# GUIDANCE FOR LOCAL OR REGIONAL GRAZING PLANS: Recommendations and Best Management Practices for Developing and Implementing Prescribed Grazing Plans

[**California Senate Bill (SB) 675: Prescribed grazing: local assistance grant program: Wildfire and Forest Resilience Task Force (2023-2024)**](https://legiscan.com/CA/text/SB675/id/2829536)[[1]](#footnote-2) directs the Range Management Advisory Committee (RMAC) to develop guidance for local or regional grazing plans that include prescribed grazing as a tool for vegetation management. These recommendations are to address the nine (9) specific topics which follow using information provided by Department of Fish and Wildlife personnel, fire ecologists with expertise in the full range of California's vegetation communities, and University of California Cooperative Extension Livestock and Natural resources Advisors and Specialists, as well as input from a diverse array of California stakeholders representing public agencies, private industry, conservation organizations, non-profits, and the public.

To further increase the utility of this document, the RMAC will also, as time and resources permit, develop information on potential funding sources, and information on navigating California Environmental Quality Act (CEQA) compliance pathways, where required.

**‘Prescribed Grazing**’ is defined in statute ([**California Public Resources Code [PRC] § 4004.5**](https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?sectionNum=4004.5&lawCode=PRC)[[2]](#footnote-3)) as the lawful application of grazing by a specific kind of livestock at a determined season, duration, and intensity to accomplish defined vegetation or conservation goals, including reducing the risk of wildfire by reducing fuel loads, controlling undesirable or invasive plants, and promoting biodiversity and habitat for special status species. Prescribed grazing may involve any kinds of grazing animals that can be managed effectively for the purpose. In the United States, cattle, goats, and sheep are the most commonly used.

## (1) Best practices for identifying and selecting priority areas for prescribed grazing.

A thorough understanding of existing environmental factors supports more effective site selection, and these factors must be considered when selecting and prioritizing areas for prescribed grazing. A site evaluation should document and assess the condition of natural resources and existing infrastructure and identify needs prior to implementation of a grazing plan. Site evaluations should at least include documentation of habitat types and vegetation communities, soil characteristics, slope, sensitive resources, and waterbodies. The State Lands’ Grazing Packet (RMAC 2025) provides a Management Action Plan (MAP) template which covers the development of grazing management plans, and Section 2.0 provides a thorough description of the various resources that should be assessed prior to or as part of the development of a grazing plan.

Areas that may benefit from prescribed grazing can often be identified by the presence of noxious weeds, toxic plants, signs of overuse by wildlife or livestock, and other ecological stressors (Burrows et al. 2015). Incorporating management goals that address fine fuels is an important component of overall site management and requires monitoring outcomes around vegetation biomass and structure to assess if grazing as prescribed is effective at reducing or limiting the build-up of highly flammable fine fuels, which may reduce wildfire risk and support safer and more effective emergency response (Burrows et al. 2015).

If not carefully planned and managed, grazing may have significant negative impacts on environmental and cultural resources. Factors in a site evaluation that warrant further discussion follow below:

### Sensitive Resources

Sensitive resources can include riparian areas, wetlands, surface waters, sensitive plant communities, wildlife habitat, cultural/historical resources, and highly erodible soils.

Livestock, especially when concentrated in a particular area for extended periods or in dense herd sizes , can trample riparian areas, compact soils, increase erosion and sedimentation in nearby water bodies, and introduce excess nutrients and pathogens. This degradation can impair water quality, reduce aquatic habitat, and harm native fish and amphibian populations (George et al. 2011).Other wildlife habitats may also be disturbed through the alteration of vegetation structure and abundance, associated noise, and physical presence of livestock and managers. Some ground-nesting birds, small mammals, and native pollinators may be particularly vulnerable if livestock disturb nests or reduce the diversity and cover of plants that provide food and shelter (National Research Council 2002).

Grazing should consider culturally sensitive resources and incorporate site-specific planning to avoid damaging areas of archaeological, spiritual, or historical importance to indigenous communities and those communities with ancestral ties to the land (Donahue 1999).

Desirable vegetation, particularly native perennial grasses and forbs, can suffer if grazing intensity, timing, or frequency is not aligned with ecological needs. Overgrazing (i.e., grazing of a plant before it has fully recovered from a previous grazing) can shift plant communities toward dominance by invasive or unpalatable species, diminishing ecosystem function and forage quality (Bartolome et al. 2014). Properly managed grazing can be a tool to support and promote native plant recovery, enhance biodiversity, and maintain ecosystem balance. Achieving such outcomes requires careful monitoring and adaptive management strategies (Bartolome et al. 2014).

### Infrastructure

Describing and addressing the current state of infrastructure ensures that prescribed grazing objectives—such as improving forage utilization, enhancing native plant communities, and protecting sensitive ecological areas—are achievable and sustainable over time. It also facilitates adaptive management, allowing landowners to prioritize upgrades or repairs that support both ecological goals and livestock productivity. Therefore, it is essential to evaluate and document the condition of existing infrastructure within the area to be grazed.

Infrastructure includes roads, established trails, watering points, watercourse crossings, water tanks, wells, and permanent fencing, all of which may serve as the backbone of an effective grazing management plan. The placement and condition of infrastructure components directly influence livestock distribution, forage use, animal health, and environmental outcomes (Teague et al. 2013).

Water points, for instance, are critical in influencing livestock movement and concentration patterns. Poorly placed or malfunctioning water systems can lead to overgrazing near water sources and underutilization of forage in more remote areas (Gerrish 2004). Ensuring that water infrastructure is operational, evenly distributed, and accessible helps achieve more uniform grazing pressure—often a goal of prescribed grazing (NRCS 2023).

Roads and access routes are vital for transporting equipment and livestock, checking livestock, and managing livestock placement and grazing schedules. Deteriorated or eroded roads can hinder management efforts and increase the risk of environmental damage, such as sediment delivery into nearby waterways. Additionally, roads in disrepair may limit emergency access or delay movement of livestock, reducing the ability of grazing managers to identify and respond to changes and needs to achieve goals of the grazing plan (Clary & Leininger 2000).

Fencing—whether permanent or temporary—must be evaluated for its ability to contain livestock and create appropriate grazing units. Fences that are broken, poorly maintained, or improperly placed can compromise the any grazing system, allowing livestock to return to previously grazed areas before adequate plant recovery, leading to overgrazing and long-term degradation of vegetation and other resources (Teague et al. 2013). In fire-prone landscapes, it is also advisable to consider wildfire-friendly fencing designs, such as using metal posts or non-flammable materials to reduce potential hazards during fire events.

### Evaluating Landscape

When planning a prescribed grazing project, careful consideration of project size and the quantity and type of vegetation to be removed is essential to ensure both ecological effectiveness and operational efficiency. These factors influence decisions such as the number and type of livestock needed, the duration and timing of grazing periods, and the suitability of the landscape for rotational or targeted grazing.

Larger landscapes may benefit from multi-species or sequential grazing strategies that can effectively manage vegetation structure while minimizing overgrazing. For example, goats are particularly effective for reducing woody and shrubby biomass, while cattle and sheep may be more appropriate for managing grasses and herbaceous cover (Hart et al., 1993; USDA NRCS, 2023). The spatial scale of the project also affects infrastructure needs—such as fencing, water access, and herding labor—and determines how much of the area can be grazed within a given timeframe without compromising plant recovery or soil health.

Similarly, the amount and type of vegetation targeted for removal directly affects stocking rates and grazing intensity. Heavier fuel loads or dense stands of invasive annual grasses, such as *Bromus diandrus* (ripgut brome) or *Avena fatua* (wild oats), may require more intensive, short-duration grazing to reduce biomass before seed set, a critical window for disrupting invasive species cycles (DiTomaso et al., 2017). Conversely, lightly vegetated areas or landscapes dominated by sensitive native species may require lighter grazing or seasonal exclusion to avoid degradation.

Understanding these variables helps determine the optimal location and scale of prescribed grazing within a broader landscape management strategy. For instance, smaller, targeted grazing units can be strategically placed in fuel break zones, near critical infrastructure, or around high-value habitat to meet specific conservation or fire mitigation goals (Launchbaugh & Walker, 2006). In contrast, broadscale rangeland restoration may demand a more flexible, adaptive grazing system that considers multiple paddocks and longer-term monitoring.

Ultimately, aligning project size and vegetation conditions with livestock management capabilities ensures that prescribed grazing supports both ecological restoration and landowner objectives. This balance is key to long-term sustainability and the resilience of rangeland ecosystems.

### Understanding Forages

When assessing whether an area is suitable for prescribed grazing, it’s important to first identify the type of forage present and how it responds to grazing pressure. For instance, tall-growing perennial grasses—whether native or introduced—tend to store much of their energy reserves in their above-ground stems and leaves (Ball et al., 2001). As a result, they are more susceptible to damage from intense or frequent grazing, especially if grazed too low. In contrast, shorter or low-growing grasses, including many native bunchgrasses and some annual species, often store more energy below ground, making them generally more resilient to grazing. Understanding the growth form (short vs. tall) and life-cycle (annual vs. perennial) of the dominant forage species can help determine the timing, duration, and intensity of grazing that will support plant recovery and long-term rangeland health (Ball et al., 2001). Repeated defoliation of these taller grasses significantly reduces leaf surface area—the main site of energy production through photosynthesis—ultimately impairing root development and plant recovery. Although native forage grasses also store energy above ground, they tend to be more tolerant if managed properly (Ball et al., 2001).

### Vegetation Characteristics

#### Identifying Vegetation for Grazing

Identifying the plant species present in a grazing area is a critical first step in selecting appropriate livestock and developing an effective grazing plan. A thorough evaluation of vegetation allows land managers to distinguish between toxic and non-toxic species—an essential measure to protect animal health and ensure the success of prescribed herbivory. Understanding the species composition also helps tailor grazing strategies, as some plants are more palatable or nutritious to certain livestock, depending on the season. Without this foundational knowledge, prescribed grazing efforts may be ineffective or even harmful to livestock.

#### Vegetation Structure

In addition to identifying plant species, it is essential to evaluate the height and abundance of available forage. These factors influence which animals are best suited for the area, as different species have varying dietary needs and physical capabilities. In addition to choosing livestock, note that animals have their own dietary preferences;

#### Grazing for Fire Prevention

Regions of California identified as fire-prone have increasingly focused on fuels reduction management to decrease the presence of excess vegetation, thereby reducing the severity and spread of wildfires (Nader et al., 2007). Grazing in these areas is effective in minimizing flame height, fire intensity, and the risk of fire spread. CAL FIRE continues to implement fuels-reduction projects across California’s fire-prone regions to reduce wildfire behavior and severity. These efforts focus on creating breaks in fuel continuity to slow fire spread and decrease intensity, ultimately helping to protect both communities and natural resources.   
Research by McBride and Russell highlighted that coyote brush (*Baccharis pilularis*) tends to dominate large, ungrazed landscapes. Notably, in the Berkeley Hills, the researchers observed a significant increase in coyote brush density following a 51-year suspension of grazing. This suggests that the absence of grazing can contribute to the proliferation of fire-prone shrub species.

### Regional Input for Best Practice Management #1:

* *Sierra Cascade-Inyo (SCI):*
* *Northern:*
* *Coastal Inland:*
* *Southern:*

## (2) Best practices for developing project plans and metrics for applying, monitoring, and evaluating the effectiveness and impacts of prescribed grazing

### Consideration of the project size and amount of vegetation needed to be removed will help determine ideal locations for prescribed grazing.

When planning a prescribed grazing project, one of the first steps is understanding how the size of the land and the amount of vegetation intended to be removed will affect where and how grazing should take place. Simply putting livestock on a piece of land without assessing these factors can lead to overgrazing, poor forage recovery, or missed opportunities to improve pasture health.

Project size matters because it directly impacts how long livestock can stay in one area, how often pastures can rest, and what kind of infrastructure (like fencing or water systems) will be needed. For example, larger parcels may support longer rotations with fewer repeated grazing events, which is important for forage recovery and soil protection. On smaller parcels, grazing may need to be more intensive but carefully timed to avoid damaging desirable vegetation (NRCS, 2023).

The amount and type of vegetation also plays a key role. If the goal is to reduce a large amount of dense, fast-growing invasive grasses or brush, then higher-intensity grazing in short bursts may be effective—especially with goats or mixed-species herds. However, if your rangeland includes native perennial grasses or sensitive habitat areas, you'll want to reduce grazing intensity and increase rest periods to allow regrowth and maintain ecological balance (UCANR, 2016).

By evaluating both the scale of the land and the vegetation load, farmers can identify which areas are best suited for grazing now, and which may need more preparation (e.g., fencing, water access) or deferred grazing to protect plant health. Using tools like pasture maps, forage biomass estimates, and even simple visual assessments can help with this planning. Over time, matching livestock numbers and grazing pressure to what your land can support will improve pasture condition, reduce erosion, and contribute to long-term sustainability.

### Residual Dry Matter (RDM) and Grazing Management

Residual Dry Matter (RDM) refers to the remaining plant material, either standing or on the ground, at the beginning of the growing season (Bartolome et al., 2002). Annual measurements of RDM provide insight into the previous grazing season’s impact and help determine appropriate grazing levels for the upcoming season. RDM shows the combined effects of the previous season’s forage production and consumption by all types of livestock (Bartolome et al., 2002).

Regional guidelines have been created to aid in rangeland management for livestock producers and range managers. The guidelines are intended to help managers assess the proper level of herbaceous forage use (Bartolome et al. 2002). Within this assessment, environmental variations are considered, resulting in various RDM guideline suggestions.

Given the limited information derived from research on RDM, the amount of fall (autumn) RDM significantly influenced forage productivity and composition at a high rain-fall location, Hopland Field Station site (Heady 1956). The same series of experiments was intended to determine the effects of RDM, and its representation of heavy to moderate grazing on annual rangelands on different sites (Bartolome et al. 2002). This series of studies, lasting from three to five years, showed that residual dry matter had a significant influence on rangeland productivity in areas that had excessive annual rainfall (15 inches), all yearly weather variations considered (Bartolome et al. 2002). However, this experiment did not completely represent the annual range region since they were focused on flat ground and lacked woody plant cover; additional experiments in the Sierra Foothills suggested a larger range of 600 to 1,200 lb/acre of RDM enhances forage production and species richness (Bartolome and Betts 2001).

Regional guidelines for minimum allowable RDM were initially developed by researchers around 1980, however their data was very limited at the time of their writing. As an effort to expand on these initial regional guidelines, a scorecard was developed by combining site characteristics such as rainfall, canopy cover, and slope, that effect animal use to quickly estimate grazing capacity (Bartolome et al. 2002). This approach can provide useful estimates of grazing capacity and is typically paired with geographic information systems (GIS) to develop mapping of forage availability (Standiford et al. 1999).

Another method for RDM assessment and measurement is clipping a plot. Though this technique may vary between organizations, the intention is to accurately measure RDM from a representative plot that reflects the overall conditions of the rangeland. Detailed instructions for clipping a plot can be found from articles derived by the University of California, Division of Agriculture and Natural Resources (Bartolome et al. 2002).

RDM evaluations are typically conducted in the fall and reflect a combination of the prior season’s forage production, natural breakdown over the summer, and consumption by grazing animals (Bartolome et.al., 2002). This residual material plays a critical role in influencing species composition and forage production for the next season.

### Livestock Selection Guidelines

Different species of grazing animals exhibit distinct foraging behaviors, dietary needs, and habitat preferences. When selecting livestock for a specific area, it is important to consider not only the vegetation type, but also factors such as topography and the presence of potential predators in the surrounding environment (.

Grazing animals are generally categorized into three classes: grazers, browsers, and intermediate feeders (Bartolome et.al., 2002).Grazers, such as cattle, elk, and horses, primarily consume grasses and grass-like plants, preferring areas with abundant ground-level forage. While browsers, which include goats, tend to feed at eye level and prefer shrubs and forbs. Although they favor woody plants, they may consume grasses when available. However, they typically avoid arid, dry areas. Lastly, intermediate feeders like sheep, have flexible diets with few strong forage preferences, allowing them to graze on a wide variety of plant types.

* + Proper livestock selection aligned with forage availability, landscape characteristics, and animal behavior improves grazing efficiency and supports land management goals.

The table below shows a succinct chart of different livestock, diet and forage behavior.

|  |  |  |
| --- | --- | --- |
| *Type of Livestock* | *Diet* | *Forage Behavior* |
| Cattle | *Grazers* - Grasses and grass-like plants | Selective; ideal for large areas |
| Goats | *Browser* – Shrubs and forbs | Access hard-to-reach vegetation. Great for brush reduction and invasive shrub control. |
| *Sheep* | *Intermediate feeder – Grasses and forbs* | Can graze more closely to the ground; ideal for targeted weed control. |
| *Horses* | *Grazers* – prefer high quality grasses | Typically used in mixed-species grazing, due to overgrazing favored areas. |
| *Other Grazers* | Deer, Elk, and Bison | Typically considered in mixed-species grazing systems. |

#### Table 1: Livestock, diet, and forage behavior

### Visual Assessment of Forages

Visual assessment of forage is a critical component when assigning livestock to pastures, paddocks, or other grazing areas. Each forage species has recommended start and end heights that serve as visual indicators for when to begin and end prescribed grazing. These height guidelines help landowners manage grazing to maintain plant health and productivity. The intensity of grazing—how much forage is removed—is another key factor and should align with land management goals. Typically, the start height is determined when a plant exceeds its average growth height, at which point it begins to lose palatability and nutritional value (.

End height recommendations vary by species, but it is essential to remove livestock before plants are grazed too short. Grazing below the crown or root zone can severely damage plants, particularly during drought or dry periods, and significantly extend recovery time.

As such, forage height should be a priority consideration in prescribed grazing plans. It directly influences plant health, regrowth capacity, and forage quality. A general rule of thumb: taller (older) plants tend to be lower in nutritional quality than younger, actively growing plants.

The table below shows commonly measured plant characteristics:

|  |  |
| --- | --- |
| Plant Type | Characteristic to Measure |
| Grasses | Canopy cover, basal area, plant height, biomass, or utilization |
| Forbs | Canopy cover, density, or plant height |
| Shrubs | Canopy cover, density, or plant height |
| Canada thistle  Knapweeds  Leafy spurge | Rosette or stem density  Rosette or flower density  Stem density, canopy cover, or biomass |
| Downy brome | Plant density or biomass |

#### Table 2: Commonly measured plant characteristics

Targeted Grazing: a natural approach to vegetation management and landscape enhancement

*(Reprinted from Launchbaugh and Walker, 2006, pg. 44)*

### Buffer Zones and Environmentally Sensitive Areas

The identification of buffer zones and environmentally sensitive areas is a critical step in project planning—particularly when implementing practices like prescribed grazing. Buffer zones are transitional areas established between grazed lands and sensitive ecosystems, such as riparian zones, wetlands, endangered species habitats, or culturally significant sites. These zones serve to protect water quality, soil health, and biodiversity by minimizing direct disturbance from livestock activities (California Rangeland Conservation Coalition, 2007).

Riparian areas are particularly sensitive to erosion and nutrient loading, should be clearly delineated and often require exclusion or restricted access to livestock. Fencing off riparian areas to protect them as a vegetative buffer is the most desirable option. Water should be provided for grazing animals in the form of an on-site stock pond or a portable water source located outside of environmentally sensitive areas (California Board of Forestry and Fire Protection, 2021). According to the California Department of Fish and Wildlife (CDFW), maintaining vegetative buffers of appropriate width can significantly reduce sediment, nutrient runoff, and physical disturbance to waterways, benefiting aquatic and terrestrial species alike (CDFW, 2021)

If accelerated soil erosion is observed, grazing animals should be herded out of an area. Prescribed grazing should avoid occurring on saturated soils that are more vulnerable to compaction, erosion, and runoff. Precipitation patterns should be considered when planning timing of grazing (California Board of Forestry and Fire Protection, 2021).

In addition, habitats of special-status species, such as vernal pools or California red-legged frog breeding areas, must be identified early in the planning process. Grazing may still be compatible in some of these areas, but only under carefully timed and monitored conditions to avoid harm to flora and fauna (USFWS, 2017). Use of adaptive management strategies, such as rotational grazing schedules or temporary fencing, helps to balance vegetation goals with habitat protection.

### Climate Factors

Understanding the climate of the region is essential for developing an effective grazing plan. California’s grassland regions typically experience a Mediterranean climate—characterized by wet winters, warm, dry summers, and oceanic influences that moderate temperatures (Keeley, 2002). In these Mediterranean-type ecosystems, many native plant species benefit from managed grazing. Livestock help reduce the dominance of fast-growing, invasive annual grasses that appear each year, allowing native species to better compete and thrive (Keeley, 2002).

Mediterranean-type climates are localized in the coast, valley, and foothill regions of California. This climate supports much of the state’s native grasslands, chaparral, and oak woodlands, and is a key factor in rangeland and grazing management. As mentioned earlier, this climate type is characterized by wet winters, with majority of its precipitation occurring between November and March (Keeley, J.E., 2005) . Dry summers are another characteristic of this climate, with little to no rainfall, between spring and fall seasons. Lastly, irregular rainfall is common in these Mediterranean climates (Keeley, J.E., 2005). Mediterranean climates also have a distinct growing season; most native and annual plants germinate during the first rains, grow through winter (and sometimes spring), eventually dying or going dormant by the summer season (Bartolome et al. 2002).

### Landscape-Level Considerations

When developing a grazing plan, the layout of the landscape should be designed to maximize forage production across the rangeland. Three key environmental factors influence this: slope, aspect, and soil type (Keeley, J. E., 2005). To promote consistent and healthy forage growth, it’s ideal to ensure that paddocks within the rangeland do not vary significantly in these characteristics. However, some variation in forage production is expected due to natural differences in terrain and soil conditions.

If surface water sources exist on the land prior to paddock development, keep in mind that these areas are typically unsuitable for direct livestock use. In such cases, dedicated livestock watering systems must be installed. Planning the location of these water sources early in the layout process will help inform effective fencing design and livestock movement strategies.

Recommended “rule of thumb” for distance to off-stream drinking water options:

* Steep/rough= no more than ¼ -½ mile
* Rolling = no more than ⅜ -¾ mile
* Level = no more than ¾ - 1 mile

There are several types of livestock watering systems available, with the most common including automatic watering systems, solar-powered systems, and miraco tanks. Selecting the right system depends on the farm's infrastructure, livestock needs, and climate conditions.

RAT leads to determine most appropriate watering systems based on landscape design?

### Continuous Grazing and Prescribed Grazing

Continuous grazing allows livestock unrestricted access to rangeland without any rotation schedule. While simple to implement, this practice can lead to overgrazing and long-term environmental degradation due to the constant pressure on forage plants. Continuous or “rotational” grazing optimizes the timing, frequency, intensity, and selectivity of grazing (Bailey et al. 2019). The goal of rotational grazing differs from continuous grazing, in that the goal of continuous grazing is typically the production of livestock commodities (Bailey et al. 2019). Both methods of grazing ultimately intend to sustain healthy soils, flora, fauna, and water resources that can sustain natural ecological processes (Bailey et al. 2019).

In contrast to rotational grazing, prescribed grazinginvolves a planned schedule developed by landowners or land managers to regulate livestock movement and grazing duration. This method provides necessary rest periods for forage plants, which is essential for maintaining plant health and promoting regrowth (UMCD n.d.). Without adequate rest, overgrazing can occur, causing plants to be grazed down to their roots. This causes stress on the plants, forcing them to use more energy and resources to recover, and can ultimately reduce their vigor and persistence over time (UMCD n.d.).

Prescribed grazing supports long-term agricultural viability. Healthier pastures provide more consistent and nutritious forage for livestock, which translates to improved animal health, reduced feed costs, and greater productivity for ranchers. This, in turn, helps stabilize rural economies and contributes to the resilience of working lands (UMCD n.d.). Investing in programs that support prescribed grazing—through technical assistance, cost-sharing, or incentive payments—has the potential to reduce future restoration costs and emergency wildfire response expenditures.

### Recovery Periods

Recovery periods are a foundational component of effective prescribed grazing, especially in California's diverse and often drought-prone landscapes. A "recovery period" is the time allotted for grazed vegetation to regrow and restore its vigor before being grazed again. Inadequate recovery time can result in overgrazing, reduced plant health, soil erosion, and diminished forage production over time.

In California’s Mediterranean climate—characterized by cool, wet winters and hot, dry summers—timing is especially critical (Bartolome et al. 2002). The growing season typically occurs in late winter through spring, making this the optimal period for forage recovery. According to the USDA Natural Resources Conservation Service (NRCS), allowing plants to recover during the active growing season is essential for maintaining healthy root systems and ensuring sustainable forage yields (NRCS, 2017). Native perennial grasses, such as Stipa pulchra (purple needlegrass), require longer recovery periods than non-native annual grasses due to their slower regrowth rates.

There are several factors that should be considered when designing recovery periods:

* **Forage species:** Rangelands with various species will require different recovery time. For instance, perennials need more time to recover than fast-growing annuals.
* **Soil type and moisture availability**: Rangelands will vary in their soil type. With this, note that sandy or dry soils may delay regrowth of forages.
* **Previous grazing intensity:** Differences in grazing intensity from previous season will determine how long rangelands should rest for; heavily grazed areas will need extended rest.
* **Seasonal conditions:** Drought years require longer recovery periods.
* **Monitoring outcomes:** Adaptive management based on on-the-ground conditions ensures flexibility and effectiveness.

The University of California Division of Agriculture and Natural Resources (UCANR) recommends using adaptive grazing schedules that account for real-time forage conditions rather than rigid calendar dates. This helps protect both ecological function and livestock productivity (UCANR, 2016). In practice, recovery periods can range from 30 to 90 days or more, depending on these factors. Incorporating rotational or deferred grazing systems ensures that no single area is overused, allowing vegetation to maintain its resilience and ecological value—supporting biodiversity, soil health, and fuel load reduction (UCANR, 2016).

### Regional Input for Best Practice Management #2:

* *Sierra Cascade-Inyo (SCI):*
* *Northern:*
* *Coastal Inland:*
* *Southern:*

## (3) Best practices for using prescribed grazing to increase the diversity and abundance of native species and decrease the abundance of invasive species, including through adaptive management, exclusion areas, wildfire-friendly fencing, and monitoring.

California’s landscapes, shaped by a Mediterranean climate, support a mix of native perennial grasses, forbs, and shrubs, alongside a wide array of wildlife (Bartolome et al. 2002). However, invasive species, altered fire regimes, and land-use changes have degraded many of these ecosystems. Strategically managed grazing can help restore native plant communities and improve wildlife habitat by controlling invasive species, reducing excessive biomass, and promoting desirable vegetation growth.

### Align Grazing Timing with Native Plant Phenology

One of the most critical considerations is the timing of grazing. Grazing during the active growing period of invasive annual grasses (typically late winter to early spring) can reduce their seed production while minimizing damage to slower-growing native perennials (Bartolome et al., 2014). Delaying grazing until after native plants have set seed allows for their regeneration, supporting long-term population resilience.

### Manage Stocking Rates and Duration to Prevent Overgrazing

The intensity and duration of grazing must be closely monitored. Overgrazing can damage native species and compact soils, whereas moderate, well-distributed grazing can open up space for native seedlings to establish. Livestock should be moved before utilization exceeds 40–50% of desirable forage species (George et al., 2011).

### Use Adaptive Management and Monitoring

Prescribed grazing is not a one-size-fits-all tool. Site conditions, weather, species composition, and land use history require adaptive management supported by robust monitoring. Establishing photo points, vegetation transects, and grazing logs helps track changes and inform future adjustments (USDA NRCS, 2023). Adaptive monitoring is the remodeled version of monitoring programs that consider environmental and socioeconomic conditions, and improved monitoring methods and tools (McCord, Pilliod 2022).

Recommendation for adding specific grazing log suggestions to strengthen understanding of when adaptive management is needed:

* Date in / date out
* Ground cover / bare ground notes
* Riparian or sensitive area status
* Soil condition
* Invasive species observations
* Management actions taken
* Next steps / recommendations

### Incorporate Exclusion Areas and Buffer Zones

To preserve sensitive ecological features, it's best practice to implement exclusion zones around riparian areas, cultural sites, and rare plant communities. Temporary fencing or herding techniques can keep livestock out of these zones, allowing recovery and protecting biodiversity (Barry et al., 2021). Excluding livestock from riparian areas is one of the most effective ways to prevent direct fecal contamination, streambank erosion, and nutrient loading into surface waters.

### Prioritize Wildlife-Friendly Infrastructure

Installing wildlife-friendly fencing supports safe movement for species like deer, elk, and pronghorn. Infrastructure should accommodate both grazing needs and habitat connectivity (California Department of Fish and Wildlife, 2018).

### Integrate Multiple Species or Targeted Grazers

Utilizing different livestock species can enhance management. For instance, goats are effective at reducing woody vegetation and invasive shrubs, while cattle or sheep may be better suited for grass-dominated sites. Mixed grazing can mimic the diversity of natural herbivore guilds and improve outcomes (Launchbaugh & Walker, 2006).

When applied thoughtfully, prescribed grazing offers a scalable, cost-effective method to manage California’s rangelands for both biodiversity and productivity. To maximize benefits, land managers should prioritize adaptive planning, ecological monitoring, and stakeholder collaboration. Supporting these practices with policy incentives, technical assistance, and research partnerships will be essential to scale up positive outcomes.

### Regional input for Best Management Practice #3:

* *Northern:*
* *Sierra-Cascade Inyo (SCI):*
* *Coastal Inland:*
* *Southern:*

## (4) Recommendation for securing sufficient lead resources, including forage, needed to pasture livestock when not engaged in a prescribed grazing project.

Securing sufficient land and resources to support livestock when not actively engaged in prescribed grazing projects is critical to the success and sustainability of grazing-based vegetation management programs. This ensures animal health, reduces overuse of project sites, and supports long-term ecological and economic viability (California Rangeland Trust 2022). Below is an elaboration of key considerations, with recommendations grounded in peer-reviewed research and agency guidance.

### Recommendations for Securing Sufficient Land and Resources to Support Livestock Outside Prescribed Grazing Projects

#### 1. Establish Dedicated Base Pasture or Holding Areas

Livestock used in prescribed grazing programs require off-site pasture when not performing vegetation management work. Required base areas include:

* Sufficient lot size to prevent overstocking.
* Lots must be equipped with adequate forage, water, fencing, and shelter.
* Managed with rotational practices to avoid soil degradation or invasive species spread.

According to the USDA Natural Resources Conservation Service (NRCS), maintaining dedicated pasture ensures animal welfare and preserves the ecological integrity of both base and project lands (USDA NRCS, 2023).

*NRCS Prescribed Grazing Conservation Practice Standard (528)* emphasizes that livestock must have access to alternative grazing units or confinement areas during rest periods or off-contract times.

Livestock rest areas - [Prescribed Grazing on Pasturelands](https://uknowledge.uky.edu/cgi/viewcontent.cgi?article=1039&context=bae_facpub)

#### 2. Secure Agreements with Public and Private Landowners

In California and other western states, cooperative grazing agreements with land trusts, public agencies, or private landowners can provide seasonal pasture when prescribed grazing isn’t occurring. Such partnerships can benefit both parties:

* Landowners receive fuel reduction or maintenance services
* Grazers gain access to additional forage

Programs like the California Rangeland Trust and UC Cooperative Extension offer tools to help graziers formalize such arrangements (Rangeland Trust, 2022; UCANR, 2020).

#### 3. Integrate Forage Planning and Drought Resilience Strategies

Forage availability can vary due to climate, seasonal growth, and drought (. Grazers should:

* Develop a forage budget that estimates livestock needs throughout the year
* Maintain a drought contingency plan (e.g., supplemental feeding, destocking, leasing alternative land)

Forage planning models like those promoted by UCANR’s Ranch Planning resources support these decisions (George et al., 2001).

*George et al. (2001)* recommend that ranchers identify at least 1.5 to 2 acres per animal unit for seasonal grazing in California's Mediterranean rangelands, adjusting for forage quality and precipitation.

#### 4. Consider Infrastructure and Accessibility

Sites used for holding or base pasture must be equipped with:

* Reliable water access (e.g., troughs, stock ponds, natural sources with appropriate measures in place to prevent bacterial contamination, sedimentation and nutrient loading)
* Perimeter fencing for containment and predator control
* Shelter or shade depending on season and species
* Vehicle access for hauling and veterinary support

If grazing contractors are mobile (e.g., targeted goat herders), portable infrastructure like solar-powered electric fencing, mobile troughs, and herder camps may be needed.

#### 5. Explore Incentives and Cost-Sharing Programs

Federal and state conservation programs may help graziers acquire or improve base pasture infrastructure. Examples include:

* NRCS’s Environmental Quality Incentives Program (EQIP)
* California Department of Food and Agriculture (CDFA)Healthy Soils Program
* USDA Farm Service Agency (FSA) Conservation Reserve Enhancement Program (CREP)

### Regional Input for Best Practice Management #4:

* *Sierra Cascade-Inyo (SCI):*
* *Northern:*
* *Coastal Inland:*
* *Southern:*

## (5) Best practices for building community support and engaging with public and private landowners to improve the implementation and outcomes of a prescribed grazing plan.

### Collaborative Planning and Partnerships

* 1. With the Regional Action Teams (RATs) derived from the [California Wildfire regions](https://wildfiretaskforce.org/regional-resource-kits-page/) form regional plans to prioritize areas for grazing and coordinate efforts, increasing the scale and impact of projects.

### Education and Outreach

#### Success Stories of Prescribed Grazing:

California resident, Marie Hoff, shared her story about her experience evacuating her home in 2017 due to a wildfire. Hoff explains how she’d never been in that situation before, and wasn’t sure what to do next, “In 2017 I evacuated my home in Northern California from a wildfire for the first time in my life. I was 34 years old, had never evacuated from a fire before, and was not aware of anyone I knew who had either, despite the entirety of those 34 years taking place in California...” (Hoff, 2020). Hoff goes onto explain her newly founded drive for fire reduction efforts.

Just like Hoff, most Californians worry about the safety of their homes, property, and belongings because of the recurring wildfires. As an effort to spread community awareness, Hoff suggests prescribed grazing as a solution to decreasing the abundance of unwanted vegetation, ultimately decreasing the likelihood and severity of wildfires (Hoff, 2020). Alongside the apparent decrease in wildfire spread, the California native includes the other benefits prescribed grazing provides. For instance, she suggests prescribed grazing is the most climate appropriate method, as grazing decreases more carbon than it emits (Hoff, 2020). More suggestions related to food and fiber production, economical boosts, and our future climate are also mentioned.

Furthermore, California residents like Marie Hoff experience the recurring threat of wildfires and their devastating impacts. Sharing relatable stories such as Hoff’s can resonate with many Californians, prompting greater interest in learning about the benefits of prescribed grazing. By increasing public awareness and understanding of its role in fire mitigation, support for implementing prescribed grazing as a proactive fire-reduction strategy may grow.

### Workshops and Demonstration Projects

* + 1. [Swanton Pacific Ranch's Fuels and Vegetation Education (FAVE) program](https://spranch.calpoly.edu/fuels) educated professionals on wildfire fuel mitigation and vegetation management to accelerate efforts for a more sustainable and fire-resilient California landscape.

### Addressing Landowner Concerns

* 1. Listen to landowner needs and tailor grazing plans to accommodate other land uses (e.g., recreation, wildlife habitat)
  2. Provide clear information on liability, fencing, water access, and animal management to reduce perceived risks.
  3. Develop agreements or contracts that outline roles, responsibilities, and expectations for all parties.
     1. [STATE LANDS GRAZING PACKET: Guidebook, including Instructions for Use of the Grazing Agreement and Management Action Plan (MAP) Templates](https://bof.fire.ca.gov/media/vvmphrwv/state-lands-grazing-packet-final-2025-05.pdf)

### Engage Community Champions and Grazing Advocates

* 1. Partner with well-regarded landowners, local ranchers, or targeted grazing professionals (e.g., **Cole Bush**, **Mark Gutierrez**) to act as liaisons.
     1. Match.Graze [California Grazing Exchange – Connecting livestock producers & those with available cropland or forage to graze](https://matchgraze.com/)
     2. [Member Directory](https://californiawoolgrowers.org/industry-contacts/member-directory/) of California Woolgrowers association
     3. [Find a goat herd for hire](https://www.goatsonthego.com/affiliate-directory)

### Host Demonstration Projects and Field Days

Ideas include inviting stakeholders and other relevant parties to observe grazing in action i.e see animal behavior, fuel reduction, and habitat restoration outcomes firsthand.

### Regional Input for Best Management Practice #5:

* *Northern:*
* *Sierra-Cascade Inyo (SCI):*
* *Coastal Inland:*
* *Southern:*

## (6) Methods to identify opportunities to house and maintain shared grazing infrastructure

##### You said:

Write a one pager that describes Senate Bill 675 , Number 6 point, about Methods to identify opportunities to house and maintain shared grazing infrastructure. Methods to identify opportunities to house and maintain shared grazing infrastructure. A list of suggested start up tools has been created and the websites where to find these tools.

###### **ChatGPT said:**

Here’s a concise, professional **one-pager draft** you could use to describe Senate Bill 675 (SB 675), focusing on Point 6:

### Senate Bill 675 – Shared Grazing Infrastructure (Point 6)

**Overview**  
A key provision of the bill is **Point 6: Methods to identify opportunities to house and maintain shared grazing infrastructure.**

**Purpose of Point 6**  
Shared grazing infrastructure—such as portable fencing, livestock water systems, corrals, and handling equipment—is critical to the success of prescribed grazing projects. However, individual landowners and producers often face high start-up costs that limit their ability to implement or expand grazing as a land management tool. Point 6 addresses this challenge by encouraging the identification and coordination of opportunities to **develop, house, and maintain shared infrastructure** that can be accessed by multiple producers, agencies, or community organizations.

**Methods to Identify Opportunities1111111111**

1. **Inventory Local Resources** – Survey existing grazing infrastructure available through Resource Conservation Districts (RCDs), UC Cooperative Extension, County Agricultural Departments, and producer groups.
2. **Regional Partnerships** – Establish cooperative agreements among landowners, ranchers, land trusts, and agencies to share infrastructure resources across properties.
3. **Centralized Equipment Hubs** – Develop storage and management facilities (“tool libraries”) for prescribed grazing equipment, maintained by local agencies or producer networks.
4. **Funding and Incentives** – Leverage grants, cost-share programs, and community investment funds to purchase and sustain shared infrastructure.
5. **Training and Access Systems** – Create clear guidelines, reservation systems, and training programs for safe use of shared equipment.
6. **Monitoring and Maintenance Plans** – Assign responsibility for equipment upkeep to ensure long-term functionality and equitable use.

**Suggested Start-Up Tools**  
 A preliminary list of resources has been identified to support infrastructure development and coordination:

* **Prescribed Grazing Equipment Guide** – <https://acrobat.adobe.com/id/urn:aaid:sc:VA6C2:9c64bf97-f463-4df5-adb7-845b7a30d6dc>
* **California Cattlemen’s Association** – <https://calcattlemen.org>
* **California Woolgrowers Association -** <https://californiawoolgrowers.org/>

**Conclusion**  
Point 6 of SB 675 is designed to reduce barriers to prescribed grazing by creating cost-effective, community-based solutions for infrastructure. By coordinating shared resources, California can expand grazing as a sustainable land management practice, increase wildfire resilience, and strengthen agricultural communities.

### Regional input for Best Management Practice #6:

* *Northern:*
* *Sierra-Cascade Inyo (SCI):*
* *Coastal Inland:*
* *Southern:*

## (7) Best practice to use prescribed grazing to support and enhance prescribed burns and other vegetation management projects.

### Integrate Grazing and Burning in Planning

California wildfires are directly linked to three factors: topography, weather, and vegetation (Schohr et al. 2021). Though factors like topography and weather are uncontrollable, vegetation is manageable through prescribed grazing and prescribed fire. With this, fire frequency and intensity can be significantly reduced by decreasing the continuity of landscape (Schohr et al. 2021).

Additionally, prescribed burns decrease the intensity of wildfires, because it safely eliminates flammable material such as under brush, dead wood, pine needles, etc., while decreasing the pace of wildfire spread.

### Managing Residual Dry Matter (RDM) Levels

Understanding Residual Dry Matter (RDM) levels and how to measure them is an essential component in developing grazing plans. As mentioned earlier, RDM is the remaining amount of dry plant material on the ground from the previous grazing season (Bartolome et al. 2002). Regional guidelines have been created to aid in rangeland management for livestock producers and range managers. The guidelines are intended to help managers assess the proper level of herbaceous forage use (Bartolome et al. 2002). Within this assessment, environmental variations are considered, resulting in various RDM guideline suggestions.

### Select Appropriate Livestock and Stocking Rates

Select appropriate livestock and stocking rates based on vegetation type and management goals. Goats are generally effective for shrub and woody fuel reduction, while cattle are generally efficient at consuming fine herbaceous fuels (Barry & Huntsinger 2021; DiTomaso 2000; Barry 2015). Adjust stocking rates and duration to avoid overgrazing, maintain soil health, and ensure sufficient fuel reduction without damaging desirable plant communities (Barry 2015; Barry & Huntsinger 2021).

A livestock selection table is provided under Best Management Practice 1; refer to this for more information.

### Synchronize Grazing with Burn Timing

When implementing grazing before burning, use livestock to reduce fine fuels in advance of prescribed burns, especially in areas where high fuel loads could lead to uncontrollable fire behavior. Strategic timing and intensity of grazing prior to burning can help ensure that fuel loads are at optimal levels for safe and effective prescribed fire application (D’Antonio et al, 2002).

If grazing is decided for after burning, implement grazing post-burn to maintain reduced fuel loads and prevent rapid regrowth of invasive species or excessive biomass accumulation. Patch-burn grazing (PBG) is a grassland management practice that mimics the natural interplay of fire and grazing. Grazers, such as cattle, preferentially feed in recently burned patches, leaving unburned areas to accumulate vegetation, which then serves as fuel for future burns. This creates a dynamic, shifting mosaic of burned and unburned, grazed and ungrazed patches, increasing habitat heterogeneity—variability in vegetation structure, composition, and density—which is fundamental to supporting biological diversity. (*Patch-Burn Grazing (U.S. National Park Service)*, n.d.)

### Address Site-Specific Considerations

Addressing site-specific considerations to tailor practices to local ecosystems, sensitive areas, and management objectives is essential in the efficacy and efficiency of grazing planning. Consider soil type, slope, climate, and proximity to communities or critical infrastructure when planning grazing and burning (Stuth, J.W. 1996). Engaging stakeholders such as landowners, agencies, and fire professionals in planning and implementation will ensure safety, compliance, and shared objectives.

### Monitor, Evaluate, and Adapt

* Implement robust monitoring protocols for vegetation, fuel loads, soil health, and ecosystem response. Use data to adjust grazing and burning strategies as needed.
* Document outcomes and adapt management based on monitoring results, ecological feedback, and changing site conditions.

### Regional Input for Best Management Practice #7:

* *Northern:*
* *Sierra-Cascade Inyo:*
* *Coastal Inland:*
* *Southern:*

## (8) Best practices for use of prescribe grazing for reducing wildfire risk in and near fire-threatened communities, as that term is defined in paragraph (2) subdivision (b) of Section 4124.5\*.

\* For purposes of this subdivision, “fire-threatened communities” means those communities in high and very high fire hazard severity zones, identified by the State Fire Marshal pursuant to Section 51178 of the Government Code, or Article 9 (commencing with Section 4201) of this code, or on the “Fire Risk Rection Community” list maintained by the board pursuant to Section 4290.1.

* <https://calfire.box.com/s/kmvz8h4nngyzcl6walqxfnz34g01jtas>

Written by Austin Rutherford from the University of Arizona, [Targeted Grazing | Rangelands Gateway](https://rangelandsgateway.org/topics/maintaining-improving-rangelands/targeted-grazing) provides information on targeted grazing, which has been used in urban-wildland interfaces to help protect cities from the threat of wildfire.

### Strategic Planning and Community Engagement

Some community engagement and strategic planning can begin by working with local fire agencies, landowners, and community organizations to identify priority areas for fuel reduction near homes, roads, and infrastructure in the wildland-urban interface (WUI). These organizations can help develop explicit goals for fuel load reduction, defensible space, and ecosystem protection.

* 1. Integration with [Community Wildfire Preparedness Plan (CWPP)](https://osfm.fire.ca.gov/what-we-do/community-wildfire-preparedness-and-mitigation/california-cwpp-toolkit) : Align prescribed grazing projects with local CWPPs and regional wildfire prevention strategies to maximize effectiveness and secure community buy-in.

### Targeted Grazing Implementation

To begin the implementation Choose the approprtoiate species for the vegetation type goats for shrubs and ladder fuels, sheep or cattle for fine grasses.

Adjust animal numbers and grazing duration to achieve desired residual dry matter (RDM) targets before peak fire season, typically aiming for RDM levels that minimize fire spread and intensity.

Precision grazing by use fencing, herding, or virtual fencing to concentrate grazing in high-risk zones, such as around community perimeters, evacuation routes, and critical infrastructure. Note, permanent fencing has to be wildlife friendly. Resource [WildlifeFriendlyFences.pdf.](https://www.nrcs.usda.gov/sites/default/files/2022-09/WildlifeFriendlyFences.pdf)

* + 1. [Virtual fencing ‘game-changer’ for ranchers grazing cattle | UC Agriculture and Natural Resources](https://ucanr.edu/blog/green-blog/article/virtual-fencing-game-changer-ranchers-grazing-cattle)

### Contracting and Liability

* 1. Use detailed contracts that specify grazing objectives, animal care, timing, access, and liability, as recommended by the [2025 Prescribed Herbivory White Paper Update DRAFT](https://app.box.com/file/1807278138680?s=kmvz8h4nngyzcl6walqxfnz34g01jtas)
  2. Work with experienced targeted grazing contractors, such as those recommended by the California Wool Growers Association’s Targeted Grazing Committee, to ensure best practices and animal welfare standards are met.
     1. [Contract Grazers | UC Agriculture and Natural Resources](https://ucanr.edu/site/central-sierra-livestock-natural-resources/contract-grazers)

### Risk Assessment

* 1. Begin with mapping and assessing community boundaries, vegetation types, and fire hazard severity zones to identify the highest priority areas for fuel reduction.
     1. [Fire Hazard Severity Zones | OSFM](https://osfm.fire.ca.gov/what-we-do/community-wildfire-preparedness-and-mitigation/fire-hazard-severity-zones?utm_source=chatgpt.com)

### WUI considerations

Targeted grazing is increasingly being used as a management tool in recreation areas and the wildland-urban interface (WUI) to reduce fuel loads and shrub density (Taylor 2006). In practice, grazing lowers surface fuels (1- and 10-hour fuels) and can break up dense brush stands. The process of grazing often tramples fine fuels and incorporates them into the soil, which reduces ignition risk (Nader et al. 2007). When browsing species are used, they can trim ladder fuels, mimicking the fire-pruning effects of low-severity fires and raising the height to live crown. These outcomes make targeted grazing an effective strategy for managing fuel breaks, the WUI, and escape zones after the initial treatment of larger fuels, as well as for preventing excessive regrowth of grass and brush and disrupting the continuity of fuel loads (Taylor 2006).

Prioritizing grazing treatments focuses on zones such as community edges, evacuation routes, and places with heavy fuel accumulation where grazing can most effectively reduce fire danger (Barry 2015; Davies et al. 2022). Continuous monitoring of fuel reduction outcomes and adaptive management ensure the approach remains effective over time (Derner et al. 2022). Engaging local agencies, landowners, and residents is essential to ensure the risk assessment reflects real conditions and that prescribed grazing projects have community support (Biggs et al. 2021; Barry 2015).

* 1. [Targeted Grazing | Rangelands Gateway](https://rangelandsgateway.org/topics/maintaining-improving-rangelands/targeted-grazing)

### Regional Input for Best Management Practice #8:

* *Northern:*
* *Sierra-Cascade Inyo:*
* *Coastal Inland:*
* *Southern:*

## (9) Other recommendations to increase the pace and scale of prescribed grazing at the local and regional levels, where appropriate.

### Expand and Streamline Funding Opportunities

* 1. Utilize [Wildfire Prevention Grants | CAL FIRE](https://www.fire.ca.gov/what-we-do/grants/wildfire-prevention-grants): These grants already fund prescribed grazing projects in and near fire-threatened communities. The program covers costs for planning, fencing, water infrastructure, and implementation.
  2. [CAL FIRE‘s Grant Programs Infographic](https://34c031f8-c9fd-4018-8c5a-4159cdff6b0d-cdn-endpoint.azureedge.net/-/media/calfire-website/what-we-do/grants/other/grants-process-infographic.pdf?rev=45a1dfbfa6294efe867024e9cc76a861&hash=7FDE14A3F4F3ECD1145746AEEC90A019)
  3. Funding for Prescribed Grazing Projects:[The 2025-26 Budget: Proposition 4 Spending Plan](https://lao.ca.gov/Publications/Report/4958) enables agencies such as CAL FIRE to provide grants for fuel reduction, which explicitly includes prescribed grazing eligible. This funding can be used for planning, implementation, and necessary infrastructure such as fencing and livestock watering systems, lowering operational barriers for landowners and grazing contractors. Proposition 4’s funding and policy provisions will help increase the pace and scale of prescribed grazing across California, especially in fire-threatened communities and wildland-urban interfaces.
  4. Community supported grazing in Ojai through [Graze Ojai: Ojai Valley’s Community Supported Grazing Program | Ojai Valley Fire Safe Council](https://firesafeojai.org/project/community-supported-grazing-program/?utm_source=chatgpt.com)

### Streamline Environmental Review and Permitting

Utilize [CalVTP](https://calfire-umb05.azurewebsites.net/projects-and-programs/calvtp-homepage-and-storymap/) for CEQA Streamlining. The California Vegetation Treatment Program (CalVTP), streamlines California Environmental Quality Act (CEQA) compliance for wildfire prevention projects, including prescribed grazing, through its Program Environmental Impact Report (EIR). By using the CalVTP EIR, project proponents can reduce the time and cost of CEQA review, making it easier to implement prescribed grazing and other vegetation treatments across the state. To further expand prescribed grazing at local and regional scales, agencies and land managers are encouraged to prioritize CalVTP use and provide training on its application, supporting more efficient wildfire resilience and ecological restoration efforts

* + 1. Project Specific Analysis (PSA) – required environmental documentation: [PSA Template](https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fbof.fire.ca.gov%2Fmedia%2Fmkgp2as4%2Ftemplate-psa-checklist-508-compliant.dotx&wdOrigin=BROWSELINK)
    2. [Project-Specific CEQA Findings and Statement of Overriding Considerations Template](https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fbof.fire.ca.gov%2Fmedia%2Ftq5hlfwb%2Fceqa-template-findings_soc-508-compliant.dotx&wdOrigin=BROWSELINK)
    3. CalVTP Project Example including Prescribed Herbivory: South Coast Herbivory Project:
       1. [CalVTP Project ID 2023-21](https://bof.fire.ca.gov/media/unaj5tx5/final-sb-south-coast-herbivory-project-psa_9-12-23_signed.pdf) Project-Specific Analysis
    4. Appendix F, Sample of Prescribed Herbivory BMPs in an approved CalVTP Project: [Attachment F Prescribed Herbivory BMPs 2023-21](https://bof.fire.ca.gov/media/5zaeasby/attachment-f-prescribed-herbivory-bmps_2023-21.pdf)
       1. Note: all approved CalVTP PSAs and environmental documentation can be found on the [CalVTP Environmental Documentation webpage](https://bof.fire.ca.gov/projects-and-programs/calvtp-homepage-and-storymap/environmental-documentation-for-approved-projects/)

### Build Technical Capacity and Regional Coordination

Efforts to support regional planning can be made by encouraging long-term, landscape-scale planning and coordination among [California Tribes](https://www.ihs.gov/california/index.cfm/tribal-consultation/resources/list-of-federally-recognized-tribes-in-ca/), [California Prescribed Burn Associations](https://calpba.org/), [California Fire Safe Council](https://cafiresafecouncil.org/), [California Association of Resource Conservation Districts](https://carcd.org/), [UC Cooperative Extension](https://ucanr.edu/site/division-agriculture-and-natural-resources/about-uc-cooperative-extension), and state agencies to maximize the effectiveness of prescribed grazing.

Another effort is to establish regional centers for shared grazing equipment and infrastructure to reduce individual project costs and logistical barriers. [California Grazing Exchange – Connecting livestock producers & those with available cropland or forage to graze](https://matchgraze.com/) is an example of a source that connects contract grazers with available herds and locations open for grazing.

Further efforts include the Range Management Advisory Committee (RMAC) workshops that emphasize the importance of logistics, planning, and collaboration, discussing funding sources and the development of grazing agreements and infrastructure to support the idea of shared resources and reduce barriers for successful grazing projects. Examples of past workshops can be found at [Range Management Advisory Committee Archives](https://bof.fire.ca.gov/board-committees/range-management-advisory-committee/range-management-advisory-committee-archives/) under “Workshops”.

### Increase Participation and Engagement

Some ways to increase participation and engagement include:

1. Encourage both public and private landowners to participate by offering contracts and technical support, increasing the pool of land available for prescribed grazing.[Rancher Technical Assistance Program – California Cattle Council](https://calcattlecouncil.org/rtap/)
2. Build community support by implementing outreach and education campaigns to demonstrate the benefits and safety of prescribed grazing, addressing concerns and building local buy-in. This can include the expansion of outreach and education to demonstrate prescribed grazing’s benefits and safety, addressing community concerns and misconceptions. An example of this follows below:
   1. [Fuels and Vegetation Education Program Homepage - Swanton Pacific Ranch - Cal Poly, San Luis Obispo](https://spranch.calpoly.edu/fuels) education by Swanton Pacific Ranch's Fuels and Vegetation Education (FAVE) program provides workshops with educated professionals on wildfire fuel mitigation and vegetation management to accelerate efforts for a more sustainable and fire-resilient California landscape.

### Regional Input for Best Management Practice #9

* *Northern:*
* *Sierra-Cascade Inyo:*
* *Coastal Inland:*
* *Southern:*

# REFERENCES

[2025 Prescribed Herbivory White Paper Update DRAFT (RMAC CWGA 3\_4\_2025).docx | Powered by Box](https://app.box.com/file/1807278138680?s=kmvz8h4nngyzcl6walqxfnz34g01jtas)

Ball, D.M., et.al. 2001. Understanding Forage Quality. American Farm Bureau Federation Publication 1-01, Park Ridge, IL.

Barry, S., et al. (2021). *Rangeland Management Strategies for Enhancing Wildlife Habitat*. University of California ANR.

Barry, S.; Huntsinger, L. 2021. Rangeland land-sharing, livestock grazing's role in the conservation of imperiled species. Sustainability. 13(8): 4466. <https://doi.org/10.3390/su13084466>.

Barry, S.J. 2015. Understanding working rangelands: The benefits of livestock grazing California’s annual grasslands. 8517 Richmond, CA: The University of California, Division of Agriculture and Natural Resources (UC ANR). <https://anrcatalog.ucanr.edu/pdf/8517.pdf>.

Bartolome, J. W., Barry, S., Griggs, T., & Hopkinson, P. (2014). *Grazing for biodiversity on California’s rangelands: A conservation practitioner’s guide*. California Rangeland Conservation Coalition. <https://rangelandconservation.org/wp-content/uploads/2016/12/Grazing-for-Biodiversity-2014.pdf>

Bartolome, J. W., et al. (2014). *California Grasslands: Ecology and Management*. UC Press. Range Management Advisory Committee [RMAC]. 2025. State Lands Grazing Packet Guidebook, including Instructions for Use of the Grazing Agreement and Management Action Plan (MAP) Templates. Range Management Advisory Committee, Board of Forestry and Fire Protection, California Natural Resources Agency. Sacramento, CA. Approved March 27, 2025. Available online on the RMAC webpage: <https://calfireumb05.azurewebsites.net/board-committees/range-management-advisory-committee/>. Verified 07 Aug 2025.

Bartolome, J. W., Frost, W. E., McDougald, N. K., Connor, J. M., & Standiford, R. B. (2002). *California guidelines for residual dry matter (RDM) management on coastal and foothill annual rangelands* (UC ANR Publication No. 8092). University of California Agriculture and Natural Resources. <https://ucanr.edu/sites/default/files/2016-12/252886.pdf>

Biggs, N.B.; Hafner, J.; Mashiri, F.E.; Huntsinger, L.; Lambin, E.F. 2021. Payments for ecosystem services within the hybrid governance model: Evaluating policy alignment and complementarity on California rangelands. *Ecology and Society* 26(1). <https://doi.org/10.5751/es-12254-260119>

C. N. Tsiouvaras, N. A. Havlik, J. W. Bartolome, Effects of Goats on Understory Vegetation and Fire Hazard Reduction in a Coastal Forest in California, *Forest Science*, Volume 35, Issue 4, December 1989, Pages 1125–1131, <https://doi.org/10.1093/forestscience/35.4.1125>

California Board of Forestry and Fire Protection. 2021. *Attachment A: Standard Project Requirements and Mitigation Measures Checklist*. June 2021. PDF file. California Vegetation Treatment Program. https://cdnverify.bof.fire.ca.gov/media/kyxlm0rz/attachment-a-standard-project-requirements-and-mitigation-measures-checklist\_ada.pdf

California Cattlemen’s Association. (2020, September 22). *Prescribed grazing with Dr. Lynn Huntsinger* [Video]. YouTube. <https://www.youtube.com/watch?v=37HpdygLGZ8>

California Department of Fish and Wildlife (CDFW). (2021). *Riparian Habitat Restoration*. Retrieved from <https://wildlife.ca.gov/Conservation/Watersheds/Riparian-Restoration>

California Department of Forestry and Fire Protection (CAL FIRE). (n.d.). *Fuels reduction*. <https://www.fire.ca.gov/what-we-do/natural-resource-management/fuels-reduction>

California Rangeland Conservation Coalition. (2007). *California Rangeland Resolution*. Retrieved from <https://www.carangeland.org/resolution>

California Rangeland Trust. (2022). *Partnering with Ranchers to Conserve Land*. [https://rangelandtrust.org](https://rangelandtrust.org/)

Clary, W. P., & Leininger, W. C. (2000). *Stubble height as a tool for management of riparian areas*. Journal of Range Management, 53(6), 562–573. <https://doi.org/10.2307/4003151>

D’Antonio, C. et al. (2002). Ecology and restoration of California grasslands with special emphasis on the influence of fire and grazing on native grassland species.

Davies, K.W.; Wollstein, K.; Dragt, B.; O'Connor, C. 2022. Grazing management to reduce wildfire risk in invasive annual grass prone sagebrush communities. *Rangelands* 44(3): 194-199. <https://doi.org/10.1016/j.rala.2022.02.001>

Derner, J.D.; Budd, B.; Grissom, G.H.O.O.X.; Kachergis, E.J.; Augustine, D.J.; Wilmer, H.; Scasta, J.D.; Ritten, J.P.H.O.O. 2022. Adaptive grazing management in semiarid rangelands: An outcome-driven focus. *Rangelands* 44(1): 111-118. <https://doi.org/10.1016/j.rala.2021.02.004>

DiTomaso, J. M., Kyser, G. B., & Oneto, S. R. (2017). *Weed control in natural areas in the western United States*. Weed Research and Information Center, University of California. <https://wric.ucdavis.edu/information/natural-areas/>

DiTomaso, J.M. 2000. Invasive weeds in rangelands: Species, impacts, and management. Weed Science. 48(2): 255-265. [https://doi.org/10.1614/0043-1745(2000)048[0255:IWIRSI]2.0.CO;2](https://doi.org/10.1614/0043-1745(2000)048%5b0255:IWIRSI%5d2.0.CO;2).

Donahue, D. M. (1999). *The Western Range Revisited: Removing Livestock from Public Lands to Conserve Native Biodiversity*. University of Oklahoma Press.

George, M. R., et al. (2001). *Annual Rangeland Forage Production*. UCANR Publication 8018.

George, M. R., Jackson, R. D., Boyd, C. S., & Tate, K. W. (2011). *A scientific assessment of the effectiveness of rangeland practices*. USDA Natural Resources Conservation Service. <https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1045816.pdf>

Gerrish, J. (2004). *Management-intensive grazing: The grassroots of grass farming*. Green Park Press.

Hart, R. H., Bissio, J., Samuel, M. J., & Waggoner, J. W. (1993). *Grazing systems, pasture size, and cattle grazing behavior, distribution and gains*. Journal of Range Management, 46(2), 81–87. <https://doi.org/10.2307/4002454>

Hoff, M. (2020, September 22). *Grazing is a Wildfire Solution.* California Climate and Agricultural Network. <https://calclimateag.org/grazing-is-a-wildfire-solution/>

James W. Bartolome, Barbara H. Allen-Diaz, Sheila Barry, Lawrence D. Ford, Michele Hammond, Peter Hopkinson, Felix Ratcliff, Sheri Spiegal, and Michael D. White "Grazing for Biodiversity in Californian Mediterranean Grasslands," *Rangelands* 36(5), 36-43, (1 October 2014). <https://doi.org/10.2111/Rangelands-D-14-00024.1>

Keeley, J. E. (2005). *Fire and invasive species in Mediterranean-climate ecosystems of California*. In C. E. Brooks & M. B. Kent (Eds.), *Proceedings of the invasive species workshop: The role of fire in the control and spread of invasive species* (pp. 81–94). Tall Timbers Research Station.

Launchbaugh, K. L., & Walker, J. W. (2006). *Targeted grazing: A natural approa-ch to vegetation management and landscape enhancement*. American Sheep Industry Association. <https://www.webpages.uidaho.edu/rx-grazing/Handbook.htm>

Loera-Sánchez, M., Studer, B., & Kölliker, R. (2019). DNA-Based Assessment of Genetic Diversity in Grassland Plant Species: Challenges, Approaches, and Applications. *Agronomy*, *9*(12), 881. <https://doi.org/10.3390/agronomy9120881>

McDougald, N. K., Frost, W. E., & Bartolome, J. W. (2001). *Residual dry matter monitoring: A rancher's tool* (UC ANR Publication No. 8091). University of California Agriculture and Natural Resources. <https://ucanr.edu/sites/default/files/2016-01/228904.pdf>

Menke, J. W. (1992). *Grazing fire management in grassland ecosystems*. University of California Agriculture and Natural Resources.

Nader et.al. (2007, October). *Planned Herbivory in the Management of Wildfire Fuels*. Society for Range Management. <https://ucanr.edu/sites/default/files/2021-07/354634.pdf>

Nader, Glenn, Zalmen Henkin, Ed Smith, Roger Ingram, and Nelmy Narvaez. 2007. “Planned Herbivory in the Management of Wildfire Fuels: Grazing Is Most Effective at Treating Smaller Diameter Live Fuels That Can Greatly Impact the Rate of Spread of a Fire along with the Flame Height.” Rangelands 29 (5): 18–24 [https://doi.org/10.2111/1551-501X(2007)29[18:PHITMO]2.0.CO;2](https://doi.org/10.2111/1551-501X(2007)29%5b18:PHITMO%5d2.0.CO;2)

National Research Council. (2002). *Riparian areas: Functions and strategies for management*. National Academies Press. <https://doi.org/10.17226/10327>

*Patch-Burn Grazing (U.S. National Park Service)*. (n.d.). <https://www.nps.gov/articles/000/patch-burn-grazing.htm>

Point Blue Conservation Science. (2021, April 21). *Grazing for habitat: How conservation grazing supports biodiversity* [Video]. YouTube. <https://www.youtube.com/watch?v=QfWu7ZmsmaY>

Roche, L. M., D.K. Macon. 2025. Expanding prescribed grazing for wildfire resilience in California: A brief on opportunities and strategies for strengthening wildfire preparedness and resilience efforts. DOI:10.13140/RG.2.2.27987.69927/1

Sanjari, G., Yu, Y., & Chen, C. (2020). *Effects of grazing management on vegetation dynamics in rangelands: A global meta-analysis*. Ecological Engineering, 158, 106074. <https://doi.org/10.1016/j.ecoleng.2020.106074>

Sedivec, K. K., Norland, J. E., & Printz, J. L. (2011). *Grazing management: Balancing livestock production and resource protection* (NDSU Extension Service Publication R-1810). North Dakota State University. <https://conservancy.umn.edu/handle/11299/214865>

Stuth, J. W. (1996). Managing grazing lands: critical information infrastructures and knowledge requirements for the future. Trop Grassl, 30, 2-17.

Taylor Jr., Charles A. 2006. "Targeted grazing to manage fire risk." Pp. 107–12 in: K. Launchbaugh and J. Walker, (eds) Targeted Grazing: A Natural Approach to Vegetation Management and Landscape Enhancement. Centennial, CO: American Sheep Industry Association

Teague, W. R., Dowhower, S. L., & Waggoner, J. A. (2013). *Mitigating degradation and improving resilience of grasslands through grazing management*. Agricultural Ecosystems & Environment, 165, 10–17. <https://doi.org/10.1016/j.agee.2012.11.007>

U.S. Fish and Wildlife Service (USFWS). (2017). *Best Management Practices for Livestock Grazing on Federal Lands*. Retrieved from <https://www.fws.gov/policy>

University of California Agriculture and Natural Resources (UCANR). (2016). *Grazing Handbook: A Guide for Resource Managers in Coastal California*. <https://ucanr.edu/sites/Cal-PacRMS/files/252886.pdf>

UCANR. (2016). *Livestock and Range Management*. [https://ucanr.edu](https://ucanr.edu/)

UCANR. (2016). *Rangeland Monitoring and Assessment* [PDF]. Retrieved from [https://ucanr.edu](https://ucanr.edu/)

UCANR. (2020). *Grazing for Fuel Reduction and Rangeland Health*. University of California Cooperative Extension.   
 Launchbaugh, K., & Walker, J. (2006). *Targeted Grazing: A Natural Approach to Vegetation Management*. American Sheep Industry Association.

USDA Natural Resources Conservation Service (NRCS). (2023). *Prescribed Grazing Standard (Code 528)*. <https://www.nrcs.usda.gov/sites/default/files/2024-01/528_NHCP_CPS_Grazing_Management_2023_0.pdf>

U.S. Department of Agriculture, Natural Resources Conservation Service. (2017). *Grazing management and soil health*. Retrieved from <https://www.nrcs.usda.gov/sites/default/files/2022-09/Grazing%20Management_SoilHealth_0.pdf>

U.S. Department of Agriculture, Natural Resources Conservation Service. (2022, October). *Prescribed grazing* (Fact Sheet No. SD-FS-57). <https://www.nrcs.usda.gov/sites/default/files/2022-10/Prescribed_Grazing_SD-FS-57.pdf>

U.S. Department of Agriculture, Natural Resources Conservation Service. (2015). *Rotational vs. continuous stocking: A long-term grazing land experiment* (Conservation Insight Series). <https://www.nrcs.usda.gov/publications/ceap-GrazingLands-2015-RotationalVsContinuousStockingComparisons-ConservationInsight.pdf>

U.S. Department of Agriculture, Natural Resources Conservation Service. (2022, October). *Prescribed grazing* (Fact Sheet No. SD-FS-57). <https://www.nrcs.usda.gov/sites/default/files/2022-10/Prescribed_Grazing_SD-FS-57.pdf>

U.S. Department of Agriculture, Natural Resources Conservation Service (USDA NRCS). (2023). *Conservation Practice Standard: Prescribed Grazing (Code 528)*. <https://www.nrcs.usda.gov/sites/default/files/2024-01/528_NHCP_CPS_Grazing_Management_2023_0.pdf>

USDA NRCS. (2013, June 28). *Prescribed grazing* [Video]. YouTube. <https://www.youtube.com/watch?v=JOiyO31rOis>

USDA-NRCS. (2017). *Prescribed Grazing Conservation Practice Standard (Code 528)*.

Vaughn et.al. San Francisco Estuary Institute. October 2020. Livestock grazing and its effects on ecosystem structure, processes, and conservation. <https://www.sfei.org/sites/default/files/biblio_files/Livestock%20grazing%20and%20its%20effects_SFEI_2020.pdf>

Waldrop, T. A., & Goodrick, S. L. (2012). *Introduction to prescribed fires in Southern ecosystems* (Science Update SRS‑054; slightly revised 2018) [PDF]. Asheville, NC: U.S. Department of Agriculture, Forest Service, Southern Research Station. Retrieved from <https://www.srs.fs.usda.gov/pubs/su/su_srs054.pdf>

Walker, J. W. (1994). *Multispecies grazing: The ecological advantage*. Sheep Research Journal.

Wilcox, B., et al. (2012). *Targeted Grazing for Vegetation Management*. USDA-NRCS.

[WildlifeFriendlyFences.pdf](https://www.nrcs.usda.gov/sites/default/files/2022-09/WildlifeFriendlyFences.pdf)

# APPENDICES

## Selected Resources

**(this may be expanded on, but is a first stab at compiling some resources for RATs to utilize; please add more resources as you include them in the outline/guidance below):**

### RangeDocs online range-related database: <https://docs.rangelandsgateway.org/>

### Google Scholar online research database

* **Anderson, M.K.; Keeley, J.E. 2018.** Native peoples’ relationship to the california chaparral. In: Underwood, E.C.; Safford, H.D.; Molinari, N.A.; Keeley, J.E., eds. Valuing chaparral. Springer series on environmental management. Cham: Springer International Publishing: 79-121. Chapter Chapter 4. <https://doi.org/10.1007/978-3-319-68303-4_4>.
* **Barry, S.; Huntsinger, L. 2021.** Rangeland land-sharing, livestock grazing's role in the conservation of imperiled species. Sustainability. 13(8): 4466. <https://doi.org/10.3390/su13084466>.
* **Balch, J.K.; Bradley, B.A.; D'Antonio, C.M.; Gomez-Dans, J. 2013.** Introduced annual grass increases regional fire activity across the arid western USA (1980-2009). Glob Chang Biol. 19(1): 173-83. <https://doi.org/10.1111/gcb.12046>.
* **Barry, S.J. 2015.** Understanding working rangelands: The benefits of livestock grazing California’s annual grasslands. 8517 Richmond, CA: The University of California, Division of Agriculture and Natural Resources (UC ANR),. 7. <https://anrcatalog.ucanr.edu/pdf/8517.pdf>. (February 13, 2025).
* **Barry, S.J. 2022.** Sustain livestock ranching to sustain habitat: Land sharing at risk on San Francisco bay area exacted conservation easements. Ecology and Society. 27(3) <https://doi.org/10.5751/es-13459-270333>.
* **Bell, C.E.; Ditomaso, J.M.; Brooks, M.L. 2009.** Invasive plants and wildfires in southern California. 8397. Oakland, CA: UC Division of Agriculture and Natural Resources. <https://anrcatalog.ucanr.edu/pdf/8397.pdf>.
* **Belsky, A.J.; Matzke, A.; Uselman, S. 1999.** Survey of livestock influences on stream and riparian ecosystems in the western united states. Journal of Soil and Water Conservation. 54(1): 419-431. <https://doi.org/10.1080/00224561.1999.12457258>.
* **Biggs, N. 2022.** Drivers and constraints of land use transitions on western grasslands: Insights from a California mountain ranching community. Landsc Ecol. 37(4): 1185-1205. <https://doi.org/10.1007/s10980-021-01385-6>.
* **Biggs, N.B.; Hafner, J.; Mashiri, F.E.; Huntsinger, L.; Lambin, E.F. 2021.** Payments for ecosystem services within the hybrid governance model: Evaluating policy alignment and complementarity on California rangelands. Ecology and Society. 26(1) <https://doi.org/10.5751/es-12254-260119>.
* **Brooks, M.; Matchett, J. 2006.** Spatial and temporal patterns of wildfires in the mojave desert, 1980-2004. Journal of Arid Environments. 67: 148-164. <https://doi.org/10.1016/j.jaridenv.2006.09.027>.
* **Brunson, M.W.; Huntsinger, L. 2008.** Ranching as a conservation strategy: Can old ranchers save the new west? Rangeland Ecology & Management. 61(2): 137-147. <https://doi.org/10.2111/07-063.1>.
* **Chavez Rodriguez, L.; Parker, S.; Fiore, N.M.; Allison, S.D.; Goulden, M.L. 2023.** Impact of drought on ecohydrology of southern California grassland and shrubland. Ecosystems. 27(1): 106-121. <https://doi.org/10.1007/s10021-023-00876-8>.
* **Cheatum, M.; Casey, F.; Alvarez, P.; Parkhurst, B. 2011.** Payments for ecosystem services: A California rancher perspective. Washington, DC: Nicholas Institute for Environmental Policy Solutions, Duke University. 74 p. <https://carangeland.org/images/payments_for_ecosystem_services_a_california_rancher_perspective.pdf>.
* **Copeland, S.M.; On, S.P.H.; Latimer, A.M.; Damschen, E.I.; Eskelinen, A.M.; Fernandez-Going, B.; Spasojevic, M.J.; Anacker, B.L.; Thorne, J.H. 2016.** Ecological effects of extreme drought on californian herbaceous plant communities. Ecological Monographs. 86(3): 295-311. <https://doi.org/10.1002/ecm.1218>.
* **D’Antonio, C.; Bainbridge, S.; Kennedy, C.; Bartolome, J.; Reynolds, S. 2002.** Ecology and restoration of California grasslands with special emphasis on the influence of fire and grazing on native grassland species. Report to the Packard Foundation. 1-99 p. <https://d1wqtxts1xzle7.cloudfront.net/91931759/fileaccess-libre.pdf?1664830708=&response-content-disposition=inline%3B+filename%3DEcology_and_Restoration_of_California_Gr.pdf&Expires=1740431148&Signature=Sy1CascW8I-5T3JxQRkyTIMIYN1~oNkWNM4v17jftQvCkGPwOekzdSj-wGWjTmucgU9q3zgiP3m5p~Q3bo5nbOLY49Ffagponpt~zbMoQyR6TXJd9norriUESDjj16yUhyWLLejDNppR71rTLdM~e-EitSjiM~0jpJ3-5tqRdanUE2dqK1jb0xuJgPIwEDixmyMsU-A1sVm44v3AciffJCjrgfmDPGIrl0sbubQ44mh2I8SFR5Is8yU1DXlRa0xtV7gkmiNZnP5wMWSOdJy8NOl4DX5bL89hx~0FOxrAIqqB6pnxtOvmvzn2~MDrJY9oREkCUowaJ8QlNPFEBDSb8g__&Key-Pair-Id=APKAJLOHF5GGSLRBV4ZA>.
* **Dantonio, C.M.; Vitousek, P.M. 1992.** Biological invasions by exotic grasses, the grass fire cycle, and global change. Annual Review of Ecology and Systematics. 23: 63-87. <https://doi.org/10.1146/annurev.es.23.110192.000431>.
* **Davies, K.W.; Wollstein, K.; Dragt, B.; O'Connor, C. 2022.** Grazing management to reduce wildfire risk in invasive annual grass prone sagebrush communities. Rangelands. 44(3): 194-199. <https://doi.org/10.1016/j.rala.2022.02.001>.
* **Davy, J.S.; Roche, L.M.; Robertson, A.V.; Nay, D.E.; Tate, K.W. 2015.** Introducing cattle grazing to a noxious weed-dominated rangeland shifts plant communities. California Agriculture. 69(4): 230-236. <https://doi.org/10.3733/ca.v069n04p230>.
* **Derner, J.D.; Budd, B.; Grissom, G.h.o.o.X.; Kachergis, E.J.; Augustine, D.J.; Wilmer, H.; Scasta, J.D.; Ritten, J.P.h.o.o. 2022.** Adaptive grazing management in semiarid rangelands: An outcome-driven focus. Rangelands. 44(1 p.111-118): 111-118. <https://doi.org/https://doi.org/10.1016/j.rala.2021.02.004>;.
* **Derose, K.L.; Battaglia, C.F.; Eastburn, D.J.; Roche, L.M.; Becchetti, T.A.; George, H.A.; Lile, D.F.; Lancaster, D.L.; McDougald, N.K.; Tate, K.W. 2020.** Riparian health improves with managerial effort to implement livestock distribution practices. Rangeland Journal. 42(3): 153-160. <https://doi.org/10.1071/Rj20024>.
* **Derose, K.L.; Roche, L.M.; Lile, D.F.; Eastburn, D.J.; Tate, K.W. 2020.** Microbial water quality conditions associated with livestock grazing, recreation, and rural residences in mixed-use landscapes. Sustainability. 12(12): 5207. <https://doi.org/10.3390/su12125207>.
* **Dimock, M.R.; Riggle, C.; Hollander, A.; Huber, P.; Tomich, T. 2021.** A new era for meat processing in California? Challenges and opportunities to enhance resilience. Davis, CA: UC Davis College of Agricultural and Environmental Sciences. 40 p. <https://foodsystemslab.ucdavis.edu/sites/g/files/dgvnsk9606/files/media/documents/2021%20September%20FSL%20%20Meat%20Processing%20White%20Paper_FINAL_1.pdf>.
* **DiTomaso, J.M. 2000.** Invasive weeds in rangelands: Species, impacts, and management. Weed Science. 48(2): 255-265. [https://doi.org/10.1614/0043-1745(2000)048[0255:IWIRSI]2.0.CO;2](https://doi.org/10.1614/0043-1745(2000)048%5b0255:IWIRSI%5d2.0.CO;2).
* **DiTomaso, J.M.; Monaco, T.A.; James, J.J.; Firn, J. 2017.** Invasive plant species and novel rangeland systems. In: Rangeland systems. Springer series on environmental management. Springer International Publishing: 429-465. Chapter Chapter 13. <https://doi.org/10.1007/978-3-319-46709-2_13>.
* **Dong, C.Y.; Williams, A.P.; Abatzoglou, J.T.; Lin, K.R.; Okin, G.S.; Gillespie, T.W.; Long, D.; Lin, Y.H.; Hall, A.; MacDonald, G.M. 2022.** The season for large fires in southern California is projected to lengthen in a changing climate. Communications Earth & Environment. 3(1) <https://doi.org/10.1038/s43247-022-00344-6>.
* **Espeland, E.K.; Schreeg, L.; Porensky, L.M. 2020.** Managing risks related to climate variability in rangeland-based livestock production: What producer driven strategies are shared and prevalent across diverse dryland geographies? J Environ Manage. 255: 109889. <https://doi.org/10.1016/j.jenvman.2019.109889>.
* **Eviner, V. 2010.** California rangeland status, structure and functioning. California rangelands: research and policy dialogue. Woods Institute for the Environment, Stanford University Woods Institute for the Environment. <http://www.plantsciences.ucdavis.edu/plantsciences_faculty/eviner/pdfs%20of%20pubs/California-Rangelands-UD-Abstract-Valerie-Eviner-20110513.pdf>.
* **Ferranto, S.; Huntsinger, L.; Kelly, M. 2014.** Sustaining ecosystem services from private lands in California: The role of the landowner. Rangelands. 36(5): 44-51. <https://doi.org/10.2111/rangelands-d-14-00023.1>.
* **Ferranto, S.; Huntsinger, L.; Stewart, W.; Getz, C.; Nakamura, G.; Kelly, M. 2012.** Consider the source: The impact of media and authority in outreach to private forest and rangeland owners. J Environ Manage. 97: 131-40. <https://doi.org/10.1016/j.jenvman.2011.10.017>.
* **Fusco, E.J.; Finn, J.T.; Balch, J.K.; Nagy, R.C.; Bradley, B.A. 2019.** Invasive grasses increase fire occurrence and frequency across us ecoregions. Proceedings of the National Academy of Sciences. 116(47): 23594-23599. <https://doi.org/10.1073/pnas.1908253116>.
* **Gamen, T.; Firman, J. 2008.** Oaks 2040: The status and future of oaks in California. In: Merenlender, A.; McCreary, D.; Purcell, K.L., eds. Proceedings of the sixth California oak symposium: Today's challenges, tomorrow's opportunities. Albany, CA: U.S. Department of Agriculture, Forest Service, Pacific Southwest Research Station: 603-616. Chapter Session 7A -Monitoring and Inventory. PSW-GTR-217. <https://doi.org/10.2737/psw-gtr-217>.
* **Garrison, K.R.; Cain, J.W.; Rominger, E.M.; Goldstein, E.J. 2016.** Sympatric cattle grazing and desert bighorn sheep foraging. Journal of Wildlife Management. 80(2): 197-207. <https://doi.org/10.1002/jwmg.1014>.
* **George, M.R.; Clawson, W.J. 2014.** History of university of California rangeland extension, research, and teaching. Rangelands. 36(5): 18-24. <https://doi.org/10.2111/Rangelands-D-14-00018.1>.
* **George, M.R.; Jackson, R.D.; Boyd, C.S.; Tate, K.W. 2011.** A scientific assessment of the effectiveness of riparian management practices. In: Briske, D.D., ed. Conservation benefits of rangeland practices: Assessment, recommendations, and knowledge gaps. Washington, D.C.: U.S. Dept. of Agriculture, Natural Resources Conservation Service: 213-252. Chapter 5. <https://nrcspad.sc.egov.usda.gov/DistributionCenter/pdf.aspx?productID=877>.
* **Gornish, E.S. 2018.** Reseeding to improve biodiversity, livestock forage, and wildlife habitat. UC Davis, CA: UC California Division of Agriculture and Natural Resources. PowerPoint.
* **Goss, M.; Swain, D.L.; Abatzoglou, J.T.; Sarhadi, A.; Kolden, C.A.; Williams, A.P.; Diffenbaugh, N.S. 2020.** Climate change is increasing the likelihood of extreme autumn wildfire conditions across California. Environmental Research Letters. 15(9): 094016. <https://doi.org/10.1088/1748-9326/ab83a7>.
* **Greenlee, J.M.; Langenheim, J.H. 1990.** Historic fire regimes and their relation to vegetation patterns in the monterey bay area of California. American Midland Naturalist. 124(2): 239-253. <https://doi.org/10.2307/2426173>.
* **Grupenhoff, A.R.; Safford, H.D. 2024.** High fire frequency in California chaparral reduces postfire shrub regeneration and native plant diversity. Ecosphere. 15(12) <https://doi.org/10.1002/ecs2.70128>.
* **Haggerty, J.H.; Auger, M.; Epstein, K. 2018.** Ranching sustainability in the northern great plains: An appraisal of local perspectives. Rangelands. 40(3): 83-91. <https://doi.org/10.1016/j.rala.2018.03.005>.
* **Hanak, E.; Ayres, A.; Peterson, C.; Escriva-Bou, A.; Cole, S.; Morales, Z.J. 2023.** Managing water and farmland transitions in the san joaquin valley. Public Policy Institute of California. <https://www.ppic.org/publication/managing-water-and-farmland-transitions-in-the-san-joaquin-valley/#:~:text=Bou%20et%20al.-,2023).,the%20valley%20(Figure%201c>).
* **Hart, C. 2020.** Factors affecting blue and valley oak regeneration. LinkedIn. <https://www.linkedin.com/pulse/factors-affecting-blue-valley-oak-regeneration-christopher-hart>.
* **Havstad, K.M.; Brown, J.R.; Estell, R.; Elias, E.; Rango, A.; Steele, C. 2018.** Vulnerabilities of southwestern u.S. Rangeland-based animal agriculture to climate change. Climatic Change. 148(3): 371-386. <https://doi.org/10.1007/s10584-016-1834-7>.
* **Hayes, G.F.; Holl, K.D. 2003.** Cattle grazing impacts on annual forbs and vegetation composition of mesic grasslands in California. Conservation Biology. 17(6): 1694-1702. [https://doi.org/https://doi.org/10.1111/j.1523-1739.2003.00281.x](https://doi.org/https:/doi.org/10.1111/j.1523-1739.2003.00281.x).
* **Heady, H.F. 1999.** Perspectives on rangeland ecology and management. Rangelands. 21(5): 23-33. <https://castatelib.idm.oclc.org/login?url=https://www.proquest.com/scholarly-journals/perspectives-on-rangeland-ecology-management/docview/48742268/se-2?accountid=26958>
* **HSU, M. 2021.** Once perceived as a problem, conservation grazing by cattle a boon to vernal pools. UC ANR. <https://ucanr.edu/News/?routeName=newsstory&postnum=51085>.
* **Hufkens, K.; Keenan, T.; Flanagan, L.; Scott, R.; Bernacchi, C.; Joo, E.; Brunsell, N.; Verfaillie, J.; Richardson, A. 2016.** Productivity of north american grasslands is increased under future climate scenarios despite rising aridity. Nature Climate Change. 6(7): 710-+. <https://doi.org/10.1038/NCLIMATE2942>.
* **Huntsinger, L.; Oviedo, J.L. 2014.** Ecosystem services are social-ecological services in a traditional pastoral system: The case of california's mediterranean rangelands. Ecology and Society. 19(1) <https://doi.org/10.5751/ES-06143-190108>.
* **Hurst, K.F.; Ramsdell, C.P.; Sorice, M.G. 2017.** A life course approach to understanding social drivers of rangeland conversion. Ecology and Society. 22(1) <https://doi.org/10.5751/es-08990-220119>.
* **James, J.; Brownsey, P.; Davy, J.; Forero, L.; Stackhouse, J.; Shapero, M.; Becchetti, T.; Rinella, M. 2022.** Management strategies determine how invasive plant impacts on rangeland provisioning services change net revenue on California annual rangeland. Rangeland Ecology & Management. 82(1): 29-36. <https://doi.org/10.1016/j.rama.2022.02.001>.
* **James, J.; Gornish, E.; DiTomaso, J.; Davy, J.; Doran, M.; Becchetti, T.; Lile, D.; Brownsey, P.; Laca, E. 2015.** Managing medusahead (taeniatherum caput-medusae) on rangeland: A meta-analysis of control effects and assessment of stakeholder needs. Rangeland Ecology & Management. 68(3): 215-223. <https://doi.org/10.1016/j.rama.2015.03.006>.
* **Jones, A. 2000.** Effects of cattle grazing on north american arid ecosystems: A quantitative review. WESTERN NORTH AMERICAN NATURALIST. 60(2): 155-164. <https://scholarsarchive.byu.edu/wnan/vol60/iss2/5>
* **Keeley, J.; Klinger, R.; Brennan, T.; Lawson, D.; La Grange, J.; Berg, K. 2023.** A decade-long study of repeated prescription burning in California native grassland restoration. Restoration Ecology. 31(7) <https://doi.org/10.1111/rec.13939>.
* **Keeley, J.E. 2002.** Native american impacts on fire regimes of the California coastal ranges. Journal of Biogeography. 29(3): 303-320. <https://doi.org/DOI10.1046/j.1365-2699.2002.00676.x>.
* **Keeley, J.E.; Brennan, T.J. 2012.** Fire-driven alien invasion in a fire-adapted ecosystem. Oecologia. 169(4): 1043-52. <https://doi.org/10.1007/s00442-012-2253-8>.
* **Keeley, J.E.; Brennan, T.J.; Syphard, A.D. 2022.** The effects of prolonged drought on vegetation dieback and megafires in southern California chaparral. Ecosphere. 13(8) <https://doi.org/10.1002/ecs2.4203>.
* **Keeley, J.E.; Fotheringham, C.J. 2003.** Impact of past, present, and future fire regimes on north american mediterranean shrublands. In: Veblen, T.T.; Baker, W.L.; Montenegro, G.; Swetnam, T.W., eds. Fire and climatic change in temperate ecosystems of the western americas. Ecological studies. New York, NY: Springer New York: 218-262. Chapter Chapter 8. <https://doi.org/10.1007/0-387-21710-x_8>.
* **Keeley, J.E.; Syphard, A.D. 2017.** Different historical fire-climate patterns in California. International Journal of Wildland Fire. 26(4): 253-268. <https://doi.org/10.1071/Wf16102>.
* **Lambert, A.M.; D’Antonio, C.M.; Dudley, T.L. 2010.** Invasive species and fire in California ecosystems. FREMONTIA. 38(2): 29-36. <https://rivrlab.msi.ucsb.edu/sites/default/files/publications/frem38.2_38.3_lambert_etal.pdf>
* **Larson-Praplan, S. 2014.** History of rangeland management in California. Rangelands. 36(5): 11-17. <https://doi.org/10.2111/rangelands-d-14-00020.1>.
* **Larson, S. 2016.** Impact of grazing on endangered species. UCANR. <https://ucanr.edu/blogs/blogcore/postdetail.cfm?postnum=22542>.
* **Lewis, D.J.; Voeller, D.; Saitone, T.L.; Tate, K.W. 2019.** Management scale assessment of practices to mitigate cattle microbial water quality impairments of coastal waters. Sustainability. 11(19): 5516. <https://doi.org/10.3390/su11195516>.
* **Li, X.H.; Zha, T.S.; Liu, P.; Bourque, C.P.A.; Jia, X.; Tian, Y.; Jin, C.; Wei, X.S.; Liu, X.Y.; Zhao, H.X.; Xu, Q.F.; Hao, S.R. 2023.** Interannual variation in gross ecosystem production and evapotranspiration in a temperate semiarid grassland undergoing vegetation recovery. Agricultural and Forest Meteorology. 341 <https://doi.org/10.1016/j.agrformet.2023.109672>.
* **Li, Z.; Angerer, J.P.; Wu, X.B. 2021.** Temporal patterns of large wildfires and their burn severity in rangelands of western united states. Geophysical Research Letters. 48(7) <https://doi.org/10.1029/2020gl091636>.
* **Liffmann, R.; Huntsinger, L.; Forero, L. 2000.** To ranch or not to ranch: Home on the urban range? Journal of Range Management. 53(4): 362-370. <https://doi.org/10.2458/azu_jrm_v53i4_liffmann>.
* **Liu, H.; Jin, Y.; Roche, L.M.; O’Geen, A.T.; Dahlgren, R.A. 2021.** Understanding spatial variability of forage production in California grasslands: Delineating climate, topography and soil controls. Environmental Research Letters. 16(1): 014043. <https://doi.org/10.1088/1748-9326/abc64d>.
* **Lubell, M.N.; Cutts, B.B.; Roche, L.M.; Hamilton, M.; Derner, J.D.; Kachergis, E.; Tate, K.W. 2013.** Conservation program participation and adaptive rangeland decision-making. Rangeland Ecology & Management. 66(6): 609-620. <https://doi.org/10.2111/Rem-D-13-00025.1>.
* **Macon, D.; Baldwin, R.; Lile, D.; Stackhouse, J.; Rivers, C.K.; Saitone, T.; Schohr, T.; Snell, L.; Harper, J.; Ingram, R.; Rodrigues, K.; Macaulay, L.; Roche, L. 2018.** Livestock protection tools for California ranchers, Version 1 online resource. <https://escholarship.org/uc/item/1dh2z0d5>.
* **Marty, J. 2007.** Managing for biodiversity in vernal pool grasslands using fire and grazing. In: Schlising, R.A.; Alexander, D.G., eds. Vernal pool landscapes. Chico, CA: California State University, Chico Chapter 213 pages : illustrations, maps (some color); 29 cm. <https://www.csuchico.edu/herbarium/_assets/documents/sfth14-20-marty.pdf>.
* **Marty, J.T. 2015.** Loss of biodiversity and hydrologic function in seasonal wetlands persists over 10 years of livestock grazing removal. Restoration Ecology. 23(5): 548-554. <https://doi.org/10.1111/rec.12226>.
* **McCreary, D. 2004.** Managing and restoring california's oak woodlands. Natural Areas Journal. 24(3): 269-275. <https://csl.primo.exlibrisgroup.com/discovery/openurl?institution=01CSL_INST&vid=01CSL_INST:CSL&genre=article&issn=08858608&title=Managing+and+Restoring+California%27s+Oak+Woodlands&volume=24&issue=3&date=2004&atitle=Managing+and+Restoring+California%27s+Oak+Woodlands&spage=269&sid=ProQ%3Aecology&author=McCreary>
* **McCreary, D. 2011.** Enhancing natural blue oak regeneration in California. UC ANR. <https://ucanr.edu/blogs/blogcore/postdetail.cfm?postnum=4606>.
* **McCreary, D.; George, M. 2005.** Managed grazing and seedling shelters enhance oak regeneration on rangelands. California Agriculture. 59(4): 217-222. <https://doi.org/10.3733/ca.v059n04p217>.
* **McCreary, D.D. 2001.** Regenerating rangeland oaks in California. University of California agriculture & natural resources ; 21601. Oakland, Calif: University of California, Agriculture and Natural Resources. book p. <https://anrcatalog.ucanr.edu/pdf/21601e.pdf>.
* **McCreary, D.D.; Tecklin, J. 2005.** Restoring native California oaks on grazed rangelands. In: Dumroese, R.K.; Riley, L.E.; Landis, T.D., eds. National proceedings: Forest and conservation nursery associations-2004. Fort Collins, CO: USDA -FS <https://www.fs.usda.gov/rm/pubs/rmrs_p035.pdf>.
* **Medellín-Azuara, J.; Escriva-Bou, A.; Rodríguez-Flores, J.M.; Cole, S.A.; Abatzoglou, J.; Viers, J.H.; Santos, N.; Summer, D.A.; Medina, C.; Arévalo, R. 2022.** Economic impacts of the 2020–22 drought on California agriculture. UC Merced. <https://cawaterlibrary.net/wp-content/uploads/2022/11/20AmSf-Economic_Impact_CA_Drought_V01.pdf>.
* **Merenlender, A.M.; Brooks, C. 1998.** Return of natural hardwood regeneration in a cleared watershed. Oaks 'n' Folks. UC ANR Cooperative Extentsion. <https://oaks.cnr.berkeley.edu/return-of-natural-hardwood-regeneration-in-a-cleared-watershed/>.
* **Michaels, J.S.; Tate, K.W.; Eviner, V.T. 2021.** Vernal pool wetlands respond to livestock grazing, exclusion and reintroduction. Journal of Applied Ecology. 59(1): 67-78. <https://doi.org/10.1111/1365-2664.14001>.
* **Myers, L.; Fiske, M.; Layhee, M. 2017.** Elevated stream pathogenic indicator bacteria concentrations in livestock grazing areas across a single national forest. Natural Resources. 08(10): 657-670. <https://doi.org/10.4236/nr.2017.810042>.
* **Nolte, H. 2021.** Alone on the range? Rangeland stakeholder perceptions of public lands, community change and maintaining rural livelihoods. Humboldt, CA: CAL POLY Humboldt. Masters. <https://digitalcommons.humboldt.edu/etd/504/>. (Febuary 12, 2025).
* **Okin, G.S.; Dong, C.; Willis, K.S.; Gillespie, T.W.; Macdonald, G.M. 2018.** The impact of drought on native southern California vegetation: Remote sensing analysis using <scp>modis</scp>‐derived time series. Journal of Geophysical Research: Biogeosciences. 123(6): 1927-1939. <https://doi.org/10.1029/2018jg004485>.
* **Oles, K.M.; Weixelman, D.A.; Lile, D.F.; Tate, K.W.; Snell, L.K.; Roche, L.M. 2017.** Riparian meadow response to modern conservation grazing management. Environmental Management. 60(3): 383-395. <https://doi.org/10.1007/s00267-017-0897-1>
* **Papanastasis, V. 2009.** Restoration of degraded grazing lands through grazing management: Can it work? Restoration Ecology. 17(4): 441-445. <https://doi.org/10.1111/j.1526-100X.2009.00567.x>.
* **Patterson, S. 2021.** Saving the little guy: Estate and inheritance taxation on generational farmers and ranchers. Estate Planning and Community Property Law Journal. <https://hdl.handle.net/2346/89677>
* **Plieninger, T.; Ferranto, S.; Huntsinger, L.; Kelly, M.; Getz, C. 2012.** Appreciation, use, and management of biodiversity and ecosystem services in california’s working landscapes. Environmental Management. 50(3): 427-440. <https://doi.org/10.1007/s00267-012-9900-z>.
* **Puritty, C.E.; Esch, E.H.; Castro, S.P.; Ryan, E.M.; Lipson, D.A.; Cleland, E.E. 2019.** Drought in southern California coastal sage scrub reduces herbaceous biomass of exotic species more than native species, but exotic growth recovers quickly when drought ends. Plant Ecology. 220(2): 151-169. <https://doi.org/10.1007/s11258-019-00912-5>.
* **Quinton, A. 2021.** California’s local meat suppliers struggle to stay in business. UC Davis. <https://www.ucdavis.edu/food/news/californias-local-meat-suppliers-struggle-stay-business>.
* **Ratcliff, F.; Rao, D.; Barry, S.; Dewees, S.; Macaulay, L.; Larsen, R.; Shapero, M.; Peterson, R.; Moritz, M.; Forero, L. 2022.** Cattle grazing reduces fuel and leads to more manageable fire behavior. California Agriculture. 76(2-3): 60-69. <https://doi.org/10.3733/ca.2022a0011>.
* **Reeves, M.C.; Moreno, A.L.; Bagne, K.E.; Running, S.W. 2014.** Estimating climate change effects on net primary production of rangelands in the united states. Climatic Change. 126(3-4): 429-442. <https://doi.org/10.1007/s10584-014-1235-8>.
* **Reiner, R.J. 2007.** Fire in California grasslands. In: Stromberg, M.R.; Corbin, J.D.; D'Antonio, C., eds. California grasslands: Ecology and management. Berkeley, CA: University of California Press: 390. Chapter 18. [https://doi.org/https://doi.org/10.1525/california/9780520252202.001.0001](https://doi.org/https:/doi.org/10.1525/california/9780520252202.001.0001).
* **Richards, R.; George, M. 1996.** Evaluating changes in ranch management practices through extension education. Journal of Range Management. 49(1): 76-80. <https://doi.org/10.2307/4002729>.
* **Robinson, C.; Snow, M. 2022.** Grazing for conservation cattle’s taste for non-native grasses helps vernal pools thrive. U.S. Fish and Wildlife Service (USFWS). <https://www.fws.gov/story/2022-02/grazing-conservation>.
* **Roche, L.; Tate, K.; Davy, J.; Eastburn, D.J. 2016.** Adaptive grazing management for weed control. Uc davis rangeland weeds and pests workshop. PowerPoint Presentation. <https://ranchwaterqualityplanning.org/wp-content/uploads/2018/02/5LeslieRoche1.pdf>.
* **Roche, L.M. 2021.** Grand challenges and transformative solutions for rangeland social-ecological systems – emphasizing the human dimensions. Rangelands. 43(4): 151-158. [https://doi.org/https://doi.org/10.1016/j.rala.2021.03.006](https://doi.org/https:/doi.org/10.1016/j.rala.2021.03.006).
* **Roche, L.M.; Kromschroeder, L.; Atwill, E.R.; Dahlgren, R.A.; Tate, K.W. 2013.** Water quality conditions associated with cattle grazing and recreation on national forest lands. Plos One. 8(6): e68127. <https://doi.org/10.1371/journal.pone.0068127>.
* **Roche, L.M.; Saitone, T.L.; Tate, K.W. 2021.** Rangeland ecosystem service markets: Panacea or wicked problem? Frontiers in Sustainable Food Systems. 5 <https://doi.org/10.3389/fsufs.2021.554373>.
* **Roche, L.M.; Schohr, T.K.; Derner, J.D.; Lubell, M.N.; Cutts, B.B.; Kachergis, E.; Eviner, V.T.; Tate, K.W. 2015.** Sustaining working rangelands: Insights from rancher decision making. Rangeland Ecology & Management. 68(5): 383-389. <https://doi.org/10.1016/j.rama.2015.07.006>.
* **Sayre, N.F.; Carlisle, L.; Huntsinger, L.; Fisher, G.; Shattuck, A. 2012.** The role of rangelands in diversified farming systems: Innovations, obstacles, and opportunities in the USA. Ecology and Society. 17(4): 43. <https://doi.org/10.5751/ES-04790-170443>.
* **SBCFSC. 2024.** Prescribed herbivory. Santa Barbara County Fire Safe Council,. <https://sbfiresafecouncil.org/prescribedherbivory/>.
* **Schachtschneider, C.L.; Strand, E.K.h.o.o.; Launchbaugh, K.L.; Jensen, S.h.o.o. 2024.** Targeted cattle grazing to alter fuels and reduce fire behavior metrics in shrub-grasslands. Rangeland Ecology & Management. 96 p.105-116: 105-116. [https://doi.org/https://doi.org/10.1016/j.rama.2024.05.010](https://doi.org/https:/doi.org/10.1016/j.rama.2024.05.010).
* **Schieltz, J.M.; Rubenstein, D.I. 2016.** Evidence based review: Positive versus negative effects of livestock grazing on wildlife. What do we really know? Environmental Research Letters. 11(11): 113003. <https://doi.org/10.1088/1748-9326/11/11/113003>.
* **Schohr, T.K.; Gornish, E.S.; Woodmansee, G.; Shaw, J.; Tate, K.W.; Roche, L.M. 2020.** Practitioner insights into weed management on california’s rangelands and natural areas. Environmental Management. 65(2): 212-219. <https://doi.org/10.1007/s00267-019-01238-8>.
* **Shapero, M. 2016.** Ecology and management of medusahead. UC ANR. PowerPoint Presentation. <https://ranchwaterqualityplanning.org/wp-content/uploads/2018/02/3MatthewShapero.pdf>.
* **Shapero, M.W.K.; Huntsinger, L.; Becchetti, T.A.; Mashiri, F.E.; James, J.J. 2018.** Land manager perceptions of opportunities and constraints of using livestock to manage invasive plants. Rangeland Ecology and Management. 71(5): 603-611. [https://doi.org/https://doi.org/10.1016/j.rama.2018.04.006](https://doi.org/https:/doi.org/10.1016/j.rama.2018.04.006).
* **Shobe, B. 2023.** Using grazing animals to reduce the risks of wildfires. Blog. California Climate & Agriculture Network (CalCAN),. <https://calclimateag.org/using-grazing-animals-to-reduce-the-risk-of-wildfires/>.
* **Siegel, K.J.; Macaulay, L.h.o.o.; Shapero, M.; Becchetti, T.; Larson, S.; Mashiri, F.E.; Waks, L.; Larsen, L.h.o.o.; Butsic, V. 2022.** Impacts of livestock grazing on the probability of burning in wildfires vary by region and vegetation type in California. JOURNAL OF ENVIRONMENTAL MANAGEMENT. 322 p.116092- [https://doi.org/https://doi.org/10.1016/j.jenvman.2022.116092](https://doi.org/https:/doi.org/10.1016/j.jenvman.2022.116092).
* **Starrs, G.; Siegel, K.; Larson, S.; Butsic, V. 2024.** Quantifying large-scale impacts of cattle grazing on annual burn probability in napa and sonoma counties, California. Ecology and Society. 29(3) <https://doi.org/10.5751/es-15080-290310>.
* **Stork, N.; Mainzer, A.; Martin, R. 2023.** Native and non‐native plant regrowth in the santa monica mountains national recreation area after the 2018 woolsey fire. Ecosphere. 14(6) <https://doi.org/10.1002/ecs2.4567>.
* **Stuth, J. W. (1996).** Managing grazing lands: critical information infrastructures and knowledge requirements for the future. *Trop Grassl*, *30*, 2-17.
* **Swain, D.L. 2021.** A shorter, sharper rainy season amplifies California wildfire risk. Geophysical Research Letters. 48(5) <https://doi.org/10.1029/2021gl092843>.
* **Syphard, A.D.; Brennan, T.J.; Keeley, J.E. 2019.** Extent and drivers of vegetation type conversion in southern California chaparral. Ecosphere. 10(7): e02796. <https://doi.org/10.1002/ecs2.2796>.
* **Syphard, A.D.; Keeley, J.E.; Abatzoglou, J.T. 2017.** Trends and drivers of fire activity vary across California aridland ecosystems. Journal of Arid Environments. 144: 110-122. [https://doi.org/https://doi.org/10.1016/j.jaridenv.2017.03.017](https://doi.org/https:/doi.org/10.1016/j.jaridenv.2017.03.017).
* **Taylor, C.A. 2006.** Targeted grazing to manage fire risk. In: Targeted grazing : A natural approach to vegetation management and landscape enhancement. Centennial, CO: American Sheep Industry Association: 108-115. Chapter 12. <https://www.sheepusa.org/wp-content/uploads/2022/01/Targeted-Grazing-Book-compressed.pdf>.
* **Timbrook, J.; Johnson, J.R.; Earle, D.D. 1982.** Vegetation burning by the chumash. Journal of California and Great Basin anthropology. eScholarship, University of California. <http://www.escholarship.org/uc/item/1rv936jq>.
* **Tyler, C.M.; Mahall, B.E.; Davis, F.W.; Hall, M. 2002.** Factors limiting recruitment in valley and coast live oaks. In: Standiford, R.B.; McCreary, D.; Purcell, K.L., eds. Proceedings of the fifth symposium on oak woodlands: Oaks in california’s changing landscape. Albany, CA: U.S. Department of Agriculture, Forest Service, Pacific Southwest Research Station: 565-572. Chapter Regeneration and Restoration. PSW-GTR-184. <https://doi.org/10.2737/psw-gtr-184>.
* **UC ANR. 2025.** Grazing. University of California Agriculture and Natural Resources,. <https://ucanr.edu/sites/fire/Preparedness/Treatment/Grazing/>.
* **United States Department of the Interior (USDI). 2017.** California rangeland management and grazing. Rangeland Health. BLM. <https://www.blm.gov/programs/natural-resources/rangeland-and-grazing/rangeland-health/california#:~:text=California%20Rangeland%20Management%20and%20Grazing&text=These%20allotments%20encompass%20about%206.1,of%20dry%20forage%20by%20weight>).
* **Van de Water, K.M.; Safford, H.D. 2011.** A summary of fire frequency estimates for California vegetation before euro-american settlement. Fire Ecology. 7(3): 26-58. <https://doi.org/10.4996/fireecology.0703026>.
* **Van Etten, E.J.B.; Brooks, M.L.; Greenville, A.C.; Wardle, G.M. 2022.** Editorial: Fire regimes in desert ecosystems: Drivers, impacts and changes. Frontiers in Ecology and Evolution. 10 <https://doi.org/10.3389/fevo.2022.968031>.
* **Vincent, C.H. 2019.** Grazing fees: Overview and issues. RS21232. Washington, D.C.: Congressional Research Service. 15 p. <https://sgp.fas.org/crs/misc/RS21232.pdf>.
* **Voeller, D.J.; Ketcham, B.J.; Becker, B.H. 2021.** Improved microbial water quality associated with best management practices on coastal dairies and livestock grazing operations. Rangeland Ecology and Management. 76: 139-149. [https://doi.org/https://doi.org/10.1016/j.rama.2021.02.011](https://doi.org/https:/doi.org/10.1016/j.rama.2021.02.011).
* **Volski, L.; Mcinturff, A.; Gaynor, K.M.; Yovovich, V.; Brashares, J.S. 2021.** Social effectiveness and human-wildlife conflict: Linking the ecological effectiveness and social acceptability of livestock protection tools. Frontiers in Conservation Science. 2 <https://doi.org/10.3389/fcosc.2021.682210>.
* **Waddell, K.L.; Barrett, T.M. 2005.** Oak woodlands and other hardwood forests of California, 1990s. U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. <https://doi.org/10.2737/pnw-rb-245>.
* **Walsh, J. 2024.** Wildlife deputy director, land acquisition program, ca wildlife conservation board.
* **Warter, M.M.; Singer, M.B.; Cuthbert, M.O.; Roberts, D.; Caylor, K.K.; Sabathier, R.; Stella, J. 2021.** Drought onset and propagation into soil moisture and grassland vegetation responses during the 2012–2019 major drought in southern California. Hydrology and Earth System Sciences. 25(6): 3713-3729. <https://doi.org/10.5194/hess-25-3713-2021>.
* **Westerling, A.L.; Bryant, B.P. 2007.** Climate change and wildfire in California. Climatic Change. 87(S1): 231-249. <https://doi.org/10.1007/s10584-007-9363-z>.

### 2025 Task Force Strategic Action Plan Prescribed Herbivory Working Group

* **Most recent Recommendations to increase the pace and scale of prescribed grazing (ExpandingRx Grazing\_ActionPlan\_20250130.docx) draft from working group:** [**https://calfire.box.com/s/sae422l7y77q378izoctwy585hywrjsh**](https://calfire.box.com/s/sae422l7y77q378izoctwy585hywrjsh)(Cole, Bart, and Katie Delbar, all RMAC members, were involved in developing this)
* **New Files from Forest Schafer (Task Force deliverables folder embedded in Local/Regional Guidance folder** [**https://calfire.box.com/s/0utysg1kly5uuv5m2kjqxjansure7hf0**](https://calfire.box.com/s/0utysg1kly5uuv5m2kjqxjansure7hf0)**):** 
  + RxGrazingWorkGroup\_InitialScope\_20241212.docx
  + ExpandingRx Grazing\_ActionPlan\_20250319.docx

### Resources from recent (2025) CRCC/Rustici Symposium presentations:

* [**2025 Rustici Symposium Poster - RMAC M. Horney**](https://calfire.box.com/s/31fch806zz1r5213kdpwvcx6pyr004hj)
* [**2025 CRCC Symposium - S. Larson**](https://calfire.box.com/s/f57k9jpsd36p0y5p24ws0lrd7cjhkjif)

### 2024 RMAC Educational Workshop

There is not a lot from this workshop in terms of resources; if there are any, Stephanie would maybe have them. But here is the agenda for that day for a list of speakers we can contact for resources and input:

### Resources from 2024 SRM Symposium

In partnership with the Society for Range Management Targeted Grazing Committee, the Range Management Advisory Committee hosted a panel symposium on prescribed herbivory in forests and rangelands with speakers in academia, state government, and private industry spanning California, Idaho, Minnesota, and Saskatchewan, Canada. Panelists included:

* Kelly Anderson with the Minnesota Department of Agriculture; Bianca Artadi-Soares, owner-operator of Star Creek Land Stewards and Talbot Sheep Company
* Cole Bush, owner-operator of Shepherdess Land & Livestock and the Grazing School of the West
* Matt Gabica, owner-operator of We Rent Goats
* Dr. Marc Horney, Certified Rangeland Manager (CRM) and Associate Professor at California Polytechnic State University, San Luis Obispo
* Dr. Stephanie Larson, Director of the University of California Cooperative Extension for Sonoma County
* Lee Sexton, owner-operator of Sexton Grazing & Consulting
* Dr. Kristina Wolf, CRM and Senior Environmental Scientist for the Board of Forestry & Fire Protection

Speaker presentations slides (where applicable) are linked below, along with a Supplementary Resources List that includes links to relevant literature and websites, and provides access to a public Box drive with hosted files to ensure long-term access to shared documents.

* **Prescribed/Targeted Grazing Resources List:** [**Supplementary Resources List**](https://bof.fire.ca.gov/media/5m0h1xz2/prescribed-grazing-resource-list-final.pdf)
* [**Additional Background Resources Folder**](https://calfire.box.com/s/go3bjcj1pbg2iwef76cf9t45lu9d7ja9)
* **Presentations:** 
  + [**Speaker Sections 1–4, with slides from B. Artadi-Soares, C. Bush, M. Gabica, M. Horney, and K. Wolf**](https://bof.fire.ca.gov/media/guqfgdvo/k-wolf-srm-2024-01-30.pdf)
  + [**S. Larson – Section 2, Targeted Grazing**](https://bof.fire.ca.gov/media/gf5fhi5a/s-larson-section-2-targeted-grazing-srm.pdf)
  + [**S. Larson – Section 3, Match.Graze**](https://bof.fire.ca.gov/media/3eno4fts/s-larson-section-3-match-graze-srm.pdf)

### 2023 CA Wildfire Conference Resources

In partnership with Ventura County Resource Conservation District and Ventura County Wildfire Collaborative, Coastal Quest hosted a 3-day exchange bringing together a diverse group of wildfire practitioners to focus on understanding, preventing, and recovering from wildfires. Day 1 focused on Planning and Collaboration; Day 2 focused on Solutions and Actions; and Day 3 comprised four different field tour options, including one on “Wildfire Mitigation and Adaptive Management Practices: Prescribed Grazing and Burning”. Members and staff for the RMAC participated in panel Session 6 on Day 2: “Adaptive Management: Prescribed Grazing and Burns”.

* [**California Wildfire Conference Homepage**](https://gcc02.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwww.coastal-quest.org%2Fconferences%2Fcalifornia-wildfire-conference%2F%23toggle-id-2&data=05%7C02%7CCALFIREITHelpDesk%40fire.ca.gov%7Cb8c3dfc1fe7941332a3408dc0d755815%7C447a4ca05405454dad68c98a520261f8%7C1%7C0%7C638400045227308899%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6Ik1haWwiLCJXVCI6Mn0%3D%7C3000%7C%7C%7C&sdata=RZS%2F%2BBfTNlG76aBpHYu%2FtSjvthpIQLrYvH8kE709RIU%3D&reserved=0)
* **Conference Program** (there might be information of interest in other talks, not sure, but here is a link so you can investigate the other talks)
* **Prescribed Grazing/Burning Session Presentations**
  + [**Day 2, Session 6: Prescribed Grazing and Burns Session Recording**](https://gcc02.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwww.youtube.com%2Fwatch%3Fv%3DorTDeECVKz4&data=05%7C02%7CCALFIREITHelpDesk%40fire.ca.gov%7Cb8c3dfc1fe7941332a3408dc0d755815%7C447a4ca05405454dad68c98a520261f8%7C1%7C0%7C638400045227465114%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6Ik1haWwiLCJXVCI6Mn0%3D%7C3000%7C%7C%7C&sdata=032O0i4v7IrBB3SctcRbVICymzpjAiLyrzmTZIzmsyU%3D&reserved=0)
  + [**K. Wolf – Prescribed Grazing and Burns**](https://bof.fire.ca.gov/media/o0knyvji/k-wolf-ca-wfc-2023-10-25.pdf)
  + [**C. Bush – Adaptive Management and Prescribed Grazing**](https://bof.fire.ca.gov/media/xqhlkpva/ca-wildfire-conference_cole-bush.pdf)
  + [**J. Stackhouse – Prescribed Burning**](https://bof.fire.ca.gov/media/sn4fjaja/j-stackhouse-prescribed-burns.pdf)
  + [**T. Winning – Air Quality**](https://bof.fire.ca.gov/media/btijbmxu/vcapcd-agricultural-burn-program_cawfc_twinning.pdf)

### 2023 RMAC Educational Series

#### NAVIGATING THE APPLICATION AND PERMITTING PROCESS FOR WILDFIRE FUELS TREATMENT USING TARGETED GRAZING

This half-day no-cost workshop was held in person and virtually during the morning session of the Joint Range Conference “Rangeland and Fire”, a partnership of the Range Management Advisory Committee and the California Rangeland Conservation Coalition. As CAL FIRE and the State of California continued to ramp up investments for increasing fuel treatments to manage high fuel loads and reduce wildfire risk, the tool of using livestock to treat fuels has garnered increased attention for its potential to managing combustible vegetation. Participants learned about a variety of **funding sources available to support wildfire prevention projects** and activities in and near fire threatened communities that focus on increasing the protection of people, structures, and communities. In this workshop, CALFIRE, UC Extension advisors, and grazing managers offered general **guidelines for developing applications for fuel reduction projects utilizing grazing through Request for Proposal (RFP) processes**, and for developing successful grazing agreements. Speakers also provided information required for major elements of the funding application process and important considerations for wildfire fuel mitigation using prescribing grazing.  
  
Speakers included RMAC Vice-Chair and UCCE Marin and Sonoma County Director and Livestock Range Management Advisor, Dr. Stephanie Larson; CAL FIRE Sonoma-Lake-Napa Unit Battalion Chief Marshall Turbeville; RMAC Chair and professor of Rangeland Ecology & Management in the Animal Science Department at California Polytechnic State University, San Luis Obispo, Dr. Marc Horney; Owner of Walking C Livestock, Principal of Koopmann Rangeland Consulting, and Area Land Manager for the San Francisco Public Utilities Commission, Clayton Koopman; and Ryan Nielsen of TN Cattle. This workshop was produced with support from California Polytechnic State University, San Luis Obispo, Swanton Pacific Ranch, Fuels and Vegetation Education (FAVE) Training Program.  
  
***Supplemental Materials***

* [**Joint Range Conference Flyer**](https://bof.fire.ca.gov/media/azhg1zhs/joint-range-conference-flyer.pdf)
* [**Workshop Recording**](https://vimeo.com/805259636)
* [**2023 Joint Range Conference: Rangelands and Fire Agenda**](https://bof.fire.ca.gov/media/uhtkpznx/feb-24-full-day-agenda.pdf)
* [**K. Wolf - RMAC Operations**](https://bof.fire.ca.gov/media/14vlddxa/about-the-rmac_k-wolf-2023-02-24.pdf)
* [**S-Larson - Match.Graze**](https://bof.fire.ca.gov/media/k2hdxfto/s-larson-match-graze.pdf)
* [**M. Turbeville – Grazing from a Firefighter’s Perspective**](https://bof.fire.ca.gov/media/2m4b33rw/m-turbeville-grazing-presentation-02-24-2023.pdf)
* [**FAVE Event Webpage**](https://spranch.calpoly.edu/navigating-proposal-process-wildfire-fuels-treatment-using-prescribed-grazing)

#### TARGETED GRAZING FOR FUEL REDUCTION: CASE STUDIES FROM EAST BAY REGIONAL PARKS DISTRICT

This all-day public workshop was an opportunity to learn about **targeted grazing with a combination of cattle, sheep, and goats** as part of a vegetation management and fuels reduction strategy. Participants improved their understanding of why people might choose targeted grazing as part of a vegetation management and fuels reduction strategy, and how that gets implemented. Fuels Reduction Coordinator at East Bay Regional Park District (EBRPD), Steve Keller, explained what is required to manage a grazing contract on a day-to-day basis. Rangeland Specialist at EBRPD, Allison Rofe, discussed the goals of the East Bay Regional Park’s livestock grazing program including treatment, design, permitting pathway, and methodology of partnerships. Star Creek Land Stewards' Bianca Soares highlighted targeted grazers' ability to adapt methods based on project goals and differences in species' grazing styles. This workshop was produced with support from California Polytechnic State University, San Luis Obispo, Swanton Pacific Ranch, Fuels and Vegetation Education (FAVE) Training Program.

***Supplemental Materials***

* [**Star Creek Land Stewards Educational Flyer**](https://bof.fire.ca.gov/media/ff4cui0z/star-creek-land-stewards-flyer_ada.pdf)
* [**East Bay Regional Parks District RFP**](https://bof.fire.ca.gov/media/h5lf3uol/2022-goat_sheep-grazing-ebrpd-rfp_ada.pdf)
* [**East Bay Regional Parks District Standard Contract for Services**](https://bof.fire.ca.gov/media/rpud0iex/2022-contract-for-services-ebrpd_ada.pdf)
* [**East Bay Regional Parks District Wildfire Hazard Reduction and Resource Management Plan**](https://www.ebparks.org/wildfire-hazard-reduction-and-resource-management-plan?url=https%3A%2F%2Fwww.ebparks.org%2Fwildfire-hazard-reduction-and-resource-management-plan&data=05%7C01%7CMazonika.Kemp%40bof.ca.gov%7Ce5be133ca4494fa1438f08db8fd78a59%7C447a4ca05405454dad68c98a520261f8%7C1%7C0%7C638261928244005415%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6Ik1haWwiLCJXVCI6Mn0%3D%7C3000%7C%7C%7C&sdata=9Xshl4K%2F5jL7i%2FzPJZ9uTud%2BHBDDtGOtmXRQbKxwTxk%3D&reserved=0)
* [**East Bay Regional Parks District Grazing Maps**](https://bof.fire.ca.gov/media/pe0bpad4/2023_overview_indivparks_drafts_ada.pdf)
* [**East Bay Regional Parks Fire Hazard Severity Maps**](https://bof.fire.ca.gov/media/rsnbet2c/treatmentareas_tofhsz_2023_drafts_ada.pdf)
* [**FAVE Event Webpage**](https://spranch.calpoly.edu/targeted-grazing-fuel-reduction-case-studies-east-bay-regional-parks)

#### TARGETED GRAZING FOR FUEL REDUCTION: CASE STUDIES FROM THE RANCHO JAMUL ECOLOGICAL RESERVE AND HOLLENBECK CANYON WILDLIFE AREA (HCWA)

This all-day public workshop was an opportunity to learn about **targeted grazing with cattle** as part of a vegetation management and fuels reduction strategy. Co-sponsored by the California-Pacific Section of the Society for Range Management spring meeting, participants learned about targeted grazing as a vegetation management and fuels reduction strategy in the Wildland-Urban Interface while incorporating conservation values into strategic management. This is the furthest south this kind of grazing management for combined fuels management conservation values is documented to occur in California, about seven miles north of the Mexico border in Jamul, California. Tracie Nelson, Department of Fish & Wildlife (CDFW) and Rancho Jamul Ecological Reserve (RJER) biologist, reviewed the context of the grazing project, including property-wide goals and special-status species, including the Burrowing Owl and rare Otay Tarplant; rancher John Mark Austel of 4J Land & Cattle described his grazing planning process, working with partners at RJER and HCWA including CAL FIRE, CDFW, and U.S. Border Patrol, and managing multiple often competing factors; Sarah McCutcheon of the US Geological Survey spoke about the San Diego Management and Monitoring Program for the regional conservation of sensitive species and habitats under the Natural Community Conservation Act; Dr. James Bartolome of U.C. Berkeley professor and Dr. Felix Ratcliff of LD Ford Consultants in Rangeland Conservation Science spoke about the collaborative San Diego Association of Governments (SANDAG) project in which researchers across a variety of institutions work to understand how grazing and burning affect grasslands and restoration success, and Dr. Bartolome also discussed the development and use of Ecological Site Descriptions; Raul Alvarado of the Natural Resources Conservation Service provided valuable information on NRCS programs, including funding opportunities and technical support for ranchers; CAL FIRE Battalion Chief Pete Scully shared insights into the effectiveness of grazing and other fuels treatments for fire and fuels management; and Matthew Shapero, Livestock and Range Advisor for the U.C. Cooperative Extension in Ventura and Santa Barbara Counties, shared research behind the science of fuels management and fire danger as it relates to livestock grazing and manipulation of fine fuels. Morning and afternoon refreshments were provided by the San Diego-Imperial County Cattlemen’s Association, and San Diego Cattlewomen’s Association, respectively. This workshop was produced with support from California Polytechnic State University, San Luis Obispo, Swanton Pacific Ranch, Fuels and Vegetation Education (FAVE) Training Program.

***Supplemental Materials***

* [May 8, 2023 Flyer](https://bof.fire.ca.gov/media/d1ubl035/rmac-calpac-srm-san-diego-2023-field-tour_reg.pdf)
* [May 8, 2023 Agenda](https://bof.fire.ca.gov/media/sesjnhi1/may-8-rjer-and-hcwa-agenda_ada.pdf)
* [John Austel – 4J Land & Cattle Grazing Management](https://bof.fire.ca.gov/media/ln5nxtjv/j-austel-4j-land-and-cattle-050823_ada.pdf)
* [Sarah McCutcheon – Sensitive Species Handout](https://bof.fire.ca.gov/media/pxtdx22e/s-mccutcheon-usgs-sensitive-species-050823_ada.pdf)
* [Matthew Shapero – Science of Grazing and Fire](https://bof.fire.ca.gov/media/fl5ebjuq/m-shapero-ucce-050823_ada.pdf)
* [NRCS – EQIP Factsheet](https://bof.fire.ca.gov/media/mccdeake/eqip-factsheet_ada.pdf)
* [J. Bartolome and F. Ratcliff](https://bof.fire.ca.gov/media/3jmnpcao/sandag-grazing-study-handout_ada.pdf) [–](https://bof.fire.ca.gov/media/xraftixn/ratcliff-et-al-2022_ada.pdf) [SANDAG Grazing Study](https://bof.fire.ca.gov/media/3jmnpcao/sandag-grazing-study-handout_ada.pdf)
* [Ratcliff et al. 2022 – Grazing, Fuels, and Fire Behavior](https://bof.fire.ca.gov/media/xraftixn/ratcliff-et-al-2022_ada.pdf)
* Barry & Huntsinger 2021 Grazing & Conservation

#### ECOLOGICAL MANAGEMENT OF FIRE-PRONE LANDSCAPES: PRESCRIBED GRAZING IN THE OJAI VALLEY

Sponsored by the Ojai Valley Fire Safe Council (OVFSC) and Range Management Advisory Committee, this all-day public workshop was an opportunity to learn about **targeted grazing with goats and sheep** within the context of OVFSC's multi-stakeholder approach to community-wide fire-safety and ecological resilience working with graziers, fire fighters, ecologists, natural resource experts, community organizations, and U.C. Cooperative Extension. Site visits and grazing demonstrations occurred at the Besant School of Happy Valley and the Thacher School, where grazing with sheep and goats is being utilized to manage fuel loads and fire risk in these high-risk communities.

Chris Danch, Executive Director of the OVFSC shared details about the formation and implementation of the Ojai Valley Community-Supported Grazing Program (CSGP), including relationships with graziers and partners; trade-offs in short-and long-term ecological goals and outcomes; challenges, constraints, and successes; and funding mechanisms. Owner-operator Cole Bush of Shepherdess Land & Livestock spoke about the evolution and intricacies of co-developed goals, grazing planning and management, and monitoring outcomes within an adaptive management framework. Matthew Shapero, Livestock and Range Advisor for the U.C. Cooperative Extension in Ventura and Santa Barbara Counties, shared research behind the science of fuels management and fire danger as it relates to livestock grazing and manipulation of fine fuels. Tom Maloney, Executive Director of the Ojai Valley Land Conservancy (OVLC), described local opportunities for prescribed grazing in OVLC’s stewardship programming within the context of ecological stewardship and a fire-safe, fire-ready community. Michael Leicht, owner-operator of Ventura Brush Goats, walked participants through the ins and outs of grazing planning in complex wildfire-urban landscapes. Morning refreshments were provided by local women-owned [Pinhole Coffee](https://www.pinholecoffee.com/?url=https%3A%2F%2Fwww.pinholecoffee.com%2F&data=05%7C01%7CMazonika.Kemp%40bof.ca.gov%7Cb9bcce446c284b71488208db979556d0%7C447a4ca05405454dad68c98a520261f8%7C1%7C0%7C638270439974408874%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6Ik1haWwiLCJXVCI6Mn0%3D%7C3000%7C%7C%7C&sdata=%2BsNLlYh1LGP%2Bi%2FH9hW1xpoYpxkKylSTIKF6rzbAjNwQ%3D&reserved=0) and sponsored by Cole Bush of Shepherdess Land & Livestock.

***Supplemental Materials***

* [May 16, 2023 Flyer](https://bof.fire.ca.gov/media/h5hdtexo/ojai-field-day-may-16th.png)
* [May 16, 2023 Agenda](https://bof.fire.ca.gov/media/rktpopcu/ojai-agenda-2023-05-16_ada.pdf)
* [Ojai Valley Fire Safe Council Community Supported Grazing Program](https://bof.fire.ca.gov/media/1l4fsoe1/ovfsc-cgsp-2023-05-16_ada.pdf)
* [M. Leicht – Ventura Brush Goats](https://bof.fire.ca.gov/media/tngdnmyt/m-leicht-2023-05-16_ada.pdf)
* [Biomass Reductions and Fire Hazard, M. Shapero – UCANR](https://bof.fire.ca.gov/media/e4hdlf3d/m-shapero-2023-05-16_ada.pdf)
* [Siegel et al. 2022 – Grazing & Wildfire in California](https://bof.fire.ca.gov/media/2tmbxl0t/siegel-et-al-2022_ada.pdf)
* [California Fire Safe Council-Fuels Treatment Success Stories](https://storymaps.arcgis.com/stories/7ce975ac02b64fa7bf054dafbf6d5de6?url=https%3A%2F%2Fstorymaps.arcgis.com%2Fstories%2F7ce975ac02b64fa7bf054dafbf6d5de6&data=05%7C01%7CMazonika.Kemp%40bof.ca.gov%7C94dbf4aaf5e14b8e280008db9797b72a%7C447a4ca05405454dad68c98a520261f8%7C1%7C0%7C638270450101010974%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6Ik1haWwiLCJXVCI6Mn0%3D%7C3000%7C%7C%7C&sdata=Bx1%2BXRPuEAgTcn852lMM4lMXdNQijz0Qo%2BqRD%2BLgOgI%3D&reserved=0)
* [Putting Nature to Work Series: Prescribed Grazing for Ecological and Wildfire Resilience](https://cecsb.org/webinars/putting-nature-to-work-series-prescribed-grazing-for-ecological-and-wildfire-resilience-6mr7k?url=https%3A%2F%2Fcecsb.org%2Fwebinars%2Fputting-nature-to-work-series-prescribed-grazing-for-ecological-and-wildfire-resilience-6mr7k&data=05%7C01%7CMazonika.Kemp%40bof.ca.gov%7C94dbf4aaf5e14b8e280008db9797b72a%7C447a4ca05405454dad68c98a520261f8%7C1%7C0%7C638270450101010974%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6Ik1haWwiLCJXVCI6Mn0%3D%7C3000%7C%7C%7C&sdata=cgAJ9sOjX1yICby%2F0Dgg5TMDcZwa%2FA7xhmbUv05k0Zk%3D&reserved=0)
* [Stewards of the Land](https://www.youtube.com/watch?v=Ihe4zIkANDo&t=103s?url=https%3A%2F%2Fyoutu.be%2FIhe4zIkANDo%3Ft%3D103&data=05%7C01%7CMazonika.Kemp%40bof.ca.gov%7C94dbf4aaf5e14b8e280008db9797b72a%7C447a4ca05405454dad68c98a520261f8%7C1%7C0%7C638270450101010974%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6Ik1haWwiLCJXVCI6Mn0%3D%7C3000%7C%7C%7C&sdata=PQR744mhaCHMOSrA13dX2jC43NlhVPCnjSr%2FYMkoj80%3D&reserved=0)
* [Prescribed Herbivory for Wildfire Prevention Treatment](https://chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://bof.fire.ca.gov/media/7208/white-paper.pdf?url=https%3A%2F%2Fbof.fire.ca.gov%2Fmedia%2F7208%2Fwhite-paper.pdf&data=05%7C01%7CMazonika.Kemp%40bof.ca.gov%7C94dbf4aaf5e14b8e280008db9797b72a%7C447a4ca05405454dad68c98a520261f8%7C1%7C0%7C638270450101010974%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6Ik1haWwiLCJXVCI6Mn0%3D%7C3000%7C%7C%7C&sdata=kqWUJV9l8bbAlmn6%2F80DseF9k9uf2cuqZP9AFr0cg9o%3D&reserved=0)
* [Regenerate Ojai](https://www.youtube.com/watch?v=qx6cuER8noc&t=1523s)
* [UCANR Grazing for Fire Prevention](https://ucanr.edu/sites/Rangelands/Grazing_for_Fire_Prevention_/?url=https%3A%2F%2Fucanr.edu%2Fsites%2FRangelands%2FGrazing_for_Fire_Prevention_%2F&data=05%7C01%7CMazonika.Kemp%40bof.ca.gov%7C94dbf4aaf5e14b8e280008db9797b72a%7C447a4ca05405454dad68c98a520261f8%7C1%7C0%7C638270450101010974%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6Ik1haWwiLCJXVCI6Mn0%3D%7C3000%7C%7C%7C&sdata=yez%2FlqQ5wFPhAUkCCKhi9uFoYEtiGKRq8q%2FnJ4GlBMI%3D&reserved=0)

#### PRESCRIBED HERBIVORY FOR FUELS REDUCTION: GRAZING PLANNING AND PERMITTING IN THE STATE OF CALIFORNIA

In this workshop, representatives from CALFIRE (Department of Forestry & Fire Protection), Caltrans (Department of Transportation), the CDFW (California Department of Fish & Wildlife), and CP SLO’s (California Polytechnic State University, San Luis Obispo) Range Program discussed the steps involved in the development of grazing agreements (‘licenses’) on State lands and beyond. Len Nielson, CAL FIRE Staff Chief for Prescribed Fire and Environmental Protection, provided an in-depth review of CEQA (California Environmental Quality Act) processes and requirements. Julea Shaw, Environmental Scientist with the CDFW, spoke about CDFW Excess Vegetation Removal (Grazing) Permit Process. Dr. Marc Horney, Associate Professor at CP SLO, discussed requirements for contracting on State lands and general guidelines for developing applications for fuel reduction projects utilizing grazing. Lisa Worthington, CalTrans Chief of the Office of Vegetation and Wildfire Management, described the process of obtaining a CalTrans encroachment permit for prescribed herbivory. This workshop was produced with support from California Polytechnic State University, San Luis Obispo, Swanton Pacific Ranch, Fuels and Vegetation Education (FAVE) Training Program.

***Supplemental Materials***

* [May 19, 2023 Agenda](https://bof.fire.ca.gov/media/yauiqghk/agenda-prescribed-herbivory-for-fuels-reduction.pdf)
* [Webinar Recording](https://vimeo.com/829576166?share=copy)
* [L. Nielson - CAL FIRE CEQA Permitting Process](https://bof.fire.ca.gov/media/iofj2bxo/l-nielsen-ceqa-process.pdf)
* [L. Worthington - Caltrans Vegetation Management Program](https://bof.fire.ca.gov/media/a3wpgn5t/l-worthington-caltrans.pdf)
* [J. Shaw - CDFW Grazing Permits](https://bof.fire.ca.gov/media/ucsntpjq/j-shaw-cdfw-grazing-permits.pdf)
* [Caltrans Vegetation and Wildlife Management Map Viewer](https://caltrans.maps.arcgis.com/apps/webappviewer/index.html?id=b824c2b040c0475fb207df0c432cbf1d)
* [FAVE Event Webpage](https://spranch.calpoly.edu/prescribed-herbivory-fuels-reduction-grazing-planning-and-permitting-state-california)

#### SALINAS RIVER VEGETATION MANAGEMENT PROJECT: GRAZING FOR FUELS REDUCTION IN A RIPARIAN CORRIDOR

Sponsored by Althouse & Meade and the Range Management Advisory Committee, this all-day public workshop was an opportunity to learn about **targeted grazing in a riparian area with goats in conjunction with mechanical methods** to reduce fuel loads in an active riparian area in a first-of-its-kind Lake and Streambed Alteration Agreement that provides the mechanism for a long-term grazing plan. Collaborators from the City of Paso Robles’ Fire Department, San Luis Obispo (SLO) Firesafe Council, Althouse & Meade Consulting, and grazing operator The Goat Girls provided insight into this long-term vegetation management project in a California riverbed fuel model. Thank you to Althouse & Meade Consulting for providing a bountiful presentation of refreshments and snacks.

Beth Reynolds, owner-operator of The Goat Girls, discussed logistics of targeted grazing within the scope of the 100-acre project, grazing post-fire and post-mastication, and the use of sheep and/or goats to achieve desired vegetative goals. Participants viewed areas managed by grazing and a goat grazing demonstration and discussed the necessary supporting infrastructure and equipment. City of Paso Robles' Fire Department Battalion Chief, Jay Enns, provided background on the site history and described how fires in the Salinas Riverbed led to a State of Emergency and multi-faceted approach to reduce fuel load in the short-term with plans to transition to a long-term vegetation management plan. Chief Enns reviewed regulatory hurdles and required permits from the Regional Water Quality Control Board and the CA Dept of Fish and Wildlife for fuels management in a riparian area zoned within city limits on a long-term basis. Dan Turner, Director of SLO Firesafe Council, shared information on funding sources and considerations for administrative support to secure funding for the project. Althouse & Meade's owner-founder Lynnedee Althouse discussed goals of the Salinas River Vegetation Management Project including unique environmental constraints and necessary adaptations for grazing management within a watercourse. Biologist and certified arborist Daniel Keeley described identification and prioritization of fuel reduction areas, grazing needs, and compatibility and/or need for other vegetation methods (e.g., mechanical treatments). Senior biologist and project manager Valerie Mattos described environmental permitting considerations for this grazing project within riparian areas.

***Supplemental Materials***

* [May 26, 2023 Flyer](https://bof.fire.ca.gov/media/jfrp5oib/paso-robles-salinas-river-field-tour-may-26-2023_ada.pdf)
* [May 26, 2023 Agenda](https://bof.fire.ca.gov/media/2fzpaf2v/may-26-agenda_ada.pdf)
* [L. Althouse Permitting and Policy](https://bof.fire.ca.gov/media/ftfjog4h/am-env-permit-policy-rx-herbivory-05-26-2023.pdf)
* [J. Enns Salinas River Tour](https://bof.fire.ca.gov/media/bfzlpq5u/salinas-river-tour-2023_ada.pdf)
* [Salinas River Project Approved Press Release](https://bof.fire.ca.gov/media/fmvdq044/press-release-salinas-river-project-approved_ada.pdf)

#### PRESCRIBED GRAZING PLANNING FOR WILDLAND FUELS REDUCTION

In this workshop, participants increased their understanding of **how to develop an objectives-based, Grazing Management Plan (GMP) that addresses wildland fuels reduction objectives**. Representatives from U.C. Cooperative Extension (UCCE), professional rangeland consulting firms, the Natural Resources Conservation Service (NRCS), and academic institutions dove into the many nuanced requirements and needs in the development of a Grazing Management Plan. Dr. Larry Ford, LDFord Consultants in Rangeland Science, described the similarities, differences, and purposes of GMPs and Resource Management Plans, and Grazing Agreements, and how they interrelate, and described the different kinds of monitoring that may be conducted for different purposes and at different levels of management. Morgan Doran, UC Cooperative Extension Advisor for Livestock and Natural Resources for Ventura County, followed with a summary of objectives and outcome-based grazing planning, trade-offs associated with different goals, and how objectives may vary depending on the institution, environment, and timeline of the grazing project. USDA NRCS Rangeland Management Specialist Alan Bower detailed the information needs and sources for developing a context-based site description to inform the grazing planning, and the role of NRCS and Resource Conservation Districts may play in assisting land managers and livestock graziers. Roxanne Foss, Senior Ecologist with Vollmar Natural Lands Consulting, LLC, followed with a presentation on monitoring and adaptive management, including the development of monitoring plans in alignment with the goals and objectives of the GMP, the different types of monitoring and monitoring metrics, and the role of monitoring results in an adaptive management process. Dr. Marc Horney, Associate Professor of Animal Science at Cal Poly, San Luis Obispo, reviewed rangeland resource concerns and constraints, types of GMPs, and permitting. Lastly, UC Cooperative Extension Livestock and Natural Resources Advisor and Santa Clara County Director Dr. Sheila Barry brought the various management pieces together, describing the mechanics of putting the plan into practice.

***Supplemental Materials***

* [June 6, 2023 Agenda](https://bof.fire.ca.gov/media/a1yhosgs/june-6-2023-gmp-agenda.pdf)
* [M. Doran - Goals and Objectives](https://bof.fire.ca.gov/media/0w2pfnio/m-doran-goals-and-objectives-2023-06-06.pdf)
* [L. Ford and F. Ratcliff - Plans and Agreements](https://bof.fire.ca.gov/media/l0tp5ivr/l-ford-and-f-ratcliff-2023-06-06.pdf)
* [R. Foss - Adaptive Management](https://bof.fire.ca.gov/media/ygvokbgi/r-foss-adaptive-mgmt-2023-06-06.pdf)
* [A. Bower - Grazing for Wildland Fuels](https://bof.fire.ca.gov/media/baxj5ade/a-bower-successful-grazing-wildlands-fuels.pdf)
* [S. Barry – Grazing License](https://bof.fire.ca.gov/media/ye5nk0of/s-barry-grazing-license-2023-06-06.pdf)

### 2023 Applying for a Wildfire Prevention Grant – with a focus on Prescribed Grazing projects

CAL FIRE’s Wildfire Prevention (WP) Grants Program provides funding for wildfire prevention projects and activities in and near fire threatened communities that focus on increasing the protection of people, structures, and communities. In this webinar, CALFIRE and UC Extension specialists explained the ins and outs of applying for the current WP Grant cycle to fund prescribed grazing projects. Details discussed included the application process, when a grazing plan is required, the basics of grazing for fuel reduction, and considerations when planning grazing projects for wildfire fuel mitigation.

These presentations are available due to a partnership between the [California Board of Forestry and Fire Protection's Range Management Advisory Committee](https://gcc02.safelinks.protection.outlook.com/?url=https%3A%2F%2Fbof.fire.ca.gov%2Fboard-committees%2Frange-management-advisory-committee%2F&data=05%7C01%7CMazonika.Kemp%40bof.ca.gov%7Cc0fcacae56bd4339f6d008daf9b1af67%7C447a4ca05405454dad68c98a520261f8%7C1%7C0%7C638096838827234014%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6Ik1haWwiLCJXVCI6Mn0%3D%7C3000%7C%7C%7C&sdata=MiMmmZjMN0C6OcN7EeESMVOE4OKzIJhICvD23NOX2zc%3D&reserved=0) and Cal Poly, San Luis Obispo.

* [Workshop Recording](https://gcc02.safelinks.protection.outlook.com/?url=https%3A%2F%2Fvimeo.com%2F790861657&data=05%7C01%7CMazonika.Kemp%40bof.ca.gov%7C6f2febc497984c99212408daff19314e%7C447a4ca05405454dad68c98a520261f8%7C1%7C0%7C638102780907075639%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6Ik1haWwiLCJXVCI6Mn0%3D%7C3000%7C%7C%7C&sdata=4AQrwOEtSnnG4ytPYuIDwiOyIsP8NJZyIPwp7eYWEno%3D&reserved=0)
* [Event Flyer](https://bof.fire.ca.gov/media/awln4mqh/wildfire-grant-flyer.png)
* [Event Webpage](https://gcc02.safelinks.protection.outlook.com/?url=https%3A%2F%2Fspranch.calpoly.edu%2Fwpg-grazing&data=05%7C01%7CMazonika.Kemp%40bof.ca.gov%7Cc0fcacae56bd4339f6d008daf9b1af67%7C447a4ca05405454dad68c98a520261f8%7C1%7C0%7C638096838827234014%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6Ik1haWwiLCJXVCI6Mn0%3D%7C3000%7C%7C%7C&sdata=9uSlg4SnIuS6rVLvR35WYY65Isb1SgqTdyW%2BIA1ohSc%3D&reserved=0)
* [Applying for a Wildfire Prevention Grant](https://bof.fire.ca.gov/media/kzcn1nqd/wildfire-prevention-grants-program-2023-01-18_ada.pdf)
* [Grazing for Fuel Reduction](https://bof.fire.ca.gov/media/xzklaljc/match-graze-2023-01-18_ada.pdf)
* [Grazing from a Firefighter’s Point of View](https://bof.fire.ca.gov/media/x0sfddfc/grazing-from-a-firefighter-s-pov-2023-01-18_ada.pdf)

Also see the [Wildfire Prevention Grants Program](https://gcc02.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwww.fire.ca.gov%2Fgrants%2Fwildfire-prevention%2F&data=05%7C01%7CMazonika.Kemp%40bof.ca.gov%7Cc0fcacae56bd4339f6d008daf9b1af67%7C447a4ca05405454dad68c98a520261f8%7C1%7C0%7C638096838827234014%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6Ik1haWwiLCJXVCI6Mn0%3D%7C3000%7C%7C%7C&sdata=%2FrQzXAMGF2I8oOvt24JPosn7RSq1ZZVaRxrtsS2ktjI%3D&reserved=0).

## Regional Approach

Insert paragraph about the four regions, how they were developed, and reference the Task Force webpages/SAP. I put some content below to get you started.

### Regional Action Teams

Regional Action Team (RAT) Leads are named for each region, below. The Local/Regional Grazing Guidance will be developed to cover the entire state and will include locally- and regionally-based contextual recommendations and guidance, based on the four regions developed by the Task Force ([Regional Profiles and Resource Kits](https://wildfiretaskforce.org/regional-resource-kits-page)). These regions are as follows:

**\* Note:** Counties marked with an (\*) contain areas in another region as well.

#### Region 1: Coastal Inland

* **Team Lead(s):** Dr. Marc Horney, [mhorney@calpoly.edu](mailto:mhorney@calpoly.edu) & Devii Rao, [deviirao@ucanr.edu](mailto:deviirao@ucanr.edu)
* **Counties:** Alameda, Contra Costa, Fresno\*, Kern\*, Kings, Madera\*, Marin\*, Mariposa\*, Merced, Monterey, San Benito, San Francisco, San Joaquin, San Luis Obispo, San Mateo, Santa Barbara, Santa Clara, Santa Cruz, Stanislaus, Tulare\*, Ventura\*

#### Region 1: Sierra-Cascade-Into (SCI)

* **Team Lead(s):** Dr. Kristina Wolf, [Kristina.Wolf@bof.ca.gov](mailto:Kristina.Wolf@bof.ca.gov) & Noah Lopez, [noah@wrstrat.com](mailto:noah@wrstrat.com)
* **Counties:** Alpine, Amador, Butte\*, Calaveras, El Dorado, Fresno\*, Inyo, Kern\*, Lassen, Madera\*, Mariposa\*, Modoc\*, Mono, Nevada, Placer\*, Plumas, Shasta\*, Sierra, Siskiyou\*, Tehama\*, Trinity\*, Tulare\*, Tuolumne, Yuba\*

#### Region 3: Northern

* **Team Lead(s):** Dr. Stephanie Larson, [slarson@ucanr.edu](mailto:slarson@ucanr.edu)
* **Counties:** Butte\*, Colusa, Del Norte, Glenn, Humboldt, Lake, Marin\*, Mendocino, Modoc\*, Napa, Placer\*, Sacramento, Shasta\*, Siskiyou\*, Solano, Sonoma, Sutter, Tehama\*, Trinity\*, Yolo, Yuba\*

#### Region 4: Southern

* **Team Lead(s):** Cole Bush, [bcb@shepherdesslandl.co](mailto:bcb@shepherdesslandl.co) & Joel Kramer, [joel.kramer@rcdsandiego.org](mailto:joel.kramer@rcdsandiego.org)
* **Counties:** Imperial, Los Angeles, Orange Riverside, San Bernardino, San Diego, Ventura\*

### Table 1. Regions, Counties, and Towns

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **County, Township, or Locality** | **Coastal Inland** | **Sierra-Cascade-Inyo** | **Northern** | **Southern** |
| ***Alameda County*** | X |  |  |  |
| Castro Valley (Alameda County) | X |  |  |  |
| Oakland (Alameda County) | X |  |  |  |
| Oakland Hills (Alameda County) | X |  |  |  |
| Berkeley (Alameda County) | X |  |  |  |
| ***Fresno County*** | X | X |  |  |
| Bretz Mill |  |  |  |  |
| Auberry |  |  |  |  |
| Dinkey Creek |  |  |  |  |
| Barnes Mountain |  |  |  |  |
| Matthews Mill |  |  |  |  |
| Shaver Lake Heights |  |  |  |  |
| Miramonte |  |  |  |  |
| Pinehurst |  |  |  |  |
| Cedarbrook |  |  |  |  |
| Bald Mountain |  |  |  |  |
| Alcalde Hills |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

**Northern**

* BUTTE: Paradise, Berry Creek, Concow, Parkhill, Yankee Hill, Hurleton, Oroville Junction, Deadman Ravine, De Sabla, Magalia, Musty Buck Ridge, Cohasset Ridge, and Butte Valley
* COLUSA: Arbuckle, Goat Mountain, Pacific Ridge,
* DEL NORTE: French Hill, Adams Station, Smith River, Gasquet, Patrick Creek, Washington Peak, Child’s Hill, Del Norte Coast Redwoods State Park,
* GLENN: Willows, Elk Creek, Rocky Ridge, Glenn, Orland, Cory,
* HUMBOLDT: Johnsons, Berry Glenn, Orick, Murrelet State Wilderness, Redwood National Park, Blue Creek Mountain Range, Orleans, Hoopa, Pine Ridge, Ranger Mountain, Bald Hills, Wautec, Eureka, Redway, Garberville, Thorn Junction, Telegraph Ridge, Shelter Cove, Humbolt Redwoods State Park, Bull Creek, Weott, Miranda, Buckeye Mountain, Petrolia, Schoolhouse Hill, Lone Star Junction, Willow Creek, Westhaven, Gold Bluffs, Gibson Ridge
* LAKE: Upper Lake, Scott’s Mountain, Lucerne, Long Valley Ridge, Soda Bay, Thurston Lake, Anderson Flat, Salminas Resort, Siegler Mountain, Cobb Valley, Lower Lake, Harbin Mountain, Castle Rock Springs, Vann, Elk Mountain, Kesley Creek, Mahnke Peak, Jim Davis Peak,
* MARIN: Tamalpais-Homestead Valley, Larkspur, King Mountain, Ross Hill, San Anselmo, Fairfax, Bald Hill, Bon Tempe Lake, Pams Blue Ridge, Sleepy Hollow, San Geronimo, Green Hill, Lagunitas, Lucas Valley – Marinwood, Marinwood, China Camp State Park
* MENDOCINO: Lake Mendocino, Vichy Springs, The Forks, Cleland Mountain, Montgomery, Orrs Springs, Pine Ridge, Whiskey Springs, Fort Bragg, Hesser Addition, Mendocino Woodlands State Park,
* MODOC: Modoc National Forest, Spalding Butte, Egg Lake, Lookout, Splawn Mountain, Manzanita Mountain, Deer Spring Ridge, Swaegart Flat, Canby, Lonepine Butte, Alturas, Modoc National Wildlife Refuge, Lake County, Cedarville,
* NAPA: Pope Valley, Howell Mountain, St. Helena, Spanish Flat, Mark West Springs, Yountville, Atlas, Steel Canyon Resort, Woodleaf, Spanish Valley (Berryessa Estates), Sage Canyon,
* PLACER: Auburn, Applegate, Gillis Hill, Camels Hump, Granite Bay, The Ceadars, French Meadows, Grayhorse Valley,
* SACRAMENTO: (east) Rancho Murieta, Van Vleck/shooting center, Browns Creek
* SHASTA: Redding, Cloverdale, Branstetter, Westwood, Gore Ranch, Clear Creek, Niles Canyon, Rancheria, Midway, Inwood, Shingletown, Manton, Viola, Eskimo Hill, Manzanita Chute, Red Lake Mountain, McCumber Flat, Thatchers Meadows, Dersch Meadows, Lookout Mountian, Davis Mountain, Flat Top Mountain, McMullen Mountain, Whitmore, Burney, Haynes Flat, Swede Creek Plains, Wengler, Hillcrest, Montgomery Creek, Williams Ranch, Gomez, Dana, Cayton, Harlow Place, Big Bend, Shasta Lake, Midway
* SISKIYOU: Big Springs, Kilgore Hills, Yreka, Greenhorn Park, Hawkinsville, Craggy Mountain, Vesa Bluffs, Badger Mountain, Scott Bar Mountains, Baker Flat, Milk Ranch Meadows, Walker Bridge Ranch, Fort Jones, Cheeseville, Etna, Scott Valley, East Fork Scott, Callahan, Scott Mountains, Hayes Clutch, Sugar Hill, Smith Hill, Paradise Hallow, Beauty Flat, Cottage Grove, Clear Creek, Fort Goff, Happy Camp, Hoskin, Lone Pine Bar, Ti Bar, Ogaromtoc Lake (East), Offield Mountain, Somes Bar, Black Mountain, Orleans, Forks of Salmon, Bestville, McCloud, Elk Flat, Garner Mountain, Bray, Tennant, Cougar, Grass Lake, Jerome, Lower Klamath National Wildlife Refuge, Tulelake, Weed, Mount Shasta, Igerna, Hammond Ranch, Howard, Azalea, Lake Siskiyou, Deetz,
* SOLANO: Rockville Hills Park, Green Valley, Suisun Reservoir, Cement Hill
* SONOMA: Camp Thayer, Bridgehaven, Santa Rosa, Bennet Mountain, Glenn Ellen, Stuart Canyon, West Verano, Fairville, Talay Creek, Goat Rock, Mohrhardt Ridge, Seaview, Toners Place, Fort Ross State Historic Park, Pole Mountain, Little Black Mountain, Reef Campground, Sea Ranch, Timber Cove, Del Mar Point, Gualala Point, Valley Crossing, Walsh Landing, California Coastal National Monument,
* SUTTER:
* TEHAMA: Red Bluff, Bend, Hooker, Mitchell Glutch, Highway 36W, Dairyville, Brown Place, Elkhorn Ridge, Tomhead Mountain, Budden Canyon, Mineral, Mill Creek, Lyman Springs, Paynes Creek, Howell Ridge, Black Butte Lake, Woodson Bridge Natural Preserve, Stinger Creek, Log Spring Ridge, Valentine Ridge
* TRINITY: Weaverville, Lewiston, Junction City, Browns Mountain, Muser Hill, Musser Hill, Dragon Mountain, Ruth, Forest Glen, Hyampom, Burnt Ranch, Peanut
* YOLO: Black Mountain, Casey Flats, Tancred, Rumsey, Putah Creek
* YUBA: Stanfield Hill, Rancho Loma Rica, Dobbins, Oregon House, Frenchtown, Hedge Hill, Yuba Foothills, Brownsville, Beale Air Force Base, Daughtery Hill, Camptonville, Challenge, Woodleaf, Plumas Lake, Yuba Foothills

**Sierra-Cascade-Inyo**

* ALPINE: Grover Hot Springs State Park, Mesa Vista,
* AMADOR: Fiddle Town, Pine Acres, Clinton, Mount Zion, Pine Grove.
* BUTTE: Paradise, Berry Creek, Concow, Parkhill, Yankee Hill, Hurleton, Oroville Junction, Deadman Ravine, De Sabla, Magalia, Musty Buck Ridge, Cohasset Ridge, and Butte Valley
* CALAVERAS: Forest Meadows, Rocky Hill, Big Trees, Canyon View, Copperopolis, Rancho Calaveras, and San Andreas
* EL DORADO: McCulloh, Glenridge Park, Blacksmith Flat
* FRESNO: Bretz Mill, Dinkey Creek, Barnes Mountain, Matthews Mill, Auberry, Shaver Lake Heights, Miramonte, Pinehurst, Cedarbrook, Bald Mountain, Alcalde Hills,
* INYO: Owens Valley, Aberdeen,
* KERN: Shirley Meadows, Kernville, Glennville, Tehachapi Valley, Stallion Springs, Bear Valley, Rowen, Pleito Hills, Grapevine, Woody, Halfway House, Bena,
* LASSEN: Susanville, Roop Mountain, Willow Creek, Aspen flat, Janesville, Honey Lake Valley (north), Carl Flat, Sang Hill, Big Valley Mountains, Alderman Ridge, Jimmerson Mountain, Day
* MADERA: Nipinnawasee, Ahwahnee, Oakhurst, Crane Valley, Wishon, North Fork, Goat Mountain, Thornberry Mountain, Potter Ridge, Crook Mountain, Indian Lakes Estates, Cascadel Woods, Whiskey Falls, Crane Valley,
* MARIPOSA: Stumpfield Mountain, Magoon Hill, Bootjack, Mariposa, Bridgeport, Bullion Mountain, Buckingham Mountain, Jerseydale, Wawona, Yosemite Valley, Greeley Hill, Yosemite West,
* MODOC: Modoc National Forest, Spalding Butte, Egg Lake, Lookout, Splawn Mountain, Manzanita Mountain, Deer Spring Ridge, Swaegart Flat, Canby, Lonepine Butte, Alturas, Modoc National Wildlife Refuge, Lake County, Cedarville,
* MONO: Crestview, Mammoth Lakes,
* NEVADA: Rough and Ready, Grass Valley, Banner Mountain, Nevada City, Buckey Ridge, Burlington Ridge, Chalk Bluff Ridge, Washington, Grouse Ridge, Sagehen Hills, Alder Hill, Truckee, Union Valley, south Donnor Lake, Bald Mountain,
* PLACER: Auburn, Applegate, Gillis Hill, Camels Hump, Granite Bay, The Ceadars, French Meadows, Grayhorse Valley,
* PLUMAS: Quincy, Keddie, Hot Springs, Paxton, Spanish Ranch, Bean Hill, Meadow Valley, Cromberg, Sloat, Greenhorn, Portola, Whitehawk, Mohawk Vista, C-Road, Taylorsville, Wheeler Peak,
* SHASTA: Redding, Cloverdale, Branstetter, Westwood, Gore Ranch, Clear Creek, Niles Canyon, Rancheria, Midway, Inwood, Shingletown, Manton, Viola, Eskimo Hill, Manzanita Chute, Red Lake Mountain, McCumber Flat, Thatchers Meadows, Dersch Meadows, Lookout Mountian, Davis Mountain, Flat Top Mountain, McMullen Mountain, Whitmore, Burney, Haynes Flat, Swede Creek Plains, Wengler, Hillcrest, Montgomery Creek, Williams Ranch, Gomez, Dana, Cayton, Harlow Place, Big Bend, Shasta Lake, Midway,
* SIERRA: Independence Lake, Campbell Hot Springs (Randolph Hill), Balls Canyon, Calpine, Pliocene Ridge, Alleghany, Forest, Goodyears Bar, Oxford Mill
* SISKIYOU: Big Springs, Kilgore Hills, Yreka, Greenhorn Park, Hawkinsville, Craggy Mountain, Vesa Bluffs, Badger Mountain, Scott Bar Mountains, Baker Flat, Milk Ranch Meadows, Walker Bridge Ranch, Fort Jones, Cheeseville, Etna, Scott Valley, East Fork Scott, Callahan, Scott Mountains, Hayes Clutch, Sugar Hill, Smith Hill, Paradise Hallow, Beauty Flat, Cottage Grove, Clear Creek, Fort Goff, Happy Camp, Hoskin, Lone Pine Bar, Ti Bar, Ogaromtoc Lake (East), Offield Mountain, Somes Bar, Black Mountain, Orleans, Forks of Salmon, Bestville, McCloud, Elk Flat, Garner Mountain, Bray, Tennant, Cougar, Grass Lake, Jerome, Lower Klamath National Wildlife Refuge, Tulelake, Weed, Mount Shasta, Igerna, Hammond Ranch, Howard, Azalea, Lake Siskiyou, Deetz,
* TEHAMA: Red Bluff, Bend, Hooker, Mitchell Glutch, Highway 36W, Dairyville, Brown Place, Elkhorn Ridge, Tomhead Mountain, Budden Canyon, Mineral, Mill Creek, Lyman Springs, Paynes Creek, Howell Ridge, Black Butte Lake, Woodson Bridge Natural Preserve, Stinger Creek, Log Spring Ridge, Valentine Ridge
* TRINITY: Weaverville, Lewiston, Junction City, Browns Mountain, Muser Hill, Musser Hill, Dragon Mountain, Ruth, Forest Glen, Hyampom, Burnt Ranch, Peanut
* TULARE: Tulare, Porterville, West Visalia, Badger, Advance, Milk Ranch/Case Wilderness Study Area, Cabin Cove, Case Mountain, Cahoon Mountain, Springville, Milo, California Hot Springs, Packsaddle Meadow, Balance Rock, Fountain Springs, East Porterville, Lake Success, River Island Country Club, Hartland, Pinehurst, Cedarbrook, Fane, Ponderosa, Eshom Valley,
* TUOLOME: Tuolumne, Ralph, Diamond Bar B Ranch, Twain Harte, Sierra Village, Long Barn, Lakewood Highlands, Comstock Ranch, Cedar Ridge, Columbia, Arastraville, Mount Prevo, Quail Ridge Ranch, Apple Valley Estates, Sylvan Lodge, Strawberry, Bumblebee, Pinecrest, Spring Gap, Cow Creek, Phoenix Lake,
* YUBA: Stanfield Hill, Rancho Loma Rica, Dobbins, Oregon House, Frenchtown, Hedge Hill, Yuba Foothills, Brownsville, Beale Air Force Base, Daughtery Hill, Camptonville, Challenge, Woodleaf, Plumas Lake, Yuba Foothills

**Coastal Inland**

ALAMEDA: Castro valley, oakland, oakland hills, Berkeley

CONTRA COSTA: Moraga, Alamo, Gudde Ridge, Lafayette, Walnut Creek, San Pablo Ridge, Briones Valley,

FRESNO: Bretz Mill, Dinkey Creek, Barnes Mountain, Matthews Mill, Auberry, Shaver Lake Heights, Miramonte, Pinehurst, Cedarbrook, Bald Mountain, Alcalde Hills,

KERN: Shirley Meadows, Kernville, Glennville, Tehachapi Valley, Stallion Springs, Bear Valley, Rowen, Pleito Hills, Grapevine, Woody, Halfway House, Bena,

KINGS:

MADERA: Nipinnawasee, Ahwahnee, Oakhurst, Crane Valley, Wishon, North Fork, Goat Mountain, Thornberry Mountain, Potter Ridge, Crook Mountain, Indian Lakes Estates, Cascadel Woods, Whiskey Falls, Crane Valley,

MARIN: Tamalpais-Homestead Valley, Larkspur, King Mountain, Ross Hill, San Anselmo, Fairfax, Bald Hill, Bon Tempe Lake, Pams Blue Ridge, Sleepy Hollow, San Geronimo, Green Hill, Lagunitas, Lucas Valley – Marinwood, Marinwood, China Camp State Park

MARIPOSA: Stumpfield Mountain, Magoon Hill, Bootjack, Mariposa, Bridgeport, Bullion Mountain, Buckingham Mountain, Jerseydale, Wawona, Yosemite Valley, Greeley Hill, Yosemite West,

MERCED: San Luis National Wildlife Refuge, Atwater, Castle

MONTEREY: Del Monte Forest, Pebble Beach, Del Rey Oaks, Carmel, Carmel Highlands, Willams Canyon, Carmel Valley, Baronet Estates, Palo Corona-White Rock, Twin Peaks, Notleys Landing, Mescal Ridge, Bottchers Gap, Skinner Ridge, Big Sur,

SAN BENITO: San Juan Canyon, Fremont Peak State Park, Hollister Hills, Ridgemark,

SAN FRANCISCO:

SAN JOAQUIN:

SAN LUIS OBISPO: Hausna, Temettate Ridge, Blacklake, Pippin Corner, Parkhill, Santa Margarita, Santa Margarita Reservior, Big Baldy, Camp San Luis Obispo, Los Osos, California Coastal National Monument, San Luis Hill, Avila Beach, Pismo Beach, Saucelito Creek, Lake Nacimiento, Santa Lucia Range, Hearst San Simeon State Historical Monument, Pine Mountain, Cambria, Harmony Headlands State Park, Cayucos

SAN MATEO: Huddart County Park, Redwood Park, Belmont, Half Moon Bay, Kings Mountain, El Granada, Mills Canyon Park, Burlingame Gardens, Pacifica, Brisbane, Crestview Park, Eaton Park, Wunderlich County Park, Sky Londa, La Honda, Haskins Hill, Deer Park Ridge, China Flat, Butano State Park, Ano Nuevo, Pomponio Ranch, Los Trancos/Vista Verde Haz

SANTA BARBARA: West Mesa, Alta Mesa, Lower State, Summerland, Montecito, Toro Canyon, Mission Canyon, Sycamore Canyon, Cielito, Foothill, San Roque, Isla Vista, Cathedral Oaks, Shepard Mesa, El Captain State Beach, Las Flores Canyon, Tajiguas, Refugio State Beach, Mission Hills, Vandenberg Village, Orcutt, Figueroa Mountain, Santa Ynez Mountains, Buell Reservior, Gaviota, San Augustine,

SANTA CLARA: Saratoga Quarry Park, Sanborn County Park, Los Gatos, Lexington Hills, Lake Elsman, Table Mountain (north), Morgan Hill, Joseph D. Grant County Park, Halls Valley, Alum Rock Park, Metcalf Motorcycle County Park, Santa Teresa Hills, Calero Reservoir County Park, Ben Lomond, Mission Springs, Henry Cowell Redwoods State Park, Blue Ridge High School, Finley Ridge, Mount Madonna, Mount Madonna West,

SANTA CRUZ: Twin Lakes, Capitola, Santa Rosalia Mountain, Hinckley Ridge, Soquel Demonstration State Forest, Watsonville, Santa Cruz, Swanton Pacific Ranch, Davenport, Aptos Hills,

STANISLAUS:

TULARE: Tulare, Porterville, West Visalia, Badger, Advance, Milk Ranch/Case Wilderness Study Area, Cabin Cove, Case Mountain, Cahoon Mountain, Springville, Milo, California Hot Springs, Packsaddle Meadow, Balance Rock, Fountain Springs, East Porterville, Lake Success, River Island Country Club, Hartland, Pinehurst, Cedarbrook, Fane, Ponderosa, Eshom Valley,

VENTURA: North Bank, Ventura, Mira Monte, Meiners Oaks, Oak View, East Foster Park, North Ojai, Vickers Hot Springs, Ojai, Hopper Mountain National Wildlife Refuge, Fairview Canyon, Sulphur Mountain, Piru, Moorpark, Las Posas Hills, Blue Point, Dominguez Canyon, Rodeo Flat, Sulphur Springs, Timber Canyon, Oat Mountain, Alamos Canyon, Grade Valley, Santa Rosa Valley, Tierra Rejada Valley

**Southern**

A. North Coast Inland:

BUTTE: Paradise, Berry Creek, Concow, Parkhill, Yankee Hill, Hurleton, Oroville Junction, Deadman Ravine, De Sabla, Magalia, Musty Buck Ridge, Cohasset Ridge, and Butte Valley

COLUSA: Arbuckle, Goat Mountain, Pacific Ridge,

DEL NORTE: French Hill, Adams Station, Smith River, Gasquet, Patrick Creek, Washington Peak, Child’s Hill, Del Norte Coast Redwoods State Park,

GLENN: Willows, Elk Creek, Rocky Ridge, Glenn, Orland, Cory,

HUMBOLDT: Johnsons, Berry Glenn, Orick, Murrelet State Wilderness, Redwood National Park, Blue Creek Mountain Range, Orleans, Hoopa, Pine Ridge, Ranger Mountain, Bald Hills, Wautec, Eureka, Redway, Garberville, Thorn Junction, Telegraph Ridge, Shelter Cove, Humbolt Redwoods State Park, Bull Creek, Weott, Miranda, Buckeye Mountain, Petrolia, Schoolhouse Hill, Lone Star Junction, Willow Creek, Westhaven, Gold Bluffs, Gibson Ridge

LAKE: Upper Lake, Scott’s Mountain, Lucerne, Long Valley Ridge, Soda Bay, Thurston Lake, Anderson Flat, Salminas Resort, Siegler Mountain, Cobb Valley, Lower Lake, Harbin Mountain, Castle Rock Springs, Vann, Elk Mountain, Kesley Creek, Mahnke Peak, Jim Davis Peak,

MARIN: Tamalpais-Homestead Valley, Larkspur, King Mountain, Ross Hill, San Anselmo, Fairfax, Bald Hill, Bon Tempe Lake, Pams Blue Ridge, Sleepy Hollow, San Geronimo, Green Hill, Lagunitas, Lucas Valley – Marinwood, Marinwood, China Camp State Park

MENDOCINO: Lake Mendocino, Vichy Springs, The Forks, Cleland Mountain, Montgomery, Orrs Springs, Pine Ridge, Whiskey Springs, Fort Bragg, Hesser Addition, Mendocino Woodlands State Park,

MODOC: Modoc National Forest, Spalding Butte, Egg Lake, Lookout, Splawn Mountain, Manzanita Mountain, Deer Spring Ridge, Swaegart Flat, Canby, Lonepine Butte, Alturas, Modoc National Wildlife Refuge, Lake County, Cedarville,

NAPA: Pope Valley, Howell Mountain, St. Helena, Spanish Flat, Mark West Springs, Yountville, Atlas, Steel Canyon Resort, Woodleaf, Spanish Valley (Berryessa Estates), Sage Canyon,

PLACER: Auburn, Applegate, Gillis Hill, Camels Hump, Granite Bay, The Ceadars, French Meadows, Grayhorse Valley,

SACRAMENTO: (east) Rancho Murieta, Van Vleck/shooting center, Browns Creek

SHASTA: Redding, Cloverdale, Branstetter, Westwood, Gore Ranch, Clear Creek, Niles Canyon, Rancheria, Midway, Inwood, Shingletown, Manton, Viola, Eskimo Hill, Manzanita Chute, Red Lake Mountain, McCumber Flat, Thatchers Meadows, Dersch Meadows, Lookout Mountian, Davis Mountain, Flat Top Mountain, McMullen Mountain, Whitmore, Burney, Haynes Flat, Swede Creek Plains, Wengler, Hillcrest, Montgomery Creek, Williams Ranch, Gomez, Dana, Cayton, Harlow Place, Big Bend, Shasta Lake, Midway

SISKIYOU: Big Springs, Kilgore Hills, Yreka, Greenhorn Park, Hawkinsville, Craggy Mountain, Vesa Bluffs, Badger Mountain, Scott Bar Mountains, Baker Flat, Milk Ranch Meadows, Walker Bridge Ranch, Fort Jones, Cheeseville, Etna, Scott Valley, East Fork Scott, Callahan, Scott Mountains, Hayes Clutch, Sugar Hill, Smith Hill, Paradise Hallow, Beauty Flat, Cottage Grove, Clear Creek, Fort Goff, Happy Camp, Hoskin, Lone Pine Bar, Ti Bar, Ogaromtoc Lake (East), Offield Mountain, Somes Bar, Black Mountain, Orleans, Forks of Salmon, Bestville, McCloud, Elk Flat, Garner Mountain, Bray, Tennant, Cougar, Grass Lake, Jerome, Lower Klamath National Wildlife Refuge, Tulelake, Weed, Mount Shasta, Igerna, Hammond Ranch, Howard, Azalea, Lake Siskiyou, Deetz,

SOLANO: Rockville Hills Park, Green Valley, Suisun Reservoir, Cement Hill

SONOMA: Camp Thayer, Bridgehaven, Santa Rosa, Bennet Mountain, Glenn Ellen, Stuart Canyon, West Verano, Fairville, Talay Creek, Goat Rock, Mohrhardt Ridge, Seaview, Toners Place, Fort Ross State Historic Park, Pole Mountain, Little Black Mountain, Reef Campground, Sea Ranch, Timber Cove, Del Mar Point, Gualala Point, Valley Crossing, Walsh Landing, California Coastal National Monument,

SUTTER:

TEHAMA: Red Bluff, Bend, Hooker, Mitchell Glutch, Highway 36W, Dairyville, Brown Place, Elkhorn Ridge, Tomhead Mountain, Budden Canyon, Mineral, Mill Creek, Lyman Springs, Paynes Creek, Howell Ridge, Black Butte Lake, Woodson Bridge Natural Preserve, Stinger Creek, Log Spring Ridge, Valentine Ridge

TRINITY: Weaverville, Lewiston, Junction City, Browns Mountain, Muser Hill, Musser Hill, Dragon Mountain, Ruth, Forest Glen, Hyampom, Burnt Ranch, Peanut

YOLO: Black Mountain, Casey Flats, Tancred, Rumsey, Putah Creek

YUBA: Stanfield Hill, Rancho Loma Rica, Dobbins, Oregon House, Frenchtown, Hedge Hill, Yuba Foothills, Brownsville, Beale Air Force Base, Daughtery Hill, Camptonville, Challenge, Woodleaf, Plumas Lake, Yuba Foothills

**Sierra Cascade Inyo:**

ALPINE: Grover Hot Springs State Park, Mesa Vista,

AMADOR: Fiddle Town, Pine Acres, Clinton, Mount Zion, Pine Grove.

BUTTE: Paradise, Berry Creek, Concow, Parkhill, Yankee Hill, Hurleton, Oroville Junction, Deadman Ravine, De Sabla, Magalia, Musty Buck Ridge, Cohasset Ridge, and Butte Valley

CALAVERAS: Forest Meadows, Rocky Hill, Big Trees, Canyon View, Copperopolis, Rancho Calaveras, and San Andreas

EL DORADO: McCulloh, Glenridge Park, Blacksmith Flat

FRESNO: Bretz Mill, Dinkey Creek, Barnes Mountain, Matthews Mill, Auberry, Shaver Lake Heights, Miramonte, Pinehurst, Cedarbrook, Bald Mountain, Alcalde Hills,

INYO: Owens Valley, Aberdeen,

KERN: Shirley Meadows, Kernville, Glennville, Tehachapi Valley, Stallion Springs, Bear Valley, Rowen, Pleito Hills, Grapevine, Woody, Halfway House, Bena,

LASSEN: Susanville, Roop Mountain, Willow Creek, Aspen flat, Janesville, Honey Lake Valley (north), Carl Flat, Sang Hill, Big Valley Mountains, Alderman Ridge, Jimmerson Mountain, Day

MADERA: Nipinnawasee, Ahwahnee, Oakhurst, Crane Valley, Wishon, North Fork, Goat Mountain, Thornberry Mountain, Potter Ridge, Crook Mountain, Indian Lakes Estates, Cascadel Woods, Whiskey Falls, Crane Valley,

MARIPOSA: Stumpfield Mountain, Magoon Hill, Bootjack, Mariposa, Bridgeport, Bullion Mountain, Buckingham Mountain, Jerseydale, Wawona, Yosemite Valley, Greeley Hill, Yosemite West,

MODOC: Modoc National Forest, Spalding Butte, Egg Lake, Lookout, Splawn Mountain, Manzanita Mountain, Deer Spring Ridge, Swaegart Flat, Canby, Lonepine Butte, Alturas, Modoc National Wildlife Refuge, Lake County, Cedarville,

MONO: Crestview, Mammoth Lakes,

NEVADA: Rough and Ready, Grass Valley, Banner Mountain, Nevada City, Buckey Ridge, Burlington Ridge, Chalk Bluff Ridge, Washington, Grouse Ridge, Sagehen Hills, Alder Hill, Truckee, Union Valley, south Donnor Lake, Bald Mountain,

PLACER: Auburn, Applegate, Gillis Hill, Camels Hump, Granite Bay, The Ceadars, French Meadows, Grayhorse Valley,

PLUMAS: Quincy, Keddie, Hot Springs, Paxton, Spanish Ranch, Bean Hill, Meadow Valley, Cromberg, Sloat, Greenhorn, Portola, Whitehawk, Mohawk Vista, C-Road, Taylorsville, Wheeler Peak,

SHASTA: Redding, Cloverdale, Branstetter, Westwood, Gore Ranch, Clear Creek, Niles Canyon, Rancheria, Midway, Inwood, Shingletown, Manton, Viola, Eskimo Hill, Manzanita Chute, Red Lake Mountain, McCumber Flat, Thatchers Meadows, Dersch Meadows, Lookout Mountian, Davis Mountain, Flat Top Mountain, McMullen Mountain, Whitmore, Burney, Haynes Flat, Swede Creek Plains, Wengler, Hillcrest, Montgomery Creek, Williams Ranch, Gomez, Dana, Cayton, Harlow Place, Big Bend, Shasta Lake, Midway,

SIERRA: Independence Lake, Campbell Hot Springs (Randolph Hill), Balls Canyon, Calpine, Pliocene Ridge, Alleghany, Forest, Goodyears Bar, Oxford Mill

SISKIYOU: Big Springs, Kilgore Hills, Yreka, Greenhorn Park, Hawkinsville, Craggy Mountain, Vesa Bluffs, Badger Mountain, Scott Bar Mountains, Baker Flat, Milk Ranch Meadows, Walker Bridge Ranch, Fort Jones, Cheeseville, Etna, Scott Valley, East Fork Scott, Callahan, Scott Mountains, Hayes Clutch, Sugar Hill, Smith Hill, Paradise Hallow, Beauty Flat, Cottage Grove, Clear Creek, Fort Goff, Happy Camp, Hoskin, Lone Pine Bar, Ti Bar, Ogaromtoc Lake (East), Offield Mountain, Somes Bar, Black Mountain, Orleans, Forks of Salmon, Bestville, McCloud, Elk Flat, Garner Mountain, Bray, Tennant, Cougar, Grass Lake, Jerome, Lower Klamath National Wildlife Refuge, Tulelake, Weed, Mount Shasta, Igerna, Hammond Ranch, Howard, Azalea, Lake Siskiyou, Deetz,

TEHAMA: Red Bluff, Bend, Hooker, Mitchell Glutch, Highway 36W, Dairyville, Brown Place, Elkhorn Ridge, Tomhead Mountain, Budden Canyon, Mineral, Mill Creek, Lyman Springs, Paynes Creek, Howell Ridge, Black Butte Lake, Woodson Bridge Natural Preserve, Stinger Creek, Log Spring Ridge, Valentine Ridge

TRINITY: Weaverville, Lewiston, Junction City, Browns Mountain, Muser Hill, Musser Hill, Dragon Mountain, Ruth, Forest Glen, Hyampom, Burnt Ranch, Peanut

TULARE: Tulare, Porterville, West Visalia, Badger, Advance, Milk Ranch/Case Wilderness Study Area, Cabin Cove, Case Mountain, Cahoon Mountain, Springville, Milo, California Hot Springs, Packsaddle Meadow, Balance Rock, Fountain Springs, East Porterville, Lake Success, River Island Country Club, Hartland, Pinehurst, Cedarbrook, Fane, Ponderosa, Eshom Valley,

TUOLOME: Tuolumne, Ralph, Diamond Bar B Ranch, Twain Harte, Sierra Village, Long Barn, Lakewood Highlands, Comstock Ranch, Cedar Ridge, Columbia, Arastraville, Mount Prevo, Quail Ridge Ranch, Apple Valley Estates, Sylvan Lodge, Strawberry, Bumblebee, Pinecrest, Spring Gap, Cow Creek, Phoenix Lake,

YUBA: Stanfield Hill, Rancho Loma Rica, Dobbins, Oregon House, Frenchtown, Hedge Hill, Yuba Foothills, Brownsville, Beale Air Force Base, Daughtery Hill, Camptonville, Challenge, Woodleaf, Plumas Lake, Yuba Foothills

**Coastal Inland:**

ALAMEDA: Castro valley, oakland, oakland hills, Berkeley

CONTRA COSTA: Moraga, Alamo, Gudde Ridge, Lafayette, Walnut Creek, San Pablo Ridge, Briones Valley,

FRESNO: Bretz Mill, Dinkey Creek, Barnes Mountain, Matthews Mill, Auberry, Shaver Lake Heights, Miramonte, Pinehurst, Cedarbrook, Bald Mountain, Alcalde Hills,

KERN: Shirley Meadows, Kernville, Glennville, Tehachapi Valley, Stallion Springs, Bear Valley, Rowen, Pleito Hills, Grapevine, Woody, Halfway House, Bena,

KINGS:

MADERA: Nipinnawasee, Ahwahnee, Oakhurst, Crane Valley, Wishon, North Fork, Goat Mountain, Thornberry Mountain, Potter Ridge, Crook Mountain, Indian Lakes Estates, Cascadel Woods, Whiskey Falls, Crane Valley,

MARIN: Tamalpais-Homestead Valley, Larkspur, King Mountain, Ross Hill, San Anselmo, Fairfax, Bald Hill, Bon Tempe Lake, Pams Blue Ridge, Sleepy Hollow, San Geronimo, Green Hill, Lagunitas, Lucas Valley – Marinwood, Marinwood, China Camp State Park

MARIPOSA: Stumpfield Mountain, Magoon Hill, Bootjack, Mariposa, Bridgeport, Bullion Mountain, Buckingham Mountain, Jerseydale, Wawona, Yosemite Valley, Greeley Hill, Yosemite West,

MERCED: San Luis National Wildlife Refuge, Atwater, Castle

MONTEREY: Del Monte Forest, Pebble Beach, Del Rey Oaks, Carmel, Carmel Highlands, Willams Canyon, Carmel Valley, Baronet Estates, Palo Corona-White Rock, Twin Peaks, Notleys Landing, Mescal Ridge, Bottchers Gap, Skinner Ridge, Big Sur,

SAN BENITO: San Juan Canyon, Fremont Peak State Park, Hollister Hills, Ridgemark,

SAN FRANCISCO:

SAN JOAQUIN:

SAN LUIS OBISPO: Hausna, Temettate Ridge, Blacklake, Pippin Corner, Parkhill, Santa Margarita, Santa Margarita Reservior, Big Baldy, Camp San Luis Obispo, Los Osos, California Coastal National Monument, San Luis Hill, Avila Beach, Pismo Beach, Saucelito Creek, Lake Nacimiento, Santa Lucia Range, Hearst San Simeon State Historical Monument, Pine Mountain, Cambria, Harmony Headlands State Park, Cayucos

SAN MATEO: Huddart County Park, Redwood Park, Belmont, Half Moon Bay, Kings Mountain, El Granada, Mills Canyon Park, Burlingame Gardens, Pacifica, Brisbane, Crestview Park, Eaton Park, Wunderlich County Park, Sky Londa, La Honda, Haskins Hill, Deer Park Ridge, China Flat, Butano State Park, Ano Nuevo, Pomponio Ranch, Los Trancos/Vista Verde Haz

SANTA BARBARA: West Mesa, Alta Mesa, Lower State, Summerland, Montecito, Toro Canyon, Mission Canyon, Sycamore Canyon, Cielito, Foothill, San Roque, Isla Vista, Cathedral Oaks, Shepard Mesa, El Captain State Beach, Las Flores Canyon, Tajiguas, Refugio State Beach, Mission Hills, Vandenberg Village, Orcutt, Figueroa Mountain, Santa Ynez Mountains, Buell Reservior, Gaviota, San Augustine,

SANTA CLARA: Saratoga Quarry Park, Sanborn County Park, Los Gatos, Lexington Hills, Lake Elsman, Table Mountain (north), Morgan Hill, Joseph D. Grant County Park, Halls Valley, Alum Rock Park, Metcalf Motorcycle County Park, Santa Teresa Hills, Calero Reservoir County Park, Ben Lomond, Mission Springs, Henry Cowell Redwoods State Park, Blue Ridge High School, Finley Ridge, Mount Madonna, Mount Madonna West,

SANTA CRUZ: Twin Lakes, Capitola, Santa Rosalia Mountain, Hinckley Ridge, Soquel Demonstration State Forest, Watsonville, Santa Cruz, Swanton Pacific Ranch, Davenport, Aptos Hills,

STANISLAUS:

TULARE: Tulare, Porterville, West Visalia, Badger, Advance, Milk Ranch/Case Wilderness Study Area, Cabin Cove, Case Mountain, Cahoon Mountain, Springville, Milo, California Hot Springs, Packsaddle Meadow, Balance Rock, Fountain Springs, East Porterville, Lake Success, River Island Country Club, Hartland, Pinehurst, Cedarbrook, Fane, Ponderosa, Eshom Valley,

VENTURA: North Bank, Ventura, Mira Monte, Meiners Oaks, Oak View, East Foster Park, North Ojai, Vickers Hot Springs, Ojai, Hopper Mountain National Wildlife Refuge, Fairview Canyon, Sulphur Mountain, Piru, Moorpark, Las Posas Hills, Blue Point, Dominguez Canyon, Rodeo Flat, Sulphur Springs, Timber Canyon, Oat Mountain, Alamos Canyon, Grade Valley, Santa Rosa Valley, Tierra Rejada Valley

1. https://legiscan.com/CA/text/SB675/id/2829536 [↑](#footnote-ref-2)
2. https://leginfo.legislature.ca.gov/faces/codes\_displaySection.xhtml?sectionNum=4004.5&lawCode=PRC [↑](#footnote-ref-3)