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Stewardship

Providing Leadership for the stewardship of rangelands based on sound ecological principles


(Photo by Jim Thorpe)

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Inside this Issue

The Editor's Corner

Welcome to the Society for Range Management's electronic publication, ***Stewardship***. We have completed 6 issues since starting the publication. I am assuming you have been reading the bi-monthly publication and are finding articles that interest you. If you look back, you will find that each issue is different in format and content (http://rangelands.org/stewardship.shtml). If you like what you see, let me know. If you want to see something different, let me know. The best option is to write a short note on one of your observations or experiences.

We are trying something a little different in this issue. We are covering two topics, riparian areas and grazing. Each topic is a series of short thoughts that the authors have tied together into a story.

Let me hear your story.

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GRAZING SERIES PART 1

This is the first article in a six part series on Grazing Management being published in the VICTORIA ADVOCATE, Victoria, TX.

By Stephen Deiss, NRCS Range Management Specialist (GLCI), Victoria, TX and Madeleine Cantu, NRCS District Conservationist, Port Lavaca, TX.

Bison on tallgrass prairie in Osage County, OK
Photo by Lance Vermeire

Even though they weren't confined and bison were not directly managed, we draw a lot of principles for grazing management from their grazing behavior. The cycle of intensive grazing followed by a long duration of rest was a key element in the evolution of tall grass prairie. This, combined with the Native American's use of fire across the landscape to attract bison (and for many other reasons) had an impact on how the ecosystems developed over time. After all, the landscape was not historically filled with a bunch of McCartney rose hedge, mesquite, huisache, running live oak, and other undesirables that we currently and constantly battle; it was an open landscape along the coast and into the upland prairies that bison could move across without any particular grazing pattern.

With the arrival of overseas and southern explorers to this part of the country came the introduction of domesticated livestock. In some cases, these animals were allowed to reproduce and become somewhat feral; particularly cattle and horses. Although these animals weren't confined, they did not roam across the continent like the large herds of bison did. Instead, they tended to stay in one area, usually within a short distance to water sources. The domesticated cattle herd was allowed to explode during the period of the Civil War which coincided with the westward expansion of the United States' population. This created the development of the cattle drive/cowboy era. That was when ranching took on the form of huge tracts of land without fences.

Cattle grazing on Fort Keogh Research Station, Miles City MT.
Photo by Lance Vermeire

As time went on, these large tracts became more confined due the advent of barbed wire and the expansion of the railroad system. Trail drives were no longer as practical, as the railroad brought the market closer to where the cattle were. Further, expanses of virgin prairie continued to shrink as native rangeland was readily converted to cropland with the Homestead Act of 1863. Cattle were raised in a fashion where they were continually grazing within the confines of the fenced ranches.

The transition from grassland prairie to brush was that the cattle, much like humans, actively selected what species they wanted to graze. Ranches used stocking rates that kept land overstocked. Technology and science had yet to catch up to how cattle move and to what effect they have as they move across a landscape. Brushy species began to emerge in bare soil due to cattle selecting grass that couldn't handle the continuous pressure. Gone were the days of bison moving in and out in droves, leaving a landscape to rest for months at a time. Grasses on the new fenced fields were grazed year-round, with resting periods no longer a given. This problem was compounded by homesteading, cropping, and families breaking up the large ranches into smaller parcels of land. Cattle continually became more confined with increased numbers of fences and smaller tracts. It could be argued that the number of head per acre even increased as the acres themselves

decreased. Cattlemen wanted the same number of head, but had a finite resource in the way of forage. Non-native species entered the picture when landowners tried to counteract the dwindling amount of native grasses and available forage by planting 'miracle grasses' and species that were thought to grow with little input. At some point, even the non-natives will have their limits over time.

In the February 1981 edition of *Rangelands*, Dr. Jerry Holechek, (Emeritus professor, New Mexico State University, Las Cruces, NM) relates that "in the mid-1890s, H.L. Bentley, a special agent with the U.S. Department of Agriculture, initiated the first range experiments concerning correct stocking rates." Also in the same article, he mentions that "in 1915 Frederick Clements, the famous Nebraska plant ecologist, addressed the problems of range abuse. He recommended that rest, controlling season of use, reducing livestock numbers, controlling noxious plants, and reseeding be used to stop range deterioration and initiate range improvement."

The days of vast acreages of open range available for grazing and the migration of bison have long been over. Can we replicate what used to occur? Can the principles that worked for eons on a continental scale be applicable to your grazing operation?

GRAZING SERIES PART 2

This is the second article in a six part series on Grazing Management being published in the VICTORIA ADVOCATE, Victoria, TX.

By Stephen Deiss, NRCS Range Management Specialist (GLCI), Victoria, TX and Madeleine Cantu, NRCS District Conservationist, Port Lavaca, TX.

Can we replicate what bison did back in the day? There might be elements that can be mimicked, but with the infrastructure that we have in place today and the nature of how civilization spreads, we no longer have an entire continent open for free range by livestock.

Fun fact: *A plant with a 6" basal diameter has approximately* ***14 miles*** *of root and*

However, that is not to say there are not ways to capture effects that were brought on by the behavior of roaming herds of bison. Managing grazing systems and implementing those ideas with the knowledge of how bison (and other free ranging animals) graze can be done in the field. There are two key principles of proper management that should be considered: leaving enough plant material so as not to injure the plant and affect its growth, and allowing for adequate rest for plant recovery.

The intensity and frequency of grazing plants plays a tremendous role in how that plant will perform from season to season. Often we think about the material above ground that we can see, and do not always consider what the root system of that plant is like—even though that is the most important part of the plant. You have most likely heard the "**take half, leave half**" rule of thumb for grazing. That is because when 50% of the leaf volume is consumed, root growth begins to be affected: 2-4% of the roots stop growing. At 60% removal of leaf volume, 50% of the roots stop growing. Plants have a built-in mechanism that, if they are grazed too severely, they shift the energy from growing roots to trying to produce more leaf. It takes a plant approximately 20 days to recover from being overgrazed, and even longer to get to a point where animals can once again graze that plant. Deferment would be required to give the plant sufficient time to reach its optimal stage.

It may also be important to note that the "**take half, leave half**" does not mean by plant height. Bunch grasses in particular are bottom heavy; some turf grasses may not be. The concept of "**take half, leave half**" has to do with half of the plant's foliage. In order to determine what half of the plant is, some sort of sampling, such as clipping and weighing, needs to be performed. There are governmental agencies such as the USDA-Natural Resources Conservation Service (NRCS) or private consultants that are available to do this.

The second key principle is to allow for adequate rest for plant recovery. A good rule of thumb is to give native bunch grasses approximately sixty days of rest, and introduced species such as Bermuda grass, Bahia grass and Old World Bluestems approximately thirty days.

Deciding on a grazing system has everything to do with assessment of current forage, the infrastructure on the property such as placement of troughs and fences, and the operator's willingness and commitment to actively manage grazing. In the following article we will provide a general overview of various grazing systems.

GRAZING SERIES PART 3

This is the third article in a six part series on Grazing Management being published in the VICTORIA ADVOCATE, Victoria, TX.

By Stephen Deiss, NRCS Range Management Specialist (GLCI), Victoria, TX and Madeleine Cantu, NRCS District Conservationist, Port Lavaca, TX.

No matter the grazing system used, it needs to be based on the forage available and accessible to livestock across the entire ranch or unit. You won't have all the information you need for a sufficient and efficient grazing plan by simply looking at one field or at a map of your place. The system has to be specific to your operation; and many factors need to be taken into account, such as types of species, amount of forage available, and how your livestock can be moved across the operation.

The worst grazing management system is continuous grazing with no rotation. In that system, over time, cattle will select out what they like best. This invariably leads to them killing out any desirable species, leaving you with low performing forage. This system then calls for either heavy input in the way of supplemental feeding, or by the removal of cattle. Often times in continuous grazing, cattle are going to over-utilize some areas, particularly the area around water troughs or windmills, and under-utilize other areas of the pasture. This is often referred to as "spot grazing". This requires low amounts of infrastructure as well as overseeing its management.

A grazing system that seems to be working well for some of the large ranches in the area is a five pasture, one herd system where each parcel is grazed an average of twenty-one days.

This provides an 84-day period of rest which is well-suited to the diverse native vegetation on these ranches. The ranchers that manage with this type of system are successful because they are knowledgeable about what their land can support and they follow the two key principles of grazing management: leaving enough plant material so as not to injure the plant and affect its growth, and allowing for adequate rest for plant recovery. The benefits of this system include the ability to take a two-week vacation and not having to hire any hands to move your livestock. It needs a lot of infrastructure in place to work, but not as much as the following example.

There are also ranches that have one herd on thirty or more grazing fields that rotate cattle to a new parcel nearly every day. This system works as follows: You have a block of land that has a certain amount of forage on it that supports a number of animals which properly utilize the available forage. You break that block into thirty pieces, and place the animals onto one piece for a short duration. You would then move them through each thirtieth progressively. Once established, you end up with a situation where the cattle are only eating the tops of each individual plant and not grazing it all the way down to the ground because they are only exposed to that piece for a short period of time. This could be leaving the animals in one piece anywhere from a few hours at a time, to a couple days. Managing at this intensity takes a lot of commitment of both capital to establish the infrastructure, and management because of the need to physically move the cattle. The two key principles of grazing management are critical in this system. Benefits from this system include breaking up the soil crust via hoof action from the concentration of animals in a small area, and applying animal waste such as urine and feces uniformly across the piece.

Which brings us to what the next article will cover: Keeping soil healthy to encourage productive vegetation.

GRAZING SERIES PART 4: FIVE BASIC PRINCIPLES INCREASE SOIL HEALTH

This is the fourth article in a six part series on Grazing Management being published in the VICTORIA ADVOCATE, Victoria, TX.

(*Editor's Note—This Part contributed by Chad R. Ellis, Pasture and Range Consultant, the Samuel Roberts Noble Foundation)*

Are you a cattle manager, a grass manager or a soil manager? Many cattlemen view livestock as their base crop through the sale of beef. Others view grass as their base crop. While management of breeding, vaccinations and marketing is important, all livestock need forage to produce pounds of beef. This forage is, in turn, heavily dependent on the health of the soil. Consequently, the management of soil health, specifically the biological components, is of vital importance to producers as it is the dynamic resource that supports plant life.

As managers, we often focus on managing the above-ground production in our pastures while paying little attention to what happens below-ground. Microbial action in the soil builds natural fertility that increases plant production. Sound grazing management is the art of capturing sunlight and water while recycling the above-ground parts of the plant through livestock. The animal eats a portion of the plant which is then deposited as urine and manure. The remainder of the plant is trampled into the ground to begin decomposition into the soil. This feeds the soil microbes that in return feed the plant. The manure, plant organic matter and carbon dioxide captured from the air by the plant combine to build a carbon bank in the soil that holds water and nutrients for plant use.

Building soil health can be accomplished by employing five principles: Armor the soil, minimize soil disturbance, increase plant diversity, keep living roots in the ground all year, and integrate livestock grazing.

Bare ground is enemy number one and is detrimental because increased soil temperatures caused by the lack of soil cover can decrease and even kill biological activity. Once soil temperatures reach 140 degrees Fahrenheit, soil bacteria die. The soil must be covered to minimize bare ground;

this is accomplished by forage and crop residue.

Physical soil disturbance such as plowing and overgrazing can result in bare ground and compacted soils that disrupt soil microbial activity. Incorporating reduced tillage methods in cropping systems and proper grazing management in pastures will keep soil covered.

Increasing plant diversity aboveground allows for a more diverse underground community. Specific soil microbes require specific plant types. The more diverse the microbial population in the soil, the better the forage will respond, due to increased biological activity.

Soils are most productive when soil microbes have access to living plant material. A living root provides a food source for beneficial bacteria and promotes the symbiotic relationship between plant roots and mycorrhizal fungi. This is aided by increased plant diversity, which can be achieved by incorporating cover crops into your pasture and crop systems.

Grasses evolved under grazing pressure. Soil and plant health is improved by grazing, which recycles nutrients through improved manure distribution, reduces plant selectivity and increases plant diversity. The most important factor in grazing systems is to allow adequate rest for the plant to recover before being grazed again.

The primary goal of a rancher should be to improve soil health. As more grass is grown, more organic matter is available to recycle into the soil for feeding microbes. This captures and holds more water and nutrients, growing more and larger plants that can gather more sunlight to power the process. This constant recycling is dependent on the animal and your knowledge of managing grass growth.

The health of our landscapes and soil health are interdependent. Our land's condition is characterized by the functioning of both the soil and the plant communities. Following these five principles will allow the site production, health of the soil, and mineral and water cycles to greatly improve, resulting in an increase of forage production and animal production.

GRAZING SERIES PART 5

This is the fifth article in a six part series on Grazing Management being published in the VICTORIA ADVOCATE, Victoria, TX.

By Stephen Deiss, NRCS Range Management Specialist (GLCI), Victoria, TX and Madeleine Cantu, NRCS District Conservationist, Port Lavaca, TX.

The first thing to do in assessing your operation is to look at what you have currently. Performing a visual inventory of what you have is imperative to determining realistic goals and maximizing your potential.

SRM members Erin Wied and Stephen Deiss conducting a vegetative transect for a cooperator in Fayette County, TX. Placing the transect along a permanent line for duplication over time to assess changes helps evaluate the forage base to recommend a correct stocking rate.
Photo by Donna Z. Mueller

Take into account where your watering sources are located. Seventy percent of a cow's grazing occurs within 400 yards of a water source. Are your pastures of a size that accommodates this statistic?

Another thing to consider is that cattle are not necessarily grazing *all* of your land. How many grazeable acres do you actually have? You may have a given total acreage, but the actual grazeable acres may be less once you discount the homestead, barns and other facilities, access roads, ditches, ponds or other bodies of standing water, areas of dense brush in which cattle will not graze, and so on.

The type of cows that you use will also affect your grazing system. You may have heard the term "Animal Unit," which is defined as a 1,000 pound cow with calf. An important rule to remember is that a cow will consume three percent of its weight per day. Thus, a 1,000 pound cow with calf will eat 30 pounds of dry weight forage a day. However, if you have a breed that averages closer to 1,400 pounds, your cattle will eat 42 pounds of dry weight forage a day. This rate of intake is critical in determining the stocking rate for your land. Is the available forage in your grazing parcels enough to sustain your cattle numbers currently? Performing an inventory that includes clipping and measuring grasses can provide data that help you determine what you have available.

What are the types and amount of forages present on your site? Are they all native species? Introduced? Is it a mix of the two? Native species are going to perform differently than introduced. The productivity of grass species will also be impacted by the soil types, which can determine the productivity of a site. Have you ever wondered why some areas within a field have more productive grasses?

You may have heard of the phrase "harvest efficiency," which is the amount of forage that is actually consumed by the cow. You may have determined from grass clippings that you have 4,000 pounds of forage available in a field. However, if you follow the "take half, leave half" principle, and then half that number again to account for insect damage, wildlife, feral hog damage, plants that are urinated and defecated on, etcetera, then you are down to 1,000 pounds that are actually available for the cow to eat. Thus, harvest efficiency is generally 25%.

An excellent visual method of monitoring productivity over the grazing period is to place an exclosure, or cage, out in the pasture in an area which is representative of that pasture. In other words, it shouldn't be located near water; you want an area that is utilized, but not over- or under-utilized. Periodic measurements can be taken of the grasses with a yard stick, comparing the height of the grasses in the open pasture with the grasses inside the exclosure. Native grasses should have a minimum of 8" in height, and sod-forming grasses a minimum of 4". Keeping records of the heights, as well as taking pictures to create a "photo log" as the seasons and years progress, can be of visual benefit to land managers. These, along with grazing records, can help you monitor trends over time, which we will discuss in our next and final installment of this six-part series.

GRAZING SERIES PART 6

This is the sixth article in a six part series on Grazing Management being published in the VICTORIA ADVOCATE, Victoria, TX.

By Stephen Deiss, NRCS Range Management Specialist (GLCI), Victoria, TX and Madeleine Cantu,
NRCS District Conservationist, Port Lavaca, TX.

Responding to changing environmental factors is critical when the environment plays the biggest role in how you make grazing management decisions. Warm season grasses have a critical growth period from mid-March through May. Approximately 40% of growth happens within this time frame. Therefore, an entire year's growth is dictated by antecedent soil moisture and rainfall occurring during this peak growing period.

> *"In any moment of decision, the best thing you can do is the right thing, the next best thing is the wrong thing, and the worst thing you can do is nothing."* – ***Theodore Roosevelt***

Ranchers often have the optimistic thought process of, "If it would just rain in a couple days, I'll be okay." But managing under that kind of mindset often limits flexibility in responding to continued dry days. In our area of Texas, if you haven't had 16 inches of rain before May, plants will most likely show the effects of a drought situation. If plants don't experience typical growth before the end of May, then it can be difficult to manage for the amount of growth you may get during the second peak when grasses produce seed around September. Generally speaking, the fall growth period is for reproduction, not for foliar production.

Having a drought plan ready is highly recommended. Drought plans include ways of responding to continued dry periods; one of which may be destocking. For instance, do you have stockers or heifers that you could stand to market? Do your grazing records show cows that continually remain open? Perhaps you have some older cows that are ready to be culled, or others that are displaying signs of age or inefficiency. Culling your herd is a lot more palatable now regarding market prices than it ever has been before.

If destocking is something you vehemently disagree with, then ask yourself this question: What is your wealth? Is it the grass, or the cows? At first thought, most may answer the cows. But without grass, you wouldn't have cows. If you could more efficiently maintain and utilize your grass, and cattle are thought of primarily as harvesters of that grass, then that would lead to a management style that is centered around what you have available on the ground at any given time, without purchasing outside input, such as hay. Conversely, if you manage for the cattle rather than the grass, you run the risk of spending any profit on supplemental feeding the cattle—and maybe even going into the negative.

To what extent would you need to destock? This is difficult to say, as many variables have to be taken into consideration. Therefore, a destocking decision should be tackled on a case-by-case basis. It may be worth noting that selling a cow not only brings you market price on the animal, but saves you the grass it would otherwise consume, particularly if you have to resort to feeding it hay due to poor grass growth.

This series of articles provide some thoughts about Grazing Management. If you are uncertain about stocking or destocking rates, and other grazing management aspects, there are many agencies such as the USDA-Natural Resources Conservation Service (NRCS), or private consultants that are available to assist you.

Part 1 of a 2 Part Series on Managing Riparian Zones

*By Steve Nelle, SRM Life member, San Angelo, TX; originally published in **RIPARIAN NOTES***

NOTE NUMBER 11, MARCH 2005: LOSING GROUND

It is a serious thing to lose riparian ground. There are two different ways that riparian areas can lose ground; either by down-cutting or by channel widening. Either type of erosion can cause long term riparian problems.

A riparian area "losing ground": With inadequate vegetation to dissipate energy during high flow events, channel, banks, and floodplain are subject to excessive erosion.
Photo by Steve Nelle

Down-cutting takes place as a creek channel cuts deeper and deeper. This type of vertical instability is also called "degradation" since the elevation of the channel is lowered or degraded over time. Down-cutting is extremely critical to overall riparian health and function. Channel degradation literally drains the water table across the entire floodplain, just like shooting a bullet hole in a large barrel of water. Not only does it lower the water level, but it prevents it from ever re-filling to the previous level. These artificially deepened channels drastically reduce the volume of water that can be stored in shallow riparian water tables. With this reduction in the water table and water storage, aquatic habitat is compromised and some riparian plant species cannot survive or cannot reproduce since the distance to water is too great. Down-cutting dries up riparian areas.

Down-cutting can begin for several reasons. If the creek is artificially manipulated or straightened, this can lead to down-cutting. Disturbances on the upland water catchment which cause accelerated runoff (such as urbanization or overgrazing) can lead to down-cutting. When riparian vegetation becomes insufficient to hold the bottom or the banks of the channel in place, this too can lead to down-cutting. On smaller creeks, roots of riparian species (herbaceous and woody) can form an interwoven matrix of roots under the channel and provide the reinforcement needed to hold the bottom of the channel in place. If this vegetation is lost or damaged, it can lead to channel instability. Often, a combination of these factors occurs simultaneously to initiate the down-cutting process. Unfortunately, a serious side effect of channel degradation is that it precipitates the eventual down-cutting of all other side channels that enter the main channel as they seek a stable gradient. Down-cutting also may trigger a natural adjustment of the channel which normally leads to the second type of channel erosion.

Channel widening occurs when the creek banks become unstable and are unable to hold up. As banks erode and slough, the channel gets wider and wider. This channel widening is also serious since it can reduce the width of the riparian floodplain. When floodplains are lost to channel widening, the size of the riparian area that acts as a giant sponge is reduced and the capacity to store water for sustained release is reduced. Channel widening can either be a reaction to down-cutting, or it can be caused by inadequate riparian vegetation.

As channels widen, natural sinuosity and meandering is reduced. When sinuosity is decreased, channel gradient increases and water velocity increases; which in turn leads to more and more erosion. As channels get wider and wider, their ability to transport sediment is diminished; which in turn causes degradation of aquatic habitat as channels become shallow and clogged.

Excessive and un-natural riparian erosion often starts a nasty chain reaction. Keeping a close watch of creeks and riparian areas and being alert to subtle changes may allow the manager to act before the damage becomes excessive.

It should be understood that some bank erosion is natural and normal even in properly functioning riparian areas, especially on outside bends. This bank erosion should ideally be offset by the formation of point bars and increased sinuosity. The next issue of these *Riparian Notes* will describe how riparian erosion combined with good vegetation can actually build back and restore damaged creeks.

Losing Ground - Part 2 of a 2 Part Series on Managing Riparian Zones

*By Steve Nelle, SRM Life member, San Angelo, TX; originally published in **RIPARIAN NOTES***

NOTE NUMBER 12, APRIL, 2005: GAINING GROUND THROUGH GOOD LAND STEWARDSHIP

In the March issue of ***Riparian Notes***, entitled "*Losing Ground*", the detrimental effects of excessive riparian and creek-bank erosion were described. Although the loss of riparian ground through erosion is a serious concern, the good news is that creeks and riparian areas are naturally able to adjust to these disturbances and heal themselves. This healing does not necessarily restore them back to their original condition, but it often allows adequate recovery to restore the basic functions of creeks and riparian areas.

It was pointed out that down-cutting of a channel often triggers the subsequent widening of that channel. In these situations, channel widening may be alarming and the landowner or manager may be determined to stop the erosion through some kind of bank stabilization project. In many cases, this widening of a down-cut channel must be allowed to take place unhindered since it is a natural and necessary adjustment. Overly deep channels and overly steep banks cannot be maintained in most cases. No matter how good the vegetation is, the stress is just too great to hold these high banks in place. Furthermore, these deeply incised creeks cannot function properly since there is no longer frequent access to a

floodplain to dissipate energy. A healthy creek must have quick and easy access to its floodplain at an elevation low enough to be flooded on a frequent basis (every year or two).

As these high and steep creek banks fail, and large chunks of land fall into the channel, that material can be used by the creek to build a new floodplain down at the new lower elevation. This natural creation of a new floodplain at the proper elevation can occur ONLY if there is adequate riparian vegetation to stabilize and hold that new material in place. Colonizer species such as spikerush, knotgrass and water hyssop can quickly and efficiently put new roots down into freshly deposited soil. Stabilizer species such as switchgrass and Emory sedge can then reinforce these newly forming banks so they can withstand the next flood event. Eventually, woody plants such as willow and button bush will establish to provide even greater strength and stability to the new banks and new floodplain. In a healthy creek system, these and other riparian species will naturally establish if given the opportunity.

A riparian area "gaining ground" Good dense vegetation dissipates energy and slows velocity allowing sediment to be captured on floodplain. The increased amount of moisture holding sediment enhances the riparian sponge.
Photo by Steve Nelle

On most creek and river systems in Texas, grazing is the most important factor that influences riparian vegetation. Heavy grazing and/or prolonged grazing damages riparian vegetation and render it ineffective at building and holding new banks. Grazing management in riparian settings should strive to provide short grazing periods followed by long rest periods to maintain or enhance desired plant communities. In fact, only two to four weeks of grazing each year may be appropriate to maintain good riparian vegetation. Separate riparian pastures combined with an observant and diligent manager will permit this kind of specialized grazing.

Proper riparian vegetation has the ability to hold these new banks in place with the extensive matrix of strong reinforcing roots. The top-growth serves to retard water velocity and dissipate energy so that new sediment and debris will be trapped and stabilized with each high flow. Without the right vegetation, these benefits will not occur.

An ongoing program of land stewardship grounded by a strong land ethic will enable landowners to carry out the kinds of management needed to restore creeks, rivers, floodplains and riparian areas.

(Editor's Note: The articles in this issue of *Stewardship* are being reprinted with permission. The photos have been added to the original articles at the Editor's discretion.)

Don't Forget to Mark Your Calendars for Sacramento!

For more information on our 2015 Annual Meeting in Sacramento, California, January 31- February 6th, click the link below:
http://rangelands.org/sacramento2015/index.html#

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