

# HIGH DESERT RANCH & FAMILY

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Inside Stories	Page
<i>2008 Cattle-Fax Summary Outlook</i>	2
<i>Management Considerations Prior to Calving</i>	4
<i>Managing soil Nutrient Availability</i>	6
<i>USFWS Anticipates Sage-grouse Decision</i>	8
<i>Grazing Permit Renewal Deadline</i>	9
<i>Monitoring Rangeland/</i>	10
<i>Calendar of Events</i>	12

## A NOTE FROM THE AGENT

### Note from the Agent

The snow that has stubbornly remained in the Greater Harney Basin this winter has been slowly melting, a tell tale sign that spring is just around the corner. Many of the articles that we have included in this edition of the High Desert Ranch and Family Newsletter are intended to provide you with information that will hopefully be useful in planning for the coming year in Harney County. I'd also like to mention the "Calendar of Events" section of the newsletter that alerts you to local and regional training opportunities and other events sponsored by the OSU Extension Service and its partners. I'd be happy to visit with you about any of the events that you may have an interest in.

I appreciate all the positive comments I have received in response to the first edition of the High Desert Ranch and Family Newsletter. The basic intent of the newsletter is to provide you with emerging information that is useful and relevant to agriculture and natural resource management in Harney County. I realize, however, the newsletter is still very new and could probably use some refinement. Any feedback on what you do and don't like about the newsletter would be greatly appreciated and will only serve to improve it over time.

Dustin Johnson

Harney County Rangeland/Livestock Extension Agent



# 2008 Cattle-Fax® Summary Outlook for the Cattle Industry

Source: Cattle Fax Outlook 2008 Executive Summary

## Beef Cattle Numbers and Meat Production

The U.S. beef cow herd decreased in 2007 and is not expected to grow in 2008 because of continued market volatility, uncertainty and regional drought impacts. Drought in the Southeast and West forced producers to reduce herd sizes in 2007 reflected by an increase of 5 percent in beef cow slaughter. Beef cow slaughter is expected to decrease about 3 percent in 2008, but continued regionalized drought impacts (see 2008 Weather Outlook on [page 3](#)) and declining profitability will keep slaughter levels elevated. Fed-cattle slaughter totals are expected to be nearly flat in 2008. Average carcass weights are forecasted to increase slightly and beef production is projected to be flat to up 0.5 percent. An expected increase in beef exports is projected to lead to an overall 1 percent decline in net beef supplies in 2008.

## Beef Demand

Despite large pork and poultry supplies throughout the year, retail beef prices achieved record highs in 2007. U.S. per capita beef consumption remained steady in 2007 at just over 65 pounds. Per capita consumption is expected to decline by 1 pound in 2008 due to flat domestic supplies, a weaker economy, continued high energy prices, ongoing mortgage and credit crisis and growing export business to Asia. However, an expected increase in U.S. beef exports to both Japan and South Korea should provide support and sustain demand. For the year in total, beef demand is expected to remain relatively flat with 2007 levels. While some believe meat consumption has reached a saturation point, high meat and poultry prices in recent years have likely stifled purchases. With high grain and feed costs, meat inflation will increase in 2008, holding meat and poultry consumption steady to lower.

## Beef Trade Outlook

U.S. beef exports are expected to increase to 1.9 billion pounds in 2008 based on access agreements with Japan and S. Korea. With a weak U.S. dollar and global beef appetites growing, expect a resumption of beef exports to pre-BSE levels by 2009/2010. Beef imports will likely increase 3-4 percent to 3.26 billion pounds in 2008

based on small U.S. cow slaughter volumes. Fed cattle imports from Canada and feeder cattle imports from Canada and Mexico are expected to increase in the coming year.

## Cattle and Beef Prices

Fed cattle prices are expected to average between \$92 and \$94 in 2008, with a range of \$85 to \$102. The highest prices are expected in the fourth quarter with most price risk in May to June. Feedlot profitability is projected to remain negative. Feeder Cattle prices are expected to average between \$103 and \$105 for the year, with a range of \$94 to \$115. Most price risk is expected in the first quarter and the most price potential is expected in the third quarter. Excess feedlot capacity will continue to support higher feeder cattle values. U.S. calf prices in 2008 (basis a 550 pound steer) are expected to average about \$115 and range from \$108 to \$123. With high costs of gain in the feed yards, look for strong stocker demand to keep calves on grazing programs longer. Cow/calf profitability will likely decline in 2008 due to the combination of lower calf values and mainly higher inputs costs. U.S. utility slaughter cow prices are expected to average \$54 in 2008, with a range of \$47 to \$58. Cow slaughter is expected to be down 3 percent in 2008. With smaller domestic non-fed beef production expected, look for beef imports to be larger in 2008. Bred female prices are expected to average about \$50 to \$100 per head less in 2008 than 2007 because of softer demand related to widespread drought, increased land usage for cereal crops, labor shortages and high feed costs. Mild liquidation occurred during 2007 and is expected to continue into 2008.

## Corn Production/Supplies

Total corn supplies were record large at 14.4 billion bushels for the 2007/08 corn marketing year which began on September 1, 2007. Record high prices for corn, wheat and soybeans have created intense competition for acreage. As a result, U.S. corn acreage is expected to decline approximately 4 million acres in 2008 to 89.6 million acres. Corn production is projected at 12.6 billion bushels for 2008, down nearly 500 million bushels compared to 2007.

## Corn Demand

Total U.S. corn usage is projected to reach a record large 13.1 billion bushels in 2007/2008. Ethanol production is growing at a rapid pace and is projected to utilize 3.2 billion bushels of corn in 2007/2008 corn marketing year and exceed 4 billion bushels in 2008/2009. The weak U.S. Dollar and record high competitive feed grain prices have led to a sharp increase in corn export demand which is expected to reach a record 2.45 billion bushels in 2007/2008.

## Corn Price

The corn market is expected to be demand-led in 2008 with spot corn futures prices projected to trade in a range of \$3.85/bu to \$5.60/bu in 2008, with an annual average near \$4.30/bu. Any supply or demand changes that could tighten stocks to use levels from current expectations will likely lead to higher than projected prices. Stock levels and growing conditions will be of critical importance this year. With a reduction in acreage expected in 2008, average yields will need to near trendline levels, or prices could surge to higher levels. Unprecedented demand for corn, wheat and soybeans is driving the price surge. Export demand is strong, while Congress increased the ethanol mandate in December to 15.2 billion gals. from livestock feed sources like corn by 2012. While the 2007 corn harvest was record-large at just over 13 billion bu., Cattle-Fax analysts say the need for another near record-large corn crop will pressure margins across the industry.

## Hay

Hay stocks declined for three consecutive years from 2004 through 2006, which bolstered demand and prices. Annual U.S. hay production rose 6 percent to an estimated 150 million tons in 2007. Increased production coupled with a 5 percent decline in annual disappearance boosted U.S. December 1, 2007 hay stocks to 104 million tons, which was up 8 percent from 2006, but still below the five-year average of 106 million tons. Prices for hay in the U.S. rose an estimated 20 percent in 2007, averaging nearly \$130/ton. Rising costs of

production and increased competition from higher value row-crops will likely limit production increases over the next few years, thus supporting historically high prices.

## 2008 Weather Outlook

Source: Cattle Fax Outlook 2008 Executive Summary

Here is the 2008 weather outlook take it for what it's worth. La Nina on the Equator will continue into the spring and early summer in 2008 favoring persistent drought in the southeastern United States. Warmer than normal temperatures have been forecasted in the Southwest and eastern half of the country from late winter to spring. Only the northwest quarter of the country is expected to be cooler than normal. Dry conditions are likely to redevelop in the Southwest during the spring. Persistent drought conditions in the Southeast are likely to moderate by the summer as the La Nina gradually weakens and tropical storm activity brings coastal rains. The summer forecast calls for the main heat and dryness to be centered in the northwest third of the country suggesting an abrupt change from a cool-wet spring to a hot-dry summer. The preliminary summer forecast calls for near normal summer throughout much of the Corn Belt favoring good crop yields depending subsoil moisture conditions.



## Management Considerations Prior to the Calving Season

By David W. Bohnert Eastern Oregon Agriculture Research Center, Burns, OR

Now is the time that spring calving operations need to start preparing for the upcoming calving season. Nutrition of the cow during late gestation (90 days pre-calving) is critical to calf health and vigor. Also, every year some cow/calf producers are caught unprepared by that first heifer or cow that has difficulty calving or that calf that gets chilled down and hypothermic before it can get up and nurse. We find ourselves scrambling for supplies and equipment that we should have organized and stocked at least 1 month prior. In this issue I will provide you with some information and management suggestions that should help decrease calf sickness and/or death loss.

### Feeding & Management Practices to Increase Calf Survival

Provide Adequate Protein Intake to Fight Weak Calf Syndrome. Each year a number of newborn calves are lost to “weak calf syndrome”. It is believed to result from inadequate protein intake by the cow during the 90 days immediately prior to calving. Some common signs of a “weak calf” include depression, can’t stand and/or suckle, and difficulty breathing. Also, arthritis and swelling around the leg joints has been described in some cases of weak calf syndrome. Research in Idaho in the early 1970’s suggested that providing at least 2 pounds of crude protein (CP) per day to beef cows during late gestation will greatly decrease the incidence of weak calf syndrome (Figure 1). As an example, a cow consuming 25 pounds of 6% CP grass seed straw is getting 1.5 lbs of CP. To meet a CP intake of 2 pounds/day the producer would need to provide 2.5 pounds of 20% CP alfalfa along with the 25 lbs of straw. Also, the Idaho data suggested that for every 0.1 pound of CP below 2 pounds per day, the incidence of weak calf syndrome can be expected to increase by 1%.

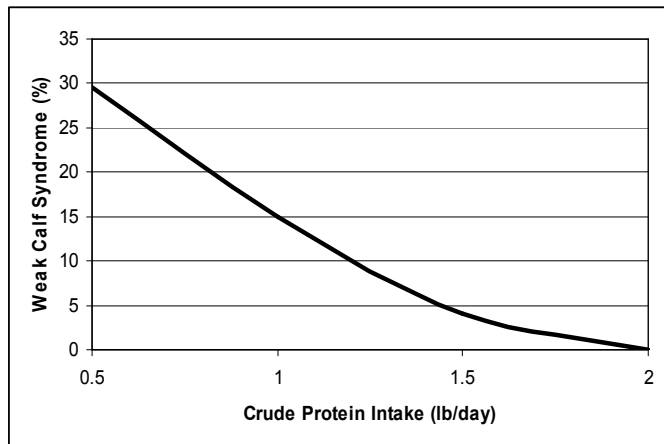


Figure 1. Incidence of weak calf syndrome in cattle herds consuming differing amounts of crude protein (adapted from *Nutrition and Weak Calf Syndrome in Beef Cattle* by R. C. Bull, R. R. Loucks, F. L. Edmiston, J. N. Hawkins, and E. H. Stauber, University of Idaho Cooperative Extension Service, Current Information Series No. 246, September 1974).



## Feed the Cow for Improved Calf Immunity.

Providing insufficient nutrients (protein, energy, vitamins, and/or minerals) to the cow during the last 90 days of pregnancy has been shown to decrease the immunoglobulin concentration in the blood of newborn calves (immunoglobulins help develop immunity and disease resistance). Immunoglobulins are obtained from colostrum, with the majority of immunoglobulins absorbed within 12 hours of birth. Research has shown that the concentration of immunoglobulins in the blood of baby calves decreases as cow body condition score decreases from 6 to 3 (1 to 9 scale; 1 = thin and emaciated and 9 = fat and obese). Also, it takes longer for calves from lower body condition score cows to stand following birth, with the time ranging from 60 minutes for body condition score 3 cows to 35 minutes for body condition score 6 cows. Similarly, other research has noted that feeding cows a nutrient deficient diet during the last three months of pregnancy results in greater calf death loss at calving and from scours compared with cows that received adequate nutrition.

**Early Evening Feeding Helps Increase Daytime Calving.** Research has shown we can increase the proportion of calves born during daylight hours by early evening feeding instead of feeding in the morning. In a series of studies from Canada, Iowa State University, and the Livestock and Range Research Station at Miles City, Montana, the proportion of calves born during daylight hours to cows fed early (before noon) in the day was approximately 50% compared with 80% for cows fed after 5 p.m. This allows producers to better observe the cow herd and assist with calving during daylight hours. However, late-feeding does not eliminate nighttime calving or the need to observe the cows during the late night and early morning.

**Recommended Pre-calving Vaccinations.** Three weeks prior to calving consider vaccinating pregnant cows/heifers for:

- Clostridial diseases (7- or 8-way depending on area)
- Rota/Corona/E. Coli vaccine if a problem exists

## Preparation for Calving

**Having the Proper Supplies Available can save Calves.** The difference between a live calf and a dead calf is often dependent on having the necessary equipment and supplies readily available. A list of the recommended equipment to have on hand prior to the start of the calving season follows (adapted from OSU Extension Publication EC 1370 – Calving Difficulties in Beef Cattle):

- Breeding dates and expected calving dates – remember calves can come a week or more early, especially with heifers
- Wool calf blankets, heat lamp, hotbox, and/or heating pad – to warm a chilled down calf
- Obstetrical (OB) chains or straps
- OB handles
- OB wire and handles
- Calf jack
- Clean knife, scalpel, or bander to castrate bull calves
- ½ inch tube with funnel or pump (or commercially available esophageal-tube feeder)
- Plastic sleeves and latex gloves
- Commercial brand lubricants
- Umbilical tape and sewing needles
- Colostrum – most calves will need 1 gallon within the first 24 hours of life. Fresh colostrum is best but either a commercially available product or properly frozen and thawed colostrum can be used
- Clean rags and towels
- Flashlight, headlight, and handheld spotlight

In addition to the standard calving equipment, consideration should also be given to the following supplies. Consult with your veterinarian in their proper use and purchase

- Needles & syringes – variety of sizes to meet potential needs

- Dopram (a breathing stimulant) – 2 cc provided either intravenously, intramuscularly, subcutaneously, or sublingually (under the tongue) for a newborn calf
- Oxytocin – 5 to 10 cc after calving (it contracts the uterus and helps with expulsion of the placenta and fluids following an assisted delivery)
- Rompun – ¼ cc provided intramuscularly to help calm down a cow to assist with grafting a calf
- Bismu-kote or Pepto-bismol – for treatment (approximately 2 oz orally) of calf scours
- Electrolyte powder/solution – for treatment of dehydration
- Probiotic paste – helps calf deal with stress of calving and maintain normal appetite
- Terramycin powder - for treatment of respiratory disease and bacterial scours
- Long acting penicillin
- Tincture of iodine (7%) – for calf navel
- Nolvasan (chlorhexidine) – a disinfectant

General Considerations for Heifer Calving Management. Replacement heifers represent at least two years of commitment and hard work, and the future of the cow herd, for most producers; consequently, we need to make sure we do all we can to try and make sure they calve successfully and raise a healthy calf. Heifers that are gaining weight and in good condition at calving will have less calving difficulty than thin heifers. Research has shown that the birth weight of calves from good-condition heifers will be slightly heavier than calves from thin heifers; however, there is no increase in calving difficulty. In fact, thin heifers may actually have more calving difficulty because they won't have the strength and muscle of well nourished heifers and may "tire out" during delivery. Therefore, don't underfeed your heifers because you can not "starve" calving difficulty out of them. The Calving School Handbook from OSU (Animal Sciences Publication 110) provides some recommendations for managing heifers.

These include:

#### Pre-Calving

- Heifers should be gaining weight
- Calving lots/pens should be clean
- Clean calving stalls and barn before, and during, the calving season
- Vaccinate heifers for scours and enterotoxemia C & D toxoid

#### Newborn Calves

- Have 2 to 3 quarts of colostrum available to give the calf within the first 6 hours of birth if it hasn't stood and nursed
- Iodine the navel (7% or tamed)
- Selenium injection (Bo Se) if in a selenium deficient area
- Vitamin A, D, & E injection – as needed
- Oral vaccine for roa/Corona viral scours
- Oral E. coli antiserum

#### After Calving

- Move pairs to a large, well-drained post-calving lot within a day or two following calving
- Increase amount and quality of feed to account for the stress of calving and increased requirements of lactation
- Watch calves daily for signs of sickness (scours, enterotoxemia, etc.)

#### **Summary**

The calving season is a time of much work and stress; however, it is also the time of year when we see the results of our effort to improve the genetics of our calves. It is an exciting and rewarding experience to see strong, healthy calves running around with their tails in the air playing with their cohorts. By following the management practices recommended in this article, we can give our calves the best opportunity to be born healthy and strong and gain well to weaning.

## Managing soil nutrient availability to reduce the spread of invasive plants

By Jeremy James, Eastern Oregon Agricultural Research Center

An increase in soil nutrient availability usually promotes invasion in rangeland systems. Here we talk about factors that commonly cause nutrient availability to increase and explore why increases in nutrient availability can favor invasives over natives. We end by evaluating the potential and limitations that managing soil nutrient availability has for the spread of invasive species.

The majority of nutrients in rangeland systems are in organic form, that is, they are tied up in living and dead plant material in the soil. Soil microbes slowly breakdown this organic matter and release nutrients in inorganic form. Because plants mainly acquire nutrients in inorganic form this means that nutrient availability in rangeland systems is normally very low. Some factors that may increase nutrient availability above normal levels are obvious. For example, if a site was cultivated in the past, previous fertilizer inputs could potentially maintain high levels of nutrient availability, even when management inputs have stopped. Other factors are not so obvious. For example, soil nutrient availability can increase greatly following prolonged periods of drought. During these dry periods microbes continue to breakdown dead plant material and release nutrients in inorganic form. These dry soils, however, prevent plants from taking up the released nutrients. As a result, water inputs following prolonged drought can correspond with a large flush of available nutrients, favoring the establishment of invasive species.

One of the most common factors that increase nutrient availability is disturbance. Disturbance increases nutrient availability by stimulating the decomposition of organic material, resulting in a flux of nutrients in inorganic form. If the disturbance is intense enough it also may kill existing vegetation. This can lower the ability of the resident plant community to sequester nutrients and allow invasive species greater access to these resources. Fire is a common natural disturbance in most rangeland systems. While fire can remove some nutrients from a site through volatilization, fire also can release nutrients back into the soil. If the fire is not too intense and native vegetation

persists, production of native vegetation may increase following the fire and sequester the inorganic nitrogen that was released. On the other hand, if the fire is intense and kills most of the resident vegetation it may leave the site susceptible to invasion.

Several traits allow invasive species to exploit high levels of nutrients better than most native rangeland species. One of the most significant trait differences is that invasive species often have much higher growth rates than native plants. At first glance, the observation that invasive plants grow faster than natives is not much of an epiphany. But on closer examination we can see that differences in growth rate among species can tell us quite a bit about how species differ in how they utilize resources and why increases in nutrient availability should benefit invasives over natives. The difference in growth rate among invasive and native species is due to differences in how these species allocate the carbon they capture during photosynthesis. Native species allocate a large portion of the carbon captured during photosynthesis to root growth. Invasive species, in contrast, allocate most the carbon captured during photosynthesis to the production of more leaves. This reinvestment into more leaf material allows even greater capture of carbon in the future. This compounding rate of return on carbon investments is a major mechanism allowing invasives to achieve much higher growth rates than natives. This does not mean that invasives species do not develop extensive root systems; they just allocate proportionately more biomass to leaves than to roots. The strategy of allocating more captured carbon to leaves and less to roots is most beneficial when soil nutrient levels are high and less root mass is need to capture nutrients. In contrast, allocating more captured carbon to root system growth is most beneficial when soil nutrient levels are low. From this, it is easy to see why the low nutrient conditions normally found in rangelands may favor native species with a low growth rate over invasive species with a high growth rate and why nutrient enrichment

may shift the competitive balance to favor invasive species over natives.

The effect that nutrient enrichment can have on invasion suggests that maintaining low levels of nutrients in rangeland systems is one important management strategy to reduce the spread of invasive species. In support of this, most research to date indicates that nutrient enrichment can greatly facilitate the spread of invasive species. There is also evidence, however, that maintaining low nutrient levels will not always prevent the spread of invasives. Some invasive species, such as cheatgrass, medusahead and knapweed seem to be as tolerant to low nutrient condition as native species and are capable of invading intact rangelands with low nutrient availability. This may be one reason why management treatments that reduce nutrient availability in invaded plant communities often cannot shift the competitive advantage back toward slow-growing native species. Taken together, current research suggests that while maintaining low nutrient levels is a key step in reducing the spread of invasive species, this management strategy alone will not necessarily prevent the spread of invasive species or allow slow-growing native species to reestablish in an invaded community. This highlights the importance of other efforts such as prevention and early detection for combating the spread of invasive plants.



## USFWS Anticipates Sage-grouse Decision in 2009

Source: Mike Stark of The Billings Gazette Staff

Federal officials may recommend whether or not to extend protections to the greater sage-grouse in Western states by May of 2009.

In December of 2007, a federal judge in Idaho, U.S. District Judge B. Lynn Winmill, said the Bush administration's 2005 decision not to place the greater sage-grouse on the endangered-species list was "tainted by the inexcusable conduct" of a senior Interior Department official, and the greater sage-grouse faces "accelerating threats" from invasive weeds, fires, oil and gas development and livestock grazing. He also said it was "very clear" that the decision was subject to political tampering by Julie MacDonald, a deputy assistant secretary at the Department of Interior, who used "intimidation tactics" and altered the science to fit a decision not to list the grouse. MacDonald resigned in May.

As the result of the decision, the U.S. Fish and Wildlife Service will conduct a yearlong, intensive review of sage-grouse and decide whether it should be placed on the list, according to Diane Katzenberger, an agency spokeswoman in Denver. The review will assess any new information about the threats and status of the sage-grouse. The review process is expected to include a "conservation assessment" by the Western Association of Fish and Wildlife Agencies, scheduled for completion in November. A final decision could be reached by May 2009. Initially, there was some discussion about the Fish and Wildlife Service coming out with a decision on the sage-grouse early this year. Instead, the group agreed to a longer time frame to have a more complete assessment of the sage-grouse before the next decision.

# GRAZING PERMIT RENEWAL DEADLINE

By Bill Andersen, Burns District Rangeland Management Specialist

All public land grazing permittees across the west are required by a 1999 court order called the Comb-Wash decision to have their term grazing permits renewed after some form of National Environmental Policy Act (NEPA) analysis. Since most term permits are issued for a 10-year period, the BLM is to have all permits analyzed and renewed by September 30, 2009.

As the deadline nears, it is important for both the BLM and permittees to work closely together to ensure that things are in order for this renewal process to be completed on time. The purpose of this article to provide you, the permittee, with the information you need to be aware of and actions that need completed in order for your term grazing permit to be successfully renewed.

One of the requirements of the renewal process was for the BLM to assess whether the Standards for Rangeland Health were achieved on each allotment and if livestock grazing was a causal factor if they were not achieved. These Standards came out of the 1996 revised grazing regulations. In Oregon and Washington, there are five Standards. They are 1. Watershed Function-Uplands, 2. Watershed Function-Riparian, 3. Ecological Processes, 4. Water Quality, 5. Special Status and Locally Important Species.

“What does this mean?”

In general, the Standards were developed to look at rangeland function in terms of water capture and storage, nutrient cycling, energy capture and storage, stream health and plant and animal habitat quality. There have been two strategies used on the Burns District to determine whether or not these Standards have been met. The main strategy used on the district is the formal allotment evaluation. This method uses all available long term monitoring data for that allotment, including actual use, utilization, upland trend, climate, riparian trend, water quality, and wildlife and plant habitat data. Allotment management objectives are also analyzed and a determination is made if the Standards were achieved and objectives were met. These evaluations

are conducted on a 5 to 10 year cycle depending on the issues associated with each allotment. The second strategy used on the district is a one time field assessment where an Interdisciplinary Team visits an allotment and answers a checklist of questions based on observations of vegetation and soil conditions.

“Why is this important?”

When all Standards have been determined to have been achieved, the BLM has been given Categorical Exclusion (CX) authority to process the permit renewal without further Environmental Analysis (EA). This greatly facilitates the ease and speed at which a term permit can be issued.

When a Standard(s) is/are not met and livestock grazing was in some way associated with the Standard not being met, then a different level of NEPA is required. This may require an EA or in some rare cases a large scale Environmental Impact Statement (EIS). Either of these can slow the process considerably. As part of the process a Proposed Decision will be issued where the interested public can have their chance at protesting the Decision.

“What can you do?”

Find out the status of your permit renewal. You need to provide any information (data) you may have as to why you think the permit should be renewed. Look through your official BLM file to ensure the data is current and if any information you have provided in the past is present. You should also review the data that is there to determine if the information is contradictory to your observations.

If you have any questions, please do not hesitate to contact me at 573-4430.

# Monitoring Rangeland/Riparian Vegetation Trend

By Dustin Johnson, Harney County Rangeland/Livestock Extension Agent

## Introduction

One of the most important components of a comprehensive ranch management plan is a well-defined long-term monitoring program designed to track changes in the condition of rangeland and riparian resources over time. The quality and quantity of rangeland and riparian resources can increase, decrease, or remain relatively stable in response to a multitude of driving forces, including management-induced and natural pressures (e.g. natural disturbances, changing environmental conditions, vegetation succession). Changes in rangeland resources commonly take place subtly overtime and often go undetected and unaddressed with appropriate management actions (e.g. juniper encroachment). The ability to detect trends in rangeland and riparian vegetation attributes allows the manager to evaluate the effectiveness of management actions, assess current management's ability to achieve resource objectives, provide evidence for maintaining or changing the current management strategy and identify changes in resource conditions that are the result of pressures beyond the control of management. Long-term monitoring of rangeland and riparian vegetation attributes is designed to detect trend and will be the focus of this article.

## Riparian/Rangeland Trend

An important benefit of maintaining a long-term monitoring program is the ability to detect trend in rangeland and riparian conditions. Trend is the direction of change in rangeland and riparian soil and vegetation attributes and is usually described in terms of being upward, downward or stable. Soil, water and vegetation are the basic resources on rangelands; therefore, trend on both upland and riparian areas is usually determined by measuring change in vegetation and soil attributes over time. Measurement of vegetation attributes over multiple points in time (i.e. years) allows the manager to determine whether or not vegetation is trending toward or away from management objectives. Once the direction of change in vegetation attributes is identified, the challenge becomes determining whether the changes were "natural," due to management or due to an interaction be-

tween "natural" drivers and management. Rangelands and riparian areas are dynamic systems that constantly change in response to fire, wildlife (and feral horses), climatic cycles, insect infestations, and natural vegetation succession; not just to livestock grazing. Therefore, any records that could be used to describe any of these potential causal factors become invaluable for interpreting the cause of rangeland or riparian trend. Therefore, it is also important to keep long-term records on climate, actual use, field observations, wildlife numbers, insect outbreaks, trespass livestock, range improvements and annual indicators of resource conditions (i.e. short-term monitoring data) for the purpose of interpreting the cause of observed trends in rangeland and riparian attributes. Photo monitoring can also be an invaluable tool for documenting trend and identifying its potential causal factors.

The sustainability of all environmental services of rangelands and riparian areas, including livestock forage production, depends on limiting accelerated soil erosion and degradation, effectively capturing, storing and releasing water, and maintaining productive, resilient biological communities. Desirable vegetation consists of native or nonnative plants that collectively function to meet management objectives (e.g. forage production for livestock, wildlife and aquatic habitat) and fulfill vegetation's functional role in protecting soils from accelerated erosion and maintaining ecosystem processes (i.e. water, nutrient and energy cycling). Therefore, the fundamental objective of any management strategy should be to maintain or increase desirable vegetation and the primary question that a long-term monitoring program needs to answer is how management actions are affecting the cover and composition of desirable vegetation.

## Methods for Monitoring Rangeland/Riparian Trend

There are several monitoring methods available for detecting trend in vegetation attributes.

Deciding among them really boils down to your technical expertise, management and monitoring objective(s) and the amount of time and resources available to you. Obviously, methods that generate quantitative data offer a more concrete interpretation of trend and are more desirable. However, these methods are more time and resource intensive than methods that provide only qualitative information, such as photo monitoring. Table 1 provides a short description of recommended monitoring methods of varying intensity levels for observing/detecting rangeland and riparian trend. For a complete description of how to establish and use these and other monitoring methods see the Monitoring Manual for Grassland, Shrubland and Savanna Ecosystems ([http://usda-ars.nmsu.edu/Monit\\_Assess/PDF\\_files/Quick\\_Start.pdf](http://usda-ars.nmsu.edu/Monit_Assess/PDF_files/Quick_Start.pdf)) or you can always contact me at 541-573-2506 for assistance.

Table 1. Recommended long-term monitoring methods of varying intensity levels, indicators generated and their interpretation. Intensity level refers to relative differences between the methods presented here. Methods have been developed that are much more time and resource intensive than those presented in this article.

Method	Measured Attribute	Data	Intensity Level	Interpretation
Photo Monitoring	None	Qualitative	Low	Permanent photographs of a landscape are useful for observing changes in vegetation composition and structure and for visually documenting and interpreting trend measured with other methods.
Pace Transect*	Plant canopy cover Plant basal cover Bareground	Semi-quantitative	Moderate	Increases in canopy cover indicate improved resistance to runoff and accelerated erosion. Basal cover is a more reliable long-term indicator because it is less sensitive to seasonal and annual differences in precipitation and use. Increases in bare ground indicate a higher risk of runoff and erosion.
Line-Point Intercept Transect	Plant canopy cover Plant basal cover Bareground	Quantitative	High	Same as Pace Transect. A modified point intercept method is used to monitor riparian “greenline” vegetation attributes along the channel’s edge.
Belt Transect	Invasive or woody plant density	Quantitative	Moderate	Interpreting belt transect data is site-specific. In a riparian area, an increase in woody species may indicate upward trend. In sagebrush steppe, the presence of juniper could be an early warning indicator of degradation.

\*The Pace Transect method is less accurate than the Line-Point Intercept method because it is difficult to pace in a straight line, especially through shrubs.

## Location and Number of Trend Sites

Monitoring a rangeland in its entirety is impractical and illogical. Instead, key areas should be selected from the rangeland based on their potential to show change in vegetation attributes that are characteristic of much larger areas. A key area is defined as, "A relative small portion of a range selected because of its location, use, or grazing value as a monitoring point for grazing use. Key areas are assumed, if properly selected, to reflect the overall acceptability of current grazing management over the range (SRM 1996)." While the concept is good in theory, identifying such locations is difficult and subjective, especially on rangeland that has several major vegetation types and variable topography and elevation. In this case, one site will certainly not be indicative of vegetation trend on all parts of the pasture. A good strategy may be to locate a trend site in each of the major vegetation types within a pasture on areas that are likely to show a response to grazing management. For example, if a given rangeland is comprised of big sagebrush/perennial bunchgrass, low sagebrush/perennial bunchgrass, and a crested wheatgrass seeding, it may be a good idea to establish at least one trend site in each of the three major vegetation types. An alternative to more than one trend transect site per pasture is to locate additional permanent photo points in the management unit. Permanent photo points are much less time consuming and provide a qualitative means to documenting trend.

Selecting the number and location of trend sites should also be largely driven by management objectives. For instance, if a management objective is to reduce the population of a noxious weed in a particular portion of the pasture, it would be appropriate to locate a trend site in this area to monitor the long-term effectiveness of a weed control and restoration program. Trend sites should be selected based on known soil and vegetation attributes that are linked to management objectives and proximity to fence lines, supplement feeding areas, watering locations, and/or other potential livestock congregation areas. Once a trend site location is selected, it should be permanently marked with t-posts or re-bar and documented on aerial photos or maps. The trend site's coordinates may also be collected

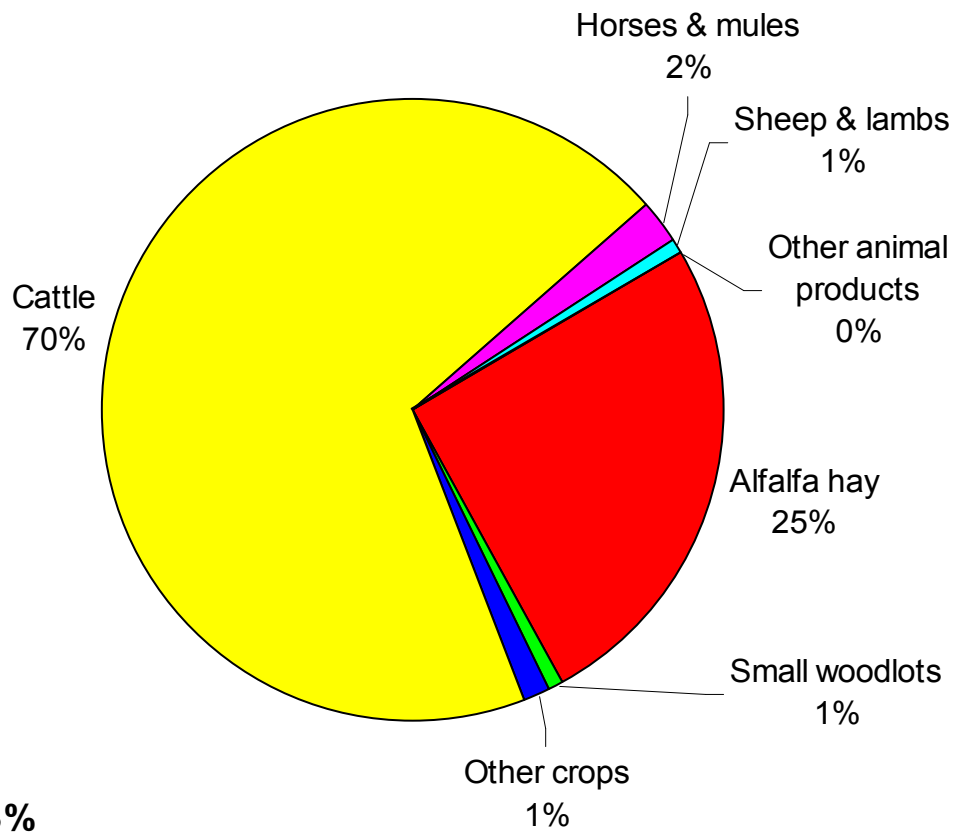
by a Global Positioning System (GPS) unit to help with relocation.

## Monitoring for Success

Monitoring can improve the management of most businesses. As a manager, you set management objectives, develop a strategy to meet those objectives, then monitor to determine whether the objectives are being met and if not, why. Successful management decisions can only be made with knowledge of the effect of past management actions and what areas of the management strategy need changed to produce the desired objective. With a growing nonfarm/ranch population that is interested in natural resource issues, monitoring becomes increasingly important. A long-term monitoring program provides a valuable source of information about management's influence on range and riparian resources. With respect to public grazing allotments, monitoring provides the measured/observed results of a grazing management program, which may become imperative in the face of litigation related to the perceived impacts of livestock grazing. If you have an interest in developing a monitoring program for your rangeland and riparian areas please contact me at 541-573-2506.



### AGRICULTURAL COMMODITY SALES HARNEY COUNTY, 2007p



**2007p Sales By Commodity**  
\$ 000

**Agricultural Sales by Year**  
\$ 000

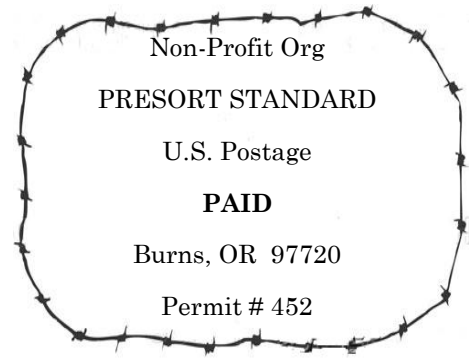
Alfalfa hay	17,677
Small woodlots	700
Other crops	1,030
<b>ALL CROPS</b>	<b>19,407</b>
Cattle	48,782
Horses & mules	1,600
Sheep & lambs	451
Other animal products	50
<b>ALL LIVESTOCK</b>	<b>50,883</b>
<b>ALL CROPS &amp; LIVESTOCK</b>	<b>70,290</b>

Year	Crops	Livestock	Total
2005r	16,562	51,837	68,399
2006r	17,445	50,248	67,693
2007p	19,407	50,883	70,290

Source: Extension Economic Information Office Oregon State University, December 13, 2007



*OSU Harney County Extension Service*  
*High Desert Ranch & Family Newsletter*  
450 N Buena Vista  
Burns, OR 97720  
1301-01-28-230



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**CALENDAR:**

**March-13th - Sixth Annual Harney County Watershed Council Highlights Reception—  
Old Camp Casino at 6:00 p.m.**

**15th - Living on a Few Acres Workshop. Redmond, OR 9 a.m.—4:30 p.m.  
To register call 541-548-6088 Ext. 7957**

**April - Date to be announced -2 nd session of the “ Ties to the Land Succession Workshop”? If  
you didn't attend the first workshop you can still attend the second one.  
For more information contact the Extension Office at 541-573-2506**

**15th & 16th—Juniper Management Workshop—Baker City, OR—8:00a.m.—5:00p.m.**

**17th & 18th—Targeted Grazing Workshop, Boise Idaho at the Owyhee Plaza. Register by  
April 10. For more information contact the Extension Office at 541-573-2506**

**May- 20th-Rangeland/Riparian Monitoring Training—Fields School 9:00—3:00**

**21st—Rangeland/Riparian Monitoring Training—Drewsey School 9:00-3:00**