

Great Gray Owl Prey Inventory Helps Inform Meadow Restoration in Yosemite

When Yosemite National Park began restoring Ackerson Meadow in 2023, park managers knew they needed to understand how the project might affect one of the park's most iconic and sensitive species: the great gray owl. The state-endangered Sierra Nevada subspecies of great gray owl depends on healthy meadows for hunting.

Park staff have monitored great gray owls for years, including tracking some birds with transmitters to better understand where they forage. But prey availability was a missing piece of the puzzle. As meadow restoration changes water levels, vegetation, and other habitat conditions, it could also affect populations of voles and gophers—the two prey groups that make up most of the owls' diet.



Yosemite's great gray owl (*Strix nebulosa yosemitensis*; left) relies heavily on voles (*Microtus* spp.; upper right) and pocket gophers (*Thomomys* spp.; lower right).

U.S. Forest Service photo by Benjamin Cossel (left), photo courtesy of Jessica Blois (upper right), NPS (lower right)

The 230-acre Ackerson Meadow complex is one of the largest mid-elevation meadow systems in the Sierra Nevada and the largest of its kind in Yosemite. In partnership with Stanislaus National Forest, the park completed restoration work in the meadow by filling an eroded stream channel with soil and organic materials, then planting native vegetation. Together, these changes are expected to raise the water table over time, returning much of the meadow to wetter conditions. The project should improve habitat for a variety of species of conservation concern, including western pond turtles and willow flycatchers.



Ackerson Meadow, Yosemite National Park.

Photo courtesy of Jessica Blois

Looking for the Owls' Prey

To establish a baseline before restoration effects become fully apparent, researchers from the University of California, Merced surveyed small mammals at Ackerson Meadow in 2023 and 2024. For comparison, they also surveyed two nearby meadow systems that represent conditions managers hope to achieve through restoration. At each site, researchers surveyed meadow and forest habitats near meadow–forest boundaries, where great gray

owls forage during the breeding season. The team focused on voles and gophers while also documenting the broader small mammal community.

Researchers used several approaches to estimate prey abundance. Traditional live traps were used to capture, identify, and release small mammals. They also tested an innovative technique involving non-toxic "chew blocks" infused with attractants. By measuring how much material animals removed from the blocks, researchers could estimate vole abundance. Cameras placed at some chew blocks helped confirm which species were visiting, with voles accounting for the vast majority of detections. Because gophers are difficult to survey using baited traps or chew blocks, researchers recorded signs of fresh activity such as new soil disturbances.



Researchers surveyed small mammals using live traps (left), measured captured voles (center), and tested camera traps paired with chew blocks (right).

Photos courtesy of Jessica Blois

The fieldwork team set traps in the evenings, checked them each morning, measured and released captured animals, monitored cameras, noted gopher signs, surveyed vegetation, and recorded habitat conditions that might influence prey populations. Researchers then used the resulting data to estimate prey abundances and compare patterns among sites, habitats, and years.



The field crew measured vegetation and other habitat characteristics at each survey site.

Photos courtesy of Jessica Blois

What They Found

The surveys documented active prey populations throughout the study areas. Gophers were detected in all three meadow systems and occurred across much of the study areas, while voles were detected less frequently and primarily in wetter meadow habitats. Vole detections varied across sites and survey periods, which could reflect the naturally fluctuating populations of these small mammals.

Soil wetness was one of the environmental variables most closely associated with prey presence, with vole presence generally increasing in wetter areas and gopher activity tending to decrease. Because the restoration is expected to create wetter meadow conditions, researchers suggest it may have the greatest potential to benefit vole populations. Even so, ample habitat for gophers is expected to remain along meadow edges and in adjacent forests.

The study also demonstrated that chew blocks can be an effective tool for monitoring vole abundance. The amount of material animals removed from the chew blocks closely reflected vole abundance estimated from live trapping and camera surveys, suggesting managers can use this less invasive and less labor-intensive method in future vole monitoring efforts.

Building a Foundation for Future Research

This study provides an important benchmark against which future surveys can be compared. By documenting prey populations during the early stages of meadow recovery and testing new monitoring methods, the project gives managers tools to track how wildlife responds as the meadow changes over time. It also highlights that successful restoration depends not only on the habitat itself, but on the many species that call it home.

Learn more

- Dig into the study details by visiting the [full report](#).
- Explore more about the [Ackerson Meadow restoration project](#) and Yosemite's [great gray owls](#).

July 2026