

The Rimrock Report



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Sense and sensibility: use and utilization.

Having just gotten back from a 2-week trip to West Africa, I am going to blame some of this article on “road founder” and “jet lag”, or as they might say back in the South: “*that ol’ boy just ain’t right.*” Anyway, somewhere on one of the long flights back and forth across the Atlantic I started thinking about how we apply and throw around some of the common terms in grazing and range management. Because of several recent conversations and working on some grazing management plans, the concept of how we measure and describe the amount of forage removed by livestock or wildlife came to mind. “Compare and contrast” is a tool employed by professional writers, so I figure why can’t an old cowboy from flyover country do that too? Bear with me here, I’ll eventually get to the point. Let’s start with a few definitions to set the stage.

Sense: A capacity for effective application of the powers of the mind as a basis for action or response.

Sensibility: An awareness of and responsiveness toward something.

Use: The fact or state of being used.

Utilization : The state of having been made use of.

In the English novel *Sense and Sensibility*, Jane Austen tells the story of two sisters with different outlooks on life. The older one is very practical and reserved, the younger is impulsive and romantic. One possesses traditional common sense while the other exhibits a more “modern” sensibility. Old School versus Pop Culture. But in a different way of looking at them, don’t these two words sort of mean the same thing? If you have one, doesn’t the other naturally follow? How about the other word pair; use and utilization... as defined here don’t they mean the same thing? Are we talking verb or noun? Isn’t one just past tense? Isn’t utilize just professor-speak for use? Now if this rambling discussion all sounds to you like just so much word play and semantics... Sort of like the definition of “is”... **That is the point.** Sometimes a word or phrase is so overused that we know what we’re saying, or what we intend to say, but we may not be able to define or describe it. We may even misuse the word. Other times we get too caught up in the terms and forget or confuse the main issue. In this case, regarding use and utilization we’re 1) talking about rangelands, 2) specifically about how much plant material was removed by grazing in a particular management unit, and asking 3) is that amount (*and timing*) of removal consistent with our management goals? So, we in range management often interchange the terms use and utilization, and that’s probably not a big deal.

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“ Seasonal utilization measured early in the growing season has no consistent relationship to utilization based on total production “



Sense and sensibility: use and utilization, continued

We sometimes also interchange the way we apply the terms seasonal utilization and end of season utilization. That is a big deal, or it can be. Still confused? Not to worry. Fortunately, there is a great publication available from Arizona Cooperative Extension, authored by an august group of range professionals to set us straight on the issue.

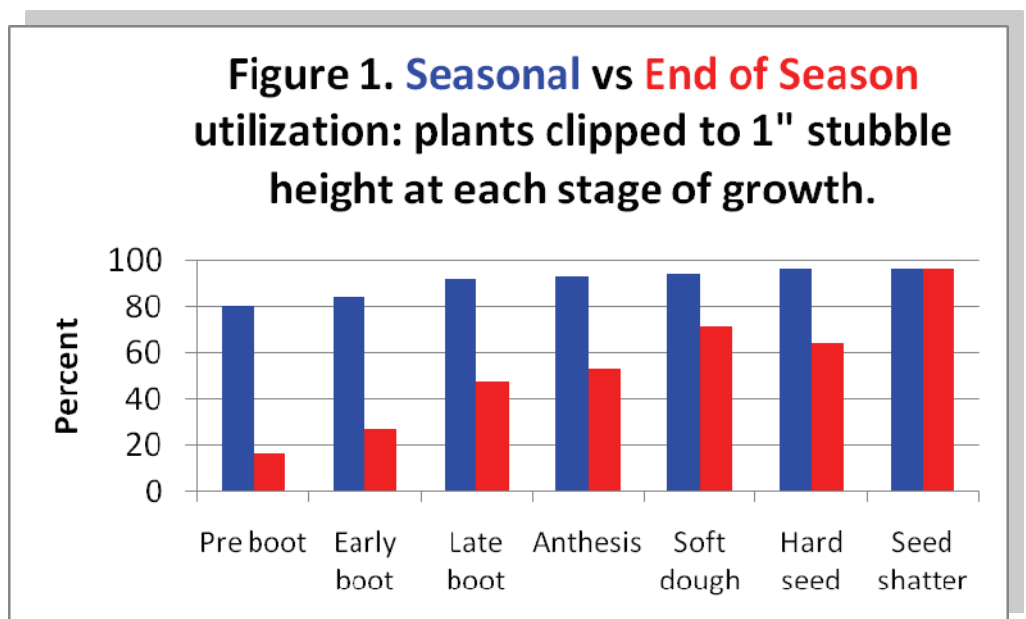
Principles of Obtaining and Interpreting Utilization Data on Rangelands by Lamar Smith and others (2007) is a peer reviewed manuscript that does just what the title suggests. It is not light reading but I highly recommend it. The authors not only spend some time going back through the various definitions of utilization and how they originated, they also expend a great deal of effort in describing what utilization means for those of us who need to go out and apply this information in real-world management settings.

Here is a “Doug Notes” version of one topic from the Smith et al. publication: the difference between seasonal or relative utilization, and end of season utilization. It sounds pretty straight forward and it is really, but these two terms can be misused in grazing monitoring or planning. Quoting from the Smith paper:

*“Seasonal utilization is the percentage of the forage produced **in the current growing season to date of measurement** that is removed by grazing. This percentage is different from utilization because it **does not account for subsequent growth** of either the ungrazed or grazed plants. Seasonal utilization measured early in the growing season has no consistent relationship to utilization based on total production. As the growing season progresses, the difference between the two measurements is reduced because the time available for regrowth diminished.”*

(*author’s emphasis)

So just for rough illustration: if we 1) estimate 40% seasonal use in a pasture in April, and 2) livestock are moved to another pasture, and 3) that pasture experiences average precipitation, we might go back and estimate 10% end of season utilization in say, October (i.e. there was still enough photosynthetic and meristematic tissue to capture sunlight, CO₂, and water to recover/re-grow and produce plant material). On the other hand, if it does not rain a drop after the livestock are moved in April, we might estimate 35% end of season utilization. What if we measured seasonal utilization at 40% in that pasture in September? We might estimate 40% in October as well. Timing relative to the end of the growing season and the conditions of the growing season are important factors





Sense and sensibility: use and utilization, continued

to consider. Figure 1 presents data from Table 1 in the Smith et al. paper and illustrates this current point. In this study, clipping Thurber Needlegrass to a very high degree of seasonal utilization resulted in light to moderate end of season utilization until that amount of harvest occurred later in the growth stage/season (i.e. the red and blue bars converge). Again, these same treatments in a different year could yield very different results. So as always, interpreting this information must be done in context of the site, current and expected conditions, and management goals.

A couple last things to consider when measuring utilization, and especially if you are using a visual method. First, much of the weight of most grass plants is at the bottom and second, animals don't always remove plant material in a nice even manner. There are times when a pasture will appear "mowed", with forage clipped off at a uniform height. When this happens it makes measuring or estimating forage utilization pretty easy. Many times though, especially on rangelands, animals will remove half of one plant, skip the next, take the top off another, pull a few leaves from the side of another, etc... (Figure 2, and for a more detailed illustration, [see the accompanying video](#)). So it is a good idea to re-calibrate your eye with your reference method or photo's from time to time. Just like a lot of other skills, practice makes perfect. I know we have talked primarily about grasses in this article and I don't intend to ignore shrubs or other browse, I just think that is a topic to be dealt with in and of itself. Especially if a river runs through it. Bottom line, measuring utilization is an effective range management tool when applied correctly, and a skill that can be learned. It also seems to me that "compare and contrast" is a tool that can be applied on the ground in the classroom of our rangelands, not just to dusty old books in a library.



Figure 2. Varying degrees of tissue removal in Western Wheatgrass.



John's Plant of the "week"

Last newsletter, I discussed the importance of cool season grasses. One of these cool season grasses has the common name of Arizona fescue. I assumed, since moving to Arizona and learning the name of Arizona fescue, that it was the recognized state grass. During my research I realized that Arizona fescue was NOT the recognized state grass. In fact Arizona does not have a recognized state grass. My question to you dear reader is, why not?

Why doesn't Arizona have a grass as one of the state symbols? Cattle have certainly been a defining force in the character of Arizona. And the cattle industry does not do well without adequate grass. In fact, range managers pride themselves in managing grass. We take many courses at universities to learn about grass physiology and proper management. It is a very important part of any ecosystem from pine forest to desert. Something this important needs to be recognized. We need to stand up and demand that Arizona adopt a state grass, and we need to do it now!

As I mentioned in the last article, the harvesting of cool season grass seeds played an important role in sustaining tribal populations during the transition from declining winter stored food, to the gathering of late summer food stocks. If that is not important enough to ensure that the grass plant has had a role in defining Arizona, again I ask, why not?

We have a state flower; Saguaro Cactus Blossom. We have a state fossil; Petrified Wood. As I see it our state flower and fossil symbols simply state, Arizona is "pretty old"! How is Arizona being defined? Why haven't our legislatures gotten around to adding a state grass? We have a state amphibian: the Arizona Tree Frog, and a state reptile; the Arizona Ridge-nosed Rattlesnake. Is grass less important than a lizard?

I give credit to Barry Goldwater with some help from The Bola Tie Society of Arizona he made a distinct statement about the character of Arizona. In 1971, he made the Bola Tie the official neckware of the state. Not only does it define Arizona's character, it also provides the opportunity to preserve history. It is claimed that in the late 1940s, a silversmith named Victor Cedarstaff went riding with friends in the Bradshaw Mountains outside Wickenburg, Arizona. When the wind blew his hat off, Cedarstaff removed the hat band, which had a silver buckle he did not want to lose, and put it around his neck. When his friends complemented him on the new apparel, Cedarstaff returned home, and wove a leather string added silver balls to the ends and ran it through a turquoise buckle. Cedarstaff later patented the new neckwear, which was called the bola because it resembled the lengths of rope used by Argentine gauchos to catch game or cattle. But we still do not have a state grass.

If it is any consolation, we are in the majority when it comes to *not* having a designated state grass. There are only 17 states that have designated a grass as part of their state symbols (Minnesota defines wild rice as their state grain). However, two of these states are east of the Mississippi: Illinois and South Carolina, since I am a native of Minnesota and it is the origin of the Mississippi river I will include it with the western states. Fourteen states west of the Mississippi and Minnesota have decided to define themselves with a grass of their choosing. It seems the majority of western states, those uniquely independent states with hard fought histories, have aligned their state with a grass. In the west, grass has significance in defining a state. In that sense Arizona is in the minority.

It is not too late. In 2007 two states, Missouri and Wyoming made big bluestem and western wheatgrass, respectively, official state grasses. And even California, the leader in all sorts of questionable trends decided in 2004 that purple needlegrass would be their state grass. In 2004, a fourth grade teacher in Wisconsin with help from the NRCS, assisted her students in researching native grasses and organized a statewide letter writing campaign aimed at legislators to pass a law declaring little bluestem the official state grass. Why? They didn't do it for fame or glory, but in the hope that this act would help preserve the prairies by bringing some status to a native grass. They chose little bluestem because it is native, it grows in a variety of habitats, it survives all kinds of weather – and the name is easy to remember. Five years later these 9th graders have yet to see little bluestem adopted as their official state grass. Is Arizona going to abandon our children, our future, and make them grow up without a state grass? Are we that inhumane? We need to adopt a grass.

Why now? With the economy struggling, the state budget in a shambles and democrats and republicans not able to agree on anything, now is the time. What better way to show solidarity, to join hands and cross the aisle and unite for Arizona? Let's get Arizonans united behind a state grass. It has the power to make neighbors who were once enemies start conversing in front yards, smiling warm greeting everywhere they travel. Let's focus on what grass has meant to Arizona, how early cattlemen faced harsh conditions and hostile territory to graze cattle. Those early cattlemen helped establish settlements that are now major towns. Let's unite as one and make Arizona threawn the state grass! What? You though I was going to say Arizona fescue? Perhaps we should go with Arizona blue-eyedgrass, what better way to cross the aisle than with a plant called a grass that it isn't a grass at all? That



John's Plant of the "week," continued

should appeal to those who want to include everyone, and the blue-eyed title might go well with those Willie Nelson fans, aren't they always fans of grass?

Seriously folks, Arizona is a botanically rich and diverse state. A search of USDA's plants database using Arizona as a common name resulted in 130 matches of every growth form from tree to moss. Ten of these matches were grasses, 11 if you include the fore mentioned blue-eyedgrass. (That is more than even I knew existed.) Is there *one* grass among these that has intrinsic historical value or the power to unite the people? You decide. I am providing a list of these grasses and want to hear from you. What grass do you think should be the state grass and why? Or should we unite over more important issues like adaptive management, the meaning of multi-use, and how best to share resources for recreation, wildlife, and livestock? Or should we bring back the bola tie by making them with a line drawing of our favorite Arizona grass?

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|----------------------|---|
| Arizona threeawn | <u><i>Aristida arizonica</i> Vasey</u> |
| Arizona needle grama | <u><i>Bouteloua aristidoides</i> (Kunth) Griseb. var. <i>arizonica</i> M.E. Jones</u> |
| Arizona brome | <u><i>Bromus arizonicus</i> (Shear) Stebbins</u> |
| Arizona cottontop | <u><i>Digitaria californica</i> (Benth.) Henr.</u> |
| Arizona wheatgrass | <u><i>Elymus arizonicus</i> (Scribn. & J.G. Sm.) Gould</u> |
| Arizona fescue | <u><i>Festuca arizonica</i> Vasey</u> |
| Arizona barley | <u><i>Hordeum arizonicum</i> Covas</u> |
| Arizona muhly | <u><i>Muhlenbergia arizonica</i> Scribn.</u> |
| Arizona bristlegrass | <u><i>Setaria arizonica</i> Rominger</u> |
| Arizona signalgrass | <u><i>Urochloa arizonica</i> (Scribn. & Merr.) O. Morrone & F. Zuloaga</u> |

*John has lived in Arizona for three years 3 months, worked on the ranch for one year, does not own a bola tie, and obviously has a sense of humor.

| State Grasses of the United States | | | |
|------------------------------------|--|------------------------------|------|
| State | Grass | Designation | Year |
| California | Purple needlegrass (<i>Nassella pulchra</i>) | official state grass | 2004 |
| Colorado | Blue grama (<i>Bouteloua gracillis</i>) | official state grass | 1987 |
| Illinois | Big bluestem (<i>Andropogon gerardii</i>) | official state prairie grass | 1989 |
| Minnesota | Wild rice (<i>Zizania aquatic</i>) | state grain | |
| Missouri | Big bluestem (<i>Andropogon gerardii</i>) | official grass | 2007 |
| Montana | Bluebunch wheatgrass (<i>Agropyron spicatum</i>) | official grass | 1973 |
| Nebraska | Little bluestem (<i>Schizachyrium scoparium</i>) | official state grass | 1969 |
| Nevada | Indian rice grass (<i>Oryzopsis hymenoides</i>) | official state grass | 1977 |
| New Mexico | Blue grama (<i>Bouteloua gracillis</i>) | official grass | 1973 |
| North Dakota | Western wheatgrass (<i>Agropyron smithii</i>) | official grass | 1977 |
| Oklahoma | Indian grass (<i>Sorghastrum nutans</i>) | official grass | 2001 |
| South Dakota | Western wheatgrass (<i>Agropyron smithii</i>) | state grass | 1970 |
| Texas | Sideoats grama (<i>Bouteloua curtipendula</i>) | official state grass | 1971 |
| Utah | Indian rice grass (<i>Oryzopsis hymenoides</i>) | state grass | 1990 |
| Washington | Bluebunch wheatgrass (<i>Agropyron spicatum</i>) | official grass | 1989 |
| Wyoming | Western wheatgrass (<i>Agropyron smithii</i>) | state grass | 2007 |



John's Plant of the "week, " continued

| Arizona State Symbols and Emblems | | |
|--|---|----------------|
| Descrip- tion | Symbol / Emblem | Adopted |
| Amphibian | Arizona Tree Frog (<i>Hylix eximia</i>) | 1986 |
| Anthem (song) | "Arizona March Song" words by Margret Rowe Clifford, Music by Maurice Blumenthal | 1919 |
| Alternate Anthem (song) | "Arizona" words and music by Rex Allen, Jr. | 1982 |
| Bird | Coues' Cactus Wren (<i>Heleodytes brunneicapillus couesi</i>) | 1931 |
| Butterfly | Two-tailed Swallowtail (<i>Papilio multicaudata</i>) | 1931 |
| Colors | Blue and Gold | 1915 |
| Fish | Apache Trout (<i>Salmo apache</i>) | 1986 |
| Flag | The flag represents the copper star of Arizona rising from a blue field in the face of a setting sun. | 1917 |
| Flower | Saguaro Cactus Blossom (<i>Cereus giganteus</i>) | 1931 |
| Fossil | Petrified Wood (<i>Araucarioxylon arizonicum</i>) | 1988 |
| Gemstone | Turquoise | 1974 |
| Great Seal | The official seal is in black and white. In the background is a mountain range with the sun rising behind the peaks. At the right side of the range of mountains is a storage reservoir (a lake) and a dam. In the middle are irrigated fields and orchards. In the lower right side of the seal is grazing cattle. To the left, on a mountainside, is a quartz mill with a miner with a pick and shovel. Above the drawing is the motto "Ditat Deus," meaning "God Enriches." The words "Great Seal of the State of Arizona" and the year of admission to the United States, 1912, is written around the seal. | 1911 |
| Mammal | Ringtail (<i>Brassariscus astutus</i>) | 1986 |
| Neckware | Bola Tie | 1973 |
| Reptile | Arizona Ridge-Nosed Rattlesnake (<i>Crotalus willardi</i>) | 1986 |
| Tree | Palo Verde (<i>Genus cercidium</i>) | 1954 |



The view from the Rim

We hold these truths to be self-evident, that all men are created equal, that they are endowed by their Creator with certain unalienable Rights, that among these are Life, Liberty and the pursuit of Happiness.--That to secure these rights, Governments are instituted among Men, deriving their just powers from the consent of the governed, ”

Excerpt from the Declaration of Independence.

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Just me talking...



It's 8168 miles from Cottonwood, Arizona to Bamako, Mali in west Africa (by way of Phoenix, Minneapolis, and Paris). Not quite to Timbuktu (spelled Tombouktou locally) but it's only about a days drive northeast of Bamako. As of this writing, I just returned from there. I was working on a USAID project to establish an NIRS program within the animal nutrition lab at their national agricultural research ministry and at their agricultural university. It was an interesting trip, and I think the possibility to improve human health and nutrition by way of animal health and nutrition there is good. We conducted several training sessions and worked with the scientists there to demonstrate some of the studies needed to develop NIRS calibrations for cattle and sheep. We will go back in

September to continue this work and travel to the Sahara Desert to initiate similar trials with camels. From a personal perspective this project represents an opportunity to help your fellow man. From a professional perspective it provides a chance to learn about another type of critter and how animals in a pretty much continuous state of malnutrition metabolize nutrients and survive. It is also another desert in which to gain experience and bring it back to Arizona. Summer is gaining speed and getting busy. Before we turn around it will be July 4th, which means Prescott Rodeo at my house, followed by the 46th Annual Natural Resource Conservation Workshop for Arizona Youth (July 6-10) on nearby Mingus Mountain. After that comes the summer meetings for AZ Section SRM in Payson (July 22-24), more validation transects on the Brass-G project, a study to feed range grass seed to cattle and track the germination rate in manure, monitoring seasonal utilization in weeping lovegrass, the AZ Cattlemen's Convention (July 29-31), V Bar V Ranch Explorers Day in August, and so on... Other than that I guess there's not much going on. Oh, by the way, take a look at this picture. I hear there is a brand inspectors job open in Mali.



Till next time... Doug