

Long-term constant effort bird monitoring in the Klamath-Siskiyou Bioregion: 2022 summary report

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In 1996, Klamath Bird Observatory (KBO) established a long-term bird monitoring program in the Klamath-Siskiyou Bioregion that utilizes multiple field survey methodologies at local and landscape scales to monitor bird populations during the breeding and migration seasons (Alexander et al. 2004). The objectives of the program are to collect data that provide an index to Neotropical migratory and resident bird species diversity and abundance, to evaluate reproductive success, survivorship, and population health, and to track trends over time in abundance and demographics; data from this program have contributed to numerous reports and peer-reviewed publications. Data resulting from these efforts are contributed to Avian Knowledge Northwest—a regional node of the Avian Knowledge Network and the following additional databases as appropriate: Institute for Bird Populations' Monitoring Avian Productivity and Survivorship Program, National Park Service Klamath Network, University of California Los Angeles Center for Tropical Research's migratory bird genetics projects, and U.S. Geological Survey North American Bird Banding Laboratory.

KBO's long-term bird banding program supports collaborative capture and banding research and monitoring projects, providing technical assistance and consultation to cooperating individuals, organizations, and agencies. Integral components include technical training and outreach efforts that consist of: 1) academic bird banding internships following the North American Banding Council (NABC) curriculum, 2) international capacity building, 3) professional and community training workshops, and 4) local banding demonstrations.

The Klamath-Siskiyou Bioregion lies within the Pacific and Intermountain West Avifaunal Biomes that include true fir, mixed conifer, mixed conifer hardwood, oak woodland, and riparian forest habitat types for which Partners in Flight (PIF) conservation plans recommend monitoring efforts be targeted for habitat-associated focal bird species (Altman and Alexander 2012, Rosenberg et al. 2016, Altman and Stephens 2022, Rockwell et al. 2022). KBO's long-term bird monitoring program gathers bird distribution, abundance, and demographic information for over 130 species annually, including 76 designated as PIF habitat focal species, Watch List species, and Common Species in Steep Decline (Altman and Alexander 2012, Rosenberg et al. 2016, Altman and Stephens 2022, Rockwell et al. 2022), Oregon Department of Fish and Wildlife Sensitive Species (ODFW 2016), and/or U.S. Fish and Wildlife Service Species of Concern (USFWS 2021 (Table 1). KBO works with the U.S. Forest Service Pacific Southwest Research Station Arcata and partners in the Klamath-Siskiyou Bioregion to fulfill monitoring goals defined by the National PIF Inventory and Monitoring Working Group (Hussell and Ralph 1998, Rosenberg et al. 2016).

Monitoring and Protocols

Standardized methods for mist netting and banding, species checklist tally, and tissue sampling for DNA and stable isotope study were conducted at six sites during May to October in 2022 (Ralph et al. 1993, Stephens et al. 2010); five have been operated 19-28 years and one was established in 2017 (Table 2). Standardized methods for point count, area search, and vegetation survey were also conducted at Oregon Caves National Monument and Preserve to maintain consistency required at that station. The frequency of vegetation surveys at the remaining five sites has been adjusted to once every five years and will occur again in 2024, unless a major habitat disturbance occurs.



Banding Interns, Victoria Langham and Axel Rutter, age a Sharp-shinned Hawk

From May through early August (breeding season), stations were scheduled once every 10-day period, following the Institute for Bird Population's dates of operation protocol for Monitoring Avian Productivity and Survivorship (MAPS; DeSante 1992). From August 9th through October 15 (fall migration season), efforts were scheduled once per week, except the Rocky Point Cabin station scheduled thrice weekly.

Mist netting capture totals from all stations include 4,644 birds of 85 species captured during 6197.7 net hours (number of 36mm 12-meter mist nets operated multiplied by time operated in hours) during 119 efforts (Table 3). Smoke impacted effort at most sites, resulting in reduced net hours when Air Quality Index conditions met or exceeded Unhealthy Levels (151 to 200 PM). One effort was lost at Oregon Caves due to excessive smoke levels and another at Munson Valley due to a Covid-19 exposure within the crew.

Additional KBO projects using bird banding techniques occurred in 2022; single species projects included Oregon Vesper Sparrow (Rockwell and Stephens 2022), Western Purple Martin, and Western Meadowlark.

Collaborations and Partnerships

Tissue sampling and associated data metrics were completed for one ongoing and three new collaborative efforts. We continued to collect feather samples from target species to contribute to the University of California, Los Angeles (UCLA) Conservation Genetics Resource Center that provides expertise, resources and sample repository facilities for the generation and analysis of molecular genetic data for wildlife conservation applications. We collected blood samples and additional biometric information from breeding Hermit Thrushes in coordination with California Gold Country Studies to help inform subspecies population genetics and their resilience to fire. We collected blood and feathers from American Robins and Yellow Warblers for two ongoing graduate student studies at Georgetown University and Colorado State University, respectively.

Education and Outreach

All planned public events and outreach activities including ranger-led groups in partnership with Crater Lake National Park at Munson Valley resumed in 2022 (Stuyck and Stephens 2022). Continued development and expansion of outreach efforts resulted in a dramatic increase in participation. A total of 254 visitors were hosted during the ranger-led programs to Crater Lake National Park at Munson Valley; visitors came from 24 states and 4 countries; 36 visitors were children. At our five other sites, a series of partner and community event days hosted 110 individuals across 48 visit days. One banding demonstration was held in conjunction with Rogue Valley Migratory Bird Day at North Mountain Park in Ashland, OR. During visits, our banding team interpreted how results from banding help inform bird and habitat conservation efforts, provided close-up views of birds being banded, provided opportunities for basic handling and release of birds.



Banding Intern, Yuly Caicedo Ortiz, releases a bird with a Crater Lake NP visitor
Photo credit National Park Service

KBO's long-term monitoring is integrated with our academic bird banding internship program, providing specialized training in the latest and most effective bird monitoring techniques for students and biologists. Four student volunteer interns received experiential instruction in advanced bird banding and survey techniques. The instruction is supplemented with study materials, published by the North American Banding Council (NABC), pertinent scientific literature, and regular seminars presented by KBO staff and discipline experts. Continuing our commitment to international capacity building through technical training, three student volunteer interns were recruited from Mexico, Colombia, and Grenada. KBO created and piloted a new NABC-sanctioned programmatic certification process where five KBO interns were certified at the Bander level and four at the Trainer level.

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Literature Cited

- Alexander, J. D., C. J. Ralph, K. Hollinger, and B. Hogoboom. 2004. Using a wide-scale landbird monitoring network to determine landbird distribution and productivity in the Klamath Bioregion. Pages 33–41 in K. L. Mergenthaler, J. E. Williams, and J. Jules, editors. *Proceedings of the Second Conference on Klamath-Siskiyou Ecology*. Siskiyou Field Institute, Cave Junction, OR.
- Altman, B., and J. D. Alexander. 2012. *Habitat conservation for landbirds in coniferous forests of western Oregon and Washington*. Version 2.0. Oregon-Washington Partners in Flight, American Bird Conservancy and Klamath Bird Observatory, Ashland, OR.
- Altman, B., and J. L. Stephens. 2022. *Conservation of landbirds and associated habitats and ecosystems in the East Cascade Mountains of Oregon and Washington* Version 2.0. Prepared for Oregon-Washington Partners in Flight, U.S. Forest Service, and Pacific Northwest Region Bureau of Land Management, American Bird Conservancy and Klamath Bird Observatory, Corvallis, OR, and Ashland, OR.
- DeSante, D. F. 1992. Monitoring Avian Productivity and Survivorship (MAPS): a sharp, rather than blunt, tool for monitoring and assessing landbird populations. Pages 511–521 in D. C. McCullough and R. H. Barrett, editors. *Wildlife 2001: Populations*. Elsevier Applied Science, London, UK.
- Hussell, D. J. T., and C. J. Ralph. 1998. Recommended methods for monitoring bird populations by counting and capture of migrants. Partners in Flight Inventory and Monitoring Working Group. Online www.fs.fed.us/psw/topics/wildlife/birdmon/pif/migmon.shtml.
- ODFW (Oregon Department of Fish and Wildlife). 2016. Oregon Department of Fish and Wildlife sensitive species list. Oregon Department of Fish and Wildlife, Salem, Oregon. www.dfw.state.or.us/wildlife/diversity/species/docs/2016_Sensitive_Species_List.pdf.
- Ralph, C. J., G. R. Geupel, P. Pyle, T. E. Martin, and D. F. DeSante. 1993. *Handbook of field methods for monitoring landbirds*. General Technical Report PSW-GTR-144, Pacific Southwest Research Station, U.S. Department of Agriculture, Forest Service, Albany, CA.
- Rockwell, S. M., and J. L. Stephens. 2022. Using GPS technology to track year-round movements of Oregon Vesper Sparrows from multiple breeding populations throughout their full annual cycle: 2022 summary report. Rep. No. KBO-2022-0011 Klamath Bird Observatory, Ashland, OR.
- Rockwell, S. M., J. L. Stephens, and B. Altman. 2022. *Population and habitat objectives for landbirds in prairie, oak, and riparian habitats of western Oregon and Washington* Version 2.0. Prepared for Oregon-Washington Partners in Flight, Pacific Birds Habitat Joint Venture, Bureau of Land Management, and U.S. Forest Service, American Bird Conservancy and Klamath Bird Observatory, Corvallis, OR, and Ashland, OR.
- Rosenberg, K. V., J. A. Kennedy, R. Dettmers, R. P. Ford, D. Reynolds, J. D. Alexander, C. J. Beardmore, P. J. Blancher, R. E. Bogart, G. S. Butcher, A. F. Camfield, A. Couturier, D. W. Demarest, W. E. Easton, J. J. Giocomo, R. H. Keller, A. E. Minni, A. O. Panjabi, D. N. Pashley, T. D. Rich, J. M. Ruth, H. Stabins, J. Stanton, and T. Will. 2016. Partners in Flight landbird conservation plan: 2016 revision for Canada and continental United States. Partners in Flight Science Committee. <http://www.partnersinflight.org/plans/landbird-conservation-plan/>.
- Stephens, J. L., S. R. Mohren, J. D. Alexander, D. A. Sarr, and K. M. Irvine. 2010. Klamath Network landbird monitoring protocol. U.S. Department of Interior, National Park Service, Natural Resource Report NPS/KLMN/NRR-2010/187, Fort Collins, CO. <http://irmafiles.nps.gov/reference/holding/152165>.
- Stuyck, C. M., and J. L. Stephens. 2022. *Engaging Visitors in Bird Ecology at Crater Lake National Park: 2022 summary report*. Rep. No. KBO-2022-0021. Klamath Bird Observatory, Ashland, OR.
- USFWS. 2021. *Birds of Conservation Concern 2021*. United States Department of Interior, Fish and Wildlife Service, Division of Migratory Bird Management, Arlington, VA.

Table 1. Species of Concern (with elevated conservation status) and Partners in Flight (PIF) Focal Species for which Klamath Bird Observatory gathers distribution, abundance, and demographic information at constant effort monitoring stations in southern Oregon by select Partners in Flight, and state and federal agency conservation plan (Altman and Alexander 2012, ODFW 2016, Rosenberg et al. 2016, USFWS 2021, Altman and Stephens 2022, Rockwell et al. 2022).

Common Name	Species of Concern					Habitat Focal Species		
	Oregon Department of Fish & Wildlife Sensitive Species (ODFW 2016)	United States Fish & Wildlife Service Species of Concern (USFWS 2021)	Partners in Flight Continental Plan Prevent Decline Watch List - Western Forest (Rosenberg et al. 2016)	Partners in Flight Continental Plan Reverse Decline Watch List - Western Forest (Rosenberg et al. 2016)	Partners in Flight Continental Plan Common Species in Steep Decline (Rosenberg et al. 2016)	Oregon-Washington Partners in Flight Coniferous Forests (Altman and Alexander 2012)	Oregon-Washington Partners in Flight East-slope Cascades Mtns (Altman and Stephens 2022)	Oregon - Washington Partners in Flight Prairie, Oak, and Riparian (Rockwell et al. 2022)
Mountain Quail	X			X				
Blue (Sooty) Grouse				X		X		
Western Grebe		X						
Clark's Grebe		X						
American White Pelican	X							
Spotted Sandpiper								X
Black Tern		X						
Band-tailed Pigeon				X		X		
Flammulated Owl	X	X	X				X	
Western Screech-Owl		X						
Common Nighthawk	X				X			
Black Swift		X						
Calliope Hummingbird							X	
Rufous Hummingbird		X		X		X		X
Allen's Hummingbird		X		X				

Table 1 (continued). Species of Concern (with elevated conservation status) and Partners in Flight (PIF) Focal Species for which Klamath Bird Observatory gathers distribution, abundance, and demographic information at constant effort monitoring stations in southern Oregon by select Partners in Flight, and state and federal agency conservation plan (Altman and Alexander 2012, ODFW 2016, Rosenberg et al. 2016, USFWS 2021, Altman and Stephens 2022, Rockwell et al. 2022).

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Lewis's Woodpecker	X			X		X	X	X
Acorn Woodpecker	X							X
Williamson's Sapsucker							X	
Red-naped Sapsucker							X	
White-headed Woodpecker	X						X	
Downy Woodpecker								X
Black-backed Woodpecker							X	
Northern Flicker						X		
Pileated Woodpecker	X					X		
Olive-sided Flycatcher	X	X		X		X	X	
Western Wood-Pewee							X	X
Willow Flycatcher	X							X
Gray Flycatcher							X	
Hammond's Flycatcher						X		
Pacific-slope Flycatcher						X		
Ash-throated Flycatcher							X	
Cassin's Vireo								X
Hutton's Vireo								X

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California Scrub-Jay								X
Clark's Nutcracker							X	
Chestnut-backed Chickadee		X		X				
Black-capped Chickadee								X
Mountain Chickadee							X	
Oak Titmouse		X		X				X
White-breasted Nuthatch (Slender-billed)		X						
Pygmy Nuthatch							X	
Brown Creeper						X	X	
Bushtit								X
Bewick's Wren								X
House Wren								X
Pacific Wren						X		
Rock Wren							X	
Swainson's Thrush							X	
Hermit Thrush						X	X	
Varied Thrush		X				X		
Mountain/Western Bluebird							X	

Table 1 (continued). Species of Concern (with elevated conservation status) and Partners in Flight (PIF) Focal Species for which Klamath Bird Observatory gathers distribution, abundance, and demographic information at constant effort monitoring stations in southern Oregon by select Partners in Flight, and state and federal agency conservation plan (Altman and Alexander 2012, ODFW 2016, Rosenberg et al. 2016, USFWS 2021, Altman and Stephens 2022, Rockwell et al. 2022).

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Wrentit		X		X				
Nashville Warbler						X	X	
Orange-crowned Warbler						X		
Yellow Warbler								X
Black-throated Gray Warbler						X		
Townsend's Warbler						X		
Hermit Warbler						X		
Wilson's Warbler					X	X		
Yellow-breasted Chat	X							X
Western Tanager						X		
California Towhee								X
Spotted Towhee								X
Blue-gray Gnatcatcher								X

Table 1 (continued). Species of Concern (with elevated conservation status) and Partners in Flight (PIF) Focal Species for which Klamath Bird Observatory gathers distribution, abundance, and demographic information at constant effort monitoring stations in southern Oregon by select Partners in Flight, and state and federal agency conservation plan (Altman and Alexander 2012, ODFW 2016, Rosenberg et al. 2016, USFWS 2021, Altman and Stephens 2022, Rockwell et al. 2022).

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Chipping Sparrow	X						X	X
Brewer's Sparrow	X						X	
Oregon Vesper Sparrow	X	X						X
Fox Sparrow						X		
Savannah Sparrow								X
Lincoln's Sparrow						X	X	
Black-headed Grosbeak								X
Lazuli Bunting						X		X
Brewer's Blackbird					X			
Horned Lark (Streaked)								X
Bullock's Oriole								X
Purple Finch						X		X
Cassin's Finch		X		X				
Evening Grosbeak		X		X				
Pine Siskin					X			

Table 2. Location of Klamath Bird Observatory constant effort monitoring stations (CES) operated in 2022 by station name, code, ownership, year established, and geospatial information. [USFS = U.S. Department of Agriculture U.S. Forest Service; BLM = U.S. Department of Interior Bureau of Land Management; USFWS = U.S. Department of Interior U.S. Fish and Wildlife Service; NPS = U.S. Department of Interior National Park Service.]

Station Name	Ownership	Year CES		Latitude	Longitude	Location
		Established				
Frain Ranch Campground (CES)	BLM, Lakeview District	1998		42° 01' 30"	122° 06' 05"	Frain Ranch Camp./Topsy Grade, 10 miles NW of Dorris, CA, Klamath Co., OR
Munson Valley (CES)	NPS, Crater Lake NP	2017		42° 53' 28"	122° 08' 17"	Crater Lake NP, Munson Valley, 14 miles NNW of Fort Klamath, Klamath Co., OR
Oregon Caves (CES)	NPS, Oregon Caves NM	2002		42° 05' 37"	123° 23' 47"	Oregon Caves NM, 14 miles SE of Cave Junction, Josephine Co., OR
Rocky Point Cabin (CES)	USFWS, Klamath Basin Refuge Network	1996		42° 29' 49"	122° 04' 47"	Rocky Point, 23 miles NW of Klamath Falls, Klamath Co., OR
Sevenmile Guard Station (CES)	USFS, Fremont-Winema NF	1996		42° 42' 18"	122° 04' 26"	Sevenmile Guard Station, 6 miles W of Ft. Klamath, Klamath Co., OR
Wildlife Images (CES)	BLM, Medford District	1994		42° 29' 25"	123° 28' 48"	Rogue River at Wildlife Images, 3.5 miles SW of Merlin, Josephine Co., OR

Table 3. Summary of Klamath Bird Observatory's constant effort monitoring station (CES) efforts in 2022. Efforts = number of station visits; Recaps, New, Unbanded and Total = number of previously banded birds recaptured, newly banded birds, birds released without being banded, and total number of birds captured respectively; Net hours = number of 12-meter mist nets operated multiplied by the time operated in hours.

Station Code	Station (Ownership)	Efforts	Captures				Net Hours
			Recaps	New	Unbanded	Total	
7MIL	Seven Mile Guard Station (USFS)	18	181	659	26	866	932.0
CABN	Rocky Point Field Station (USFWS)	36	109	1630	23	1763	1926.7
MUVA	Munson Valley/Crater Lake National Park (NPS)	13	39	273	6	318	759.0
ORCA	Oregon Caves National Monument (NPS)	16	42	298	10	350	801.2
TOPS	Frain Ranch Campground/Topsy Grade (BLM)	18	92	638	12	742	910.2
WIIM	Wildlife Images (BLM)	18	87	495	23	605	868.6
Total		119	550	3993	100	4644	6197.7