ENVIROTHON 2013

Current Issue

Sustainable Rangeland Management: Achieving a balance between Traditional Agricultural Uses with Non-Agricultural uses on California Rangelands.

Background:

Rangeland in California and across the nation contributes immensely to a sustainable agricultural economy. California agriculture leads the nation. Rangeland provides forage and habitat for domestic livestock, wildlife and a variety of ecosystem services. There have been increasing demands on the rangeland for multiple land uses. These uses include land for other agricultural products (grapes, almonds and pistachios), rural homes, mining (gold and silver), energy (solar, geothermal and gas) and recreational uses such as access to hunting, fishing, bird-watching, hiking, snowmobiling, cross-country skiing and trail bike/ATV riding. Today, management approaches vary greatly while attempting to promote a multitude of services that rangeland provides to society.

California is a large and diverse state covering roughly 100 million acres. Although it is the most populous state in the nation, the population is concentrated in urban areas and roughly 63 per cent of the land base still consists of rangeland providing ecological, economic and other services. Approximately 34.1 million acres is actually grazed and most of this is on private lands. As our knowledge of rangeland has increased, it has become evident that what helps the rancher is often good for wildlife and other ecosystem services. In this grazing-dependent ecosystem, many species of both plants and animals rely on the presence of large grazing animals. Properly managed rangeland can provide a sustainable agricultural economy and healthy rangelands for future generations.

However, California is losing its rangelands. By 2040, according to the estimate of the California Department of Finance, the state's population will swell to more than 50 million people. Rangelands that were once home to cattle, coyotes and blue oaks are now home to irrigated agriculture, subdivisions, shopping malls and freeways, and this conversion is accelerating. Ranchettes and large lot developments damage rangeland ecosystems by disrupting natural water cycles, ecosystem services and fragmenting wildlife habitat.

History of California Rangeland Trust:

In 1998, a group of innovative ranchers within the California Cattlemen's Association founded the California Rangeland Trust. Recognizing that the environmental health of the state's

rangelands and the economic health of its rural communities are intertwined, they created an organization to provide and promote alternate ways to safeguard rangeland agriculture and the natural balance of its ecosystems. California Rangeland Trust is working to permanently protect hundreds of thousands of acres of California rangeland through agricultural conservation easements.

California Rangeland Trust works closely with landowners to protect and enhance the environmental and economic benefits that these working landscapes provide. Landowners can be confident that California Rangeland Trust understands their concerns and will work with them to protect and improve the environmental quality of their land and the economic stability of their ranching operations.

Conservation of Private Rangelands

California Rangeland Trust uses conservation easements to preserve the inherent benefits of the ranching industry for future generations. An agricultural conservation easement is a voluntary, legally recorded agreement between the landowner and the California Rangeland Trust that restricts the land to agricultural and open space uses. The trust pays the landowner for his development rights to the property and tax benefits are granted to the landowner. Conservation easements preserve ranching for the future by protecting the land from future development, and permanently protecting open space and agricultural values. A conservation easement is created by the signing of an agreement between the landowner and California Rangeland Trust or any other qualified organization or government agency willing to accept the easement.

In addition to providing viable conservation alternatives directly to landowners, California Rangeland Trust participates in collaborative efforts with other conservation organizations to gain public support and funding for rangeland protection and stewardship enhancement.

Ecological Benefits of Rangelands

- Virtually all of the water consumed by California residents flows over rangeland.
- Research has shown that private lands typically provide better wildlife habitat as the result of the private owner stewardship ethics.
- Endangered or threatened species depend on rangeland for their habitat. In fact, 95 percent of all federally threatened or endangered species have some habitat on private land.
- Many ecological resources depend on properly managed grazing by domestic livestock for their continued viability
- Today’s ranching families are adopting innovative management practices that blend time-tested management methods with new innovative approaches which benefit livestock, wildlife and other ecosystem services.

Economic Benefits of Rangelands

- Privately owned ranches remain on the tax rolls, providing tax income to the local communities.

- It is less expensive to acquire conservation easements than for a state or local entity to acquire fee title – the cost per acre for an easement is a fraction of the fee value.
- Privately managed land is less expensive to the public, and through conservation easements, California can be assured land will remain as open space.

Cultural Benefits of Rangelands

- The rolling oak savannahs that symbolize California are largely family-owned ranchlands.
- The majority of California's ranches are multi-generational family operations. Many have been in existence for over a hundred years and are operated by fourth and fifth generation ranchers.
- Archaeological sites dating to Native American populations and early European settlers have remained untouched on rangelands due to the protection of private ownership.

Restrictions, Rights, Obligations and Requirements of Conservation Easements*

- A "baseline" report is created to describe the original condition of the property to assure any future changes in the use of the property are consistent with the terms of the easement.
- The easement is granted in perpetuity. Neither the original landowner, or his heirs or assigns, can alter the agreement. The grant in perpetuity is what creates the tax benefit.
- Conservation easements create negative easements by restricting the original landowner from performing specific acts. Normal easements for roads, power lines, etc. are positive easements and don't restrict or stop the landowner from using his land, constructing buildings, raising irrigated crops, dry land farming, subdividing, putting up fences, etc.
- Purpose Clause – This ensures the land will remain forever in its natural and scenic condition. The purpose clause is the most important paragraph in the entire agreement. Here, the Grantor promises never to perform any act "inconsistent with the purposes of the conservation easement." In other words, the Grantee has the sole discretion regarding what is required of the landowner and the landowner is bound to abide by any changes made to the purpose or the management obligations under the easement.
- Property Uses – virtually none. "Any activity on or use of the property inconsistent with the purposes of the conservation easement is prohibited."

*The restrictions, rights, obligations and requirements come directly from a "model" conservation easement form supplied from a leading national land trust document.

Learning Objectives

“Sustainable Rangelands”

KEY TOPICS:

1. Basic rangeland knowledge, to include identification of grasses, plant I.D. and definitions, and the importance of grazing lands in California.
2. Range ecology processes – definition of ecological sites (soil – plant relationships), ecological processes (energy flow, nutrient cycle, water cycle and plant succession).
3. Rangeland management – stocking rates/carrying capacity, general types of grazing systems, improvement practices (fencing and water development), wetland, riparian and upland communities
4. Basic knowledge of livestock and wildlife interactions, forage preferences, forage overlap, and habitat requirements.

RANGELAND CONCEPTS

- Define rangeland, percentage of state encompassed by rangeland and importance of grazing lands.
- Define rangeland ecological sites, understand ecological processes.
- Understanding rangeland soils in relation to plant growth, erosion, water holding capacity

RANGE MANAGEMENT PRACTICES

- Understand basic rangeland management concepts, i. e. grazing systems, stocking rates, and rangeland improvements.
- Understand Best Management Practices (BMPs) on rangeland
- Understanding relations between livestock and water quality add reference

ANNUAL RANGE FORAGE PRODUCTION AND QUALITY

- Identify grasses of California, differentiate between plant types (grass, forb, shrub, and trees), identify parts of a grass and/or grass like species, distinguish between annual vs. perennial.

- Understand forage production and species composition is largely controlled by four factors: precipitation, temperature, soil characteristics and plant residue (residual dry matter).
- Understand precipitation and temperature control the timing and characteristics of four distinct phases of forage growth: break of season (germination and onset of growth), winter growth, rapid spring growth, and peak forage production.
- Understand the annual grassland forage year can be divided into three seasons based on the adequacy of beef cattle weight gains: inadequate green season (fall-late winter), adequate green season (late winter – late spring) and inadequate dry season (late-spring to fall).
- Understand the need for supplementation during inadequate forage period. Protein, energy, vitamins and minerals in annual rangeland forage decline as the growing season progresses. Conversely, fiber and lignin increase as forage plants mature.
- Understand the effect of species composition on forage quality. At the same stage of maturity legumes are usually higher in protein than filaree (forbs) and filaree is usually higher than the annual grasses.
- Balancing Nutrient Requirements and Seasonal Forage Quality on Annual Rangeland

Definitions:

NRCS National Range and Pasture Handbook. Pages 396-458 includes a Glossary of Rangeland terms
http://www.uwagec.org/wire/ResourcePages/NRPH.PDF

California Certified Rangeland Manager
http://www.carangeland.org/images/CRM_broch_Sept_2011.pdf

Rangeland Measurements:

CLIPPING A PLOT The technique for clipping a plot for RDM measurement varies between agencies and individuals. The following procedure, recommended by the University of California is the method that was used in the research on which these guidelines are based.

1. Place the quadrant (usually 1 square foot) on the ground surface.
2. Remove from the area within the quadrant all summer annuals such as tarweed, yellow starthistle, and turkey mullein.
3. Remove tree leaves.
4. Clip the remaining plant material within the quadrant as close to the ground as you can without disturbing the soil surface.
5. Rapidly collect as much of the clipped plant material as is practical without inadvertently including bits of soil.
6. Weigh the plant material (1 gram per square foot = 96 pound per acre). The plant material should be dry in September or early October unless there has been unusually early rain.

WEB LINKS TO RANGELAND RESOURCES:

Conservation Benefits of **Rangeland Practices (NRCS)** – Assessment, Recommendations, and Knowledge Gaps
http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/technical/nra/ceap/?&cid=stelprdb1045811

Best Management Practices (BPMs) including NRCS Rangeland Conservation Practices:
http://www.blm.gov/pgdata/etc/medialib/blm/ca/pdf/pa/rangeland_management/final_rangeland_health.Par.d96bb007.File.pdf/APPENDIX_08.pdf

National Range & Pasture Handbook – (Please note, document is 472 pages, consider saving paper)
http://www.uwagec.org/wire/ResourcePages/NRPH.PDF

Land Resource Regions and Major Land Resource Areas of the United States, the Caribbean, and the Pacific Basin (MLRA 17)
ftp://ftp-fc.sc.egov.usda.gov/NSSC/Ag_Handbook_296/Handbook_296_low.pdf

NRCS Ecological Site Information System (Ecosite Descriptions, http://esis.sc.egov.usda.gov/ESIS/
CA Rangeland **Conservation Coalition** http://www.carangeland.org/

California **Rangeland Trust** http://www.rangelandtrust.org/

California Rangelands Website http://californiarangeland.ucdavis.edu/

CA Rangeland Watershed Laboratory http://rangelandwatersheds.ucdavis.edu/

California **Soil Resource Lab** http://casoilresource.lawr.ucdavis.edu/drupal/

NRCS **Web Soil Survey** http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm

Guidelines for Describing **Grazing Management** and Utilization when Conduction Botanical Surveys
http://anrcatalog.ucdavis.edu/pdf/7225.pdf

California Guidelines for **Residual Dry Matter (RDM) Management** on Coastal and Foothill Annual Rangelands: http://californiarangeland.ucdavis.edu/Publications%20pdf/8092.pdf

Efficient Use of Annual Plants on Cattle Ranges in the California Foothills:
http://californiarangeland.ucdavis.edu/Publications%20pdf/EfficientUse.Circ870.1951.pdf

Responses of **Annual Vegetation to Temperature and Rainfall Patterns** in Northern California
http://californiarangeland.ucdavis.edu/Publications%20pdf/Ec%20ann%20veg%20T%20and%20ppt%20Pitt%201978.pdf

Balancing Beef Cow **Nutrient Requirements and Seasonal Forage Quality** on Annual Rangeland
http://californiarangeland.ucdavis.edu/Publications%20pdf/8021%20balancing%20beef%20cow%20nutr%20requ.pdf

Annual Rangeland **Forage Quality**
http://californiarangeland.ucdavis.edu/Publications%20pdf/8022%20ann%20rng%20for%20qual.pdf

Annual Range **Forage Production**
http://californiarangeland.ucdavis.edu/Publications%20pdf/8018_AnnForageProd.pdf