

**University of California**  
 Agriculture and Natural Resources  
*Making a Difference for California*



Fall 2010

# Livestock, Range, & Watershed

San Luis Obispo and Monterey Counties

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## Range Management as it Relates to Water Quality Regulations

**Royce Larsen**  
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Fall is fast approaching. This is a time to consider management measures on ranches to help prevent or reduce erosion. There are regulations covering Non-Point Source pollution that the Central Coast Regional Water Quality Control Board (CCRWQCB) is working on. For the ranching industry, the CCRWQCB is working on watersheds that have been determined to be impaired. For those watersheds, they are using an approach called Total Maximum Daily Loads (TMDL). A TMDL is a written plan that describes how an impaired water body will meet water quality standards. Currently, there are several watersheds on the Central Coast where TMDL's have been completed, including the Pajaro River, Lower Salinas River, Watsonville Slough, San Luis Obispo Creek, Chorro Creek, and Los Osos Creek. These TMDL's deal with all the pollutants that exceed target values for a given water body. For a complete listing of TMDLs and the pollutants they target, please see the CCRWQCB web site [http://www.waterboards.ca.gov/centralcoast/water\\_issues/programs/tmdl/303d\\_and\\_tmdl\\_projects.shtml](http://www.waterboards.ca.gov/centralcoast/water_issues/programs/tmdl/303d_and_tmdl_projects.shtml).

So what can be done? Whether you live in a watershed where a TMDL has been used or not, there are certain actions that can be done to reduce pollution. For example, with the onset of winter rains, whether it is a drier or wetter than the average year, certain practices can be accomplished to prevent or reduce erosion. Please see the California Rangelands website for more information, the website is <http://californiarangeland.ucdavis.edu/>. There are three important ways that ranchers can take action to reduce or prevent erosion. First, most erosion on ranches occurs from roads.



Therefore, making sure roads are properly designed and maintained is important. Grading roads to prevent water from coalescing is critical. This can be done by use of water bars, rolling dips, out sloping, etc. Also, making sure all culverts are clear, so they will not deter water flowing through them is very important. Having culverts sized correctly is also very important. There is information available that can be used as a guide to help with road maintenance from your local UCCE office. You could also contact the agricultural engineer at your local USDA NRCS office. Second, the overall best management practice for helping to prevent or reduce erosion on ranches is making sure you leave the proper amount of residual dry matter (RDM) to protect the soil against erosion. RDM will help absorb the rainfall energy, and slow the water down for better infiltration. In addition to helping with erosion, proper RDM amounts help determine the species and amount of production the following year. You can find more information about RDM on the California Rangelands website. Third, making sure cattle do not spend too much time in and around streams is important. This can be accomplished using water, supplements, herding, etc. as management measures to pull cattle away from streams. Also, riparian fencing could be used in extreme situations. More information on keeping cattle from spending too much time in and around streams can be found at California Rangelands website or your local UCCE office.

## Animal Disease Response

**Amy Breschini**  
**Farm Advisor Assistant**  
**County of San Luis Obispo**

The thought of a foreign animal disease outbreak is chilling and unreal. The best method of preventing the spread of any disease is by working with your vet when you become aware that your animals may be ill with something that seems unrecognizable or extreme. It's important that you let your vet know this before they enter your property if you suspect that something is unusual. This gives him the opportunity to wear protective

clothing or keep his vehicle off the property, so that he will not become a carrier or spreader of a disease. Often diseases can persist on a person, either on skin, in sinus passages and even in small fragments of dust and dirt on their vehicle, so it's important that your veterinarian and you are prepared to not be carriers to other properties. The types of diseases called zoonotic may be transmitted from animal to animal or human to animal. A few examples are TB, influenza, Brucellosis, plague, rabies, Monkeypox and West Nile virus. Humans may also transmit diseases that are non-zoonotic such as foot and mouth disease and hog cholera. Foot and Mouth Disease is one of the most infectious diseases known. It can spread up to 6 miles in the wind and even be transported on cars and clothing!

Your vet will be able to help diagnose and submit samples to the state vet if he feels necessary. Only an official federal lab can confirm or refute the presence of a foreign animal disease in the US. Many tests are submitted every day and the testing is completely anonymous, unless there's a positive finding. Your local vet works with the California State Veterinarian, Dr. Richard Breitmeyer. He will be in contact with the Federal authority, which is the California's Area Vet in Charge (AVIC), Dr. Kevin Varner. The AVIC works very closely with state animal health authorities to protect animal health. There is a tight network in order to have a unified response, to protect nearby farms and ranches from exposure, and the agriculture industry at large. An agricultural emergency is defined as an event that jeopardizes the economic stability of the agriculture industry.

If you are curious what diseases are out there, the World Organization for Animal Health (OIE) is the international organization responsible for setting animal health standards on which international trade restrictions are based. They maintain a database of all diseases with potential for rapid spread and that could severely damage agriculture markets and exports. The presence of diseases listed by OIE must be reported within 24 hours. For additional information, visit their website at: [www.oie.int](http://www.oie.int)

# New Research will Look at Ecosystem Services

**Ken Tate**  
**Rangeland/Watershed Specialist**  
**UC Davis**

A new project titled “Prescribed Grazing to Restore Rangeland Soil Quality, Plant Diversity, Water Quality, and Agricultural Productivity” is starting. This project is funded by the USDA Range Research Program and USDA Western Sustainable Agriculture Research and Extension Program. Dr. Ken Tate will be leading a team of scientists from UC Davis to conduct this project.

Rangelands in the western US are at risk due to factors such as weed invasion, improper grazing, energy development, and climate change. Improper livestock grazing can negatively impact various rangeland ecosystem functions and services. Alternatively, grazing practices can enhance plant diversity, carbon storage, suppress weeds, mitigate climate change impacts, and enhance various ecosystem functions. Practical, effective grazing management strategies must be identified, confirmed by research and broad manager agreement, and extended to managers to promote grazing which simultaneously enhances multiple rangeland ecosystem services. Grazing management decisions cannot focus solely on optimizing annual ranch proceeds. Grazing management must sustain ecosystem functions and services necessary for the long-term ecological health of the system and the dependent ranch enterprise.

Determining what constitutes proper prescribed grazing remains problematic. Due in large part, in our opinion, to inadequate exchange of information or perspective between the range science and ranch management communities about prescribed grazing management practices. Managers often focus on operational and socio-economic outcomes at

the ranch-scale, while researchers emphasize ecological processes of vegetation-soil-herbivore interactions within plant communities and ecological sites. These are both valid scales at which to evaluate grazing management, but we must bridge the gap in scale and communication in order to integrate prescribed grazing research and management expertise to advise ranch managers. The problem is not a lack of management expertise or research results, rather in the integration of this information for application at the ranch enterprise scale.

They are working directly with the ranching communities in Wyoming and California to integrate management expertise, ranch-scale research, and existing research information to identify and extend practical grazing options to optimize interdependent agricultural, economic, and ecological services. Wyoming represents a perennial, summer rangeland system, while California is representative of an annual, winter rangeland system. Perennial rangelands cover 27 million acres in Wyoming where cattle and sheep production exceeds \$820 million annually. In California, annual rangelands encompass 16 million acres and state-wide cattle production exceeds \$3 billion annually. By working across these two representative agro ecosystems, the information developed from this project will have applicability across millions of acres. California’s 16 million acre annual rangeland ecosystem provides critical livestock forage to support rural agricultural economies, houses the most diverse plant and animal communities in the state, and supplies drinking water to millions of residents. Restoration efforts in this ecosystem must be based upon a clear understanding of social, ecological, and business factors determining ranch level grazing management decisions and ecosystem response. You can learn more about this project by visiting the website: [http://rangelandwatersheds.ucdavis.edu/main/grazing\\_services.htm](http://rangelandwatersheds.ucdavis.edu/main/grazing_services.htm).

# Evaluating Techniques to Enhance Natural Blue Oak Regeneration

**Doug McCreary**  
Natural Resource Specialist  
UC Berkeley

For nearly a century there has been concern that several native California species were not naturally regenerating adequately to sustain populations. Research has demonstrated that the bottleneck for successful regeneration is often from the seedling to the sapling stage. For the last 20 years, UC researchers have worked on developing successful techniques for artificially regenerating oaks. It has demonstrated that establishing sapling-sized oaks is possible by the so-called artificial techniques, but it requires considerable management inputs and, as a result, can be costly.

An alternative oak regeneration strategy is to use naturally regenerating oak seedlings and take measures to promote their advancement to the sapling stage. However, this strategy has not yet been tested. To test the strategy of enhancing natural blue oak regeneration, a study has been underway since 2007 at six sites throughout the state including one at the Santa Margarita Ranch outside San Luis Obispo.



**Doug McCreary gets ready to measure a blue oak seedling.**

At each site, 144 naturally occurring blue oak seedlings were identified, measured and tagged. We selected seedlings such that half are under the canopy of the trees on the site and half are outside the drip line in the open. The 72 seedlings per shade treatment were arranged in 18 groups of 4 seedlings each. One member of each group was covered with a treeshelter in spring, 2007. A second seedling in each group had the ground vegetation within 2 feet of the seedling eliminated by spraying with contact herbicide (roundup). The third seedling of each group was covered with a tree shelter and had the vegetation removed around it. The fourth seedling was a control with no protection or weed control.

Results to date indicate that weed control significantly enhances survival while tree shelters greatly enhance height growth. The increase in height of tubed seedlings has been especially dramatic this past year because of the above-average rainfall. These results suggest that utilizing existing natural seedlings could contribute to increased blue oak regeneration at lower cost, thus improving the chances that this species can be managed sustainably and conserved for future generations.

## Sycamore Study in San Luis Obispo County

**Bill Tietje and Royce Larsen, UC Cooperative Extension, and Karl Striby, Natural Resource Conservation Service**

For the past 3 decades much attention has been given to the status of several of the California native oak trees. Two of them, the valley oak and blue oak, are not regenerating well and may be removed or compromised by various kinds of land use. Much less attention, however, has been given to another California native—Western Sycamore. An inhabitant of riparian ranchland, Western Sycamore grows to an impressive size. Mature trees are often 3 feet in diameter and 100 feet in height.

Exceptional trees grow up to 10 feet thick at the base! The smooth bark is an attractive patchwork of various shades of gray, tan, and brown. The large, angling branches and large lobed deciduous leaves (turning golden to orange-red before falling in late fall) create a tree among the most beautiful in the state. Western sycamore provides shade for resting cattle and is used by many kinds of wildlife for food, cover, and nesting. Like the valley oak and blue oak, perhaps you have noticed the lack of western sycamore sapling replacement trees. It seems there may be too few to grow the next generation.

To examine a couple of factors that may be affecting sycamore regeneration, UCCE and NRCS teamed up with a collaborating ranch south of Pozo, California. In 2010 an NRCS cost-share EQIP grant provided funds to fence a 10 acre stretch of riparian habitat on the ranch. The San Luis Obispo County Native Tree Committee donated 75 sycamore one-gallon plants which we planted in March 2010. We planted 50 seedlings within the fence. Of these, we protected 25 with cattle guards but left the other 25 without the guards. Farther up the riparian area, to serve as controls, we planted another 25 sycamore seedlings with no protection from cattle and deer. The fenced area will be grazed seasonally starting in winter 2011.



**A sycamore seedling in a protective enclosure.**

Thereby, a third of the sycamore plants (those planted in the cattle guards) are protected from deer and cattle year round, a third (those in the 10-acre fenced area) are protected from cattle part of the year, and the remaining third (the controls) are unprotected at all times. All of the sycamore seedlings were planted in wire-mesh root guards and have been given supplemental water weekly since planting.

The trial is just getting underway; hence, it is too early to draw any conclusions from the data collected so far. Overall, approximately 30 percent of the seedlings have survived so far. All living seedlings look robust and healthy and a few have grown to nearly 2-feet tall. We will continue to monitor the trees until those that remain alive have grown sufficiently to survive and grow into mature trees on their own.

## Announcements

### Alternative Review Process for Agricultural Grading

You may qualify for the Resource Conservation District's Alternative Review Program (ARP). ARP is a unique Agricultural Grading Review Program where the CSLRCD and US-LT RCD has partnered with the County to provide land-owners an alternative agricultural grading permit process through the RCDs in lieu of filing a standard grading permit through the County. If you want more information contact the Coastal San Luis Resource Conservation District (CSLRCD) at 805-772-4391 or [nsmith@coastalrkd.org](mailto:nsmith@coastalrkd.org). The Upper Salinas Las Tablas Resource Conservation District (US-LT RCD) could also be contacted at 805-434-0396 ext. 5.

**New Publication on Determining Drought**  
There is a new publication "Determining Drought on California's Mediterranean-Type Rangelands: The Noninsured Crop Disaster Assistance Program". The publication helps to define drought and how it relates the USDA FSA Noninsured Crop Disaster Assistance Program. This publication is available in Rangelands, June 2010 issue. Rangelands is a publication of the Society for Range Management.