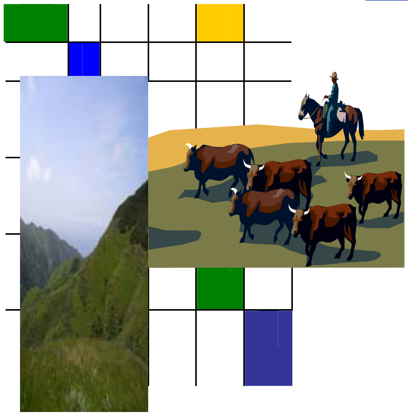

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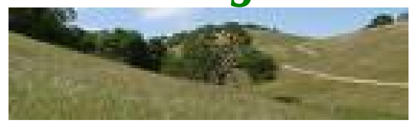
THE STOCK EXCHANGE

Rangeland Management Series 2



Spring 2010

Dear Livestock, Dairy Producers, Rangeland Owners, and Operators,

Earth Day – 2010

Excerpt from Society for Range Management's Earth Day Proclamation

The American public has the highest quality of life in the world. A major reason for this is due to the "Green Revolution" that began in the 1950s which involved the development of crop rotation, the mass production and use of petroleum-based fertilizers and chemical pesticides, expanded irrigation, and the introduction of genetically superior, disease-resistant cultivars (cultivated crops). The Green Revolution reshaped the U.S. into a dense urban society. At present it is estimated that a mere 2% of the U.S. population feeds the nation and the average age of that 2% is over 55. As a result, the average American does not experience hunger and spends less than 9% of their total disposable income on food. Many American consumers have become complacent and take it for granted that food will always be plentiful at a low cost. The question becomes: *Is U.S. agriculture capable of meeting future needs?*

The United Nation's Food and Agriculture Organization recently stated that in just 40 years global food production must double. This doubling of food production is necessary in order to head off mass global hunger and feed the projected global population of nine billion by 2050. There is a general consensus that agriculture has the capability to meet the food needs of 8–10 billion people but there is little consensus on how this can be achieved by sustainable means. Sustainability implies that high yields can be maintained through agricultural practices that have acceptable environmental impacts.

About half of the world's land surface is suitable only for rangeland and not for growing crops. More than 2/3 of land used for grazing the United States is not suitable for raising crops. In Sonoma-Marin counties, almost 50% of the land type is classified as pasture or rangelands. Rangelands produce significant quantities of grasses, shrubs and forbs that only livestock and wildlife can utilize. Livestock contributes 40% of the global value of agricultural production and supports the livelihoods and food security of almost 1 billion people. Globally, livestock contributes 15% of total food energy and 25% of dietary protein. Well managed grazing of rangelands pasture land is the most sustainable form of agriculture known.

Happy Earth Day 2010. *Thank a farmer and rancher today and every day for the food and fiber they produce.*

Stephanie Larson

Stephanie Larson, Ph.D.
Livestock & Range Management Advisor, Certified Range Management License #73

In order to manage rangelands to their optimum, you first need to assess how many animals your land can sustainably carry. This article will help calculate the proper stocking rate for your land.

Stocking Rate and Carrying Capacity:

Dr. Mel George, CE Specialist, UC Davis
David Lile, County Director, UC Davis

Stocking rate is the number of specific kinds and classes of animals grazing a unit of land for a specified time period. Carrying capacity or grazing capacity is the maximum stocking rate possible while maintaining or improving vegetation or related resources.

Animal Units and Animal Unit Months:
Stocking rate and carrying capacity are often expressed as **animal unit months (AUM)**.

The original definition of an AUM was the amount of forage a cow and her calf would consume in one month. This definition worked reasonably well for several years until cows started getting bigger and calf weaning weights increased. To accommodate bigger cows and calves the definition of an AUM was put on a weight basis. Today an **animal unit (AU)** is commonly defined as 1000 lbs of body weight and an AUM is the amount of forage that an animal unit will consume in one month. If the cow and her calf weigh 1000 lbs then they are still one animal unit. More likely the cow weighs 1200 lbs and calf grows to 400 or 500 lbs by weaning. So the cow without a calf is around 1.2 animal units. However, by weaning time the cow and her calf are around 1.6 to 1.7 animal units. The 1000lb animal unit can be applied to most large herbivores to get a rough estimate of stocking rate. However, tables of animal unit equivalents are often used to provide a more precise estimate that recognizes interspecies differences in metabolic and intake rate. For example, a mature sheep has an **animal unit equivalent** of 0.20. This means a sheep eats about 20% of the forage a cow will eat in one month. Table 1 contains animal unit equivalents for several domestic and wild herbivores.

Figure 1. Sierra Foothill and coast range oak-woodland carrying capacity is commonly in the range of 10-30 acres per animal unit per year.

Forage and Feed Equivalents
The daily dry matter intake of a cow ranges from 1.5 to 3 percent of her body weight each day. If she eats 2 percent of higher body weight per day and she weighs 1000 lbs then she will eat 20 lbs of forage per day on a dry matter basis. Multiplying 20 or 30 by 30 days in one month results in 600 to 900 lbs of dry forage consumed each month. Some textbooks use 600 lbs for the amount of monthly consumption (Holecheck 2004). Others us 800 to 1000 lbs per month to be more conservative in their carrying capacity calculations and to account for wasted forage. One AUM is often considered to be equivalent to 800 lbs of hay or 400 lbs to TDN.

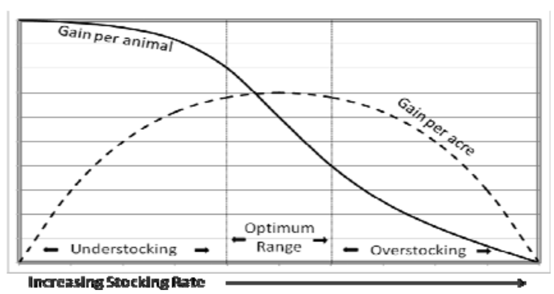


Figure 2. Influence of stocking rate on individual animal performance and production per acre.

Stocking Rate and Productivity
There is a fundamental trade-off between gain per animal and gain per unit of area (Figure 2). At very low stocking rates animals can selectively forage with little competition from each other. This promotes high gain or high body condition of individual animals but does not result in maximum productivity per acre. As stocking rate increases competition between animals for forage increases resulting in a decrease in individual animal performance. At heavy stocking rates individual animal performance also decrease because lower quality plants make up a larger portion of the diet and total intake can be reduced. Between the

extremes of light and heavy grazing there is an optimum stocking rate that maximizes productivity per acre.

Potential Effects of High Stocking Rates

- Animal performance reduced
- Intake and forage quality reduced
- Desirable forage plants replaced by less desirable species
- Overall forage productivity reduced
- Increase in bare soil and preferred grazing areas become degraded
- Increased replacement feed costs
- Potential for water quality impacts due to increased bacteria, sediment, and nutrient loading

Potential Effects of Low Stocking Rates

- Economic potential not fully realized, enterprise sustainability at risk
- Mature animals maintain over-fat body condition which can reduce reproductive capacity
- On perennial dominated rangelands patchy grazing results in development of "wolfy" plants that are used little or not at all. This reduces over all productivity. This occurs less in annual dominated rangeland types but under used patches of less desirable vegetation may occur.
- Some desirable forage species can be crowded out by taller growing species.
- Reduced biodiversity of species that thrive under moderate grazing.

Stocking Rate

Many livestock operations base their stocking rate on carrying capacity estimates handed down from generation to generation, on the advice of their neighbors or local experts and on trial and error. Stocking rate is usually documented in private and public land leases. Often carrying capacity is estimated from average annual productivity, which is available from soil surveys or ecological site descriptions (formerly range site descriptions). To calculate carrying capacity you need to determine the total available forage in the pasture and you need to determine animal demand for forage. There are two ways to calculate total available forage. The first is the residual dry matter method used on California's annual rangelands. The second is the allowable use method used on perennial rangelands throughout the western U.S. Finally you may need to adjust your carrying capacity estimate for steep slopes and distance to water.

Cattle	**Animal Unit**
Mature cows without calf	1.0
Cow with calf	1.2
Weaned calf to yearling	0.6
Steers & heifers (1-2 yrs)	1.0
Mature bulls	1.3
Sheep	
5 weaned lambs to yearlings	0.6
5 mature ewes with/out lambs	1.0
5 mature rams	1.3
Goats	
6 weaned kids to yearlings	0.6
6 does with/out kids	1.0
6 mature bucks	1.3
Horses and Mules	
Mature horse (1200 lbs)	1 to 1.25
Mature mule	1 to 1.25
Wildlife	
6 deer	1.0
Antelope, mature	0.20
Bison, mature	1.00

Table 1. Animal Unit Equivalents for domestic and wild herbivores

Calculating Total Available Forage (Allowable Use Method)

Total Available Forage (lbs/a) = Production (lb/a) X Allowable Use (%) X Pasture Size (A)

- Production (lb/a) estimates based on averages for several years are often available for ecological sites from the USDA Ecological Site Information System (ESIS) website or from range production tables in Soil Data Mart. Current year's production can be determined by weighing dry forage clipped from small plots of a known area.
- Allowable Use guidelines are available in Table 2 or from textbooks (Valentine 2001 – pg 399-391, Holecheck 2004 – page 233-247) or from USDA Natural Resources Conservation Service (NRCS) or other agencies.

If production is determined to be 1375/lbs/a, allowable use is 40% and pasture size is 1000 acres then:

Total Available Forage = 1375 lb/a X 0.4 X 1000 = 550,000

Calculating Total Available Forage (Residual Dry Matter Method)

On California's annual grasslands and oak-woodlands stocking rate is calculated by another method that insures that adequate residual dry matter (RDM) remains at the end of the grazing season (UC Leaflet 8092)

Total Available Forage (lbs) = (Production (lb/a) – RDM (lbs/a)) X harvest efficiency (%) X pasture area

Production can be determined in the same way as for the allowable use method. The amount of RDM that should be left behind varies with rainfall, slope and canopy cover and can be determined from UC Leaflet 8092.

http://anrcatalog.ucdavis.edu/FreePublications

Animal demand for forage = 800 lb/AUM

550,000 lb of forage ÷ 800 lb/AUM = 687.5 AUMs

687.5 AUMs ÷12 AUM/yr = 57.3 AU for 12 months = 57.3 animal unit years (AUY)

Therefore it takes about 17.5 acres (1000 acres/57.3) to support 1 animal unit for 1 year (12 AUM).

If the pasture is to be used for only 6 months then:

550,000 lb of forage ÷ 800 lb/AUM ÷ 6 months on pasture = 114.6 AU for 6 months.

Harvest efficiency or grazing allocation is a term that has been used for the forage that is available for grazing cows or other livestock. In order to maintain a conservative stocking rate the grazing allocation or harvest efficiency should be about 50%.

If production is determined to be 1600 lbs/a, RDM to be 500 lb/a, harvest efficiency is 50 and pasture size is 1000 acres then:

(166-500) X .5 X 1000 = 1100 X .5 X 1000 = 550,000 lbs of forage

Animal Demand for Forage

If we assume that one animal unit month is 800 lbs of forage on a dry matter basis and that the pasture will be used for 12 months then:

Figure 4. Annual grassland carrying capacity often is in the range of 6-12 acres per animal unit per year.

RANGELAND MANAGEMENT

Weed infestations are an increasing problem in rangelands, as they decrease the quantity and quality of available forage. To help reduce these infestations, it is helpful to develop identification and management strategies. Every Stock Exchange will address two problem weeds in the County in hopes of helping land operators develop management strategies. This issue focuses on the Himalayan Blackberry and Medusahead.

Himalayan Blackberry

Himalayan blackberry (*Rubus armeniacus*) Weihe & Nees, is an aggressive sprawling weak-stemmed shrub. The stems (canes) grow upright at first, later cascading into surrounding vegetation creating large mounds or thickets. Some stems remain upright, growing up to nine feet; most are trailing, growing 20-40 feet long. The leaves are dark green on the upper surface and grayish green on bottom, with five large oval toothed leaflets. Piercing thorns grow along the stems, on the leaves and leaf stalk. The white to pink flowers produce large blackberries, ripening late summer to fall.

This plant rapidly forms impenetrable thickets, having both live and dead canes which choke all other plant growth. The root systems are large, taking up food and water needed by other plants. New growth can form roots crowns, from where the stems touch the ground, and from seed. Himalayan blackberry often grows on right-of-ways, pastures, in fence rows, abandoned lands, etc. It is an invasive species to the United States, originating in Armenia.

Himalayan blackberry can be distinguished from the native blackberry plants by having five angled stems and large wide-based prickles. Also, each leaf of this blackberry has five leaflets while the native species has three leaflets.

Herbicide:
A variety of herbicide applications can be applied as a broadcast foliar spray or spot treatment. Two herbicides that have been used successfully are Milestone™ and Garlon®. Both products should be used with a good quality non-ionic surfactant. For use and amount of applications contact the Sonoma County Agriculture Commissioners Office.

Timing:
The optimum timing is late July to a killing frost in the field. Apply herbicides to all of the plants growing tips, spraying to wet at least 80% of the foliage.

Mowing:
Mowing can be incorporated into a control program. If mowing, spray the canes after they reach full elongation then wait 4-6 weeks to mow the treated canes. If canes are mowed before treatment, allow the canes to re-grow to a length of 3-4 feet before treating.

Grazing:
A grazing treatment that uses goats can be used to reduce the amount of vegetation present. Once reduced, other treatment methods can be incorporated.

Ecological and Economical Impacts of Management Options for Medusahead Control

Theresa Becchetti, Rangeland Advisor, UC Davis

Medusahead (Mh) has been quietly taking over our rangelands for over 50 years. It has slowly replaced our desirable forages with a monoculture that is not palatable to livestock, increases fire risk, and changes habitat for a variety of species. Fire has traditionally been the best tool to fight it, but burn permits are not easy to obtain. UCCE has been working on many different strategies that are available to ranchers that we will briefly discuss here.

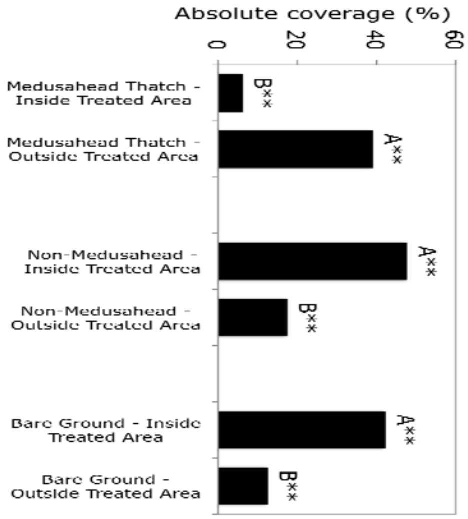
First we need to cover some basics. There is a two week window of opportunity, which in our area occurs roughly early to mid April, depending on weather conditions. For comparison, on the coast, development is delayed and the same susceptible period does not occur until early to mid May. The nutritional content of Mh is another factor. As the grass leaves the vegetative state and enters into the reproductive state (roughly when we want to target it), the Crude Protein content dramatically drops and continues to drop as it matures. Mh also has a high silicon content regardless of the growing state. We also know from our observations that as Mh cover increases, there is a decrease in grazing ability. As Mh increases from 5 to 40%, we have seen a reduction in grazing of 50%, and as Mh cover increases over 40%, there is a 100% reduction in grazing (Picture 1). This means that either you have to provide supplemental feed, reduce number of livestock, or find more land to graze.

High intensity grazing:
We stocked Mh infested areas with sheep to achieve utilization levels of 50, 60, 70, and 80% at short and long time periods (7 and 14 days). We had a high density of sheep in the areas, ranging from 1 to 28 sheep per acre (equivalent to 0.2 to 5.6 cows per acre). We had no differences per treatment, but did have great results for treatments compared to controls. High intensity grazing dramatically reduced seed production to 187 seeds per foot squared (ft^2) compared to the area not grazed producing 748 seeds per ft^2. We also compared our high intensity grazing to continuous grazing, which produced roughly 654 seeds per ft^2. Mh thatch decreased from 40% to 8% and other grasses and forbs increased from 18% to 50% in the treated areas, providing more desirable forages. Bare ground also increased in the treated areas (Graph 1).

Supplementation:
Low moisture supplement tubs were strategically placed in areas of high Mh cover during our window of opportunity. We placed five tubs radiating out from a center point in 2007, and added four more tubs in 2008. We also had transects and exclosures where we could compare areas open to grazing at different distances from the tubs, and non grazed areas. The supplement tubs did attract livestock, and we did see a reduction in Mh cover, however as you moved further away from the tubs, there was less impact. Tubs appear to be effective for a distance of about 40 yards (Picture 2).
Mowing. We mowed areas of high Mh cover in 2007. Mowing lengthens the window of opportunity by another week. Mh cover was reduced from 50% to 5%. Seed production also dramatically reduced from over 280 seeds per ft^2 to 13 seeds per ft^2. Desirable species also increased the following year with an increase in soft chess, rose clover, and filaree.

Herbicide:
3% active ingredient glyphosate was applied at 16 and 32 oz per acre early, mid, and late season. We did not see any difference between the rates. As expected, the early and mid applications did kill everything. Our late application may have been a little too late to be effective. From our preliminary results, it looks like a mid season spray will allow for a longer grazing period and kill Mh. This spring we will be completing data collection and will have more information on this treatment option.

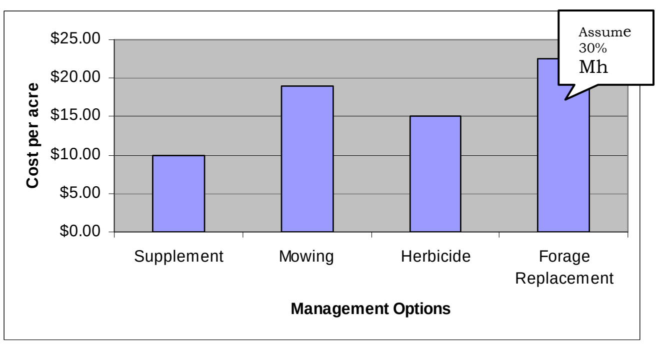
Costs:
We have found methods that work, however each method may not work for each ranch. Mowing may not be practical in rocky areas. High intensity grazing may not work if you are not able to duplicate our stock density. Each person will need to examine their own constraints and determine what works best for their situation. To help with this, UC Cost Studies were utilized to calculate costs per acre (Graph 2). Supplement is the cheapest option available, roughly $10 per acre. This is for the extra time you will be spending looking for Mh patches, and moving the supplement to that area, which you can expect to do weekly. While this is the cheapest option, it also does not provide as much control. Impact is within a small sphere, which is why moving weekly is key. It is important to note that doing nothing has a cost to it that you may not be realizing. At a typical 30% cover of Mh, there is a grazing reduction of 50%. To calculate a cost we put this on an average production of 1000 lbs of available forage per acre, and a reduction of 50% would mean 500 lbs per acre would need to be replaced. We replaced our lost forage with grass hay at a cost of $22.50 per acre. When you start to realize how much you are loosing by not controlling Mh, different control options start to look more appealing and actually can pencil out. It is important to keep in mind that hitting Mh when it hurts the most is important for control, as well as long range planning. It may take more than one year depending on the control option you choose, and persistence will be needed to keep Mh off your ranch.



Graph 1. Cover of Mh, other species, and bare ground after high density grazing.

Picture 1. Mh thatch. This level of thatch prevents desirable species, reducing grazing ability.

Picture 2. Picture of supplement tub and exclosures. Impact decreases as you move further away from tubs



Graph 2. Cost per acre of different management options, and the cost of no management (forage replacement).

MANAGING RESTORED STREAMS

Can targeted grazing maintain forage and ecosystem services while controlling exotic brush encroachment over multiple decades?

Michael Lennox, UCCE Ranch Planning & Conservation Monitoring Coordinator
David Lewis, UCCE Watershed Management Advisor
Stephanie Larson, UCCE Livestock/ Range Management Advisor

Billions of dollars have been spent in the United States on stream and river restoration. The number of stream and river restoration projects in the United States has steadily increased, since the 1980's, from 100 to over 4,000 projects per year by 2001. Ranchers and farmers in north coastal California have led in this effort to properly maintain watersheds and implement necessary conservation practices.

We surveyed 103 sites to learn about the local outcomes resulting from stream restoration and revegetation (creek fencing, tree planting and erosion control) in Sonoma, Marin and Mendocino Counties (Figure 1).

Overall, the intended result of most restoration (to establish native trees) was successful with an increase of over 1,000% after 30 years and streambanks were stable where trees were planted. Plus, pools in the stream available for fish and frogs were deeper and often had shelter. Basically, we found a transition in the riparian plant community as woody species established and dominated sites replacing grass and forbs over multiple decades (Lennox et al. 2010).

Figure 1: Examples of two surveyed project sites above and below a county road that were both fenced to control livestock access near the stream (right).

Looking closer, 30 year old project sites often have continuous patches of Himalaya blackberry thickets under willow trees (left). The project across the road is less than 10 years old with a mix of plant species and blackberry is starting to establish (bottom right).

An unintended result of the projects was the increase in exotic and invasive shrubs over time. Encroachment by invasive shrub species is an ongoing concern for land managers because they reduce options for management, impact plant diversity by out-competing native grasses/sedges and may increase wildfire connectivity. The most common exotic shrub species at 89% of restored streams was Himalaya blackberry (*Rubus discolor, R. armeniacus*, or *R. procerus*). It colonized the wet floodplain areas first before creeping vegetatively up the streambank to drier locations along the creek within the fenced area (Figure 2). Plus, it rarely co-occurred with other understory species once established (Hoshovsky 2007). Other exotic shrubs were less common including gorse and various broom species.

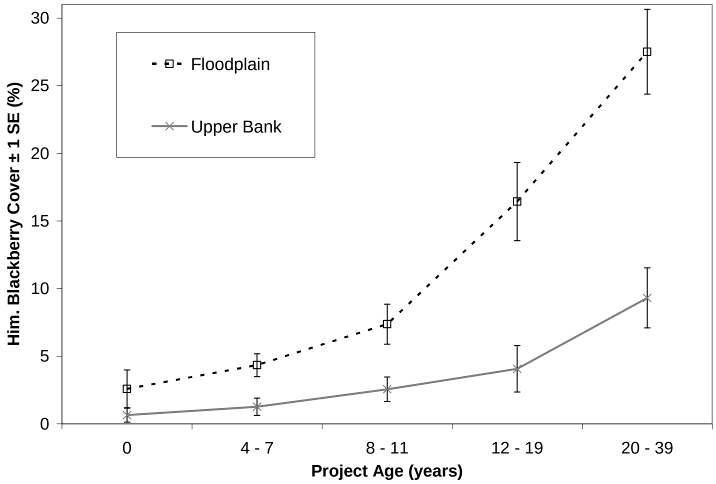


Figure 2: *Himalaya blackberry cover over time since stream restoration was implemented comparing floodplain to upper bank locations along the creek.*

Native shrubs such as California blackberry (*Rubus ursinus*) and coyote brush (*Baccharis pilularis*) were also common at restored sites but they colonized slower and co-occurred with other plant species once established. Native perennial grasses, forbs and sedges did not significantly increase over time and may be out-competed by the taller, faster growing shrubs. The annual grasses, annual forbs, weedy thistles (Italian, yellow-star, purple-star, distaff) and native rush species (*Juncus*) steadily decreased as project age increased.

Biologists often assumed that native plants would abound after livestock were removed from stream areas, but our survey did not support this hypothesis – locking-up creeks and throwing away the key did not always result in "nature's nirvana". The ranchers who said there would be nothing inside the creek fence for the livestock to eat were correct and this may be an appropriate alternative for some sites.

Solutions to maintain forage and control invasive plant species were implemented at some of the restored stream sites. They appeared successful if started soon enough (years 5 – 20 after the project) before the exotic shrubs established continuous thickets. Vegetation management tools included targeted grazing (CWGA 2006), prescribed grazing (USDA 2008), mowing, spot spraying and removal of the fence for open grazing. Timing livestock access until after new trees are established during the project maintenance phase (years 3 – 10) and annually after the bird breeding season (mid-March – late-July) were important considerations (Kreitinger and Gardali 2006). Himalaya blackberry encroachment depended on preproject site conditions – it was more of a problem where a patch was present before livestock access was controlled.So solutions are site-specific, species-specific and depend on long-term objectives for the ranch. *We have observed that it is possible to establish trees along streams while maintaining long-term plant diversity and forage production.*

Of course, a few bramble patches at an otherwise "barren site" offer cover and food to wildlife such as Swainson's Thrush (White et al. 2005), other migratory songbirds and quail. So it is often beneficial to focus on establishing trees and controlling thistles during the project maintenance phase (years 3 – 10) and wait to control exotic shrubs. Unfortunately, grant funding for managing restored streams and responding to this need is not currently available. However, the long-term ramifications of removing livestock across the landscape may not result in the most desired watershed or habitat conditions after multiple decades. Continuing to work with landowners to meet society's challenges has fostered confidence in our local resource agencies and increased agricultural viability to provide locally produced food.

It is ironic that the rich horticultural history of Sonoma County is to blame for the spread of Himalaya blackberry across the west coast from Armenia. Luther Burbank was so proud of his

"Himalaya Giant" he introduced it to Seattle in 1885, but he was unaware it would become such a problematic garden escapee and provide habitat for house/roof rat (*Rattus rattus*) populations (Dutson 1974).

The challenge now is to find solutions for treating the restored streams that have been invaded by exotic brush. Luckily, numerous resources exist to manage blackberry (DiTomaso 2002, Hoshovsky 2007), broom (LeBlanc 2002, Oneto et al. 2009), gorse (GRRCD 2009) and other woody weeds (DiTomaso and Kyser 2008, USDA 2008). Reintroducing livestock to invaded sites using targeted grazing (CWGA 2006) may be a viable option if it can be done at streams so as to not impact water quality, habitat conditions or other ecosystem services. UCCE is beginning a study to design how this should be done at restored/vegetated streams based on feedback from landowners challenged with this issue.

Preparing sites will be the first step combining mechanical and chemical removal tools used with revegetation of native herbaceous species such as sedge (*Carex*) to create a vegetation mosaic, or patches, ideal to most wildlife (Kreitinger and Gardali 2006). A targeted grazing strategy (CWGA 2006) will quickly follow with frequent site visits until perennial herbaceous vegetation establishes and a prescribed grazing approach (USDA 2008) is viable. UCCE will partner with agencies, landowners and consultants to slowly transition riparian sites invaded by exotic shrubs towards sustaining ecosystem services and producing local food for generations to come. *Targeted grazing appears to be the most efficient and usable tool for the long-term management of restored streams in Sonoma and Marin Counties.*

The on-the-ground work by private landowners, restoration practitioners, and technical and financial agency assistance to implement riparian revegetation efforts over multiple decades made this survey possible. We thank the National Oceanic and Atmospheric Administration and California Coastal Conservancy for funding the research project. For further information, contact Michael Lennox (mlennox@ucdavis.edu, 707 565-2621) or visit: http://cesonoma.ucdavis.edu/Watershed_Management923/Riparian_Revegetation_Evaluation.htm

References Upon Request

ATTENTION

If you have not completed our newsletter information card, please do so. We want to keep you informed on all UCCE programs via email or USPS. At our office website: http://cesonoma.ucdavis.edu we have a mailing update link for submitting your email. Fall 2009, we enclosed an update card asking if you would like to have newsletters and updates mailed to you or emailed. Please know that if we do not hear from you we will not be able to keep you updated on current events.

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Please mail newsletter and all event notices to the above address.

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UCCE – Kathy Perry
133 Aviation Blvd, Suite 109
Santa Rosa, CA 95403

Sonoma County Meat Buying Club & Food Systems

Throughout this past year we have begun to evaluate and research the current state of the Sonoma County food system network. We have researched direct marketing channels for producers and consumers, marketing through a retail outlet, as well as marketing to a restaurant. Through our work with local vegetable CSA's, our own Sonoma County Meat Buying Club, as well as work with local farmer's markets we have gained information with regards to consumers' preferences, have worked with individual producers in costs analysis and developed a business plan for our monthly meat CSA. In collaboration with the Sonoma County Agricultural Commissioner office we conducted a marketing study which was sent out to Sonoma County livestock and poultry producers asking about their own operating market methods.

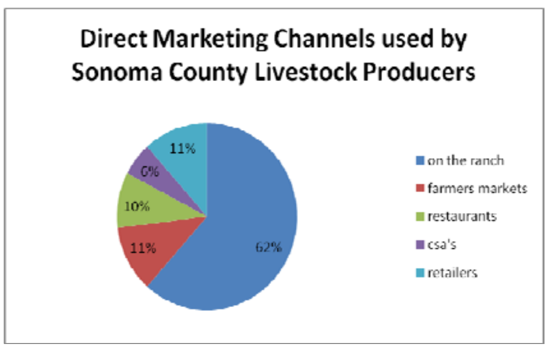

Figure 1. gives a brief overview of the direct marketing methods that survey respondents are using to market their poultry and livestock within Sonoma County.

We have worked to develop guidelines for how to go about attending a Sonoma County Farmers Market, as well as costs and returns that can be associated with local markets. Through work with one of our grass-fed beef producers as well as a local grocery chain, we have been able to lead the way for local beef to be sold in three of the local grocery chains stores. We continue to make progress in leading the way to improve the Sonoma County food system. Next steps include; expediting projects with emphasis on marketing Sonoma county products, working to "grow" more farmers, as well as working with cooperating county agencies to evaluate the amount, types and areas in which food is produced within the county. This year we will be hosting our third annual Range to Plate event combined with the Santa Rosa Junior College AgTrust's fundraising event Ag-Stravaganza.

Figure 2. Our Range to Plate event will be held this year combined with the SRJC Ag-Extravaganza Awards Ceremony. Proceeds benefit the Santa Rosa Junior College Ag Trust Scholarship Award Program.