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# Avian monitoring results for two years of study at a newly recognized spring migration concentration point in the Angeles National Forest, Los Angeles County, California

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## ABSTRACT

*A newly-discovered research location in southern California, called Bear Divide, has recently emerged as a reliable locality for observing the morning flight of thousands of passerine birds during spring migration, becoming one of the few documented cases along the Pacific Migratory Flyway. The establishment of two new bird banding stations in the Bear Divide area, the Bear Divide and Oak Springs Banding Stations, arose from a need to explain the phenomenon of morning flight and quantify the concentration of northbound spring migrants through Bear Divide. With the establishment of these two new banding stations, we have initiated a long-term avian monitoring program to track temporal changes in migratory population dynamics and physiological condition. This report presents the results of avian monitoring efforts using a mist-netting and bird banding sampling method for the 2021 and 2022 spring seasons at the Bear Divide and Oak Springs Picnic Areas in the Angeles National Forest, Los Angeles County, California. During the 2021 and 2022 spring banding seasons at the Bear Divide Banding Station, we conducted a total of 2,485 net-hours of mist-netting and captured 3,823 birds, representing 80 avian species. During the 2022 spring banding season at the new control site, Oak Springs Banding Station, we conducted 203 net-hours, capturing 36 birds representing 19 avian species, for which ten were migrant species.*

## INTRODUCTION

**L**ocations to observe dawn migration, or avian morning flight events along the Pacific Migratory Flyway, are understudied and poorly understood. Accounts of avian morning flights are unique, as migration typically occurs nocturnally (Martin 1990). Morning flight is thought by some researchers to be a result of a “spill over” of nocturnally migrating bird species (Bingman 1980) attempting to reorient over land, either from water or to compensate for wind drift during the night (Wiedner et al. 1992, Horton et al. 2016, Newcombe et al. 2019). A newly discovered research location in southern California, Bear Divide, has recently emerged as a novel and promising locality for observing the morning flight of thousands of passerine birds during spring migration (Terrill et al. 2021), providing a unique and exciting opportunity for scientific study and community engagement.

The Bear Divide Banding Station was established in the spring of 2021 to complement point count data collected by Ryan Terrill (Terrill et al. 2021) by monitoring migrating birds using a mist-netting and banding sampling method, with a focus on species, age, sex, and physiological characteristics of individual passerine migrants (Hill and Romero 2021). Spring 2022 was the second year of monitoring efforts at the Bear Divide Banding Station. We present in this report a summary of results for both the 2021 and 2022 banding seasons at Bear Divide.

In Spring 2022, we acquired a permit to expand banding operations to a control site at Oak Springs Picnic Area, establishing the Oak Springs Banding Station. Here we report banding operations and results for the Oak Springs Banding Station for the spring 2022 season.

## Location

### Bear Divide

The Bear Divide Banding Station (34° 21' 37.5" N, 118° 23' 50.7" W) is in the San Gabriel Mountains National Monument, along the western edge of the greater Angeles National Forest, approximately 9 km east of Santa Clarita, Los Angeles County, CA, in a dirt pull out approximately 0.3 km from the Bear Divide Vista Picnic area (Figure 1). The pass sits at 850 m in elevation, flanked to the east by mountains up to 1700 m elevation and west by mountains up to 950 m in elevation. To the south is a low winding canyon that perhaps acts as a “funnel” for birds traveling northward. The vegetation community surrounding the the Bear Divide Banding Station is dominated by four native plant species: Deerweed (*Acmispon glaber*), Yerba Santa (*Eriodictyon californicum*), California Buckwheat (*Eriogonum fasciculatum*), and Bush Poppy (*Dendromecon rigida*). Surrounding the site are pockets of mixed conifer stands, mostly located at higher elevations, with a small cluster present near the Bear Divide Fire Station, which is managed by the United States Forest Service (USFS).

### Oak Springs

The Oak Springs Banding Station control site, located in Sylmar, CA, about 7.5 km southeast of Bear Divide (34° 19' 09.8" N, 118° 19' 58.9" W) is at a lower elevation of 543 m. The vegetation surrounding the Oak Springs Banding Station is characterized by mixed oak woodland, coastal sage scrub, and riparian plant communities. The site is managed by the USFS and borders Gold Creek, an ephemeral stream (Figure 2).

## Methods

### Bear Divide

The Bear Divide Banding Station operated two spring seasons under the management of

three lead banders; all certified by the North American Banding Council. The lead banders, Tania Romero (subpermittee #22030-T), Lauren Hill (subpermittee #22030-U), and Jayde Blair, (subpermittee #9082-X), operate under the direction of master banders Walter H. Sakai (Permit #22030) and C. John Ralph (Permit #9082).

Mist-netting operations were performed from 3 Apr to 15 May in 2021, and from 27 Mar to 16 May in 2022. In both seasons, operations were conducted six days a week on a Tuesday-Sunday schedule, as weather conditions permitted. Operations consisted of 4.5 hours mist-netting efforts from sunrise to 10:30, using up to ten 12 m x 2.5 m mist nets with 30 mm mesh. Lead banders selected net locations based on bird movements observed in early Apr, 2021 and include areas with open vegetation, dense vegetation, and canyon edge features. Trapping, handling, banding, and data collection protocols followed station operation procedures outlined in Ralph et al. (1993), Pyle (1997), and North American Banding Council (2001). All banding operations were conducted with the help of 12 trained volunteer banders.

### Oak Springs

The Oak Spring Banding Station operation protocols including trapping, handling, banding, and data collection were adopted and replicated from practices at the Bear Divide Banding Station. We performed a minimal mist-netting effort at Oak Springs from 2 to 31 May 2022, banding two days a week on randomly selected days from Monday-Sunday, as weather conditions permitted. Operations usually consisted of 4.5 hours mist-netting efforts, at randomly selected time periods ranging from sunrise to sunset, using up to six 12 m x 2.5 m mist-nets.

## Results

### Bear Divide

Mist-nets were open for 909 net-hours in 2021 and 1,576 net-hours in 2022 for a total of 2,485 net-hours. One net-hour represents one 12 m x 2.5 m mist-net open for one hour. For the two seasons, 80 bird species were captured (Table 1), excluding any birds that were unidentifiable at the species level due to net escape post capture that did

not allow for processing, including unidentified *Selasphorus* species, thrush species, hummingbird species, *Empidonax* species, and White-crowned Sparrows, with the latter instead identified to subspecies.

During the two seasons, 3,823 birds were captured at the Bear Divide Banding Station. The most abundant captures were Gambel's White-crowned Sparrow (n=359), Western Tanager (n=293), Orange-crowned Warbler (n=246), Warbling Vireo (n=243), Wilson's Warbler (n=360), and Yellow Warbler (n=164). Scientific names are in Table 1.

Other high-volume captures include *Empidonax* flycatchers and hummingbirds (Table 2).

In 2021, 1,995 birds were captured representing 71 species. The average capture rate was approximately 220 birds/100 nh. Our highest capture day consisted of 173 birds on 5 May 2021. In 2022, 1,828 birds were captured representing 67 species. The average capture rate was approximately 116 birds/100 nh. Our highest capture day consisted of 178 birds on 7 May 2022.

### **An Overview of 2021 vs 2022 Bear Divide Banding Seasons**

In 2022, there was an increase of 667 additional net-hours (170% net-hour increase) conducted and a decrease of 167 birds captured (9% bird capture decrease) compared with 2021 data. The species composition and the top ten most abundant species also changed between years with a notable increase of Wilson's Warblers (2021 n=131, 2022 n=229), and Swainson's Thrushes (2021 n=63, 2022 n=123), who nearly doubled in abundance in the second year of banding operations. There were also some notable decreases in abundance in 2022 from 2021, as seen in Yellow Warblers (2021 n=107, 2022 n=57), and Orange-crowned Warblers (2021 n=160, 2022 n=86), (Table 2).

### **Season Highlights**

A highlight for the 2021 season was the capture of a Gray Vireo (*Vireo vicinior*), one of very few migrant records for this species in Los Angeles County per eBird's database. In southwestern California,

the breeding range for Gray Vireos has become fragmented and decreased in size, with an apparent disappearance from the San Gabriel Mountains (Barlow et al. 2020). Its wintering range is not as well known as breeding locales, but includes parts of northwestern Mexico, southwestern Arizona, and southwestern Texas. Historical changes to the distribution of Gray Vireos in southern California, including the shrinkage of historical breeding locations, may be due in part to cowbird parasitism (Barlow et al. 2020).

Another highlight from the 2021 season included four Bell's Sparrows of the subspecies *canescens* (*Artemisiospiza belli canescens*), the interior subspecies known to breed in southern California from the San Joaquin Valley through the western Mojave Desert, to the Owens Valley; individuals move upslope after breeding and many migrate south to the Colorado Desert in winter (Martin and Carlson 2020). We did not capture or detect any Bell's Sparrows of the subspecies *belli* (*A.b. belli*), the expected resident species of the coastal ranges, with resident populations from the northern San Francisco Bay region and western slope of the Sierra Nevada south to northwestern Baja California (Martin and Carlson 2020).

Another notable capture were White-throated Swifts (*Aeronautes saxatalis*) [one in 2021 and two in 2022], which are known to fly regularly between 10-100 m above the ground (Ryan and Collins 2020). The captures of White-throated Swifts in mist-nets illustrate how low many migrants are flying through Bear Divide.

Another highlight of the 2022 season was a Myrtle Warbler (*Setophaga coronata coronata*). In southern California, Audubon's Warblers (*S. c. auduboni*) are the dominant subspecies of Yellow-rumped Warbler (*S. coronata*); however, Myrtle Warblers winter less commonly and more locally along the Pacific Coast and can form mixed flocks with Audubon's Warblers during migration (Hunt and Flaspohler 2020, Gaddis 2011).

Another 2022 highlight included the capture of three hybrid Townsend's x Hermit Warblers (*Setophaga townsendi x occidentalis*). Townsend's (*Setophaga townsendi*) and Hermit (*Setophaga occidentalis*)

warblers are known to hybridize regularly where their geographic ranges meet in Washington and Oregon (Wright et al. 2020). Although there has been extensive research in their hybrid zone, there is limited information on hybrid migration ecology and wintering grounds. More study is needed to determine the significance of Bear Divide as a migratory passageway for Townsend's x Hermit Warblers.

### A Recaptured Birds

recaptured bird is defined as an individual bird that was initially captured and banded by us or another banding station, either in prior years or earlier within the same season, and is then recaptured following its initial capture, either in the same year or subsequent years. Individual birds that were captured and banded by us were not recorded as recaptured birds if they were recaptured later on the same day as their initial capture. A total of 112 recaptures among 27 species were recaptured in 2021 (n = 73) and 2022 (n = 39) (Table 4). Less than 3% of all birds initially captured and banded at the Bear Divide Banding Station were recaptured.

Recaptures of individuals within migratory populations usually occurred one to four days after their initial capture and banding. A few exceptions include a Wilson's Warbler individual who was recaptured in the area 12 days after its initial capture, a Orange-crowned Warbler individual who was recaptured 15 days after its initial capture, and a Nashville Warbler who was recaptured nearly a month after its initial capture. This suggests that some migratory populations may be using Bear Divide as a stop-over site, and not exclusively as a migratory passageway during spring. Bird species that have both migratory and common breeding populations (e.g. Pacific-slope Flycatcher, Warbling Vireo, Orange-crowned Warbler, Yellow Warbler, Western Tanager, Black-headed Grosbeak), or uncommon local/isolated breeding populations (e.g. Yellow-rumped Warbler, Nashville Warbler, MacGillivray's Warbler, Black-throated Gray Warbler (*Setophaga nigrescens*), Fox Sparrow (*Passerella iliaca*)) in Los Angeles County are difficult to distinguish as either migratory or non-resident breeding individuals. More study is needed to better understand how these populations are utilizing Bear Divide.

### Hummingbird Captures

Hummingbirds were not banded or marked in any fashion, as we do not hold a hummingbird banding permit. For the two seasons, 442 hummingbirds were captured. Without banding hummingbirds, one cannot differentiate recaptures of single individuals; hence, total hummingbird captures are likely an overestimation (Table 1). Bear Divide appears to be a suitable site for the study of hummingbird populations, as all six western hummingbird species were captured at Bear Divide during both banding seasons, including migratory Rufous Hummingbird (*Selasphorus rufus*), Calliope Hummingbird (*Selasphorus calliope*), Costa's Hummingbird, Black-chinned Hummingbird (*Archilochus alexandri*), and resident Allen's Hummingbird (*Selasphorus sasin*), and Anna's Hummingbird (*Calypte Anna*)

### Additional Cooperative Ornithological Studies

**Bird Genoscape Project:** During both spring banding seasons, we collected feather samples for the Bird Genoscape Project (Ruegg et al. 2020). Feather sampling consisted of the collection of two tail feathers (opposing R6 and R1) per bird that were sent to the Bird Genoscape Project and will be added to their avian genetic bank to map population-specific migratory flyways.

**Blood Sampling:** Kristen M. Covino (subpermittee #22030-W) from the Department of Biology at Loyola Marymount University joined our team during the 2022 season to collect blood samples from three target migrants: Swainson's Thrush, Gambel's White-crowned Sparrow, and Audubon's Warbler. Covino is studying how testosterone fluctuates throughout migration.

### Community Engagement

The Bear Divide Banding Station serves not only as a bird banding research station, but also as an education station. We provide extensive, certification-level training to each of our 12 volunteer banders. The station is highly accessible to the general public, and often gathers dozens of visitors who are captivated by the station's activities and the birds migrating overhead. Each weekend, an average of 50 community members visited the station. Visitors were composed of

groups of students, biologists, bird-watchers, and ornithologists as well as general members of the public, including families, firefighters, non-birders, and various groups of people recreating outdoors. Multiple station tours and banding demonstrations were provided to university classes throughout both banding seasons, including classes from the Moore Lab of Zoology of Occidental College, the Tingley Lab from the University of California Los Angeles, the Physiology, Hormones, and Avian Biology Lab from Loyola Marymount University, the Bonisoli-Alquati Lab from California Polytechnic Pomona, the Los Angeles Birders Young Birder's Club, Feminist Bird Club, and the Pasadena Audubon Society.

### **The Future**

Future plans for the Bear Divide Banding Station include a long-term avian monitoring and bander training program to assess migratory population trends and prepare the next generation of banders. We plan to continue to offer community outreach opportunities that inspire avian stewardship and develop collaborative projects that encourage further specialized research.

### **Oak Spring Picnic Area Control Site**

In 2023 we will run a continuous mist-netting effort at Bear Divide and Oak Springs, concurrently, to highlight and further understand migration ecology and important usage of Bear Divide as a concentration point for migratory birds compared to surrounding areas. While Bear Divide is currently one of the only known locations to observe dawn migration flights in Los Angeles County, it may not be the only one. In 2023, we plan to continue station operations of Oak Springs as a control site to compare data collected at Bear Divide and offer further training opportunities to volunteer banders.

### **Motus**

In the winter of 2022-23, a Motus Wildlife Tracking System (Motus) tower was installed at the Bear Divide Fire Station by the Pasadena Audubon Society. Motus is an international collaborative network of researchers that use automated radio telemetry to simultaneously track hundreds of individuals of numerous species of birds, bats, and

Jan. - Mar.

insects over vast distances. This installation at Bear Divide provides a new opportunity to study western avian migration and population ecology through the deployment of radio telemetry tags.

### **WBBA 2023 Annual Meeting**

The Bear Divide Banding Station will host the Western Bird Banding Association Annual Meeting from 6 May - 9 May 2023. We invite you to visit our station and learn more about our current research and collaborative partners, hear from other researchers and recent ornithological studies across the western region, experience hands-on workshops, connect with fellow bird banders, and more. For more information, visit <https://www.westernbirdbanding.org/2023-meeting>.

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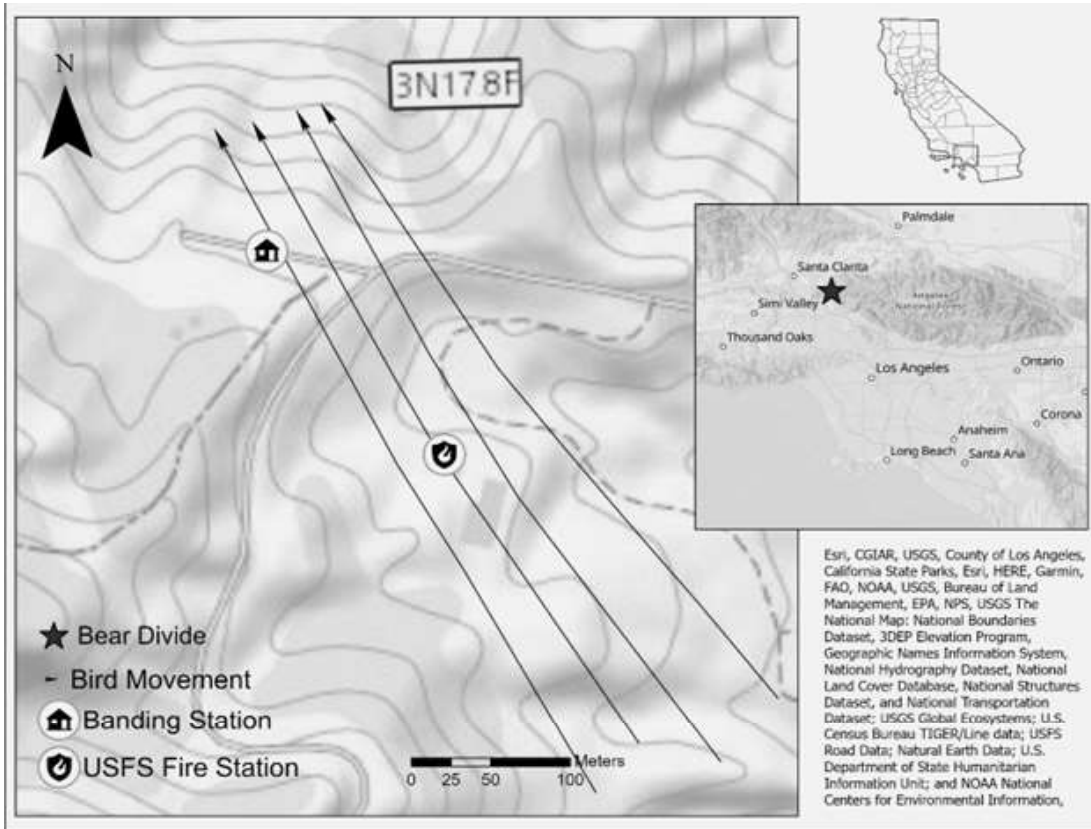
For more information, inquiries regarding collaboration, or interest in ways to support our research, contact us at:

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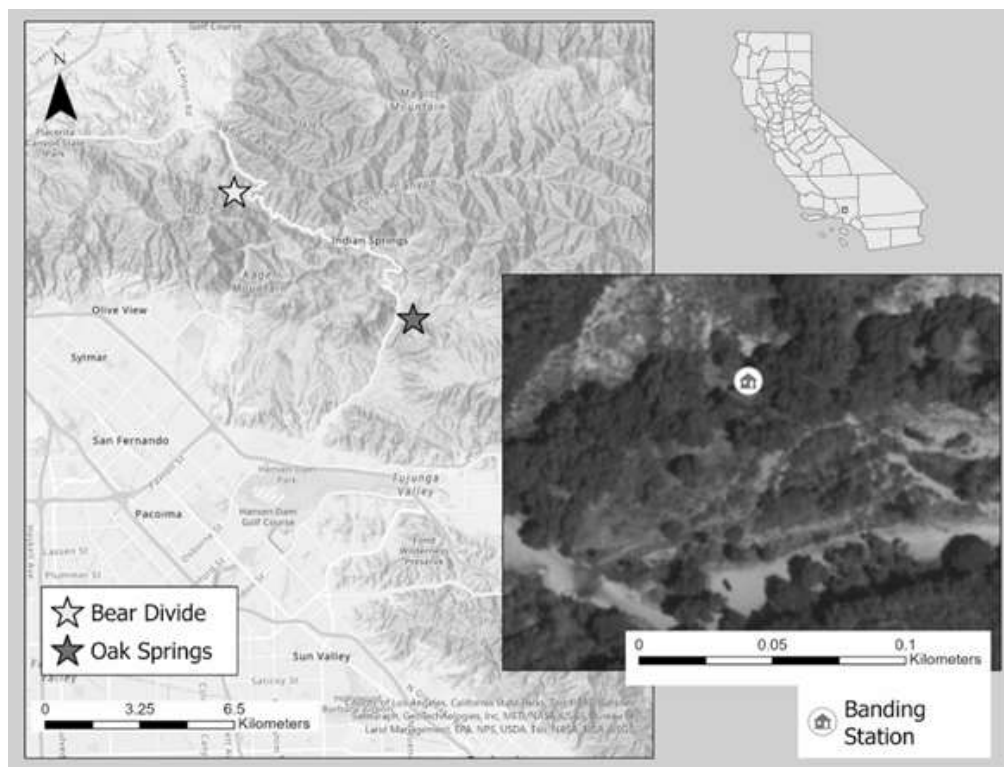
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**Figure 1. General location of the Bear Divide area and banding station in the Los Angeles area. The arrows indicate the general movement of migration birds up the canyon and over Bear Divide.**



**Figure 2. General location of the Oak Springs area and banding station in Sylmar, CA, about 7.5 km southeast of Bear Divide.**

**Table 1.** All bird captures at the Bear Divide Banding Station in the springs of 2021 and 2022. A total of 80 bird species and 3,823 individuals have been captured during the two seasons.

<b>Species</b>	<b>Scientific Name</b>	<b>2021</b>	<b>2022</b>
California Quail	<i>Callipepla californica</i>	4	10
Mourning Dove	<i>Zenaida macroura</i>	0	1
Sharp-shinned Hawk	<i>Accipiter striatus</i>	0	1
Hairy Woodpecker	<i>Dryobates villosus</i>	1	0
Nuttall's Woodpecker	<i>Dryobates nuttallii</i>	1	0
Acorn Woodpecker	<i>Melanerpes formicivorus</i>	3	1
Red-shafted Flicker	<i>Colaptes auratus cafer</i>	1	0
White-throated Swift	<i>Aeronautes saxatalis</i>	1	2
Black-chinned Hummingbird	<i>Archilochus alexandri</i>	14	11
Costa's Hummingbird	<i>Calypte costae</i>	17	15
Anna's Hummingbird	<i>Calypte anna</i>	22	41
Rufous Hummingbird	<i>Selasphorus rufus</i>	78	76
Unidentified Selasphorus	<i>Selasphorus sp.</i>	22	5
Allen's Hummingbird	<i>Selasphorus sasin</i>	31	68
Calliope Hummingbird	<i>Selasphorus calliope</i>	25	8
Unidentified Hummingbird	<i>Trochilidae sp.</i>	1	8
Western Kingbird	<i>Tyrannus verticalis</i>	2	1
Ash-throated Flycatcher	<i>Myiarchus cinerascens</i>	64	22
Olive-sided Flycatcher	<i>Contopus cooperi</i>	0	1
Western Wood-Pewee	<i>Contopus sordidulus</i>	2	2
Pacific-slope Flycatcher	<i>Empidonax difficilis</i>	42	69
Willow Flycatcher	<i>Empidonax traillii</i>	0	9
Unidentified Empidonax	<i>Empidonax sp.</i>	4	1
Hammond Flycatcher	<i>Empidonax hammondii</i>	20	19
Dusky Flycatcher	<i>Empidonax oberholseri</i>	0	6
Gray Flycatcher	<i>Empidonax wrightii</i>	7	7
California Scrub-Jay	<i>Aphelocoma californica</i>	4	3
European Starling	<i>Sturnus vulgaris</i>	0	2
Brown-headed Cowbird	<i>Molothrus ater</i>	1	0
Hooded Oriole	<i>Icterus cucullatus</i>	7	5
Bullock's Oriole	<i>Icterus bullockii</i>	7	7
Cassin's Finch	<i>Haemorhous cassinii</i>	1	0
House Finch	<i>Haemorhous mexicanus</i>	3	3
Lesser Goldfinch	<i>Spinus psaltria</i>	11	8
Lawrence's Goldfinch	<i>Spinus lawrencei</i>	4	7
Pine Siskin	<i>Spinus pinus</i>	2	1
Savannah Sparrow	<i>Passerculus sandwichensis</i>	0	1
Lark Sparrow	<i>Chondestes grammacus</i>	2	1
White-crowned Sparrow	<i>Zonotrichia leucophrys</i>	1	0
Gambel's White-crowned Sparrow	<i>Zonotrichia leucophrys gambelii</i>	185	174
Golden-crowned Sparrow	<i>Zonotrichia atricapilla</i>	13	8
Chipping Sparrow	<i>Spizella passerina</i>	48	27
Brewer's Sparrow	<i>Spizella breweri</i>	1	0
Black-chinned Sparrow	<i>Spizella atrogularis</i>	6	3
Oregon Junco	<i>Junco hyemalis oreganus</i>	3	2
Bell's Sparrow	<i>Artemisiospiza belli canescens</i>	4	0
Rufous-crowned Sparrow	<i>Aimophila ruficeps</i>	9	5
Song Sparrow	<i>Melospiza melodia</i>	2	3
Lincoln's Sparrow	<i>Melospiza lincolni</i>	5	11
Fox Sparrow	<i>Passerella iliaca</i>	6	22
Spotted Towhee	<i>Pipilo maculatus</i>	22	16



**Table 1. cont'd**

Green-tailed Towhee	<i>Pipilo chlorurus</i>	2	0
California Towhee	<i>Melospiza crissalis</i>	27	20
Black-headed Grosbeak	<i>Pheucticus melanocephalus</i>	80	92
Lazuli Bunting	<i>Passerina amoena</i>	78	73
Western Tanager	<i>Piranga ludoviciana</i>	180	113
Phainopepla	<i>Phainopepla nitens</i>	2	4
Warbling Vireo	<i>Vireo gilvus</i>	148	95
Cassin's Vireo	<i>Vireo cassinii</i>	14	12
Gray Vireo	<i>Vireo vicinior</i>	1	0
Nashville Warbler	<i>Leiothlypis ruficapilla</i>	72	45
Orange-crowned Warbler	<i>Leiothlypis celata</i>	160	86
Yellow Warbler	<i>Setophaga petechia</i>	107	57
Myrtle Warbler	<i>Setophaga coronata coronata</i>	0	1
Audubon's Warbler	<i>Setophaga coronata auduboni</i>	33	22
Black-throated Gray Warbler	<i>Setophaga nigrescens</i>	44	16
Townsend's Warbler	<i>Setophaga townsendi</i>	33	49
Townsend's X Hermit Warbler	<i>Setophaga townsendi x</i>	0	3
Hybrid	<i>occidentalis</i>		
Hermit Warbler	<i>Setophaga occidentalis</i>	19	34
MacGillivray's Warbler	<i>Geothlypis philadelphia</i>	18	24
Common Yellowthroat	<i>Geothlypis trichas</i>	5	0
Yellow-breasted Chat	<i>Icteria virens</i>	1	1
Wilson's Warbler	<i>Cardellina pusilla</i>	131	229
Bewick's Wren	<i>Thryomanes bewickii</i>	4	2
House Wren	<i>Troglodytes aedon</i>	1	2
Oak Titmouse	<i>Baeolophus inornatus</i>	2	0
Wrentit	<i>Chamaea fasciata</i>	19	8
Bushtit	<i>Psaltriparus minimus</i>	3	0
Ruby-crowned Kinglet	<i>Corthylio calendula</i>	7	1
Blue-gray Gnatcatcher	<i>Poliophtila caerulea</i>	3	3
Swainson's Thrush	<i>Catharus ustulatus</i>	63	123
Hermit Thrush	<i>Catharus guttatus</i>	25	19
American Robin	<i>Turdus migratorius</i>	0	1
Thrush sp.	<i>Catharus sp.</i>	2	0
Western Bluebird	<i>Sialia mexicana</i>	2	0
<b>TOTAL</b>		<b>1995</b>	<b>1828</b>

**Table 2.** Net-hours and individual birds captured in 2021 and 2022. Top 15 most abundant species are shown for each field season.

<b>2 Apr- 15 May 2021</b>		<b>29 Mar- 15 May 2022</b>	
<b>Totals</b>	<b>n</b>	<b>Totals</b>	<b>n</b>
Net-hours	909	Net-hours	1576
Total Birds captures	1995	Total Birds captures	1828
<b>Common Name</b>	<b>n</b>	<b>Common Name</b>	<b>n</b>
Gambel's White-crowned Sparrow	185	Wilson's Warbler	229
Western Tanager	180	Gambel's White-crowned Sparrow	174
Orange-crowned Warbler	160	Swainson's Thrush	123
Warbling Vireo	148	Western Tanager	113
Wilson's Warbler	131	Warbling Vireo	95
Yellow Warbler	107	Black-headed Grosbeak	92
Rufous Hummingbird	78	Orange-crowned Warbler	86
Lazuli Bunting	78	Rufous Hummingbird	76
Nashville Warbler	72	Lazuli Bunting	73
Black-headed Grosbeak	80	Pacific-slope Flycatcher	69
Ash-throated Flycatcher	64	Allen's Hummingbird	68
Swainson's Thrush	63	Yellow Warbler	57
Chipping Sparrow	48	Townsend's Warbler	49
Black-throated Gray Warbler	44	Nashville Warbler	45
Pacific-slope Flycatcher	42	Anna's Hummingbird	41

**Table 3.** Species and abundance of all bird captures at Oak Springs in the spring season of 2022

(203 total net-hours).

\* = Migrant species caught in Oak Springs

Species	Scientific Name	2022
Costa's Hummingbird *	<i>Calypte costae</i>	3
Allen's Hummingbird	<i>Selasphorus sasin</i>	1
Black Phoebe	<i>Sayornis nigricans</i>	1
Western Wood-Pewee *	<i>Contopus sordidulus</i>	1
Pacific-slope Flycatcher *	<i>Empidonax difficilis</i>	2
Willow Flycatcher *	<i>Empidonax traillii</i>	1
California Scrub-Jay	<i>Aphelocoma californica</i>	2
Hooded Oriole *	<i>Icterus cucullatus</i>	1
House Finch	<i>Haemorhous mexicanus</i>	2
Oregon Junco	<i>Junco hyemalis oregonus</i>	1
Song Sparrow	<i>Melospiza melodia</i>	4
Spotted Towhee	<i>Pipilo maculatus</i>	6
California Towhee	<i>Melozone crissalis</i>	2
Black-headed Grosbeak *	<i>Pheucticus melanocephalus</i>	1
Nashville Warbler *	<i>Leiothlypis ruficapilla</i>	1
Yellow Warbler *	<i>Setophaga petechia</i>	2
Wilson's Warbler *	<i>Cardellina pusilla</i>	2
Oak Titmouse	<i>Baeolophus inornatus</i>	1
Swainson's Thrush *	<i>Catharus ustulatus</i>	2
<b>TOTAL</b>		<b>36</b>

**Table 4.** All bird recaptures (n = 112) for the Bear Divide Banding Station in the springs of 2021 and 2022. Totals for individuals (Ind.) captured and recaptures (Rec.) are represented for each species for both years.

: individuals recaptured in 2022 that were banded during the previous 2021 season

Species	Scientific Name	2021		2022	
		Ind.	Rec.	Ind.	Rec.
Ash-throated Flycatcher	<i>Myiarchus cinerascens</i>	1	1	1	1
Gray Flycatcher	<i>Empidonax wrightii</i>	1	1	0	0
Hooded Oriole *	<i>Icterus cucullatus</i>	0	0	1	1
Lesser Goldfinch	<i>Spinus psaltria</i>	1	1	0	0
Gambel's White-crowned Sparrow	<i>Zonotrichia leucophrys gambelii</i>	5	9	7	8
Golden-crowned Sparrow *	<i>Zonotrichia atricapilla</i>	2	4	1	1
Chipping Sparrow	<i>Spizella passerina</i>	1	2	0	0
Black-chinned Sparrow *	<i>Spizella atrogularis</i>	1	1	1	1
Rufous-crowned Sparrow *	<i>Aimophila ruficeps</i>	3	4	2	2
Fox Sparrow	<i>Passerella iliaca</i>	0	0	1	1
Spotted Towhee	<i>Pipilo maculatus</i>	1	4	3	4
California Towhee *	<i>Melozone crissalis</i>	2	2	3	3
Black-headed Grosbeak	<i>Pheucticus melanocephalus</i>	2	2	0	0
Western Tanager	<i>Piranga ludoviciana</i>	5	6	0	0
Phainopepla	<i>Phainopepla nitens</i>	1	1	0	0
Warbling Vireo	<i>Vireo gilvus</i>	3	3	1	1
Nashville Warbler	<i>Leiothlypis ruficapilla</i>	3	4	1	1
Orange-crowned Warbler	<i>Leiothlypis celata</i>	7	10	4	4
Yellow Warbler	<i>Setophaga petechia</i>	2	2	1	1
Black-throated Gray Warbler	<i>Setophaga nigrescens</i>	0	0	1	1
MacGillivray's Warbler	<i>Geothlypis philadelphia</i>	1	1	0	0
Common Yellowthroat	<i>Geothlypis trichas</i>	1	1	0	0
Wilson's Warbler	<i>Cardellina pusilla</i>	3	5	2	2
Bewick's Wren	<i>Thryomanes bewickii</i>	1	1	0	0
Wrentit *	<i>Chamaea fasciata</i>	5	6	3	4
Swainson's Thrush	<i>Catharus ustulatus</i>	1	1	2	2
Hermit Thrush	<i>Catharus guttatus</i>	1	1	1	1
<b>TOTAL</b>		<b>54</b>	<b>73</b>	<b>36</b>	<b>39</b>