Bird Conservancy of the Rockies

Connecting People, Birds and Land

Chatfield Banding Station Report, Spring 2022

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"Word is out that the best bird jewelry store is open at Chatfield. Here is a pic of a happy customer." **Rob Raker, Photographer**

Introduction

Since 2002, Bird Conservancy of the Rockies and Denver Audubon have partnered to run a spring banding station near the Audubon Nature Center at the south end of Chatfield State Park. This station has dual goals: 1) to provide valuable education and engagement opportunities for students as well as other humans interested in helping birds, and 2) to obtain data so that we and other scientists can increase our understanding of birds, especially during migration, and how to conserve them and their habitats most effectively.

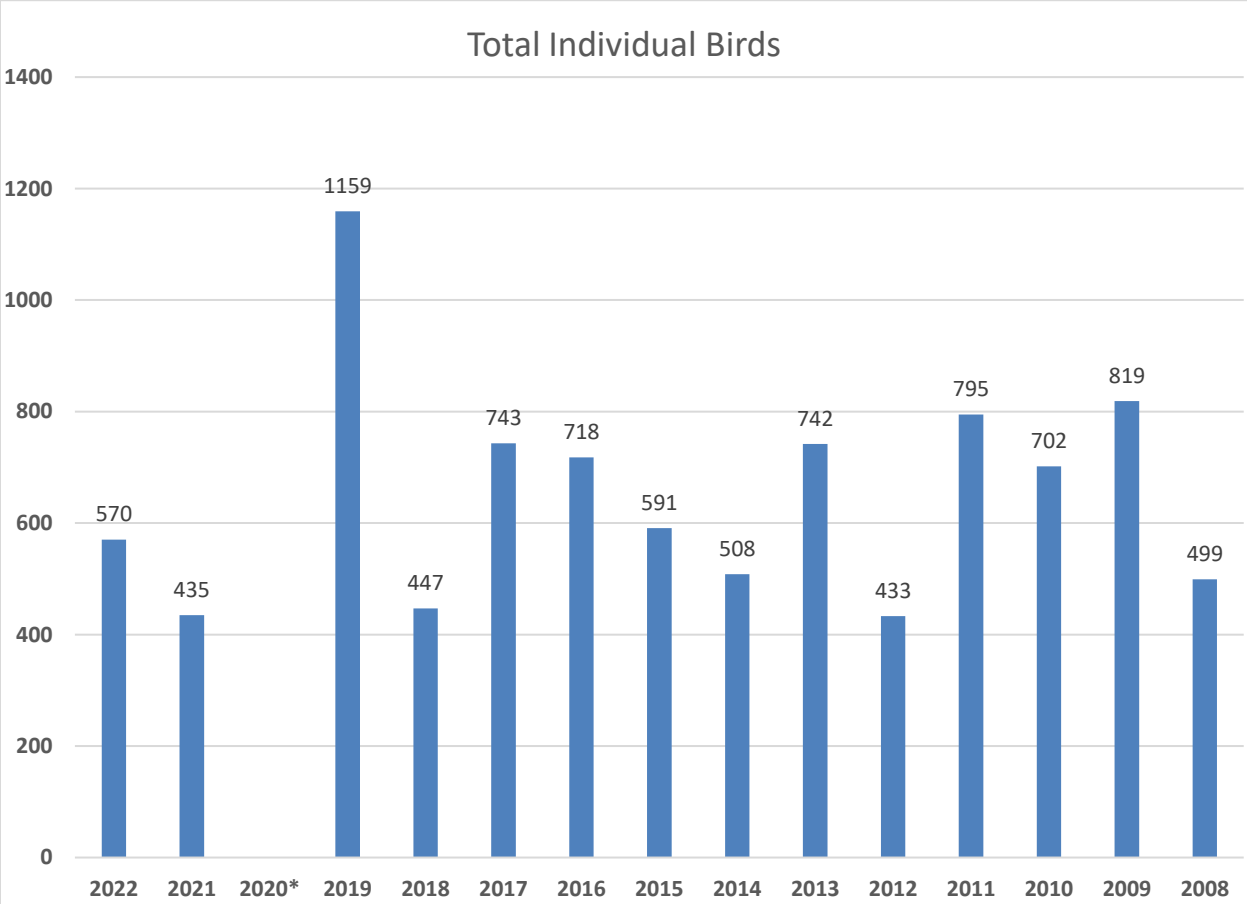
The station was scheduled to run from April 26 through May 29, six days per week (closed on Mondays), opening at 6:30 a.m. and closing at 11:30 a.m. We were closed three additional

days (May 4 and May 20 & 21) because of storms. On three other mornings, we opened late and/or closed early due to weather issues.

Bird Numbers

Bird numbers continue to be below average

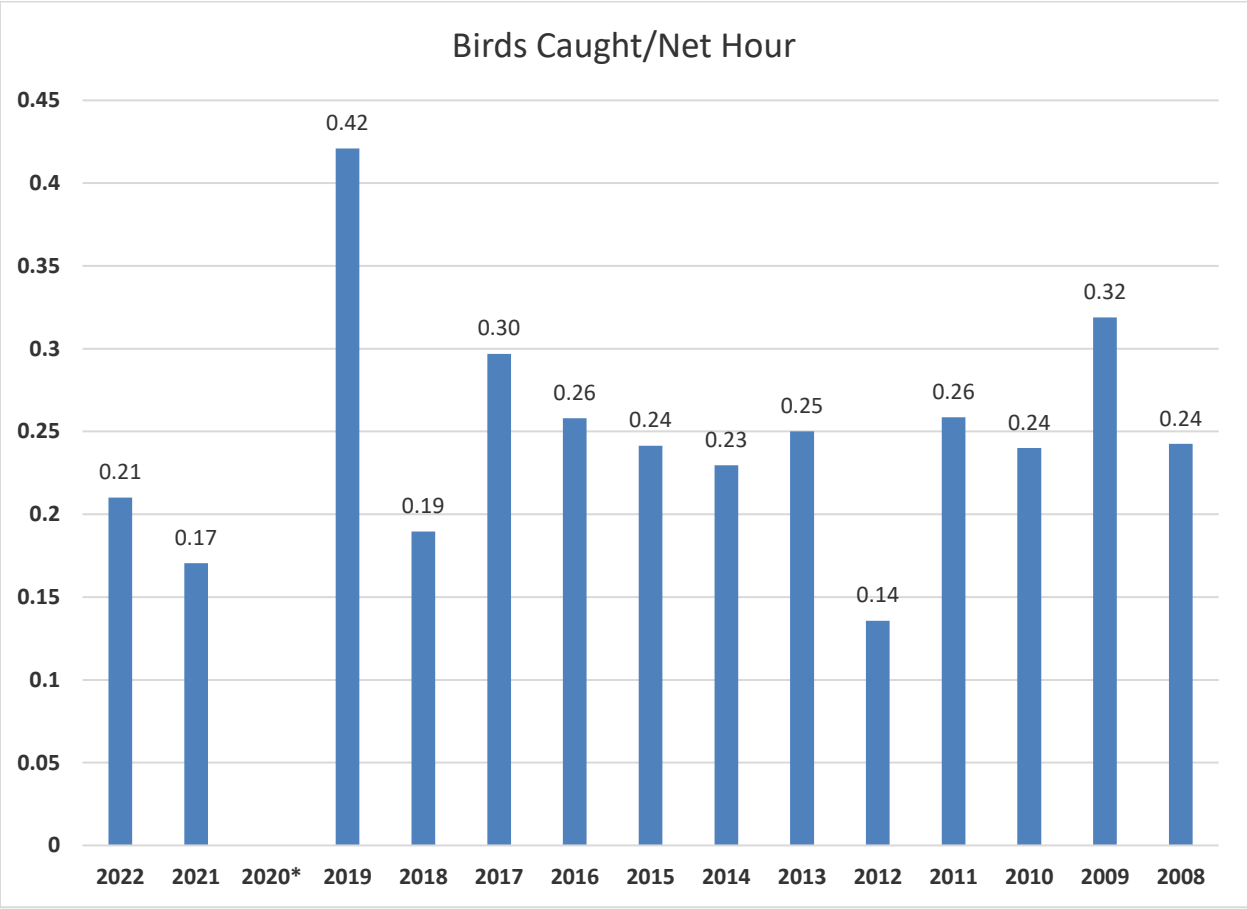
The total of 570 birds for 2022 was well below the average of 661 for the years 2008-2021[1], but a 31 percent increase over the very low 2021 season. Two storms during the season helped to increase numbers; on the other hand, the continued impact of the brutal fall of 2020, when long term draught and loss of insects came together with fires and storms to kill off and/or severely compromise the health of large numbers of birds, probably accounted for the still below average numbers in 2022. The chart below shows the total number of birds caught each year since 2008:



*Station did not run in 2020 due to COVID.

[1] We have started these comparisons with 2008 because by then major changes in the station location and net array had been completed. From 2002-06 the station was in different locations; 2007 we made major changes in the net array at the current location. Also, for most of the earlier years we did not track net hours.

The chart below shows the total birds caught per net hour. Comparing years based on net hours eliminates some of the distortion that can exist because of differences each year in how many nets are open for how many days or hours. This chart shows a fairly similar pattern to that seen in the chart for total birds caught, particularly in the past few years, as the number of days and hours we are open has become more standardized:



Increases from 2021:

Last year, we looked at our ten most commonly caught species over the years 2008 to 2019 and compared the average of those years with the number caught in 2021. All but Catbirds were below average, and all but Yellow Warblers were down by a double-digit percentage. Below, we have added the numbers for those species for 2022. Although not all of these commonly caught species returned to normal or near normal numbers, overall they accounted for 70 percent of the increase over last year.

Species	Average 2008-19	2021 Caught	2022 Caught
Yellow Warbler	121	110	105
House Wren	61	28	55
Gray Catbird	59	66	49
Yellow-rumped Warbler	46	22	73
Lincoln's Sparrow	36	17	34
Common Yellowthroat	27	17	23
Dusky Flycatcher	26	8	2
Yellow-breasted Chat	21	16	18
Swainson's Thrush	20	4	22
Hermit Thrush	15	1	2
Totals	**432**	**289**	**383**

Species outside of the top 10 that were quite high this year compared to last year (and at or above their 2008-19 average) included Western Wood-Pewee, Violet-green Swallow, Cedar Waxwing and White-crowned Sparrow. These four species and the increases in five of the top 10 species described above accounted for the total increase in bird numbers for 2022 compared with 2021.

The Impact of the Storms

Storms during spring migration can have a major impact on the number of birds and the species caught. In the spring, birds are in a hurry to return to their breeding grounds and may fly longer periods without stopping. Storms, especially those starting at night, bring down migrating birds that otherwise would have moved on through. Additionally, spring storms that bring snow at higher elevations may keep birds that breed in the foothills at lower altitudes, like around Chatfield, while they wait for that late snow to melt. Finally, birds are usually hungry after hunkering down from a storm, so they will be actively out searching for food and thus more likely to get caught.

This year, we had a major storm on May 4. May 5, while not a huge day, was the busiest of the season. We caught 47 birds, 37 of which were Yellow-rumped Warblers, most of which would probably not have been caught except for the storm, and, as seen in the chart in the section above, is part of the reason for the increase in birds this season over last.

A second storm came through later in the season; we were closed on May 20 and 21. This storm did some major damage – In the photo on the left below, Santi Tabares surveys the damage to net 25 caused by a downed tree and in the photo on the right, August Hazel debates how to get another downed tree off a trail. This two-day storm impacted the number of birds and the species that were caught on the next day of banding, May 22; with 38 birds caught, it was the second busiest day of the season.

Because it was later in the season, the high number of birds caught probably had more to do with birds being out and about after two days of rain. Insects were active lower down, which brought some species down to net level. Six of the 10 Western Wood-pewees and seven of the eight Violet-green Swallows caught this season were caught this day (two more of the species that helped increase birds this year over last), as was an assortment of relatively rare to very rare species. (See details in next section.)

Rare Birds

For a relatively slow season, we had a number of unexpected species.

Our 104th Species!

From 2008 through 2021, we caught a total of 103 species. The 104th species, a Western Bluebird, arrived on May 22 – the day after the second storm. Although there are Western Bluebirds breeding within walking distance of the banding station, they are in a much different habitat. This second-year male just wandered slightly further (maybe 200 yards?) to the east than usual.

Rarish Flycatchers

On that same post-storm day, we caught two rarish flycatchers. We had caught eight Gray Flycatchers prior to this one (left, below), but only two since 2012, and only two Eastern Phoebes (right, below), both in 2016. We did catch an Eastern/Black Phoebe hybrid in 2019, and in recent years birders have noted an increase in the number of both Eastern and Black Phoebes breeding under bridges nearby.

A Story of Red-eyed Vireos

Rounding out the rarish birds caught on the post second storm day were <u>three</u> Red-eyed Vireos, after only catching three in the history of the station, in 2009, 2017 and 2021. One of the three caught this year was the bird we banded in 2017!
Colorado is on the fringe of the breeding range for this

species, its numbers appear to have declined over the past 20 years, and it now occupies a more limited breeding range in the state.[2] Are they breeding here, or were they passing through and brought down by the storm? We don't know for sure, although it would be very unlikely to have caught the 2017 bird again if it was not breeding here. And Rob Raker had photographed a banded one on May 16 (photo above, left), so we know at least one was already here before the storm hit.

White-eyed Vireo

We closed out the season on May 29 with a stunning White-eyed Vireo, only the fourth ever caught at the station (shown at the right with a much more frequently caught species, a Warbling Vireo).

A young visitor was pleased to release the White-eyed visitor back into the wild.

Most Interesting Returns

Most birds live less than one year. If songbirds make it to their first breeding season, they have about a 50 percent chance of surviving each additional year. Given those odds, about one songbird in a thousand would make it to ten years.[3] The only way to know how long a bird lives is to catch it, mark it, and then catch it again (or get lucky enough to identify the marking in a photo) at some later time. At Chatfield, where the majority of the birds we catch are likely birds that breed in the area (that is, returning birds as opposed to birds that are migrating through), approximately nine percent of birds in any season will be birds that we banded in a prior year.

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[2] *The Second Colorado Breeding Bird Atlas*, Lynn E. Wickersham, Editor, page 358
[3] *What It's Like to be a Bird*, David Sibley, page 169

Our growing family of American Redstarts: Regular birders in the area have been telling us for years that there is a small group of American Redstarts breeding near the banding station. The numbers caught are very small, but they have increased - Over 14 years, the average is 2.25 per year; since 2017, we've caught 4-5 each year. And one of them has been the male below, who was banded May 14, 2017. This year there was also a female return – she was banded May 16, 2019, and then we banded two new ones this season, an adult female and a second-year female.

Old Yellows: The Yellow Warbler is our most commonly caught species at Chatfield. We believe that most of those we catch breed at Chatfield, and, as a bird with strong site fidelity, we catch many of those we band in subsequent years. (On average 23 percent of the Yellow Warblers we catch in any year will be birds we banded in a prior year, compared with nine percent of all birds.) Our oldest recapture was last caught when he was about 10 years old (2006-2015).

This year, the oldest Yellow Warblers we caught were two that were banded in 2016, both females, one banded as an adult and one as a hatch year. The one banded as an adult, #2770-72828, shown in the photo to the left with her capture history, is now at least nine years old.

Tied for oldest bird caught this season: We caught a male Black-capped Chickadee who was banded April 25, 2015 as a second year bird (so hatched in 2014 like the Yellow Warbler described above), and was recaught in 2016, 17, 18 and 21. This species doesn't migrate – Chatfield is his year-round home - but he has been caught in nets from one end of the station to the other. (The male and female of this species look very similar; we have been able to

definitively sex this bird because we catch him during the breeding season and can see his cloacal protuberance.[4])

Meeting our goals

As mentioned in the introduction, we have two goals – to provide education and engagement opportunities and to collect data to provide scientists with information they need to better understand the full annual life cycle of birds. These goals increase our ability to conserve birds – we need both the ***knowledge*** about how to protect birds and the ***will*** to protect them that comes from education and engagement.

Educating and Engaging

Denver Audubon takes responsibility for setting up the education and engagement opportunities. School groups organized by Audubon visit the banding station every weekday morning during the season. Bird Conservancy provides the learning experience at the banding station, allowing students to observe birds up close, explaining how they are identified, measured, weighed, etc. They then participate in releasing them back into the wild. Four hundred twenty-nine students visited the station in 2022.

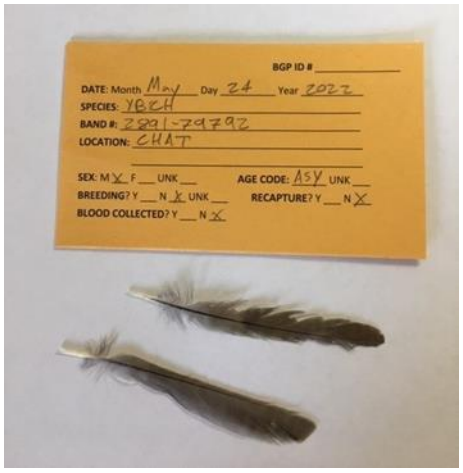
On weekends, there were three one-hour time slots for visitors of all ages, at 7:30, 8:30 and 9:30. Registration was required; an hour program was $6/participant. Five hundred eighty-six adults and children attended these popular programs.

[4] In order to store sperm and to assist with copulation, the cloaca (the rear orifice that serves as the only opening for the digestive, reproductive, and urinary tracts of many vertebrate animals, including birds) in male passerines expands during the breeding season. (See *Identification Guide to North American Birds*, Peter Pyle, Part 1, 2nd Edition.

Evergreen Audubon members, regular visitors to the banding station, were fortunate to visit this year on a day when we caught several Yellow-rumped Warblers; they all got close looks and a couple of lucky young people got to help release one!

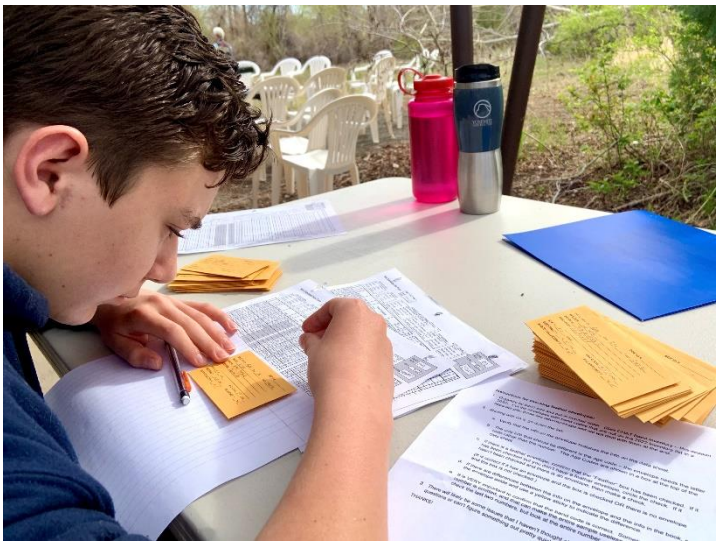
Collecting Data for Bird Conservation Research

Collecting feather samples for the Genoscape Project[5]: Since 2015, the Bird Conservancy has been collaborating with the Genoscape Project, led by Colorado State University Assistant Professor Kristen Ruegg, which is working to map population-level migratory pathways of songbird species. A genoscape is a map of genetic variation across the geographic range of a species that can be used to trace the breeding origin and wintering ground of a bird captured anywhere along its migratory pathway using DNA contained within a single feather – essentially *Ancestry.com* for birds! Identifying these migratory connections provides an effective tool for monitoring declining populations and developing effective conservation strategies.



The goal of the Genoscape Project is to map the population specific migratory pathways of 100 species of concern by 2025. To accomplish that, they need MANY feather samples! So, our banders have been pulling two tail feathers from the species identified by the Genoscape Project, placing them in envelopes like the one seen on the right.

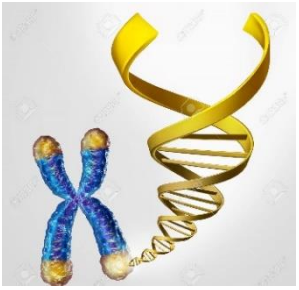
This season we collected feathers from approximately 380 birds of 24 species. They have all been delivered to the Ruegg Lab of the Genoscape Project at Colorado State University.



In the photo on the left, teen volunteer Owen Flanagan checks the info on the envelopes to confirm it is correct.

[5] For more information, see here.

Collecting blood samples for study evaluating the effects of climate change on Yellow Warblers: As noted in our 2021 report, we are assisting on a specific study of the Genoscape Project, being directed by Colorado State University Ph.D. student Marina Rodriguez. Marina is seeking insight into the effects of climate change on passerines, using the Yellow Warbler as the study species. She notes that Yellow Warblers make an excellent model system for exploring local adaptation as they are found across many different environmental conditions. She is looking at using genomic vulnerability as a tool to forecast which populations of a species may be at risk of declining. To do this, she is measuring the lengths of individual bird's telomeres[6] in subsequent years.



Thus, she needs two blood samples from the same Yellow Warblers, taken a year apart. To get sufficient samples to complete her study, she has been working with banding stations like ours that are in locations where lots of Yellow Warblers breed. (Yellow Warblers, like many migratory songbirds and as noted earlier in this report, have high site fidelity, and tend to return to the same breeding ground each year.) In 2021, we successfully obtained blood samples from 32 birds; in 2022, we were pleased to recapture and again obtain blood samples from nine of those birds, at 28 percent, slightly higher than our average recapture rate (see page 8 above).

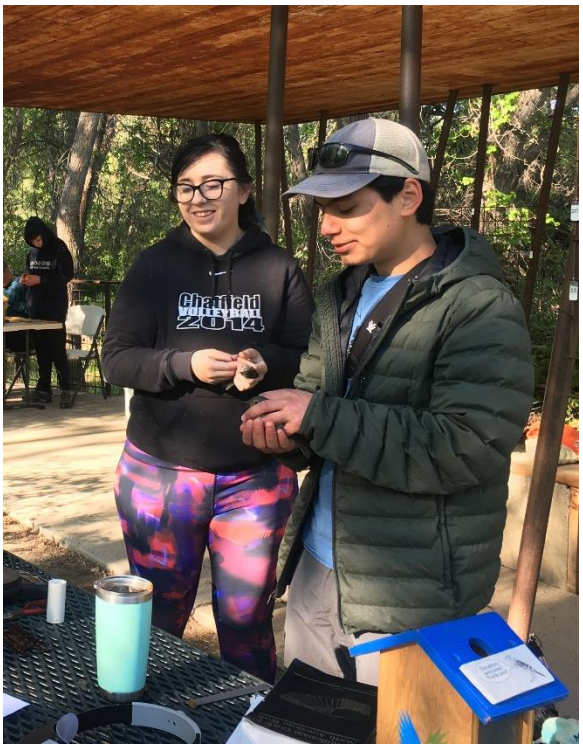
Marina was the featured speaker at our end of season volunteer appreciation event. She shared with us what she and other scientists have been learning about the impacts of climate change on species and populations. She noted that climate change is causing rapid temperature changes, fluctuations in precipitation, and extreme climatic events across the globe.

Current fitness in Yellow Warblers reflects effects of past climate change: The relationship between telomere length and past changes in precipitation indicates that in areas where precipitation has decreased, we are seeing shorter telomeres but in areas where precipitation has increased we are seeing longer telomeres. Marina notes, "So this is interesting, because [for Yellow Warblers] it's not necessarily change in precipitation that is causing decreases in telomere length, which is what I predicted, but decreases in precipitation."

[6] Telomeres are repetitive, non-coding sequences of DNA that cap the ends of chromosomes and protect the functional genome. Telomeres shorten with each round of cell division, and rate of shortening can be accelerated by environmental stressors.

Similarly, when she looked at the correlation between estimated abundance trends and changes in precipitation over time in Yellow Warblers, Marina found that in areas where precipitation has increased over the years, abundance has increased and in areas where precipitation has decreased abundance has decreased.

Encouraging the next generation of ornithologists: One of our education goals is to provide learning opportunities for teens who have exhibited a high level of interest in pursuing careers in ornithology. Each season we have a few teens in various stages of on-the-job training to band birds – our objective is to provide them with this basic ornithological skill before they head off to college. Often, those young people will return for a visit – either for a season or a few days – to help out and/or brush up on their skills. The photo below shows not one but two of those teen alums: Kylie Mattes, who graduated from high school in 2018 and was taking some time off from college and returned as a volunteer for the 2022 spring season, and Santi Tabares, who returned for a few days at the end of May after completing his first year at Cornell.



In Appreciation – Thanks to our banding station volunteers

This season included 29 banding days – getting the station opened, spending five hours checking nets, extracting and processing 767 birds (including those caught more than once), releasing them back into the wild, and then closing everything up at the end of the morning. As noted earlier, we also shared our birds and our knowledge with over 400 students who visited the station on field trips and more than 600 other visitors who attended a program. This is only possible with the help of an outstanding crew of dedicated volunteers. Twenty-six in all this year, ranging in age from 14 to 70-something, a few are relative newcomers but many have been supporting this effort for over a decade:

Isaac Becker and his parents, Troy and Bonnie
Nicole Buyck
Dale Campau
Cairn Carr
Joyce Commercon
Paulina Erices
Owen Flanagan and his mom, Carrie Jantz
Curt Frankenfeld
Kate Frost
Mackenzie Goldthwait
August Hazel and his mom, Alison
Suzy Hiskey
Heather Jackson

Kylie Mattes
Lucinda Miller
Jennie Morris
Ian Redfield and his mentor, Charlie Chase
Jennifer Redmond
Emily Snode
Santiago Tabares
Tom Williams

The Saturday crew, posing for an official photo on the final day of the season: (from left to right) Charlie Chase, Suzy Hiskey, Ian Redfield, Nicole Buyck, Troy, Isaac & Bonnie Becker, and (seated) Santi Tabares

Some of the Sunday crew (Jennifer Redmond, right, and Emily Snode, Alison Hazel and her son August, far right), sharing the joy of hustling to get the station down on the last day before a storm hit!

Photo Credits:

Page 1: Banded Redstart in field – Rob Raker
Page 5: Santiago Tabares post-storm – Meredith McBurney
Page 5: Augie Hazel post-storm – Meredith McBurney
Page 5: Western Bluebird – Carol Peterson
Page 6: Eastern Phoebe – Unknown
Page 6: Gray Flycatcher – Santi Tabares
Page 6: Red-eyed Vireo in hand – Unknown
Page 6: Red-eyed Vireo in field – Rob Raker
Page 7: White-eyed and Warbling Vireos – Santi Tabares
Page 7: Girl releasing White-eyed Vireo – Unknown
Page 8: American Redstarts – Dale Campau
Page 8: Yellow Warbler with chart – Joyce Commercon
Page 10: Children releasing bird – Carol Burdick
Page 10: Evergreen Audubon group – Carol Burdick
Page 10: Envelope with feathers – Meredith McBurney
Page 11: Owen Flanagan checking envelopes – Meredith McBurney
Page 12: Marina Rodriguez – Susan Rosine
Page 13: Santi Tabares and Kylie Mattes – Meredith McBurney
Page 14: Various volunteers – Meredith McBurney
Page 15: Various volunteers – Meredith McBurney

Species Summary, Chatfield Station, Spring, 2022

Species	Banded	Return	Recovery	Total
Downy Woodpecker	2	1		**3**
Western Wood-Pewee	11			**11**
Willow Flycatcher	2			**2**
Least Flycatcher	6			**6**
Dusky Flycatcher	2			**2**
Gray Flycatcher	1			**1**
Cordilleran Flycatcher	1			**1**
Unknown Empidonax Flycatcher	1			**1**
Eastern Phoebe	1			**1**
White-eyed Vireo	1			**1**
Warbling Vireo	5			**5**
Red-eyed Vireo	2	1		**3**
Violet-green Swallow	8			**8**
Black-capped Chickadee	6	3		**9**

White-breasted Nuthatch		1		**1**
Bushtit	1			**1**
Marsh Wren	1			**1**
House Wren	53	2		**55**
Ruby-crowned Kinglet	1			**1**
Blue-gray Gnatcatcher	1			**1**
Western Bluebird	1			**1**
Swainson's Thrush	22			**22**
Hermit Thrush	2			**2**
American Robin	4	1		**5**
Gray Catbird	37	12		**49**
Cedar Waxwing	6			**6**
Orange-crowned Warbler	3			**3**
Virginia's Warbler	1			**1**
Yellow Warbler	88	17		**105**
Yellow-rumped Warbler, Myrtle	22			**22**
Yellow-rumped Warbler, Audubon's	45			**45**
Unidentified Yellow-rumped Warbler	6			**6**
American Redstart	3	2		**5**
Northern Waterthrush	3			**3**
MacGillivray's Warbler	3			**3**
Common Yellowthroat	23			**23**
Wilson's Warbler	14			**14**
Yellow-breasted Chat	15	3		**18**
Green-tailed Towhee	6			**6**
Spotted Towhee	10	3		**13**
Song Sparrow	10	3		**13**
Lincoln's Sparrow	34			**34**
Gambel's White-crowned Sparrow	22			**22**
Mountain White-crowned Sparrow	7			**7**
White-throated Sparrow	1			**1**
Black-headed Grosbeak	2			**2**
Red-winged Blackbird	3			**3**
Brown-headed Cowbird	2	1		**3**
Bullock's Oriole	7			**7**
Lesser Goldfinch	2			**2**
American Goldfinch	11			**11**
TOTAL = 47	**521**	**50**		**571**