

# **Wild horses do not carry maps: a GIS note on the Pryor Mountains Wild Horse Range**

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Wild Horse Herd Areas were designated in 1971 as federal lands where wild horses and/or burros were found during the initial flights in 1971. As additional surveys were done and data gathered, it was determined that some of these lands and animals were actually on private lands and/or were private animals. Areas with private animals that were claimed were not carried forward as Herd Areas. Herd Areas were carried forward in land use plans and determinations were made as to whether or not to manage animals on these federal lands. Federal lands identified in 1971 and managed for wild horses and burros are called Herd Management Areas, so they are contained within an originally designated Herd Area. In Herd Management Areas, specific laws and regulations for the management of wild horses and burros are applied. The Bureau of Land Management uses the term Herd Management Area; the Forest Service uses the term Wild Horse Territory. Management status can change based on changing conditions.

The Pryor Mountain Wild Horse Range (PMWHR) was created in 1968 by a U.S. Department of the Interior Secretarial Order. This order, together with the Wild and Free-Roaming Horse and Burro Act of 1971 and current BLM national policy for the Wild Horse and Burro Program states that the wild horses in the PMWHR should be managed as wild and free-roaming but without causing any impairment to the land's productivity. The PMWHR consists of the Pryor Mountain Wild Horse Territory and the Pryor Mountain Wild Horse Herd Management Area (which is part of the Pryor Mountain Wild Horse Herd Area) and is managed by three federal agencies, namely, Bureau of Land Management, National Park Service, and Forest Service (Fig. 1, Table 1). Within the BLM section, 19,504 acres comprise three interconnected Wilderness Study Areas (WSA's) that link the Custer-Gallatin National Forest (USFS) with the Bighorn Canyon National Recreation Area (NPS) by means of common federal borders (Table 2). 4,107 acres in the northeast of the PMWHR Herd Area and along its southwestern border are not included in the Herd Management Area, though they are connected to the entire ecological unit too through common boundaries (Fig. 1).

It has not yet been proven that wild horses can read maps, let alone understand federal boundaries. In a landscape without barriers that could effectively prevent horses from accessing places, the expected behavior of the animals is to travel across a home range in their pursuit of forage, water and environmental conditions that are suitable for a successful management of their stress. Because of its special ecological and administrative characteristics, the Pryor Mountain Wild Horse Range sets a case study that highlights the importance of assessing how WSA direction can be followed completely in Wild Horse and Burro Herd Management Areas which are spread out in lands with mixed federal authority, given the capacity of wild horses and burros to stress local resources under situations of ecological imbalance. Once mixed ownership and uses are mapped, tools can be implemented, for example, to facilitate (1) a Web GIS site hosting dynamic cartography that maps regulations and uses to help WHB managers access and assess jurisdictional direction in mixed-ownership lands, and/or (2) a mobile GIS application to assist federal personnel and engage the public in the geospatial and temporal reporting of horse and burro sightings. In short, we propose dynamic models of interaction between managers, communities and data to assist decision making in the management of the values that are protected by the Wild Horse and Burro Program.