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REVIEW

Review: Challenges and opportunities in rising feral horse populations

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ABSTRACT

The ever-increasing feral horse population in the United States is creating both challenges and opportunities that affect science, the environment, and society. Although the presence of feral horses is well-known, the implications of these rapidly growing populations are not fully appreciated nor understood. In this review, the aims are to first summarize the nature of the feral horse populations in the United States and then to discuss the main challenges along with their impact and potential solutions. Our analysis is expected to be helpful both for the scientific community as well as the public in the United States and elsewhere.

Key words: Bureau of Land Management, feral horses, Wild Free Roaming Horse and Burro Act, contraception, natural resources

INTRODUCTION

Origins of Feral Horses in the United States

Feral horses, or mustangs, refer to horses whose ancestors were at one time domesticated, but are now free ranging without reliance on any human care. In contrast, wild horses are those with ancestors that were never domesticated (National Horse and Burro Rangeland Coalition, 2013). Originating in North America, the wild horse vanished from the Americas around 12,000 years ago and returned in 1493 as a domesticated animal traveling with Christopher Columbus (Wildlife Society, 2011; Conant et al., 2012). The only wild horse located in North America today is the Przewalski horse, found exclusively in zoos (Goto et al., 2011). The present day feral horse in North America is a descendant of domesticated animals from Eurasia and Africa that were brought to the Americas by Spanish explorers. Today, they have become an icon of American culture (Browin, 2007; Dalke, 2010a; Conant et al., 2012).

Current Locations and Numbers

North American feral horses range over more than 18.2 million hectares in 10 states within the United States (**US**) and 2 Canadian provinces (Wildlife Society, 2011). Not all of these feral horses are managed by federal government agencies; some may be managed by state, county, city, and even private, nonprofit organizations. In 2008 about 39% of all the feral horses of North America were reported to be located on islands bordering the US and Canadian East Coast, with federal, state, and local organizations working together to manage these animals (Lubow and Ransom, 2008). Although feral horses can be sited across the US, there are only 3 ranges specifically set aside by the Bureau of Land Management (**BLM**) to protect wild and free roaming horses: Little Book Cliffs Wild Horse Range in Mesa County, Colorado; McCullough Peaks Herd Management Area in Park County, Wyoming; and Pryor Mountain Wild Horse Range in Lovell, Wyoming (Wildlife Society, 2011).

In 1971 the Wild Free Roaming Horse and Burro Act (**WFRHBA**) estimated the number of feral horses and burros as approximately 17,000 (Browin, 2007). Forty-four years later, this number has more than tripled in the western ranges in 2015 to an estimated 58,150 (Gorey, 2015b). These numbers do not include those feral horses and burros maintained off-range in corrals (14,932 horses and 793 burros) and pastures (30,324 horses and 0 burros) located in states that include, but are not limited to, Kansas, Oklahoma, Colorado, and Montana. Today, these animals, and others like them, continue to be managed by the BLM in long-term corrals and pastures, rather than free roaming in managed and protected ranges.

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HISTORY OF THE FERAL HORSE

Nature of Feral Horse Breeds, Survival, Environmental Impact, and Competition for Grazing Lands

A variety of the horse breeds still found throughout the US have contributed to the genetics of the feral horse, and the genetic make-up of today's population makes them unique and important in the understanding of population behavior and dynamics. Although there still are horse breeds of northern and central European decent, the influence of Spanish horse breeds is predominant in the US population, and these horses are often referred to as "Spanish Colonial feral horses" (Conant et al., 2012). Along the East Coast, the Florida Cracker, Marsh Tacky, and Shackleford Banker horses represent breeds of the Spanish Colonial feral population. Research has shown that these breeds demonstrate genetic and gait or locomotive characteristics that make them uniquely different from other modern-day American horse breeds (Nicodemus and Clayton, 2002; Nicodemus and Beranger, 2009; Conant et al., 2012; Nicodemus et al., 2013). Unlike many of today's domesticated US breeds, Conant et al. (2012) found these breeds possessed a genetic link between each other and those first horses brought to North America by Spanish explorers. Although this genetic link to the past holds historical importance, these breeds also demonstrate ambling-type gaits not found in current domesticated horse populations but similar to those breeds that settled the New World in the early 1500s (Nicodemus and Clayton, 2002; Nicodemus and Beranger, 2009; Nicodemus et al., 2013). This Spanish influence is not exclusive to our East Coast; it reaches into the West to include such Spanish Colonial horse breeds as the Wilbur-Cruce Mission horse (Nicodemus and Beranger, 2010). The Wilbur-Cruce Mission horse breed is a subset of the Spanish Barb in which both the Barb and Andalusian horse breeds come from Spanish bloodlines and have distinguishing color patterns and lumbar vertebrae characteristics (Feist and McCullough, 1975). Other notable feral horse breeds located in the US include, but are not limited to, the New World Iberian horse, New Forest ponies, and Sable Island ponies off the Canadian East Coast. Again, each of these breeds displays distinctive physical and behavioral characteristics that show some of the last ancestral links to those domesticated horses that were the first brought back to North America in the 16th Century (Feist and McCullough, 1975; Conant et al., 2012).

Whereas genetics has given us insight into the origins of feral horse behavior, the understanding of herd dynamics in equines is important for interpreting behavior and the impact of this behavior on the environment. Because they are social, herd-oriented animals, feral horses live in small groups referred to as bands, either mixed harem or male bachelor bands, with average group sizes from 2 to 20 (McDonnell and Haviland, 1995). The size of a band depends on the environment. Bands tend to be larger if the feral horses live in an open grassland terrain without many trees. Smaller bands are less common due to the risk of predators and are located primarily in rugged, more mountainous terrain or more densely forested areas. Whereas larger bands may be beneficial to the horse, allowing for greater protection from predators, they can create difficulties for the environment and the other animals sharing this environment.

The feral horse population living on public lands competes with cattle (American Wild Horse Preservation Campaign, 2010). They tend to frequent higher elevations and steeper slopes than cattle, for grazing, defense, and thermoregulation. Horses' flexible lips and long incisors cut plants to the surface of the soil. This, in turn, delays regrowth of the grazed plants. The slow regrowth is aggravated by the fact that horses ingest much more forage per unit of body mass than any other large grazing animal in North America, with horses consuming 63% more forage per month compared with cattle (Menard et al., 2002). Horses also are dominant among hoofed animals during social encounters, mostly at watering holes. Although antagonistic behaviors may be observed, the mere presence of the horse alone is enough to influence the distribution of the wild animals native to the area and how these animals use their habitat (McDonnell and Haviland, 1995; Wildlife Society, 2011).

Government Policies on Feral Horses and the Use of Federal Lands

From the ranchers' and governments' perspectives, the numbers of feral horses that came into contact with livestock in the mid-20th Century needed to be sharply reduced. To accomplish this, capture of the feral horse for slaughter became an obvious solution in the 1950s, and those not slaughtered were killed by poisoned watering holes (PBS, 2013). This provoked such public outrage that the WFRHBA was passed in 1971, which labeled the feral horse as a link to our national heritage that should be considered a part of federal public land. The act did not allot for, however, management of the feral horse in wildlife rescues or national parks. Nonetheless, these bands of feral horses gradually wandered onto these protected lands due to their natural ability to travel long distances (Abella, 2008). Today, feral horses remain on these restricted lands due to insufficient public support for population control, which is further limited financially by the high costs of control methods.

The WFRHBA identified the BLM and the USDA as the responsible parties for the management of feral horses and burros, and the goal of this management has been to ensure healthy and genetically viable populations for the future (PBS, 2013). The database called the Wild Horse Identification and Management System