



WEST NILE VIRUS: REVIEW AND IMPACTS IN THE THUNDER BASIN NATIONAL GRASSLAND REGION OF WYOMING

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INTRODUCTION

West Nile virus (WNV) first appeared in North America in the New York City area in 1999. Since 1999, WNV spread rapidly across the country, reaching Wyoming in the summer of 2002. In 2003, WNV became a significant disease in many parts of Wyoming, affecting over 390 humans, 230 horses, and 200 birds. Counties in Wyoming hit hardest by WNV include several located within the Thunder Basin National Grassland (TBNG) region—most notably Campbell and Converse counties, with 66 and 19 human cases, and 16 and 18 equine cases, respectively. Fewer wild birds were submitted from counties within the TBNG region than many other parts of the state; however, birds of several orders and families were diagnosed WNV-positive from the region, including Canada geese (*Branta canadensis*), greater sage grouse (*Centrocercus urophasianus*), mourning doves (*Zenaidura macroura*), ferruginous hawks (*Buteo regalis*), red-tailed hawks (*Buteo jamaicensis*), and golden eagles (*Aquila chrysaetos*).

Greater sage grouse demonstrate the potential impacts that WNV might have on wildlife within the TBNG region. This is a declining species native to sagebrush habitats of western North America, including the TBNG. Historically widespread, the species has disappeared from much of its original range. Loss and degradation of suitable nesting and brood-rearing habitat from human change is

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thought to be the single most important factor leading to fragmentation, reduction, and extirpation of populations. These changes, occurring within the TBNG region to some degree also increase the risks to sage grouse populations from other factors, including diseases like WNV.

In the summer of 2003, WNV was diagnosed as the cause of mortality for 24 sage grouse from Wyoming and Montana at the Wyoming State Veterinary Laboratory, including two sage grouse from within the TBNG region. In one marked population of sage grouse just outside the TBNG, 13/15 (86.7%) hens were lost to WNV infection in a two-week period at the end of July and the beginning of August. Serological surveys performed on 111 birds from several marked populations of sage grouse near the TBNG and on hunter-killed birds from a variety of areas in Wyoming that experienced WNV mortality

demonstrate that no birds (0/111) had serum-neutralizing antibodies against WNV. These findings are not conclusive, but the data suggest that few (if any) sage grouse survived WNV infection in the summer of 2003.

More systematic and thorough surveillance for WNV infections in wildlife within the TBNG will be required to determine if this emerging disease will have significant effects at the population level. Increasing such wildlife surveillance, developing arthropod vector surveillance, and maintaining surveillance in human and domestic animal populations is planned for 2004, and beyond, and will require significant contributions from a diverse array of federal, state, and local governmental agencies, private industries, landowners, and other stakeholders in the general public.

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