San Marcos Foothills Preserve Prescribed Grazing Fact Sheet

From 2019 to 2021, Channel Islands Restoration (CIR) in cooperation with Cuyama Lamb conducted prescribed grazing annually at the Santa Barbara County owned San Marcos Foothills Preserve (SMFP). The primary objective of the grazing program was to support the restoration of native grassland to facilitate the recovery of grassland dependent native bird populations. With the planned addition of the West Mesa property to SMFP in 2022, there will be an additional 100 acres of grassland added to SMFP totaling roughly 150 acres of grassland across the property.

With three years of grazing having taken place on the current SMFP from 2019 to 2021 and no recent grazing on the West Mesa, grassland restoration can be implemented while using prescribed herbivory in an experimental context to further understand the implications and impacts of this management strategy. Generally post-grazing vegetation monitoring at SMFP showed a shift in grassland structure from taller annual grasses that generate considerable thatch to a more open grassland structure with shorter vegetation and less thatch.

Annual exotic grasses such as brome and wild oat generally grow taller, dry out rapidly, and generate considerable thatch that remains on the landscape after dying back. This biomass both negatively impacts habitat and readily spreads fire. Ecologically, exotic species block native grasses and forbs from sprouting and growing, and the resulting accumulated thatch also provides a fuel source for wildfire. Prescribed herbivory is a cost-effective way to control exotic grasses and reduce thatch. The reduction of thatch and corresponding structural shift has co-benefits for native plant recruitment and wildfire risk mitigation. Native grassland, particularly perennial bunchgrasses, do not generate thatch to the extent that non-native annual grasses do and maintain moisture better. Thus, native grasslands are both better habitat and more fire resilient landscapes compared to grasslands dominated by annual exotic species and prescribed herbivory is a management strategy that can help control invasive annual grasses.

Baseline vegetation monitoring was conducted in 2018, and then repeated in 2020 and 2022, to assess grazing efficacy and impacts. 28 permanent vegetation monitoring plots were established at SMFP in a range of exotic and native dominated grassland to capture the variability of the Preserve's grasslands. 2018 baseline monitoring showed soil moisture was significantly higher in grassland dominated by native perennial species compared to areas dominated by nonnative annual species. There are other factors beyond grazing and species composition that influence soil moisture so continued research is important to better understand dynamics of vegetation structure shifts and implications of various management alternatives. Higher soil moisture likely has positive implications for both biodiversity and fire resiliency. Grazing appears to have at least partially driven an increase in bare ground and a decrease in the amount of thatch.

Climate change, invasive species, and wildfire are just a few of the challenges that are impacting the Central Coast. In the face of these challenges, creative solutions that foster resilient landscapes are needed. Prescribed herbivory represents a cost-effective, scalable management option that can achieve desired outcomes. While all options available to managers can have corresponding positive or negative impacts, taking no action also results in impacts. Prescribed herbivory is one available tool to land managers and based off CIR's experience at SMFP it is management strategy that can have positive outcomes for both habitat and fire resilience.

Grazing Best Management Practices (BMPs)

- **Rotation**: Rotation intervals can be shortened or lengthened to achieve desired management objectives, though must be optimized in length to minimize impacts to natural resources and promote desired benefits. There is a balance between prescription benefits and impacts, but by ensuring that sheep are not left in a cell for too long management objectives are achieved while minimizing impacts. Optimal rotation during the San Marcos Foothills Preserve prescribed grazing program was ~1 acre/day
    - Optimal grazing time is a ratio between the optimal number of animals, the size of the grazed cell, condition of vegetation, and desired level of grazing.

- **Exclusion**: Electric fencing should be used to enclose stock and exclude grazers from sensitive areas within a grazing cell such as riparian areas, areas with threatened and desired species, and any culturally and archaeologically sensitive areas. Fencing shall be carefully monitored to ensure that animals remain enclosed and are not entangled. Signage for fencing must be prominent, numerous, and is important to communicate the presence of electrified fencing and unleashed work dogs to any members of the public.

- **Timing**: Grazing should be done with optimal timing to achieve objectives, maximize benefits, and minimize impacts. Seasonality for desired results and to preserve low growing native forbs, allow for reproduction, and remove impacts. To the extent possible grazing shall be timed to not impact herbaceous perennials and annual natives, allowing seed to set.

- **Purging**: When moving from a site that is more exotic dominated to a less weedy site, sheep shall be purged by feeding them "clean" hay for roughly 3 to 5 days. Relative to other sites, SMFP and the West Mesa can be considered as a less weedy site, where non-native exotics are not as problematic from a transfer perspective.

- **Shearing**: To prevent the transport of weed seeds in coats, sheep should be sheared prior to grazing in an area. Less wool means less surface for weed seed to be transported on.

- **Slope and Aspect**: Grazing prescription while vary depending upon slope and aspect. Steep environments, while more accessible to grazers compared to mechanical or manual treatments, are susceptible to erosion issues if overgrazed. Vegetation on steep slopes should not be grazed too excessively and enough vegetation must be left to ensure erosion issues do not occur

- **Monitoring**: Prior to prescribed herbivory monitoring for threatened and endangered species and other sensitive areas shall be conducted. Monitoring should be conducted by a qualified individual prior to commencement of grazing every season. There is the possibility species move in and inhabit an area following the completion of a season.

- **Community Engagement**: When conducted in a publicly accessible location such as San Marcos Foothills public should be notified and engaged.