

To Whom It May Concern:

July 16, 2009

I am writing in regard to the recent decision to lower the AML for horses on the Pryor Mountain Wild Horse Range to 95 individuals. I have been involved with work involved with genetic variability of the PMWH for many years. The most important single factor in maintaining genetic variation in a managed population is effective population size. This topic has been discussed for the PMWH many times. The minimum effective population size for maintenance of genetic variation in endangered species or managed populations is 50 but it must be understood that this number is what is required to keep the rate of loss of genetic variation at 1% per generation. Note, there is loss. Also, the key word is minimum and 50 is an absolute minimum. As has been stressed several times, the effective population size is generally $1/4^{\text{th}}$ to $1/3^{\text{rd}}$ of the census population so that a census population size of 150 to 200 is required to achieve the minimum effective population size. It is not possible to accurately determine the real effective population size of a wild population such as the PMWH so estimates such as those above must be used. It also is important to understand that within a closed population, genetic diversity does not increase without the input of new genetics from an outside source. What this means is that if the size of a population is lowered and genetic variation is lost, which is inevitable, then enlarging the population size does not increase the genetic variation, it only slows the rate of loss of existing variation. There is much else that could be discussed about this complicated subject but the above issues are the most significant. I want to emphasize that I fully understand that range conditions must be seriously taken into account in the management of the PMWH and population size clearly impacts range conditions. Loss of population size can occur by environmental conditions as well as by human interventions. My purpose here is to make sure that it is understood what the potential consequences of a reduction in population size are in terms of genetic diversity. Although genetic diversity in the PMWH has been relatively high, significant loss of genetic diversity can occur within a period of one or two generations within a small population. The PMWH has been one of the most important and visible herds within the BLM Wild Horse Program and it is important that it stays viable. I would be more than happy to discuss these issues further.

Sincerely,



E. Gus Cothran, Ph.D.



Texas Veterinary Medical Center
TAMU 4458
College Station, TX 77843-4458

Tel. 979.845.2828 Fax. 979.847.8981
www.cvm.tamu.edu