

# The Rimrock Report



The University of Arizona,  
School of Natural Resources, Cooperative Extension



Volume 2, Issue 4

October 1 2009

## Where there's smoke...

*"I fell into a burning ring of fire, I went down, down, down, and the flames went higher..."* (excerpt from the song, Ring of Fire, as performed by Johnny Cash, written by Merle Kilgore and June Carter)

*"Get up Bambi! Get up. You must get up!"* (excerpt from the animated film, Bambi, a Walt Disney production, as Bambi was being encouraged to run from the forest fire)

*"This raging wildfire has completely destroyed 10,000 acres of beautiful pristine forest."* (anonymous TV news reporter)

*"Happiness is smoke on the horizon."* (Charles "Butch" Taylor, Texas A&M Regents Professor of Rangeland Ecology and Management)

*"I came out here to experience nature and because of all the wildfires, all I can see is smoke..."* (anonymous tourist)

*"Fire good."* (anonymous Neanderthal)

**Fire.** It is one of those words that has a certain power in and of itself. We all know the cliché about yelling "fire" in a crowded room for instance. Special teams coaches yell "fire" to let punt returners know they should not get anywhere near the football. It is both a warm place on a cold night and something to be feared. In the right hands, fire can transform raw meat into a mouth-watering delicacy. Out of control, a city can be reduced to ashes. The quotes above were selected to represent differing views on this natural phenomenon. They are variously poetic, profound, ironic, even possibly humorous. But even these individual selections may not mean the same thing to you as they do to me. Not everybody grew up listening to their Dad and uncles play Johnny Cash songs on the front porch. You may get teary-eyed just thinking about Bambi, or you may think that particular movie is the epitome of Hollywood anthropomorphism run amok. From a range or natural resource standpoint, your perception of fire, more specifically wildfire, may depend on your occupation, location, or past experience. Tourists and "The Media" will not often share the enthusiasm for wildland fire that an experienced range manager has. And no matter what our perception of fire, we may not express it as eloquently as did our early European ancestors.

Quite a few mornings this summer, a thick blanket of smoke greeted residents of the Verde Valley here in central Arizona. Several wildland fires, mostly lightning caused, burned within a 50 mile radius of Cottonwood. Whether that was a good or bad thing again depended on who you talked to. Firefighters saw over-time and the chance to do what they do best. Likewise, caterers and vendors were busy feeding or outfitting the firefighters. Tourists were either curious or cursing their luck. Those folks with respiratory problems

## Inside this issue:

WHERE THERE'S SMOKE	1
JOHNS PLANT OF THE "WEEK"	4
THE VIEW FROM THE RIM	6
JUST ME TALKING	6

The Rodeo-Chediski Fire in June-July 2002 is the largest recorded fire in Arizona history. It burned 467,066 acres.



## Where there's smoke..., continued

were miserable. I have been here in Cottonwood long enough now that a few people know me as “that range guy from the V Bar V”. Seems like every time I went to the gas station, corner store, etc... somebody would bend my ear about which ever fire was going at the time. I can imagine what the guys and gals in the green trucks heard. In fact, I understand there were threats called in to some of the ranger stations. So what was my opinion? Well, there is an old joke in the south that goes something like:

*“Did you hear about the tornado that went through (insert name of your least favorite town)?”*

*“No, what about it?”*

*“It did \$1 million worth of improvement.”*



A prescribed fire burning southeast of the V Bar V.

My opinion is sort of like that. I know that any given wildland fire can cause hardship to a rancher if they lose forage they needed right then, or it may make an erosion-prone site more vulnerable. A wildfire may remove habitat for a threatened species or a hunter may see his “honey hole” disappear. But in general I look at fire as one of our best range management tools. Fire is one of the types of disturbance that shaped the appearance, composition, and function of our rangelands, obviously more in some places than others. But basically, fire is a natural ecosystem process. A lot of the complaints I hear about wildland fire are directed at prescribed fires or “wildland use” fires, i.e. those that are caused naturally but allowed to burn to meet certain landscape goals. The complaints mostly sound something like: *“we shouldn't be meddling with nature”*, *“it is just too risky”*, or *“why does it have to be so close to my house?”*.

Now I don't have a good answer for all those questions but here is my take on the subject. Fire was used by native peoples for many reasons; as a weapon, for insect control, or for forage management. In modern times, we employ fire as perhaps the only cost effective tool on large landscapes to accomplish maintenance or restoration of certain ecosystems. For instance, thinning ponderosa pine, mesquite, or juniper. Fire removes old, dry forage material and subsequently (with the right precipitation) this is replaced with “new, live, leaf.” Hopefully that sounds familiar to you Rimrock regulars. Fire and herbivory are coupled in many ecosystems; herbivores are attracted to the new growth, and by default, tend to rest older forage which builds fuel for future fires, etc... Fire may be required for certain seeds to germinate. Planned burns can be used to reduce fuel loads at the wildland urban interface. I think you get the picture. But aren't prescribed fires risky? Yes. When you are dealing with any natural force, even with the best plans made by competent people, sometimes fires get out. So this becomes a question of weighing risks versus benefits. Do we practice prescribed fire to manage fuel loads or do we allow fuel to accumulate until we experience a catastrophic fire? These aren't easy questions to answer and as always there are many factors to consider.



## Where there's smoke..., continued

A couple of items to end our discussion with. First, let's start with Bambi. There have been volumes written about "Bambi Syndrome" and how this has shaped public opinion on wildlife, hunting, and forest fires. In my opinion it is just a cartoon, but I know people who think that it is accurate. It is a misconception that all animals flee in abject terror at the sight or smell of fire. Yes, I have seen deer, jack rabbits, coyotes, etc... running to get out of a fire, but they tend not to go far. I have data from radio collared bobwhite quail in the Rolling Plains that indicates they go right back into their previous home ranges in burned pastures within 24 hrs. Nest predation was actually less in burned pastures than on the edges and in adjacent unburned pastures. I have seen cattle and deer grazing just across the road from an actively burning area. Dale Rollins, a range and wildlife extension specialist from San Angelo Texas tells the story of when he worked for Oklahoma State and was doing some prescribed burns on a ranch just off the Wichita Mountains Wildlife Refuge. The refuge has a large bison herd. One day smoke was blowing over the fence onto the refuge and Dale noticed that all the bison in that unit had moved over to that side of the pasture, looking over the fence. So, what makes for good drama is not always what happens in the real world. Bambi is a great artistic achievement with outstanding animation, but it is just a story.

Secondly, I hope that as I go around Arizona doing my job as an extension specialist I can provide information about fire and other range issues to help people make more informed decisions. Even better, I hope I can do research that provides information and tools to help range managers (public and private) do their jobs better and safer. I am fortunate enough to be involved in a project that will someday provide real-time landscape-scale fire fuel models for firefighters, planners and ecologists. The Burning Risk Advisory Support System for Grazinglands (Brass-G) uses site specific vegetation, soil, topography, etc... data along with remote sensing in a GIS format to create maps, graphs, and tables to be used by fire professionals. As a bonus, we can use some of the same information for grazing purposes. It is being tested on private ranches, military bases and national forests. Preliminary results for this project will be presented at the annual Society for Range Management meetings in Denver next February. In validation work conducted on the V Bar V, initial calibrations have predicted 70% of re-sampled sites within the standard error for hand clipped vegetation. So initial efforts look good, but we still have some work to do. Good, bad, or ugly; fire is something we all may have different opinions about, but at least we get some classic country songs out of the deal...

*"She's burning like a wildfire, there's no chance of rain; Where there's smoke, you'll find my old flame"* (excerpt from the song, Where there's smoke, as performed by Mark Collie, written by Bobby P. Barker and Mark Collie)



The landscape may not look pretty just after the fire, but this treatment may be an important part of maintaining or rejuvenating this ecosystem.





## John's Plant of the "week"

### Smoke Signals

With the days becoming shorter and the temperatures dropping, I am reminded of my days growing up in rural Minnesota. The cooler days and nights required a jacket in the morning on walk to the school bus. After school I often wandered the wind breaks lining the fields surrounding our farm, now only half covered in yellow and orange leaves. With my single shot 16 gauge at the ready and senses on full alert, I waited for the sudden burst and rapid acceleration from safety of a covey of Hungarian partridge.

Shooting a single shot, I soon learned to make the best of the one shot I had when the opportunity came. I often did harvest one or maybe two partridge on my walk out one tree line and back to the farm on another. On Saturday, if wind was right, I would get to participate in burning the ditches of the country roadsides. There is something magical about fire in the eyes of a young boy. Ditches were burned to prevent the drifting of snow across the roadway caused by grasses that grew tall along country roads.



Grass re-growth on a burned area of Mingus Mountain approximately 45 days after an August wildfire

In school I learned that fire requires three ingredients, heat, fuel and oxygen. As we all know, fuel can be many things and at a high enough temperature most things will burn. In the roadside ditches of northwestern Minnesota, the fuel was mostly smooth brome, originally seeded to hold the soil in place after the roadbed had been built. One thing I learned from that early experience is burning dormant grass does not result in mortality of that grass. The following spring the burned roadsides would turn green with new growth, in fact they would green up faster than those areas not burned.

Even though smoke I smell in Arizona is not the familiar smell of my youth, I know grass is burning along with the dead and down pine in the Forest Service prescribed burns. Forest health is the reason most often given for these planned burns. As rangeland managers know forage and browse management can be difficult, and may not always be the priority of these prescribed fires. Fire, like any tool, if not used properly can be detrimental to the resource applied. Outlined below are the responses of several grass species to fire, season of fire and the response to the removal of fire on some species.

#### Arizona fescue:

- survives most fires
  - recovery is typically quick with summer monsoon moisture that follows dry-season surface fires in ponderosa pine forests
  - production and abundance may even be greater on burned than unburned sites following surface or low-severity fires
- frequent fires in Arizona fescue habitats are considered important to the maintenance of forest openings and Arizona fescue persistence

#### Western wheatgrass:

- generally unharmed by fire, rhizomes may be damaged but are generally not killed by fire
- cover usually increases or changes little after fire

spring burns often favor western wheatgrass by increasing density during the 1st growing season after fire in years of below average precipitation, western wheatgrass density may be lower in plots with "reduced surface litter," such as burned plots, than in areas with undisturbed surface litter



## John's Plant of the "week," continued

### **Tobosa:**

- rhizomes are deep enough in the soil that they are protected from fire
- spring burns followed by sufficient precipitation produce the most rapid recovery
- the response of tobosa following fire is dependent upon site characteristics, geographic location, soil moisture, season of burn, and precipitation in the months following burning
- burning is a very effective tool for stimulating forage production in stagnant tobosa stands  
burning should take place in the spring while plants are still dormant and the soil is wet

### **Blue grama:**

- top-killed by fire.
- variable fire tolerance; it has fair tolerance when dormant but experiences some damage if burned during active growth, especially during drought
- frequency may increase but productivity may decrease for a few years following fire
- response of blue grama to fire may be dependant on precipitation following the fire; "wet" years tend to increase blue grama yield on a semi-desert grassland site in Arizona, blue grama declined significantly during the 1st season following a prescribed burn; however, it recovered fully after 2 post-fire years

The above information is found on the USDA Forest Service web site. <http://www.fs.fed.us/database/feis/plants/graminoid/index.html>

It seems to me that the lesson of my youth holds true. In most instances, fire will not result in grass mortality. It may reduce frequency or productivity in the short term, but with adequate moisture, grasses will be more productive. In some instances after fire the old dead material, especially in the case of tobosa grass, is now burned away and not restricting access to the new live leaf that holds the most value nutritionally.

Another obvious lesson: burning live actively growing plants will have adverse affects. The intensity of the fire applied to actively growing plants will vary the extent of mortality on plants. Most grasses will survive most fires. Extremely hot fire will kill all grasses, sterilizing the soil. Fire during the dormant season is ideal since the plant is storing all of its energy in the root and crown, waiting for the proper temperature and moisture to start growth.

I noticed in my reading, blue grama has been studied more on its reaction to fire than the other grasses mentioned here. The web page mentioned above lists blue grama as excellent forage for all livestock. Tobosa, Arizona fescue, and western wheatgrass were all listed as good forage by the same website.

Blue grama favors annual burning and the exclusion of fire in southwestern ponderosa pine forests has led to large accumulations of litter (pine needles) and large woody debris that "impair the reestablishment" of Arizona fescue. It probably comes as no surprise that stands of tobosa grass burn hotter than any other species discussed. These are indicators that fire is a necessary part of the natural ecological process of this land we live in.

I want to leave with two final thoughts. If you are permitted to prescribe fire as a management tool, be sure, as if you were shooting a single shot, of your target. Lastly, as you become aware of smoke in the crisp air this season I hope you process it as a signal to the green sprouting grass that will arrive with the next growing season.

Video link on burning ditches from a couple of NDSU graduates <http://www.youtube.watch?v=ayvzyXj2bLk>



# The view from the Rim

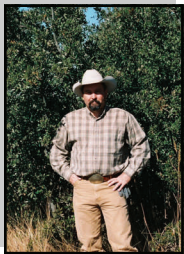
One of the guys I am working with in Mali told me this story recently:

“I decided that if I am going to work several years in West Africa, I need to learn French. So I bought the French version of (a popular foreign language software program). When I was installing it on my computer, I had a problem so I called the help line number. The person who answered the phone could not speak English...”

**The University of Arizona**  
**School of Natural Resources**  
**V Bar V Ranch**  
**2657 S Village Dr**  
**Cottonwood, AZ 86326**

**Phone: 928-646-9113**  
**Fax: 928-646-9108**  
**Cell: 928-821-3222**  
**E-mail: [dougt@cals.arizona.edu](mailto:dougt@cals.arizona.edu)**  
**Web: <http://cals.arizona.edu/aes/vbarv/>**  
**Note: Please email me if you would like to be added to the “mailing” list for this newsletter.**

## Just me talking...



Well, we are a little late getting the newsletter out this time, but I guess it had to happen sooner or later. Once again I am just back from 2 weeks in Africa and barely back in the right time zone, but at least I am sleeping till about 4 AM now. Fall monitoring is in full swing, John Kava has been taking on those chores while I have been gone and has been on the Kaibab, Tonto, Apache-Sitgreaves, and the Coronado NF's the last couple of weeks. We will both be out on the Prescott next week, then back around the V Bar V for the end of the month, working with the **Range Rocks!** program and FFA students from local high schools. We have put in a set of transects at Mingus Springs Camp, comparing burned, unburned, thinned and non-thinned ponderosa pine sites. The honors science class from Northpoint High School is using this as a project and we will be able to use these sites for the NRCWAY camp in years to come. It will make a really nice “before and after” demonstration for prescribed fire and manual thinning. The campers will get to participate in data collection and see the results first-hand. We should be kicking off some NIRS studies this fall and winter and I hope to get our lab trailer set up soon. The monsoon was “interesting” this year. In May, the Climate Prediction Center had forecast a generally wetter and warmer monsoon season for the state. Currently, Phoenix TV stations are reporting this to be the 2<sup>nd</sup> hottest and 10<sup>th</sup> driest monsoon on record. It was deceptively dry in our immediate area. We had a couple of really strong storms, heavy flooding in Sedona, etc... There were a couple of weeks that it rained every day, just not very widespread, even “spottier” than normal. We have recorded just under 4 inches of rain during July through September at Cedar Flat this year which is about half of the previous 2 years total for that period. You can drive or ride across the country here and see places that are nice and green and then go over the hill a half a mile and see nothing but dry, brown plants. May be time for a little adaptive management?

Till next time... Doug

