

Northern Saw-whet Owl Migration Monitoring Report 2023



Ken and Students with a Northern Saw-whet Owl

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Northern Saw-whet Owl Season Summary 2023 at the Big Chico Creek Ecological Reserve

Abstract

Ken Sobon directed the fall banding Northern Saw-whet Owl Migration Monitoring and Nest Box Program at the Big Chico Creek Ecological Reserve. Permitted banders Charlie Giannini, Dawn Garcia and Erika Iacona helped run the station. We conducted one winter owl monitoring during the Snow Goose Festival in January, recaptured two owls from fall 2022 and banded one new owl. This fall, the owl population was on the upswing from the previous year, and we banded 72 new owls. We had a foreign recovery from the Pedder Bay station in British Columbia, Canada. In 40 days, this owl traveled at least 594 miles from its original banding site. We recaptured 5 same-season owls, two individuals were netted three times. Females (n=49) and hatch year owls (n=46) were most abundant. We set up nets on 30 nights from October 12 to November 16, when Ken concluded the end of the season. We canceled 1.5 banding nights due to rain. Owl captures were in a bimodal pattern with the low point being mid-season coinciding with the full moon. We banded two new Western Screech Owls and documented a Barred Owl on the Reserve for the second time in our history. Weather conditions were good, mostly dry, calm, and typically from mid 70's to 50's through October and mid 40's towards the end of the season. This year, two Western Screech Owls nested in the nest boxes we installed on the Reserve.

Results and Discussion

Winter-Spring Summary

We conducted one winter sampling in January for the Snow Goose Festival and captured one new Northern Saw-whet Owl (NSWO, *Aegolius acadicus*) and two recaptures from the previous fall, October 17 and 29, 2022. We assume the young owls, both banded as Hatch Year birds, remained around the area during the months between banding, meaning the Reserve continued to provide a good prey base for them. We did not conduct any other spring/winter sampling in 2023.

Nest box program

In 2016, we installed nest boxes to determine potential nesting of saw-whets on the Reserve. Nine boxes remain in various locations on the east side of Big Chico Creek. Although we have yet to document use by NSWO, this year two boxes were occupied by Western Screech Owls (WESO, *Megascops kennicottii*). Consistent for seven consecutive years, the same female nested in box #15. This year she raised two young, which when Ken went to band on June 3rd, they were fluffy nestlings and too young to band (Figure 1). On the recheck on June 25th, they had already fledged! She has successfully fledged 22 young (Table 1, Box 15). A new unbanded female occupied Box #13. Ken was able to band her and her two downy nestlings. The remaining seven boxes were not occupied but continue to provide additional nesting and roosting opportunities for multiple species of all taxa.

Table 1. Occupants of Nest Boxes (WESO are nestling numbers)

Year	Box 15	Box 8	Box 13
2017	2 WESO		
2018	4 WESO		
2019	3 WESO		
2020	3 WESO		
2021	4 WESO		
2022	4 WESO	Ash-throated flycatcher nest	
2023	2 WESO		2 WESO



Figure 1. Western Screech Owl female and her two downy young, plus one unhatched egg.

Fall 2023 Monitoring Overview

Fortunately for owls and banders, the NSWOW season capture numbers were up from last year, and we had our 5th exciting foreign recovery. We netted 72 NSWOW this fall, with slightly greater field effort than last year (Table 2 Figure 2). Relative to last year, we had good banding weather conditions throughout the season and were only closed for one and a half nights due to rain. We erected nets on 30 nights beginning October 12 and ended the season on November 16. We had one night with 0 owls, compared to last year's seven 0-owl nights, and this occurred during the full moon. Owls may not migrate or move around as much during the full moon due to more exposure to predators, and perhaps they avoid the nets if they are more visible. We banded at both OWL2 and OWL3 sites, mostly to avoid the brightness of the full moon October 28-29, the middle of the banding season. OWL 2 has a more closed canopy that may diffuse the moonlight. October 2022, site OWL3 was part of a prescribed burn treatment. A year later it did not seem to noticeably change the vegetation structure in our netting

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area and may have been beneficial for rodent foraging.

Age

2023 was favorable for hatch year (HY) owls (n=46), making up 63% of the population this year. We captured 26 adults (36%), and of those, 11 were second year (SY) having hatched in spring 2022; 14 were in their 3rd year or older after hatch/ after second year (AHY/ASY). Based on banding information, an NSWOW can live over 9 years. The number of HY and AHY owls banded each year since our opening in 2005 is shown in Figure 2 and Table 2.

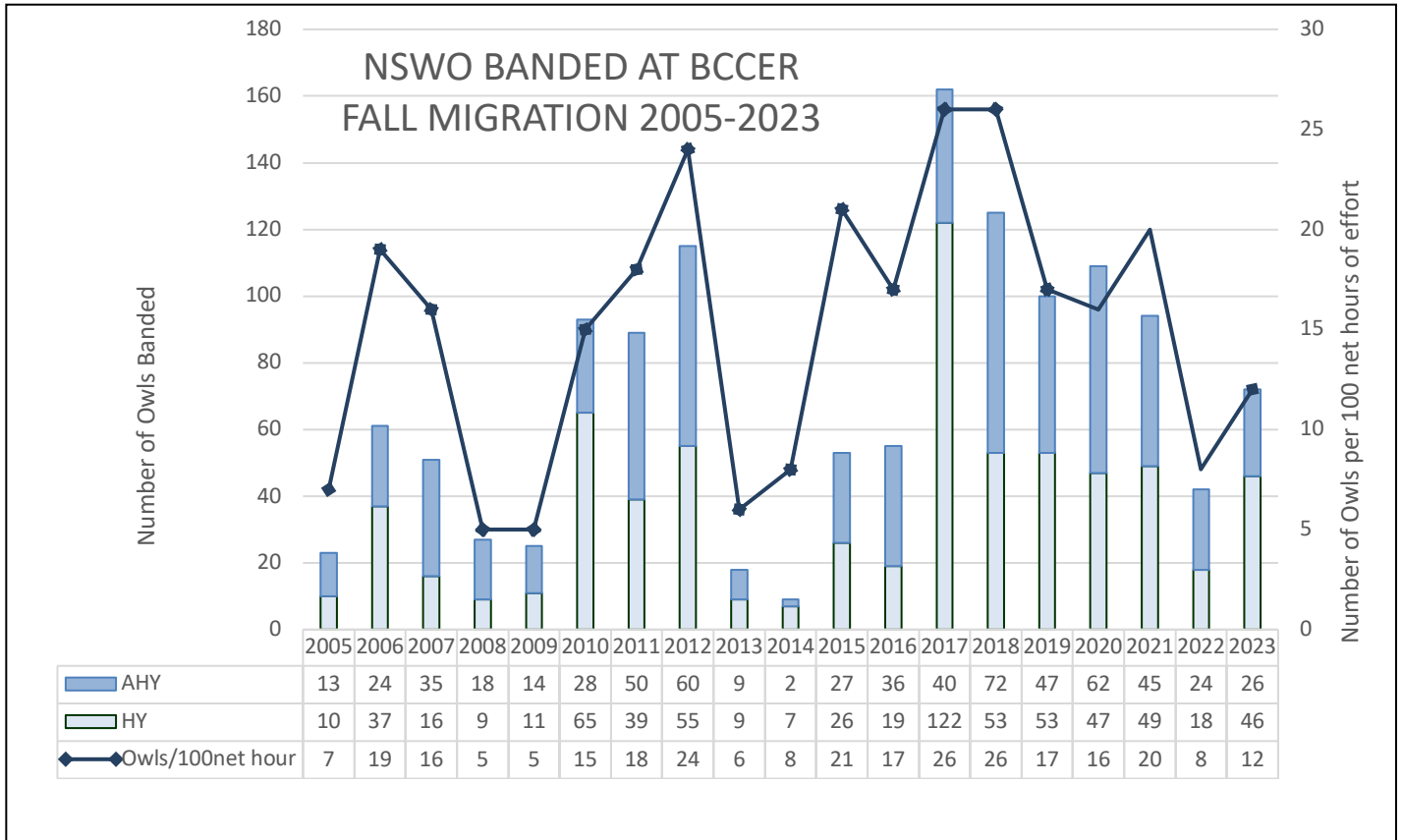


Figure 2. Age and number of NSWOW banded during fall migration, 2005-2022. The secondary axis (black line) shows the number of owls banded in a season/100 net hours open. The higher points mean that we captured more owls with less field effort, a good season for owls and banders.

Sex

Sex is determined by the wing chord length (the measurement from the wrist to the longest primary feather) and mass of the owl. Most females are larger than males but there is an overlap zone between the sexes, in which case we cannot determine the sex and assign it a U for unknown sex. As is typical of ours and other stations, our population consisted of mostly females: 49 females (68%), six males (6%), and 17 of unknown sex (23%). Theories about this dramatic ratio seen at all NSWOW banding stations include, males remain on territory and do not migrate, or males are not attracted to the broadcast of the audio lure, a male vocalization.

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Recovery and Recapture

Our station has had five foreign recoveries, or birds that were originally banded at another location and subsequently flew to our station and were recaptured in our nets. Below is a list of our recoveries in order of when we captured them, and the straight-line distance between stations. We don't know the travel distance/route per individual, particularly those that were captured years later. Nevertheless, impressive!

- Owl Research Institute, Bitterroot Valley in western Montana, (2011). Traveled at least 600 miles and was captured 35 days later.
- Hitchcock Nature Center, NR Honey Creek, Pottawatomie County, Iowa, (2013). 1300 miles between stations; captured the following year.
- Cobble Hill, BC Canada, (2019). 606 miles between stations; captured 2 years later.
- Near Danville, Contra Costa County, California, (2022). 110 miles between stations; captured 3 years later.
- Pedder Bay, BC Canada, (2023). Traveled at least 594 miles and was captured 40 days later.

We also had five same season recaptures, two of these were subsequently netted several more times, and were likely together based on their capture times and dates. The “couple” were two ASY owls, a male #52 and a female #53. They were both originally banded on 10/16 and then again together on 11/13. Owl 52 was also netted on 11/7 and owl #53 on 10/21, 11/2. It gave us a snapshot of their weight and body condition which remained good throughout their fall netting adventure.

Incidental Captures of Other Owls and Wildlife

Every year we capture species incidental to our NSWOW targets. This season we netted one Pallid bat (*Antrozous pallidus*), which typically prey on ground dwelling crickets, scorpions and millipedes, which the Reserve has plenty of. We also caught a rain beetle (*Pleocoma sp.*) a very interesting hairy beetle that emerges after a rain. We detected a Western Screech-Owl (WESO) regularly hanging around the barn where there are active bat boxes. This opportunistic owl was preying on a consistent food source! Ken captured this photo of the owl eating a bat, probably a Mexican free-tail bat (*Tadarida brasiliensis*), that use the boxes (Figure 4). Other owls detected (not banded) throughout the season included Great Horned Owls (*Bubo virginianus*), a Barn Owl (*Tyto alba*) and multiple Northern Pygmy Owls (*Glaucidium gnoma*). These species have been commonly heard throughout the monitoring period over the years. Ken heard a Barred Owl (BDOW, *Strix varia*), only our second observation on the Reserve. Although it is exciting to have a variety of owl species on the Reserve, BDOW, which have expanded their ranges from the eastern US, are relatively new to the western states and are known to be major predators of small owls. We hope they do not stay in the area. We heard Sandhill Cranes (*Antigone canadensis*), Tundra Swans (*Cygnus columbianus*), Snow Geese (*Answer caerulescens*) and White-fronted Geese (*Answer albifrons*) migrating overhead in the night sky. Cool non-avian sightings were the bat house roosting Mexican Free-tailed Bats, gray foxes, a ringtail, and glow-in-the-dark scorpions!

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Figure 3. Bander Charlie's dad gets to release our 5th owl from another station, BC!

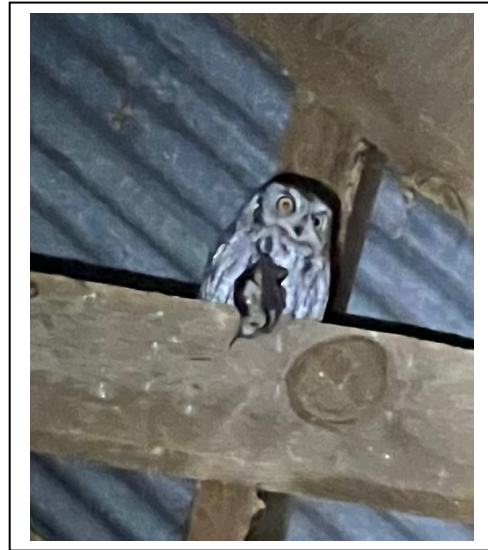


Figure 4. Banded WESO with bat prey in the BCCER barn.

Community Outreach and Volunteers

Educating the community about these elusive owls, and training volunteers to assist in an incredibly gratifying project, is an essential part of our program (Figures 3 and 5). In January, Erika Iacona conducted an outing for participants at the Snow Goose Festival. Ken hosted several guest outings, including one for the MCAA student chapter at CSU Chico, AltaCal, two BCCER groups, and many smaller groups. Every season our outreach focuses on training new volunteers and honing the skills of returning volunteer banders. There were 20 involved this season, with several committed returnees. Thank you so much!

Project Support

Logistical support continued this year from Chico State Enterprises and AltaCal Audubon Society. Licensed banders were Project Director Ken Sobon, Charlie Giannini, Dawn Garcia, and Erika Iacona. All data were submitted to the Bird Banding Laboratory who manages and disseminates banding information nationwide. We are members of Project OwlNet <http://www.projectowl.net.org/> and follow their monitoring recommendations.

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Figure 5. All in the family! Mike Fisher's (previous NSWOB bander) grandson meets and releases a NSWOB.

Table 1. Northern Saw-whet Owl fall capture rates and age ratios, and recaptures during fall migration 2005-2020. HY indicates birds hatched that monitoring year. AHY indicates birds in their 2nd year or older.

a owls/net hour/net area (m2) x 1,000 (as per Project OwlNet 2016) =150m2 at OWL3

b originally banded at another banding station

c owl banded at BCCER and recovered at another banding station

Banding Years	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Total
Total Individual Owls Captured	23	61	51	27	25	93	89	115	18	9	53	56	160	125	100	109	94	42	72	1322
# Nights Netting Effort	19	20	27	30	28	32	28	29	22	12	15	19	33	24	29	34	24	27	30	482
Net-hours	340	322	327	561	550	621	511	480	398	114	266	338	619	480	573	640	470	535	590	8735
Owl captures/100 Net-hrs	6.8	19.0	15.5	4.8	4.5	14.8	17.6	24.1	5.5	7.9	20.6	16.5	26.1	26.0	17.4	16.0	20.0	7.8	12.2	18 (ave)
Owl capture/Unit effort ^a	0.45	1.3	1.0	0.32	0.30	1.0	1.2	1.6	0.30	0.75	1.3	1.4	2.1	1.7	1.2	1.1	1.3	0.52	0.81	1.0 (ave)
Hatch Year (HY)	10	37	16	9	11	65	39	55	9	7	26	19	120	53	53	47	49	24	46	695
After Hatch Year (AHY)	13	24	35	18	14	28	50	60	9	2	27	37	40 (2U)	72	47	62	45	18	26	627
HY/AHY Ratio	0.77	1.5	0.45	0.5	0.78	2.3	0.78	0.92	1.0	3.5	0.96	0.53	3.0	0.74	1.1	0.76	1.1	1.3	1.8	1.3 (ave)
Recaptures Same Season	3	5	3	1	4	9	1	1	1	1	1	9	13	7	4	4	4	1	5	72
Previous Years	0	0	2	0	0	1	2	2	1	0	1	0	0	0	3	2	2	0	1	16
Foreign Recoveries ^b	0	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	0	1	1	5
Recovered owls ^c	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0	3