

# Monitoring Avian Productivity and Survivorship (MAPS) Power To Be

2024



*Cassin's Vireo, Power To Be, 2024.  
Photo: Mara Hanneson.*



Prepared by Jannaca Chick  
Rocky Point Bird Observatory  
Victoria, BC, Canada

## 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.

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This project would not have been possible without the cooperation and assistance of Power To Be (PTOB) and their staff.

In 2024, MAPS monitoring by Rocky Point Bird Observatory was conducted primarily by volunteers. Personnel include: MAPS Coordinator Cathy Reader, Volunteer Coordinator Robyn Byrne, and Bander-in-Charge Jannaca Chick (contractor), Mark Byrne (Bander Trainee), and Ashlea Veldhoen (Lead Educator); station setup and takedown, monitoring efforts, and education liaison were completed with the volunteer help of Melissa Anderson, Kim Beardmore, Mark Byrne, Robyn Byrne, Jannaca Chick, John Costello, Anne Cotter, Skyler Freeman, Sonja Futehally, Mara Hanneson, Gail Harcombe, Salem Lait, Christina Lam, Marilyn Lambert, Cheryl Mackie, Storm Morgan, Jo Motek, Mike Motek, Ann Nightingale, Amy Pellatt, Emma Radziul, Sean Rangel, Cathy Reader, Rebecca Reader-Lee, Adam Ross, Stephen Ross, Ann Scarfe, Walter Thorne, Mark Walker, and Tamara Wolowicz.

There were 298.25 volunteer hours of field work logged at the Power To Be site during the 2024 MAPS season; this includes site preparation, set up and take down, and education liaison. This does not include administrative volunteer hours. The MAPS banding season would not have been possible without our volunteers and the generous donation of their time and effort.



*Banding station at Power To Be, 2024.  
Photo: Jannaca Chick.*

## Summary

2024 was the fourth year that Rocky Point Bird Observatory (RPBO) ran the Monitoring Avian Productivity and Survivorship (MAPS) program at the Power To Be (PTOB) property on Prospect Lake in Victoria, B.C.

Sampling was conducted between 2 June 2024 and 4 August 2024 (MAPS periods 4 to 10), for a total of seven sessions, one for each 10-day MAPS period. Mist nets were deployed, and birds extracted, banded, and processed according to the MAPS Manual 2024 Protocol (DeSante et al. 2024) developed by The Institute for Bird Populations (IBP). Breeding status was determined by observing the body condition of individuals while in the hand, by location of active nests, and by the formulae prescribed by IBP. Each sampling day, detections of birds seen or heard were also recorded in accordance with the MAPS protocol.

In addition to following the MAPS protocol, this year, RPBO participated in two studies for the second consecutive year at both MAPS stations:

- 1) The SaP Project (Songbirds as Pollinators) conducted by Carolyn Coyle, PhD student at Colorado State University.
- 2) Environment and Climate Change Canada (ECCC) and Canadian Migration and Monitoring Network (CMMN) feather pull study.

In total, 213 individual birds of 30 species were banded, 74 birds of 14 species were recaptured, and 5 birds of 5 species were unbanded. A total of 292 individuals were processed. This constitutes an increase of 41% over last year. The topmost frequently banded and recaptured species were Song Sparrow (43), Orange-crowned Warbler (37), and Swainson's Thrush (34). Banding highlights included two Cassin's Vireos (females with brood patches), two juvenile Hutton's Vireos, and several recaptures from our prior three years of banding at this site. Of the total number of birds banded and recaptured (292), 56% were hatch year (HY). For newly banded birds, 140 of 213 (66%) were HY.

Concurrently with banding procedures, 69 species were observed on site throughout the season. Highlights include Common Nighthawks seen and heard overhead in the early morning on six out of seven sessions, a Great Horned Owl was found roosting in the back forest, and the Barn and Violet-green Swallows that nest on site in nest boxes.

## Background

The Monitoring Avian Productivity and Survivorship (MAPS) Program was established in 1989 by The Institute for Bird Populations (IBP) in California, USA. The program was designed to standardize collection of demographic data (vital rates) of North American landbirds. Analyses of MAPS data provide critical information relating to landbird ecology that can be applied to conservation and management initiatives.

The purpose of the MAPS project is to inventory breeding songbird populations using standardized methodology, and to record sightings of other species occurring at these locations to facilitate comparisons of populations and avian diversity at the site with those in similar habitats across North America. The data is submitted to Environment and Climate Change Canada (banding), Birds Canada (banding) and The Institute of Bird Populations (banding, observation, breeding status, and habitat structure) to be made available to researchers and others.

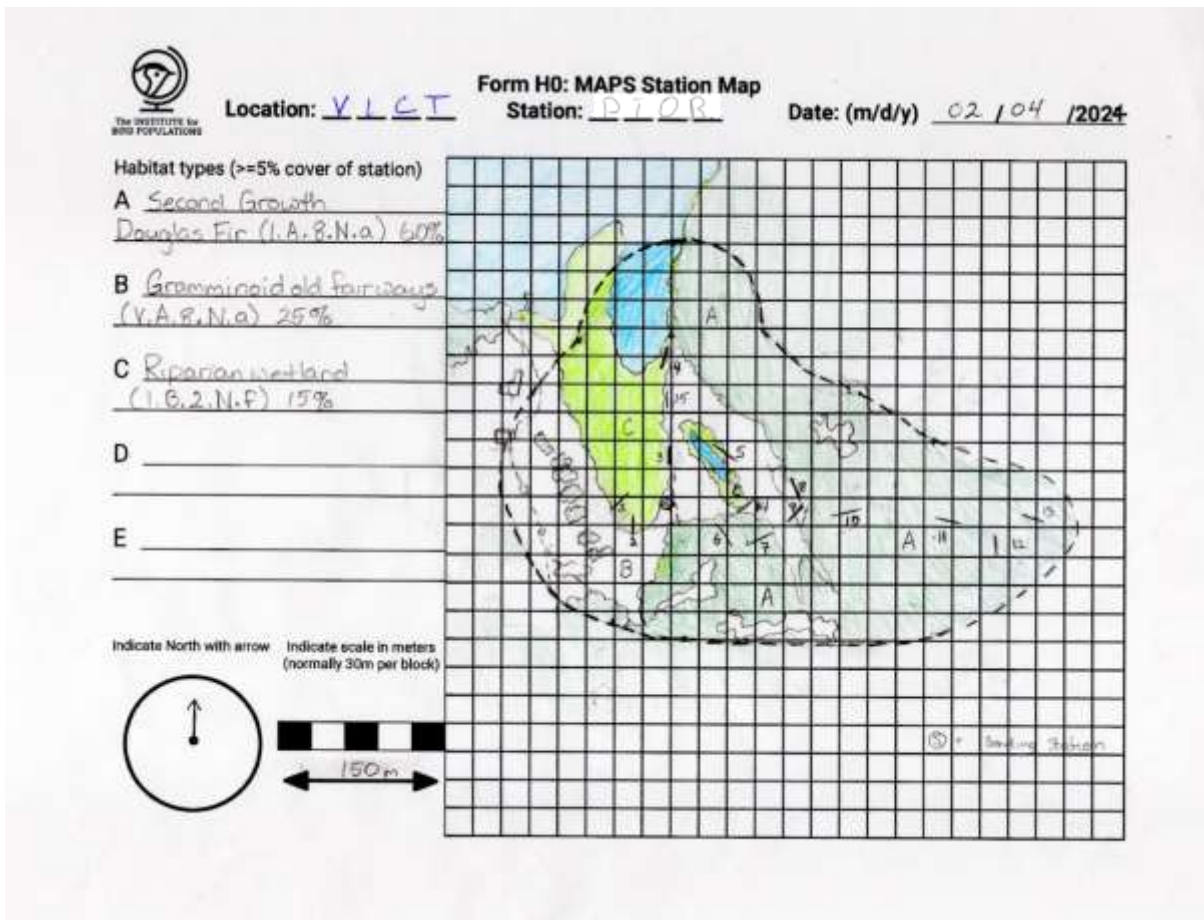
MAPS data collection is a collaborative effort involving a network of bird mist nets and banding stations run by government agencies, non-government organizations, and individuals, throughout North America. Rocky Point Bird Observatory (RPBO) staff and volunteers have collected data for MAPS since 2003. The southern Vancouver Island banding stations at Rocky Point and Royal Roads University served as RPBO's MAPS sites until 2009 when Witty's Lagoon Regional Park was added and monitoring at Royal Roads was discontinued. In 2011, MAPS at Rocky Point was discontinued, and a second site was established at Madrona Farm in Saanich, BC. Monitoring at Madrona Farm was discontinued after 2019. In 2021 we started a new MAPS site at Power To Be on Prospect Lake. These five stations have provided data for over 200 species in previous monitoring years.

The Power To Be site is a 78-hectare former golf course, now leased to Power To Be by the owners. Power To Be is a non-profit organization that connects people with nature and seeks to remove cognitive, social, and physical barriers to the outdoors. Staff and clients primarily use trails and cart ways to access low-impact outdoor recreational activities. Access is by permission only.

This summary report includes data collected at Power To Be in 2024. A summary report has also been prepared for our MAPS site at Witty's Lagoon Regional Park in Metchosin.

## **Site Description**

The banding station at Power To Be (PTOB) is accessed via 4633 Prospect Lake Road in Victoria, BC. The RPBO MAPS banding operation nets are set up in each of the main three habitats on the property. Formerly cut fairways are largely left to grow uninhibited, and the woodlands and forests are left as is, except for a network of trails and old cart paths. There is a variety of native and introduced vegetation in all habitats. The dominant habitat is second-growth Douglas-fir forest with various sub-dominant trees including grand fir, red alder and bigleaf maple. The graminoid old fairways are a mixture of introduced grasses and scattered herbs. There are a few lone mature Douglas-fir left over from the original forest cover. Nets 1-5 are adjacent to, or slightly inside the riparian willow - red alder wetland. Introduced willows dominate the wetland canopy (Figure 1).



**Figure 1.** Map of the Power To Be MAPS site with habitat structure types.

## Methodology

Methodology followed the MAPS Manual 2024 Protocol (DeSante et al. 2024). Landbirds were captured in mist nets and banded during standardized sampling sessions conducted once in every ten-day period during the nesting season, from 2 June to 4 August 2024. The safe handling and banding of birds followed the applicable sections of Rocky Point Bird Observatory’s Field Protocol (RPBO 2022) and the MAPS Manual 2024 Protocol (DeSante et al. 2024). A component of the RPBO protocol is the Bander’s Code of Ethics developed by the North American Banding Council, which emphasizes bird safety over data collection (NABC Revised 2021).

Each sampling session involved the use of fifteen mist nets (12m x 2.8m, with 30mm mesh size; Figure 2) for a six-hour period commencing at dawn. If necessary, nets were closed in poor weather if winds exceeded 15 km/hour or if there was significant precipitation. Nets were checked every 30 minutes, or more frequently if weather conditions warranted. This year there were no net closures. Captured birds were removed from the nets and taken to a central location for processing. Each bird was then identified by species, assigned an age class according to criteria compiled by Pyle (second edition 2022) and banded with an aluminum U.S.



Fish and Wildlife leg band with a unique nine-digit number. A series of morphometric measurements was collected from each bird including wing chord, stage of breeding development, amount of fat deposit, age of each feather tract, feather wear, and mass. Sex and age were determined, if possible, in accordance with criteria in the MAPS Manual 2024 protocol. Date, time, and capture-net code were also recorded. Once processed, local-aged birds incapable of sustained flight were released near their capture net. Flocks of mixed ages captured simultaneously in the same net were released together to facilitate regrouping of family units.



*Figure 2. Map of the Power To Be MAPS site.*

Breeding status of each species encountered at Power To Be was determined using multiple criteria. During each session, staff and volunteers observed bird behaviour and evidence of breeding birds. A bird is considered a breeder at the site if clear evidence, such as a nest or recent fledgling is found, but also if other related behaviours such as territorial singing or carrying food are observed over an extended period. Breeding status is not limited to a single session or season, but rather is determined by observations over all MAPS periods. Recapture of an adult bird more than seven days after original banding is used as an indicator that the bird is on breeding territory.

## Results

2024 was the fourth season of MAPS data collection at PTOB. A total of seven sampling days were conducted between 2 June and 4 August (Table 1). Nets did not require closure for adverse weather conditions. This resulted in a total of 630 net hours for the season. A total of 292 birds of 30 species were captured (Tables 1 and 2).

**Table 1.** Daily summary of 2024 mist net effort and total captures at Power To Be. New captures per net hour do not include repeat captures of the same banding day.

Date	New	Recaptured	Unbanded	Total	Net Hours	New per net hour
June 2	32	12	1	45	90.00	0.40
June 15	42	13	0	55	90.00	0.27
June 23	28	8	2	38	90.00	0.34
June 30	19	10	0	29	90.00	0.24
July 15	46	12	0	58	90.00	0.12
July 23	33	13	1	47	90.00	0.14
August 4	13	6	1	20	90.00	0.16
<b>Total</b>	<b>213</b>	<b>74</b>	<b>5</b>	<b>292</b>	<b>630.00</b>	<b>0.34</b>



*Wilson's Warbler, Power To Be, 2024.  
Photo: Altitude Sports.*

**Table 2.** Summary of 2024 captures by species and capture category at Power To Be. The top species banded are highlighted in **bold**.

American Goldfinch	1	0	0	1
American Robin	5	6	0	11
Bewick's Wren	5	2	0	7
Black-headed Grosbeak	2	0	0	2
Brown Creeper	10	2	0	12
Brown-headed Cowbird	1	0	0	1
Cassin's Vireo	2	0	0	2
Chestnut-backed Chickadee	<b>26</b>	0	1	27
Chipping Sparrow	4	2	0	6
Common Yellowthroat	4	1	0	5
Dark-eyed (Oregon) Junco	14	10	0	24
Downy Woodpecker	3	1	0	1
House Wren	1	0	0	1
Hutton's Vireo	2	0	0	2
MacGillivray's Warbler	3	1	0	4
<b>Orange-crowned Warbler</b>	<b>31</b>	6	0	<b>37</b>
Pacific Wren	1	1	0	2
Pine Siskin	3	0	0	3
Purple Finch	3	0	0	3
Red-breasted Sapsucker	4	2	0	6
Red-breasted Nuthatch	3	0	0	3
Rufous Hummingbird	12	0	0	12
<b>Song Sparrow</b>	<b>25</b>	17	1	<b>43</b>
Spotted Towhee	7	3	0	10
Swainson's Thrush	17	16	1	<b>34</b>
Unknown Yellow-rumped Warbler	1	0	0	1
Western Flycatcher	7	1	1	9
White-crowned Sparrow (Puget Sound)	4	1	0	5
Willow Flycatcher	2	0	0	2
Wilson's Warbler	10	2	1	13
<b>Totals</b>	<b>213</b>	<b>74</b>	<b>5</b>	<b>292</b>



All birds that were captured and processed were categorized as new bands, recaptures, or unbanded. Of the 292 total captures, 73% were newly banded birds, 25.3% were recaptures, having already been banded, and 1.7% were unbanded. Of the 74 recaptures, 15 were same day (captured more than once during the same banding period). RPBO achieved an average of 0.34 newly banded birds per net hour (Table 1). All species captured were regularly observed in the area.

**Table 3.** Proportion of birds by age at Power To Be, 2024. Recaptured includes same day.

Age	New	Proportion of new	Recaptured	Proportion of recaptured	Total proportion
HY	141	66.2%	21	28.4%	<b>56%</b>
AHY	6	2.8%	3	4%	<b>3.2%</b>
SY	31	14.5%	7	9.5%	<b>13.2%</b>
ASY	34	16%	41	55.4%	<b>26.1%</b>
TY	1	0.5%	0		<b>0.3%</b>
ATY	0		2	2.8	<b>0.7%</b>



*Black-headed Grosbeak, Power To Be, 2024.  
Photo: Jannaca Chick.*

Of the total 74 birds recaptured: 7 were banded in 2021 (9.5% of recaptures), 18 were banded in 2022 (24.2%), 5 were banded in 2023 (6.8%), and 44 were same season (59.5%), of which 15 were same day recaptures. The recaptures of birds banded in 2021 to 2023 indicate the

importance of this site as a breeding location. Five birds were released unbanded, either due to escaping or the bander forgot to band them.

Of the 213 banded birds, 141 (66.2%) were hatch year (HY), 6 (2.8%) were after hatch year (AHY), 31 (14.5%) were second year (SY), 34 (16%) were after second year (ASY), 1 (0.5%) was third year (TY). (See Table 3).

This was our fourth year banding at this site and recaptures indicate site fidelity in both migrants and resident species (Table 4). Some of the recapture highlights were two Red-breasted Sapsuckers, four Swainson’s Thrushes from all three previous years of banding, three Oregon Juncos, three American Robins, two Chipping Sparrows, one Orange-crowned Warbler, and a Western Flycatcher.

**Table 4.** Recapture history of birds captured at Power To Be in 2024.

Year banded	Recaptures (including banding date)	Species
2021	2	1 Swainson’s Thrush (ASY in 2021)
	5	2 American Robin (both ASY in 2021)
	2	1 Brown Creeper (HY in 2021)
	2	1 Western Flycatcher (SY in 2021)
2022	6	2 Song Sparrow (both ASY in 2022)
	5	2 Swainson’s Thrush (1 HY, 1 ASY in 2022)
	4	2 Dark-eyed Junco (Oregon) (1 SY, 1 ASY in 2022)
	4	1 American Robin (SY in 2022)
	2	2 Chipping Sparrow (both SY in 2022)
	2	1 Orange-crowned Warbler (HY in 2022)
	2	1 Red-breasted Sapsucker (ATY in 2022)
2023	3	1 Dark-eyed Junco (Oregon) (SY in 2023)
	2	1 Red-breasted Sapsucker (TY in 2023)
	2	1 Swainson’s Thrush (ASY in 2023)
	2	1 Bewick’s Wren (ASY in 2023)

In 2024, 69 species of birds were observed on the Power To Be site. The updated IBP 2023 Breeding Status for PTOB after three years of monitoring is shown in Table 5. 40 species were determined to be breeders, 19 were transient (in breeding range, but not breeding at the MAPS site), 9 species were occasional breeders (<½ years), 10 species were usual breeders (>½, not all years), and 2 species were migrant (Table 5). Two new species were observed this year: Great Horned Owl, and Greater Yellowlegs.

**Table 5.** Breeding status of birds observed at Power To Be 2021 to 2023.

Species	Breeding Status	Species	Breeding Status
American Crow	Occasional	Mallard	Transient
American Goldfinch	Breeder	Marsh Wren	Occasional
American Robin	Breeder	Mourning Dove	Transient
Anna’s Hummingbird	Breeder	Northern (Red-shafted) Flicker	Breeder
Audubon’s Yellow-Rumped Warbler	Occasional	Northern Pygmy-owl	Transient
Bald Eagle	Occasional	Northern Rough-winged Swallow	Transient
Barn Swallow	Breeder	Olive-sided Flycatcher	Usual
Barred Owl	Occasional	Orange-crowned Warbler	Breeder
Belted Kingfisher	Breeder	Osprey	Transient
Bewick’s Wren	Breeder	Pacific Wren	Usual
Black-headed Grosbeak	Breeder	Pileated Woodpecker	Breeder
Black-throated Gray Warbler	Breeder	Pine Siskin	Transient
Brown Creeper	Breeder	Purple Finch	Breeder
Brown-headed Cowbird	Breeder	Purple Martin	Transient
Bushtit	Breeder	Red Crossbill	Occasional
California Gull	Migrant	Red-breasted Nuthatch	Breeder
California Quail	Occasional	Red-breasted Sapsucker	Breeder
Canada Goose	Breeder	Red-tailed Hawk	Breeder
Cassin’s Vireo	Breeder	Red-winged Blackbird	Usual
Cedar Waxwing	Breeder	Rufous Hummingbird	Breeder
Chestnut-backed Chickadee	Breeder	Song Sparrow	Breeder
Chipping Sparrow	Breeder	Spotted Towhee	Breeder
Cliff Swallow	Transient	Steller’s Jay	Transient
Common Loon	Transient	Swainson's Thrush	Breeder
Common Nighthawk	Usual	Tree Swallow	Transient
Common Raven	Usual	Townsend’s Warbler	Occasional
Common Yellowthroat	Breeder	Turkey Vulture	Transient
Cooper's Hawk	Breeder	Violet-green Swallow	Breeder
Dark-eyed (Oregon) Junco	Breeder	Virginia Rail	Transient

**Table 5.** Breeding status of birds observed at Power To Be 2021 to 2023 (cont.).

Species	Breeding Status	Species	Breeding Status
Downy Woodpecker	Breeder	Warbling Vireo	Breeder
Eurasian Collared Dove	Transient	Western Flycatcher	Breeder
European Starling	Transient	Western Tanager	Breeder
Evening Grosbeak	Transient	White-crowned (Puget Sound) Sparrow	Breeder
Glaucous-winged Gull	Transient	Willow Flycatcher	Breeder
Golden-crowned Kinglet	Transient	Wilson's Warbler	Breeder
Great Blue Heron	Transient	Wood Duck	Occasional
Hairy Woodpecker	Breeder	Yellow Warbler	Breeder
House Finch	Usual	Yellow-rumped Warbler	Occasional
House Wren	Breeder		
Hutton's Vireo	Breeder		
MacGillivray's Warbler	Usual		

### Songbirds as Pollinators, the SaP Project

The SaP Project is a collaborative effort between Colorado State University, the Institute for Bird Populations (IBP), MAPS (Monitoring Avian Productivity and Survivorship), individual bird banders, and members of the public. This project seeks to understand the relationships between North American songbirds and flowering plants through documenting flower-foraging behaviours of songbirds and using cutting-edge methods to sequence angiosperm DNA in pollen samples collected from songbirds. While some research on songbirds as pollinators has been done in Asia and Europe, the nature and frequency of pollination by North American songbirds has not been systematically investigated until now.

Through partnering with banding stations and nature enthusiasts, this project is collecting pollen samples in addition to foraging observations. This is a two-year study and 2024 was RPBO's second year participating in this cross-border partnership with Carolyn Coyle of Colorado State University. Pollen samples were requested from warblers, hummingbirds, Bushtits, Warbling Vireos, and Western Tanagers during our MAPS banding season. The study will draw inferences about what plants may be important to birds by using pollen samples collected by RPBO and other collaborators. By sampling spring-migrating songbirds, they can determine the plants most frequently visited during migration and use existing phenological databases to explore the sensitivity of songbirds to changes in flowering timing of those favoured plants.

To collect samples, banders used swabs to gently wipe the faces and bills of target species when these birds were in the hand. Hands were properly sanitized prior to sampling to avoid contamination. The swabs are specifically designed to pick up small particles, such as pollen. The swab was then put into a small, pre-numbered tube, and into an envelope where all the data are recorded (date, species, band number, age, sex, etc.). Each swab is associated with a single bird, which can then be used to make inferences about plants visited by that individual. The researchers will look for patterns across species and genera.

We took pollen samples from 70 birds, which included: Orange-crowned Warbler (35), Wilson's Warbler (14), Rufous Hummingbird (10), Common Yellowthroat (4), MacGillivray's Warbler (3), Chipping Sparrow (1), Unknown Yellow-rumped Warbler (1), Song Sparrow (1), Chestnut-backed Chickadee (1). The samples and data have been sent to Carolyn Coyle of Colorado State University. 2024 was our second and final year of pollen sampling for this project.

To learn more about the SaP Project, please visit their website:

<https://carolyncoyle.wixsite.com/saproject>



*Common Yellowthroat pollen sampling, Power To Be, 2024.  
Photo: Robyn Byrne*

### **ECCC and CMMN Feather Collection**

ECCC (Environment and Climate Change Canada) and CMMN (the Canadian Migration Monitoring Network) are seeking to fill geographic gaps in their feather collection to identify breeding/natal ground origin for songbirds. The ECCC project is using the feathers of migrants to determine mercury content and relating that to habitat (upland vs wetland), diet, and



breeding ground origin. Feathers will be assayed for mercury and for several stable isotopes, including hydrogen. All analyses will be conducted by the ECCC labs in Saskatoon and/or Western University in London, ON. Resulting publications will acknowledge the crucial contribution of those who collected the samples.

This year RPBO was asked to contribute feather samples for this project, during both MAPS and Fall Migration Monitoring. Retrix 3 from each side of the tail were collected from species as specified by ECCC.

At Power To Be, 15 feather samples were collected from the following species: Swainson's Thrush (6), Orange-crowned Warbler (5), Song Sparrow (3), Dark-eyed Junco (Oregon) (3), Wilson's Warbler (2), and White-crowned Sparrow (Puget Sound) (1).

### **Comments & Recommendations**

The fourth year of the MAPS program at Power To Be saw a total of 292 birds of 30 species processed. This constitutes an increase of 41% as compared to 2023 when 206 birds were processed; 2023 had a decrease of 17% from the previous year, 2022.

We captured both breeding and juvenile birds. The percentage of hatch year birds was 56%, including new birds and recaptures. There was definite evidence of breeding birds in the area. The seven MAPS sessions yielded a few interesting species. There were 2 female Cassin's Vireos with brood patches; this species has been heard singing, but none had been banded prior to 2024. Two hatch year Hutton's Vireos were banded; this species has not been banded in prior years although they have been observed singing onsite. A HY unidentified Yellow-rumped Warbler was banded. This is an excellent breeding site for Red-breasted Sapsuckers with four new birds, and two older recaptures. Three new Downy Woodpeckers banded. Both Swainson's Thrush and Orange-crowned Warbler were in the top 3 species banded and recaptured this year, an excellent showing by these long-distance migrants.

Collaboration with the PTOB organization provides an excellent opportunity to reach a section of society that may not otherwise be exposed to birds or bird banding. This provides diverse opportunities for RPBO to promote interest in birds, bird monitoring, and bird banding. The Power To Be organization and staff are extremely supportive of our banding activities, and we anticipate future education and outreach collaborations together.

This year we were able to host several PTOB groups of clients and staff. A total of 35 visitors visited the banding station. All expressed great interest in and enthusiasm for our project.

- 23 June 2024: the Alumni overnight group which was being shadowed and filmed by Altitude Sports (Fyallraven) from Quebec. Altitude Sports included our banding operations in a film about PTOB which was posted on social media via Power To Be and Altitude Sports in October. They also posted a photo feature of our banding operations about a week later. This video is shared on the RPBO website.

- 30 June 2024: Family Camping Program for the Power To Be access group, open to anyone who qualified (and included different disabilities).
- 15 July 2024: the Ferns Camp Group visited us twice that morning as the children enjoyed it so much, they asked to come back!

The MAPS protocol advises that a five- to ten-year period of data collection is required before meaningful analysis can be initiated by IBP. RPBO intends to continue with MAPS banding at this site. It appears that as the vegetation reverts to a natural state, more birds are breeding on this property. A site assessment should be done in the future.

The MAPS program provides an excellent opportunity for banders and volunteers to improve their skills. This year, new volunteers were able to join us as scribe/helpers, assist with net setup and takedown, and begin extractor training. Mark Byrne volunteered as a Bander Trainee, with the intent of obtaining a banding permit. Mara Hanneson and Sonja Futehally both participated as assistant banders, and to familiarize themselves with the MAPS protocol.

We had a few interesting wildlife sightings this season. On 15 July, Anne Cotter saw a Western Painted Turtle, Vancouver Island's only remaining native turtle species. Its COSEWIC status is Threatened and SARA Status is Endangered. We often found Pacific Tree Frogs amongst our station gear during the early morning set up. A black bear was seen by volunteers near the back nets on our final day of banding, 4 August. At that point onwards, we sent volunteers in pairs to check the nets. The bear later appeared within sight of the station near the small pond. An air horn was effectively used to frighten it off.

Over the seven sessions, including site setup and takedown, RPBO had 30 volunteers assisting for a total of 298.25 volunteer hours.

It is recommended that RPBO continue to use Power to Be as a MAPS site.

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