

Impacts of Wild Horses, Cattle, and Wildlife on Riparian Areas in Idaho

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On the Ground

- Our study confirms that grazing by cattle and horses can negatively impact riparian ecosystems if not properly managed.
- Population levels and grazing patterns of wild free-roaming horses limit management options, potentially leading to rangeland and riparian degradation.
- Grazing by wild free-roaming horses and cattle in riparian areas caused streambank disturbance and reductions in stubble height and herbaceous biomass.
- Both wild free-roaming horses and cattle affected riparian attributes while wildlife had little effect.
- Horses had a greater negative impact than did cattle when examined on an individual animal basis.
- Managers and ranchers in areas with wild free-roaming horses will need to consider potential impacts of unmanaged wild free-roaming horses in combination with livestock to mitigate the cumulative effects of multiple species of grazers on riparian condition.

Keywords: streambank alteration, stubble height, game camera, species interaction, grazing.

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Excessive and poorly timed grazing can negatively affect riparian ecosystems. Increasing populations and grazing habits of wild free-roaming horses make it difficult to manage their impacts on riparian areas. We empirically quantified effects of wild horses, cattle, and wildlife on riparian habitat characteristics using game cameras to monitor riparian use. We also examined riparian vegetation and streambank disturbance each month to compare with animal occurrences. We observed overall negative impacts of wild free-roaming horses and cattle on riparian attributes, but wildlife had little effect. In areas with wild horses, land managers should consider the combined use of unmanaged wild horses with livestock to address their cumulative effects in riparian areas.

Wild Horses, Cattle, and Riparian Areas

Wild free-roaming horses (*Equus caballus*) and burros (*E. asinus*) are surrounded by controversy in the western United States. As cultural icons of the West, they hold great emotional significance, often eliciting heated debates over how they should be managed. The horses and burros that are free-roaming across the western United States are biologically feral, but are hereafter termed "wild." Wild horses and burros roam public lands in 10 western states, with large and potentially unsustainable populations in several regions. Having few natural predators, wild horse and burro herds can increase by 15% to 20% each year and double every 4 years.^{1,2} Estimates of wild horse and burro populations have risen from 30,000 individuals in 2005 to about 49,000 individuals in 2014,^{3,4} although there is concern this number is underestimated due to limited detection of secretive individuals.² This prolific growth can result in populations exceeding appropriate management levels within their federally delineated herd management areas (HMAs; Table 1). Large populations of wild horses and burros in many areas can contribute to ecological damage and increase risk of rangeland degradation.²

The effects of wild horses on riparian areas are a concern for many land managers. Riparian areas are ecologically important zones around rivers, streams, and lakes. Although riparian areas comprise only about 2% of western lands, they are some of the most ecologically important habitats in rangelands⁵ by providing important resources for many species of wild and domestic animals such as abundant forage, cover, and water.² Riparian areas are also important for trapping sediment, slowing runoff, and supporting ecologically functioning watersheds. Excessive animal grazing and trampling in riparian areas can decrease sediment capture, limit infiltration, and increase the energy of water flow.⁶ These hydrogeomorphic impacts can magnify erosion and down-cutting which can lead to separation of the streambed from the flood plain and decrease riparian area size.⁶

Riparian areas attract wild and domestic grazing animals because of available water, cooler micro-climates, and more nutritious and abundant forage generally staying green longer into the summer than the surrounding upland vegetation.^{7,8} The negative impacts of livestock grazing in riparian zones have been well documented for nearly half a century.⁶ In

Table 1. Population estimates of wild horses and burros (total estimated number of individuals) in 10 western US states in 2014 as compared with the recommended high appropriate management level (AML) set by the Bureau of Land Management to maintain healthy rangeland and resources⁴

State	Total	High AML
Arizona	4,744	1,676
California	6,008	2,184
Colorado	1,205	812
Idaho	668	617
Montana	160	120
Nevada	25,035	12,796
New Mexico	146	83
Oregon	3,180	2,715
Utah	4,292	1,956
Wyoming	3,771	3,725
TOTAL	49,209	26,684

recent decades, research has also shown that wild horses can have detrimental impacts on riparian areas.^{9,10,11,12}

Wild horses and domestic cattle (*Bos taurus*) are both implicated in degrading riparian areas (Fig. 1). However, horses may have a greater impact on riparian areas than cattle because horses often have year-round access to these areas, while cattle are generally removed for part of the year (Fig. 2).^{9,13,14} Though free-roaming horses are generally smaller than modern rangeland cattle, they may have a greater than expected influence on riparian vegetation because horses have a digestive system that enables greater intake per unit of body weight than cattle.^{13,15} In addition, because many breeds of wild horses can go longer without water than can cattle, they often spend less time per day within riparian zones than individual cows do.¹ Therefore, to truly understand the effects

of horses compared with cattle, intensity of use should be assessed to account for both the number of animals and the time spent in the area rather than strictly the number of animals using the area.

Habitats used by wild horses are also used by wildlife and livestock species, making it difficult to determine which species has the greatest influence on riparian health.^{9,16} Land managers often struggle to balance rangeland health and forage allocations for wild horses, livestock, and wildlife. These difficulties are compounded by the lack of empirical information about the compounding effects of grazing by different species of herbivores. In turn, maintaining wild horse populations while sustaining healthy plant communities requires a better understanding of their role in the rangeland ecosystems they inhabit.



Figure 1. Game camera picture of wild horses (foreground) and cattle (background) using a riparian area in southwestern Idaho.

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