

Guidelines for Developing a Grazing Plan for a Vernal Pool Ecosystem

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Introduction

Grazing may be used as a tool to maintain vernal pool hydrology and prevent the invasion of exotic weeds. Livestock have grazed in and among most vernal pools in the Sacramento Valley for at least a century. They may help to maintain the hydrology of the uplands surrounding vernal pools by preventing the excessive accumulation of plant material. Limiting the amount of residue that accumulates around a vernal pool also favors a greater diversity of endemic plants. Properly managed grazing in vernal pool habitats on California's annual rangeland may enhance ecological balances and biological diversity.

I. Define the Landscape Vision

To use grazing as a land/resource management tool, you should clearly define your land management goals. Consider the following questions:

- What's the long term vision for the site?
- What's the current condition of the vernal pools?
- Is there a diversity of desirable endemic vernal pool plant and animal species?
- Are there plant or animals species that should be present, but are not?
- Are there invasive species that are or could threaten the ecosystem?
- Are there particular areas within the vernal pool site that have impaired ecological function?
- Are there particular areas within the vernal pool site that are good examples of your vision for the landscape?

II. Review the Management History of the Site

Understanding the management activities that have contributed to the current conditions of the site will provide you with valuable information in planning future management activities. Consider the following:

- Farming: type of activity, implements used, frequency
- Grazing: season of use, species/class of livestock, used grazing pressure
- Fire: time of year, frequency

- Other activities that have impacted the property : road building, mining, irrigation, etc.

III. Assess the Current Condition of the Site

Assess the current conditions of the range site so you can monitor trend changes in the site. Comparing data collected in subsequent years will help you adjust your management plans to make progress towards your landscape vision. Consider monitoring the following:

- Vegetation utilization
- Residual Dry Matter
- Population surveys for vernal pool animals and plants of interest

IV. Grazing Management Plan Considerations

The information you collected in Steps I - III should be reviewed while you are developing a grazing plan. Your plan should consider the following aspects:

A. Selection of Livestock

Consider the class and kind of stock to use on your rangeland site. For example, sheep can graze closer and prefer more broadleaf plants than cattle. Cattle and horses will utilize coarse grassy swales best, although horses can graze closer than cattle. Horses will travel farther than other livestock. Mature and non-lactating animals can maintain themselves on less and poorer quality feed than younger or high producing stock.

B. Season of Grazing

The grazing season typically corresponds with the growing season. On rangelands in the Sacramento Valley, the grazing season is from November to May depending on the time and frequency of precipitation. The break of the season follows the first fall rains that exceed 1 inch during a 1-week period. If this occurs in September, it is possible to have new green growth by November. Since, in many years, the break in the season has occurred as late as January, ranchers will generally leave some residual dry matter at the end of the previous grazing season to use in the early fall until new growth is adequate. Feed quality in the Sacramento Valley peaks around March, but can be

adequate in quality for many classes of cattle and sheep until May or June.

Forage productivity and seasonal species composition are largely controlled by four factors: precipitation, temperature, soil characteristics and residue. Forage species composition is usually established by December 1 and is largely determined by dates of fall rains, fall temperatures, and the amount of residual dry matter in the fall. Adjusting the season of grazing will typically not impact seasonal species composition, but may be used as a tool to manage residual dry matter or distribution.

C. Residual Dry Matter Management

Residue, the dry forage remaining at the end of the growing season each year, is the major manageable factor governing productivity and composition. Residue acts as a mulch and influences germinating plants and soil organic matter; however, retaining greater amounts of residue does not enhance total production or diversity.

Measuring and monitoring the residual dry matter on your vernal pool site will provide you with valuable information for determining stocking rates. In general, vernal pool soils are not very productive so total forage production is low. Many vernal pool sites produce less than 500 lbs/acre. Managing the residual dry matter to a maximum of 500 - 600 lbs/acre may be a strategy to maintain a diversity of endemic vernal pool flora. General guidelines for determining stocking rates in the Sacramento Valley based on productivity of a site is as follows:

Total Lbs. Dry Matter Produced per Acre	AUM/Acre	Average Acres/head 4 - 7 month season
300-1500	.4 - 1.9	20
100-800	.1 - 1.0	35

AUM = Amount of feed necessary to maintain a 1000 lb. cow for one month. It is equivalent to .4 ton or 800 lb. of hay, 540 lb. concentrate, 1.2 ton silage, 400 lbs. TDN (total digestible nutrients).

D. Distribution

Utilization mapping should allow you to identify problems with distribution of livestock. Although

installing cross fencing is an obvious tool to distribute stock, there are several other methods which may be effective. For example, consider the location of water, salt, mineral and supplement feeders.

Water. Properly located, adequate, clean and dependable water supplies are essential for good range management. Cattle will walk on level terrain 3/4 to 1 mile to water. Some cattle, depending on genetics and environment, will walk further to water than others. Sheep will travel 2 to 4 miles to water on level terrain.

Salt, Mineral and Supplemental Feeding. The planned location of salt and mineral with water in properly fenced range sites can encourage grazing distribution. Salt, mineral and supplement can attract livestock to areas they tend to avoid. They can also create undesirable loafing areas. Do not, however, place all of the mineral and/or supplement far away from water because livestock may not consume adequate quantities of the supplement.

Fencing. As mentioned, fencing can be constructed to redistribute livestock, but fencing can also be the cause of undesirable livestock distribution. In some places, cattle may create stock trails along fence lines or from one gate to another. If these areas of high animal impact are in undesirable locations, it may be advantageous to remove or move the cross fencing.

V. A Successful Grazing Plan

The success of your management plan will depend largely on four conditions:

1. The accuracy of the resource inventory and the clarity of your resource vision
2. The willingness of the manager to apply the plan
3. The thoroughness of recording and
4. The effectiveness of making and implementing needed adjustments in the plan.

Practicality and flexibility are essential requirements of a successful grazing plan.

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