

TRAIL HORSES DO NOT THREATEN WILDLIFE

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Abstract

Numerous studies evaluate the influence of hikers, mountain bikers, and other passive recreation users on wildlife in natural areas, but there is essentially no literature on the impact of horses on wildlife. This position paper summarizes the research on the impact, or lack thereof, of horses and equestrians on wildlife. While there is no doubt that every activity undertaken by every organism on earth has some effect on every natural resource, we believe the preponderance of the evidence shows that the limited equestrian activity that takes place in the Front Range of Colorado is negligible.

We also analyze some of the local research on the impact of trails in general on bird populations in Boulder, Colorado, and conclude that the “trail effect” on birds is so small as to be insignificant.

It is our professional belief that horses are not responsible for threatening wildlife or trampling ground-nesting birds. We support best management practices to minimize the impacts of horses on public lands, and we outline some of these principles in this paper.

Introduction

Horses in Colorado. Horses have long been the ultimate icon of the diverse American traditions of farming, ranching, mining, exploration, settlement, hunting, outdoor recreation, and nature appreciation on public lands. Of the approximately 6.9 million horses in the United States, about a third (2.9 million) are used as recreational trail companions and a means of transportation into front country and backcountry settings (American Horse Council, 2001). About 145,000 horses call Colorado home, and approximately 57,000 of those horses are considered to be recreational trail horses, including pack stock (Colorado Horse Development Authority, 1999; AHC, 2001). In Colorado alone, recreational trail horses provide a \$500 million economic benefit and support 5,200 full-time jobs – the state’s largest equine-related category (AHC, 2001).

Horses on Public Lands. Public lands in Colorado have traditionally been managed for a variety of purposes. Most public land management agencies try to implement a set of best management practices to balance ecosystem protection with passive recreational opportunities.

However, regulatory pressures have increased recently on all forms of recreation, from municipal parks to National Parks. Although statewide the number of acres in the public domain has increased, and trail mileage has increased somewhat, neither has increased as fast as the population; meanwhile, maintenance budgets have been shrinking. These imbalances have created tensions among trail user groups, environmentalists, and public land managers, as each constituency fights for its share of what it sees as a shrinking pie. Equestrians have come under more than their share of scrutiny, including generalized anxiety about whether horses spread noxious weeds, frighten (or trample) the wildlife, erode the landscape, pollute the water, or intimidate the citizenry.

The Colorado Horse Council, Back Country Horsemen of America, Boulder County Horse Association, and others have conducted extensive research into the available literature on this subject, and we have discussed the issue directly with researchers in the field and with agency personnel. We also contribute considerable personal experience representing thousands of trail miles ridden and hundreds of trail miles built.

Managing Our Public Lands. In recent years attempts have been made to prioritize the purposes for open space, with various stakeholder groups each claiming that their interests should receive the highest priority. Because public land management requires weighing variables that are not easily quantified, and incorporating the values of widely-different sectors of the public, this leads to the perfect storm increasingly referred to as a “wicked problem.” Two researchers whose work was conducted in the Colorado Front Range at the Rocky Mountain Research Station in Ft Collins point out that “Addressing wickedness calls for institutional changes that allow for and reward the use of trust building, inclusive communication, and genuinely collaborative processes....Collaboration that overcomes wickedness requires that decision-makers allow themselves to be directly informed by local positions and knowledge” (Brooks and Champ 2006). Allen and Gould (1986) conclude that “emphasis on people within the organization and on external customers is the central element when wicked problems are successfully handled.”

Lack of Communication. A large part of “the horse problem” is that the public, the politicians, and even some professional land managers have little experience with and don’t understand horses. Horses are seen as being too big, too remote, too “different”, too complex, too rare, and in some places, even too “politically incorrect,” even to try to understand. And horsemen of all backgrounds don’t understand the land managers, the politicians, and the non-horse-owning public. Horse owners are traditionally too busy caring for their livestock or their ranch to take the time to study the problem and its solutions; in what little free time they have, they just want to be left alone to enjoy their horses. The situation has been more or less manageable for a hundred years, but increasing squabbles among these groups in the 21st century call for improved communication and attempts at mutual understanding.

Horses and Megafauna

Fear: Some land managers and others worry that horses are responsible for disturbing wildlife, including elk and mule deer. They contend that horses should be severely restricted from public lands to protect the wildlife.

Facts: Horses are prey animals, not predators. They have eyes on the side of their heads so they can see potential predators coming from a long distance and get ready to flee if necessary. The scent of a horse says “herbivore” to the wildlife in an ecosystem. By contrast, humans and dogs are predators, with eyes on the front of their face. As they walk, they leave the trace scent of “omnivore” or “carnivore” on the trail, which can alert wildlife to their presence as possible threats.

A horse passing along a trail creates sound rhythms identical to other four-footed prey animals in the ecosystem, which informs wildlife that they are a non-threatening presence. Horses are recognized by wildlife as prey animals, even when a person is sitting on their back (Quinn, 2001).

An exhaustive synthesis of long-term studies of elk and mule deer in the Starkey Experimental Forest and Range of northeast Oregon (“The Starkey Project”) was conducted in 2002. Among the various aspects of the study was a detailed, landscape-wide, three-year-long experiment to measure effects of off-road recreation on mule deer (*Odocoileus hemionus*) and elk (*Cervus elaphus*), two “charismatic species of keen recreational, social, and economic interest across western North America” (Wisdom, Ager, Preisler, Cimon, and Johnson 2005). The researchers analyzed measured responses of elk and mule deer to ATV, horseback, mountain bike, and hiking activities. The results “show clear differences in elk responses to the four off-road activities. Elk reactions were more pronounced during ATV and mountain bike riding, and less so during horseback riding and hiking.... Both movement rates and probabilities of flight responses were highest for ATV... and mountain bike riding... and lowest for horseback riding and hiking.” Mule deer showed less change in movement rates and similar probabilities of flight response for all four off-road activities compared to the control periods (and were not significantly different than the null probability for control periods (Wisdom et al, 2005).

There appears to be no research on interactions between horses and mountain lions, bears, coyotes, foxes, or other megafauna.

Summary: The anecdotal experience of hundreds of trail riders supports the research conclusions. Equestrians can often ride through herds of deer and elk with the animals giving the horses nary a glance.

Interactions between horses and other large wildlife are insignificant.

Horses and Ground-level Fauna

Fear: Some people are worried that horses, because of their large hooves, will trample reptiles, amphibians, or prairie dogs, or even be attacked by them.

Fact: The percussion pulse of an approaching horse provides warning to reptiles, rodents, prairie dogs and other ground-level wildlife to move away (Quinn, 2001). Having ample “notice” diminishes the flushing/flight response because the animals can move away calmly, thereby avoiding producing unnecessary adrenaline and avoiding consuming energy.

There are no known reports of horses stepping on prairie dogs or snakes (CDOW, personal communication 2011). With regard to the possible danger to horses from stepping in prairie dog holes or being bitten by snakes, there is no current mechanism for reporting horses injured in such incidents.

Summary: The concerns about conflicts between ground-level fauna and horses appear to be, well, groundless.

Horses and Ground-Nesting Birds

Fear: Some people are concerned that horses, because of their size, will frighten birds or trample their nests.

Facts: Any sporadic human visitation can disturb wildlife. However, we have found no professional studies confirming any link between equestrian use of ground-nesting bird habitat, increased flushing by birds, or diminution of nesting or fledging (“nest success”).

Bennett and Zuelke (1999) undertook an extensive literature review of recreation effects on birds and concluded that disturbance from recreation has only temporary effects on the behavior and movement of birds. Direct approaches caused greater disturbance than tangential approaches, and rapid movement by joggers was more disturbing than slower hikers. Children and photographers were especially disturbing to birds. Passing or stopping vehicles were less disturbing than human foot traffic. And horses and riders did not disturb birds at all (summarized in Quinn, 2001).

The City of Boulder Open Space & Mountain Parks has enacted seasonal closures for groundnesting birds, specifically grasshopper sparrows, in grassland portions of the West TSA (as well as the Southern Grasslands and Eldorado Mountain/Doudy Draw TSAs). These birds are considered “globally secure” because of their wide distribution across North America, but “vulnerable” in Colorado and Wyoming by the S/B Natural Heritage Program (Slater 2004). Boulder County is the extreme western

extent of their range. Nest density is approximately 1 per 5 acres in Oklahoma and Texas. Bock, et al (1984, 1999) point out that on arid or semi-arid shortgrass prairies, cattle grazing is detrimental to the grasshopper sparrow; Bock and Webb (1984) recommend curtailing grazing in Colorado during nesting season. In Alberta, it was noted that grasshopper sparrows were entirely absent from continuously grazed natural grasslands and from those grazed in summer (Prescott and Wagner 1996). Studies yielded inconsistent recommendations regarding grazing practices for sparrow conservation. OSMP's lessees frequently graze about 75 cow/calf pairs on 794 acres of this grassland (OSMP West TSA Grazing Summary, 2011).

Boulder proposes to ban horses entirely from going off-trail in the grassland portion of the West TSA, year-round, out of concern for the grasshopper sparrow. We could find no published literature pertaining to trail management or limiting off-trail use for horses in grasshopper sparrow habitat.

So let's look at some more numbers. With about 10 acres per cow on ground-nesting bird grasslands, and about 6,740 total acres in the West TSA for 1 horse off-trail, the chances of a cow versus a horse inadvertently stepping on a bird's nest are approximately 674:1. But the horse visit is no more than 5 hours, whereas the cows are there 24 hours a day. So the horse's chances go down by a factor of 24/5 over the cow's, so a cow is 3,235 times more likely to trample a nest than a horse is.

Summary: Even if equestrians go off-trail, the concern about horses having a measurable impact on ground-nesting birds is miniscule compared with current OSMP grazing policy.

In any case, as part of the Community Collaborative Group, equestrians already agreed to respect the seasonal closure for groundnesting birds. It is unreasonable to make the current seasonal closure into a year-round closure for horses only, in order to protect birds that aren't even here for most of the year.

Trails and Birds

Scott Miller and Richard Knight were commissioned by the City of Boulder Open Space Department in 1995 to examine the relationship between recreational trails and bird communities. The trail transects they chose to study included pine forest and mixed-grass prairie ecosystems. The areas they studied were open to passive recreational activities such as hiking, wildlife viewing, exercising pets, jogging, mountain biking, horseback riding, and rock climbing. They did not single out horses in their study as being more impactful than any other passive recreational use, nor did they differentiate in their study which trails were used by which type of recreationists, and they did not evaluate the relative or absolute number of trail users.

While they found fewer nests near trails, they are careful to point out that "fewer nests near trails may, in part, be a result of higher nest predation at these sites by

raccoons, skunks, foxes, ground squirrels, and coyotes. Whether or not the avoidance of trails by nesting birds has any consequence on population size is unclear. Fewer nests near trails may be compensated by a greater number away from trails, resulting in no net effect on population size.”

Let us take a moment to evaluate the actual impact of the trails studied by Miller and Knight on Boulder’s Open Space and Mountain Parks.

Closer examination of the data reveals that the vast majority of bird species studied (84%) were unaffected by (didn’t “care” about) trails, and of those that did (16%), the detrimental effect of the trail was vanishingly small (2%). Taking City Open Space bird species as a whole, the overall trail effect was found to be only three tenths of one percent, or 0.32% (16% x 2%). We’re not denying that a subtle trail effect exists for some species -- we’re merely trying to keep “biased biology” from being blown out of proportion. How much recreational access should be given up to realize a three-tenths-of-one-percent increase in possible wildlife habitat?

So what effect do existing trails actually have on public lands? If every trail is viewed as an environmental catastrophe 100 feet wide, over which no bird dares fly and no mouse dares cross, and on which no blade of grass dares grow, the so-called “trail effect” for each jurisdiction can be calculated.

The City of Boulder Open Space and Mountain Parks Department currently owns about 45,000 acres (70 square miles) of land, with approximately 130 miles of designated trails. (City of Boulder Visitor Master Plan, 2005).

If all OSMP users were to be restricted to existing designated trails, and the trail effect were 100 feet wide and consisting of 100% sterility for every trail, every day, year round, trail users would be “devastating” to at most 3.5% of all OSMP lands.

But trails are not environmental catastrophes, of course, so if we multiply the trail effect (0.32%) by the percentage of Open Space lands affected by trails (3.5%), we conclude that Open Space trail users may actually reduce the overall integrity of Open Space lands by only about one one-hundredth of one percent (0.0112%). The quality of the Open Space environment for fauna is, therefore, 99.9888% of what it would be with no trails.

Phrased another way, because of trail use there may statistically be one less bird successfully fledged on City of Boulder Open Space & Mountain Parks out of every 8,929 successful fledglings.

Proponents of the “Open Space is for Habitat Preservation Only” philosophy are fond of citing these bird studies as justification for extrapolating from birds to all wildlife, and to all ecosystems, and therefore concluding that all trails are “bad” because they fragment the habitat for all wildlife.

Finally, Miller and Knight specifically point out that nature viewers and wildlife photographers, who are often seen as “benign” passive recreationists, may have a disproportionate impact on birds “Because [they] approach wildlife closely, [and because] encounters are often repeated and may last for extended periods of time.” (Gutzwiller 1995, in Miller and Knight 1995).

In addressing the appropriate balance between passive recreation and environmental preservation, we believe these statistics support the requests of responsible recreationists for more trails and access to our public lands.

Summary: Despite all the emotional rhetoric, trails have truly minimal environmental impact.

Horseback riders are much less likely to dismount to investigate ground-nesting birds or to flush them from their nests, than nature viewers, wildlife photographers, hikers or dogs. Thus, equestrians may actually be more environmentally benign than other public land visitor groups.

Conclusions

We fully accept the importance of contemporary ecosystem management to ensure the health of native plants and animals, and wildlife management is a vital part of that process. We acknowledge that in some locations under certain conditions, management of all visitor groups is appropriate and necessary.

However, the overwhelming body of scientific research, coupled with expert opinions and anecdotal evidence, indicates that horses have an insignificant effect on wildlife and in fact may be more compatible with wildlife than other stakeholder groups.

Finally, recreational trail horses comprise a tiny fraction of total trail users. For example, in April of 2006, 73,816 recreational users visited Rocky Mountain National Park, 224 of which were “either” snowmobiles or horses. Similarly, 25,911 recreationists visited Redwood National and State Parks in California, of which only 496 were day-use horseback riders (NPS Public Use Statistics Office Website, 2006). Boulder County Parks & Open Space regularly reports that about 2% of its annual visitors are equestrians (BCPOS website, 2008). The City of Boulder Open Space & Mountain Parks Department reports that horses comprised between 0-2% of all visitors between 2004 and 2010. The number of horses out on the trails nationwide is statistically very small compared to other visitors, and equestrian use carries a proportionately small potential for impacts.

The City of Boulder Visitor Master Plan (2005) states that “The minimum objective of management actions is to ‘do no harm.’ Where recreational activities may, will, or could harm the environment, Open Space and Mountain Parks shall avoid, minimize, and mitigate impacts. Restricting visitor activities will be a last resort.”

We agree.

In spite of our relatively small demographics, trail use and equestrian access to public lands is extremely important to the horse people who choose that form of recreation.

We recommend that equestrians and public land managers alike adhere to the following set of best management practices to reduce the impact of horses on public lands:

- 1) Respect wildlife. Move slowly in their presence and give them as much space
- 2) as possible.
- 3) Do not pursue or harass wildlife.
- 3) Report aggressive-wildlife encounters to the appropriate agency.
- 4) Encourage (but it is not necessary to require) visitors to stay on designated trails.
- 5) Reach out to equestrian groups to enhance meaningful communication and education.
- 6) Incorporate the experience and expertise of equestrians in making management of our public lands a true partnership, rather than an adversarial relationship.

“The bottom line is that horse trails can be maintained on most natural areas without unacceptably impacting ecological values” (Williams and Conway-Durver, 1998).

We believe that banning horses from trails, restricting horses to on-trail use (except in small areas of particularly sensitive natural resources where all off-trail use is banned) or artificially creating *de facto* closures to horses by refusing to build even minimal horse trailer parking, are unnecessarily severe management actions that should be avoided.

If the above guidelines are followed, land managers will be able to avoid draconian measures with regard to horse use, and equestrians will be able to continue enjoying the many diverse forms of public land that have been open to them for centuries, for many more years to come.

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