



May 2004

# Colorado GLCI

## Technical Note 4

Colorado Grazing Lands Conservation Initiative  
**Managing Small Pastures**

### **The Value of Healthy Pastures**

Most people subconsciously recognize the value of healthy pastures. Our concept of a “pastoral scene” reflects the contentment we experience when exposed to a site that has healthy plant communities, clear filtered water, stable soil and is enjoyed by people, livestock and wildlife. In addition to being one of the best “habitats” for all living creatures, healthy pastures provide aesthetics, recreation, ecological soundness and economic opportunity.

### **Effective Pasture Management Principles**

Basic range management principles must be implemented to keep pasture or rangeland healthy and functioning. These principles include:

- A desirable healthy groundcover must be maintained at all times.
- Organic, nutrient, mineral, hydrological, and other natural cycles must be functioning at proper levels.
- Healthy cycle maintenance depends on maintaining plant communities well-between overgrazing and decadence.
- Management techniques should pace all uses in a fashion that is complimentary to the stability of grass communities.
- Research-based techniques such as restoration grazing should be applied.
- All pasture management requires a clear understanding of a site’s status, pasture potential and ongoing monitoring.
- Disruptions and disturbances to a pasture such as weed infestation, development and over-stocking should be minimized if not totally avoided.



### **Why Managing Small Pastures is Different**

Small pastures (1- 200 acres) must be more closely managed than larger parcels of rangeland. Since these landscapes are often associated to new home sites, are usually near population centers and are closer to adjacent properties under different management, they are exposed to a greater number of potential disturbances and less insulated from outside influences.

In addition to these factors, smaller pastures have a greater tendency to be managed by owners with less experience and training than larger rangeland landscapes. This “newness” to range management principles often results in excessive stocking levels, over-estimated carrying capacity and insufficient knowledge of grass physiology which would allow more accurate and timely management.

The overall result for any small acreage manager is that smaller parcels amplify good practices, bad practices, and mistakes more quickly than larger landscapes. This requires that managers of small pastures need to be “more on top of the game” than anyone else.

### **BASIC RANGE & PASTURE RULES:**

- 1. EVERYTHING DEPENDS ON A NUMBER OF FACTORS**
- 2. ALL MANAGEMENT IS SITE SPECIFIC.**
- 3. THERE ARE NO SIMPLE ANSWERS TO COMPLEX QUESTIONS**

(Cotton & Steffens – 1999)

### **Learning Colorado Ecosystems**

To effectively manage any pasture you must start with understanding the framework surrounding your area. All states have various components of eco-regions within their boundaries. Within each eco-region there are a variety of ecosystems.

It is often beneficial for pasture managers to review ecosystems based on dominant plant communities since those often do the best job of reflecting precipitation, temperature regime, soils, and weather patterns: all of which are the primary controllers of ecosystem development.

Such plant communities in Colorado include desert, short grass prairie, montane forest, sagebrush steppe, pinon/juniper foothills and alpine “zones”. Since many of these plant communities are adjacent to each other it is important to not only look at your distant horizon, but to also look at your feet when learning about the ecosystem around your pasture.

Each plant community type has both benefits and limitations that evolved within the parameters of the dominant climate and landscape.

Expecting to have pasture conditions that reach above and beyond ecosystem parameters is a frustrating and usually fruitless effort.

### **Understanding Landscape Potential**

Although plant communities and ecosystem conditions set the outside “normal” boundaries of pasture potential, local landscape characteristics can “exempt”, “enhance” or further “limit” the potential of your pasture.

Factors such as soil type, slope, aspect, micro-weather patterns, management history, condition, absence or presence of water, and history of disturbances can dramatically vary your site from the “norm” of the dominant ecosystem.

### **Assessing Pasture Condition**

The process of “assessing condition” is simply getting an overview of the current status of your pasture. A few steps to begin with should include:

- Does the pasture look “good”?
- What percentage of the site is weedy?
- How much bare ground is showing?
- What is the history of pasture use?
- How many plants are dead (decadent)?
- What percentage are green plants?
- Is there obvious disturbance in the pasture?
- How tightly spaced are the “desirable” plants?
- Is soil erosion occurring in the pasture?
- What plant species are present?
- Are there signs of salinity accumulation?
- Do you notice active insects on the pasture?
- Are there signs of wildlife use?
- Are birds and small animals present?

### **Recognizing Site Potential & Limitations**

Despite what condition you determine your small pasture is currently in, it has both limitations and potential for improvement. Understanding pasture potential and limitation begins with learning the characteristics of the plant community dominant on your site. Each plant community has a spectrum of potential depending on inputs and disturbances.

Effective management combined with favorable climate can yield amazing increases in pasture condition and carrying capacity. Even without beneficial weather, effective management can make some improvements.

Work with USDA- Natural Resource Conservation Service, Colorado State University Cooperative Extension and other range management professionals who utilize research-based information to help you identify the fragility, potential, limitations, and full power of your pasture. The availability of water and allowing grass to recover from use, are the largest tools in your “tool chest”.

## Determining “Desired Condition” (A Goal)

Once you have clearly identified the reasonable “boundaries” established by your ecosystem, site, and landscape – you can set a personal goal for your small pasture. This is often referred to as “desired condition”.

Visualize this as your goal for your pasture.

This goal should include how you want the pasture to “look”, what carrying capacity (production level) you would like to attain, what the dominant plant community should be, what enhancements you want to occur, and what “transitions” or stages you expect to move through to reach your goal.

Once you think about these strategic planning elements, write them down. Often you will have to change your timeline and occasionally shift your goal due to funds, disturbances, and weather. But the initial draft will start a plan. Plans easily lead to action steps which usually result in improvement.

## Linking Grass Physiology to Management

One of the largest barriers to effective small acreage management is a lack of a clear understanding of grass physiology. Physiology includes growth form, patterns, and characteristics.

All grass by nature is a dichotomous plant. When the leaves emerge they do in pairs, for example two leaves, four leaves, six leaves, seed.

Grass has one goal, to make a seed and reproduce. Lets’ walk through the annual “leaf” growth stages of grass.

- Pre-emergent stage – grass plant is beginning growth using the energy stored in roots or seeds. No photosynthesis is occurring.
- Emergence – 2 leaf stage. The first two leaves emerge still using stored energy. Photosynthesis begins but does not meet plant needs for self-support. Leaves are tender and succulent. Growth meristem begins moving above the soil.
- Mid-growth – 4 leaf stage. Two pairs of leaves are now above ground. Leaf tenderness is good but increasing in indigestible fiber. Meristem is its

highest level above ground.

Photosynthesis meets plant needs but stores no additional energy for disturbance or regrowth.

- Full growth – 6 leaf stage. Three pairs of leaves are present. A seed stalk rises above the leaves. Photosynthesis exceeds plant needs. Sugars move to seeds leaving leaves less palatable. Growth meristem drops back towards a protected level just above the soil.
- Seed – multi leaves in place. Plant begins to dry and go dormant as all sugar is transferred to seeds. Photosynthesis sends energy to seed and root stalks. Growth meristem is nestled back close to soil level.

Because grass has a primary goal of reproduction, it will stimulate more leaves when its capacity to reach seed is interrupted as long as its ability to conduct photosynthesis is not impaired.

For this reason effective pasture management:

- Avoids grazing so intensely that photosynthesis is inhibited.
- Avoids heavy grazing when growth meristems are very far above the soil.
- Grazes to inhibit grass from “going completely to seed”.
- Avoids late grazing when grass species are re-establishing root energy reserves for over-wintering.
- Implements grazing between the four-leaf and six-leaf stages to stimulate root and leaf production.
- Recognizes that these characteristics and timing vary with site, conditions, and grass community.

### **AN EASY EXAMPLE:**

*Mowing your lawn is simulated grazing. If you mow it too low or too often, it will weaken and get thin and struggle. If you mow it too little, your lawn will go seed becoming coarse and rough. It like pasture management, must follow the 3 BEARS METHOD: Not too much, Not too little, it has to be JUST RIGHT!!*

## Identifying Barriers to Success

Many barriers may jump in the way of effective small pasture management including:

- Lack of management knowledge, experience, or systems.
- Lack of funds.
- Poor pasture condition.
- Undesirable climate conditions.
- Demands that exceed the capacity of the pasture site.

Despite all the barriers the largest is ALWAYS the lack of a management system.

## Finding a Management System Approach

All pasture management efforts over the last 100 years which have been successful have involved some type of management system approach whether it was formal or intuitive.

All of the dominant management systems include an awareness of pasture condition, a set of goals, monitoring of trends, changes, and condition, and a willingness to make animal management decisions based on the results of the monitoring.

Since small pasture managers usually operate under “micro-pressure” all of the time it is imperative to begin a system promptly.

That pasture management system should include:

1. A clear understanding of their pasture site.
2. A willingness to set stocking rates appropriate for the carrying capacity of the site.
3. A set of goals for the pasture.
4. Refraining from grazing until grass has stabilized at the four-leaf stage.
5. Grazing moderately between the four-leaf and six-leaf stage to inhibit seed generation and stimulate root and leaf growth.
6. Allowing grass rest from all grazing so that it can re-progress from grazed to four/six leaf stage.
7. Discontinuing all grazing for a similar rest period just prior to dormant season so grass can store energy and survive the winter.

8. Control of all disturbances including weed infestation, physical disturbance, unplanned wildfire, and other disruptions.
9. Regular monitoring of grazing use before, during and after grazing activities.
10. The system should include documentation at randomly established but permanently maintained sites. It should be easy for repeatability – such as photo-points.

Grazing systems do not work without effort and infrastructure. Often infrastructure reduces effort once established and allows one of the largest tools – control of grazing distribution.

But even though small pasture managers may be able to develop paddocks and facilitate strong control of grazing movement, timing and accuracy, eventually climatic conditions will slow pasture growth so there no rested areas to move into.

This is when two things must happen. You must have a “sacrifice area” where you can place and hold stock until the grass has rested enough for re-entry. Normally this requires supplemental feeding. In addition to a sacrifice area the manager must seriously re-evaluate his stocking rate and pasture carrying capacity.

If the manager has funding to provide supplemental feed it is not an issue. If not, the manager must either partially de-stock or find additional pasture resources.

Adopting and utilizing a system is crucial. The individual system is up to the manager’s preference but must be adaptable so that it can be adjusted to the goals and site of the manager.

***One of the founding charter members of the Society for Range Management once said***

***“Range management is both a science and an art. The science knows how to manage natural resources. The art is knowing when and where to apply the science.”***

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