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## Testimony on North Dakota Senate Bill 2331

Dear Legislators:

The following is the testimony of Erik Molvar on Senate Bill 2331, relating to the Theodore Roosevelt National Park working group regarding wild horses.

I am a wildlife biologist with peer-reviewed research published on the behavior, ecology, and population dynamics of Alaskan moose. I am also Executive Director of Western Watersheds Project, a nonprofit conservation group working to protect and restore wildlife and watersheds throughout the American West, an organization that has submitted comments on the management and disposition of wild horses in Theodore Roosevelt National Park (TRNP). Western Watersheds Project focuses on ecological land health, but also has developed organizational expertise on the viability of rare species, and has looked into the role of wild horses in Intermountain West ecosystems (which admittedly are somewhat different from the Great Plains ecosystems of Theodore Roosevelt National Park). Despite having perennial bunchgrasses less tolerant to heavy grazing than the sod-forming grasses of the Great Plains, we have found that wild horses have a lighter ecological impact, animal-for-animal, than domestic cattle and sheep.

Small and isolated populations of animals are at elevated risk of extirpation, both due to stochastic (i.e., random) events such as disease outbreaks or severe weather events, and due to long-term declines driven by the loss of genetic viability. Scientists have established, as a general rule, that a population must be kept above an effective number of breeding animals ( $N_e$ ) of 100 in order to avoid the steady loss of genetic diversity and the genetic problems (birth defects, inbreeding depression which reduces offspring survival) that accompany inbreeding.<sup>1</sup> The  $N_e$  calculation is made based on an equation that weights the total number of a population required to achieve an absolutely equal ratio of males and females actively participating in breeding in a given year, with the understanding that for some species (like wild horses or sage grouse, for example), a few males will do most of the breeding with many females, skewing the sex ratio of breeding animals. In such circumstances, the total population will need to be substantially larger than 100 in order to get the genetic equivalent of 50 males breeding equally with 50 females. For wild horses, I have used the correction factor derived in a study of wild horse breeding on the Pryor Mountain wild horse range in Montana<sup>2</sup> to determine that the total population of wild horses required to achieve a genetically viable population with  $N_e = 100$  is 278 total animals. The present population of wild horses in

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<sup>1</sup> Frankham et al., 2014. Genetics in conservation management: Revised recommendations for the 50/500 rules, Red List criteria and population viability analyses. *Biol. Conserv.* 170: 56-63.

<sup>2</sup> Singer et al., 2000. A demographic analysis, group dynamics, and genetic effective number in the Pryor wild horse population, 1992-1997. Pp. 73-89 in *Ecological Studies of the Pryor Mountain Wild Horse Range, 1992-1997*. Fort Collins, CO: US Geological Survey.

TRNP at present is substantially smaller than this critical threshold, and the population is isolated from other wild horse herds.

Wild horses in TRNP, like wild horse herds on western lands managed by the Bureau of Land Management and U.S. Forest Service farther west, have been subjected to fairly heavy-handed and intensive management by federal agencies. I am aware that the use of chemical birth controls is occurring in TRNP, in particular the chemical operating under the trade name GonaCon, which is designed to induce long-term (or even permanent) sterility in the interest of reducing herbivore population numbers. The effect of subtracting breeding adults permanently from the population is to lose their genetic contribution to future generations of the population, resulting in a long-term reduction in genetic diversity and a trend toward inbreeding. For this reason, the use of GonaCon is disfavored for use as a wild horse birth control method, especially so in small and isolated populations like the one inhabiting TRNP. Where birth control through darting is desired, the use of porcine zona pellucida (PZP) is more widely accepted, as it results in only temporary loss of breeding ability of 18 to 24 months, a reversible outcome that allows darted females to resume breeding, and contributing their genetic complement to the gene pool, once the drug wears off.


Because the TRNP wild horse population is significantly smaller than 278 individuals, it is particularly vulnerable to adverse genetic consequences of subtracting individual animals permanently from the breeding population.

The National Park Service is an agency with limited experience and capability in actively managing wild species, in significant measure due to the fact that they typically allow natural regulation of the wildlife inhabiting their park system. This is a good thing, in the overwhelming majority of situations. But it does not place the agency in the most advantageous position in actively managing a wild horse population, as they are presently attempting to do. Having more voices in the discussion to help inform NPS in its decision-making process could, in this instance, be beneficial.

It may also be true that TRNP might benefit from an expansion in acreage if it is determined that 278 wild horses require a larger land and forage base to thrive while also meeting the NPS legal requirements that direct the agency to manage for healthy, natural ecosystems. If this is the case, land swaps and other measures to expand Park boundaries would benefit not just wild horses, but bison and other species as well, and I hope that the legislature would also be supportive of such solutions.

Thank you for the opportunity to share my perspectives, and I wish you the best in your deliberations.

Respectfully yours,

  
Erik Molvar