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**After the Fire – Tips for Rangeland Managers**

By Dr. Kate Wilkin, Forestry/Fire Science and Natural Resource Advisor and Dan Macon, Livestock and Natural Resource Advisor

Like many Northern Californians, we awoke early on October 9, 2017, to reports of wind-driven wildfires devastating our communities. At this writing, fire crews continue to fight the Lobo and McCourtney Fires in Nevada County, the Cascade Fire in Yuba County and the La Porte and Cherokee Fires in Butte County. As we begin to think about the long road to recovering from these fires, we wanted to provide some resources for rangeland owners and managers to assist with post-fire recovery activities.

It might be hard to look out at the charred landscape and imagine its recovery now. However, within the month, we will start to see green growth. Riparian areas will start to green-up within the next two to six weeks. Even though many of the oaks may appear dead, many will sprout from the base this growing season. For surviving oaks, their canopies most often recover within three growing seasons. While the thin-barked foothill pines may not survive, many of our native shrub species will re-sprout or reseed.



To start the recovery, you will need to assess the fire severity on your property, and any nearby values that you would like to maintain. Many of us in the foothills are concerned about the oaks that have been damaged by fire. A 2011 publication from the University of California provides important information about

managing burned oaks. Go to <http://anrcatalog.ucanr.edu/pdf/8445.pdf> to download the publication. Authors Doug McCreary and Glenn Nader provide guidelines for determining which fire-damaged oaks on your land may survive. Trees on which the cambium layer (the tissue directly beneath the bark) has been killed all the way around the stem will eventually die. “However,” McCreary and Nader write, “even if a small portion of the circumference of the cambium remains alive (as little as 10%), the tree will likely survive.” Generally, trees that suffer leaf damage will recover if the cambium survives. The publication offers the following guidelines for deciding which trees to leave:

Okay to Cut Trees That:

- Are less than 6 inches in diameter and have been scorched all the way around the trunk.
- Are 6-12 inches in diameter and have continuous charring around the base, with reductions in bark thickness.
- Are more than 12 inches in diameter and have continuous charring, pronounced reductions in bark thickness, and occasional exposure of underlying wood.
- Have basal wounds on 50% or more of their trunks and are located where they could present a safety hazard.

We should note that while these trees are dead, they do not necessarily need to be removed. Leaving some or most of these trees as wildlife habitat is advantageous, provided they do not present a safety hazard.

Leave Trees That:

- Have lost most of their leaves but have sustained only minor stem damage.
- Have only spotty scorching on the trunk, with at least 10% of the cambium alive.
- Are over 12 inches in diameter and are scorched all the way around the trunk but with no reduction in bark thickness.

Finally, even killed trees that have been cut down may re-sprout. Live oak re-sprouts can be especially vigorous, but almost all other oak species will sprout in the following spring. If sprouts are pruned back to one or two dominant shoots, these will grow more rapidly and have less tendency to develop multiple trunks.

As we head into the rainy season, preventing soil erosion is also a priority on fire-impacted landscapes. There are several methods landowners should consider for preventing erosion after a fire. Mulch, like certified weed-free straw, can be used to cover bare soils. This reduces raindrop impact and soil particle movement and can offset the effects of water-repellent soils. On steeper slopes, straw wattles, silt fences, log barriers or straw bale check dams can slow water flow, trap sediment and increase infiltration. Depending on your landscape and livestock operation, you may want to reseed annual grasslands this fall as well – the Natural Resources Conservation Service (NRCS) should have seeding recommendations. On the other hand, natural regeneration of the vegetation may be preferable for some landowners and on some landscapes. A new publication on restoring annual grassland systems has useful information on this subject (see <http://anrcatalog.ucanr.edu/pdf/8575.pdf>). In addition, NRCS has a variety of cost-share and technical assistance programs that may help landowners address post-fire erosion and revegetation concerns. For more information, contact:

NRCS – Grass Valley Service Center  
(530) 272-3417

NRCS – Yuba City Service Center  
(530) 674-1461

The USDA Farm Service Agency has several programs available to assist livestock producers who have lost forage to wildfire. The Emergency Assistance for Livestock, Honeybees and Farm-Raised Fish Program (ELAP) can provide some reimbursement for livestock death losses and forage losses – download this fact sheet for more information: [https://www.fsa.usda.gov/Assets/USDA-FSA-Public/usdfiles/FactSheets/2017/elap\\_for\\_livestock\\_oct2017.pdf](https://www.fsa.usda.gov/Assets/USDA-FSA-Public/usdfiles/FactSheets/2017/elap_for_livestock_oct2017.pdf).

Finally, ranchers should watch for smoke and fire-induced stress impacts on livestock. Just as with humans, smoke inhalation can cause irritation of the eyes and respiratory tract in livestock. It can also aggravate chronic lung diseases and reduce lung function. Burn injuries can also be an issue for some producers. Drs. John Madigan, David Wilson and Carolyn Stull from the UC Davis School of Veterinary Medicine have developed a short, easy-to-read publication on caring for livestock after a wildfire – download the publication here: <http://cecentralsierra.ucanr.edu/files/220420.pdf>.

Recovering from fire is a long, challenging process. In the upcoming weeks, we will write more about prioritizing vegetation management and post-fire succession on your property. In the meantime, be sure to check out the Sutter-Yuba Living with Fire Webpage at [http://cesutter.ucanr.edu/Fire\\_Information/](http://cesutter.ucanr.edu/Fire_Information/). If you have specific questions regarding fire impacts and post-fire recovery on your property, don't hesitate to contact us directly!

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## Matching Your Cows to the Environment

Last month, someone forwarded an interesting article from North Dakota State University Beef Specialist, Kris Ringwall. The Dickinson Research Extension Center in North Dakota has been gathering data to help answer the big cow vs. small cow discussion since the mid-1990s. Since that time, the center has bred larger heifers with Aberdeen bulls. Steer calves have been fed out to harvest weights of around 1,250 pounds; heifer calves have been retained and added to the center's cow herd. At maturity, these cows weighed about 1,100 pounds – 300 pounds lighter than the center's main cow herd. The center managed these Aberdeen-influenced females in a separate "range" herd, while the majority of the larger cows remained in the center's "beef" herd.

According to Ringwall, when individual animal performance was measured, the smaller "range" cows did not perform as well as the bigger "beef" cows. However, when he looked at stocking rate and carrying capacity, the story changed. The smaller cows consumed less forage, which meant two pastures of similar size and quality could carry more of the smaller "range" cows – 30 percent more cows in Ringwall's example. Put another way, a pasture that would support 100 of the bigger "beef" cows would support 130 smaller "range" cows.



Bigger cows wean bigger calves – the 1,400-pound cows in North Dakota weaned 640-pound calves (205-day adjusted weight), while the 1,100-pound cows weaned calves that averaged 535 pounds. Digging into this cow math a bit further, 100 "beef" calves should weigh 64,000 pounds total (100 calves at 640 pounds). On the other hand, 130 "range" calves should weigh 69,550 pounds – an extra 5,550 pounds of marketable beef.

Can these smaller "range" cows be competitive in mainstream beef production? The Dickinson Center also harvested steer calves from these smaller cows in 2015. The cows averaged 1,120 pounds and weaned an average of 511 pounds of actual calf weight (45.6 of the cows' body weight). The steer calves were fed to a finished weight, and after harvest averaged 891 pounds hot carcass weight – not bad!

During my time at the Sierra Foothill Research and Extension Center several years ago, I often thought about the right sized cow for our foothill annual rangelands. The Yuba County foothills, obviously, are very different than the northern plains rangelands of North Dakota. However, fitting cows to our environment is an important consideration regardless of where we ranch. What do you think? What is your ideal cow for **your** environment?

You can read the full article, titled "Time to Get Serious; Small Cows Produce," at <https://www.ag.ndsu.edu/news/columns/beef-talk/beef-talk-time-to-get-serious-small-cows-produce/>.

## Controlling Internal Parasites in Sheep and Goats

If you raise sheep or goats, you have undoubtedly seen symptoms of internal parasites, including diarrhea, general lethargy, anemia, and bottle jaw. If you have been in the business of raising sheep and goats for any length of time, you will also know that dewormer resistance (that is, parasites that develop resistance to specific dewormers) is an increasingly difficult challenge. Thanks to an outstanding website developed by the American Consortium for Small Ruminant Parasite Control, we have new resources to help us control internal parasites and avoid resistance problems. Check it out at [www.wormx.info](http://www.wormx.info)!

Some producers use the FAMACHA© system to identify anemic animals in their flocks - anemia is a symptom of infection with *Haemonchus contortus* (barber pole worm). By using the FAMACHA© system, producers can target just the infected animals with deworming treatments. According to Dr. Ray Kaplan of the University of Georgia College of Veterinary Medicine, proper use of the FAMACHA© system "will significantly slow the development of resistance to dewormers, which is becoming an extremely important concern in small ruminant production." For more information on the FAMACHA© system, go to <https://www.wormx.info/famacha>.

The FAMACHA© system, however, does not tell the whole story about parasitic infection. Fecal egg counts can be used to monitor more closely the level of parasitism in your herd or flock. We have not done this systematically with our own sheep, but I think we'll start! The website has resources for this as well: <https://www.wormx.info/part6>.

At one time, veterinarians recommended rotating deworming products to reduce the likelihood of developing resistance. Today, rotation will not prevent resistance from worsening. Instead, experts now recommend that dewormers be used together at the same time in combination. Another article by Dr. Kaplan indicates that using combinations of dewormers gives each drug an additive effect, which means fewer resistant worms survive the treatment. See <https://www.wormx.info/combinations> - and be sure to read the "Precautions and issues to consider" section!

Finally, some sheep and goat producers believe that chicory contains a compound that is helpful in controlling internal parasites. It turns out that there may be something to this! An experiment conducted in Ohio in 2009-2010 investigated non-traditional forages (including chicory) as a strategy for reducing parasite burden in lambs. The researchers found that lambs grazed chicory showed statistically lower fecal egg counts. They acknowledge that "grazing forage chicory is not an effective parasite control strategy in and of itself," but that it might have potential as one tool within a multi-tool approach. Go to <https://ohioline.osu.edu/factsheet/VME-31> for more information on grazing chicory. It may be worth seeking funding for conducting a similar trial in California - contact me if you are interested in researching this topic!



### The Dirty Dozen Pasture and Rangeland Weeds

If you graze livestock on annual rangeland or irrigated pasture in the Sierra Foothills or Sacramento Valley, you've encountered them – the Dirty Dozen Pasture and Rangeland Weeds! In all likelihood, you've encountered more than just these 12! A new page on the Placer-Nevada-Sutter-Yuba Livestock and Natural Resources website compiles information on the management and control of these weeds – go to <http://ucanr.edu/sites/Livestock/Weeds/> for more information.

Based on feedback on the UCCE Sustainable Foothill Ranching Facebook page (at <https://www.facebook.com/FoothillSustainableRanching/>) the following weeds were voted into the Dirty Dozen:

1. Yellow Starthistle
2. Medusahead
3. Barbed Goatgrass
4. Smutgrass
5. The Thistles (Italian, Milk and Bull)
6. Himalayan Blackberry
7. Cocklebur (Spiny and Common)
8. Scotch Broom
9. Poison Hemlock
10. Foxtail Barley
11. Riggut Brome
12. Broom Sedge

To submit your own nomination for additions to the Dirty Dozen website, or simply to ask a question about a weed that isn't on this list, go to <http://ucanr.edu/weedquestion>.

## New Research/Demonstration – the Livestock Guardian Dog Project

In late August, I was invited to demonstrate the livestock protection tools we use with our sheep at a workshop at the Hopland Research and Extension Center. Our primary tools are electro-net fencing and livestock guardian dogs – and as I prepared for my demonstration, I realized that livestock guardian behavior is difficult to demonstrate. When we have visitors to our sheep pastures, the dogs approach, sniff the stranger, and generally resume their daytime naps in the shade – not a terribly dynamic demonstration!

After talking with UCCE Wildlife Specialist Dr. Roger Baldwin at UC Davis and Dr. Derek Bailey at New Mexico State University (who makes extensive use of GPS technology for tracking animal behavior), I've decided to start a new project using GPS collars and game cameras to track (and graphically demonstrate) livestock guardian dog behavior in response to the presence of predators. The first step in this project has been to build and test a GPS collar and deploy game cameras on my sheep operation. After a week of testing a single collared dog and two game cameras, I was able to capture a photo of a coyote approaching our electric fence and document the dog's response – the technology worked as I hoped it would!



The next steps in this project will be to build enough GPS collars to collar 1-2 dogs and up to five sheep or goats. We will also deploy eight cameras on the perimeter of our sheep paddocks. This next step will allow us to compare dog behavior and response with sheep behavior and response. Once we have a good handle on the technology and logistics, we plan to collect similar data from operations in different environments. My hope is that our data collection will provide a better understanding of how livestock guardian dogs interact with predators – and that I will be better prepared the next time someone asks me to demonstrate guard dog behavior!

If you are interested in becoming a producer-cooperator on this project, please contact me at [dmacon@ucanr.edu](mailto:dmacon@ucanr.edu)! Look for project updates on my website, and on the soon-to-be-launched Livestock-Predator Conflict Management Information hub on the UC Rangelands website (<http://rangelands.ucdavis.edu/>). And be sure to check out Roger Baldwin's website: <http://baldwin.ucdavis.edu/>.

## Will Your Ranch Outlast You? Planning for Continuity

In many ways, a ranch is itself a living organism. Even when the rancher is incapacitated or gone, the life of the operation continues. Cows must be fed; sheep must be moved to new pasture.

Our next Farmer-to-Farmer event will focus on operational continuity. Join us for a potluck dinner and networking with fellow farmers and ranchers about steps we can all take to help ensure the continuity of our farms and ranches in our absence. The dinner will be held on Wednesday, November 1 from 6-9 p.m. at the Auburn Veterans Hall. Register at <http://ucanr.edu/sites/placernevadasmallfarms/?calitem=384337&g=22527>.

### Sign up Now for Introduction to Farm Business Workshop

Are you interested in making your passion for raising livestock into a profitable business? If you have already started selling products, our Introduction to Farm Business Workshop on November 3, 2017, is a great step towards economic viability! This one-day intensive course will include information on ranching a business, developing marketing strategies, understanding regulations, managing risk, and making strategic capital purchases. The cost is just \$20 per person and includes lunch and course materials. Pre-registration is required – go to <http://ucanr.edu/sites/placervevadasmallfarms/?calitem=376481&g=22527> for more information.

### Calendar of Events

November 1: Farmer-to-Farmer Dinner: Planning for Now and the Future

6-9 p.m. – Auburn Veterans Hall

RSVP at <http://ucanr.edu/survey/survey.cfm?surveynumber=21906>

November 3: Introduction to Farm Business Workshop

8:30 a.m. – 5 p.m. – UCCE Placer-Nevada, Auburn, CA

Register at <http://ucanr.edu/sites/placervevadasmallfarms/?calitem=376481&g=22527>

November 9: Electric Fencing Field Meeting

8:30 a.m. – 12:30 p.m. – Robinson Ranch, Penn Valley, CA

Register at <http://ucanr.edu/2017elecfenceworkshop>



*Follow UCCE Placer-Nevada-Sutter-Yuba Livestock and Natural Resources on Facebook at <https://www.facebook.com/FoothillSustainableRanching/>*

*Be sure to check out the Ranching in the Sierra Foothills Blog at <http://ucanr.edu/blogs/ranchinginthefoothills>*

*Placer-Nevada-Sutter-Yuba Livestock and Natural Resources Website <http://ucanr.edu/sites/Livestock/>*

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