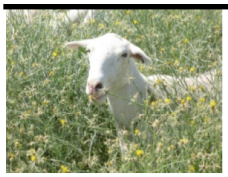
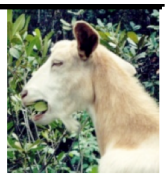


# Multi-Species Academy

## SHEEP CAN'T READ AND OTHER TALES: A YEAR OF CONTRACT GRAZING



By Dan Macon, Flying Mule Farm

In 2009, we added a contract grazing enterprise to our sheep and goat operation. Contract grazing involves the use of livestock to control specific undesirable plants, primarily for ecological restoration and wildfire prevention purposes. Rather than paying landowners for pasture, as we have been doing for the last 5 years, contract grazing generates income. The landowners we worked for saw grazing as an ecologically friendly alternative to mowing, mechanical brush removal, and herbicide application.

While this might sound like an easy way to make livestock pay for themselves, contract grazing does involve a significant amount of management expertise and plant knowledge. Moving a group of sheep and goats through a subdivision to an open space preserve without damaging landscaping or upsetting homeowners is not for the faint of heart. In addition, we've had to learn what our animals will eat and when they'll eat it. Fortunately, we've found that it is possible to "train" sheep and goats to eat a wide variety of plants – even plants that the books say they won't eat.

### Targeted Grazing – Knowing Your Plants

According to the Targeted Grazing Handbook, "Targeted grazing is the application of a specific kind of livestock at a determined season, duration, and intensity to accomplish defined vegetation or landscape goals." In our experience, this requires us to know our livestock and what they will eat. We also need to know something about the life cycles of the plants we're trying to manage. For example, Himalayan blackberries, an invasive introduced perennial plant, go dormant in the winter. This means that the plants try to store carbohydrates in their roots in the fall. By removing their "solar panels" (e.g., leaves) during this critical time, we can stress the plant enough to limit its growth and to eventually kill it.

We also need to know something about the plants that aren't the target of our management objectives. In some cases, we want to encourage the growth of desirable plants while impacting less desirable species. We also need to be aware of potentially poisonous plants. In areas adjacent to landscaped properties, for example, we've seen oleander, foxglove, and other poisonous plants. Finally, we need to be aware of plants that our clients want to protect. In our part of California, blue and valley oaks are species of concern. On several of our projects, we worked to protect these trees from grazing and browsing.

### Fencing

All of the contract grazing jobs we've obtained thus far have been on un-fenced properties, which means we need to come equipped with our own fencing. We've used two methods; electrified netting and portable 4-wire polywire fences. Each of these systems has a place in contract grazing. Electric netting is the most secure fencing system. This fencing comes in various heights from 36" to 48" and is generally available in 164-foot sections. We use fences manufactured by Premier 1 Supplies and by Kencove. The Premier fences seem to hold up longer in our conditions. We've also used 4-strand polywire fences and tread-in fence posts. The fence posts can be installed by pushing them in with my foot (in all but the hardest and rockiest ground). The wire comes on spools that can be rolled up easily. With either type of fencing, we can build a 2 acre pasture in about an hour.

Since we don't have access to the electrical grid, we use battery powered fence energizers. Our preference is for the Stafix and Speedrite brands, both of which are made in New Zealand. These low impedance energizers put a pulse of electricity through the fence, which eliminates the possibility of heating up the fence wires. This is critical for dry season grazing projects in our region, where the threat of wildfire is ever present. We use solar panels to keep our

12v deep cycle batteries charged. The energizers are rated in joules. I'm not sure what a joule is, but I do know that a 2-joule energizer will power a paddock with 8 nets sufficiently to contain sheep and/or goats.

Predator Control

In our region, we have coyotes, mountain lions, black bears and domestic dogs – all of which present a threat to our livestock. While the electric fences provide some protection, we rely on livestock guardian dogs and llamas to completely protect our animals. In more than 6 years, we've lost fewer than 3 animals to predators thanks to our guardians.

Dogs seem to be the most reliable guardians in our system. We use both crossbred and purebred dogs, including a purebred Anatolian shepherd, a Pyrenees-Anatolian cross, and several Anatolian-Akbash crosses. On the plus side, these dogs seem to repel all predators, including mountain lions. On the negative side, our dogs are not always content to patrol within the boundaries of our paddocks. On large properties, this is not a problem; in neighborhoods, homeowners sometimes object to large, white dogs roaming freely. Furthermore, a guard dog's first line of defense is its bark – again, not a problem on large properties but somewhat objectionable in a neighborhood.

We've recently acquired a guard llama to add to our division of livestock protection. From our research, llamas are great at protecting sheep and goats from dogs and coyotes. On the other hand, they are reported to hide in the midst of the flock when a mountain lion is nearby. Regardless, llamas are silent guardians, which may make them more appropriate in some settings.

Herding and Transportation

Sheep and goats can be trained to follow a handler or to move away from him (in other words, animals can be led or driven). We rely primarily on driving (it's easier to be behind the animals when loading them in a trailer, for example). We use low-stress handling techniques and border collies to move our animals into and out of paddocks and into the trailer. Using these techniques, we can load animals directly from a paddock into our trailer.

For us, border collies are an indispensable part of our system. By instinct, border collies try to keep the livestock between themselves and their handler. This means that their default approach is to stop the animals and bring them back to us – a safe way to ensure that the livestock are contained. A well-trained border collie can gather livestock from a distance of a mile or more. We use our dogs to load our trailers, sort animals and help move stock from one paddock to the next. The joke at our house is that the border collies are our most reliable employees – they are happy to work, always show up, and never need to be bailed out on Saturday morning!

Transportation is generally the most significant cost of any project. We can haul 25-35 head in our gooseneck trailer, so a project requiring 100 sheep or goats takes three to four trips. As an alternative, we can hire help to transport animals as well. For short moves, the most economical and stress-free option is to herd animals onto a property. In our region, traffic generally eliminates this option.

Stock Water

Sometimes, we've been able to provide water to the animals from a landowner's system. More often, we've had to improvise. We can haul water in tanks if we have vehicle access to the paddocks. We have also used a solar-powered pump to pump water into a holding tank, which then gravity feeds into our water troughs. Obviously, the lack of on-site water adds to the cost of any project. Accordingly, we've started adding a charge for hauling stock water.

Grazing Management

To effectively impact the targeted vegetation, we need to understand something about grazing management, as well as our client's goals. If the goal is to eliminate a plant (like yellow starthistle or Himalayan blackberry), we'll purposely graze those plants severely. We also try to target the time of year when we'll have the greatest impact. With

starthistle, for example, we like to graze it during the bolt stage. At this point in the plant's life cycle, it is putting all of its energy into growing taller and producing flowers. Grazing can severely stress the plant and significantly reduce seed production.

However, we cannot always time our grazing perfectly – weather, our production cycle, the number of contracts, and other factors can hamper our ability to graze specific plants at exactly the right time. In these cases, we can still positively impact the landscape using grazing, but we adjust our management techniques.

Another factor in grazing management is the grazing behavior of the animals. We have found that we can achieve more uniform impact on the targeted plants if we create a sense of grazing competition in the flock. To do this, we try to increase our stock density (that is, the number of animals per acre). We manage for three impacts from the grazing animals: consumption (or grazing), trampling, and manure/urine deposition. Each of these impacts can be desirable in terms of ecological improvement on a particular site. Our portable fencing system gives us a great deal of flexibility to do this. As an example, we used sheep and goats to prepare and then plant a site infested with starthistle with more desirable annual grasses (triticale and ryegrass). By using very small paddocks and 150 head of sheep and goats, we used a stock density that was the equivalent of 3000 head per acre. While we generally do not use densities this high, we do manage paddock size for the optimal impact to the site.

Class of Livestock

As I see it, there are two approaches to contract grazing for vegetation management. One can focus primarily on vegetation management, producing meat (or feeder animals) as a byproduct of that primary activity. Alternatively, one can focus on meat production and focus on vegetation management contracts as a secondary enterprise. Since keystone enterprise is producing and marketing grass-fed lamb and goat, we've opted for the second alternative. This means that when we have a choice between contract grazing and optimizing our meat production, we choose meat production.

Even with this focus, we find that we have significant opportunities to use our sheep and goats for vegetation management. The spring ewes and does are available for contracts after we wean in late May and early June. These females can remain on vegetation management projects at least until we split them into pre-breeding groups by their body condition scores. Following our flushing period (pre-breeding), we can turn rams, ewes, bucks and does back out on projects during the fall months. Since we also maintain a fall lambing flock, we have a smaller group of ewes that are available during the winter and spring. Finally, our ewe lambs (both fall-born and spring-born) are available for projects before we breed them at 1 year of age.

We have also found that some groups of animals (and individuals within each group) have a more varied diet. Our older ewes and does have learned to eat a wide range of grasses, weeds and brush, which gives us a great deal of flexibility in addressing specific targeted grazing projects. Conversely, our ewe lambs have not yet learned to graze so aggressively, making them more suitable for projects where we only want to impact understory grasses and weeds. We recently worked on a project in which our client wanted to remove grass and weedy plants from a newly planted riparian forest restoration site. The ewes and does would have browsed the trees and brush as well as grazing the understory. The ewe lambs, on the other hand, focused primarily on the targeted plants.

Charging for the Service

We're still learning how to charge appropriately for the service we provide. By evaluating our costs, we try to build in both a wage and a profit; that is, I try to pay myself for the hours I work on the contract and build in an additional profit that goes back into the business.

Our costs include a number of factors, including transportation of the animals to and from the project site, our labor in setting up fencing and moving animals, wear and tear on vehicles, fencing and other equipment, and care of guardian animals.

Our current fee structure includes a one-time rental fee for the fencing, an hourly charge for fence-line preparation and stock water hauling, and a daily rental fee for the animals (on a per head basis). Some landowners are used to paying by the acre, so we also try to translate our cost estimates into a per-acre equivalent.

Problems and Solutions

Based on what I've written so far, you may think that these projects are simple – we show up, build fences, turn out the livestock, show up to feed the dogs once a day, and pick up the livestock when the job is done. Like any business involving livestock and Mother Nature, contract grazing is rarely that simple! Over the last several years, we've encountered (and mostly overcome) a variety of challenges.

While electric fences generally work great, they are not foolproof. Animals will get out – due to fencing failures, predators, and a host of other problems. When we have livestock on a job, I live and sleep with my cell phone nearby. I also try to talk with all of the neighbors before we move onto a job, just to let them know what to expect and to ask them to call me if there are problems. Most neighbors are great. In the few cases where escaped livestock have been annoying, the gift of a leg of lamb seems to help smooth the relationship. A well-trained border collie is also an invaluable help in getting escaped animals back into their paddocks quickly and safely.

To do their jobs effectively, our guard dogs bark quite frequently, especially at night. On large open space preserves with few surrounding neighbors, this is not a problem. In a more densely populated neighborhood, barking dogs can be an annoyance. Our pre-project meetings with neighbors can help in this regard, too – many neighbors will report to us that the dogs were barking and that they (the neighbors) checked on the livestock to make sure there was not a serious problem. In those cases where we get complaints, we try to address them by moving the animals if possible. We've recently added a llama to our livestock guardian team, which gives us a quieter, if slightly less effective, alternative to our dogs.

Sometimes a guard dog will choose to stay with his or her animals rather than fight off a threat. Last summer, we worked on a project where a neighborhood dog (and perhaps a homeless man who camped in the area) panicked the animals and chased them through the electric fencing. Our guard dog elected to go with the stock rather than face the threat, which resulted in sheep and goats roaming an adjacent subdivision. Fortunately our work with neighbors paid off and we were notified of the problem within minutes. In less than an hour, all of the animals were back in the paddock.

We are prone to summer and fall wildfires in our part of California. When we have animals grazing on dry grass and brush during these periods, we watch the horizon for smoke and the sky for fire planes. We try to have at least two escape routes planned for evacuating the livestock in the event of a fire. In a worst case scenario, we would resort to turning the animals loose and trying to herd them to a safe location.

In the winter, stormy weather can also create problems. Flooding can be a challenge on riparian restoration projects. We generally have enough warning that we are able to move animals out of a flood zone before we have a problem. On the rare occasions that we get snow, we make sure to shore up our electric nets with extra posts. Extra posts are also helpful during periods of high winds.

Conclusion

While contract grazing for targeted vegetation management can be a profitable addition to some livestock operations, it's not for everyone. While most of my time is spent on the day-to-day needs of my animals, I also spend a great deal of time on public relations. At least in our part of California, most of our projects are within or adjacent to populated areas. For the most part, people appreciate the work that we do (and seem to derive entertainment from watching our animals). We've made the decision to focus first on our meat business and second on our vegetation management enterprise. Other producers make the opposite choice. There is no right or wrong answer.

Successful contract grazing requires scientific and management expertise as well as artistic creativity. We must understand specific plants and their response to grazing and browsing. We must also be creative in addressing the challenges of managing a biological system with living creatures. While I've learned a great deal through research and educational workshops, I've learned as much (if not more) from simply watching my animals.

2010 Update

In 2010, we significantly increased both our sheep numbers and our contract grazing projects. Our projects included both small contracts (35 sheep on less than two acres) and large contracts (200+ sheep on 15 acres). During the course of ramping up this side of our business, we've learned a number of lessons:

- When possible, we will take the greatest number of sheep possible to a project. Our labor is fairly constant regardless of sheep numbers (except for haul-in and haul-out time). With larger numbers of animals, we can complete a project more quickly, increasing our hourly return.
- We've charged on a per acre and a per animal basis this year. In the future, we'll charge a per animal fee on a sliding scale depending on ease of fencing, distance to the project, and other factors. Rather than guaranteeing a maximum charge, we'll ask the landowner to give us a budget based on our per animal fee.
- Small projects can help with cash flow, but large projects provide a better return to our labor, time and equipment. We'll be more discriminating about taking on small projects in the future.

To illustrate the benefit of larger numbers of sheep and shorter projects, we've compared our efforts on the same property in 2009 and 2010. Last year, we used 67 ewes and 13 goats on the Canyon View project near Auburn. This project consisted of controlling blackberry and starthistle on approximately 7.5 acres of land owned by the Placer Land Trust. This year, we took 211 ewes to the same project and grazed roughly 10 acres. The table below compares these two approaches.

| | **2009** | **2010** |
|---|---|---|
| **Goats** | 13 | 0 |
| **Ewes** | 67 | 211 |
| **Acreage Treated** | 7.5 | 10 |
| **Project Term** | 40 days | 21 days |
| **Trailer Loads (in and out)** | 3 | 5 |
| **Transportation Labor** | 10 man hours | 20 man hours |
| **Management Labor** | 58 man hours | 64 man hours |
| **Total Charges** | $3,200 | $4,400 |
| **Hourly Rate Equivalent** | $38.10 | $64.79 |
| **Per Acre Cost** | $426 | $440 |