
Unidentified duck	19	2	10			19	
California Quail	366	52	35	46	147	125	48
Rock Pigeon	1	1	1				1
Band-tailed Pigeon	5739	79	544	26	554	3703	1456
Eurasian Collared-Dove	23	18	4	4	11	6	2
White-winged Dove	1	1	1		1		
Mourning Dove	4	3	2		1	3	
Common Nighthawk	15	12	2	5	10		
Black Swift	30	11	8		1	27	2
Vaux's Swift	1443	35	250		30	1338	75
Anna's Hummingbird	138	76	6	15	46	43	34
Rufous Hummingbird	121	38	10	50	70	1	
Virginia Rail	65	58	2	3	23	24	15
Sora	13	13	1	2	8	1	2
Sandhill Crane	84	19	35			52	32
Black Oystercatcher	636	83	24	55	167	216	198
Black-bellied Plover	6	6	1	1	1	2	2
Killdeer	353	75	19	8	94	185	66
Semipalmated Plover	22	14	3	3	11	8	
Marbled Godwit	3	3	1		2	1	
Short-billed Dowitcher	4	4	1			3	1
Long-billed Dowitcher	12	9	3	2	3	6	1
Short-billed/Long-billed Dowitcher	4	3	2		1	3	
Wilson's Snipe	38	19	9		1	17	20
Red-necked Phalarope	4633	15	1532		4322	311	

Species	Total detections 2024	Days detected	Max count	Total detections by month			
				Jul.	Aug.	Sep.	Oct.
Red/Red-necked Phalarope	203	2	200		203		
Spotted Sandpiper	12	11	2	1	9	2	
Solitary Sandpiper	3	3	1		3		
Lesser Yellowlegs	6	5	2		2	3	1
Greater Yellowlegs	64	42	5	10	30	20	4
Black Turnstone	174	40	17	9	46	54	65
Surfbird	53	9	22		2		51
Dunlin	6	2	5				6
Baird's Sandpiper	5	4	2		5		
Least Sandpiper	490	53	46	48	408	34	
Western Sandpiper	446	48	84	83	290	70	3
Semipalmated Sandpiper	1	1	1		1		
Unidentified small sandpiper ('peep')	215	21	56	37	138	38	2
Unidentified shorebird	8	2	5		3		5
Parasitic Jaeger	33	16	6		5	19	9
Pomarine Jaeger	27	10	9		3	20	4
Unidentified jaeger	2	2	1			1	1
Rhinoceros Auklet	2723	76	514	70	1209	569	875
Cassin's Auklet	2	2	1		1	1	
Marbled Murrelet	79	23	12		27	10	42
Pigeon Guillemot	478	59	38	70	310	69	29
Common Murre	25543	75	2103	30	4564	11276	9673
Ancient Murrelet	20	3	16			2	18
Unidentified alcid	5	1	5			5	
Black-legged Kittiwake	1	1	1			1	
Sabine's Gull	2989	9	1250		2401	588	
Bonaparte's Gull	117	14	30		3	6	108
Franklin's Gull	2	2	1		2		
Heermann's Gull	555	66	44	1	123	177	254
Short-billed Gull	3192	73	200	7	693	1280	1212
Ring-billed Gull	14	14	1		7	6	1
Western Gull	9	8	2		1	2	6
California Gull	76940	85	7500	1209	26347	33152	16232
Glaucous-winged Gull	17213	86	850	372	3284	7473	6084
Western x Glaucous-winged Gull	440	14	100	3	42	245	150
Iceland Gull	27	12	4			14	13
Unidentified gull	99053	84	10500	1437	24144	51277	22195
Caspian Tern	5	3	2		3	2	
Arctic Tern	3	1	3			3	
Common Tern	1	1	1			1	
Horned Grebe	5	1	5			5	
Red-necked Grebe	35	21	5		7	17	11
Western Grebe	37	9	12			1	36
Red-throated Loon	10	7	3		1	4	5
Pacific Loon	321	35	38		13	103	205
Common Loon	57	31	6		5	25	27
Unidentified loon	2	2	1		1		1
Fork-tailed Storm-Petrel	1	1	1			1	
Northern Fulmar	1	1	1			1	
Pink-footed Shearwater	22	5	17		18	4	
Sooty Shearwater	986	15	500		49	927	10
Short-tailed Shearwater	23476	15	8000			12220	11256
Sooty/Short-tailed Shearwater	24430	24	4697		2	12450	11978
Brandt's Cormorant	8104	66	2511	3	258	952	6891
Pelagic Cormorant	1236	69	168	27	101	361	747

Species	Total detections 2024	Days detected	Max count	Total detections by month			
				Jul.	Aug.	Sep.	Oct.
Double-crested Cormorant	1106	59	102	1	71	404	630
Unidentified cormorant	374	9	221		20	227	127
Great Blue Heron	322	86	7	43	117	101	61
Turkey Vulture	11140	85	1200	85	197	5791	5067
Osprey	8	3	4			8	
Golden Eagle	1	1	1			1	
Sharp-shinned Hawk	212	46	16		9	115	88
Cooper's Hawk	151	59	8	1	21	72	57
Northern Harrier	36	30	3		10	22	4
Bald Eagle	175	76	11	27	72	23	53
Mississippi Kite	1	1	1			1	
Broad-winged Hawk	45	15	8			43	2
Red-tailed Hawk	277	65	32	17	20	129	111
Great Horned Owl	86	58	4	10	28	21	27
Northern Pygmy-Owl	1	1	1		1		
Barred Owl	32	30	2	1	4	18	9
Northern Saw-whet Owl	6	4	3			4	2
Belted Kingfisher	208	86	5	22	74	72	40
Red-breasted Sapsucker	19	14	3	8	3	5	3
Lewis's Woodpecker	1	1	1			1	
Downy Woodpecker	370	86	11	46	150	113	61
Hairy Woodpecker	233	85	6	16	84	79	54
Pileated Woodpecker	119	62	4	8	43	45	23
Northern Flicker	911	86	42	64	211	351	285
Unidentified woodpecker	1	1	1		1		
American Kestrel	19	15	2		6	10	3
Merlin	32	26	2	4	12	8	8
Peregrine Falcon	28	24	2		2	14	12
Olive-sided Flycatcher	347	45	20	167	174	6	
Western Wood-Pewee	190	39	11	63	124	3	
Willow Flycatcher	414	56	31	19	349	45	1
"Traill's" Flycatcher	1	1	1		1		
Hammond's Flycatcher	74	37	7	2	25	42	5
Western Flycatcher	945	72	91	209	579	153	4
Unidentified <i>Empidonax</i>	1	1	1		1		
Hutton's Vireo	57	40	3	7	15	27	8
Cassin's Vireo	52	37	3	5	24	23	
Warbling Vireo	182	53	17	64	88	30	
Steller's Jay	39	20	6	1	12	18	8
American Crow	94	26	14	8	43	10	33
Common Raven	785	82	84	36	283	201	265
Chestnut-backed Chickadee	3602	86	72	501	1415	1058	628
Horned Lark	27	14	3		3	20	4
Bank Swallow	2	2	1		1	1	
Tree Swallow	28	8	10	11	17		
Violet-green Swallow	1074	62	128	235	571	259	9
Purple Martin	174	46	13	23	90	61	
Northern Rough-winged Swallow	197	32	26	60	135	2	
Barn Swallow	1089	57	150	266	536	287	
Cliff Swallow	19	10	5	13	5	1	
Bushtit	1336	80	56	113	509	431	283
Ruby-crowned Kinglet	1382	40	150			527	855
Golden-crowned Kinglet	1890	79	118	16	129	910	835
Pygmy Nuthatch	1	1	1				1
Red-breasted Nuthatch	2147	86	75	153	795	747	452

Species	Total detections 2024	Days detected	Max count	Total detections by month			
				Jul.	Aug.	Sep.	Oct.
Brown Creeper	933	86	35	99	443	265	126
Northern House Wren	565	71	24	144	348	64	9
Pacific Wren	814	85	48	29	113	327	345
Marsh Wren	131	74	6	10	32	58	31
Bewick's Wren	742	86	20	96	272	236	138
European Starling	2860	83	285	365	1194	927	374
Varied Thrush	576	34	198		2	51	523
Swainson's Thrush	560	70	21	95	246	214	5
Hermit Thrush	237	35	34			106	131
American Robin	10427	86	2500	155	218	1849	8205
Cedar Waxwing	2801	84	141	188	1142	1051	420
American Pipit	520	40	95		4	461	55
Evening Grosbeak	158	51	18	11	61	26	60
House Finch	187	51	23	12	32	41	102
Purple Finch	1996	86	119	111	355	918	612
Red Crossbill	3319	86	87	312	1050	1266	691
Pine Siskin	6331	85	635	1020	2461	1510	1340
American Goldfinch	2787	84	96	566	1497	581	143
Lapland Longspur	3	3	1				3
Chipping Sparrow	302	43	35	155	143	3	1
Lark Sparrow	1	1	1			1	
Fox Sparrow	722	47	37		9	346	367
Dark-eyed Junco (Slate-colored)	1	1	1			1	
Dark-eyed Junco (Oregon)	907	62	66	7	40	329	531
White-crowned Sparrow	3630	85	214	650	1995	896	89
Golden-crowned Sparrow	774	42	80		2	370	402
White-throated Sparrow	18	13	3			7	11
Savannah Sparrow	1283	71	292	6	86	1086	105
Song Sparrow	1205	86	31	135	365	381	324
Lincoln's Sparrow	1197	54	94		161	842	194
Swamp Sparrow	4	4	1				4
Spotted Towhee	1597	86	56	113	414	507	563
Western Meadowlark	2	2	1				2
Red-winged Blackbird	1151	74	97	86	191	253	621
Brown-headed Cowbird	188	38	14	79	109		
Brewer's Blackbird	63	14	13		19	17	27
Northern Waterthrush	5	5	1		1	4	
Black-and-white Warbler	5	5	1	2	3		
Orange-crowned Warbler	781	80	44	89	321	320	51
MacGillivray's Warbler	225	57	12	40	143	41	1
Common Yellowthroat	701	86	29	90	277	303	31
Yellow Warbler	885	76	72	45	415	410	15
Yellow-rumped Warbler (unk. ssp.)	1314	52	250	16	49	329	920
Yellow-rumped Warbler (Myrtle)	358	31	100			136	222
Yellow-rumped Warbler (Audubon's)	922	71	150	12	106	469	335
Black-throated Gray Warbler	63	40	5	4	29	26	4
Townsend's Warbler	193	49	16	7	68	108	10
Wilson's Warbler	844	69	31	189	490	164	1
Unidentified warbler	30	1	30			30	
Western Tanager	155	53	12	17	96	39	3
Black-headed Grosbeak	53	32	4	10	38	5	
Lazuli Bunting	1	1	1		1		
Hybrid passerine	2	2	1			2	
Unidentified passerine	6	2	4			6	

Appendix 2: Daily Estimated Totals for Pedder Bay

Totals are in taxonomic order; total detections do not necessarily equate total individuals. Species in bold represent first site records.

Species	Total detections	Days detected	Max count	Total detections by month			
				Jul.	Aug.	Sep.	Oct.
	2024						
Snow Goose	331	4	284			7	324
Greater White-fronted Goose	274	6	225			270	4
Cackling Goose	170	6	74			21	149
Canada Goose	698	75	41	43	324	224	107
Mallard	86	28	23	1	9	28	48
Northern Pintail	29	5	9			14	15
Green-winged Teal	46	10	17		15	11	20
Greater Scaup	19	1	19				19
Lesser Scaup	17	1	17				17
Hooded Merganser	25	14	3		8	5	12
Common Merganser	17	7	5			6	11
Unidentified duck	18	2	15			18	
California Quail	2282	90	73	179	903	824	376
Band-tailed Pigeon	1237	66	177	28	164	815	230
Eurasian Collared-Dove	678	87	24	122	241	170	145
Mourning Dove	2	1	2		2		
Common Nighthawk	67	38	4	20	47		
Black Swift	5	3	3		2	3	
Vaux's Swift	237	22	40		13	207	17
Anna's Hummingbird	592	90	17	43	173	236	140
Rufous Hummingbird	94	33	12	46	42	6	
Sandhill Crane	34	4	30			31	3
Killdeer	13	13	1		4	7	2
Semipalmated Plover	1	1	1			1	
Upland Sandpiper	1	1	1			1	
Long-billed Dowitcher	1	1	1				1
Wilson's Snipe	4	4	1			1	3
Spotted Sandpiper	7	5	2		7		
Solitary Sandpiper	4	3	2		4		
Greater Yellowlegs	11	11	1		8	2	1
Baird's Sandpiper	1	1	1		1		
Least Sandpiper	223	30	40	10	206	7	
Pectoral Sandpiper	1	1	1		1		
Western Sandpiper	93	14	26		93		
Unidentified small sandpiper ('peep')	20	6	10		15	5	
Marbled Murrelet	2	2	1		1	1	
Pigeon Guillemot	1	1	1			1	
Common Murre	2	1	2			2	
Short-billed Gull	38	17	5	1	1	15	21
California Gull	57	20	8		10	32	15
Glaucous-winged Gull	1588	89	77	59	386	823	320
Hybrid Gull	54	15	7	23	15	2	14
Unidentified gull	373	30	80	9	134	128	102
Common Loon	4	4	1		1	2	1
Double-crested Cormorant	326	35	65		2	161	163
Great Blue Heron	176	89	5	22	61	69	24
Turkey Vulture	2007	86	213	32	163	770	1042
Osprey	10	9	2		4	2	4

Species	Total detections 2024	Days detected	Max count	Total detections by month			
				Jul.	Aug.	Sep.	Oct.
Sharp-shinned Hawk	50	30	3	1	4	24	21
Cooper's Hawk	123	72	5	7	32	51	33
Northern Harrier	1	1	1			1	
Bald Eagle	95	60	5	18	24	15	38
Broad-winged Hawk	2	1	2			2	
Red-tailed Hawk	151	68	22	11	21	54	65
American Barn Owl	1	1	1			1	
Great Horned Owl	42	31	3		14	20	8
Northern Pygmy-Owl	14	13	2	1	2	8	3
Barred Owl	6	6	1			1	5
Northern Saw-whet Owl	2	2	1				2
Belted Kingfisher	220	90	4	28	78	72	42
Red-breasted Sapsucker	63	42	5	10	17	21	15
Downy Woodpecker	304	90	8	30	102	113	59
Hairy Woodpecker	197	86	7	14	63	56	64
Pileated Woodpecker	193	78	5	15	65	75	38
Northern Flicker	826	90	27	51	191	323	261
American Kestrel	5	4	2		2	3	
Merlin	15	15	1		5	5	5
Peregrine Falcon	5	5	1		1	2	2
Olive-sided Flycatcher	130	36	8	57	71	2	
Western Wood-Pewee	7	6	2		5	2	
Willow Flycatcher	275	53	25	87	152	36	
Hammond's Flycatcher	49	33	5	4	16	23	6
Dusky Flycatcher	1	1	1			1	
Western Flycatcher	404	69	19	96	237	69	2
Hutton's Vireo	42	33	6	5	7	12	18
Cassin's Vireo	35	28	2	6	17	12	
Warbling Vireo	90	39	9	4	52	34	
Steller's Jay	59	37	6	1	4	28	26
American Crow	680	85	81	95	378	119	88
Common Raven	827	90	42	57	192	282	296
Chestnut-backed Chickadee	3009	90	70	389	1045	984	591
Horned Lark	8	5	2			4	4
Violet-green Swallow	486	60	50	72	251	155	8
Purple Martin	781	50	40	111	598	72	
Northern Rough-winged Swallow	101	23	11	7	92	2	
Barn Swallow	730	64	44	76	436	218	
Unidentified swallow	45	1	45			45	
Bushtit	1407	82	47	245	543	440	179
Ruby-crowned Kinglet	876	46	66		2	363	511
Golden-crowned Kinglet	1907	84	120	51	94	916	846
Red-breasted Nuthatch	1449	90	40	131	467	554	297
Brown Creeper	577	89	22	76	207	205	89
Northern House Wren	339	69	17	83	203	49	4
Pacific Wren	622	86	29	25	75	213	309
Bewick's Wren	5	4	2		3	2	
Marsh Wren	785	90	19	86	277	271	151
European Starling	2318	89	80	139	772	875	532
Varied Thrush	256	48	47	5	5	67	179
Swainson's Thrush	731	77	31	159	323	242	7
Hermit Thrush	473	43	31		1	274	198
American Robin	3930	90	281	152	209	1247	2322
Unidentified thrush	1	1	1			1	
Cedar Waxwing	1195	83	44	154	573	377	91

Species	Total detections 2024	Days detected	Max count	Total detections by month			
				Jul.	Aug.	Sep.	Oct.
House Sparrow	63	27	7	12	37	10	4
American Pipit	97	23	24			79	18
Evening Grosbeak	609	80	35	151	317	64	77
House Finch	1277	90	34	185	426	381	285
Purple Finch	1858	90	91	118	391	897	452
Red Crossbill	2211	90	55	193	690	824	504
Pine Siskin	3493	89	480	366	1379	872	876
American Goldfinch	1535	86	75	404	864	224	43
Chipping Sparrow	133	36	17	78	50	5	
Fox Sparrow	1201	53	73		20	515	666
Dark-eyed Junco (Slate-colored)	1	1	1				1
Dark-eyed Junco (Oregon)	1591	85	109	19	133	459	980
White-crowned Sparrow	2161	92	69	157	1026	802	176
Golden-crowned Sparrow	1613	50	192		6	558	1049
White-throated Sparrow	29	20	3	2		10	17
Savannah Sparrow	162	36	21		12	131	19
Song Sparrow	1458	90	37	125	361	552	420
Lincoln's Sparrow	960	56	60		86	667	207
Spotted Towhee	1883	90	67	133	454	676	620
Red-winged Blackbird	986	69	212	13	78	543	352
Brown-headed Cowbird	123	37	9	39	79	5	
Brewer's Blackbird	1617	82	81	210	782	441	184
Unidentified blackbird	30	1	30			30	
Orange-crowned Warbler	488	83	20	119	152	193	24
Nashville Warbler	1	1	1			1	
MacGillivray's Warbler	205	57	17	35	145	22	3
Common Yellowthroat	338	71	18	11	133	180	14
Yellow Warbler	410	64	51	12	144	243	11
Yellow-rumped Warbler (unk. ssp.)	362	41	77	3	8	79	272
Yellow-rumped Warbler (Myrtle)	148	21	24			65	83
Yellow-rumped Warbler (Audubon's)	378	46	54	2	9	236	131
Black-throated Gray Warbler	45	24	8	4	23	18	
Townsend's Warbler	200	60	15	9	41	138	12
Wilson's Warbler	532	72	28	128	282	118	4
Unidentified warbler	3	1	3	3			
Western Tanager	262	64	21	11	177	73	1
Black-headed Grosbeak	74	38	5	24	41	9	
Unidentified passerine	3	2	2	1		2	

Appendix 3. Protocol and notes on switching mist net type at Rocky Point station

Text by Science Program Manager James Kennerley (2023)

Each year, wear and tear from daily use means that mist nets require continuous maintenance to repair holes and fix broken shelf strings and loops. However, mist nets eventually reach a point when they must be replaced due to irreparable damage.

At our Rocky Point station, SpiderTech nets have been used since 2004, but with the company ceasing operations, the decision was made to switch to a different supplier. Avinet was selected as its mist nets are already in use during migration monitoring at Pedder Bay. Furthermore, using the same mist nets at both migration monitoring stations is logistically easier with purchasing and will ensure the most comparable data between the two sites. The specifications of the two net types are similar, with both having a length of 12 m with 30 mm Nylon mesh and four shelves; the differences are that SpiderTech nets are 3.0 m tall with 110-denier threads, while Avinet nets are 2.6 m tall with 70-denier threads, making them slightly smaller and lighter with shallower pockets.

As a Canadian Migration Monitoring Network (CMMN) member station, RPBO follows the standardized Migration Monitoring Protocol used at stations across Canada which includes using the same types of nets year-to-year to minimize variation in capture totals due to changing methodology. Due to the insolvency of our mist net supplier, continuing to use the same types of mist nets is not possible. Because of this, we need to ensure a smooth transition from using SpiderTech mist nets to Avinet mist nets, so that data collected in the future can be compared with previously collected data and form part of a continuous dataset.

Following email discussions with Dr. Erica Dunn (Science Advisory Committee, CMMN), RPBO has established a protocol to transition from using SpiderTech mist nets to Avinet mist nets (Table 15). The three-year process to switch all nets means there will be a two-year period with both types of mist net in operation. This will provide a way to understand how capture rates differ between net types while controlling for year-to-year variables such as migration activity and weather. Once the transition is complete, RPBO will analyze whether capture rates differ between the two types of mist nets and the potential implications this could have on the RPBO migration monitoring dataset.

Table 15. Steps for transitioning from using SpiderTech mist nets to Avinet mist nets at Rocky Point.

Step	Year	Even numbered nets	Odd numbered nets
1	2023	SpiderTech	Avinet
2	2024	Avinet	SpiderTech
3	2025	Avinet	Avinet

On 18 August 2023, the process of switching nets began with SpiderTech mist nets taken down from odd numbered net lanes after the standard banding period and replaced with Avinet mist nets. In 2024, Step 2 will be taken at the beginning of the migration monitoring season rather than part way through. Step 3 will commence at the start of the 2025 migration monitoring season.

Appendix 4. Church Hill surveys

During our regular monitoring, staff and volunteers at the Rocky Point station spend time counting birds of prey on migration, often marvelling at the large 'kettles' of Turkey Vultures and other raptors which form over the site in late September and early October. These groups of southbound raptors often build up over the front and back meadows, gaining altitude on the thermals that form there, and often make their way to the very southern tip of the island, or move further west; either way they are often too distant to view properly. This year, we had the good fortune of surveying Church Hill, a site further south and west of our main monitoring area, toward where these birds often seem to be heading upon departure from our site.

The goal of these surveys was to determine the suitability of this location as a site for an official hawk watch and/or seawatch, and took place on 1-3 October and 16 October during closures for military activities at our main monitoring site in Area B. As Church Hill is located in Area C and is outside the safety perimeters for the main training areas, it was unaffected by these activities. Initial explorations took place in poor weather and with very limited time on 1 October, and identified the path up to the viewing area. A more thorough survey on 2 October in better weather and with more time (approximately three hours) identified two locations as potentially suitable for official surveys, with the area near the old bunker at 48.3125, -123.5843 (elevation 104 m) having potential for a seawatch, and the area at the top of the east-facing cliff (48.3134, -123.5825; elevation 93 m) having great potential for a hawk watch. Further surveys took place at these same two locations on 3 and 16 October (approximately two and five hours, respectively), beginning at the seawatch spot and moving to the hawk watch spot once the weather was suitable to encourage raptors to start moving. Between these three sessions, a total of 20,920 individual birds of 71 species were tallied; approximately 1900 of those were birds of prey, including single-session high counts of 960 Turkey Vultures, 42 Sharp-shinned Hawks (*Accipiter striatus*), 16 Bald Eagles (*Haliaeetus leucocephalus*), and 83 Red-tailed Hawks (*Buteo jamaicensis*).

Although large numbers of seabirds were noted from the location near the bunker, its elevation above the water made conducting a thorough survey of migrating seabirds quite difficult, as viewing birds flying close to shore required looking down and missing birds farther out, and vice versa. Although the bunker sits at an elevation of 104 metres above the water, we located a sheltered, flat area below it at an elevation of approximately 80 metres to watch from on 16 October. For comparison, the current RPBO seawatch site at nearby Beechey Head is at an elevation of approximately 18 metres above the water, and the other popular seawatch site at Otter Point in Sooke is at an elevation of approximately six metres above the water. An elevation of between five and 15 metres is typically ideal for conducting a seawatch, allowing for both distant and close viewing more or less simultaneously, while being high enough above the water to avoid issues such as waves and heat haze.

The site for the hawk watch showed much more promise, with a good view from the north-northeast to the southeast over the Rocky Point Training Area. This allowed for the viewing of distant birds funneling down the east side and centre of Rocky Point (over the open, grassy areas with good thermals), where they kettled for some time before either attempting to cross the strait, or drifting farther west and closer to our viewpoint. Many of the birds then passed either directly overhead, or slightly to the north

of our viewing position, before either building up at the southwest corner of the peninsula or carrying on toward Beechey Head. In addition to the birds of prey, this site showed promise as a general visible migration location, with flocks of Band-tailed Pigeons (*Patagioenas fasciata*), Pine Siskins and other finches, and some late Vaux's Swifts (*Chaetura vauxi*) passing low overhead. With better visibility of the flight lines and much closer viewing on many of the individuals, this site was much better than our current monitoring site for a hawk watch, at least on initial impressions. Further surveys during peak raptor migration (approximately 10 September to 20 October) are recommended to aid in the development of an official counting protocol, if this site is to be used as an official migration monitoring location. It would be recommended to collaborate with other hawk watching sites in the region in the development of such a protocol.



A close-up view of a Red-tailed Hawk passing the Church Hill viewing site. Photo: David Bell.



The view to the east from the potential hawk watch site, with Race Rocks visible at the far right. Photo: David Bell.



The view to the west from the bunker, with several Turkey Vultures in frame. Photo: David Bell.