The Art and Science of Targeted Grazing–A Producer's Perspective

By Dan Macon, Flying Mule Farm

On the Ground

- Targeted grazing is an increasingly popular tool for managing vegetation over large landscapes.
- While the principles of targeted grazing are scientifically based, the successful practice of targeted grazing requires site-specific knowledge of plant growth, animal nutrition and grazing behavior, ecosystem function, and public relations.
- Targeted grazing requires significant producer investment–in livestock, infrastructure and equipment, and knowledge.

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With a population of nearly 60,000 people, the city of Rocklin in the western foothills of California's Placer County (east of Sacramento) barely recalls the small town where George Whitney and his son Parker decided to establish one of the largest sheep ranches in Gold Rush-era California.[1] Today, the once oak-studded, rolling grasslands are covered by gated communities, golf courses—and a fair amount of county-mandated open space. But while the Parker Whitney Ranch is now the Whitney Oaks community and country club—home to 5,000+ people and nearly 2,000 homes—it is once again being grazed by sheep and goats. Indeed, in a 15-mile corridor from Rocklin north to the city of Lincoln, more than 10,000 sheep and goats are used to manage vegetation in the late winter and early spring. Across much of urban and suburban California, municipalities, nonprofits, government agencies, and private landowners are turning to targeted grazing as a tool for managing rangeland landscapes.

Targeted Grazing

According to the *Targeted Grazing Handbook*, "targeted grazing is the application of a specific kind of livestock at a determined season, duration, frequency and intensity to accomplish defined vegetation or landscape goals."[2] As the *Annual Rangeland Handbook* notes,

> *strategic application of increased stock density may be used to manage weed populations or reduce standing crop that competes with threatened or endangered species such as [plants associated with] vernal pools. Pastures containing critical habitat such as riparian areas or nesting habitat can be rested during critical periods and used at times that will not harm habitat. Resting pastures during restoration projects may facilitate plant establishment and reproduction.*[3]

From a scientific perspective, as these references suggest, targeted grazing is straightforward. The appropriate species of livestock is placed on the rangelands to be managed at exactly the right time of year at exactly the right stocking rate for exactly the right duration. As with any real-world management system, however, the art of targeted grazing is much more complicated. Flying Mule Farm has provided targeted grazing services for small- to medium-sized (under 250 acres) projects in the Sierra foothills since 2008. We have also worked with several large targeted grazing contractors to manage large scale projects in the foothills and the Sacramento Valley. We have found that combining the scientific underpinnings of range science with the art of managing livestock, ecological processes, and human beings makes the business of targeted grazing uniquely challenging.

Comparing Grazing to Other Treatments

Many targeted grazing "customers" assume that grazing works similarly to other vegetation control methods—especially mowing or chemical application. From their perspective, the livestock are turned out, they graze all the plants to a specified level, and then are moved on to the next project. Spraying and mechanical treatments, however, often address the symptoms of lack of management or mismanagement—in this respect, they are a short-term solution to a long-term problem. Grazing, if it's part of an overall plan, addresses this lack of management. This distinction is critical. The symptoms of no management—fuel-loading, invasive weed infes-

Figure 1. We have found that sheep are well-suited to managing annual vegetation in oak woodlands.

Figure 2. Goats are better suited to treating woody vegetation.

tations, reduction in ecological function—are generally not the result of one season, or even one year, of no management. Similarly, the disease cannot be "cured" in one season of targeted grazing. While spraying or mechanical treatments can be repeated in multiple years, some landscapes are too steep for machinery or too close to residential areas or other sensitive areas for chemical treatment. Similarly, burning might be a great option ecologically, but air quality and public safety concerns limit the use of fire in California. For example, I have found that controlling invasive Himalayan blackberries requires multiple grazing entries—the plants need to be "over-grazed" to the point where they are stressed enough to die. In some cases, this treatment may need to be repeated over several years. Furthermore, grazing involves three impacts (see below)—unlike mowing or spraying. Many clients are more familiar with the immediate gratification that comes with killing plants with herbicides or knocking them down with mowers. I find that I must explain this carefully and in the simplest terms when I'm talking to a client who doesn't have any background in rangeland management or livestock production.

What's Your Business?

Targeted grazing contractors must be clear with themselves (and with their clients) about the business they are in. Are they livestock producers who provide targeted grazing services? Are they land managers who use grazing animals as a tool for managing vegetation? My answers to these questions help me evaluate opportunities for targeted grazing. My primary business is sheep production. I offer targeted grazing services only when they complement the production needs of my animals. For example, I will not put my sheep onto targeted grazing projects in the 6 weeks prior to breeding—I use this time to improve their nutrition to increase conception rates and twinning percentages. If my primary business were vegetation management, on the other hand, I might run wether (castrated) goats and mature sheep with the understanding that I'm not trying to put weight on the animals. That said, every operation has classes of animals that can be pushed harder from a nutritional standpoint for a portion of the year. For example, we do not breed our replacement ewe lambs until they are fully grown (at 18 months of age). We often use these ewes in our targeted grazing projects because we can push their nutritional envelope.

Matching Animals and Impacts to the Project

Successful targeted grazing projects require a working understanding of vegetation, the environment and livestock impacts. I've found that the timing of my grazing projects depends on the goals of the client—if a landowner wants us to reduce fuel loads, we try to time our grazing to consume the fine fuels while minimizing the potential for regrowth. Other clients may want to reduce competition from nonnative grasses as part of an ecological restoration project. In this case, we try to time our grazing to impact the targeted plants—and time our rest period to allow native plants to flourish. We also differentiate between "grazing carbon" (that is, vegetation that our animals will graze) from "trample carbon" (usually dead standing material that we want to incorporate into the soil). Understanding livestock impacts—grazing, trampling and feces/urine deposition, as well as rest from these impacts—helps us design and manage successful targeted grazing projects.

We have found that different species and classes of animals often have different dietary preferences (and different impacts). Because we've established a flock of sheep that is exposed to a wide range of forages (from grasses to broad-leaf weeds to brush), our animals are able to utilize (and impact) widely varied types of vegetation. When we purchase sheep or goats that have not been "trained" to browse, for example, we find that we lose some productivity as these new animals adapt to our system. Dr. Fred Provenza's work has been especially helpful in this regard—understanding how animals