

Home on the Range

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High School Youth Forum - Boise, Idaho - February 14, 2022

INTRODUCTION

I hope we can all say that at least once in our lives we have heard the song “Home on the Range.” For those of us who haven’t heard it in a while, here’s a little refresher. The first two lines of the song read “Oh, give me a home, where the buffalo roam, and the deer and the antelope play.” These words create an idyllic image, but when we think of rangelands, or open prairie, how many of us actually think of an environment filled with buffalo, deer, and pronghorn antelope? I for one, don’t. When I think of animals on the range, I think of one type in general—cattle. However, even though the buffalo, more specifically bison, have faded with history, the deer and antelope still roam. In fact, those species, as well as elk, are thriving on western rangelands today despite sharing their home with millions of production cattle.

THE BIG QUESTION

That brings us to the question, can wildlife and cattle coexist on America’s rangelands? If so, how does it affect the rangeland? What, if any, are the benefits? When I was considering topics for this forum, I was advised by more than one individual that the interaction of wildlife and cattle is no longer a relevant topic within the ranching community. However, I disagree. After interviewing several local ranchers from southern Colorado, I found that it is still important

to educate the population on the benefits that wildlife and cattle provide for each other and the rangeland. When studying this topic, both sides of this argument had many valid points. A wildlife enthusiast might argue that the wildlife must be conserved and that they promote biodiversity in the land. Furthermore, wildlife is needed for certain enterprises, such as hunting, to profit and exist. But a rancher might disagree. He might say that a large number of big game species, such as deer, elk and antelope, take away usable forage from his grazing cattle and that the cattle industry is one of the biggest industries in the world with 130 billion pounds of beef consumed annually (Cook, 2023); therefore, it is more important (*USDA ERS - Sector at a Glance*, 26 Sep. 2022). Now, let's pause and use our imaginations for just a minute. Can you imagine a world where you couldn't ever see deer, elk, or antelope except for in a zoo? Can you imagine a world where you couldn't order a steak because there were not enough cattle to produce one? Cattle and wildlife both belong on rangelands; however, if one or the other is exterminated from the range, this is a world we could live in. So today we will learn about how these animals can be beneficial to each other as well as the rangeland. First, we will examine the historical aspect of this scenario by learning about rangeland health during the time of the buffalo. Then, we will look at the positive and negative ways ranching affects rangelands. After that, we will discuss how wildlife add to and take away from what rangelands have to offer. Finally, we'll round it out by learning how wildlife and the cattle industry can complement each other as well as improve the health of the rangeland.

NATURE'S WAY

Long before cattle ranching was a predominant way of life in the American West, the western rangelands were populated by millions of free roaming buffalo. As you can imagine, the rangelands of the past looked much different from the rangelands of today. According to the national park service, buffalo eat a large variety of grasses when living on mixed grass prairie. Some examples of these include blue grama, sand dropseed, and little bluestem (*Bison Bellows: Bison Eating Habits Influence the Prairie Ecosystem (U.S. National Park Service)*, 6 Nov. 2017). The service also says that buffalo occasionally feed on woody plants, such as shrubs, when food is limited. Because buffalo are “picky,” or selective of what they will and will not eat, they influence the biodiversity of the rangelands. According to South Dakota State University, biodiversity is “the variability among living organisms,” also known as, “the spice of life” (*Importance of Plant Biodiversity in Rangelands*, 6 Aug. 2022). By only feeding on certain vegetation, buffalo increase plant diversity on rangeland which can in turn increase gas exchange, biomass, and plant cover. Other natural systems are also increased, like photosynthesis which can furthermore promote rangeland health because light becomes more available as well as water and nutrients when the competition between plants is reduced on rangelands. Although the buffalo grazed the land intensely and in large numbers, they migrated. Meaning that the area grazed was given adequate rest to fully recover before the buffalo returned. This process happened all across the plains. Knowing this, I think we can safely assume that when America’s rangelands were covered with millions of buffalo and very few cattle, the range was probably in one of its healthiest states ever.

LIVESTOCK BENEFIT RANGELANDS

According to the USDA, American Rangelands support 91 million open range cattle over 770 million acres (*About Us*, n.d.). As with any herbivore, if the grazing practices and populations are not properly managed, these animals can have negative effects on the rangeland. For example, a continuous grazing cycle may lead to overgrazing, which could have major consequences for the range. Without adequate recovery time for the plants to regrow, the rangeland could take years to recover. According to Penn State Extension, some other negative effects of overgrazing are root loss, susceptibility to erosion, loss of topsoil, and increased soil compaction (*Avoid Overgrazing Your Pastures*, 20 June 2018). However if properly managed, these animals can have positive effects on the rangeland. For example, properly managed grazing reduces the amount of dead plant material, or litter, on the ground. While plant litter does have positive purposes, such as shading the soil, preventing erosion, and increasing water holding capacity, it can also serve as fuel for wildfires. Grazing, however, lowers the chances of a large wildfire because it lowers the amount of fuel available to burn by managing the amount of standing plant biomass and plant litter on the ground (*Benefits of Grazing Animals*, 2022). Large amounts of litter can also hinder native plant growth (*Benefits of Grazing Animals*, 2022). By using proper grazing practices, native plant growth is encouraged and litter amounts are maintained while also promoting a healthy, diverse rangeland.

One example of this is regenerative grazing. Regenerative grazing is a system of grazing that focuses on rejuvenating the natural landscape and plant communities, not just sustaining it (*Pasture Project* n.d.). Much like the migration of the buffalo, regenerative grazing allows the rangeland months, if not years, to recover after heavy grazing with a high stock density over a small area of rangeland. The benefits of regenerative grazing are far greater than just to the

rangeland. Through regenerative grazing, soil health is improved, which improves the health of the targeted rangeland. This causes the rangeland to produce more heavily nutrient-dense food, not only for cattle, but for native herbivores (wildlife) and humans. Regenerative grazing also encourages water retention, microbial biodiversity, and resilience to climate variability (*“Regenerative Grazing and the Benefits of Livestock on Soils in Norther”* by Raymond Mooney, 2019).

Not only does proper grazing help range on a ranch scale, but also on a community scale. The ranching way of life protects rangelands from urban development. This promotes open space for humans to enjoy. Maintaining open space also helps wildlife by preventing their habitat from being fragmented by urban development. Furthermore, this benefits rangelands as well as the plant and animal life that live there. Ranching can also greatly impact the economy. In 2021 the beef industry was estimated to be worth 132.9 billion dollars (*USDA ERS - Statistics & Information*, 26 Sept. 2022). The United States alone produced 27.9 billion pounds of beef in 2021 (*USDA ERS - Statistics & Information*, 26 Sept. 2022). The cattle industry benefits rangelands because if a rancher cannot sustain their way of life, it will cease to exist and all the benefits listed above would disappear with it. However, it is still important to understand that the local wildlife can also impact rangeland health; especially since these animals were here long before cattle.

BIG GAME WILDLIFE BENEFIT RANGELANDS

Deer, elk, and pronghorn antelope have lived on western rangelands for thousands of years. They are the three predominant big game species. Their presence in ecosystems is as vital

as oxygen is in the air. There are approximately 36 million deer (Informer, 2021), 1 million elk (Informer, 2021), and 1 million pronghorn on rangelands throughout the United States (*Pronghorn — Texas Parks & Wildlife Department*, n.d.). It's crazy to think that at one point, there were even more. Just as with cattle, if the populations of the species are not correctly managed, they can degrade the rangeland. If the populations of these big game species are not managed, they can over-populate in an area, which can lead to overgrazing and all of the consequences that come with it. It can also lead to a decline in health of wildlife herds and an increase in disease, some of which may spread to cattle, such as scrapies (*White-Tailed Deer Are Susceptible to the Agent of Sheep Scrapie by Intracerebral Inoculation - PMC*, 11 Oct. 2011). However, with proper management practices, these big game species can benefit the rangeland and its health. Deer, elk, and pronghorn are all examples of herbivores, meaning they eat primarily plants. Yet, their diets still vary in what type of plants they prefer to eat. For example, a deer's diet is 95 percent browse (woody plants such as shrubs and trees) (*What Are Browse and Forbs? – Goats*, n.d.) (Frisina et al., 2008), while an antelope's is only 27 percent browse. An elk's diet is only 55 percent browse (Frisina et al., 2008). While the major types of plants that these animals prefer are the same, the variability of their diets can still promote biodiversity among the plants on the rangeland. Deer, elk and antelope also encourage biodiversity in the trophic levels below them. For example, elk feed mainly on forbs and shrubs which can help balance the populations of plants such as Winterfat and Fourwing Saltbush while also encouraging the growth of grasses such as Western Wheat and Blue Grama. These native herbivores affect every trophic level of a food chain (*Herbivores | National Geographic Society*, 20 May 2022). They promote biodiversity in the levels above them by being a food source for

predators such as mountain lions. For example, when there is a healthy population of deer, there may be a diverse population of predators that eat them such as bears, coyotes, and mountain lions. Without enough of these big game species there would be an imbalance in the ecosystem which could have catastrophic consequences.

Yet, wildlife populations need to be managed as a way of managing their grazing on the rangeland. Think of it like a stocking rate and carrying capacity. There are only so many deer, elk, or antelope that an area of rangeland can support. By minimizing the disturbing of migration routes and allowing these animals to roam freely, we can reduce the chances of overgrazing by deer, elk, and pronghorn. One way of doing this is by encouraging ranchers to install wildlife friendly fencing. Examples of this are single strand electric fences and virtual fencing. By designing fencing locations with wildlife guidelines, laid out by fish and game professionals, big game populations can be better managed. This includes a fence no taller than 42 inches with only three strands of wire. Both the top and the bottom strand must be smooth, not barbed, and the bottom strand can be no lower than 16 inches from the ground (Hanophy, 2008).

Another way of managing big game populations is through hunting. According to the Rocky Mountain Elk Foundation, hunters add 55.4 billion dollars to the economy annually and 94 billion more is spent by recreational shooters and anglers (“Hunting Is Conservation - The Economy of Wild Game,” 2021). My family can be included in this group. I’ve grown up hunting, so it is something I enjoy and I am passionate about. My dad is an outfitter, or someone who sells and organizes hunts. We lease land from a local Trinidad rancher named Bill Buhr to run our hunts on. State agencies, such as Colorado Parks and Wildlife, study big game populations across the state to determine how many hunting licenses for each species should be

given out to correctly manage the populations (*Understanding Hunting Seasons and Tags • Modern Hunters*, 29 Nov. 2014). This gives ranchers the chance to keep livestock production as their priority, yet satisfy both sides of this argument, protect the health of the rangeland, and make a profit.

BIG GAME WILDLIFE vs CATTLE: PROBLEM OR OPPORTUNITY?

Now that I have discussed how both livestock and local big game species can affect a rangeland and its health, we should be able to answer the questions from earlier. Can wildlife and cattle coexist on America's rangelands? And if so, what are the benefits? The combined average diet of deer (both mule deer and white tail), elk, and pronghorn antelope is almost entirely browse (Frisina et al., 2008) . On the other hand, a cow's diet consists almost entirely of grass (Pressin et al.). The differences between these two diets prove that cattle and wildlife are not in direct competition but instead influence the growth of plants that make up the largest parts of each other's diet. When wildlife graze on browse and forbs, they encourage the growth of grasses by decreasing competition. The same happens when cows eat mainly grass and not browse and forbs. In short, both wildlife and cattle promote biodiversity that both sides can benefit from. The selective feeding of both wildlife and grazing cattle creates biodiversity in the ecosystems of rangelands which in turn creates more usable forage for animals to eat. This can have several benefits on the health of the herd which include desired weights being reached faster, healthier calves, and decrease in disease. Not only can plants and animals benefit from biodiversity but so

can the rangeland. Biodiversity is vital in any ecosystem. It is responsible for several things, including mitigating climate, moderating weather, soil creation and stabilization, nutrient cycling, and water storage and purification (*Importance of Plant Biodiversity in Rangelands*, 6 Aug. 2022). Without these, there are negative effects on the ecosystem that negatively affect forage production, wildlife habitat, and ecosystem health, which affects everything overall.

SUMMARY

In summary, both cattle and wildlife are needed to maintain the health of a rangeland. The U.S. cattle industry is one of the largest in the world, estimated to be worth 132.9 billion dollars (*USDA ERS - Statistics & Information*, 26 Sept. 2022). With proper grazing techniques, such as regenerative grazing, grazing cattle cannot only help sustain a rangeland, but also rejuvenate it. Meanwhile, wildlife have been on the rangeland for thousands of years. They are also needed to help keep a rangeland healthy by helping to create a lush, thriving ecosystem on every trophic level. At the same time, maintaining their populations through methods like hunting can help ranchers diversify and incorporate another source of income. We have observed that cattle and wildlife can compete in certain circumstances, but for the most part prefer different types of plants. And that the selective feeding of cattle, deer, elk, and antelope can help promote biodiversity on a rangeland, which in turn can have huge benefits to the rangeland as a whole. In conclusion, both cattle and wildlife are vital to rangeland health. Home on the range isn't just where the deer and the antelope play after all.

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