

Iona Island Bird Observatory 2015 Annual Report



Prepared for WildResearch by:

Holly Buehler

Sarah Nathan

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Iona Island Bird Observatory (IIBO) is a program run by non-profit organization, WildResearch.

WildResearch's mission is to build, train, and educate a community that contributes to conservation science.



The Iona Island Bird Observatory is situated at Iona Regional Park. Use of the park is permitted by Metro Vancouver Regional Parks.



Major Funding for IIBO in 2014 was provided by the Sitka Foundation



Purchase of volunteer scheduling software, Better Impact, for 2015 and beyond was made possible by:



Acknowledgements

Significant thanks and gratitude is owed to many supporters of IIBO in 2015, including the following individuals and collaborators:

Metro Vancouver Regional Park has supported and facilitated the use of Iona Beach Regional Park for IIBO from 2010-2015. Big thanks to Iona Beach Regional Park Facilitators, Melanie Blendell for assistance with lane clearing, path upgrades, and Markus Merkens, Parks West Area *Natural Resource Management Specialist* for permitting support.

Funding received toward IIBO has allowed for program expansion and increased program capacity. Major funding for 2015 was generously provided the Sitka Foundation, allowing for equipment purchase, and wages towards seasonally hired contractors (banded-in-charge and assistant banders). Because of the specialized work involved in bird banding, the success of the IIBO program continues to be tied to our ability to attract and hire knowledgeable and skilled contractors, who further advance membership training and community building at IIBO.

Volunteer scheduling software for the 2015 IIBO program was made possible by a grant from the Mountain Equipment Co-op (MEC) for purchase Better Impact. We thank Mikaela Davis and Renae Mackas for coordinating volunteer requests from new and interested volunteers and for preparing the Better Impact schedule and sending reminder shift emails to those signed up to attend shifts at IIBO!

Special thanks to the Fairmont Vancouver Airport, and General Manager, Ken Flores, for collaborating with WildResearch and promoting guest packages for visitors to drop by IIBO and learn about bird banding and bird-watching.

This report features data summary figures and tables prepared by Amanda Kissel and Jen Scholefield while under contract to prepare a cumulative report featuring data collected at IIBO between 2010-2015. We thank Amanda and Jen for their contributions to the 2015 Annual Report during the time of their contract.

Finally, several banders contributed to IIBO as paid contractors or volunteers in 2015, including: Andrew Huang, Anna Szeitz, Azim Shariff, Christine Rock, Dan Froehlich, Paul Levesque, and Paul Preston. Thank you for going that extra mile to provide a positive learning environment for volunteers, encouraging training and development for those attending IIBO, and for highlighting WildResearch's work at IIBO to park attendees and visiting groups.

Program Management in 2015 was provided by WildResearch President, Christine Rock. Duties included: annual permitting requests and reporting; grant reporting; contractor and data management; program and volunteer outreach; support to authors/review of annual IIBO reports and 2010-2015 cumulative report; scheduling banding demonstration group visits; managing collaborations, and overseeing site maintenance. The current report was reviewed and edited by Christine Rock.

Iona Island Bird Observatory

2015 Annual Report

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EXECUTIVE SUMMARY

WildResearch is a membership based charitable non-profit organization that operates Iona Island Bird Observatory (IIBO). WildResearch's mission is to build, train, and educate a community that contributes to conservation science. WildResearch develops and runs citizen science programs like IIBO because it enables us to conduct conservation science research while offering skills to our membership, and engaging the public with the nature around them.

At IIBO, WildResearch monitors avian populations over three seasons (Winter, Spring, and Fall) in Iona Beach Regional Park in Richmond, BC using passive mist-netting. The Winter Songbird Monitoring Program (WSMP)'s long-term objective is to determine over-winter survival rates and species diversity in the area. The two migration monitoring programs, Spring Migration Monitoring Program (SMMP) and Fall Migration Monitoring (FMMP) aim to monitor population and migratory trends, and collect information about annual and long-term trends in breeding productivity

In 2015, the IIBO programs were highly successful, with a total of 3,149 new and recaptured birds of 59 species or subspecies, monitored over 7,747 mist-net hours. The diversity and volume of birds monitored at IIBO are two enormous benefits of having a station in Iona Beach Regional Park, situated along the Pacific Flyaway.

The SMMP exhibited high capture rates and exceptional diversity, supporting previous SMMP findings that the Iona Island area is ecologically significant for migrant stop-over. During the SMMP, 1,476 birds were monitored for the first time and 184 birds recaptured over 40 banding days. Fifty species were observed with a catch rate of 0.51 birds/net/hour for new birds and 0.06 birds/net/hour for recaptures. Wood Warblers, including Wilson's Warblers and Orange-crowned Warblers dominated the captures during spring migration. The age ratio of second-year to after-second-year birds (SY:ASY) ranged from 0.9:1 to 1.3:1.

In 2015, the FMMP was also productive for IIBO and took place over 22 banding days. A total of 1,009 birds were monitored for the first time and 263 birds recaptured. Forty-two species were observed with a catch rate of 0.28 new birds/net/hour and 0.07 recaptures/net/hour. Unlike previous years, song and fox sparrows were the most commonly caught species, amounting to 27% of total captures. The age ratio of hatch-year to after-hatch-year birds (HY:AHY) ranged from 1.9:1 to 3.7:1.

In 2015, the WSMP monitored large numbers of resident birds over 5 fair-weather banding days. Roughly equal amounts of previously marked birds (*"recaptured"*) and newly captured birds were recorded. During the WSMP, 110 birds were monitored for the first time and 107 birds were recaptured. Seventeen species were observed with a catch rate of 0.09 birds/net/hour for new birds and 0.08 birds/net/hour for recaptures.

In 2015, just over 400 individuals attended IIBO during group banding demonstrations including visits during the migration monitoring programs, exceeded the number of people to visit for group demonstrations in 2014 by 100 individuals. Feedback from leaders of visiting groups in 2015 lend high support for our work at IIBO, and adults and children alike are captivated by their experience of seeing birds in the hand.

Avian monitoring at IIBO would not be possible without help from our numerous supporters and volunteers. WildResearch would like to acknowledge support from Metro Vancouver, funding from the Sitka Foundation, BC Nature, and BC Naturalist Foundation. Seventy-two volunteers donated 2,015 hours of their time to run IIBO in 2015. We extend our sincere thanks to all those who volunteered at IIBO, the hard work and dedication of so many enthusiastic birders ensured the success of the monitoring station.

1. INTRODUCTION

1.1. Avian Monitoring Programs

The same attributes which draw urban development near large bodies of water, estuaries, rich productive land and/or riparian areas make these areas biologically important. The residual urban green spaces provide refuges, resource sources, dispersal corridors, wintering habitat and migratory stopovers for avian species that traditionally relied on the landscape that urban areas now occupy (Ohmart 1994; Bolger et al. 2001; Melles et al. 2003; Sandstrom et al. 2006).

WildResearch is a charitable organization whose goals are wildlife research and monitoring, environmental education, and community engagement through training and outreach. This organization believes that wildlife use in these semi-natural habitats is important for supporting wildlife communities, and should be further investigated. The IIBO program serves to increase our knowledge of such communities.

1.2. Iona Island Bird Observatory

Iona Island Bird Observatory (IIBO) has been in operation since 2010, and continues to serve as one of WildResearch's core programs. IIBO is located within Iona Island Regional Park, immediately north of the Vancouver International Airport in Richmond, BC (Figure 1.1-1) and is maintained by Metro Vancouver Regional Parks. This urban park is an isolated patch of riparian and meadow habitat that is surrounded by an expanding matrix of residential, commercial and industrial development. The park has been demonstrated in previous years to act as a stop-over for a variety of passerines (IBA Canada 2015; Toochin 2014a). It has been designated an Important Bird Area by Birdlife International and its local partners, Bird Studies Canada and BC Nature. The Sitka Foundation has provided significant funding to WildResearch for operating IIBO.

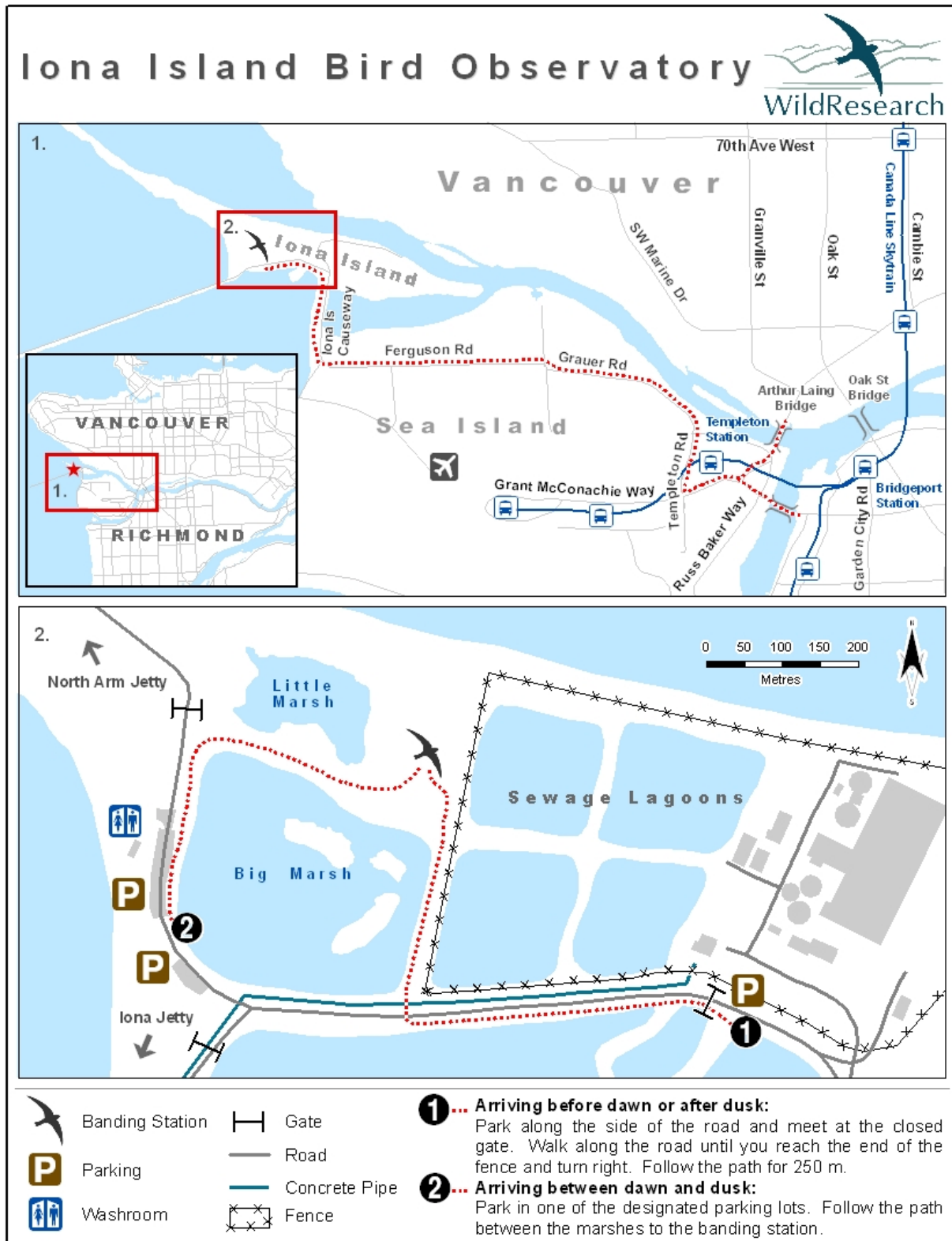


Figure 1.1-1. The Iona Island Bird Observatory is located at Iona Beach Regional Park in Richmond, British Columbia.

1.3. Report Objectives

The Iona Island Bird Observatory 2015 Annual Report summarizes the IIBO program activities in 2015. The 2015 report marks the 6th annual program in IIBO's history. The three major programs at IIBO summarized in the 2015 report extend from November 2014 to December 2015. Like past annual reports, the current report also summarizes the invaluable volunteer hours contributed per program. The current report is the first IIBO annual report that includes the number and group names of visiting groups that attended IIBO in 2015 to view banding demonstrations and learns about the IIBO program. Data summarized in this report has been compiled with data collected since 2010 and is presented in a 5-year IIBO report (Kissel and Scholefield 2016).

The 2015 report will be freely accessible from the WildResearch website because easy access to our yearly activities and results will benefit both the general public and scientific community. In addition, this report will be distributed to WildResearch members, funders, and land managers that allow WildResearch use of their property.

1.4. IIBO Programs Overview

IIBO conducts three distinct avian population monitoring programs with the following objectives:

- Winter songbird monitoring Program (WSMP), monitoring winter resident species abundance, diversity, and survival rates; and
- Spring Migration Monitoring Program (SMMP), monitoring population abundance, species diversity, migratory trends, local stopover length, and long-term trends during the spring migratory period as birds relocate from their wintering grounds to their breeding grounds; and
- Fall Migration Monitoring Program (FMMP), monitoring population abundance, species diversity, migratory trends, local stopover length, and long-term trends in breeding productivity during the fall migratory period as birds relocate from their breeding grounds to their wintering grounds.

Overall these programs are designed to monitor the abundance, diversity, annual productivity, survival and stop-over ecology of birds that use this urban park. IIBO is one of nine bird observatories currently operation in British Columbia, allowing the opportunity to compare data at local and regional scales within the province. These programs also provide educational opportunities whereby volunteers work alongside experienced ornithologists, learning to identify, safely handle, and band captured species.

2. METHODOLOGY

In 2015, all three IIBO programs employ the same sampling design, which features 14 mist net lanes, each of which are 12 m long (Figure 2-1). Net locations are representative of habitat diversity and plant species compositions in Iona Island Regional Park, including

wetland and riparian habitat and native as well as invasive plant species assemblages (Bishop and Forrester 2012; Shariff 2015). Nets are set up such that the bottom of the net is 30 – 40 cm above the ground (Boyd 2012). Nets are opened a half hour before sunrise and remain open for up to 6 hours provided that weather conditions, such as wind, rain, and cold temperatures do not endanger bird health or safety. Net rounds are conducted every 20 to 30 minutes depending on temperature to minimize the amount of time birds spend in the nets (RISC 1998; NABC 2001; Fair et al 2010; Boyd 2012; Mackenzie and Gahbauer 2014).

Special care is taken to train volunteers to adhere to IIBO's banding protocol, and a Bander-in-Charge (BIC) with an active master or sub banding permit is present at all times to ensure adherence to banding protocols (Boyd 2012). All volunteers are taught to handle birds using bander's and photographer's grips (NABC 2001); both of which can be used during extraction (Boyd 2012). All staff and volunteers carry radios so that volunteers can request assistance from the BIC to ensure bird safety during difficult extractions (Boyd 2012).



Figure 2-1. Map of the Iona Island Bird Observatory, including 14 mist-net locations.

Once extracted, birds are carefully placed individually in cloth bags using bander's grip to prevent injuring birds, and brought to the banding station (Boyd 2012). At the station, birds are stored within their individual cloth bags hung up on hooks to ensure bird safety, and birds are processed on a first-in first-out basis to minimize handling time (Boyd 2012). During processing, banders record the following information: species (subspecies where possible), age (hatch-year, second-year, after-second-year, after-hatch-year, or unknown), sex (male, female, or unknown), wing chord, weight, and fat reserves. Capture net and time are also recorded. All new birds (birds that had not been previously captured) are fitted with a Canadian Wildlife Service-issued aluminum butt-end band marked with a unique eight or nine-digit band number. For all birds that have been previously captured (recaptures), banders recorded their unique band number, collect age and body condition data, and release the bird.

3. RESULTS AND DISCUSSION

3.1. Spring Migration Monitoring Program

During 2015, the SMMP ran daily from April 18 to May 31. The SMMP included constant-effort mist-netting and collection of morphometric and other data from each bird captured. Banding was possible on 40 fair weather days during that period, for a total effort of 2,866.5 net hours.

A total of 1,660 birds from 50 species were monitored during the SMMP with a rate of 0.58 birds captured per net hour. Of those observed, 1,476 new birds from 50 species were captured (Figure 3.1-1), and 184 recaptures from 25 species occurred (Figure 3.1-2).

The top five most frequent new captures accounted for 69% of new captures and like previous years were all warbler species. These included Wilson's, Orange-crowned, Audubon's, Myrtle, and Yellow Warblers (Table 3.1-1). Wilson's Warbler, Common Yellowthroat, Song Sparrow, Spotted Towhee and Black-capped Chickadee were the five most frequently recaptured species, accounting for 67% of all recaptures (Table 3.1-2). Of the total recaptures, 24% were recaptured more than once (Appendix A).

Age ratios of SY to ASY birds for the top five species for newly captured and recaptured combined were between 0.9:1 and 1.3:1 (Table 3.1-3). However, not all birds banded during SMMP were aged into the SY or ASY categories.

Iona Island Bird Observatory was also fortunate to capture three Barn Swallows in the spring of 2015, one female on May 25th and two males on May 6th and 12th. Barn Swallows are Blue-listed in British Columbia, and were designated as Threatened by the Committee on the Status of Endangered Wildlife in Canada in 2011 (COSEWIC 2011), but have not been list on the Species at Risk Act Schedule. They are one of the many aerial insectivores that are in decline (North American Bird Conservation Initiative Canada 2012). Barn swallows, in particular, have been reduced to a quarter of their abundance as measured in 1970, likely due to a combination of habitat loss, pesticide use, reduction of prey items, and climate change (North American Bird Conservation Initiative Canada 2012).

Table 3.1-1: Five Most Commonly Captured New Bird Species during the Spring Migration Monitoring Program

| Species | Number of Captures | Percent of total new captures |
|------------------------|---------------------------|--------------------------------------|
| Wilson's Warbler | 476 | 32 |
| Orange-crowned Warbler | 259 | 18 |
| Audubon's Warbler | 117 | 8 |
| Myrtle Warbler | 99 | 7 |
| Yellow Warbler | 66 | 4 |

Table 3.1-2: Five Most Commonly Recaptured Species during the Spring Migration Monitoring Program

| Species | Number of Captures | Percent of total recaptures |
|------------------------|---------------------------|------------------------------------|
| Wilson's Warbler | 78 | 27 |
| Common Yellowthroat | 38 | 13 |
| Song Sparrow | 37 | 13 |
| Spotted Towhee | 29 | 10 |
| Black-capped Chickadee | 22 | 8 |

Table 3.1-3: Age ratios Second Year (SY) vs. After Second Year (ASY) of top five species monitored during the 2015 Spring Migration Monitoring Program

| Species | Number Aged to SY or ASY | Approximate Ratio (SY:ASY) |
|------------------------|---------------------------------|-----------------------------------|
| Wilson's Warbler | 443 | 1.1:1 |
| Orange-crowned Warbler | 233 | 1.0:1 |
| Audubon's Warbler | 111 | 1.3:1 |
| Myrtle Warbler | 91 | 1.1:1 |
| Yellow Warbler | 64 | 0.9:1 |

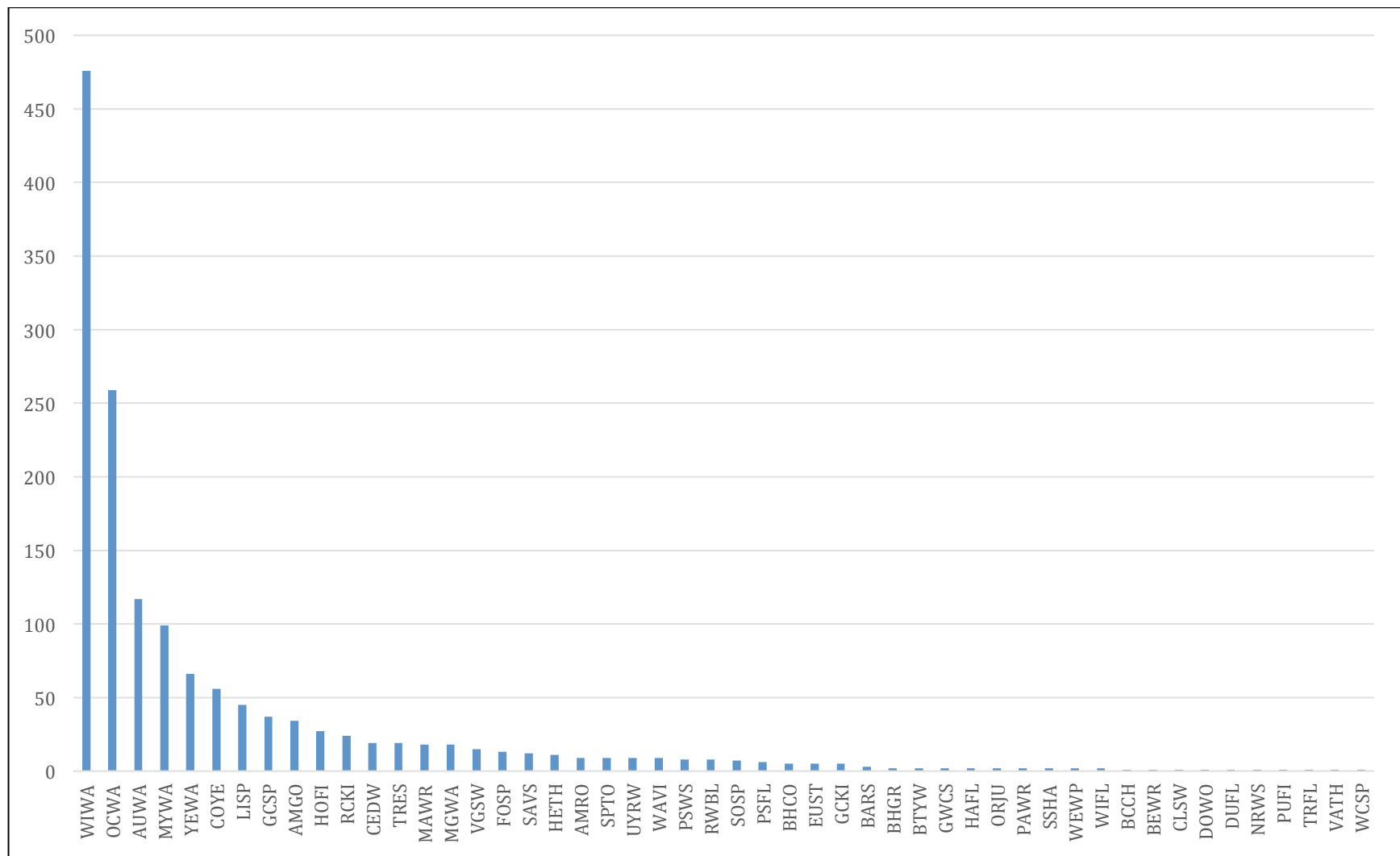


Figure 3.1-1: Spring Migration Monitoring Program 2015 New Captures (Refer to Appendix B for species codes)

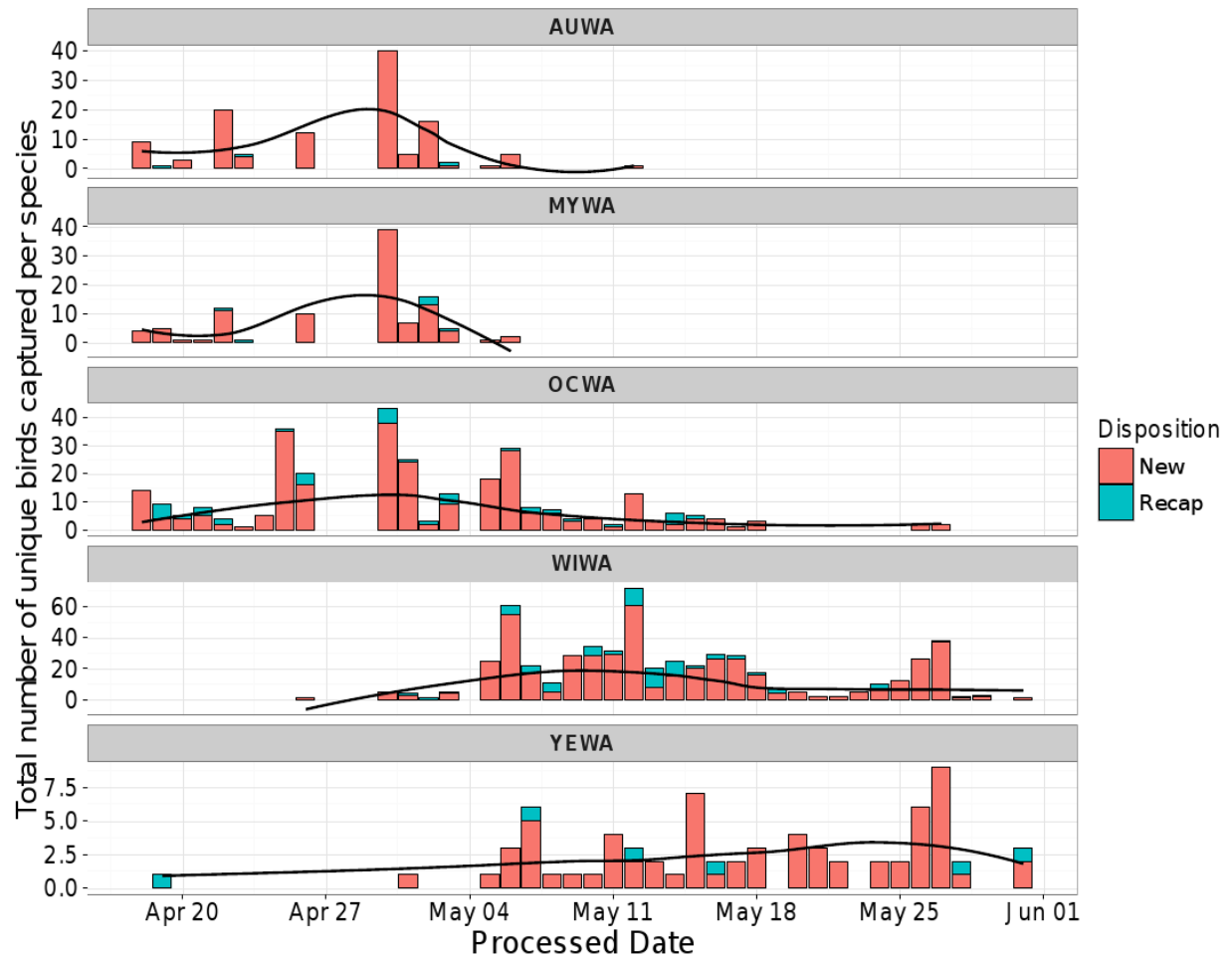


Figure 3.1-2: Trends in the number of birds caught over the 2015 SMMP for the top five new capture species.

Two of the provincially permitted species were captured; Sharp-shinned Hawk and Red-winged Blackbirds, totaling 10 individuals and 14 capture and recaptures. Of particular note was the capture of a male Black-chinned Hummingbird. This individual was photographed but not processed as humming are not banding during the IIBO Program. This is the 6th occurrence record of this species in Vancouver since 1962 (Toochin 2014b), the first photograph of the species in Vancouver (Plate 3.1-1), and the first ever record for Iona Beach Regional Park. Other interesting species not typically captured at IIBO that were captured in 2015 included a Downy Woodpecker, male and female Black-headed Grosbeak (Plate 3.1-2), and a Black-throated Grey Warbler (Plate 3.1-3).



Plate 3.1-1. Black-chinned Hummingbird in the hand. Photo credit: Murray Lashmar.



Plate 3.1-2. Male Black-headed Grosbeak. Photo credit: Jesse Kemp



Plate 3.1-3. Black-throated Grey Warbler, Photo credit: Paul Levesque

During the SMMP, 41 volunteers contributed 974 volunteer-hours to the Iona Island Bird Observatory monitoring program over the course of 40 days (Plate 3.1-4). Of the three programs, the SMMP yielded the most number of volunteer hours and most birds banded. Training provided by experienced coordinators resulted in beginner volunteers rising to intermediate and advanced training levels. This will ensure the continued success of the migratory station and allow volunteers to gain practical biological field skills.

During the SMMP, IIBO hosted the following group visitors:

- British Columbia Institute of Technology (BCIT) Sustainable Resource Management program, Applied Ecology Course;
- Metro Vancouver Regional Park's Celebrating Partners event (Plate 3.1-5);
- Swedish Ornithological Society.



Plate 3.1-4. Biologist and new trainee, Cecilia holding a Marsh Wren, Photo credit: Paul Levesque



Plate 3.1-5. Metro Vancouver's Celebrating Partners Event field trip to IIBO. Photo credit: Paul Levesque

3.2. Fall Migration Monitoring Program

The FMMP operated three days per week from August 22 to October 25 in 2015. During the 22 fair-weather days within that period, a total effort of 3,608 net hours were achieved. The FMMP yielded 1,272 captures with an average capture rate of 0.35 birds per net hour. Of the total, 1,009 individuals of 42 species were new birds and were captured at an average rate of 0.28 birds per net hour (Figure 3.2-1), while 263 individuals from 25 species were recaptured at an average rate of 0.07 birds per net hour.

Among new captures, Song Sparrows, Fox Sparrows, Golden-crowned Kinglets, Ruby-crowned Kinglets and Yellow Warblers were the top five most frequent newly captured species, representing 51% of all new captures (Table 3.2-1). Song Sparrows, Fox Sparrows, Black-capped Chickadees, Spotted Towhees, and Ruby-crowned Kinglets were the most frequently recaptured species, representing 66% of all recaptures (Table 3.2-2). Of the total recaptures, 25% were recaptured more than once (Appendix A).

More than 95% of captured birds were precisely aged to HY and AHY age classifications in the FMMP. For the top five species newly captured and recaptured combined, this resulted in HY:AHY ratios between 1.9:1 and 3.7:1 for the top five species, respectively (Table 3.2-3).

One provincially listed Barn Swallow was captured during the FMMP on September 5th 2015. Red-shafted Northern Flicker made it to observer highlight lists because of their rarity of capture at the station. As part of the FMMP we had the opportunity to monitor two species new to IIBO: Swamp Sparrow and Red-breasted Nuthatch. We also monitored some species less frequently monitored at our station, a juvenile Northern Shrike, Brown Creeper, Varied Thrush, and Red-shafted Northern Flicker.

During the 2015 FMMP, 50 dedicated volunteers donated 1,015 hours of their time to help run the IIBO station (Plate 3.2-2).

Table 3.2-1: Five Most Commonly Captured New Bird Species during the Fall Migration Monitoring Program

| Species | Number of Captures | Percent of total new captures |
|------------------------|--------------------|-------------------------------|
| Song Sparrow | 137 | 12 |
| Fox Sparrow | 131 | 12 |
| Golden-crowned Kinglet | 99 | 9 |
| Ruby-crowned Kinglet | 96 | 9 |
| Yellow Warbler | 96 | 9 |

Table 3.2-2: Five Most Commonly Recaptured Species during the Fall Migration Monitoring Program

| Species | Number of Captures | Percent of total Recaptures |
|------------------------|--------------------|-----------------------------|
| Song Sparrow | 55 | 21 |
| Fox Sparrow | 44 | 17 |
| Black-capped Chickadee | 27 | 10 |
| Spotted Towhee | 26 | 10 |
| Ruby-crowned Kinglet | 22 | 8 |

Table 3.2-3: Age ratios [Hatch Year (HY) vs. After Hatch Year (AHY)] of top five monitored species during the 2015 Fall Migration Monitoring Program.

| Species | Number Aged to AHY or HY | Ratio (HY:AHY) |
|------------------------|--------------------------|----------------|
| Song Sparrow | 144 | 3.4:1 |
| Fox Sparrow | 141 | 1.9:1 |
| Golden-crowned Kinglet | 97 | 3.6:1 |
| Ruby-crowned Kinglet | 98 | 3.7:1 |
| Yellow Warbler | 97 | 3.2:1 |

During the Fall Migration Monitoring Program, we were visited by the following groups:

- Vancouver and Nicomekl Chapters of NatureKids (formerly Young Naturalist Club), Vancouver Chapter;
- University of British Columbia (UBC) 3rd year Ornithology class;
- Vancouver District Girl Guides;
- University of British Columbia 1st year Biology class;
- BCIT's Ecological Restoration class (Plate 3.2-2);
- Delta Home Learners – NatureKids group;
- Thompson Rivers University invertebrate class; and
- Two students from the Fraser Valley University 1st year Biology as part of a class assignment to contribute volunteer hours to local non-profit organization, and present their experience to their class to teach others about opportunities in the local non-profit sector.

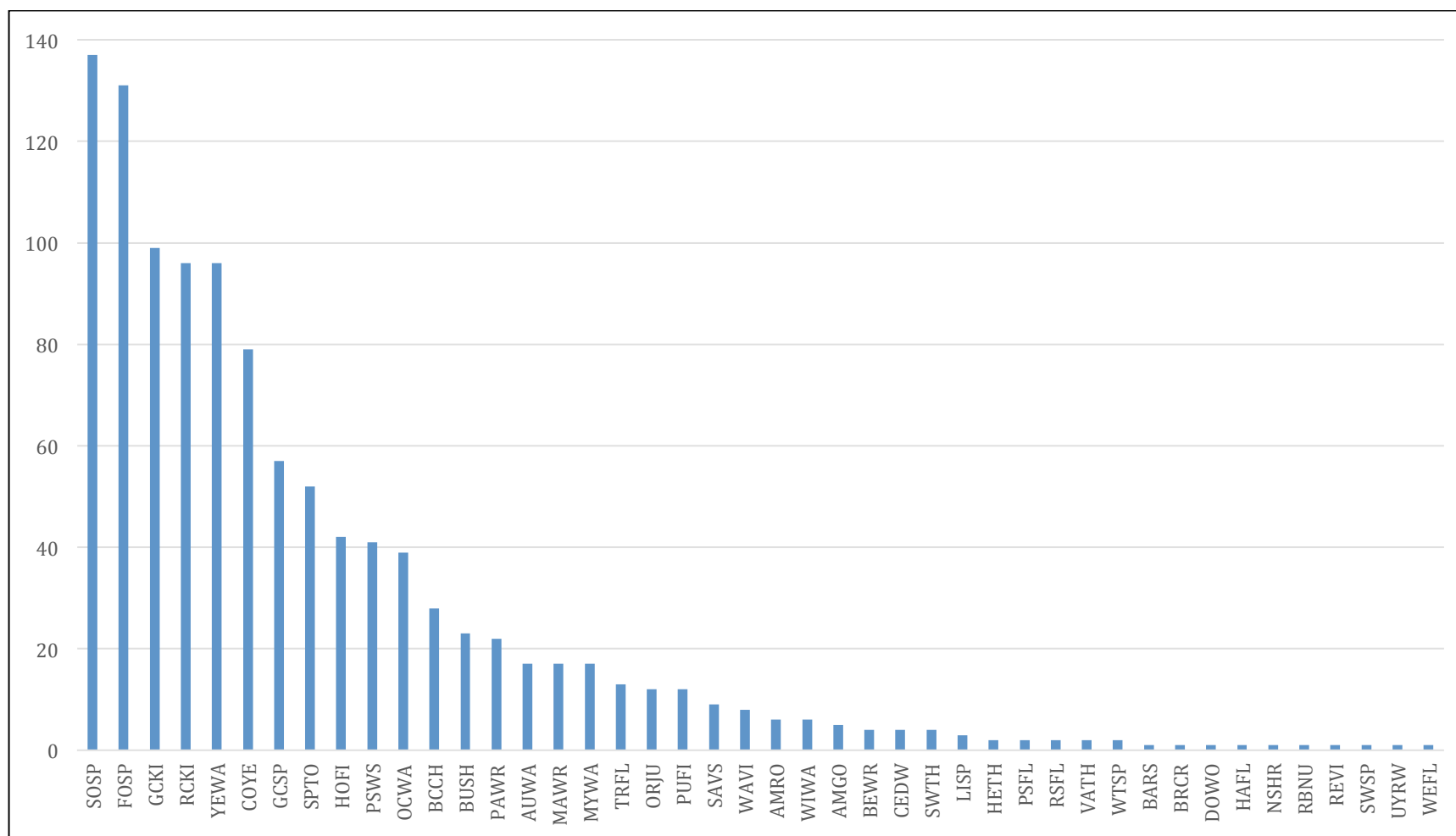


Figure 3.2-1: Fall Migration Monitoring Program Total Capture Frequency by Species (Refer to Appendix B for species codes).

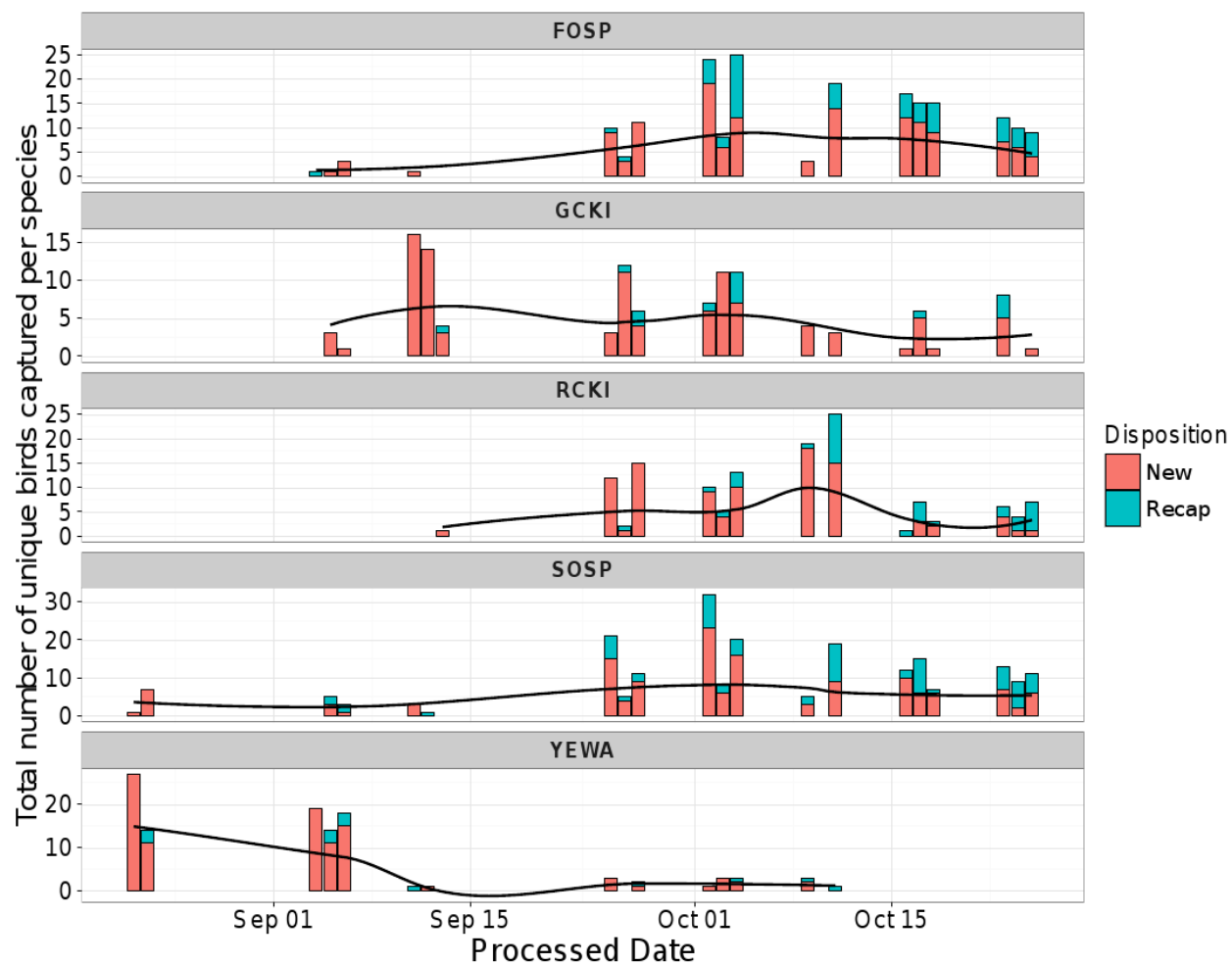


Figure 3.2-2: Trends in the number of birds caught over the 2015 FMMP for most commonly newly captured species



Plate 3.2-1. John, holding his first black-capped Chickadee with IIBO Bander, Paul.
Photo credit: Christine Rock



Plate 3.2-2. IIBO Bander, Anna (left), shows BCIT Restoration class student a Swamp Sparrow while student looks up the species in her bird field guide. Photo credit: Paul Levesque

3.3. Winter Songbird Monitoring Program

The WSMP planned to run four days per month for November and December. However, inclement weather reduced operations to five days in total for the two months with a total mist net effort of 1,272.5 net hours. The WSMP yielded a total of 217 captures from 17 species (Figure 3.3-1), representing a total capture rate of 0.17 birds per net hour. Of these, 110 individuals of 10 species were new birds and 107 recaptures from 12 species occurred. Of the total recaptures, 18% were recaptured more than once (Appendix A). Throughout this season, recapture rates of birds previously caught were higher relative to new birds captured compared to other seasons.

The five most frequent new birds were Fox Sparrows, House Finches, Spotted Towhees, Song Sparrows, and Golden-crowned Kinglets, which accounted for 82% of all new captures (Table 3.3-1). The five most frequently recaptured species were Fox Sparrows, Song Sparrows, Spotted Towhees, Black-capped Chickadees and Ruby-crowned Kinglets, which accounted for 88% of all recaptures (Table 3.3-2). A rare capture during the WSMP was the Downy woodpecker which was observed on one occasion.

The 2014-2015 Winter Songbird Monitoring Program capture rates of 0.09 birds/net/hour for new species and 0.08 for recaptures were less than to prior seasons, which ranged between 0.18-0.26 birds/net/hour for new birds and 0.40-0.47 birds/net/hour for recaptures in previous years (Boyd 2012; Tirrul 2014). The top five new captures and recaptures were also the same species as in the 2013-2014 season (Arbeider 2015): Fox Sparrow, Song Sparrow, House Finch, Black-capped Chickadee, Spotted Towhee, Ruby-crowned Kinglet, and Golden-crowned Kinglet. These species are known winter residents and their sustained high capture and recapture rates ensure the success of the WSMP in determining over-winter survival estimates.

During the 2014-2015 Winter Songbird Monitoring Program, 9 volunteers accumulated 140 volunteer hours over 5 banding days. These dedicated volunteers braved the winter mornings (Plate 3.3-1) to contribute to the program, monitoring common winter residents (Plate 3.3-2).

Table 3.3-1: Five Most Commonly Captured New Birds during the Winter Songbird Monitoring Program

| Species | Number of Captures | Percent of total New Captures |
|------------------------|--------------------|-------------------------------|
| Fox Sparrow | 26 | 24 |
| House Finch | 25 | 23 |
| Spotted Towhee | 17 | 15 |
| Song Sparrow | 13 | 12 |
| Golden-crowned Kinglet | 9 | 8 |

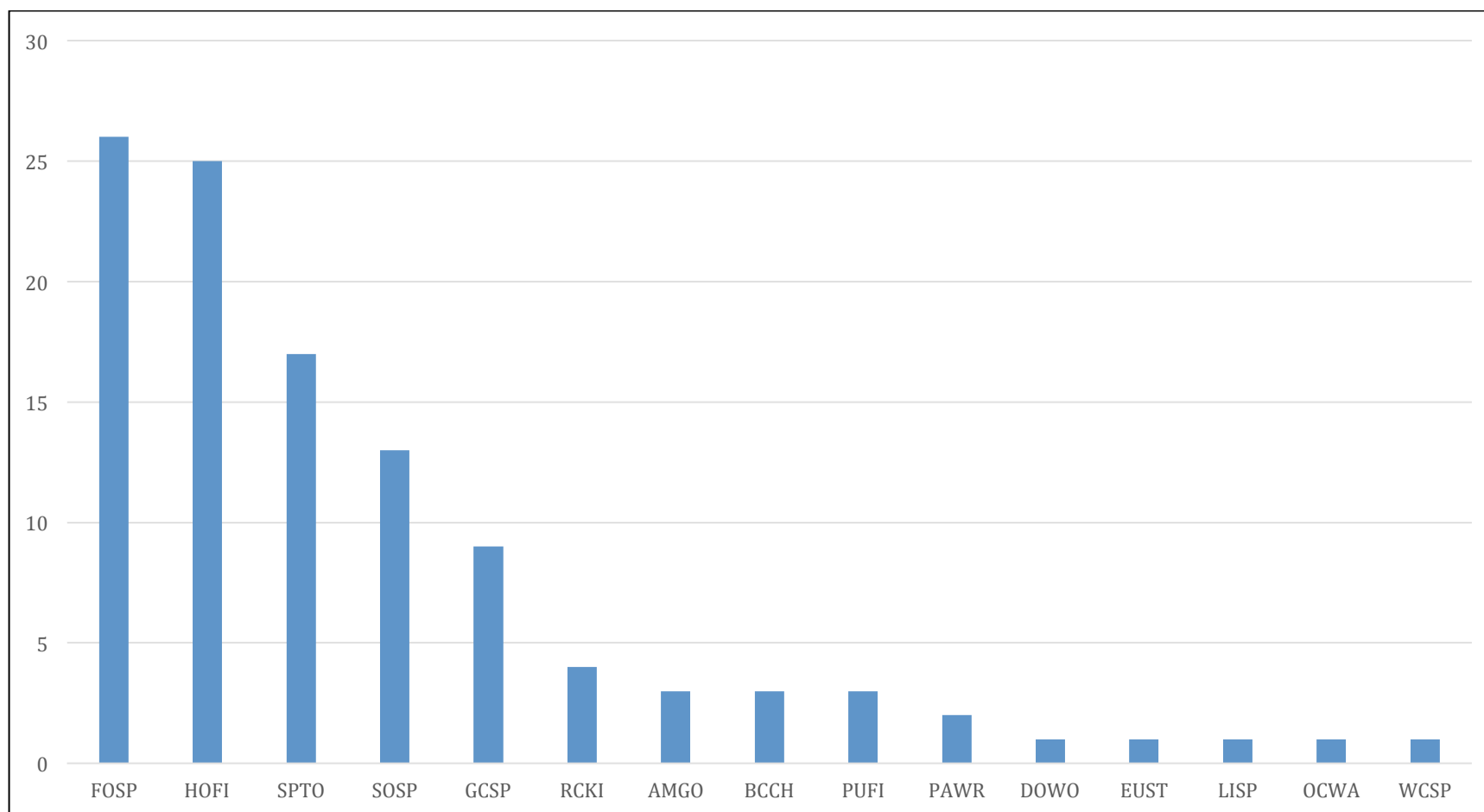


Figure 3.3-1: Winter Songbird Monitoring Program Total Capture Frequency by Species (Refer to Appendix B for species code)

Table 3.3-2: Five Most Commonly Recaptured Species during the Winter Songbird Monitoring Program

| Species | Number of Captures | Percent of total Recaptures |
|------------------------|--------------------|-----------------------------|
| Fox Sparrow | 30 | 28 |
| Song Sparrow | 24 | 22 |
| Spotted Towhee | 24 | 22 |
| Black-capped Chickadee | 12 | 11 |
| Ruby-crowned Kinglet | 5 | 5 |

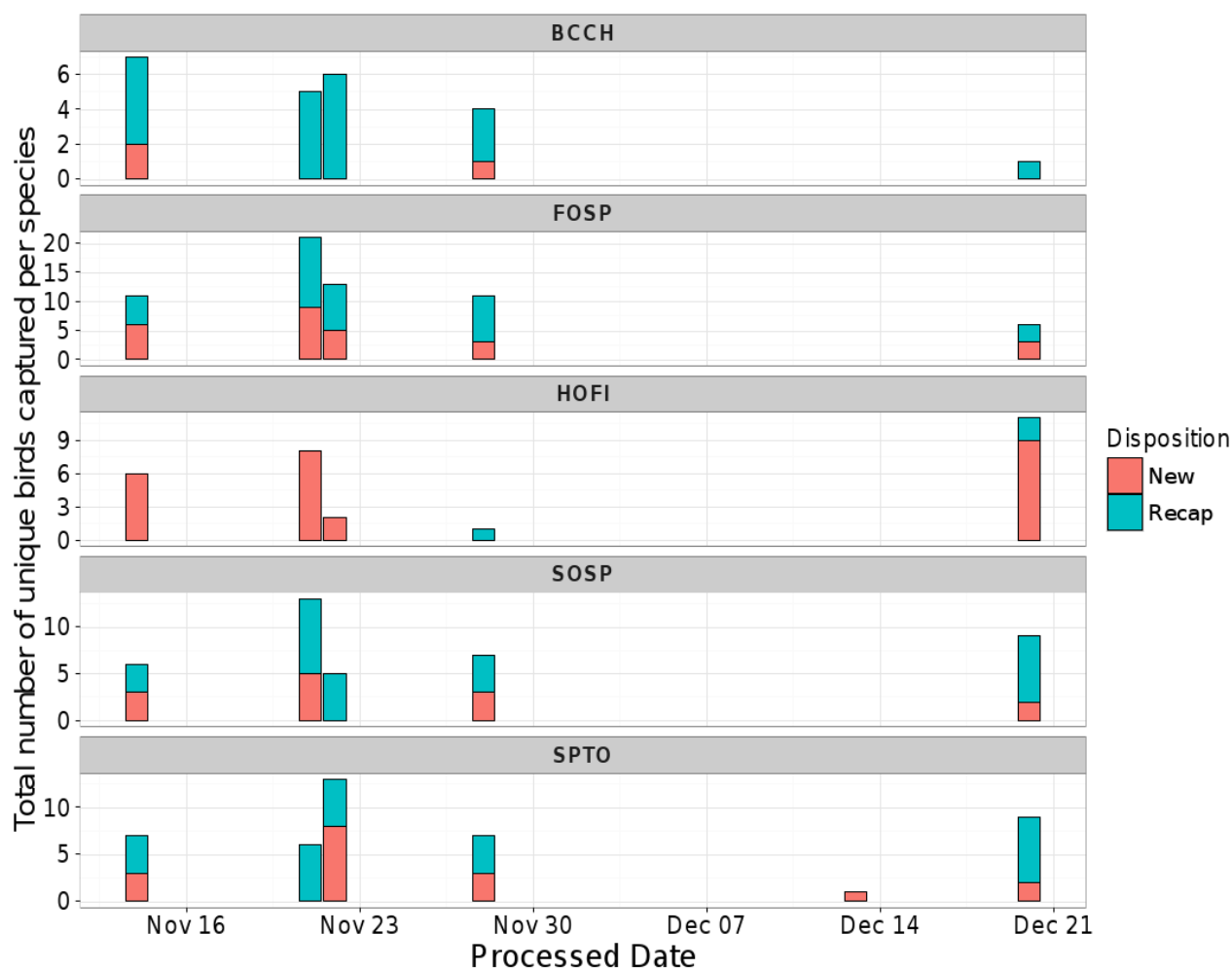


Figure 3.3-2: Trends in the number of birds caught over the 2015 WSMP for most commonly newly captured species



Plate 3.3-1. Angela (left) and Renae (right) working in the IIBO banding hut on a frosty morning. Photo credit: Ken Flores



Plate 3.3-2. Kiirsti (left) and Brynn (right) holding typical species captured during the winter songbird monitoring program, Spotted Towhee (left) and Black-capped Chickadee (right). Photo credit: Christine Rock.

4. OUTREACH SUCCESS STORIES

Many inspiring moments occur at IIBO when we see first-hand the positive influence that experiences with nature have on the general public, and on children, youth, and elders alike. The two success stories below illustrate moments in 2015 that were inspiring.

4.1. Connecting Children and Youth with Nature

Each and every group visit is in its own way special, but WildResearch Directors most enjoy visits from children's groups. In the fall of 2015, we had a special group of children from the NatureKids, Vancouver chapter visit IIBO. IIBO personnel were impressed by how many children in the group could already identify the species, and in some case even the gender of the birds before we taught them. We had to giggle when one participant took out her note pad and was intent on sketching the birds as we held them. We overheard one Mother remark to the NatureKids Leader and trip organizer, Leslie Bol, that she had never seen her daughter so engaged in anything to the degree that she was engaged at IIBO. This remark was posted on the NatureKids Facebook page. A photo of the experience, and a drawing sketched out during the visit are detailed below (Plate 4.1-1).

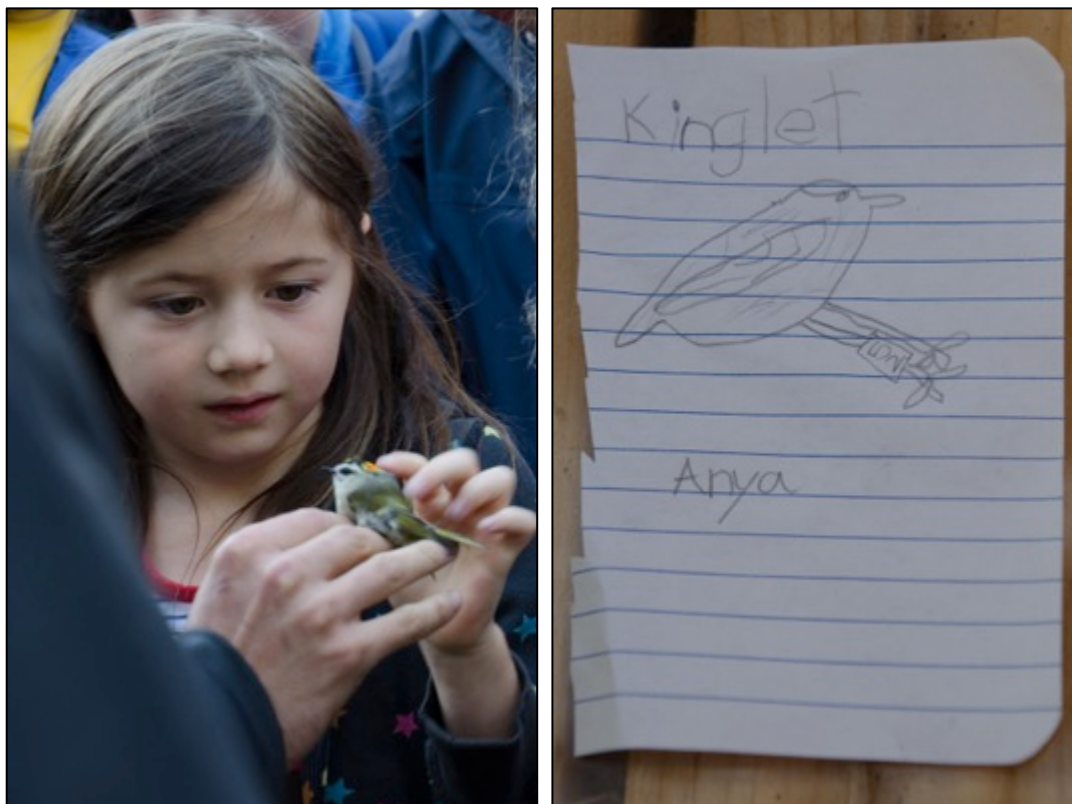


Plate 4.1-1. Nature Kids, Vancouver chapter visitor examining up close view of Golden-crowned Kinglet (left), and accompanying drawing (right).

4.2. Engaging the Public

Our work at IIBO proves that seeing a bird in the hand inspires even the most young-at-heart. This spring, WildResearch personnel approached a curious Mother and Daughter that were birding in the park and asked them whether they would like to see the work we were conducting at IIBO. Both were delighted to hold birds, especially the Mother who was celebrating her birthday (Plate 4.2-1).



Plate 4.2-1. IIBO visitation experience contributes to birthday celebration.

5. CONCLUSIONS

Iona Island Bird Observatory has successfully run several programs for the last six years (2010-2015). In 2015, a total of 3149 birds were monitored over 7,747 mist-net hours. The diversity and volume of birds monitored at IIBO are two enormous benefits of having a station on the Pacific Flyaway in Iona Beach Regional Park.

Capture rates for both recaptures and new captures for the 2015 monitoring program are lower than those observed in previous years. The 2015 SMMP overall capture rate of 0.58 birds per net per hour was lower than that of the 2013 and 2014 SMMP capture rates of 0.70 and 0.99 birds per net per hour, respectively (Arbeider 2015; Tirrul 2014). Similarly, the overall capture rate of 0.35 birds per net per hour for the 2015 FMMP were lower than that of 2013 (1.19 birds per net per hour) and of 2014 (1.6 birds per net per hour) (Arbeider 2015; Tirrul 2014). Lower capture rates were consistent across both new birds

and recaptures. The 2014-2015 WSMP capture rates of 0.09 birds per net per hour for new species and 0.08 for recaptures were less than to prior seasons, which ranged between 0.18-0.26 birds per net per hour for new birds and 0.40-0.47 birds per net per hour for recaptures in previous years (Arbeider 2015; Tirrul 2014). Continuation of the IIBO Program should be conducted to identify and characterize any potential declines, or continued patterns of decline.

The 2015 IIBO monitoring programs supported the research goal to identify survival rates of species, trends in fat contents, and arrival dates of migrating warblers and sparrows. The 2015 data combined with the results of past IIBO programs acts as a baseline for avian species that use IIBO either as a migration stop-over point, or year-round. Full datasets and analyses are presented in the 6-year cumulative IIBO report (Kissel and Scholefield 2016). As the effects of climate change and habitat loss intensify, these programs may contribute to management decisions at Iona Beach Regional Park and other natural areas in the Metro Vancouver area, in order to maintain avian species diversity.

Iona Island Bird Observatory is accomplishing WildResearch's three main goals of research and monitoring of wildlife, environmental education, and community engagement. With five years of monitoring completed (including the pilot year in 2010) and the 2015-year currently in operation, WildResearch has also completed a comprehensive multi-year report (Kissel and Scholefield 2016). This report is needed to fulfill the research portion of WildResearch's goals and to help contribute to a shared knowledge base that can inform conservation efforts.

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APPENDIX A: 2015 CAPTURE DATA

Table A1: 2015 Spring Migration Monitoring Program Capture Data¹

| Species | Species Code | New Captures | Number of Recaptures | | | | | |
|---|--------------|--------------|----------------------|-----|-------|------|-----|--------|
| | | | One | Two | Three | Four | Six | Eleven |
| American Goldfinch | AMGO | 34 | 4 | | | | | |
| American Robin | AMRO | 9 | 5 | | | | | |
| Audubon's Warbler | AUWA | 117 | 3 | | | | | |
| Barn Swallow | BARS | 3 | | | | | | |
| Black-Capped Chickadee | BCCH | 1 | 4 | 2 | 1 | | | 1 |
| Bewick's Wren | BEWR | 1 | 1 | 1 | | | | |
| Brown-headed Cowbird | BHCO | 5 | 1 | | | | | |
| Black-headed Grosbeak | BHGR | 2 | | | | | | |
| Black-throated Gray Warbler | BTYW | 2 | | | | | | |
| Cedar Waxwing | CEDW | 19 | | | | | | |
| Cliff Swallow | CLSW | 1 | | | | | | |
| Common Yellowthroat | COYE | 56 | 8 | 4 | 5 | | 1 | |
| Downy Woodpecker | DOWO | 1 | | 1 | | | | |
| Dusky Flycatcher | DUFL | 1 | | | | | | |
| European Starling | EUST | 5 | | | | | | |
| Fox Sparrow | FOSP | 13 | 1 | | | | | |
| Golden-crowned Kinglet | GCKI | 5 | | | | | | |
| Golden-crowned Sparrow | GCSP | 37 | 3 | | | | | |
| White-crowned Sparrow, Gambel's subspecies | GWCS | 2 | | | | | | |
| Hammond's Flycatcher | HAFL | 2 | | | | | | |

¹ Species under Provincial permit in bold font

continued

| Species | Species Code | New Captures | Number of Recaptures | | | | | |
|---|--------------|--------------|----------------------|-----|-------|------|-----|--------|
| | | | One | Two | Three | Four | Six | Eleven |
| Hermit Thrush | HETH | 11 | | | | | | |
| House Finch | HOFI | 27 | 1 | | | | | |
| Lincoln's Sparrow | LISP | 45 | 2 | | | | | |
| Marsh Wren | MAWR | 18 | 4 | 2 | 1 | 1 | | |
| MacGillivray's Warbler | MGWA | 18 | 2 | | | | | |
| Myrtle Warbler | MYWA | 99 | 6 | | | | | |
| Northern Rough-winged Swallow | NRWS | 1 | | | | | | |
| Orange-crowned Warbler | OCWA | 259 | 3 | 4 | | | | |
| Oregon Junco | ORJU | 2 | | | | | | |
| Pacific Wren | PAWR | 2 | | | | | | |
| Pacific Slope Flycatcher | PSFL | 6 | | | | | | |
| White-crowned Sparrow, Puget Sound subspecies | PSWS | 8 | | | | | | |
| Purple Finch | PUFI | 1 | | | | | | |
| Ruby-Crowned Kinglet | RCKI | 24 | 1 | | | | | |
| Red-winged Blackbird | RWBL | 8 | 4 | | | | | |
| Savannah Sparrow | SAVS | 12 | | | | | | |
| Song Sparrow | SOSP | 7 | 9 | 4 | | 3 | | |
| Spotted Towhee | SPTO | 9 | 5 | 4 | 1 | | | |
| Sharp-shinned Hawk | SSHA | 2 | | | | | | |
| Tree Swallow | TRES | 19 | 2 | 1 | | | | |
| Traill's Flycatcher | TRFL | 1 | 1 | | | | | |
| Yellow-rumped Warbler, Unknown subspecies | UYRW | 9 | | | | | | |
| Varied Thrush | VATH | 1 | | | | | | |
| Violet-Green Swallow | VGSW | 15 | | | | | | |
| Warbling Vireo | WAVI | 9 | 1 | | | | | |

continued

| Species | Species Code | New Captures | Number of Recaptures | | | | | |
|-----------------------|--------------|--------------|----------------------|-----|-------|------|-----|--------|
| | | | One | Two | Three | Four | Six | Eleven |
| White-crowned Sparrow | WCSP | 1 | | | | | | |
| Western Wood-pewee | WEWP | 2 | | | | | | |
| Willow Flycatcher | WIFL | 2 | | | | | | |
| Wilson's Warbler | WIWA | 476 | 64 | 7 | | | | |
| Yellow Warbler | YEWA | 66 | 4 | 1 | | | | |

Table A2: 2015 Fall Migration Monitoring Program Capture Data

| Species | Species Code | New Captures | Number of Recaptures | | | | |
|------------------------|--------------|--------------|----------------------|-----|-------|------|------|
| | | | One | Two | Three | Four | Five |
| American Goldfinch | AMGO | 5 | | | | | |
| American Robin | AMRO | 6 | 1 | | | | |
| Audubon's Warbler | AUWA | 17 | | | | | |
| Barn Swallow | BARS | 1 | | | | | |
| Black-capped Chickadee | BCCH | 28 | 11 | 9 | 4 | 2 | 1 |
| Bewick's Wren | BEWR | 4 | | 1 | 1 | | |
| Brown Creeper | BRCR | 1 | | | | | |
| Bush Tit | BUSH | 23 | 1 | | | | |
| Cedar Waxwing | CEDW | 4 | | | | | |
| Common Yellowthroat | COYE | 79 | 16 | 3 | 2 | | |
| Downy Woodpecker | DOWO | 1 | | | | | |
| Fox Sparrow | FOSP | 131 | 32 | 9 | 3 | | |
| Golden-crowned Kinglet | GCKI | 99 | 11 | | 1 | | |
| Golden-crowned Sparrow | GCSP | 57 | 7 | 2 | | | |
| Hammond's Flycatcher | HAFL | 1 | | | | | |
| Hermit Thrush | HETH | 2 | | | | | |
| House Finch | HOFI | 42 | | | | | |

continued

| Species | Species Code | New Captures | Number of Recaptures | | | | |
|---|--------------|--------------|----------------------|-----|-------|------|------|
| | | | One | Two | Three | Four | Five |
| Lincoln's Sparrow | LISP | 3 | 3 | | | | |
| Marsh Wren | MAWR | 17 | 7 | | | | |
| Myrtle Warbler | MYWA | 17 | 2 | | | | |
| Northern Shrike | NSHR | 1 | | | | | |
| Orange-crowned Warbler | OCWA | 39 | 3 | | | | |
| Oregon Junco | ORJU | 12 | 1 | | | | |
| Pacific Wren | PAWR | 22 | 3 | 1 | | | |
| Pacific Slope Flycatcher | PSFL | 2 | 1 | | | | |
| White-crowned Sparrow, Puget Sound subspecies | PSWS | 41 | | 1 | | | |
| Purple Finch | PUFI | 12 | 3 | | | | |
| Red-breasted Nuthatch | RBNU | 1 | 1 | | | | |
| Ruby-crowned Kinglet | RCKI | 96 | 15 | 3 | 2 | | 2 |
| Red-eyed Vireo | REVI | 1 | 1 | | | | |
| Red-shafted Flicker | RSFL | 2 | | | | | |
| Savannah Sparrow | SAVS | 9 | | | | | |
| Song Sparrow | SOSP | 137 | 42 | 9 | 3 | 1 | |
| Spotted Towhee | SPTO | 52 | 23 | 3 | | | |
| Swamp Sparrow | SWSP | 1 | | | | | |
| Swainson's Thrush | SWTH | 4 | | | | | |
| Traill's Flycatcher | TRFL | 13 | 1 | | | | |
| Yellow-rumped Warbler, Unknown subspecies | UYRW | 1 | | | | | |
| Varied Thrush | VATH | 2 | | | | | |
| Warbling Vireo | WAVI | 8 | 1 | | | | |
| Western Flycatcher | WEFL | 1 | | | | | |
| Wilson's Warbler | WIWA | 6 | | 1 | | | |

continued

| Species | Species Code | New Captures | Number of Recaptures | | | | |
|------------------------|--------------|--------------|----------------------|-----|-------|------|------|
| | | | One | Two | Three | Four | Five |
| White-throated Sparrow | WTSP | 2 | 1 | | | | |
| Yellow Warbler | YEWA | 96 | 11 | | 1 | | |

Table A3: Winter Songbird Monitoring Program 2015 Capture Data

| Species | Species Code | New Captures | Number of Recaptures | | | |
|------------------------|--------------|--------------|----------------------|-----|-------|------|
| | | | One | Two | Three | Four |
| American Goldfinch | AMGO | 3 | | | | |
| Black-capped Chickadee | BCCH | 3 | 4 | 7 | 1 | |
| Bewick's Wren | BEWR | | 1 | | | |
| Downy Woodpecker | DOWO | 1 | | | | |
| European Starling | EUST | 1 | | | | |
| Fox Sparrow | FOSP | 26 | 26 | 1 | 3 | |
| Golden-crowned Kinglet | GCKI | | | | 1 | |
| Golden-crowned Sparrow | GCSP | 9 | 1 | | | |
| House Finch | HOFI | 25 | 3 | | | |
| Lincoln's Sparrow | LISP | 1 | | | | |
| Orange-crowned Warbler | OCWA | 1 | 1 | | | |
| Pacific Wren | PAWR | 2 | 3 | | | |
| Purple Finch | PUFI | 3 | 2 | | | |
| Ruby-crowned Kinglet | RCKI | 4 | 2 | 2 | 1 | |
| Song Sparrow | SOSP | 13 | 22 | 1 | | 1 |
| Spotted Towhee | SPTO | 17 | 23 | | 1 | |
| White-Crowned Sparrow | WCSP | 1 | | | | |

APPENDIX B: INDEX OF SPECIES CODES

| Species Code | Species Common Name |
|--------------|--|
| AMGO | American Goldfinch |
| AMRO | American Robin |
| AUWA | Audubon's Warbler |
| BARS | Barn Swallow |
| BCCH | Black-Capped Chickadee |
| BEWR | Bewick's Wren |
| BHCO | Brown-headed Cowbird |
| BHGR | Black-headed Grosbeak |
| BRCR | Brown Creeper |
| BTYW | Black-throated Gray Warbler |
| BUSH | Bush Tit |
| CEDW | Cedar Waxwing |
| CLSW | Cliff Swallow |
| COYE | Common Yellowthroat |
| DOWO | Downy Woodpecker |
| DUFL | Dusky Flycatcher |
| EUST | European Starling |
| FOSP | Fox Sparrow |
| GCKI | Golden-crowned Kinglet |
| GCSP | Golden-crowned Sparrow |
| GWCS | White-crowned Sparrow, Gambel's subspecies |
| HAFL | Hammond's Flycatcher |
| HETH | Hermit Thrush |
| HOFI | House Finch |
| LISP | Lincoln's Sparrow |
| MAWR | Marsh Wren |
| MGWA | MacGillivray's Warbler |
| MYWA | Myrtle Warbler |
| NRWS | Northern Rough-winged Swallow |
| NSHR | Northern Shrike |
| OCWA | Orange-crowned Warbler |
| ORJU | Oregon Junco |
| PAWR | Pacific Wren |
| PSFL | Pacific Slope Flycatcher |

Continued

| Species Code | Species Common Name |
|---------------------|---|
| PSWS | White-crowned Sparrow, Puget Sound subspecies |
| PUFI | Purple Finch |
| RBNU | Red-breasted Nuthatch |
| RCKI | Ruby-Crowned Kinglet |
| REVI | Red-eyed Vireo |
| RSFL | Red-shafted Flicker |
| RWBL | Red-winged Blackbird |
| SAVS | Savannah Sparrow |
| SOSP | Song Sparrow |
| SPTO | Spotted Towhee |
| SSHA | Sharp-shinned Hawk |
| SWSP | Swamp Sparrow |
| SWTH | Swainson's Thrush |
| TRES | Tree Swallow |
| TRFL | Traill's Flycatcher |
| UYRW | Yellow-rumped Warbler, Unknown subspecies |
| VATH | Varied Thrush |
| VGSW | Violet-Green Swallow |
| WAVI | Warbling Vireo |
| WCSP | White-crowned Sparrow |
| WEFL | Western Flycatcher |
| WEWP | Western Wood-pewee |
| WIFL | Willow Flycatcher |
| WIWA | Wilson's Warbler |
| WTSP | White-throated Sparrow |
| YEWA | Yellow Warbler |