

Burnem Grant, Tate Creek Ranch Wildlife Ag Symposium

I've been invited here today to discuss overlap between wildlife and agriculture in the Peace Region. First of all, I think if we want to know where we're going on this subject, we should take a minute to look at where we've come from. Archaeological information indicates that there were people and wildlife in the Peace Region thousands of years ago. The three most prominent wildlife species at one time were apparently the horse, the wapiti and the bison in that order. All of these species went on to near extinction in this area. What the cause of this was, I don't know, but I think there is a strong possibility nature itself could have wiped them out. Since those times, the human being went on to undergo the biggest change in history, from moving around hunting and gathering food to settling down, camping, raising and storing up food. Today, human beings dominate the whole system. The horse is back in its domesticated form, the wapiti is back mostly through wildlife transplant programs, the bison is back through game farm activity. In addition, deer are very strong in many areas and the moose continues to hold its own and maintain more independence than anything. It seems all population recovery except for the moose are related to agricultural development. Even the Ministry of Environment's management plan is a form of farming. They have herd security, an annual harvest and a selective harvest, which translates to a selective breeding and marketing program. And now they charge for road kills. The conflict comes because there is no control of movement, and no feed guarantee. This ends up being taken care of by private producers.

Preserving nature is very popular these days and there are many individuals, special interest groups, corporations, governments and even farmers getting into the game. The fact is that nature is a changing commodity and we can't save it, we can only affect its course of change.

For the wildlife in this region, we have plenty of Crown grazing available but it is not always accessible. Some obstructions are the sometimes-severe winter weather, particularly heavy snows, recreational activity such as ATV's, industrial activity resulting in lost cover and residential hunting activity, which affects movement.

I feel pressure to cooperate with the Ministry's hunting agenda and this comes with a cost to me.

I am subject to phone calls at all hours, I must manage a list of hunters who want to access my land, there is a disruption to my herd and there is risk and liability to me as the landowner. For all of this there is little or no chance of any return to me.

The Stackyard Fencing had great support at the wildlife committee meetings. Every individual, every group thought this would be a good wildlife management tool and wanted to support this program. Now, for a fence to reach reality the producer must front one hundred percent of the initial cost and then, after inspection and approval, receive a forty percent rebate to cover materials, all future maintenance costs are covered by the producer. This is considered by the public to be a 'free' fence; I have to ask, "Free for who?" and thank Corky Evans for acting on our request for funding. The fence is not free, it is paid for by agriculture and it is strictly to help manage wildlife.

In our area, we have ample Crown range to service our present wildlife needs and our elk herd is probably 3 times greater than it's target size. These animals are not dumb and they will seek out the best deal and they will habituate to those conditions. Good grazing, salt and minerals, security cover, thermal cover, good exposure and limited harassment, all of which they find on ranches like mine. Today, wildlife is a valued renewable resource and the key component to respected industries of hunting and tourism. It also adds to the quality of life for people who live here. Nature conservation is a booming business today and agriculture should not have to continue to carry the load of mismanaged wildlife. This is a regional issue, and a resident wildlife policy in the wildlife act could address any issues of conflict. Having said this, I would like to thank Andy Ackerman and Karen Goodings for the opportunity to come here and express my views.

Bob Forbes, Wildlife Biologist Wildlife - Ag Symposium

Kootenay Region

BACKGROUND

- Elk/agriculture

SETTING OF PROBLEM AREA

- Rocky Mountain Trench between Radium and the Montana border. The Trench in this area is between 3 to 15 miles wide and the problem area extends about 120 miles.
- Valley separates two major mountain ranges – the Rockies on the east and the Purcells on the West.
- The elevation of the problem area is roughly between 2500 and 4500 ft. asl
- The area is largely forested with the bottom of the valley and the lower south and south-western facing slopes covered with a mosaic of open forest and grassland. Much of the bottom of the valley is a patchwork of communities, farms and rural residences that abut Crown land.
- Get about 14 inches of rain per year. The annual precipitation peaks twice per year, once in November-January as snow and again in may-June as rain. It's fairly warm - 110 frost free days.

ECONOMY

- Approximately 37,000 people live in this area. The big four in terms of the economy are forestry, mining, agriculture and tourism.
- The region supports a great diversity of wild ungulates – seven in total (elk, mule deer, whitetailed deer, sheep, goats, caribou and moose)
- Currently between 20,000 and 25,000 elk in the area, as well as around 17,000 mule deer and 20000 white tailed deer.
- Very popular area for hunting and wildlife viewing. About 20,000 people hunt in the East Kootenay, generating about \$8,000,000 per year. In addition, there are about \$4,000,000 generated each year by wildlife viewing activities, primarily with moose, elk and deer. Hunting and non-hunting use of wildlife is expected to increase, largely because of the proximity of Calgary, which is expected to reach a population of 1,000,000 people within a few years and the "overflow" of tourists attracted to the seven national parks associated with the region (Banff, Jasper, Waterton, Yoho, Mt. Revelstoke, Kootenay and Glacier).

LIVESTOCK SECTOR

- There are approximately 150 ranches (mostly cow-calf operations) in the Trench. Most of these use Crown range for summer grazing combined with feeding operations on private property during the winter months. Have about 8500 head utilizing Crown range during part of the year with another 4000 head in the Trench that do not access Crown range. Population bulges to approximately 24,000 animals during the spring to fall period when calves are present on the range.
- The number of cattle in the region decreased sharply after the flooding resulting from the Libby Dam being constructed in Montana and then stabilized. Total cattle numbers have remained fairly constant since the early 1980's. Total Crown land grazing amounts to some 47,000 AUM's. Gross livestock production receipts on these ranches is around 7 million dollars annually.

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PROBLEM

- The agriculture/wildlife conflict most commonly dealt with is associated almost exclusively with elk and the livestock industry, concentrated on the open forests, grasslands and private cropland within the area.

HISTORY

- Has been long history of elk/agriculture conflict in Rocky Mountain Trench.
- Livestock and hunting have long standing in the East Kootenay and both have played significant roles in the economic, cultural and social makeup of the region.
- The ranching industry became established around the turn of the century in the southern Trench, at a time when elk were relatively scarce at the lower elevations of Kootenay valley.
- There was lots of grass in those days, largely due to the dynamic fire history of the place, and the reason there were few elk is probably because they were pretty much hunted out.
- As grassland availability increased in the Trench in response to logging, the elk population also increased. By the 1950's elk were doing very well in the area and had pretty much established a pattern of spending their summers in the high country and wintering in the Trench. It was then that the elk/agriculture conflict really began to bloom as elk began to make extensive use of private cropland and stored feed, particularly in the winter. To make matters worse, some elk refused to leave these low elevation habitats and stayed on problem areas all year round.
- At the same time, recreational hunting began to take off and public support for the maintenance of large elk populations became well established in the area.
- While this atmosphere of conflict was developing, the availability of grassland habitats on Crown lands in this area was shrinking fast due to the aggressive fire control programs that were in place. Over time, the amount of grassland habitats available to both cattle and elk shrank significantly, at a rate of about 3000 ha. per year from 1950 to the present. In short, went from about 250,000 ha. of grassland in the Trench between Golden to the US border in 1950 to about 136,000 ha of grassland and open forest in 2000. This resulted in even greater competition for forage from elk and domestic livestock and made a bad situation worse.
- By 1956 the lines had been drawn between livestock and wildlife interests.
- A number of studies were commissioned to investigate the elk/agriculture problem. The first one was in 1957; the last one was in 1997. In between there were at least six other reports dealing with the issue, ranging from an Ombudsman's investigation to unpublished reports lodged with the Ministry of Agriculture and Environment.

PROBLEM ANALYSIS

These studies clearly showed there were some basic issues that had to be dealt with:

1. The elk/agriculture conflict was real, not a trumped up argument in favor of agricultural subsidies
2. The elk/agriculture problem was essentially three faceted:
 - a) Winter elk use of stored domestic forage (hay) intended for cattle (homesteader elk).
 - b) Summer elk use of forage crops (hay) being grown for storage as winter feed (homesteader and migratory elk).

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c)Elk and cattle competition for forage (mostly rough fescue, Idaho fescue and bluebunch wheatgrass; saskatoon and bitterbrush) on Crown ranges. Significant dietary overlap between the two groups. The impact of the two groups on the same site can result in overgrazing and a long term decrease in overall forage availability. As a rule, elk use the forage on these sites in winter, cattle use it in summer.

1. Declining Crown forage availability through forest succession on grasslands was a significant factor exacerbating the conflict
2. Cattle numbers are much easier to control than elk numbers. Cattle can be moved ; populations can be adjusted at the whim of the owner. Elk numbers can only be adjusted through hunting seasons, usually cow/calf seasons and there is no public support for cow/calf elk seasons in the East Kootenay at this time.

PROBLEM SOLUTION

1. The best thing that happened with respect to the problem solving approach in the East Kootenay was a mutual agreement that the 40 year range war was over. Both sides use the same land and both sides are faced with the same problems and pressures. Neither side is going away, so we had better stop fighting and figure out ways to improve both of our lots.
I will go on record as stating clearly that I support the agricultural industry in the East Kootenay and frankly admit that I cannot achieve my goals of increasing wildlife populations in this region without the cooperation of the agriculture industry. Wildlife does not recognize private property and will continue to have an impact on agricultural operations in the Trench as long as cattle and elk use the same resources and the same land base. In fact, elk NEED access to the private land within the Trench to survive, at least for part of their seasonal cycle.
2. A recognition that carrying capacity for elk is not infinite and a clear understanding of elk population goals in the problem area. Specifically, we are limiting the elk population in the problem area to around 25,000 elk for the time being, down from the 34,000 that were there in the mid-'80's. That target was identified as being within the current winter range carrying capacity of Crown land in the problem area (optimal condition 40,500 elk).
3. The facing of the ingrowth problem. To that end in 1997 the government in cooperation with the agriculture industry and organized rod and gun clubs in the East Kootenay embarked on an aggressive "grassland ecosystem restoration program" in and adjacent to the problem area to give some relief to the elk and cattle use of forage on Crown range. These are slashing, burning and fertilization projects and so far we have improved or converted to grassland about 7500 ha. of forested habitat. These activities are funded cooperatively by the Rocky Mountain Elk Foundation, the Grazing Enhancement Fund, The Columbia Basin Fish and Wildlife Compensation Fund and the Habitat Conservation Trust Fund. Again, the intent of these projects is to put more elk and cattle forage on the ground on Crown lands and give problem elk somewhere else to go other than private properties ("intercept range"). The long term (30 year) goal for the program is to restore a total of 135,000 ha. of grassland in the Trench. This in itself will allow for more cattle AND elk in the area, with a minimum of conflict between the two.
4. The reduction of damage to stored domestic forage by protecting stack yards with fencing and feeding cattle during the day (notwithstanding inconvenience during

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calving). Most cattlemen in the problem area recognized the effectiveness of protecting their hay long ago and have long since fenced their stack yards.

5. The control of elk damage on forage crops during the summer months (homesteader elk) by establishing damage area specific limited entry hunting seasons for homesteader cow/calf elk. Attempts to discourage these elk from using summer forage crops through scare devices or fencing have either not been successful or economically unfeasible. Transplanting is not practical here, either. Therefore, the reduction of these herds must be accomplished by either controlling them directly or by harassing them into changing their migration strategy. The limited entry hunting seasons put in place are worked out jointly between the Wildlife Branch and individual landowners suffering summer elk damage.

They begin as early in the fall as the public will accept (Sept. 1 - orphan calf issue) and run until the migrating elk start to come back onto the winter range (October 15).

To ensure the right places and elk are targeted the seasons are focussed on specific damage areas determined by the landowner in question

Hunters participating in the season are required to take direction from the landowner on whose property they are hunting and are required to obtain a permission slip from the landowner

Hunters are provided with individual instructions from the Wildlife Branch regarding the individuals they have to contact in order to get permission to hunt and are told specifically that they must comply with the landowners wishes.

The landowner has the option of restricting permit availability to seniors and juniors (high compliance with direction and regulations, lower success rate - 40% hunter success) or to any age hunter (high success rate - 80% hunter success)

This program began in the 1999 season. We had one landowner cooperator that year - 30 permits were issued - 4 cow elk were shot.

In 2000 we had 5 cooperators - 150 permits issued - 57 elk were shot.

In 2001 we will have 14 cooperators - 365 permits will be issued.

So far the program has worked fairly well. There have been some complaints but it looks as though homesteader elk recruitment is being controlled on damage areas. Much of the opposition resident hunters had toward the program when it first started has melted away.

SO IN SUMMARY, WITH RESPECT TO ELK/AGRICULTURE PROBLEMS IN THE EAST KOOTENAY WE HAVE:

1. MADE PEACE
2. RECOGNIZED THE LIMITATION OF THE LAND TO SUSTAIN BOTH ELK AND CATTLE
3. EMBARKED ON A PROGRAM OF RANGE ENHANCEMENT FOR BOTH ELK AND CATTLE
4. PROTECTED STORED DOMESTIC FORAGE THROUGH FENCING
5. INITIATED PUBLICALLY SUPPORTED DAMAGE ELK SEASONS ON SPECIFIC PROBLEM AREAS.

The End

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MANAGEMENT AT THE EDGE OF OPPORTUNITY

Bob Budd
Director of Stewardship
Manager – Red Canyon Ranch
The Nature Conservancy
Wyoming

"Why do species become extinct? Because they first become rare. Why do they become rare? Because of shrinkage in the particular environments which their particular adaptations enable them to inhabit. Can such shrinkage be controlled? Yes, once the specifications are known. How known? Through ecological research. How controlled? By modifying the environment with those same tools and skills already used in agriculture and forestry."

Aldo Leopold
The Land Ethic

As people, we tend to see in shades of black-and-white, to place values on our world, and to demand results. Even in nature, we expect to have sure, certain outcomes from our actions. We decide what is important and what is not, placing value-laden terms such as "good," or "fair," or "poor" on landscapes as well as species. For those of us who live on the land, the world rarely catches hues of black or white, only occasional shades of darker or lighter grey.

On any given day, I will encounter many things, from peregrine falcons soaring over my head, to rattlesnakes beneath my feet, to the new life of a black-baldy calf in my arms. On the slopes where I work, seven species of rare plants make a living among the representative plant communities that define my existence and that of other species. Sagebrush, bitterbrush, yarrow, and balsamroot scent the air. Soon it will be a mix of later season plants that integrate themselves into the seasons of my senses. The riparian areas in my temporary care are a mixture of constantly mobile sand and silt, contradicted by stable stands of willow and birch older than the ranch house, even ancient juniper fence posts. There are frogs in the stream now, a revelation. The sound of that first frog's belly hitting the water was riveting as a gunshot. We raced through the snagging, snarling roses to see this green messenger, and danced in the sedges like children!

The 35,000 acres upon which I work are owned by The Nature Conservancy, and we use cows to achieve multiple objectives associated with conserving biological diversity in the southern Wind River Mountains. Some assume there must be some contradiction in terms, in mission, in realities. Nothing could be further from the truth.

"Given...the knowledge and the desire, this idea of controlled wild culture or 'management' can be applied not only to quail and trout, but to any living thing"

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from bloodroots to Bell's vireos. Within the limits imposed by the plant succession, the soil, the size of the property, and the gamut of the seasons, the landowner can raise any wild plant, fish, bird, or mammal he wants to. A rare bird or flower need remain no rarer than the people willing to venture their skill in building it a habitat."

Aldo Leopold
The Land Ethic

Every day in the Rocky Mountain West, hundreds of thousands of acres are converted from open rangeland to housing, recreational venues, and uses which wildlife and natural things do not seem to comprehend. When we assess threats to plant communities and the species that depend upon them, few compare with this current race to fragment habitats. Yet, we often find ourselves mired in debate over uses of the landscape - emotional, sometimes irrational extensions of our personal biases which may forsake the task at hand. Conservation is the task at hand, and how we get there is as much a function of conserving people who can do this job daily, as it is a necessity to "save all the pieces."

I work with grazing animals, and people who like grazing animals. Most of the animals are cows, but some are bison. Some are animals native to this land. Others are not. They are grazing animals, defined in most dictionaries as "animals that eat grass." I work on public lands and private lands, from alpine forest to cold desert. I would rather think of the land in its ecological sense than by its political identity - it seems more honest and fair. Ridges don't run on grid lines. Creeks and rivers follow the terrain and not a map. Mule deer could care less about the politics.

Today, there is constant debate about grazing animals, or at least those that are cows and sheep. Some would remove livestock from all public lands. Others would be happy to remove livestock from the landscape altogether (including me, at the end of calving or the height of weaning). But, how do you measure success when that objective is achieved?

Just down the road lies four hundred acres of rangeland where livestock have been removed. It began simply enough, with reductions in numbers of animals on public lands. And the banker waited, and he wanted his money back, as he should. It mattered not that the number of cows to make the payment were now being concentrated on the private lands, where streams and springs were plentiful, and the rancher tried to make the land carry the load, to make it work, as he should. A deal is a deal. When cows would no longer make the payments, and the land was tired, it was plowed to make way for a cash crop that might return more per acre. Fertilizers were jabbed into the soil, and chemicals kept the crops "pure." In time, willow stands and chokecherry bushes were removed. The land was leveled, and drained, and made better for crops like corn or wheat. But, even that did not sustain the people on the land, and in time, 400 acres became 40 lots.

This must be a model of success, for there are no cattle on this ranch anymore. Now, there are 40 houses, 40 sheds, 40 roads, 40 septic tanks, 40 wells, 40 sets of trash barrels, 40 haystacks, 40 irrigation ditches, 40 fences, 80 dogs, 80 cats, 80 cars that run, 80 cars that will run no more, 120 horses that never get ridden, a handful of llamas, 240

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sheep, and a bunch of rabbits in cages. There is leafy spurge and knapweed, houndstongue and toadflax. When it rains, brown water runs from the roads to the creek. Sometimes, it makes a light tan foam where it enters the stream. No one fishes here much.

Last week, with several hundred cattle as witnesses, my eight-year-old son caught a fish as long as his arm on a willow battered fly he finally threw with finesse. The next day, he saddled his own horse at dawn and moved cattle to the mountains. To that man, choices were very simple. We can choose to "save" something like the stream he loves by taking away something else he loves, or we can work to care for the whole. If we truly wish to manage for landscapes in which wild things can thrive, to offer them a future, then we must think on a larger scale. We cannot take a traditional, reductionist view of science and impose it on nature. As the saying goes, "don't try to teach a pig to sing - it's frustrating for you, and it annoys the pig."

To get there, we really don't have that many tools at our disposal. We often jump first to **technology**, that "thing" humans run to whenever we venture out of black-and-white land, that thing which moves us to select quick-fixes to our problems, so that we might get back to the current murder on our latest version of the television. Technology is an answer, but it is not the only answer. At times, the technology solution is driven by a reactionary chain that addresses more symptoms than problems. And, at times, we do not sufficiently work out effects and unintended consequences of technological advance, leading us to take two steps forward - one back, or one forward - and two back.

We have **fire**, removed from our box of tools long ago, long enough that we now must understand the need to make fuel loads appropriate to the places where we might burn. Fire is essential, and yet, we must be careful to make fire work in a natural sense, at a time when fires should burn, in fuels that aren't laden with the baggage of decades or generations of suppression. Fire has even become the short-term goal in some cases, leading us to use other tools so that fire itself becomes a usable force in the future.

There is **rest**, long used, often abused. In ecosystems where I work, grazing animals have been part of the landscape since the Pleistocene, and in fact, are now some of the species we worry most about. Like uncertain doctors, we prescribe rest and monitor symptoms, often finding that the patient recovers miraculously to our wisdom. But, few of us follow the patient home, and when it begins to lose vigor to a place where it cannot recover, we look only to the latest episode, and not the life of the system. Land is a living thing. When we restrain it to save it, we must at least check in once in awhile to see that all is well. We may find that our prescription is akin to paralysis, a total lack of energy in the system, a slow death we don't see or care enough to reverse. However, when used in a managed grazing program, rest can be an extremely effective tool, paving the way for fire, living organisms, animal use, and other combinations of management which ultimately point us toward our goal for a given piece of land.

Living organisms are often not immediate change agents, and humans are woefully inadequate in understanding relationships, so we scurry to things which look to be better and faster ways of achieving immediate satisfaction. Even if we can understand that grasshoppers live in a seven-or eleven-year cycle, we are still not satisfied to connect the hoppers to the sage grouse to the alfalfa to the weevils to water to soil to pesticides

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to heat or cold. Use of this tool can be rewarding and instructive, and keeping it in mind can help us comprehend both biological diversity and the need to think on a larger scale.

And then there is this thing called **grazing animals**.....a concept that ventures into images of black and white. At Red Canyon Ranch, we often ask people to name three grazing animals. Adults uniformly point out cow, horse and sheep. Children see beyond paradigms of adult knowledge and cry out, "goose!, deer!, buffalo!, grasshopper!, elk!, mole!, mountain sheep!, rabbit!, gopher!, prairie dog!, cow!" Arms raised high, other arm around the neck to hold the uplifted firm, they see this essential tool for what it is. One girl raised her arm, nose, eyebrows, and bangs to be noticed, then shouted out, "APHIDS – the cows of ants!"

We focus most of our attention on the tool of grazing, and associated **animal impacts**, for a number of reasons. First, it is an ancient and prevalent force in the landscapes in which we work – our natural systems evolved with grazing animals, and while the current user may not be exactly the same as those through history, it is one we can manage with an incredible degree of sensitivity.

Secondly, livestock are an economic force that maintains vast landscapes by generating a profit for people who love the land, and want nothing more than the chance to continue making a living by caring for natural landscapes. These are the people of whom Leopold speaks in The Land Ethic when he suggests that the "harmonious integration" of bread and beauty "can make farming not only a business but an art; the land not only a food factory but an instrument for self expression, on which each can play music of his own choosing." Livestock and people who raise them are fibers in the cultural tapestry of western communities, a source of stability to local economies and traditions, but moreso, those who hold the line against fragmentation of habitats, loss of opportunity, and a chance to maintain and improve upon what we have now. In light of challenges to wildlife and natural things, these are the people who must become and be seen as the musicians and artists Leopold envisioned. No rancher wishes to become a "museum piece" in their lifetime, but they feel the pressures of extinction all too well.

Third, we must look at our ability to affect vast ecosystems beyond our borders. In that sense, economic uses which contribute to biological diversity, healthy streams and wetlands, and constantly changing upland ecosystems, may meet some of the world demand for food, fiber, and other goods, without sacrificing rain forests and other habitats under siege. A huge percentage of all beef eaten is consumed as ground beef supplied from areas where slash-and-burn tactics are viewed as the only alternative to poverty. If we produce an adequate supply of healthy, high-quality products on native rangelands, while at the same time conserving our ecological treasures, we might even be successful in aiding the brilliant songbirds at my window today when they venture south for winter.

Using grazing animals as a tool (as well as an economic agent), the drawers of our tool box contain more magic than we might have thought. Number of animals, season of use, length of grazing period, type of animals, and other applications will derive different results. As we build programs of livestock use, we can look to pre-historic and recent historic records to guide us in managing for a variety of objectives. At Red Canyon, bison were probably not the main agent of change. There is some record of bison presence, but it a fairly ephemeral occurrence, wandering bulls perhaps, or small

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bunches seeking shelter or escape. The primary animals noted on cave walls, and in the journals of trappers and explorers were more commonly elk, bighorn sheep, deer, and antelope. Of those, the elk and sheep were the herd animals most likely to shape the environment. In looking at animals which might mimic that activity, cattle have a fairly direct dietary overlap, and prefer similar habitats.

We know that big, native ungulates did not follow a plan derived by Lewis and Clark. Rather, they are responsive to natural events and occurrences which led to their foraging behavior. Predators, fire, drought, rain, lack of feed, and other natural factors moved the animals, probably imperfectly, across the landscape. We surmise that these animals had a range they preferred, and still see elk calving or wintering in the same safe havens. It is certain these animals did not avoid riparian and wetland habitats – they still favor those areas, much as most other species favor them. Consequently, in our design of grazing systems, one of the most important tools we can use to mimic natural disturbance is the amount of time animals spend in a given area.

We can enhance those habitats further by varying the season that animals are there, thus leading to a different plant response over the longer term. With children, I tell a story about how plants think, how some of them see Spring as a time to grow as fast as possible, while others are content to lay in bed until it is really hot. If we don't toss challenges at these plants, they will quickly learn that their actions will create the same reaction - those which are eaten will give up and go away, leaving the landscape to those who are lazy. In time, a pasture perfect for Spring use will become worthless for that purpose, blooming late in the year, sometimes when that pasture is unusable. The optimal result comes when we manage for diversity in all of our pastures.

When asked what we are trying to create by this management scheme, I proudly answer, "chaos and confusion!" This causes great consternation. We humans do things in our minds that lead us astray - one is to assume that the natural world should appear "pristine," a raked forest floor in a moody photograph. The natural world may be pristine, but it is not that photogenic. There is new growth, decay, erosion, floods, fire scars, and a world of successional variation on our landscape, and that will not be sustained if we insist upon a textbook example of mid-seral conditions. We must celebrate the fact that grazing animals can have an impact on these systems, an impact as natural as wind, rain, or fire. In many cases, we should look at grazing animals as keystone species that maintain or craft environments for others. Where we have discounted such interactions, we have sometimes paid the price dearly.

There are two key areas animals can affect most rapidly in natural systems. The first is **succession**. Animals can be used, by understanding diet, behavioral tendencies, and other characteristics, to favor or disfavor plants, often by impacting other vegetation. In the case of riparian and wetland systems, escaped bromes seize waterways through quick, early growth. By the time woody species have a chance to grow, they must compete with a four-foot canopy of dense grass in order to photosynthesize. The same reality can take place in a sedge meadow. By grazing these areas early in the season, as the native animals may have done, we can reduce canopies of bromegrass or other undesirables and see sprouting of willow, birch, and other woody desirables increase laterally and within stands. Streams can narrow and deepen, and fisheries can produce trout as long as an eight-year-old's arm.

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The key to management is to have as complete an understanding of the targets, goals, or objectives for the system of choice. Using grazing animals to move in the desired direction can be an effective means of maintaining biological diversity, along with local cultures and economies.

In addition to succession, grazing animals may be essential integrators of **energy** within natural systems. In addition to the obvious contributions of dung and urine, animals can have a profound impact on energy tied up in vegetative systems. When we look at long term exclosures in conjunction with adjacent, grazed systems, we may find some unsettling realities. At the outset of rest, vegetation within exclosures released and began to flourish. For a number of years, it appeared as if exclusion was the cure. The area was assumed to be "healed". But, at some point long beyond that of a Master's or Doctorate program, many of these systems began to unravel. Woody vegetation became more scattered, characterized by older, perhaps less vigorous plants. Weeds occupied more of the areas. Measured differences began to confirm human observation, and ask questions of their own. Diversity of species appeared to be less, and occurrences of "less desirable" species more. Why is this happening? Perhaps it is a function of energy in natural systems, that field of science that so-terrifies us due to lack of understanding and inability to see it work. Without agents to mobilize energy above- and below-ground, systems may reach points of stasis that become binding. Perhaps it is the stable states described by many in the research world. It appears that without challenge, disturbance, or outright energy release, many of the systems we seek to maintain will be crushed under their own weight. As this process occurs, other species may vacate, perhaps indicators that the system is in peril. We do not yet know these species of alarm, so must think of them all as "possibles," if possible, without overreacting. We **do** have time to figure these things out, but only if we approach the world as something will not "save" in our own time," instead as a mystery we can help our children to better comprehend.

If we truly wish to conserve the many species and communities we cherish in the West, we must find the will and wisdom to manage for those values. We must share them, and we must be both bold and patient. Within the hearts, minds, and hands of local people on the land lies the key to opportunity. Aldo Leopold said it best.....

"The only progress that counts is that on the actual landscape of the back forty."

The End