# It May Be Utilization, But Is It Management?

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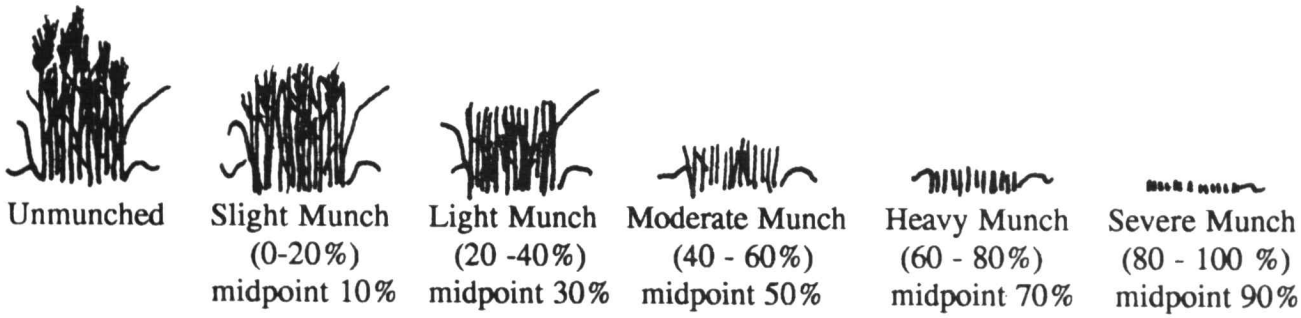
The cow took a bite of grass. "Stop the truck, Ross. We've got to take a look at this!" was my reaction. The Flying-M cow stepped forward and took another bite off the top of another ricegrass plant. Here, twenty-five years after I took Range Management 101, I had finally found some cows eating grass the way the professor told me they should: these winter-grazing cows were systematically eating the *tops* of the ricegrass plants. This correlates nicely with the chart the professor drew on the blackboard for the class that day some years back:




Since that day in class I have watched many a cow eat grass plants, and have made thousands of "Utilization Transect" studies to see how much grass has been eaten. And despite the Flying-M cow and the long-ago professor, most of the time a cow (or a horse, or a buffalo) doesn't eat grass from the top down, "first a little, thence to more". No, when Bossy visits a tasty bunchgrass plant she puts her mouth down next to the ground, gives the head a little tilt, and ropes the whole plant in with her tongue at about *Heavy Munch* on the old chart. Watch a horse eat grass: a bit of lip and tooth action, a twist of the head, and the favored plant is nipped right off at the *heavy* level. And that's how large grazing critters eat grass in many parts of the world.

The folks who have paid real close attention to how big critters eat grass have never quite recovered from the experience. A few days spent watching the mega munchers and such folks have gone to considerable trouble thereafter to design grazing strategies based on their new knowledge: if you don't fit 'em with a muzzle, the danged critters are going to eat the grass pretty darn close to the ground as a matter of preference.

The grand rabbi of "rest rotation grazing", Gus Hormay (1970) explained some of the reasoning behind his severe-use/long-rest strategy: "Grazing habits of livestock make proper use level for plants meaningless as a device for regulating stocking."

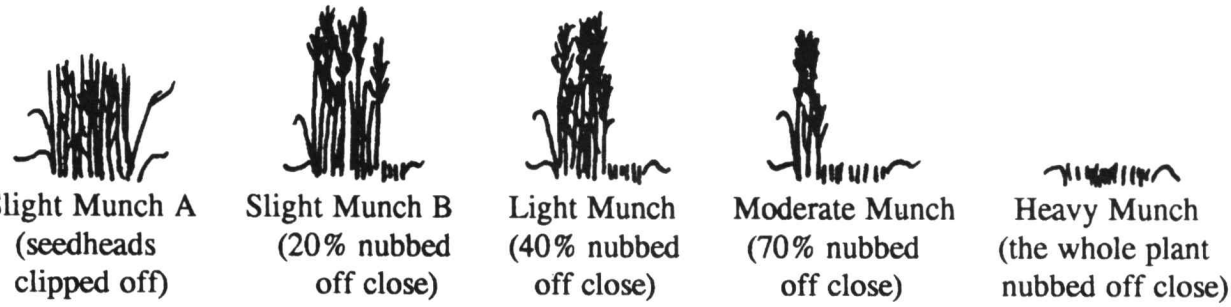
That wise man from Africa, Allan Savory (1988) whose "Holistic Resource Management" includes a heavily monitored, generally short duration grazing strategy, observes: "Severe grazers don't slowly nibble all the members of a given species until half the leaves are taken from each plant. They tend to take one plant all the way down and leave the next."

Riparian management enthusiasts Hall and Bryant (1995) watched cow behavior on the creekbanks and they tell us: "Cattle prefer to reach their tongue out of the side of their mouth and draw in the vegetation, tasting it as they do." Diets switched to shrubby riparian vegetation only when the cow had too little of the taller green grasses to satisfy her preferred eating method. This point becomes the Hall/Bryant key indicator for moving bossy off the creek.

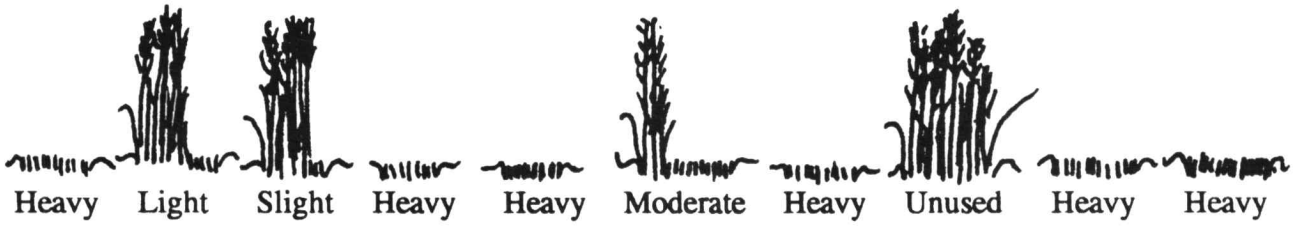
And that is how the big critter eats the cabbage. When we go on to look at how much of this forage our animals are taking off we are delving into that much used but poorly understood subject of *utilization*. "*Utilization is the amount of annual (above-ground) plant growth which is removed (munched or stomped) by critters.*" Range folks have been measuring utilization for years to see how much forage is being produced in a pasture (if you know what percent has been grazed and how many critter-days it took to get there, you can use simple mathematics to calculate how many critter-months (AUMs) of forage were produced by that pasture in that year). This is straightforward, simple, and somewhat useful, but in the past few years the agencies have been developing *Utilization Standards* which the public-land rancher must meet. Suddenly the old mundane *utilization study* is a topic of interest which is worthy of a real serious look.

Utilization takes place on a plant-by-plant basis as our grazing critters "visit" their favorite plants, but utilization is measured as an *average* of the use on the plants in an area, usually on a species-by-species basis. This seems simple enough, but let's look at what this means:

In order to *measure* the utilization level in the pasture we will take an *average* of the plants by walking a line (transect) and observing utilization of a number of individual plants of each important species, and taking the average based on the *midpoint* utilization percentage (look at the "munch" chart again to see the midpoints). But that old "munch" chart won't do us much good for this transect: here's how the chart would look if we designed one based on how critters eat grass:




Now we have a real-world chart, let's look at some real-world "moderate grazing":




This typical transect of 10 plants in an area which averages *Moderate Munch* might show: 6 plants *heavy* (6*70% = 420); 1 plant *moderate* (1*50% = 50); 1 plant light (1*30% = 30); 1 plant slight (1*10%=10; and 1 plant *unused* (1*0% = 0);. We take the average: 420 + 50 +30 +10 +0 = 510; 510/10 = 51% average. So our utilization at this area is *moderate*, while only one out of ten plants was actually used at a moderate level.

And that's what we find when we are dealing with rangeland bunchgrasses, then; *moderate* utilization usually means that most of our plants are munched at the 70% level (heavy use) a few are partly used, and a few are untouched. *Light* utilization would mean that somewhat less than half the plants are munched at the *heavy* level and most are untouched (40% of the plants grazed at the 70% level would be 40*70% = 28%, which is right in the middle of the *light* range of 20% to 40%).

This seems simple and obvious. The meaning of this is that utilization studies are somewhat helpful for getting a handle on the production we can expect in a pasture, and even the ranges of production from good or poor years. And that's all these studies can do. Utilization study, being an *average*, tells us nothing about impacts to the *individual* plant; and the studies can not by themselves tell us a thing about *management*: 2,000 buffalo that spend 10 days in an area will eat the same as 100 buffalo who are in the area for 200 days. Forage consumption may have been about the same, but a closer look would show major differences in results. The 2,000 buffalo would leave the pasture with most plants grazed at the normal 70% level, ungrazed plants mashed to the ground, and with lots of critter-stomps making places for seedlings to get a start; the 100 buffalo would leave the pasture with half the plants scrubbed off at the ground, the other half untouched and full of old, oxidizing material, and with miles of compacted bison trails meandering around. (and we'd probably call the utilization 50%). The first is good for the ground and the second is not, even though our observations of utilization would be higher for the first (2,000 buffalo) than for the second (100 buffalo).

Just a few hours observation of the way animals eat grass will show anyone that "heavy grazing" is not "overgrazing"; heavy grazing is the natural way big grazing critters eat grass plants. If there were anything magical about 50% utilization levels and seriously detrimental about 70% utilization levels, then these big grazing critters would have eaten themselves into extinction millions of years ago.

Most certainly big grazing critters can overgraze plants; that's one of the reasons we have lost the bunchgrass from many places in the West. The mechanism for this "overgrazing" requires that the big grazing critter re-visit the plant. On the first go-around our animals almost never take a plant much below the 70% utilization level (or a stubble height that would equate to this on a reasonably normal year). No, the action that seriously weakens the plant requires that the grazing animal comes back and "visits" the

plant a second time before the plant has regrown after that first visit. This second time the animal is attracted by some new green growth coming up, but because of the desire to get a "mouth-full" this critter is going to bite deeper to get some old plant growth along with the new. Now the grazing animal is taking new growth for which the plant gave up considerable "root-reserves" (stored carbohydrates) to produce, and may also be removing some of the "growing points" which would be needed to start next year's shoots growing upward. This plant is damaged and will be unable to make the same amount of growth as a plant treated more politely. And repetitions of this abuse will cause the plant to "just fade away".

The important thing to note about "overgrazing", which frequently matches up with utilization at the *severe* level, is that it is not produced by animals biting too deeply when they first visit the plant. Overgrazing is produced when the animals re-visit the plant, and is a symptom of the animals staying too long in the same spot. The sneaky thing about overgrazing is that it happens on a plant-by-plant basis, and we can have some serious overgrazing and yet have our utilization studies fail to show any of this. Here our 10-plant transect might show: 4 plants *severe* (4*90 = 360); 2 plants *heavy* (2*70 = 140); 4 plants *ungrazed* (4*0 = 0) for an average of: 360 + 140 + 0 = 500; 500/10 = 50% average utilization, or right in the middle of the *moderate* range. Our utilization study again shows moderate utilization yet this time we have 40% of our plants, in the *severe munch* category, being damaged by overgrazing. Nevada's grazing guru, Wayne Burkhardt (1992) explained this situation thusly: "It's like I'm sitting here with my rear in the snowbank and my feet in the campfire. On *average* I'm fine, but I'm really miserable as hell."

### How Managers Use "Utilization"

Our best utilization studies result in "use pattern maps" where the patterns of utilization are drawn on a good map so anyone can see where the big grazing animals are getting their meals, and how much is being taken and how much remains. If the map is done in detail it may show areas of:

Severe—animals-stayed-too-long producing overgrazing
Heavy—nearly every plant grazed;
Moderate—about half the plants are grazed
Light—some of the plants are grazed
Slight—very few of the plants are grazed
No use—almost none of the plants grazed

From this use-pattern map the range manager can see where management (movement of animals) can be improved. Also the manager will probably calculate average pasture utilization for the reasonably accessible areas, and then equate this to the known amount of critter-days to get an estimate of how much forage (in critter-months, or AUMs) the pasture produced that year.

A poorer way to get utilization information, but very common because it responds to the desire to stretch range people to cover more grazing allotments, is to use *key area* utilization. The *key area* is a spot which has been picked to represent the pasture; the key area is a mythical place where you would always measure *moderate* use when the whole pasture was used moderately, and *heavy* when the pasture was used heavily. If the same cows used the pasture at the same time each year and the weather were always the same, we might be able to pick pretty good key areas. But different animals use an area differently; the weather changes how animals use an area; and animals use areas differently in different seasons. In the normal huge grazing pasture with "interesting" topography and a variety of vegetation communities, there is no such thing as a good key area; there are just some key areas which do an even worse job representing the pasture than do other key areas.

Utilization study may show opportunities, but does a mediocre job of showing problems, because utilization problems occur on an individual plant basis and the study is done on the average. So where do the new ***Utilization Standards*** come from and what is their usefulness? We have already observed that the standard critter will sidle up to the standard bunchgrass plant and munch it off at the standard 70% level. So the standard utilization, if there is such a thing, should logically be 70%, shouldn't it? But "Utilization Standards" always indicate some utilization level below 70%, and sometimes *far* below. What gives here?

Land managers are by nature conservative people. Although the primary job of the land manager is to improve the land, the conservative approach is to "first, make sure you don't damage the land". For some students of this school of thinking a tool which results in fewer critters on the land might be a very attractive tool because it would reduce the risk that these critters would do damage. The free-for-all grazing of the 1800's and early 1900's is long behind us, and in these days utilization study, done conscientiously at the end of the growing season and looking at all the major plant species over all of the accessible portions of the allotment, may show uneven distribution but seldom shows overstocking. For a utilization study by itself to be the tool for reducing grazing, the folks using the technique end up using some non-standard methods (Tacky Tricks).

### Tacky Tricks With Utilization

1) Measure the utilization during the growing season, rather than afterwards. Utilization which appears *heavy* in May (or even in early August for a riparian zone) would more truly be judged as somewhere from light to undetectable if measured in September after all plant growth has taken place for the year.

2) Monitor only the most favored plant species for the season the animals were in the pasture; ignore all other species, even though these other plants may become *most favored* when we put the critters in the pasture during a different season next year.

3) Produce the use-pattern map from observations made while driving along roads; don't get out of the pickup and walk 50 yards off the road to get away from the travel route provided by the road for the grazing animals.

4) Manage for a *utilization standard* measured at a *key area* and get this written up in a *Land Use Plan*. This allows you to take data which is useful *only* for estimating production, pretend it is really *management*, and then give it the force of *law*.

5) To obtain even greater reductions in animal numbers, use technique #4 with a *floating key area* whereby you move the key areas around to coincide with the *heavy* use areas.

6) To obtain major reductions in allocations, pick *riparian areas* for doing #4.

7) To completely rid the range of grazing animals, combine #6 with #1.

8) When calculating pasture production from utilization data, throw out any utilization lower than moderate. This way you can average the moderate use (50%) with heavy use (70%) and always show that the range is fully stocked or overstocked, no matter how few animals the rancher runs or how good his management (movement patterns for the animals) may be. And this technique sounds quite reasonable and *conservative* when explained in a sincere voice.

9) To dodge those obnoxious unwanted comments, leave the *utilization standards* out of the draft Land Use Plan, but slide 'em into the *final*.

## Summary

And that's the story on utilization: a fine old range management tool with valuable but limited application, is now being used less as a management tool and more as a political tool for removing livestock and wild horses from rangelands. In the resulting brouhaha everyone involved soon forgets all the really interesting stuff we have learned about management over the past 40 years.

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