

# Keeping Mountain Meadows Healthy

## *Using birds to measure the health of your Sierra meadow*

**Why should you be concerned about meadow health?** Mountain meadows are vital for birds, other wildlife and people. Healthy meadows store and filter water, reduce downstream flooding, produce more forage for livestock, and support a diverse and abundant wildlife community.

**How do you know if your meadow is healthy?** Look for these 9 meadow bird focal species who are indicators of meadow health. Meadow birds utilize a range of habitat attributes including deciduous trees and shrubs, a dense and tall herbaceous layer, saturated soils, and snags. These vegetation layers and habitat attributes are dependent on a functioning meadow system which includes regular floodplain inundation during spring floods and prescribed grazing management.

	<b>Sandhill Crane</b>	<b>Wilson's Snipe</b>	<b>Red-breasted Sapsucker</b>	<b>Warbling Vireo</b>	<b>MacGillivray's Warbler</b>	<b>Yellow Warbler</b>	<b>Wilson's Warbler</b>
<p>Photos courtesy of Ryan Burnett, Chris McCreedy and Tom Grey.</p>       	<p>Entirely gray plumage (though often stained rust) with a red crown. Long legs and neck, ~46 inches tall. Performs dancing displays and has loud bugling call.</p>	<p>Dark brownish bird with bold cream-colored stripes on back and head. Outer tail feathers produce a low pulsing whistle when in display. Long bill for probing.</p>	<p>Woodpecker with red head and breast, white stripe on side of wing and white mustache.</p>	<p>Grey-green back, whitish underparts, greyish line through eye. More easily recognized by its song, a rapid warbling with an accented, higher-pitched last note.</p>	<p>Gray hood that covers head, throat, and nape, white eye arcs, olive green back and wings, and yellow underparts. Females duller in color.</p>	<p>Bright yellow with a large black eye. Males have reddish streaks on breast. Plain face with no streaking. Females are pale yellow with no reddish streaking.</p>	<p>Bright yellow underparts, greenish back, black eye, and black cap. Females greenish-yellow with little to no black cap.</p>
<b>How to Identify</b>	Entirely gray plumage (though often stained rust) with a red crown. Long legs and neck, ~46 inches tall. Performs dancing displays and has loud bugling call.	Dark brownish bird with bold cream-colored stripes on back and head. Outer tail feathers produce a low pulsing whistle when in display. Long bill for probing.	Woodpecker with red head and breast, white stripe on side of wing and white mustache.	Grey-green back, whitish underparts, greyish line through eye. More easily recognized by its song, a rapid warbling with an accented, higher-pitched last note.	Gray hood that covers head, throat, and nape, white eye arcs, olive green back and wings, and yellow underparts. Females duller in color.	Bright yellow with a large black eye. Males have reddish streaks on breast. Plain face with no streaking. Females are pale yellow with no reddish streaking.	Bright yellow underparts, greenish back, black eye, and black cap. Females greenish-yellow with little to no black cap.
<b>Nest Site</b>	Nests in emergent vegetation in or near water. Gathers a mound of plant material and anchors it to nearby vegetation.	Placed in a woven cup of grasses on the ground, often close to or surrounded by water.	Nests in cavity in live trees or in snags.	A cup built in the outer branches of a tree or shrub. Often nests high in the canopy.	Open cup placed under dense shrub cover at or near the ground.	Nests in the fork of a shrub or small tree.	Nests placed on ground or on shrub near ground.
<b>Habitat</b>	Uses tall, wet, grassy areas for roosting and nesting, forages for insects, earthworms, and seeds. Found north of Lake Tahoe.	Primarily forages in mud for insects and earthworms. Uses wet sedge meadows, estuaries, and wetlands.	Drills holes in trees and then eats the sap and insects attracted to it. Often nests in live conifers, also uses aspen stands and willows.	Higher densities in deciduous trees such as alders, cottonwoods, and aspens. Forages for insects from treetops.	Usually found in shrubs. Prefers moist montane thickets, margins of montane meadows, and deciduous shrubs.	Prefers deciduous shrubs, especially willows.	Moist riparian thickets, deciduous woody meadow vegetation such as alders and willows.
<b>Tips for a Healthy Meadow</b>	Restore high water table minimize human disturbance. Prescribed grazing to create a lush herbaceous layer for nesting.	Restore a high water table and plant sedges and rushes. Tall herbaceous layer to conceal nests.	Retain standing dead trees and trees with dead branches. Restore aspen stands and plant willows.	Encourage and plant deciduous trees such as cottonwoods and aspen. Protect young trees from overgrazing. Restore floodplain function.	Remove young conifers growing in the meadow area and plant deciduous shrubs. Avoid highlining of shrubs by cattle.	Exclude grazing from the stream corridor and plant willows. Restore floodplain function.	Restore floodplain function and encourage and plant deciduous woody shrubs.

# Keeping Mountain Meadows Healthy

*Using birds to measure the health of your Sierra meadow.*

	<b>Song Sparrow</b>	<b>Lincoln's Sparrow</b>
		
<b>How to Identify</b>	Dark reddish brown wings with blurry streaks on breast; brown and grey stripes on head.	Brown or grayish-brown sparrow. Streaks on back, head, and buffy streaks on breast. White belly.
<b>Nest Site</b>	Generally nests in shrubs.	Nest surrounded by sedges often below a shrub, on low branches or slightly raised ground.
<b>Habitat</b>	Uses shrubby vegetation and willow thickets in wet meadows.	Prefers wet meadows with a dense, tall, herbaceous layer, intermixed with willows. Absent at lower elevations.
<b>Tips for a Healthy Habitat</b>	Restore floodplain function and retain and plant deciduous woody shrubs.	Restore floodplain function and use prescribed grazing to create a lush herbaceous layer.

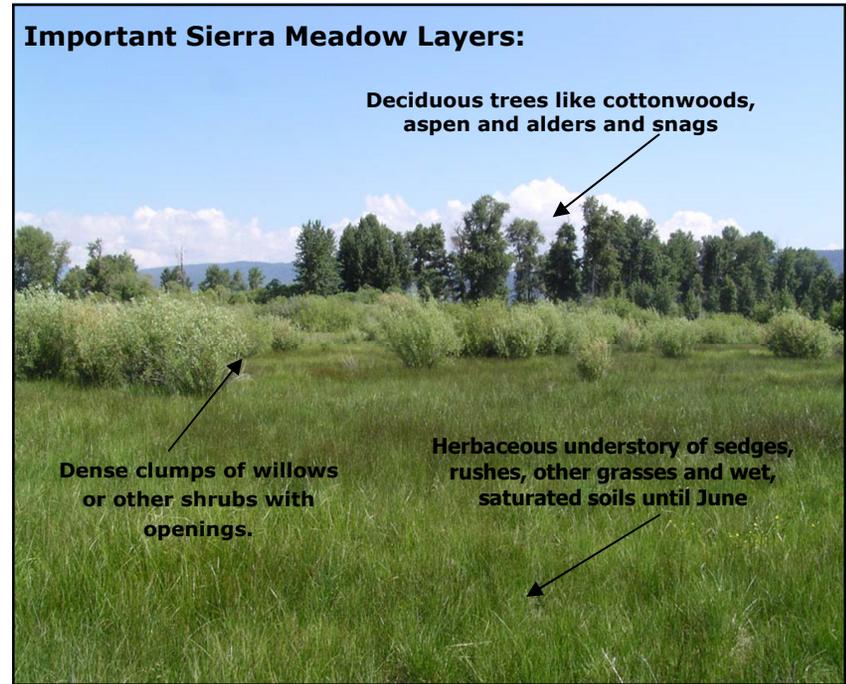


**Degraded meadows** have little bird life or forage for livestock.

**Vs**



**Restored meadows** can increase forage productivity and provide habitat for birds and other wildlife.



**Many meadows are in poor health in the Sierra.** Restoring ecological function to heavily degraded meadows is one of the best ways to safeguard our water supplies, protect wildlife and ensure that birds like the Yellow Warbler will continue to find the willow thickets they need to nest and raise their young.

## How you can help:

- Work with NRCS range and wildlife professionals to **develop a meadow grazing plan**. Use fencing to control livestock access to riparian areas, install off-channel watering facilities, and manage the timing, duration, and number of livestock in key areas in order to support meadow vegetation. Consider creating a fenced riparian pasture along the stream corridor to control grazing impacts.
- Use engineering practices that repair incised streams, **support and restore a high water table**, floodplain connectivity and saturated soils.
- **Retain and plant willows, sedges and rushes** to support soil structure, prevent erosion, and provide habitat for shrub and ground-nesting birds.
- **Retain and plant aspen, alders and cottonwoods** for canopy-nesting birds and for shaded fish habitat.
- **Leave fallen logs** to help slow stream flows, and **retain dead trees and dead limbs** for cavity-nesting birds.
- **Remove young conifers** that are encroaching on meadow edges and consider removing conifers that are shading deciduous trees such as aspen and cottonwood.

**Contact your local NRCS office for technical and/or financial assistance to help restore Sierra mountain meadows**