

Tatlayoko Lake Bird Observatory

2021 Annual Report



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On behalf of the Tatlayoko Field Station Society

and Canadian Wildlife Service



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Photos by Avery Bartels unless otherwise stated

1. Introduction

The Tatlayoko Lake Bird Observatory (TLBO) conducts annual migration monitoring of birds in the West Chilcotin region of British Columbia during the months of August and September. The project is conducted on the Tatlayoko Lake Ranch property, owned by Nature Conservancy of Canada who initiated and ran the project from 2006 to 2015. In 2017 BC Spaces for Nature took over operation of the TLBO and ran it until 2019. 2020 saw the project overseen jointly by BC Spaces for Nature and a new local organization, the Tatlayoko Field Station Society (TFSS). In 2021 the TFSS took over the project in full with the aim of being the long-term home of the TLBO. With a strong connection to the TLBO among the board of directors and members of the TFSS this puts the TLBO in a secure position moving forward. Meanwhile, the TLBO provides a flagship project for the TFSS in their efforts to open a field station and encourage research within the Tatlayoko Valley and region at large.

The TLBO is located at the north end of Tatlayoko Lake with the banding lab and net lanes sitting roughly 700m north of the lakeshore. Standard monitoring is conducted daily and consists of 6.5 hours of conducting observational birds counts, 6 hours of mistnetting/banding and a 1 hour census. At the end of each session a Daily Estimated Total is tallied for each species recorded that day based on these three count methods. The banding and Daily Estimated Totals will be elaborated on in this report.

The TLBO is a member of the Canadian Migration Monitoring Network (CMMN). Along with the 25+ other member stations, data collected at the TLBO is submitted to the CMMN for long-term population analysis and is made publically available on the NatureCounts website (<https://www.birdscanada.org/birdmon/default/main.jsp>). All bird banding data is submitted to the US Geological Survey, who issues all bird bands in North America, and the Bird Banding Office at Environment and Climate Change Canada.

2. Acknowledgments

In 2021 the TLBO was largely funded by the Canadian Wildlife Service, Environment and Climate Change Canada. We are very grateful to Wendy Easton and Tara Imlay of CWS (Delta) for their ongoing support of this project. This years funding was applied for by their office(s). The Birds Canada Birdathon fundraiser was once again a success thanks to many generous folks who contributed to Avery, Sachi and Steve’s respective Birdathons. The Tolko Log Hauler’s fund also provided a generous contribution. Several private and in-kind donations were made to the TLBO, with special thanks to Charlie and Ruth Travers, Joerg Fischer, John Snively, Otter Books, Calypso Environmental Services, Barry Lancaster, Peter and Roma Shaughnessy, Hana Kamea and the North Okanagan Naturalist Club. As ever, we are grateful to Nature Conservancy of Canada for their ongoing support of the project in granting access to the Tatlayoko Lake Ranch property and the use of existing infrastructure and equipment.

Thanks to additional outside funding we were able to carry out a couple side projects. The Cariboo Regional District provided funding for the October Owl Banding Extension pilot project. The Northern Saw-whet Motus tagging project initiated with collaborators Rocky Point Bird Observatory and Vancouver Island University was funded from the Public Conservation Assistance Fund managed by the Habitat Conservation Trust Fund.

The Tatlayoko Field Station Society (TFSS) and Avery Bartels worked together to implement the 2021 project with full management of the TLBO program now shifted to the TFSS. The local community continues to engage and help with TLBO in a variety of ways. We very much appreciated support from TFSS personnel, local community members and volunteers in 2021:

Local Community

Peter and Roma Shaughnessy, Fritz and Sally Mueller, Sandra McGirr and Sandy Hart, Mike Smialowski, Hana Kamea, Charlie and Ruth Travers, Sabina and Troy Harris, Andrew Harcombe, Steve Ogle and Chris Chutter



Volunteers

Andrew Erickson , Margaret Hubble, Claire Chistensen, Courteny Jones, Calypso and Evan, Jannaca Chick, Emma Radziul, Andrew and Gail Harcombe, Maleen Mund, Brooke Morrice, Joachim Bertrands, Sonya Pastaran, Mae Frank, Roma Shaughnessy and Jim Sims



3. Overview of Season

The TLBO's 15th season ran from August 3 to September 28, 2021. Two full time staff positions (assistant bander split between Emma until August 13 and Sachi for rest of season) contributed over 685 hours towards the daytime migration monitoring project. In 340.8 hours of observation, over 57 days, a total of 143 species were recorded within the census area, the second highest season tally and seven species above average. Twelve standard nets were used for a total of 3235 standard net hours, providing us with 1727 birds banded and 252 recaptures. In addition, three large gauge (hawk) nets and three 2-panel nets (the "pipit fence") in the north field added 285.6 non-standard net hours during the morning banding period. Non-standard banding, including the bal-chatri trap, produced a further 13 birds banded.

Over the course of 10 nights of owling (including Sept. 30 and excluding two nights abandoned after 1 hour due to wind) we had 191 net hours from our seven-net owl setup. We used the same setup as in the previous three years with five 60mm owl nets and two of our standard songbird nets (Nets 9 and 10) though these latter were left closed on a few of the latter sessions due to wind/falling leaves. Over this period we banded 54 Northern Saw-whet Owls. The results of our October Owl Banding pilot can be found on page 29.

In total, 3711.6 net hours produced 1794 birds banded, 1727 of which were caught in standard nets during standard hours. This was a significant increase on the previous two seasons and well above the average of 1566 birds banded (Fig. 1).

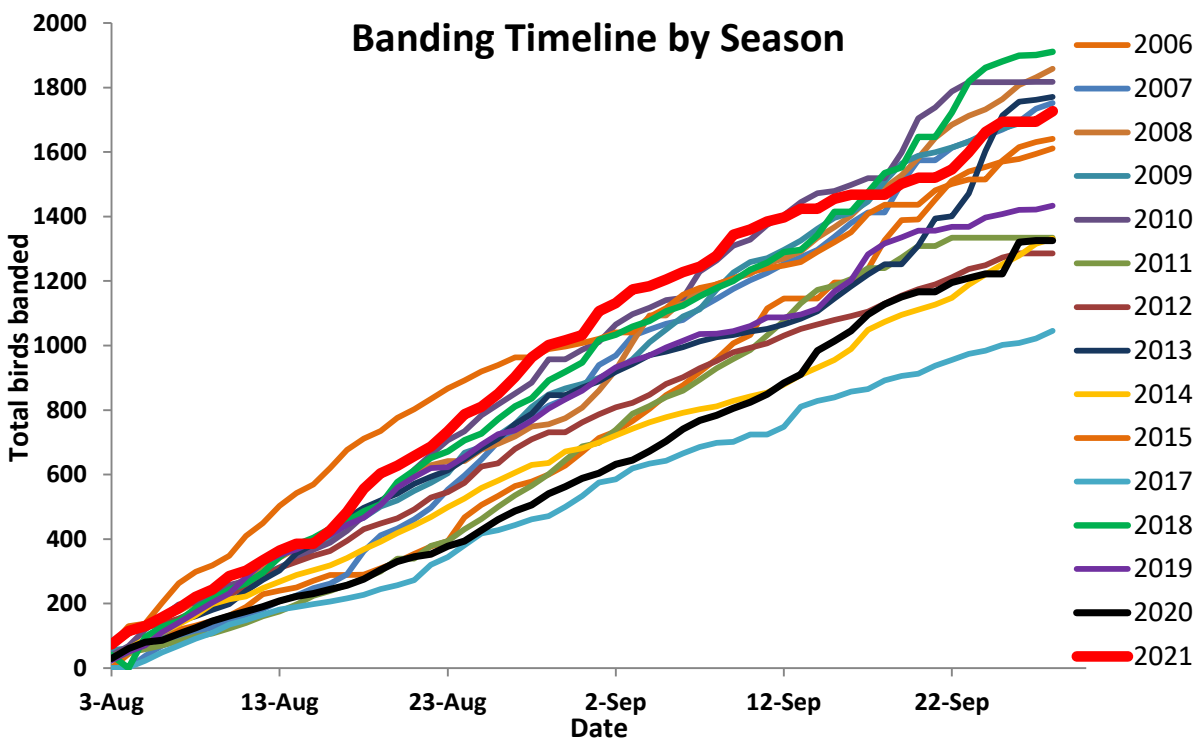


Figure 1 Banding timeline by season

4. Vegetation Management and Nets

4.1 Vegetation Management

As net locations were originally picked to cover a selection of habitat types some nets pass through regenerating riparian habitat, dominated by willow and alder. To keep habitat conditions standard across years, it is necessary to do some pruning in order to maintain similar vegetation height. This helps ensure the consistency of a net's catch rate from year to year. Only four nets regularly receive this treatment: 16, 12, 17 and 18 while vegetation at Net 6 has reached a level on the west side of the net that annual trimming is now needed. Upon arrival this year it was apparent that our fairly extensive pruning efforts in the past few seasons had been successful in maintaining a good vegetation height for the 2021 season.

The vegetation on the west side of Net 6 that had grown up to well above the height of the net by 2018 was pruned back at the end of that season and required just the removal of a few ambitious saplings as we set up the net this year, as it did last year. The rest of the nets received no trimming until the end of the season.

After the season ended, pruning was conducted by Sachi at nets 16, 6, 18 and 12/17. The former received little attention with removal of only the tallest suckers along with four larger alder trunks to continue to make space for younger growth. Net 6 also received a similarly quick trim with only the tallest suckers on the west being removed. The other three



nets, 18, 12/17 received a more [Net 12 in August, last year's pruning achieved a nice vegetation height for 2021](#) comprehensive pruning as a selection of older trunks were removed to make room for the new growth that has come up as a result of previous years' pruning. Further, vegetation was topped to maintain net height on both the north and south sides of 12/17 and on the east side of 18. In addition to pruning around the nets Sachi also continued to maintain an open corridor by cutting the willows that have been sprouting up in the field southwest of the Harrier net. 2020 Saw us take out the cottonwood and aspen saplings that had sprouted up along the path between the banding lab and net 6, as well as in the small clearings south of net 14. The one-year growth was not such that more clearing in these areas was required this season.

4.2 Net Productivity

Our most productive net, as is often the case, was Net 14 despite being used just 60.2% of the time (due mainly to wind exposure). While in 2020 it rarely caught the mixed species flocks that it usually does, we were pleased that it was back to its usual state this season, catching a whopping 310 birds or 18% of our total catch (Table 1). Warbling Vireos were its bread and butter from the second week of August into early September. In the last two weeks of the season Yellow-rumped Warblers, then Ruby-crowned Kinglets started hitting it. Sparrows would consistently find their way into this net throughout the season as well.



Sachi extracting a flock from Net 14

Net 1 was surprisingly productive as, like net 14, it would often get flocks hitting it, though mostly in the 5-10 bird range. This net seems to vary quite widely from year to year in terms of productivity but is rarely among our busiest. The 251 birds caught accounted for 14.5% of the total season catch and is way above the past two years (8.8% and 5%). Interestingly, in 2018, which was our last big year banding numbers-wise, it also accounted for a higher percentage of the total catch at 10.6%.

Nets 12 and 17 tend to share similar fates. After a lack of pruning in 2016 and 2017 made for a very low year in 2018 (presumably due to increased vegetation height) subsequent years have seen an increase in the catch rate and that was the case again in 2021. Catch rates for both this year were comparable to, if slightly below, the past two seasons.

Net 16 has seen a fairly drastic drop in birds caught the past two seasons and this is likely a result of the new growth of Willows that are now 3m+ tall out in the field to the east and northeast of this net. Where once this net bisected the border of

Table 1 Birds banded per net in 2021

| Net | Banded | Birds /Hr | Recaps | % time used | % Total catch |
|-----|--------|-----------|--------|-------------|---------------|
| 14 | 310 | 1.62 | 23 | 60.2% | 18.0% |
| 1 | 251 | 1.12 | 63 | 82.1% | 14.5% |
| 17 | 191 | 0.71 | 11 | 82.8% | 11.1% |
| 13 | 184 | 0.78 | 38 | 83.1% | 10.7% |
| 6 | 177 | 0.80 | 42 | 79.9% | 10.2% |
| 12 | 127 | 0.48 | 8 | 82.8% | 7.4% |
| 16 | 124 | 0.54 | 13 | 74.2% | 7.2% |
| 18 | 105 | 0.46 | 6 | 71% | 6.1% |
| 11 | 76 | 0.34 | 19 | 81.9% | 4.4% |
| 15 | 74 | 0.31 | 13 | 82.9% | 4.3% |
| 9 | 59 | 0.25 | 13 | 82.6% | 3.4% |
| 10 | 49 | 0.18 | 3 | 82.6% | 2.8% |

vegetation and field this new growth creates a corridor for birds to pass just east of the net. Since 2018 its percent of total catch has decreased annually as follows: 15.4, 14.3, 10.7 down to just 7.2% in 2021. This same increase in vegetative cover has also negatively impacted Net 18 though the effects on that net have been going on for more years.

As expected, Nets 9, 10, 11 and 15 continue to be our least productive due to the high vegetation levels around them. Net 10 was surprisingly “productive” by its standards during August, helped mainly by the large numbers of Swainson’s Thrush that were its primary catch.

5. Staff and Volunteers

The 2021 season saw Avery Bartels return for a seventh season as Bander-in-charge and 10th season over all. Sachi Snively, as he has since 2018, ably filled the Assistant Bander position for most of the season while Emma Radziul provided experienced cover for him up until his arrival August 13. Many thanks to Emma for joining us for that critical period. Census was, usually, shared between the banders, alternating days to coincide with who was on blog duty that day. Longer term volunteers and those with prior experience were encouraged to extract and band as this training is one of the additional focuses of our banding operation. To this end more than 1/5 of the birds banded in 2021 were done so by volunteers (Table 2)!

While we initially had a quite full volunteer schedule two cancellations made for a couple gaps in our schedule; from August 17-24 and September 24-26 we had no volunteers. Over the course of the season most volunteers were short-term, staying for one week or less which is contrary to the previous few seasons (excluding 2020 when we had no volunteers due to Covid-19). Just one volunteer, Maleen, was what we would consider “long-term”, staying 17 days. Emma, meanwhile, did return for two volunteer stints after her period as Assistant bander. She joined us for five days in late August and six days in late September/ October. We had several returning Volunteers including Andrew and Gail Harcombe who have joined us most years, Jannaca Chick who volunteered in 2019 as well and Calypso who volunteered in 2013 and 2019. A timeline of our volunteers this season can be found in Figure 2 (pg. 8). Overall, our volunteers contributed 501.5 hours of effort to our standard program.

Table 2 Bird banded per bander in 2021

| Bander | Banded | Recaps | % Processed |
|---------------|---------------|---------------|--------------------|
| Sachi | 637 | 93 | 37% |
| Avery | 549 | 85 | 32% |
| Emma | 244 | 15 | 13% |
| Andrew | 104 | 11 | 6% |
| Jannaca | 89 | 22 | 6% |
| Maleen | 52 | 20 | 4% |
| Sonya | 11 | 1 | 1% |
| Courtney | 11 | 0 | 1% |
| Joachim | 9 | 2 | 1% |
| Brooke | 9 | 1 | 1% |
| Calypso | 8 | 2 | 1% |
| Evan | 4 | 0 | 0% |

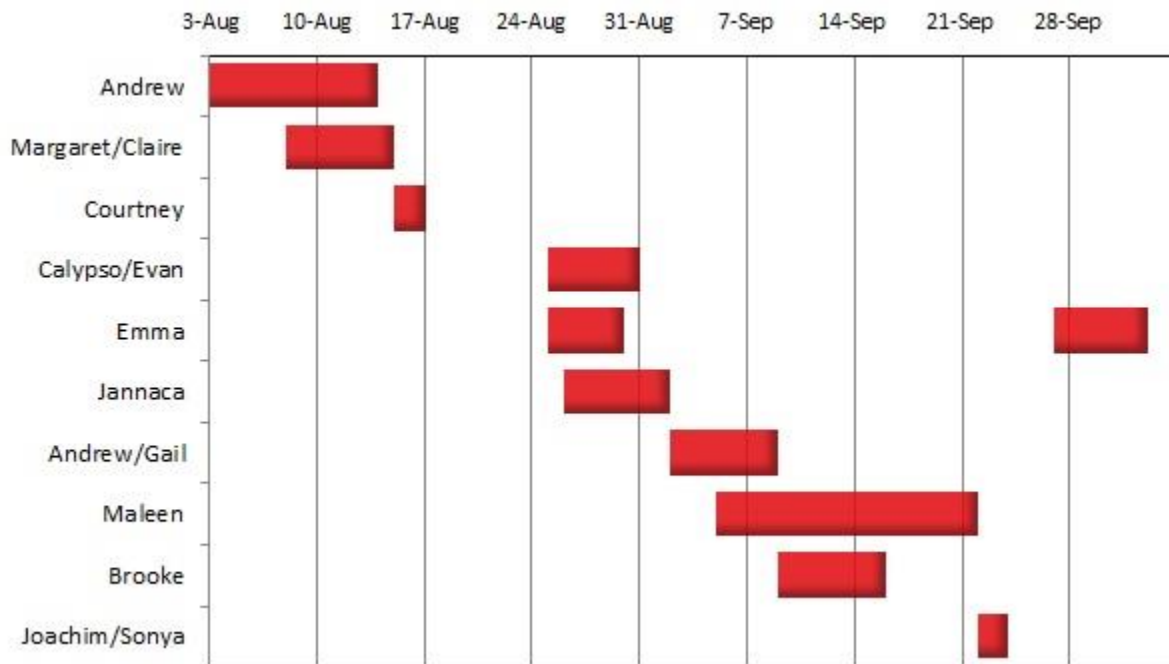


Figure 2 Timeline of our volunteers in 2021

The October owl Banding project required additional volunteers to join Sachi. Emma was present for Oct. 1 while locals Roma Shaughnessy (nights of Oct. 2 and 12) and Jim Sims (night of Oct. 3) also volunteered. Mae and Courtney (returning), both from William’s Lake arrived Oct. 5. While Courtney was present until Oct. 10, Mae stayed until the end of the pilot, Oct. 15. Volunteers contributed a further 41.25 hours to the TLBO in October.

6. Outreach

Bird banding operations provide an excellent setting to engage the public in nature and conservation. The experience of seeing birds up close and learning from knowledgeable staff can have a profound impact on people of all ages but especially younger generations. With this in mind we try our best to encourage locals, visitors to the valley and school groups to visit the station during our banding season.

6.1 Visitors

As is often the case, the first couple weeks of the season saw almost no visitors. Indeed, the only visitors prior to August 15 were two mountain bikers who were a bit lost, though they seemed to enjoy seeing our operation. However, things picked up from there with most weeks seeing 2-3 groups stopping in. As ever the owling proved the most powerful draw with visitors most of the nights we went out, accounting for 22 of our total visits up until the end of September.

We were pleased to host two school groups. Anahim Lake brought out 11 students on September 16 while 22 students from the Tatla Lake School visited on September 23. As per usual, the students were given a tour of the net loop and got to witness the banding of a couple rounds worth of birds. The Tatla school ended up staying for a few hours and many of the kids were very keen to continue watching and asking questions. It was a busy day for their visit so they got to see several dozen birds!

In all our standard monitoring and owling accounted for 103 separate visits from 80 individuals. Meanwhile, the October Owl Banding pilot accounted for a further 33 visits from 27 individuals over the course of six nights.



Sachi extracting a bird during a school group visit

6.2 Blog

In 2021 we kept up the daily blog posting as we have every season since 2009 (www.tatlayokobirds.wordpress.com). After each day we would post highlights, photos, quizzes and educational pieces on various aspects of our migration monitoring. The banders took turns posting throughout the season and it was nice to have some fresh voices in the form of posts by Emma and guest blogs from Maleen and Andrew Harcombe.

Over the course of 58 posts during the months of August and September we received 1985 views and 673 visits. The number of views and visits was almost exactly the same as in 2019 but down notably from last year. As with the past few years, the highest daily views/visits came after posts onto social media, in particular to the Facebook group “Birds of BC” as well as the occasional post later in the season on the “Tatla Lake and Area Community Bulletin Board” Facebook group.

While most views were from Canada, we also received views from a further 19 different countries! Over the course of the season the blog received 49 comments. This is quite a low count, even less than last year, compared with past years.

Further posts in October resulted in 575 views, 223 visits and 11 comments for the month.

7. Standard Monitoring

7.1 Effort and Environmental Conditions

The weather patterns have been more varied and unpredictable the past few years and this was once again the case this season. There were no prolonged periods of warm, clear days that in years past often settled in during much of August and/or the first half of September. August was not overly windy while during September the wind became more frequent and stronger, in keeping with the norm. Over the course of the season there was frequent rain, even more so than the past three years which have all been wetter than average. In many years we have gone virtually the entire first ¼ of the season without more than 1-3 periods of rain (often light when they do occur). The past two seasons have rather bucked the trend. Poor weather during much of the final two weeks accounted for a significant loss of net hours.

The season started off quite warm with mid-day temperatures hitting mid to high 20s (Celsius) on eight of the first 12 days (Fig. 3). However, after this the temperatures moderated and we never got another hot spell with high temperatures only reaching the low 20s a further eight times the rest of the season. Unlike in 2020, we didn't have any cold nights early on. August 24 and September 2 saw starting temperatures of 0.5°C but we wouldn't reach sub-zero until September 15 (-1°C). September 16 would be our coldest morning, starting at -5°C.

The wind that so often results in net closures was not much of a factor in August and our net hours were quite high through the first part of the season as a result. August 15 was the lone day in the entire month that we did no banding due to a strong southerly that persisted throughout the day. The wind became more omnipresent in September, frequently picking up mid-late morning. Through much of the final quarter of the season strong winds persisted throughout the mornings and resulted in a lot of lost net hours (Fig. 4, pg. 11).

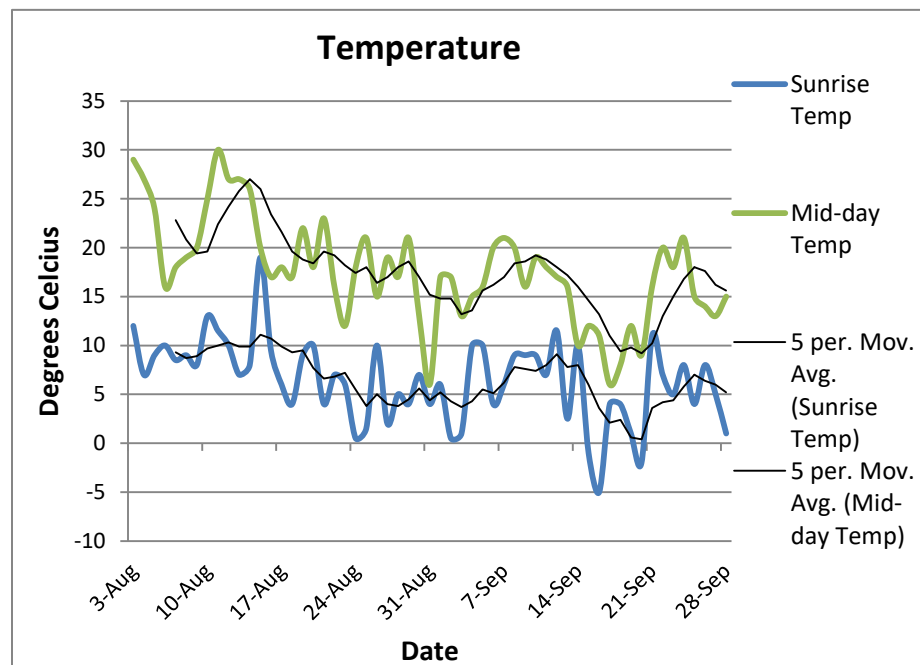
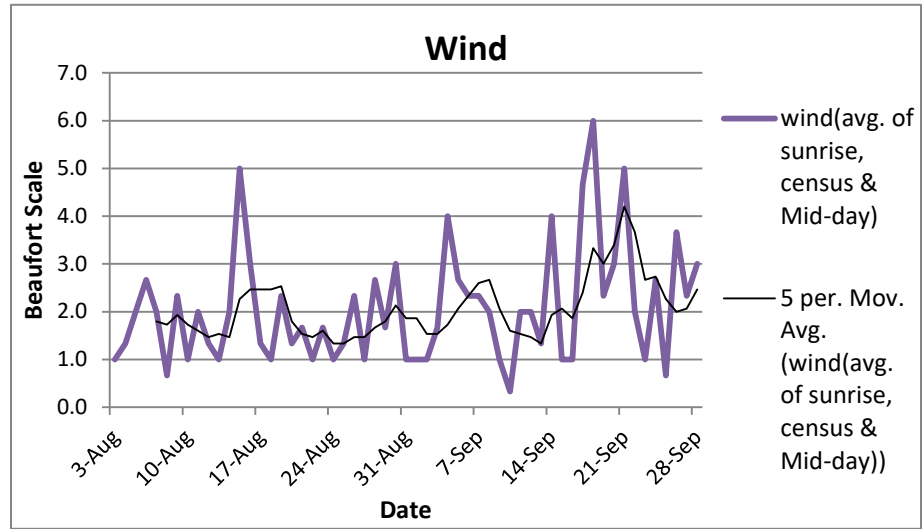


Figure 3 Temperatures of the course of the 2021 season

Barely a week went by without any rain this season. In total we had 13 days with at least some rain, split fairly evenly between August (Aug. 5, 8, 22, 23, 26, 27 and 31) and September (Sept. 4, 8, 9, 11, 19 and 27). While most of the precipitation was light, and indeed often



resulted in few or no lost net hours, we did get proper rain showers on several days especially later in the season. Most frequently, the bulk of the precipitation would fall during the night but, especially later in the season, this would often extend into the following morning, impacting our operations.

Figure 4 Wind over course of the 2021 season

In total, we had six days of no banding (Aug. 15, Sept. 14, 17, 18, 21 and 27) and a further two days with less than 10 net hours due to weather (Aug. 31 and Sept. 26). This is a very high number of lost days as we typically average more like 2-3 total days without banding per season. On an additional nine days, 12 or more net hours were lost. All told, we finished the season with just 3235 net hours, 285 hours below the average (Fig. 5).

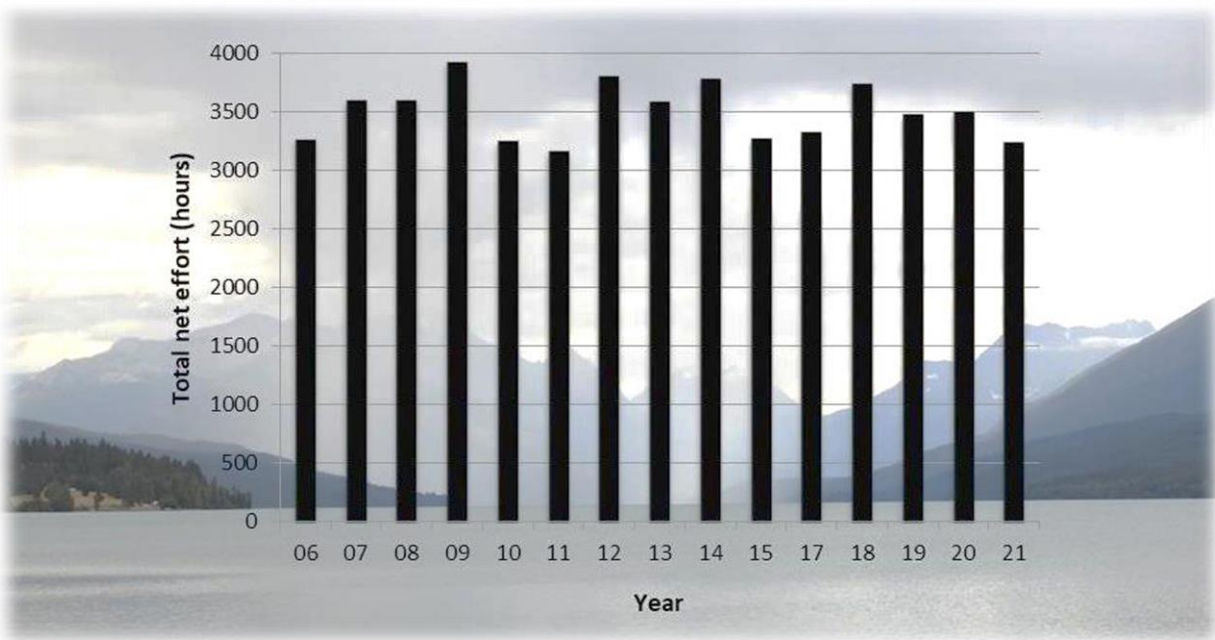


Figure 5 Net hours per year

7.2 Banding Results

A total of 1727 birds were banded as part of our standard banding program in 2021, a marked increase after two low years (Fig. 6). These were comprised of 53 species, right on the 14-year average. Due to this increase in bird numbers, no non-standard songbird nets were used meaning we banded just 13 birds by non-standard means. These included four species not banded by standard means.

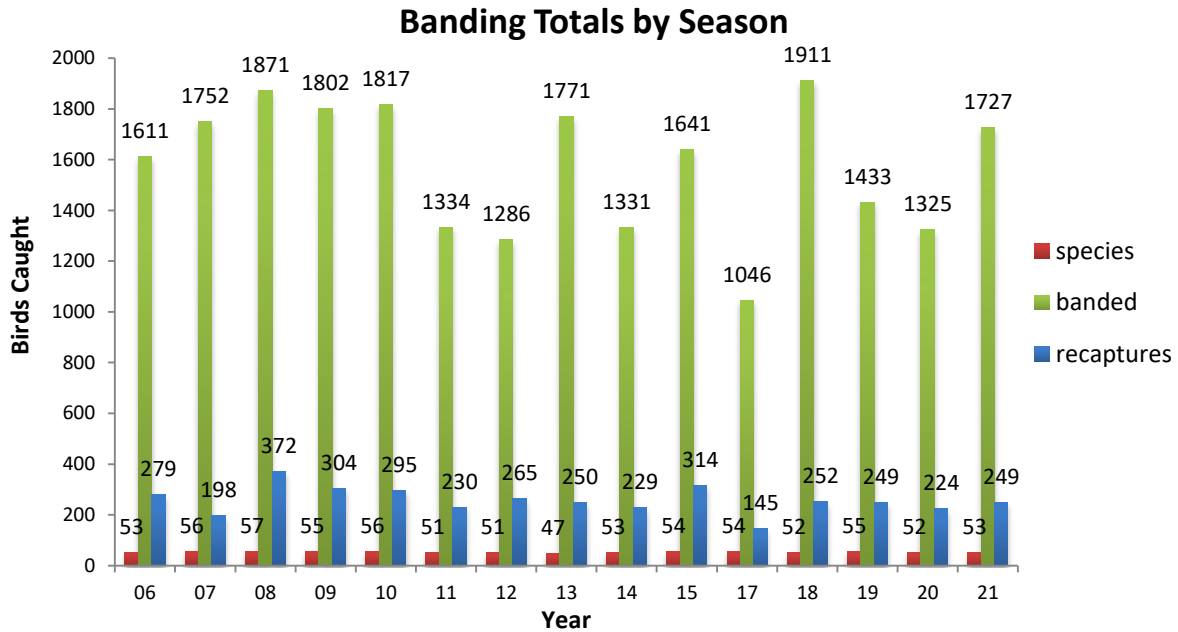


Figure 6 Banding and recapture totals by season

The season got off to a record start with 74 and 40 birds banded respectively on the first two days (Fig. 7, pg. 13). After a bit of a dip the month of August then proceeded on a fairly steadily above average pace with “low” days still mostly in the 20’s while we would break 50 five times including a day of 72 (August 18). By month’s end we were on record-setting pace, having banded 1032 birds.

After seeing out August with two days of poor weather, and thus low banding numbers, the weather broke and September 1 was our busiest day of the season with 75 birds banded. September 9 was another busy day with 66 banded but most of the rest of September saw a marked decrease in birds banded. This was exacerbated by poor weather in the latter half of the month. Our busiest period of the season typically falls between September 18 – 25 but with only a few decent days weather-wise we had to be content with two more productive days of 53 and 63 birds banded on September 23 and 24. Overall, it was a season of two halves with most days in August being above average and most of September below.

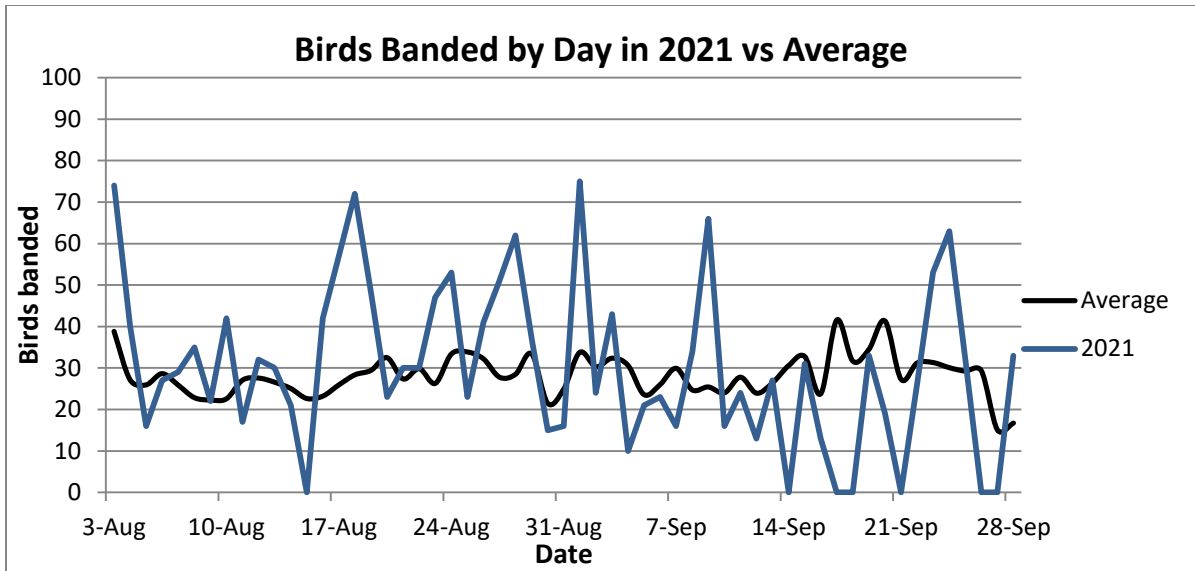


Figure 7 Birds banded per day in 2021 vs average

As in 2019 and 2018, there were large numbers of Swainson’s Thrush around and they were among our commonest catches daily through most of August. This was perhaps in part due to the bumper berry crop as another frugivore, Western Tanager, also regularly found our nets in August with 21 banded tying the record from 2015. The season started off with an unlikely chart-topper in American Redstart which had very high local breeding success this summer and finished the season with a record 104 banded (Table 3, pg. 14). Family groups were everywhere around the census area in early August and on August 3 we caught a whopping 22. To put that in perspective, that is only a few birds short of the season totals in 2015 and 2017 (our two



Yellow Warblers were above average for the first time since 2014

lowest years for this species)! Most warblers seemed to have good breeding seasons locally with Yellow Warbler (111 banded, 49% above average), Northern Waterthrush (58 banded, 34% above average) and Wilson’s Warbler (63 banded, 13% above average) also posting above average numbers banded. The ever-present Song Sparrows found our nets with regularity through August, and indeed the entirety of the season. They finished as our 3rd most banded species at 214, 46%

above their average. Our top catch in August was Warbling Vireo of which we banded an

extraordinary 212 and they would be our most banded species with 294 by the end of the season, a record by a wide margin (next highest season was 218 banded in 2013).

Late August often sees a bit of a shift in species composition as early migrants have peaked and Common Yellowthroats and Lincoln’s Sparrows start taking over. However, this year was a dud for both of these skulking species as totals for each were below half their average. At just 55 banded, Common Yellowthroats were way below their next lowest season total (78).

Meanwhile, for Lincoln’s Sparrows the 95 banded was the second lowest (after 88 in 2013) season total. This was in large part why our September totals were so low. Song Sparrows, thankfully, picked up some of the slack as they were at, or near, the top of our banding charts most days throughout the first few weeks of September. As is usually the case, Ruby-crowned Kinglets took over as our most banded species for the final 10 days or so of the season. While large numbers of Yellow-rumped Warblers were around, they were mostly staying away from our net lanes with September 23 the exception when we banded 17 of them.

In addition to Lincoln’s Sparrow and Common Yellowthroat, flycatchers as a group were way below average. In total we banded just 25, less than half the annual average of 58.5 for this family as a whole. For Dusky (2 banded) and Least Flycatcher (0 banded) 2021 was the lowest season total on record at the TLBO. Contrary to the rest of their congeners, Pacific-slope Flycatcher, with 5 banded, had their best season since 2013.



One of 214 banded Song Sparrows by Sachi Snively

Table 3 The 15 most banded species in 2021

| Species | 2021 | Average banded 06-20 | % Of Average |
|------------------------|------|----------------------|--------------|
| Warbling Vireo | 294 | 141.2 | 208% |
| Swainson's Thrush | 224 | 136.7 | 164% |
| Song Sparrow | 214 | 146.9 | 146% |
| Yellow Warbler | 111 | 74.4 | 149% |
| American Redstart | 104 | 50.4 | 207% |
| Ruby-crowned Kinglet | 100 | 125.7 | 80% |
| Lincoln's Sparrow | 95 | 192.1 | 49% |
| Orange-crowned Sparrow | 77 | 87.1 | 88% |
| Wilson's Warbler | 63 | 55.6 | 113% |
| Northern Waterthrush | 58 | 43.3 | 134% |
| Common Yellowthroat | 55 | 124.8 | 44% |
| "Audubon's" YR Warbler | 42 | 59.5 | 71% |
| Savannah Sparrow | 28 | 27.2 | 103% |
| MacGillivray's Warbler | 29 | 31.5 | 92% |
| "Gambel's" WC Sparrow | 24 | 36.5 | 66% |

A full list of banding totals for the 2021 season can be found in Appendix A (pg. 39).

7.3 Recaptures

In 2021 we had 249 standard recaptures of 164 unique individuals comprised of 17 species. This was just below our average of 258 recaptures per season. It was perhaps somewhat surprising we didn't have a higher number of recaps given the above average number of new birds banded but a certain amount of variability in this regard is to be expected.



We rarely recapture White-throated Sparrows but we got one in 2021

Song Sparrows, perennially the most-recaptured species, made up the bulk of the recaptures with 112 accounting for a whopping 45% of the season's total standard recaptures. This was followed by Swainson's Thrush with 39 and Black-capped Chickadee and American Redstart with 18 apiece. Warbling Vireos were our 5th most prevalent recapture at 14. This species has one of the lowest recapture rates at the TLBO which is surprising given that they are one of our most abundant. This low recapture ratio is a good indicator of

just how much turnover there can be in a single count area.

Every year we have a number of inter-annual recaptures and this season we had 18 (Table 4, pg. 16). Of these, the oldest was a Song Sparrow that was originally banded as a hatch-year in 2015 making it 6 years old. Next oldest was a Swainson's Thrush banded as an after-hatch-year in 2017 meaning it was, at a minimum, 5 years old. Single four-year-old Swainson's Thrush and Orange-crowned Warbler were among our other notable inter-annuals. Black-capped Chickadees are year-round residents and seem quite faithful to their territories. Most years the number of recaptures and new banded are similar, reflecting this fact. As such, we always have a few inter-annuals and this year was no different. Among the four Chickadees banded in previous years were three from 2018. One of these was an after-hatch-year at banding, making it a minimum of four years old.

While we didn't catch any foreign recaptures, we did have several of our own birds recovered elsewhere over the past months. The first of these, the victim of a cat, was a Song Sparrow (band # 2951-23776) that was reported from Bellingham, Washington on February 19, 2021. It was banded as a hatch-year on August 7, 2019. A second Song Sparrow was recovered in Eugene, Oregon on October 8, 2021, just a couple weeks after it was banded at the TLBO.

This one, band # 3041-01175, was banded as a hatch-year on September 24 and recovered by as yet unconfirmed means.

Table 4 Inter-annual recaptures in 2021

| Band Number | Species | Recapture Date | Banding Date | Age at Banding | Sex | Days since Banding | Age at Recapture |
|-------------|------------------------|----------------|--------------|----------------|-----|--------------------|------------------|
| 2661-82605 | Song Sparrow | 08/03/2021 | 08/07/2015 | HY | F | 2188 | 6 |
| 2661-82960 | Swainson's Thrush | 08/25/2021 | 08/07/2017 | HY | U | 1479 | 4 |
| 2810-40155 | Orange-crowned Warbler | 09/08/2021 | 09/01/2017 | HY | F | 1468 | 4 |
| 2661-83114 | Swainson's Thrush | 09/09/2021 | 09/06/2017 | AHY | U | 1464 | 5+ |
| 2810-40306 | Black-capped Chickadee | 09/19/2021 | 08/06/2018 | HY | U | 1140 | 3 |
| 2810-40431 | Black-capped Chickadee | 09/24/2021 | 08/18/2018 | AHY | U | 1133 | 4+ |
| 2810-40279 | Black-capped Chickadee | 09/03/2021 | 08/03/2018 | HY | U | 1127 | 3 |
| 2760-63232 | American Redstart | 08/24/2021 | 08/05/2018 | AHY | F | 1115 | 4+ |
| 2691-76136 | Swainson's Thrush | 08/27/2021 | 08/29/2018 | HY | U | 1094 | 3 |
| 2691-76098 | Swainson's Thrush | 08/20/2021 | 08/26/2018 | AHY | U | 1090 | 4+ |
| 2221-83829 | Northern Waterthrush | 08/20/2021 | 08/08/2019 | AHY | U | 743 | 3+ |
| 2840-88994 | Yellow Warbler | 08/05/2021 | 08/06/2019 | AHY | F | 730 | 3+ |
| 2951-23629 | Swainson's Thrush | 08/06/2021 | 08/25/2019 | AHY | U | 712 | 3+ |
| 2951-23916 | Song Sparrow | 09/22/2021 | 08/07/2020 | SY | U | 411 | 2 |
| 2790-58951 | American Redstart | 08/30/2021 | 08/16/2020 | AHY | M | 379 | 2+ |
| 2951-24137 | Swainson's Thrush | 09/01/2021 | 09/08/2020 | AHY | M | 358 | 2+ |
| 2951-24041 | Song Sparrow | 08/04/2021 | 08/29/2020 | AHY | F | 340 | 2+ |
| 2920-59924 | Black-capped Chickadee | 08/27/2021 | 09/26/2020 | AHY | U | 335 | 2+ |

The high Northern Saw-whet Owl numbers this year has resulted in a plethora of recoveries of our birds at the Rocky Point Bird Observatory on southern Vancouver Island. These have included an incredible five different TLBO birds so far this fall! Three of these were banded in 2021 and one in 2020 (with 9, 9 and 36 days between banding and recapture respectively). The most remarkable owl though was one banded as a third-year in 2017 that was recaptured in 2018 at RPBO as well as on Oct. 22, 2021!



NSWO 1853-81089 photo by Jannaca Chick (RPBO)

7.4 Estimated Totals and Diversity

2021 saw a total of 143 species recorded in the census area, well above the average of 136 (Fig. 8). As in 2020, we added a modest count of two new species to the TLBO list, Broad-winged Hawk and Parasitic Jaeger. These new additions are elaborated upon in Table 10 (pg. 37) in the “Highlights” section of this report. The TLBO species list now sits at 206 species detected during diurnal monitoring +1 in a Long-eared Owl seen in 2018 during owl banding. Over the course of the season 27, 601 detections were made, 39% higher than the 2006-2020 average of 19, 845. This represents the second highest total detections in a season though a disclaimer should be added on two fronts. These are that pre-2018 a) coverage of the census area in terms of making observations was less than the past four seasons and b) counts of the more abundant species were almost certainly more conservative. A full list of detections for each species can be found in Appendix B (pg. 40). A list of the commonest species recorded at TLBO and their numbers in 2021 vs average can be found in Table 5, pg. 21.

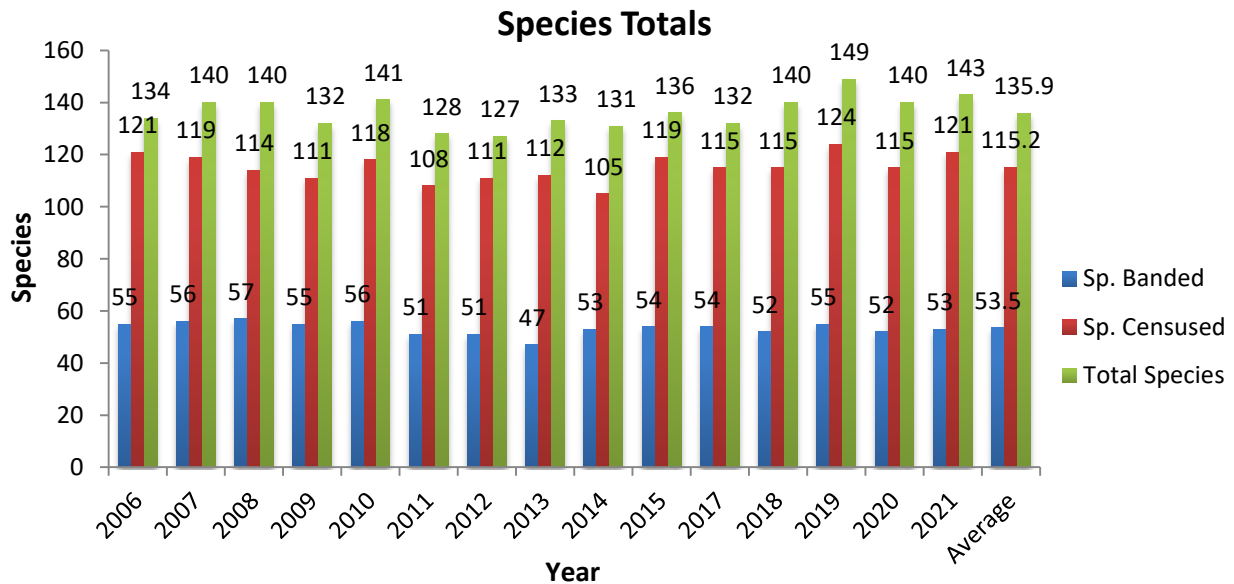


Figure 8 Species detected through banding, census and total

Waterfowl numbers were down somewhat from average with 1273 detections being 88% of the 2006-2020 average. This is quite consistent with the past two years which both saw overall waterfowl numbers at 82% of the average. One species that has a strong influence on the waterfowl numbers at large are Canada Geese. The bulk of many seasons’ total of this species tends to principally be made up of a single flock that is detected on a daily basis for much of the early part of August. This year there were detections for a few days running in both early August and early September but there was no sustained period of detections making for a total of just 106 (26% of average). This was the fourth successive year in a row of low counts for this species. On the flip side, Green-winged Teal (319 detections), Northern Shoveler (52

detections), Barrow's Goldeneye (17 detections) and Common Merganser (75 detections) were all way above average. Mallard, our most common waterfowl at 341 detections, were at just 69% of average. Meanwhile, American Wigeon, at 239 detections, and Northern Pintail, at 27 detections, were each just above average. Other waterbirds, such as Common Loon, Grebes and Great Blue Heron were all above average with the exception of Pied-billed Grebe (13 detections, average of 17). In the case of Red-necked Grebes it seems they may have at least attempted to breed on the property as a pair of adults was present through early August and were heard doing their display "song".

It was a good season for raptors with 503 detections being 50% above the average of 335. The lone regular species to have below average numbers were Northern Harriers (36 detections, 84% of average) which were largely absent through much of the latter part of August and the first half of September, a period when they are often detected daily. Red-tailed Hawk (25 detections), Bald Eagle (59 detections) and Merlin (67 detections) all had record seasons with the first two more than doubling their annual average. American Kestrel was our most detected raptor with 117 detections (42% above average), followed by Sharp-shinned Hawk with 85 detections (25% of average) and Osprey with 84 detections (75% of average). The local Ospreys seemed to successfully raise at least one young and this family likely accounted for virtually all detections throughout the season.



The 54 detections of Great Blue Heron was just 3 shy of the record

Shorebird numbers are never high at TLBO and this year was about average. The three species that are detected with any sort of regularity are Killdeer, Spotted Sandpiper and Wilson's Snipe. All three were detected in well above average numbers. Wilson's Snipe, with 20 detections, were way above the average and this was in most part due to a lone individual that was flushed on several days in early August from the pasture just to the south of the oxbow. The dates indicate they may have bred on the property, as we suspected was the case last year as well. Gulls are another group that are not numerous at the TLBO. Herring Gulls typically account for over 2/3 of our gull detections but this year the just 19 detections of this species was only 48% of the average. Since 2015 we've had regular Sandhill Crane sightings at the TLBO as at least one pair has seemingly spent the summer in the vicinity. This year we had 14 detections, usually of 3 individuals (when

seen) though in several other instances we could hear them calling from well outside our census area.

Rufous Hummingbirds detections were slightly less than average at 17 over the course of the season. Belted Kingfisher by contrast, with 101 detections, were 23%. Woodpeckers were almost uniformly around their respective averages. Of the regular species, only Pileated strayed from the mean with a total of 92 detections being way above the average of 50. As is usual, it is likely that almost all detections of this species pertain to the same few individuals that are resident in the area. American Three-toed Woodpeckers are usually scarce but there seemed to be one hanging around this year with 11 detections matching the single season record of 2014.

Aerial insectivores, including Swifts, Flycatchers and Swallows often see similar trends as a group in a given year and while 2020 was a bumper year for all, this year was a little more varied. Flycatchers in particular showed mixed numbers with several species being well above average, making for an overall above average tally for the family (283 detections, 21% above average). These included Western Wood-pewee (38 detections) and Olive-sided Flycatcher (30 detections), which both finished at double the average, and Dusky Flycatcher (115 detections, 61% above the average). The two *Contopus* seemed to have a single family that was present in



Olive-sided Flycatcher numbers were double the average

the census area for part of August while there were at least two broods of Dusky Flycatchers east of the banding lab for the first quarter of the season. Hammond's Flycatchers were detected in slightly above average numbers (21 detections). Meanwhile, the "Traill's" Flycatcher complex were below average with just 3 detections of Willow (average of 12), 45 of Alder (average of 61) and 15 "Traill's" (average of 11). Least and Pacific-slope Flycatchers are always detected in low numbers but fared opposing fates this year with 6 Leasts being less than half the average (13) and 7 Pacific-slopes being nearly double the average (4).

Swallows had a strong season, for the second year in a row. The 329 detections was just shy of double the average of 176. Barn Swallow was the only species below average at just 27 detections (average of 48). There has been a marked decline in this species, starting in 2017 since which time the average has been just 19 detections while up until 2015 the average was 60. Tree Swallows, with 13 detections were right on average while Bank (15) and Cliff (12), the most infrequent species at TLBO, were way above their normal counts. Northern Rough-winged

Swallows were 57% above average at 44 detections and the most detected species, Violet-green Swallow, were 179% above average at 204 detections (second highest season total after 2020). Black Swifts were detected in low numbers on just a few days with 25 total detections being a bit down from the average of 30.

Warbling Vireos had a record season with 1410 detections (166% above the average) smashing the 2013 record of 1039. Flocks foraging between the banding lab and net 14 as well as along the Homathko across from and north of our nets were standard from the middle of August to early September. Both Cassin's and Red-eyed Vireos did not follow suit, finishing somewhat above and below average respectively. The common corvids were mostly around their respective averages with Clark's Nutcrackers being the exception. While the 439 detections was down from the past two years, it was still 69% above on the average.

For the sixth successive year American Pipit numbers were high. The 798 detections (67% above average) was down from 2019 and the record setting year of 2018 (1306 detections) but very similar to 2020 (758 detections). Meanwhile, another high elevation breeder that prefers open habitats the Horned Lark, at 100 detections, was above the average of 80 and nearly double the 2020 total (57 detections).

As in 2020, our two resident Chickadee species had opposing numbers. Black-capped Chickadees were up a bit from 2020 but the 505 detections were just 87% of the average. Mountain Chickadees meanwhile had a record season (for the second year running) with a whopping 243 observations being 129% above the average. For the latter, increased coverage of the conifers northeast of the banding lab since 2017 has seen a marked rise in detections of this species. That being said, in 2021 they were also regularly seen around the banding lab, the pine flats along the census route and in the conifers along the road, opposite the south end of the airstrip so there were plenty around. As with the last species, Red-breasted Nuthatches had a record year. This is perhaps unsurprising as they share a preference for coniferous forests. The 328 detections were just shy of double the average.



Red-breasted Nuthatches had a record year by Sachi Snively

Ruby-crowned Kinglets are prone to large fluctuations in numbers from year-to-year but this was an only slightly above average year with 904 detections, compared to the average of 810. Meanwhile, Golden-crowned Kinglets were a bit below average with 56 detections compared with the average of 67.

Thrushes had consecutive bumper years in 2018 and 2019 before mostly returning to average years in 2020. This season many species once again had exceptional numbers and all finished above average. Two species had record seasons, Swainson’s Thrush with 806 detections (average of 369) and Townsend’s Solitaire with 61 detections (average of 10). Mountain Bluebirds had their second highest total with 211 detections, more than 4x the average. Otherwise, American Robin, Hermit Thrush and Varied Thrush were all slightly above average. The high thrush numbers could in part have been due to an abundant berry crop (saskatoon, currents, dogwood, raspberry etc.) and these seemed to draw in good numbers of the other frugivores such as Cedar Waxwing (1365 detections, 51% above the average) and Western Tanager (256 detections, 237% above the average!). For the latter it was a record season while for the former, the second highest tally on record at the TLBO.

Table 5 The most detected species in 2021 as compared to average

| Species | 2021 | Avg. 06-20 | % of Average |
|----------------------------|------|------------|--------------|
| Evening Grosbeak | 314 | 78.1 | 402% |
| Western Tanager | 256 | 76.0 | 337% |
| American Green-winged Teal | 319 | 99.4 | 321% |
| Violet-green Swallow | 204 | 72.9 | 280% |
| Warbling Vireo | 1410 | 529.6 | 266% |
| Mountain Chickadee | 243 | 105.5 | 230% |
| Swainson’s Thrush | 806 | 368.6 | 219% |
| American Redstart | 446 | 208.2 | 214% |
| Wilson’s Warbler | 266 | 127.4 | 209% |
| Red-breasted Nuthatch | 328 | 165.9 | 198% |
| Yellow Warbler | 483 | 260.6 | 185% |
| Song Sparrow | 1360 | 768.0 | 177% |
| Clark’s Nutcracker | 438 | 259.9 | 169% |
| American Pipit | 798 | 477.8 | 167% |
| Dusky Flycatcher | 115 | 71.1 | 162% |
| Red-winged Blackbird | 388 | 240.9 | 161% |
| Savannah Sparrow | 704 | 439.9 | 160% |
| Yellow-rumped Warbler | 4682 | 3031.6 | 154% |
| Northern Waterthrush | 208 | 134.7 | 154% |
| Pine Siskin | 2146 | 1403.1 | 153% |
| Cedar Waxwing | 1365 | 902.1 | 151% |
| American Kestrel | 117 | 82.4 | 142% |
| Chipping Sparrow | 457 | 322.9 | 142% |
| Ruffed Grouse | 191 | 145.1 | 132% |
| Orange-crowned Warbler | 300 | 228.2 | 131% |
| MacGillivray’s Warbler | 107 | 82.0 | 130% |
| Sharp-shinned Hawk | 85 | 68.1 | 125% |
| Horned Lark | 100 | 80.6 | 124% |
| Belted Kingfisher | 101 | 81.7 | 124% |
| Western Meadowlark | 188 | 159.9 | 118% |
| American Robin | 789 | 693.2 | 114% |
| Ruby-crowned Kinglet | 904 | 809.9 | 112% |
| Oregon Junco | 412 | 370.9 | 111% |
| Downy Woodpecker | 80 | 73.3 | 109% |
| Common Raven | 107 | 98.1 | 109% |
| American Wigeon | 239 | 222.0 | 108% |
| Northern Flicker | 209 | 210.4 | 99% |
| Red Crossbill | 140 | 142.1 | 98% |
| Hairy Woodpecker | 89 | 91.4 | 97% |
| Black-capped Chickadee | 505 | 577.9 | 87% |
| American Crow | 978 | 1195.9 | 82% |
| Lincoln’s Sparrow | 478 | 631.1 | 76% |
| Mallard | 341 | 496.1 | 69% |
| Common Yellowthroat | 367 | 559.4 | 66% |
| White-crowned Sparrow | 136 | 261.9 | 52% |
| Canada Goose | 106 | 403.8 | 26% |

With the sole exception of Common Yellowthroat it was a uniformly great year for warblers with all species detected in above average numbers. For the second year running there were several species that posted record numbers. Northern Waterthrush (208 detections), American Redstart (a whopping 466 detections, previous record from 2019 of 343), Yellow Warbler (483 detections), Townsend's Warbler (66 detections) and Wilson's Warbler (266 detections) all hit single-season highs. Meanwhile, Orange-crowned Warbler (300 detections, 31% above average) and MacGillivray's Warblers (107 detections, 30% above average) saw a more modest increase. As ever, the most detected warbler was Yellow-rumped with 4682 detections being the 3rd highest on record and 54% above the average. Common Yellowthroats had a disastrous season with a near-record low of 367 detections being just eight more than in 2011 and 66% of the average.

After three seasons of consistently high numbers, most sparrows were again above average in 2021, the notable exceptions being Lincoln's Sparrow (478 detections, 76% of average) and White-crowned Sparrow (136 detections, 52% of average).

For both these species this was the lowest season since 2013. On the flip side, Song Sparrows had a stellar year with 1340 detections (77% above average) being their second highest total. Savannah Sparrow (704 detections, 60% above average), Chipping Sparrow (457 detections, 42% above average) and Spotted Towhee (77 detections, 43% above average) were all notably above their average as well.

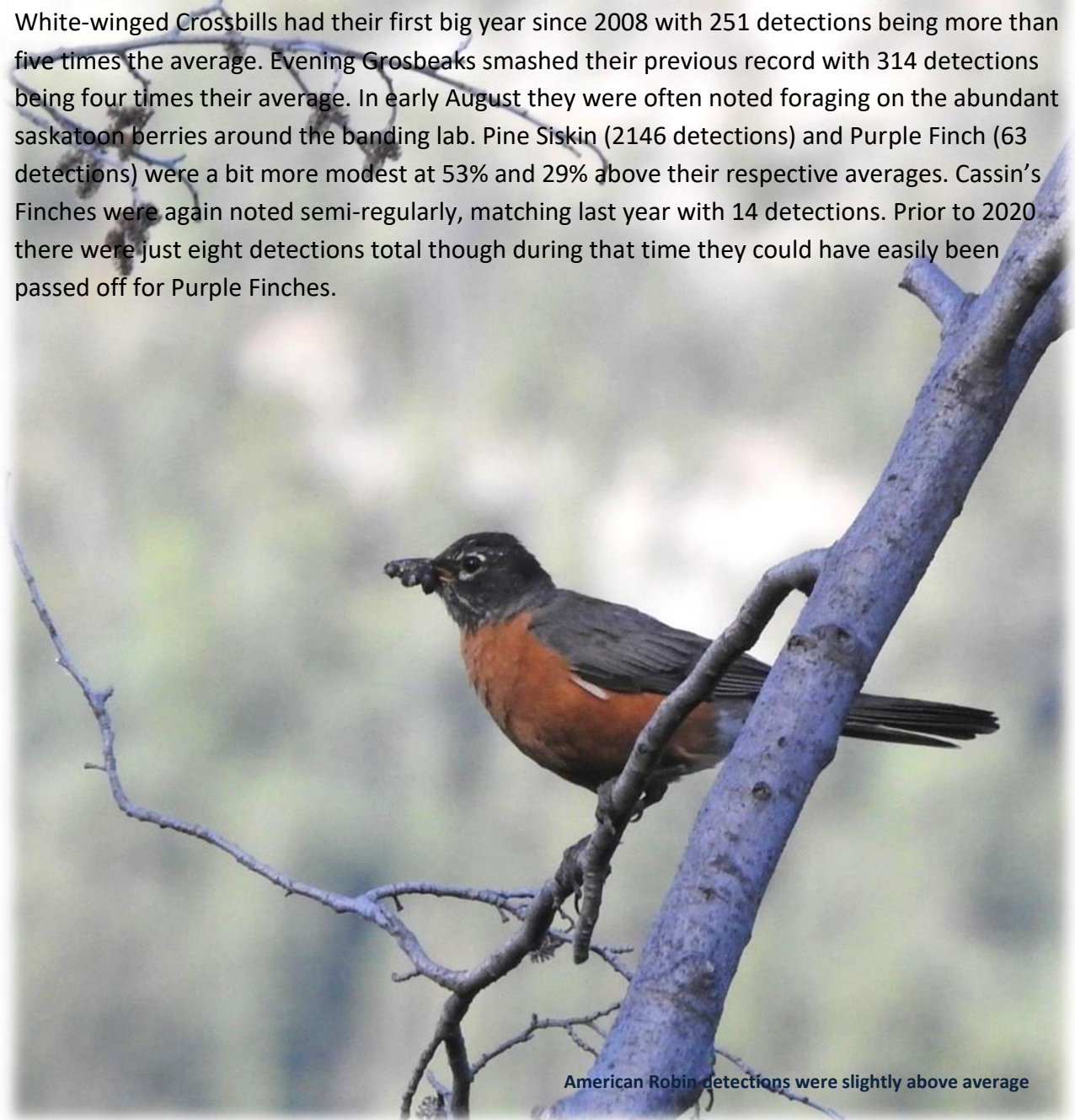


White-crowned Sparrow numbers were half the average

Meanwhile, sitting around their average, or close enough due to low annual counts, were "Oregon" Dark-eyed Junco, Vesper, Golden-crowned, Fox and White-throated Sparrows. It is worth noting that Savannah Sparrows seemed to have a terrible breeding season on the property itself with very few noted in the early season. This was almost certainly due to the presence of cattle in the fields over the summer (not a normal occurrence) which grazed down the grasses significantly. This could have also contributed to lower numbers of Western Meadowlarks (see next paragraph).

Red-winged Blackbird numbers were well above average again after two low seasons. The 388 detections (61% above average) were helped out by a flock that was seen regularly in early August, peaking at 90 individuals on August 8th. Western Meadowlarks, with 188 detections, were a bit above average but continued a slow downward trend of the past four seasons.

Last but not least, Finches are always irruptive but this was a high year for all of our regular species with the exception of Red Crossbill which, with 140 detections, was right at the average. On the back of a low season for all species last year it was nice to see flocks of White-winged Crossbills and Evening Grosbeaks in August as well as good numbers of Pine Siskins throughout. White-winged Crossbills had their first big year since 2008 with 251 detections being more than five times the average. Evening Grosbeaks smashed their previous record with 314 detections being four times their average. In early August they were often noted foraging on the abundant saskatoon berries around the banding lab. Pine Siskin (2146 detections) and Purple Finch (63 detections) were a bit more modest at 53% and 29% above their respective averages. Cassin's Finches were again noted semi-regularly, matching last year with 14 detections. Prior to 2020 there were just eight detections total though during that time they could have easily been passed off for Purple Finches.



American Robin detections were slightly above average

8. Non-Standard Banding

Non-standard banding activities were fairly limited in 2021. No non-standard songbird nets were used due to the consistent numbers of birds in our standard nets. The three large gauge “Hawk nets”, HN4, HN7 and HN9, retained their locations from previous years and these accounted for nine birds banded (Fig. 9). HN4 caught a lone Northern Harrier and a Sharp-shinned Hawk. HN7 caught just a lone bird, providing us with our only banded Western Woodpecker of the season. HN9 was the most productive catching three Sharp-shinned Hawks, a Red-naped Sapsucker, an “Audubon’s” Yellow-rumped Warbler and a Swainson’s Thrush. The “Hawk Nets” were used most days, wind permitting, though were often closed during the census period.

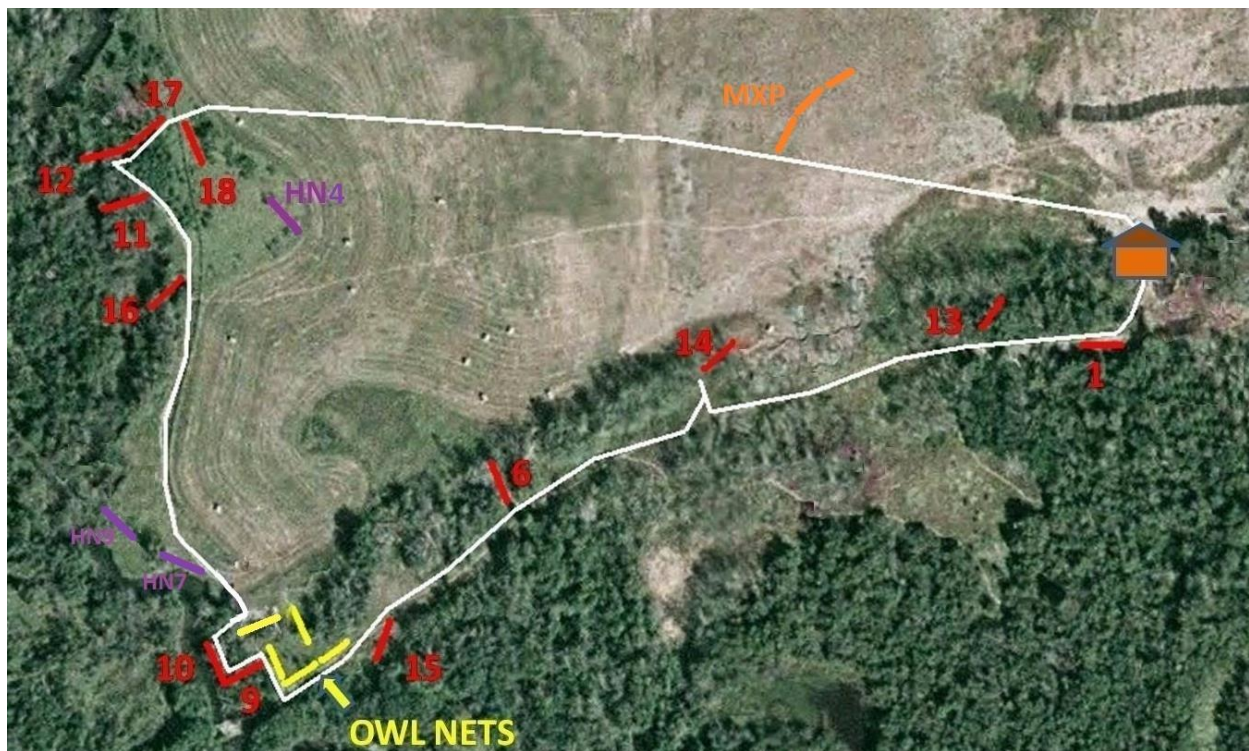


Figure 9 The net setup in 2021 including non-standard nets

The “Pipit fence” of three consecutive two panel nets didn’t get many opportunities this season, despite being available all of September. In all it was only opened on six different days and caught just two Savannah Sparrows. The bal-chatri trap by contrast, saw more action than normal this year, particularly later in the season. This provided us with two American Kestrels and several near misses, particularly from Merlins, which seemed wilier than the Kestrels.

With the extension of the Northern Saw-whet Owl banding program into the first two weeks of October all nets were left in place in order to be available for nonstandard day time songbird banding which was carried out on a purely opportunistic basis. Songbird banding

occurred on seven of the 15 days in October (1st, 4th, 6th, 8th, 10th and 13th) with sessions ranging from 2-5 hours for an average of 3 hours. During these seven sessions 67 birds were banded comprised of 18 species and 10 recaptures of three species (Table 6). The most banded species was Ruby-crowned Kinglets with 17 followed by Song Sparrows with nine and Audubon’s Yellow-rumped Warblers at six. Hardy residents and late-migrants were prevalent, but three Hermit Thrush, an Orange-crowned and a late Wilson’s Warblers were welcome additions to the banding totals.

In addition, a three net triangle (comprised of the hawk nets) was set up in the white spruce aspen thicket to the east of the station that is bordered by a section of thick willows to the south with the aim of targeting Long-eared Owls. This set-up was only used once, for three hours in conjunction with the Saw-whet program on October 12th. No Long-eared Owls were caught or detected throughout the duration. In the future this could worth running as a pilot on a more regular basis in September in conjunction with the Saw-whets. On October 12th one hour of targeted Boreal Owl banding was initiated using the Saw-whet grid. Again, this was unsuccessful but perhaps is worth attempting again in future years if the program is extended into October.

Table 6 Nonstandard birds banded during October

| Species | Banded | Recaps |
|---------------------------|--------|--------|
| Ruby-crowned Kinglet | 17 | 2 |
| Song Sparrow | 9 | 1 |
| "Audubon's" YR Warbler | 6 | |
| Golden-crowned Kinglet | 5 | |
| Pacific Wren | 4 | |
| Black-capped Chickadee | 3 | 7 |
| Hermit Thrush | 3 | |
| Hairy Woodpecker | 1 | |
| Downy Woodpecker | 1 | |
| Orange-crowned Warbler | 1 | |
| Wilson's Warbler | 1 | |
| Fox Sparrow | 1 | |
| "Oregon" Dark-eyed Junco | 2 | |
| "Myrtle" YR Warbler | 3 | |
| "Unidentified" YR Warbler | 1 | |
| Lincoln's Sparrow | 5 | |
| Savannah Sparrow | 3 | |
| "Gambel's" WC Sparrow | 1 | |



Our lone Northern Harrier of the season



One of two HY male American Kestrels banded

9. Owl Banding

While our record season of 2019 rather threw the theory of four-year cycles in owl populations out the window, we were nevertheless optimistic that we would have a busy year like we did in 2017. Fortunately, this was indeed the case though we would end up suffering from quite a lot of poor weather. As with last season, a couple of cold, calm nights at the beginning of September tempted us and we would regret not taking advantage of them even if they were a bit early for much owl movement. Overall we would end up conducting 10 owl sessions, plus two further attempts where we closed after one hour due to poor weather (Table 7). From September 23 onward we did not use nets 9 and 10 due to abundant falling leaves in those nets. On eight nights we ran the full 3 hours (with an additional 45 minutes on Sept. 30) and ended with 31.5 total hours of effort for September.

Table 7 Owling totals

| Date | Effort (hrs) | Owls Banded |
|--------|--------------|-------------|
| 6-Sep | 2.5 | 1 |
| 12-Sep | 3 | 3 |
| 13-Sep | 2.25 | 0 |
| 15-Sep | 3 | 5 |
| 19-Sep | 3 | 2 |
| 22-Sep | 3 | 2 |
| 23-Sep | 3 | 6 |
| 24-Sep | 3 | 8 |
| 26-Sep | 1 | 0 |
| 27-Sep | 3 | 11 |
| 28-Sep | 1 | 1 |
| 30-Sep | 3.75 | 15 |

While wind and rain made much of September less than ideal for owling, for the final week of the month we got some good conditions with cool, clear nights with little (or at least less) wind. These provided us with a couple very productive nights. In particular, September 27 with 11 owls and the 30th with 15 (five of which came after the standard three hour session was over). In the end we banded 54 owls (Fig. 10).

Most big owl years tend to correspond to low adult/young ratio but this year was a bit of an exception with nine adult, plus two unknown age birds. Removing the unknown age birds from the equation, 17% of our catch were adults which, while low, is much higher than expected compared with our previous big years (8% in 2017 and 5% in 2019).

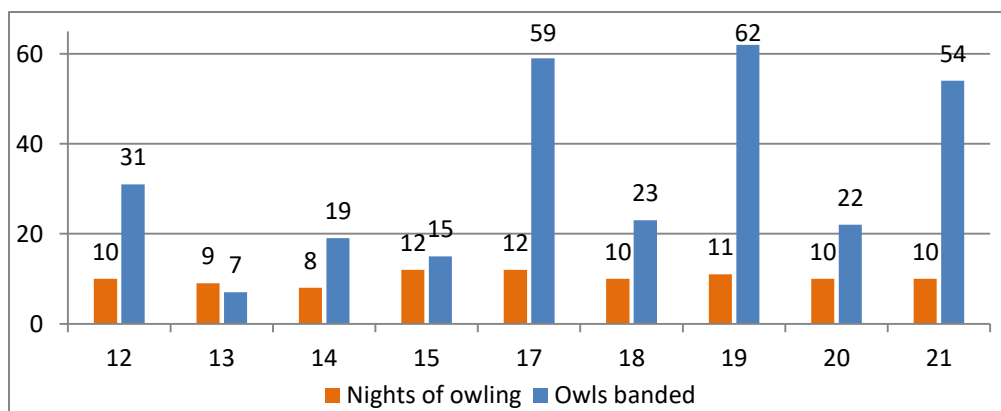


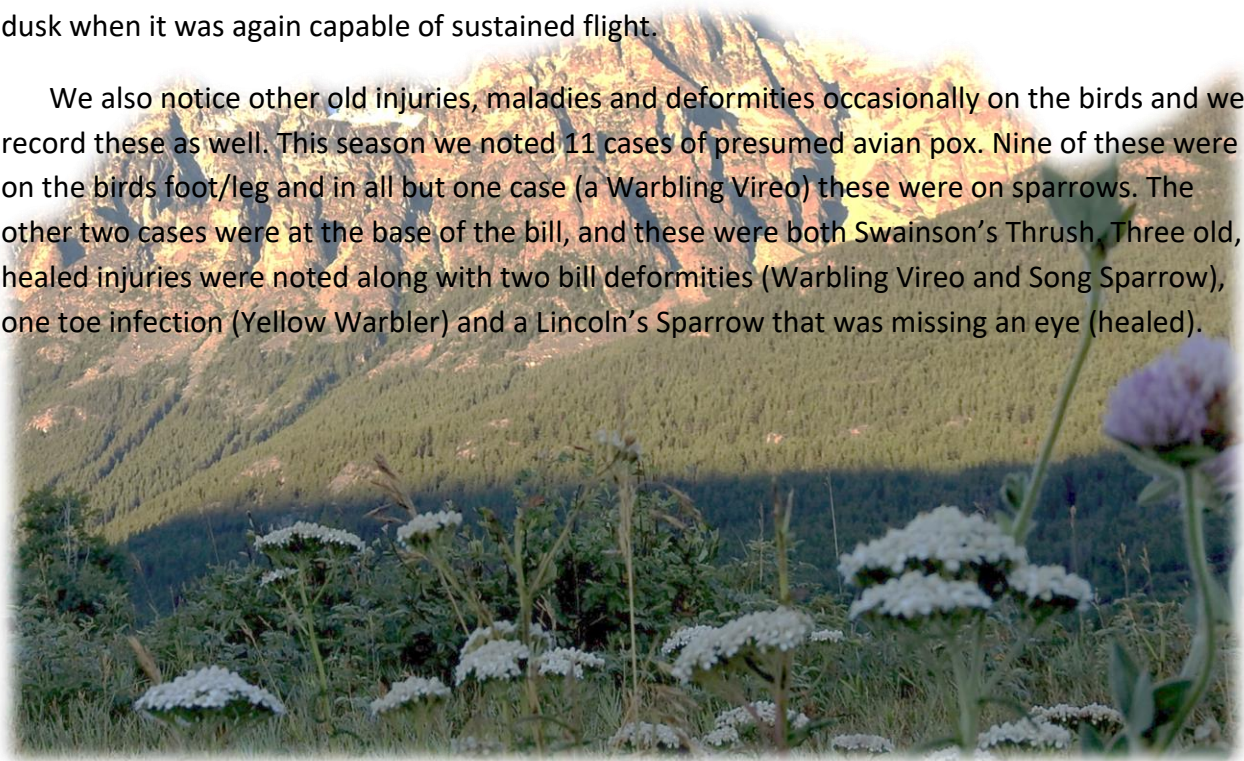
Figure 10 Effort and owls banded per year

10. Injuries and Fatalities

An unfortunate consequence of mist-netting birds is that there is the occasional injury and even fatality. While measures are taken to prevent casualties and injuries, (i.e., frequent net checks, monitoring nets when a predator is seen nearby etc.) the odd mishap is inevitable. In 2021 we had an average number of injuries, increasing somewhat on our low injury tally of 2020. Of the total of 1940 birds banded, 259 recaptured and an unknown number of same-day recaptures we had two fatalities and 23 injuries. The two fatalities were of a hatch-year female Wilson's Warbler, for which cause of death was strangulation from the net, and an adult male American Redstart that was hit in the net by a Cooper's Hawk.

The 23 injuries included 15 incidences of wing strain, four dislocated tibia/tarsus joint/leg fractures, two cases of superficial wounds on the sides of the neck, almost certainly self-inflicted by the bird's claw as they try to "scratch" the netting off their head and a lone superficial belly wound on a Fox Sparrow as a result of the same Cooper's Hawk attack as our second fatality. Most years we will subsequently catch one or two of our previously injured birds that had recovered. In 2021 this was the case with one of our Song Sparrows that was released with wing strain at banding and subsequently caught several times with no sign of injury. For the second season running we had a Northern Saw-whet Owl with minor wing strain due to being severely tangled in a net. After holding it overnight for 41hrs, it was released at dusk when it was again capable of sustained flight.

We also notice other old injuries, maladies and deformities occasionally on the birds and we record these as well. This season we noted 11 cases of presumed avian pox. Nine of these were on the birds foot/leg and in all but one case (a Warbling Vireo) these were on sparrows. The other two cases were at the base of the bill, and these were both Swainson's Thrush. Three old, healed injuries were noted along with two bill deformities (Warbling Vireo and Song Sparrow), one toe infection (Yellow Warbler) and a Lincoln's Sparrow that was missing an eye (healed).



11. New in 2021

In 2021 the TLBO became a project of the Tatlayoko Field Station Society, after being jointly operated by them and BC Spaces for Nature the year before. While there were no changes to operations or the setup of the monitoring program in 2021 we did initiate two pilot projects, namely a hawkwatch during September and an extension of the owl banding program until October 15. Lastly, after initiating discussions with Wendy Easton at Canadian Wildlife Service in Delta in 2020 the TLBO now has a Motus receiving station which was set up on Skinner Ridge on August 29.

11.1 Hawk Watch

Over the course of September a hawk watch was conducted on eight different occasions, during a variety of weather conditions, though never in rain or fully overcast skies. The site chosen (10U 403745, 5710932) is located about half way down Tatlayoko Lake and provides the closest access to the ridgeline of the Potato Mountains. A meadow just shy of 100m off the road provides the perfect viewing location to scan the ridge and nearest peaks. Hawkwatches were typically conducted for two hours, starting around 11:00am. While results on days with clear skies and little wind were encouraging the weather was rarely appropriate for hawkwatching. Our best day came on September 13 when 26 raptors of seven species were detected. By far the most detected species was Sharp-shinned Hawk which accounted for 47 of the total 79 raptors detected across all counts (Table 8). A seemingly resident adult Golden Eagle was seen on five of the days while a presumed migrant immature was also spotted on the 18th. Mountain Goats were spotted on all but one of the days.

Table 8 Summary of hawkwatch totals, “R” indicates presumed resident breeding individuals

| Species | 6th | 7th | 12th | 13th | 15th | 18th | 22nd | 24th | Totals |
|--------------------|----------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|
| Golden Eagle | 1R | | | 1R | 1R | 1 | 1 | 1R | 6 |
| Northern Harrier | | | 1 | | | | | | 1 |
| Osprey | | | 1 | | | | | | 1 |
| Sharp-shinned Hawk | 6 | 3 | 16 | | 10 | | 11 | 1 | 47 |
| Cooper's Hawk | | | 1 | | 1 | | | | 2 |
| Northern Goshawk | | | 1R | | | | 1 | | 2 |
| Red-tailed Hawk | 1 | 4 | 4 | | 2 | | 1 | | 12 |
| American Kestrel | | | 1 | | 1 | | | | 2 |
| Merlin | | | | | 1 | | | | 1 |
| Peregrine Falcon | | | | | | | 1 | | 1 |
| Raptor Sp. | | 1 | 1 | | | | 1 | | 3 |
| Total | 8 | 8 | 26 | 1 | 16 | 1 | 16 | 1 | 79 |

Due to the lack of appropriate weather/low raptor numbers it seems that a hawkwatch is not a worthwhile addition to the annual migration monitoring program but it is likely that they will be undertaken in future years on an opportunistic basis.



Andrew and Gail at the hawkwatch by Sachi Snively

11.2 October Owl Banding Extension

With a generous grant from the Cariboo Regional District we ran a pilot extension of the Northern Saw-whet Owl program from October 1-15th. Sachi stayed on to conduct this and was joined by volunteers for most of the period. Weather was the most challenging variable, namely wind and some rain, as we could only operate on six of the 15 nights. The same seven-net setup, and a new speaker were used for a total of 123.75 net hours. The last three nights we continued the monitoring beyond the standard 3 hour period due to the continued presence of owls. Also, on those last three nights we ran all seven of our nets unlike the first three nights where only the five owl nets were used.

Despite the low effort, 79 owls were banded for an average of 13 per night which is 10 above the eight-season average of three during our normal owl banding season in September. This is also well above the nightly average of 5.4 during the standard period this year. Of the 79 owls, 69 were hatch-years, six were second-years, one was an after-second-year and three were third-years. This ratio validates the expectation that this would be a high reproduction year due to the peak in the rodent population. Two of these owls were recaptured later in the season at the RPBO (see section 7.3, pg. 16) on Vancouver Island. The busiest night was Oct. 10 with 22 owls banded (Table 9)!

Table 9 Owls banded in October

| Date | Owls banded |
|--------------|-------------|
| 1-Oct | 1 |
| 2-Oct | 6 |
| 3-Oct | 16 |
| 6-Oct | 16 |
| 10-Oct | 22 |
| 12-Oct | 18 |
| Total | 79 |

A three-net setup east of the banding lab (UTM 10U 402989, 5723379) was used for 3 hours on October 12th to target Long-eared Owls though without success (see section 8, pg. 25).



Sachi and volunteer Courtney with two Northern Saw-whet Owls by Mae Frank

11.3 Motus Receiving Station

Equipment for a Motus receiving station (tower) was picked up from the Lower Mainland en route to the TLBO in late July. While intentions were to set it up by mid-August it wasn't until August 29 that all the pieces fell into place to do the installation. Local Mike Smialowski agreed to allow us to put the two antennas and solar panel on his existing VHF repeater tower on Skinner Ridge, 5.5km north of the TLBO. Mike's ingenuity, knowledge and work were integral to the setup and we are deeply indebted to him for this as well as for allowing us to use his existing infrastructure in the first place. The crew on the day of installation was made up of Mike, Fritz Mueller, Peter Shaughnessy and banders Avery and Sachi.

On September 26 the first tower check and data download took place. All was in order and we were able to get two days' worth of detection data for the first two Motus tags that we deployed on Saw-whet Owls (see section 12.3, pg. 32). However, the next data downloads were not as successful. On October 12 the laptop battery died, meaning Sachi and Fritz had to return on October 14 with an inverter to connect the laptop to the solar-powered battery in the Motus tower setup. This data download attempt revealed that the receiver had not been collecting data since our first data download, 19 days previous. While the cause of this is unknown it is expected it may have been due to a poor connection where the power connects to the raspberry pi within the Sensorgnome. This connection was checked to make sure it was secure before leaving so we hope the next data download will be more successful.



Setting up the Motus receiving station, the two 9-element antennas and top solar panel are part of the Motus setup

12. Research Collaborations

This year saw an increase in research collaborations the TLBO took part in. As with the past few years, we collected samples from Swainson's Thrush for two different projects of the Delmore Lab at Texas A&M University. We also collected Louse Flies for a researcher at University of Guelph. Most exciting for us though was a joint project between Vancouver Island University (Eric Demers), Rocky Point Bird Observatory and the TLBO putting Motus tags on Northern Saw-whet Owls. Each of these projects is elaborated upon below.

12.1 Samples for Delmore Lab

We collected samples for two different projects of the Delmore Lab this year. The 4th rectrix was collected from Swainson's Thrushes, as in the past two years, for genetic analysis to determine subspecies/intergrades between coastal and eastern subspecies. For the second year running we also collected blood, claw and feather (2GCs, clippings from P1 and P9) samples from moulting adult Swainson's Thrush. This was for a joint project that the Delmore Lab is involved in studying the phenomenon of moult migration in a variety of songbirds. For this latter project samples were mostly collected by Avery though Sachi took samples from at least two thrushes under supervision from Avery in order to gain experience with the procedures.

12.2 Louse Fly Samples

Throughout the season we collected Louse Flies (aka Flat Flies) when encountered on birds. While we attempted to catch all that we noticed we likely only collected around 1/2 to 2/3 of these. It was a low year for flat flies overall and we collected just 25, from 11 bird species. These samples were sent to Taxonomic Specialist Valerie Levesque-Beaudin, M.Sc. at Guelph University. We aim to collect Louse Flies for her again next year as well.

12.3 Motus Tagging of Northern Saw-whet Owls

In April, 2021 a collaborative project to put Motus tags on Northern Saw-whet Owls was initiated by Eric Demers (Vancouver Island University), Rocky Point Bird Observatory (RPBO) and the TLBO. The goal of this joint project is to shed light on the little understood movements of this species throughout their annual cycle and to ascertain feasibility of conducting a much larger, future project of this nature. While the timeframe to get everything in place for a fall 2021 field season was very tight it was ultimately achieved. Thanks to grants, applied for by TLBO (\$2500) and RPBO (\$6500), from the Public Conservation Fund, and some additional funds from the Demers Lab, the group was able to purchase 38 vhf tags from Lotek. While the goal was to put as many of these tags as possible on adults (due to natural high mortality rates in hatch-years) this was difficult for us at the TLBO with the tags only arriving on September 21. As

Avery was the one with the permit to attach the tags, this gave us just ten potential nights to deploy our allotment of nine tags (we received 10 but we were not able to activate one of them) before he left.



The first owl tagged at the TLBO by Sachi Snively

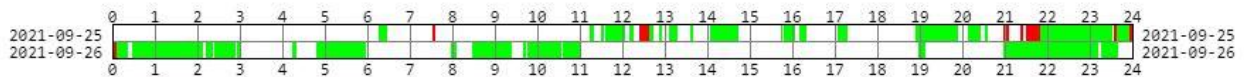
While owling was attempted on seven nights during this period, four of these nights had fairly strong winds making the owling marginal at best.

However, two adults were tagged on September 24, two adults and one hatch-year were tagged September 27 and four hatch-years were tagged on September 30 (none of the 15 owls caught that night were adults). Eight of the tags were attached by Avery while one was attached by Sachi under supervision from Avery.

A data download from the Motus tower on Skinner Ridge on September 26 had many detections of both owls tagged on September 24 (Fig. 11). Meanwhile, hand-held tracking along the census route using a 3-element antenna and a receiver lent to us by Amie MacDonald of Birds Canada was undertaken on two days in late September. Unfortunately, perhaps due in part to the very short detection range (~100m or less as per tests on unused tags at the banding lab) in the dense vegetation at the TLBO, no owls were detected. While the original plan had been to do hand-held tracking from a vehicle, up and down the valley, the low detection range meant we deemed this to be very unlikely to accomplish anything.

Chart uses UTC time on the X-axis, starting at midnight UTC on the left.

Show detections in: [a table](#) | [a timeline](#)



Tag deployments

- BC NSWO MOTUS#444:30.7 M.58865 - Northern Saw-whet Owl (ID# 36461) - detections of this tag by this receiver
- BC NSWO MOTUS#445:30.7 M.58866 - Northern Saw-whet Owl (ID# 36462) - detections of this tag by this receiver

Figure 11 Detections by the Skinner Ridge tower of the two Saw-whets, note UTC is 7 hrs ahead of local time. Chart taken from motus.org

While we await detections of our owls from other receiving stations we are hopeful that this project will be a success and encourage future Motus projects at the TLBO.

13. Highlights

As in 2020, we added two new species to the TLBO list, which now stands at 206 species (+ Long-eared Owl during owl banding 2019). Unlike last year, neither of these were banded species. The first new species of the season came on August 21st when Avery noted a smaller looking *Buteo* circling over the road, east of the banding lab. After observing it in the scope and snapping a few shots it was confirmed as a juvenile Broad-winged Hawk, a perhaps overdue species at the TLBO given their seeming increase in the southern interior of the province in recent years. We had to wait another month to add our second new species which came on September 18th. During a morning of strong southerly winds Sachi noted two adult Parasitic Jaegers flying north overhead as he was birding the pines along the entrance road. This was followed up with one adult (uncertain if same or different) loafing on the north beach the following morning.



Adult Parasitic Jaeger by Sachi Snively

While we added just one new species (Sora) to our banding list this season we still had several notable captures. This started right off the bat with a heavily moulting adult female Tennessee Warbler caught in Net 1 on opening net round August 3rd. The timing/age of this capture, coupled with a detection this June by previous bander Steve Ogle of a singing male 1.8km north of here, would seem to indicate a breeding attempt locally. It is worth noting that this cyclical species is currently in a “boom” elsewhere in the boreal and this could contribute to this unusual local (presumed) breeding attempt. An immature was subsequently observed near the banding lab on August 22nd. It was a good year for other locally scarce warblers as we banded and observed both Magnolia (8th banding record) and Blackpoll Warblers (7th banding record). Our first Magnolia was a hatch-year banded on August 10, with two subsequent observations on August 14th (an unbanded individual in a mixed flock near Net 6) and 18th (near

the banding lab). A hatch-year Blackpoll Warbler was banded on August 14th, while another was observed near Net 18 early on August 23rd.

August 7th provided us with a duo of Evening Grosbeaks in net 14, just the 4-5th banding records. It was interesting to compare plumages of the hatch-year and adult female. With the abundant berry crop it was perhaps unsurprising that we would catch this species as small groups were regularly seen foraging in the saskatoon nearby during the first couple weeks of August. A hatch-year Gray Catbird (4th banding record) showed up in Net 1 on August 25th. Still in juvenile plumage it seems likely that this locally scarce species probable bred nearby (as has been suspected in previous years as well). Another locally scarce species to end up in our nets was a Clay-colored Sparrow which was banded on September 8th (6th banding record). This followed an observation of one in the willows near hawk nets 7 and 9 on August 17th.



Hatch-year and adult female Evening Grosbeaks

One of, if not THE highlight of the season was a Sora that on August 28th flushed from Avery's feet as he was leaving Net 18 and fluttered into the top pocket of Net 17. This represented the first banding record of a rallid at the TLBO! A hatch-year male, it made for a lot of excitement among the banding crew that morning for all of whom it was a first in-hand experience with this species.

On the raptor front, it was an overall poor season for Northern Harriers with low numbers detected. However, we did still catch a lone hatch-year in the "Harrier Net" (HN4) on August 17th (14th banding record). The bal-chatri trap saw quite a bit of use, in particular later in September and we successfully caught two hatch-year male American Kestrels (6-7th banding records) on it. The first of these beauties came on September 23rd during a visit from the Tatla Lake School group which produced many amazed and happy faces among the kids. The second capture came on September 27th when no other banding was done due to poor weather.

On the observation front things kicked off with the TLBO's 3rd record of Lesser Yellowlegs on August 8th when one was voice recorded by Emma as it passed overhead on her way back from

census. The next day a Mourning Dove was spotted in the pines NE of the banding lab, our only detection of the season. August 18th was a good day for observations as a Barred Owl was heard calling from the western slopes on census while a lone Greater White-fronted Goose (6th record) was loafing on the back of the little island in the lagoon. A lone Red-necked Phalarope was noted on the lagoon on August 21st and singles (uncertain if the same or multiple individuals) were seen on four other dates throughout the season with the last occurring on September 18.



Hatch-year Gray Catbird

of 17 Snow Geese was seen flying south early on the 24th. The next day provided our only Boreal Chickadee of the season, en route back to the banding lab from census.

September 27th was a great day for observations with a couple notable highlights. The first was a flock of 32 greater White-fronted Geese that were seen flying back and forth over the station a few times, and again loafing on the lagoon during census. Near the end of the day an immature Golden Eagle was spotted flying over the banding lab, fairly low, providing good views!

With Sachi staying on an extra two weeks to do the owl banding extension we were interested to see what the birding in October would be like. On October 4th another Golden Eagle was spotted, this time attacking a lone Snow Goose that was out in the field in front of the banding lab! On this day, in addition to the

Moving into September, the 5th record of Western Sandpiper came on the 8th with a lone juvenile spotted flying around the lagoon before it finally alighted on the back side of the little island. Late September is often the best time for unusual species to show up and this was again the case in 2021. On the 19th an immature Sabine's Gull (2nd TLBO record) was noted at the north end of the beach, alongside the previously mentioned Parasitic Jaeger, providing a nice double-whammy of rarities for Sachi. It was then seen the following day as well. A flock



A young Sabine's Gull by Sachi Snively

high numbers of Snow Geese previously mentioned, 100 Greater White-fronted Geese also passed overhead. Lapland Longspur, generally scarce at the TLBO, were singly detected on the 7th, 9th with nine seen on the 10th. A Blue Jay made the rounds of the local bird feeders for several days and was spotted at the TLBO on October 8th and 10th. Lastly, two female Eurasian Wigeon were spotted along with large numbers of their American brethren in the back lagoon, halfway along the beach, on October 13th.

Table 10 Highlights from the 2021 season; birds highlighted in yellow are 1st banding records, in orange 1st station records

| Species | Details |
|-------------------------|---|
| Tennessee Warbler | One AHY/F banded Aug. 3 (4th banding rec.); one HY obs on Aug. 22 (11th TLBO rec.) |
| Evening Grosbeak | Two banded on Aug. 7 (4-5th banding records) |
| Lesser Yellowlegs | One observed flying over on Aug. 8 (3rd TLBO record) |
| Mourning Dove | One observed in pines NE of banding lab on Aug. 9 |
| Magnolia Warbler | One HY banded Aug. 10 (8th banding record; singles observed Aug. 14th and 18th) |
| Blackpoll Warbler | One HY banded Aug. 14 (7th banding rec.); one observed Aug. 23 (13th TLBO rec) |
| Northern Harrier | One HY banded on Aug. 17 (14th banding record) |
| Clay-colored Sparrow | One observed Aug. 17; one HY banded Sept. 8 (6th banding record) |
| Gr. White-fronted Goose | 1 On census Aug. 18; flock of 32 seen flying, then on lagoon Sept. 27; 100 on Oct. 4 |
| Barred Owl | Heard calling on Aug. 18 and Aug 27 (5th TLBO record) |
| Broad-winged Hawk | One juvenile observed circling east of the banding lab Aug. 21 (1st TLBO record) |
| Red-necked Phalarope | Single juveniles on Aug. 21, Aug. 31, Sept. 11, Sept. 17 and Sept. 18 |
| Gray Catbird | One HY banded on Aug. 25 (4th banding record) |
| Sora | One HY/M banded on Aug. 28 (1st banding record) |
| Western Sandpiper | One on lagoon island on census Sept. 8 (5th TLBO record) |
| Parasitic Jaeger | Two adults observed flying north Sept. 18, one on lake Sept. 19 (1st TLBO records) |
| Sabine's Gull | Juvenile seen on north beach during census Sept. 19 and 20 (2nd TLBO record) |
| American Kestrel | Two HY/M banded, Sept. 23rd and 27th (6-7th banding records) |
| Snow Goose | Flock of 17 flying south early on Sept. 24 (2nd TLBO rec.); 357 migrating over Oct. 4 |
| Boreal Chickadee | One observed Sept. 25 |
| Golden Eagle | One observed over banding lab 27 Sept (5th TLBO record); 1 attacking SNGO Oct. 4 |
| Lapland Longspur | Singles on Oct. 7 and 9, a flock of 9 on Oct. 10 |
| Blue Jay | One observed around the banding lab on Oct. 8th and 10th |
| Eurasian Wigeon | Two females observed on the back lagoon, west along beach on Oct. 13 |



Greater White-fronted Geese on the lagoon by Sachi Snively

Highlights

2021



Figure 12 Banding highlights of 2021, top to bottom: Tennessee warbler, Northern Harrier, Blackpoll Warbler, Sora and Clay-colored Sparrow (by Sachi Snively)

Appendix 1 Banding and recapture totals from 2021

| Species | Band | Recap |
|--------------------------|------|-------|
| Sharp-shinned Hawk | 7 | 0 |
| Sora | 1 | 0 |
| Downy Woodpecker | 5 | 0 |
| Hairy Woodpecker | 1 | 0 |
| Red-shafted Flicker | 1 | 0 |
| Pacific-slope Flycatcher | 5 | 0 |
| Willow Flycatcher | 3 | 0 |
| Alder Flycatcher | 2 | 0 |
| Hammond's Flycatcher | 6 | 0 |
| Dusky Flycatcher | 2 | 0 |
| Cassin's Vireo | 1 | 0 |
| Warbling Vireo | 294 | 14 |
| Red-eyed Vireo | 5 | 0 |
| Black-capped Chickadee | 16 | 18 |
| Red-breasted Nuthatch | 4 | 0 |
| Brown Creeper | 1 | 0 |
| Pacific Wren | 4 | 0 |
| Golden-crowned Kinglet | 2 | 0 |
| Ruby-crowned Kinglet | 100 | 0 |
| Hermit Thrush | 12 | 1 |
| Swainson's Thrush | 224 | 39 |
| American Robin | 12 | 0 |
| Gray Catbird | 1 | 0 |
| Cedar Waxwing | 13 | 0 |
| Northern Waterthrush | 58 | 11 |
| Orange-crowned Warbler | 77 | 4 |
| Tennessee Warbler | 1 | 0 |
| MacGillivray's Warbler | 29 | 3 |
| Common Yellowthroat | 55 | 4 |
| American Redstart | 104 | 18 |
| Magnolia Warbler | 1 | 0 |
| Yellow Warbler | 111 | 5 |
| Blackpoll Warbler | 1 | 0 |
| Yellow-rumped Warbler | 54 | 1 |
| Townsend's Warbler | 6 | 0 |
| Wilson's Warbler | 63 | 1 |

| Species | Band | Recap |
|------------------------|-------------|------------|
| Spotted Towhee | 3 | 0 |
| Clay-colored Sparrow | 1 | 0 |
| Chipping Sparrow | 2 | 0 |
| Savannah Sparrow | 28 | 2 |
| Vesper Sparrow | 4 | 0 |
| Fox Sparrow | 11 | 2 |
| Song Sparrow | 214 | 112 |
| Lincoln's Sparrow | 95 | 13 |
| Oregon Junco | 16 | 0 |
| White-crowned Sparrow | 24 | 0 |
| Golden-crowned Sparrow | 3 | 0 |
| White-throated Sparrow | 4 | 1 |
| Western Tanager | 21 | 0 |
| Red-winged Blackbird | 1 | 0 |
| Evening Grosbeak | 2 | 0 |
| Purple Finch | 4 | 0 |
| Pine Siskin | 5 | 0 |
| Traill's Flycatcher | 7 | 0 |
| Totals | 1727 | 249 |

Appendix 2 Daily Estimated Totals (DET) and Banding totals in 2020 and average, in taxonomical order

| Species | DET | Avg. DET 2006-20 | Band | Avg. Banded 2006-20 |
|-----------------------------|------------|-----------------------------|-------------|--------------------------------|
| Greater White-fronted Goose | 33 | 6.9 | 0 | 0 |
| Snow Goose | 17 | 2.1 | 0 | 0 |
| Blue-winged Teal | 6 | 4.1 | 0 | 0 |
| Cinnamon Teal | 0 | 0.5 | 0 | 0 |
| Northern Shoveler | 52 | 23.5 | 0 | 0 |
| Lesser Scaup | 0 | 3.9 | 0 | 0 |
| Barrow's Goldeneye | 17 | 8.7 | 0 | 0 |
| Common Goldeneye | 0 | 3.9 | 0 | 0 |
| Hooded Merganser | 7 | 9.9 | 0 | 0 |
| Common Merganser | 75 | 33.0 | 0 | 0 |
| Red-breasted Merganser | 0 | 0.4 | 0 | 0 |
| Dusky Grouse | 0 | 5.8 | 0 | 0 |
| Ruffed Grouse | 191 | 145.1 | 0 | 0 |
| Western Grebe | 0 | 0.3 | 0 | 0 |
| American Bittern | 0 | 0.5 | 0 | 0 |
| Great Blue Heron | 54 | 26.7 | 0 | 0 |
| Turkey Vulture | 6 | 1.3 | 0 | 0 |
| Osprey | 84 | 48.4 | 0 | 0 |
| Sharp-shinned Hawk | 85 | 68.1 | 7 | 4.4 |
| Red-tailed Hawk | 25 | 11.1 | 0 | 0 |
| Golden Eagle | 1 | 0.3 | 0 | 0 |
| Bald Eagle | 59 | 26.4 | 0 | 0 |
| Sandhill Crane | 14 | 5.1 | 0 | 0 |
| Virginia Rail | 1 | 1.1 | 0 | 0 |
| Sora | 13 | 5.0 | 1 | 0 |
| Killdeer | 18 | 6.4 | 0 | 0 |
| Greater Yellowlegs | 0 | 1.2 | 0 | 0 |
| Solitary Sandpiper | 3 | 2.2 | 0 | 0 |
| Spotted Sandpiper | 68 | 58.3 | 0 | 0 |
| Upland Sandpiper | 0 | 0.2 | 0 | 0 |
| Long-billed Curlew | 0 | 0.1 | 0 | 0 |
| Western Sandpiper | 1 | 0.3 | 0 | 0 |
| Least Sandpiper | 4 | 2.1 | 0 | 0 |
| Long-billed Dowitcher | 0 | 0.4 | 0 | 0 |
| Wilson's Phalarope | 0 | 0.4 | 0 | 0 |
| Red-necked Phalarope | 5 | 0.9 | 0 | 0 |
| Red Phalarope | 0 | 0.1 | 0 | 0 |
| Sabine's Gull | 2 | 0.1 | 0 | 0 |
| Bonaparte's Gull | 2 | 1.9 | 0 | 0 |
| Ring-billed Gull | 7 | 9.2 | 0 | 0 |
| California Gull | 12 | 5.0 | 0 | 0 |

| Species | DET | Avg. DET 2006-20 | Band | Avg. Banded 2006-20 |
|---------------------------|------------|-----------------------------|-------------|--------------------------------|
| Herring Gull | 19 | 39.7 | 0 | 0 |
| Caspian Tern | 0 | 0.1 | 0 | 0 |
| Common Tern | 0 | 0.3 | 0 | 0 |
| Parasitic Jaeger | 3 | 0.0 | 0 | 0 |
| Eurasian collared-Dove | 1 | 2.4 | 0 | 0 |
| Great Horned Owl | 0 | 3.4 | 0 | 0 |
| Barred Owl | 2 | 0.3 | 0 | 0 |
| Northern Saw-whet Owl | 0 | 6.4 | 0 | 0.1 |
| Vaux's Swift | 7 | 0.9 | 0 | 0 |
| Rufous Hummingbird | 17 | 23.0 | 0 | 0.1 |
| Belted Kingfisher | 101 | 81.7 | 0 | 0.2 |
| Red-naped Sapsucker | 46 | 41.4 | 0 | 2.1 |
| Black-backed Woodpecker | 0 | 1.3 | 0 | 0 |
| Northern Flicker | 209 | 210.4 | 0 | 0 |
| Pileated Woodpecker | 92 | 50.5 | 0 | 0.1 |
| Peregrine Falcon | 1 | 1.4 | 0 | 0 |
| Prairie Falcon | 0 | 0.1 | 0 | 0 |
| Gyr Falcon | 0 | 0.1 | 0 | 0 |
| American Kestrel | 117 | 82.4 | 0 | 0 |
| Merlin | 67 | 37.1 | 0 | 0.1 |
| Olive-sided Flycatcher | 30 | 15.2 | 0 | 0.4 |
| Western Wood-pewee | 38 | 19.9 | 0 | 1.4 |
| Pacific-slope Flycatcher | 7 | 3.9 | 5 | 3.1 |
| Yellow-bellied Flycatcher | 0 | 0.1 | 0 | 0.1 |
| Willow Flycatcher | 3 | 12.2 | 3 | 9.1 |
| Alder Flycatcher | 45 | 60.8 | 2 | 12 |
| Least Flycatcher | 6 | 12.6 | 0 | 3.4 |
| Hammond's Flycatcher | 21 | 17.7 | 6 | 8 |
| Dusky Flycatcher | 115 | 71.1 | 2 | 10.9 |
| Say's Phoebe | 0 | 0.1 | 0 | 0 |
| Eastern Kingbird | 0 | 0.8 | 0 | 0 |
| Northern Shrike | 0 | 0.6 | 0 | 0 |
| Cassin's Vireo | 21 | 17.8 | 1 | 1.4 |
| Warbling Vireo | 1410 | 529.6 | 294 | 130.6 |
| Red-eyed Vireo | 48 | 63.9 | 5 | 8.9 |
| Steller's Jay | 11 | 12.4 | 0 | 0.3 |
| Blue Jay | 0 | 0.3 | 0 | 0 |
| Clark's Nutcracker | 438 | 259.9 | 0 | 0 |
| Gray Jay | 18 | 4.0 | 0 | 0 |
| Common Raven | 107 | 98.1 | 0 | 0 |
| American Crow | 978 | 1195.9 | 0 | 0.1 |
| Horned Lark | 100 | 80.6 | 0 | 0 |

| Species | DET | Avg. DET 2006-20 | Band | Avg. Banded 2006-20 |
|---------------------------|------------|-----------------------------|-------------|--------------------------------|
| Tree Swallow | 13 | 12.7 | 0 | 0 |
| Violet-green Swallow | 204 | 72.9 | 0 | 0 |
| Bank Swallow | 15 | 3.4 | 0 | 0 |
| N. Rough-winged Swallow | 44 | 27.8 | 0 | 0 |
| Cliff Swallow | 12 | 1.6 | 0 | 0 |
| Barn Swallow | 27 | 47.5 | 0 | 0 |
| Mountain Chickadee | 243 | 105.5 | 0 | 2.2 |
| Black-capped Chickadee | 505 | 577.9 | 16 | 20.2 |
| Chestnut-backed Chickadee | 0 | 1.4 | 0 | 0.1 |
| Boreal Chickadee | 1 | 1.9 | 0 | 0.6 |
| Red-breasted Nuthatch | 328 | 165.9 | 4 | 4.6 |
| Brown Creeper | 3 | 5.2 | 1 | 1.8 |
| House Wren | 0 | 0.2 | 0 | 0 |
| Pacific Wren | 25 | 6.8 | 4 | 1.4 |
| Marsh Wren | 0 | 3.8 | 0 | 0.6 |
| American Dipper | 0 | 0.1 | 0 | 0 |
| Golden-crowned Kinglet | 56 | 66.9 | 2 | 9.3 |
| Ruby-crowned Kinglet | 904 | 809.9 | 100 | 110.6 |
| Townsend's Solitaire | 61 | 9.6 | 0 | 0.1 |
| Mountain Bluebird | 211 | 51.0 | 0 | 0 |
| Western Bluebird | 0 | 0.2 | 0 | 0 |
| Veery | 0 | 0.3 | 0 | 0.2 |
| Gray-cheeked Thrush | 0 | 0.1 | 0 | 0.1 |
| Hermit Thrush | 29 | 24.9 | 12 | 12.2 |
| Swainson's Thrush | 806 | 368.6 | 224 | 135.9 |
| American Robin | 789 | 693.2 | 12 | 11.8 |
| Varied Thrush | 53 | 46.6 | 0 | 1.6 |
| Gray Catbird | 5 | 2.2 | 1 | 0.2 |
| European Starling | 22 | 41.9 | 0 | 0 |
| American Pipit | 798 | 477.8 | 0 | 0 |
| Bohemian Waxwing | 0 | 5.2 | 0 | 0 |
| Cedar Waxwing | 1365 | 902.1 | 13 | 17.1 |
| Lapland Longspur | 0 | 0.9 | 0 | 0 |
| Northern Waterthrush | 208 | 134.7 | 58 | 43 |
| Black and White Warbler | 0 | 0.2 | 0 | 0.1 |
| Orange-crowned Warbler | 300 | 228.2 | 77 | 82.3 |
| Tennessee Warbler | 2 | 0.6 | 1 | 0.2 |
| Nashville Warbler | 3 | 2.1 | 0 | 0.9 |
| MacGillivray's Warbler | 107 | 82.0 | 29 | 31.8 |
| Common Yellowthroat | 367 | 559.4 | 55 | 120.8 |
| American Redstart | 446 | 208.2 | 104 | 49.4 |
| Magnolia Warbler | 3 | 0.9 | 1 | 0.5 |

| Species | DET | Avg. DET 2006-20 | Band | Avg. Banded 2006-20 |
|-----------------------------|------------|-----------------------------|-------------|--------------------------------|
| Yellow Warbler | 483 | 260.6 | 111 | 72.4 |
| Blackpoll Warbler | 2 | 0.8 | 1 | 0.4 |
| Western Palm Warbler | 0 | 0.1 | 0 | 0.1 |
| Yellow-rumped Warbler | 4682 | 3031.6 | 54 | 85.9 |
| Black-throated Gray Warbler | 0 | 0.1 | 0 | 0.1 |
| Townsend's Warbler | 66 | 22.6 | 6 | 3.9 |
| Wilson's Warbler | 266 | 127.4 | 63 | 53.9 |
| Spotted Towhee | 77 | 53.9 | 3 | 2.4 |
| Clay-colored Sparrow | 2 | 0.9 | 1 | 0.4 |
| Chipping Sparrow | 457 | 322.9 | 2 | 3.3 |
| Brewer's Sparrow | 0 | 0.1 | 0 | 0.1 |
| Savannah Sparrow | 704 | 439.9 | 28 | 26.1 |
| Le Conte's Sparrow | 0 | 0.1 | 0 | 0 |
| Vesper Sparrow | 58 | 57.1 | 4 | 3.4 |
| Lark Sparrow | 0 | 0.1 | 0 | 0 |
| American Tree Sparrow | 0 | 0.1 | 0 | 0 |
| Fox Sparrow | 24 | 17.0 | 11 | 6 |
| Song Sparrow | 1360 | 768.0 | 214 | 145.1 |
| Lincoln's Sparrow | 478 | 631.1 | 95 | 188.6 |
| Swamp Sparrow | 0 | 1.1 | 0 | 0.6 |
| Oregon Junco | 412 | 370.9 | 16 | 31.6 |
| White-crowned Sparrow | 136 | 261.9 | 24 | 36.2 |
| Golden-crowned Sparrow | 24 | 23.4 | 3 | 5.1 |
| White-throated Sparrow | 13 | 9.9 | 4 | 1.4 |
| Western Tanager | 256 | 76.0 | 21 | 6.4 |
| Lazuli Bunting | 1 | 13.8 | 0 | 4.8 |
| Indigo Bunting | 0 | 0.1 | 0 | 0.1 |
| Brewer's Blackbird | 0 | 35.1 | 0 | 0 |
| Rusty Blackbird | 2 | 3.6 | 0 | 0 |
| Red-winged Blackbird | 388 | 240.9 | 1 | 2.3 |
| Yellow-headed Blackbird | 0 | 1.1 | 0 | 0 |
| Brown-headed Cowbird | 14 | 9.4 | 0 | 0.3 |
| Western Meadowlark | 188 | 159.9 | 0 | 0 |
| Bullock's Oriole | 0 | 0.2 | 0 | 0 |
| Pine Grosbeak | 0 | 3.7 | 0 | 0 |
| Evening Grosbeak | 314 | 78.1 | 2 | 0.2 |
| Purple Finch | 63 | 48.9 | 4 | 4.4 |
| Cassin's Finch | 14 | 1.6 | 0 | 0 |
| Red Crossbill | 140 | 142.1 | 0 | 0.1 |
| White-winged Crossbill | 251 | 47.1 | 0 | 0.1 |
| Pine Siskin | 2146 | 1403.1 | 5 | 13.2 |
| American Goldfinch | 0 | 0.1 | 0 | 0 |

| Species | DET | Avg. DET 2006-20 | Band | Avg. Banded 2006-20 |
|--------------------------|--------------|-----------------------------|-------------|--------------------------------|
| Black-headed Grosbeak | 0 | 0.1 | 0 | 0 |
| Unidentified Goose | 0 | 2.1 | 0 | 0 |
| Unidentified Duck | 8 | 40.0 | 0 | 0 |
| Unidentified Dabbler | 9 | 1.2 | 0 | 0 |
| Unidentified Accipiter | 1 | 1.1 | 0 | 0 |
| Unidentified Shorebird | 11 | 4.5 | 0 | 0 |
| Unidentified Gull | 7 | 28.3 | 0 | 0 |
| Unidentified Hummingbird | 10 | 0.6 | 0 | 0 |
| Hybrid Sapsucker | 1 | 0 | 0 | 0.1 |
| Flicker Intergrade | 7 | 2.9 | 0 | 0.9 |
| Red-shafted Flicker | 2 | 4.5 | 1 | 1 |
| Yellow-shafted Flicker | 1 | 8.6 | 0 | 0 |
| Unidentified Empidonax | 3 | 9.2 | 0 | 0.2 |
| Traill's Flycatcher | 15 | 12.2 | 7 | 4.6 |
| Unidentified Swallow | 14 | 10.5 | 0 | 0 |
| Unidentified Warbler | 49 | 5.4 | 0 | 0 |
| Slate-colored Junco | 0 | 0.1 | 0 | 0.1 |
| Unidentified Sparrow | 11 | 4.4 | 0 | 0 |
| Unidentified Blackbird | 1 | 4.5 | 0 | 0 |
| Unidentified Finch | 43 | 0.5 | 0 | 0 |
| Totals | 27602 | 19848 | 1727 | 1571 |