



# Managing Meadow Habitat for Birds in the Sierra Nevada



Meadow and other riparian areas are the single most important habitat for birds in the west. Water diversion and damming, mining, development, encroachment of conifers, and most importantly grazing have caused a significant loss and degradation of meadow bird habitat in the Sierra. As a result, four meadow bird species have been conferred special status in California (Sandhill Crane, Great-Gray Owl, Willow Flycatcher, and Yellow Warbler). With most of the largest meadows in the Northern Sierra privately owned, efforts to protect and manage these valuable resources will require a collaborative effort between multiple partners. Recent restoration efforts - primarily in the form of removing grazing - have resulted in increases in numerous meadow species, including Sandhill Crane and Willow Flycatcher. With their limited extent on the landscape, wildlife value, and degraded state, meadow restoration and management should be among the highest priorities for managers in the Sierra Nevada.



Ryan Burnett

## Strategies for Managing Meadows for Birds

With the extreme loss and degradation of meadow habitat throughout the Sierra, changes in meadow management are necessary. The following are a list of the most important considerations for managing meadows for breeding birds:

1. **Get to know your meadows.** Inventory and rank the habitat value of meadows using key species listed above as indicators.
2. **Make wildlife management the primary objective in the meadows most important for birds.** With their unmatched ecological value and loss and degradation, the few remaining high quality meadows should be managed exclusively for wildlife.
3. **Restore degraded meadows.** Several meadows in the N. Sierra have responded well to minimal restoration activities, including raising water tables with check dams and removing all grazing.
4. **Manage for dense patches of willow/alder.** Dense stringers or patches of these shrubs are the single most important habitat feature for meadow-dependent birds.
5. **Manage for tall lush herbaceous vegetation.** A vigorous understory is important for concealing nests and supporting invertebrates that birds prey upon. The Willow Flycatcher is strongly correlated with this habitat feature in the Sierra.

## Key Meadow Bird Species

- Sandhill Crane
- Wilson's Snipe
- Calliope Hummingbird
- Red-breasted Sapsucker
- Warbling Vireo
- Willow Flycatcher
- Swainson's Thrush
- Yellow Warbler
- Wilson's Warbler
- MacGillivray's Warbler
- Lincoln's Sparrow



Ryan Burnett

Yellow Warbler

## Key Meadow Features

- Dense patches of willow/alder
- Lush tall herbaceous layer
- Large area to perimeter ratio
- High elevation meadows
- Soil moisture/standing water



Peter LaTourette

Lincoln's Sparrow

## Adaptive Management

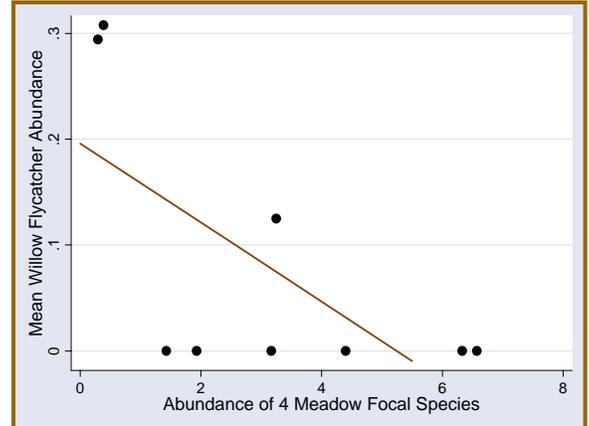
A vital part of effective land management is developing a program of monitoring and adaptive feedback. As meadow restoration treatments are necessary to enhance this vital habitat, monitoring the effects of these actions and feeding information back into future management decisions will result in the greatest benefit to birds and other wildlife. Bird monitoring is an ideal tool for providing cost-effective feedback on a whole community of organisms.



Wilson's Warbler

## Single vs. Focal Species Approach

While Willow Flycatcher management should be a priority, focusing meadow management solely on the needs of one or two species is not likely to ensure the needs of all meadow dependent birds species are being met. In the Lassen region, Willow Flycatcher occupied meadows rarely contain individuals of four important meadow-dependent bird species (Warbling Vireo, Wilson's Warbler, MacGillivray's Warbler and Lincoln's Sparrow; see figure). Using a suite of avian species that represent the full range of meadow ecosystem attributes to guide management (i.e., "focal species") is a more ecologically sound, well informed approach.



## Meadow Grazing and Birds

It is well established in the scientific literature that grazing can negatively affect a number of meadow-dependent breeding birds. Livestock can reduce vegetative cover making habitat unsuitable for many riparian bird species that are sensitive to changes in vegetation complexity and structure. Degraded meadows throughout the Sierra and the special status afforded a number of the associated species are evidence of the effects over a century of grazing abuse has had on this sensitive and vital wildlife habitat.

## Response to Restoration

In the Northern Sierra, meadow birds have responded positively to the removal of grazing. Several meadows, once heavily grazed, now support breeding populations of Willow Flycatcher, Sandhill Crane, and Yellow Warbler all of which were rare to absent prior to cessation of grazing. At several sites, active restoration was necessary to restore incised stream channels, water tables, and functional geomorphology and hydrology. Increased soil moisture at these sites along with no grazing pressure have resulted in natural regeneration of dense young stands of riparian shrubs, sedges, and grasses. Meadows in the Lassen region now support over 90 Willow Flycatcher breeding territories.



Humbug Valley - Plumas County, CA

## Resources

- ♦ Riparian & Sierra Nevada Bird Conservation Plans ♦ <http://www.prbo.org/calpif/plans.html>
- ♦ Institute for Bird Populations Sierra Meadow Project ♦ [www.birdpop.org/Sierra/meadows.htm](http://www.birdpop.org/Sierra/meadows.htm)
- ♦ US Forest Service PSW Sierra Nevada Research Center ♦ [www.fs.fed.us/psw/programs/snrc/](http://www.fs.fed.us/psw/programs/snrc/)
- ♦ TNC's Northern Sierra Project ♦ [www.nature.org/wherewework/northamerica/states/californiapreserves/art6324.html](http://www.nature.org/wherewework/northamerica/states/californiapreserves/art6324.html)
- ♦ PRBO Conservation Science Sierra Nevada Program ♦ [rburnett@prbo.org](mailto:rburnett@prbo.org)

