



The Sierra Nevada Monitor

Newsletter of the Sierra Nevada Network Inventory & Monitoring Program Spring 2026 Volume 16, Issue 1



The red-breasted nuthatch was one of 11 species that benefited from fire for at least 35 years afterwards. NPS / Jane Gamble.

Pyrodiversity and Birds in Sierra Nevada Parks

The Sierra Nevada Network’s bird monitoring partners at the Institute for Bird Populations recently collaborated with NPS staff to publish an analysis of how birds respond to fire over time. The study used network bird monitoring data from Sequoia, Kings Canyon, and Yosemite National Parks. “Fire gives avian populations a rapid and enduring boost in protected forests of California” was published in *Fire Ecology* in 2025. The following is a summary of the findings, with links to the article, a blog about it, and an interview with the lead author, Chris Ray.

In the Sierra Nevada, national park lands served as a natural laboratory to answer a poorly understood question: how do bird communities react to fire over the long term? The answer matters to land managers choosing among different types of controlled burning and fuel reduction to prevent the increasing threat from large, high severity “megafires.” Researchers studied how bird populations over the past 2 decades responded to fire over the past 35 years in Yosemite, Sequoia, and Kings Canyon National Parks. They learned that a majority of the 42 bird species they studied benefited from fire for years after. Some benefited for at least 35 years after. Increased bird abundance long after moderate severity fires, even more than low severity fires, suggests the value of pyrodiversity—a mix of fire return intervals and burn severities—in managing forests. [Read about and access the published research](#) or listen to an [interview with the lead author](#) to learn more.

Inside this Issue

Research on Birds and Fire	1
Lake Analyses in Progress	2
White Pine Mortality Study Updates	2
Welcome, New Staff!	2
Summer Field Season Calendar and Plans	4
Recent Publications	6

Lake Analysis and Synthesis

Dr. Adrienne Smits, an Aquatic Ecosystem Ecologist at UC Davis, is collaborating with the Sierra Nevada Network to analyze and synthesize the long-term lake monitoring dataset. This effort builds on previous work to publish the lake chemistry dataset, complete trend analyses, and summarize algal survey data. It will culminate in a comprehensive synthesis report to inform park management. Project objectives include

- further interpreting water chemistry trends in the context of watershed and environmental drivers
- analyzing green algae shoreline survey data in relation to lake chemistry and landscape characteristics
- synthesizing status and trend results to provide management-relevant recommendations, including considerations for future research and potential protocol updates

White Pine Mortality Project



Trees killed by mountain pine beetles near Woods Lake. NPS/Maeve Draper

This past winter and early spring, we completed preliminary analyses to investigate the extent and causes of emergent mortality in high-elevation white pines in Sierra Nevada Network parks. This work specifically focused on assessing causes of mortality in areas of known mortality and cannot be applied population wide. We found that mountain pine beetle was the leading cause of mortality in whitebark pine plots experiencing canopy loss, followed by unknown causes (no evidence of beetles or pathogens or physical damage). In foxtail plots experiencing canopy loss, the leading causes of mortality were fire and mountain pine beetle. We expect to assess the extent of whitebark mortality this coming summer.

Welcome, New Staff!

Rachel Wolstenholme—Program Management Support



Rachel Wolstenholme hiking Walker's Route in the Swiss Alps.

Rachel is excited to provide program management support for the Sierra Nevada Network again since her 2024 detail as its program manager. Her past roles include 5 years as the region's wildlife biologist, and prior to that, she was the condor program manager at Pinnacles National Park from 2013 to 2020.

Maeve Draper—Forest Ecologist



Maeve Draper on Mt. Whitney in the Sierra Nevada.

Maeve Draper has returned to the Sierra Nevada Network as their Forest Ecologist, a year after working on the white pine mortality crew. In this role she leads the network's long-term high-elevation forest monitoring project. The project records the spatial occurrence of forest pests and pathogens while assessing tree health, mortality, and growth throughout the network's parks. Maeve holds a BS in biology from the University of Kentucky and an MS in forestry from Michigan Tech. Her master's research focused on long-term growth, yield, and sustainable management in northern hardwood forests.

Maeve began working in Sequoia and Kings Canyon National Parks four years ago with USGS, where she was on field crews for multiple projects including forest demography, sequoia inventory, and fire ecology studies. The complex and impactful nature of these important projects, coupled with their immersive backcountry fieldwork, helped her fall in love with the Sierra Nevada.

Outside of work, Maeve enjoys backpacking, snowboarding, and playing piano. She is looking forward to another wonderful season of great data collection and fun fieldwork in the high country.

Morgan Tschumi—Logistics Coordinator



Morgan Tschumi near Vogelsang pass with views of the Cathedral Range.

Morgan Tschumi is the 2026 season Logistics Coordinator for the Sierra Nevada Network through November. In this role she will help biological technician crews conduct their important backcountry work smoothly.

Previously, Morgan was contributing to environmental education, outreach, and restoration efforts in Monterey County through curriculum development and program coordination. She completed her bachelor's degree on the central coast as well at California State University Monterey Bay.

Morgan has a love for the Sierra Nevada region sprouted from personal backpacking and climbing trips. She is grateful for the opportunity to expand her knowledge of the region while supporting the network's conservation goals. Outside of work, Morgan can be found hiking, birding, and generally enjoying the outdoors.

Alexa Serrantes—Assistant Data Scientist



Alexa Serrantes at Olympic National Park, with Hurricane Ridge in the background.

Alexa Serrantes joined the Pacific West Region in January as a shared Assistant Data Scientist, working with the Sierra Nevada, Mojave Desert, and Upper Columbia Basin Inventory and Monitoring (I&M) networks. In this role, she will be building tools to streamline data workflows for shared protocols, as well as helping with data publication and data visualization.

She began her career in natural resources working on botanical and ecological programs in the high deserts of Nevada, Oregon, and California. After a couple seasons in the field, she joined I&M as a data management intern and spent 2 years working on a large-scale data publication effort, collaborating with 13 I&M networks across the country.

Alexa holds a BS in mathematics and an MBA with a concentration in managerial analytics. She is currently taking natural science classes at a local community college in pursuit of becoming a more well-rounded scientist. Outside of work, Alexa enjoys exploring the outdoors through hiking, climbing and camping.

Field Season Plans for 2026

We'll be out in your parks this summer monitoring vital signs according to this calendar:

2026 Field Schedule at Sierra Nevada Network Parks

Vital Signs Monitoring	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
High-Elevation Forests (SIEN contact—Maeve Draper)			SEKI/YOSE						
Lakes (SIEN—Kelly Martin)					SEKI/YOSE				
Wetlands (SIEN—Kelly Martin)			SEKI/YOSE/DEPO						
Rivers (SIEN— Kelly Martin)		YOSE/DEPO							
Park acronyms Sequoia and Kings Canyon National Parks (SEKI), Yosemite National Park (YOSE), Devils Postpile National Monument (DEPO)									

Wetlands

Hydrologic monitoring continues as the primary focus in network wetlands in 2026. The lakes monitoring crew (Ean Eberhard, Riley Hacker, and Haley Jenkins) will visit annual panel wetland sites to collect groundwater field measurements, download dataloggers that continuously monitor groundwater levels, and perform routine maintenance on monitoring wells. Sampling will focus solely on the hydrologic component of the protocol, with vegetation and invertebrate sampling remaining on hold.

On the data front, we are working with our new assistant data scientist, Alexa Serrantes, to conduct QA/QC of the wetlands vegetation and invertebrate datasets, with the goal of publishing these data in FY26.

Learn more about [Wetlands monitoring](#).

Image to the right: Wetlands crew (Jayna Frank, Ean Eberhard, and Riley Hacker) taking well measurements at a site in Cahoon Meadow in Sequoia National Park.



Birds

This field season, bird monitoring activities in Sierra Nevada national parks will be paused. Although an unexpected termination of our agreement with the Institute for Bird Populations (IBP) was ultimately reversed, the resolution came too late to adequately prepare for this year's monitoring season.

IBP will use this interim period to advance several key analyses. These include a comprehensive analysis of trends in bird abundance from 2011 to 2024, an assessment of bird community responses to fire in giant sequoia groves, and a population trend estimate for Clark's Nutcracker that incorporates whitebark pine condition. We look forward to sharing the results of these analyses. We anticipate resuming field activities in 2027.

Learn more about [Bird monitoring](#).

Lakes

Our network lakes monitoring crew will be visiting lake sample design panels 1 and 3 in 2026, with a goal of sampling 25 lakes across the network. This year, we will operate with a single 3-person crew. The team includes 2 Biological Science Technicians, Ean Eberhard (crew lead) and Riley Hacker (crew member), returning from last season with valuable experience. Haley Jenkins joins the crew from Yosemite, rounding out the team.

Annually, the crew collects data on a suite of measures to monitor water chemistry and document amphibians, contributing to our long-term understanding of lake ecosystem condition and trends across the network. This work provides park managers with important information on current resource conditions and supports ongoing efforts to track changes in high-elevation lake systems over time.

In addition to 2026 field work, we are working with Dr. Adrienne Smits, an Aquatic Ecosystem Ecologist at UC Davis, to analyze and synthesize the Sierra Nevada Network long-term lake monitoring dataset. See “Lake Analysis and Synthesis” above in this newsletter.

Explore the Sierra Nevada Network’s [lake monitoring](#) further through these visually rich stories:

- [Clear Waters story map](#)
- [Seeking Clarity: Tracking Change in Mountain Lakes](#) video



Outlet pond at an index sampling site for the lakes protocol—Emerald Lake in Sequoia National Park—captured at sunset.

Rivers

The Sierra Nevada Network River Hydrology Monitoring Protocol reports on streamflow data from 14 gages in and near network parks, with an additional 11 gages operated by partners. Staff from the network, Yosemite National Park, and Devil’s Postpile National Monument collaborate to measure streamflow at 3 river gaging stations on the Tuolumne River and the Middle Fork of the San Joaquin. Rachel Hallnan will lead hydrology work in 2026 with support from hydrology technicians, Natty Abrahams and Rachel Lurz, assisting with field measurements at Yosemite sites. Staff at the US Geological Survey (USGS) California Water Science Center will continue to measure streamflow along the San Joaquin River in Devil’s Postpile.

The network is also wrapping up a collaboration with Dr. Safeeq Kahn at the University of California for a river hydrology and water temperature trend analysis. The report is expected to be published this spring. The findings will provide important insights into long-term hydrologic patterns in river catchments across network parks.

Learn more about [River monitoring](#).



Physical Science Technician Nathanial Abrahams measuring discharge on the Tuolumne River at the Tioga Road gage in Yosemite National Park.

High-Elevation Forests

The high-elevation forest monitoring project will resume this year for the first time since 2022. We will be measuring plots in Panel 1, which will begin the fourth rotation of visiting all 108 high-elevation forest plots we monitor. The final 2 plots were installed last year. The field crew will measure permanent sample plots throughout Sequoia, Kings Canyon, and Yosemite National Parks.

Owen Hill is returning as a crew lead and for his fourth season in Sequoia-Kings. He led the white pine mortality crew last year and worked with USGS in prior years. The rest of the crew includes two Scientist in Parks members, Allie Arnfield and Payton Bovee, who are joining us for their first season with the network.

Over the course of 8 backpacking trips, the crew will visit all 36 plots, each containing from 20 to over 400 trees! The project focuses on whitebark pine and foxtail pine, 2 five-needle high-elevation pines that face the threat of decline from pathogens, like white pine blister rust, and pests, such as the mountain pine beetle.

Learn more about [High-Elevation Forest monitoring](#).



Field crew hiking to a high-elevation whitebark pine plot near Cartridge Pass, Kings Canyon National Park. NPS/Maeve Draper

Recent Publications

Battles, J.J., and D. Foster. 2026. Assessment of the Current Condition and Future Vulnerability of Sugar Pine (*Pinus lambertiana*) in the Sierra Nevada: Evaluating the Drivers of Change in a Declining Species. Science Report NPS/SR—2026/384. National Park Service, Fort Collins, Colorado. <https://doi.org/10.36967/2317028>

Ray, C., R.B. Siegel, R.L. Wilkerson, L. Schofield, M.W. Tingley, S. Aronson, S. Haultain, S. Stock, and K. van Wagtendonk. Fire gives avian populations a rapid and enduring boost in protected forests of California. Fire Ecology 21:56. <https://doi.org/10.1186/s42408-025-00402-2>

Associated data package:

- Ray, C., R.B. Siegel, B. Wilkerson, L. Schofield, M.W. Tingley, S. Aronson, S. Haultain, S. Stock, K. van Wagtendonk, and SIEN. 2025. Sierra Nevada Landbirds Fire Analysis Monitoring Data Package, 1999-2019. National Park Service. Fort Collins, Colorado. <https://doi.org/10.57830/2308571>.

Sierra Nevada Network		
The Sierra Nevada Network is one of 32 National Park Service inventory and monitoring networks that monitor vital signs to assess the condition of park ecosystems and contribute to a body of scientific knowledge that informs park management decisions. Parks in the network are: *César E. Chávez National Monument (CECH) - Devils Postpile National Monument (DEPO) - Sequoia & Kings Canyon National Parks (SEKI) - Yosemite National Park (YOSE)	Year-round staff: Program Manager Anne Pfaff anne_pfaff@nps.gov, (559) 565-3788 Data Manager Sarah Wakamiya sarah_wakamiya@nps.gov, (530) 453-9440 Physical Scientist Kelly Martin kelly_martin@nps.gov, (559) 565-3174	Ecologist Maeve Draper maeve_draper@partner.nps.gov (559) 565-3174 Science Communication Specialist Sonya Daw sonya_daw@nps.gov, (541) 552-8578 *Established in 2012, César E. Chávez NM is not included in the vital signs monitoring program. https://www.nps.gov/im/sierranevada