

West Nile Virus

There are two reasons for looking at county-based statistics for West Nile virus — both are related to concerns voiced by Garfield County residents. First, in public meetings, focus groups, and interviews, citizens have expressed the concern that birds appeared to be fewer in number in certain areas of Garfield County than remembered. Birds are the reservoir host for West Nile virus. They may become ill and die as a result of the viral infection.

Second, many of the symptoms associated with human West Nile virus infection mimic those reported by Garfield County residents and attributed to exposures related to natural gas industry activities.

West Nile virus was first observed in Colorado in 2002. It was not until 2003, however, before the virus had a significant Western Slope presence. The coincidence of the presence of this virus and the beginnings of the surge in natural gas industry activities on the Western Slope make it important to consider the possibility that West Nile virus infection could be the cause of some of the human physical symptoms and animal impacts that have been reported by Garfield County residents. At this point, it would be extremely difficult to either rule out West Nile virus as the cause of at least some of these impacts or to prove conclusively that it was the virus and not exposure to volatile organic compounds or other toxicants present in the environment as a result of natural gas activity.

Natural History of West Nile Virus (www.cdphe.state.co.us/dc/Zoonosis/zoonosis.asp)

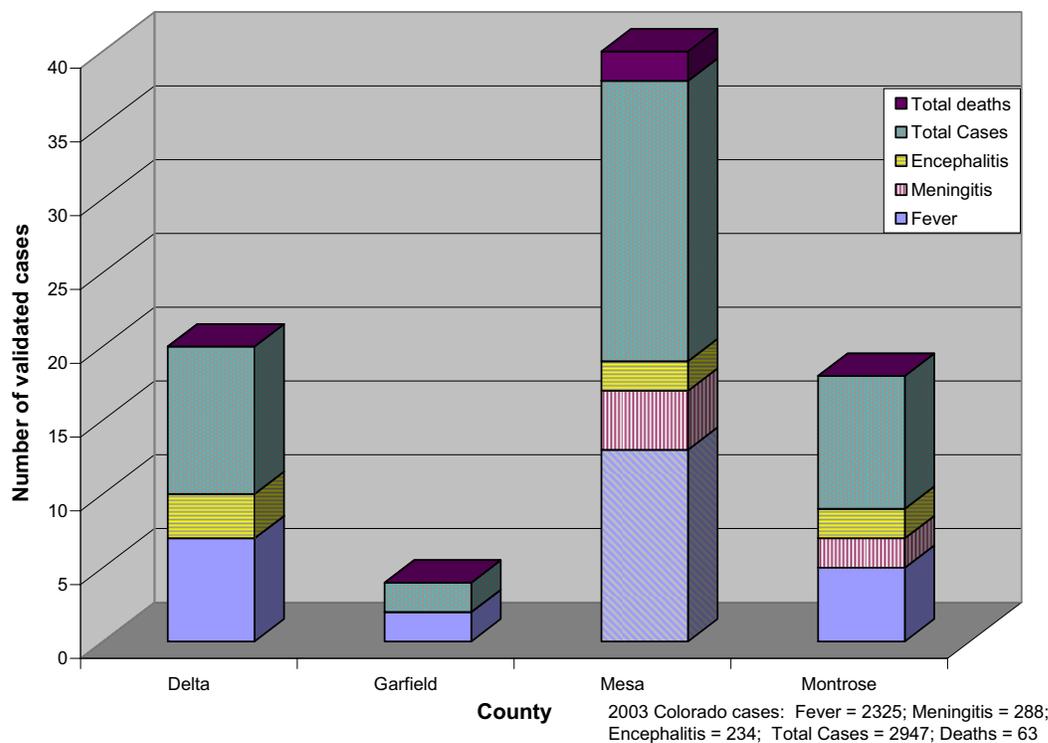
West Nile virus is maintained in a bird-mosquito-bird cycle. Mosquitoes are infected by feeding on an infected bird; virus is then transmitted to a new host when the mosquito bites a person or other animal. Humans and horses are the most frequent, “dead-end” hosts (i.e, they cannot infect other mosquitoes). Viruses are prevalent from May to September, when mosquitoes are most abundant.

West Nile virus infection has been detected in more than 70 wild bird species. The highest death rates are seen among birds in the corvid family. Horses are susceptible to infection with West Nile virus and can die as a result of the infection. Other clinical signs include lack of coordination or muscle control, weakness of limbs, and inability to rise. Other mammalian species may be susceptible to infection with this virus (e.g., there have been reports of infection in dogs).

Most people who are infected with West Nile virus do not become ill and have no symptoms. For those who do become ill, the onset of symptoms occurs 5-15 days after being bitten by an infected mosquito. The clinical symptoms of West Nile virus infection range from a flu-like syndrome (West Nile fever) to meningitis and encephalitis. The symptoms of West Nile fever have been reported to last significantly longer than the usual flu. Individuals who have developed West Nile fever report “not feeling well” for many months after the onset of the illness. In some cases, infection with the virus results in inflammation of the brain, resulting in either meningitis or encephalitis. In these cases, symptoms begin with a high fever and headache that may progress to stiff neck, disorientation, tremors, coma and death. Severe infections have resulted in long-lasting neurological syndromes that resemble polio.

The following graphs and maps illustrate the time trends for West Nile Virus in Colorado from 2002 through 2007 (Colorado Department of Public Health and Environment). Information is provided for both human and animal infections. It is important to note that the numbers for human cases represent only those that were clinically validated (either by blood tests or by the fact that the individual was hospitalized as a result of their infection). Because of the tendency of individuals suffering “flu-like” symptoms NOT to be tested for West Nile virus (due to cost or unavailability of the test) and to either be treated by their doctors or to treat themselves symptomatically, it is very likely that the actual numbers of individuals who developed West Nile Fever were much higher than those listed in the official records (CDPHE; www.cdphe.state.co.us) and reported here.

Figure 50. West Nile Virus Infections – 2003



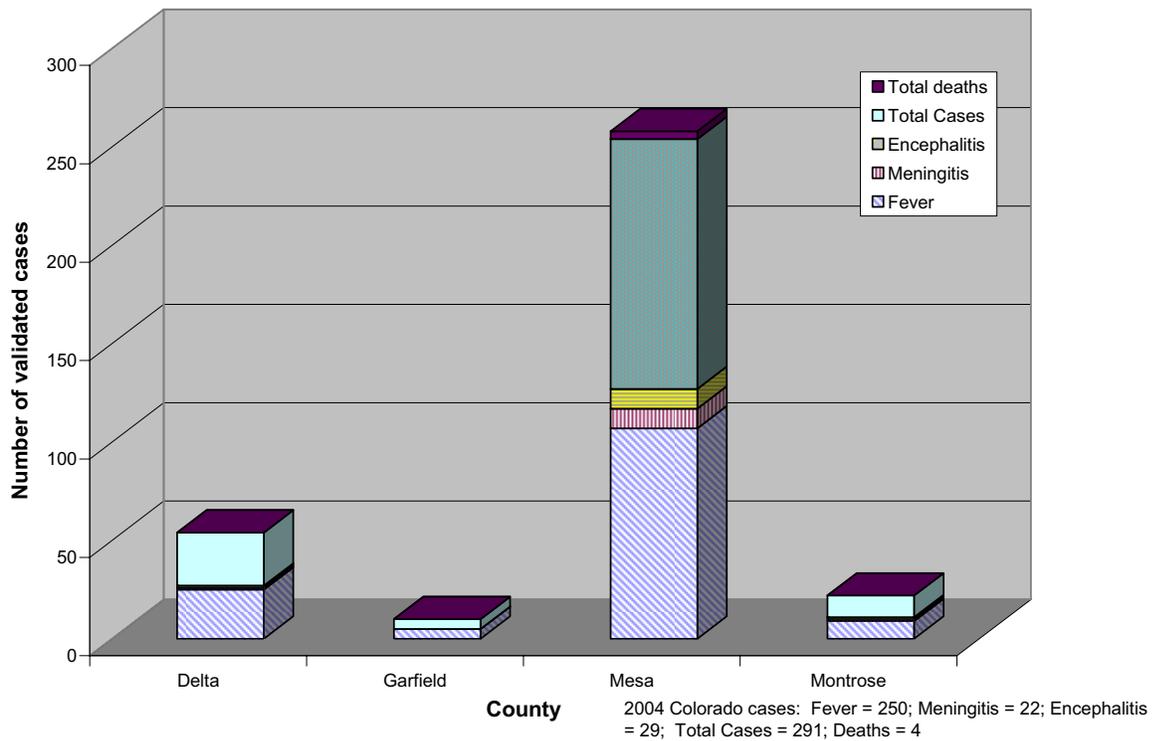


Figure 51. West Nile Virus Infections – 2004

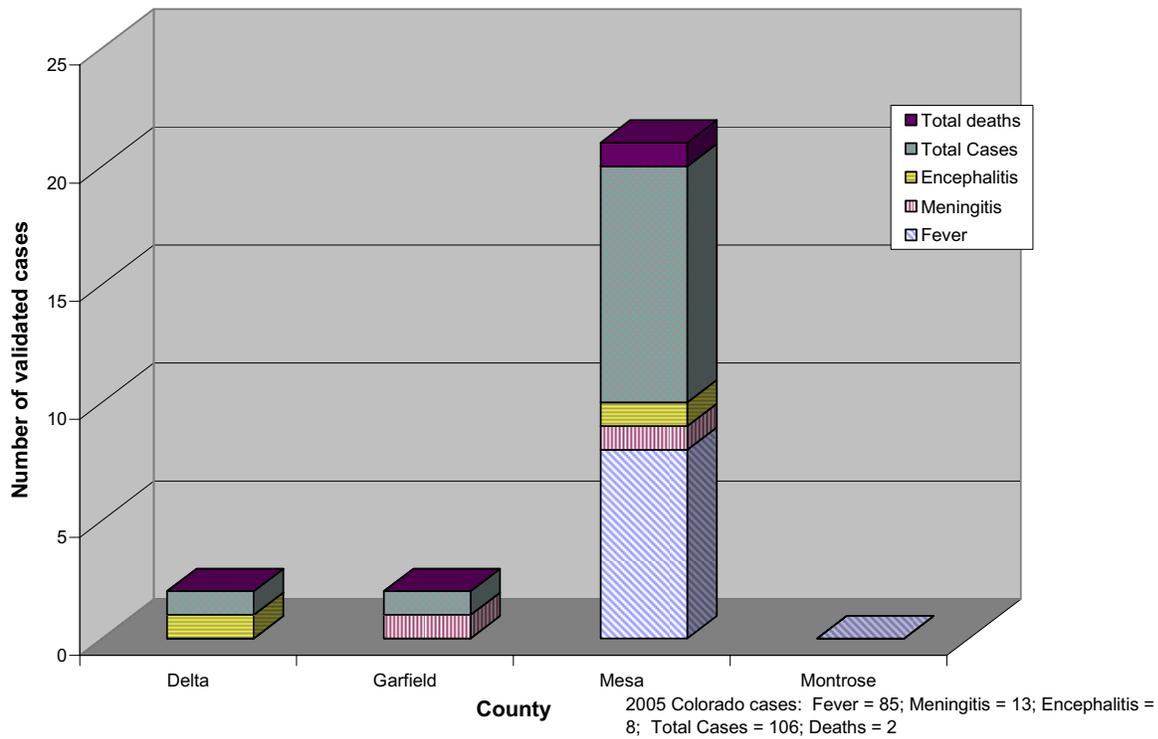


Figure 52. West Nile Virus Infections – 2005

Figure 53. West Nile Virus Infections – 2006

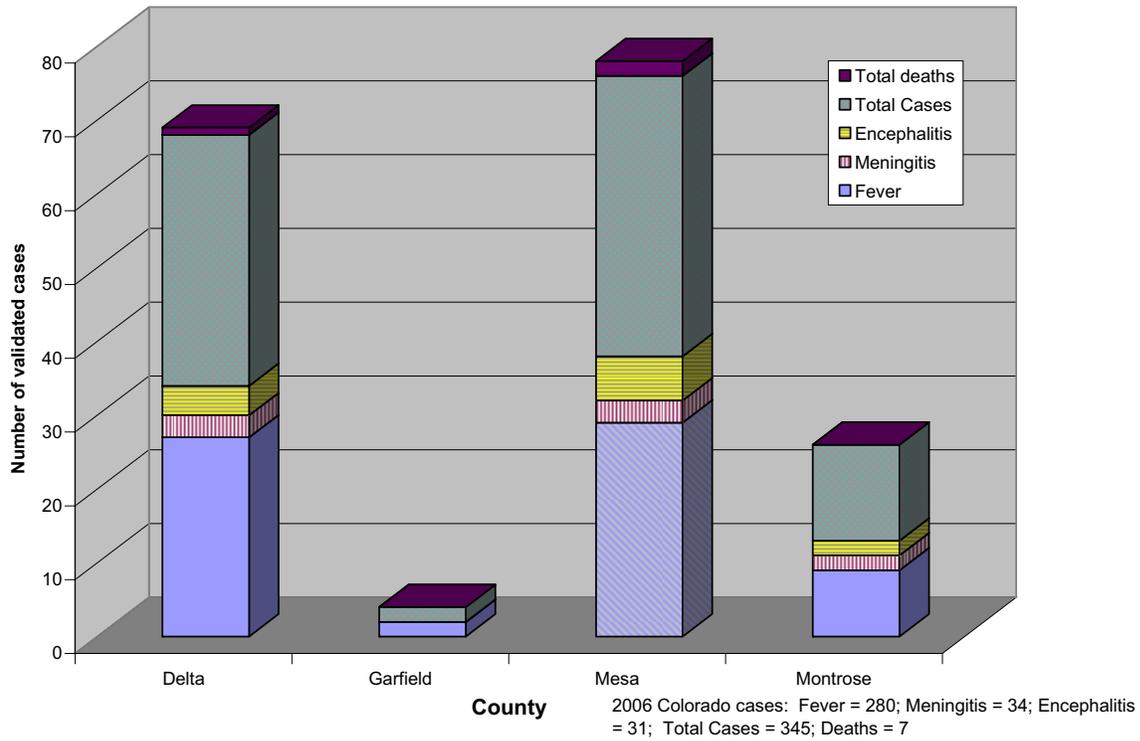


Figure 54. West Nile Virus Infections – 2007

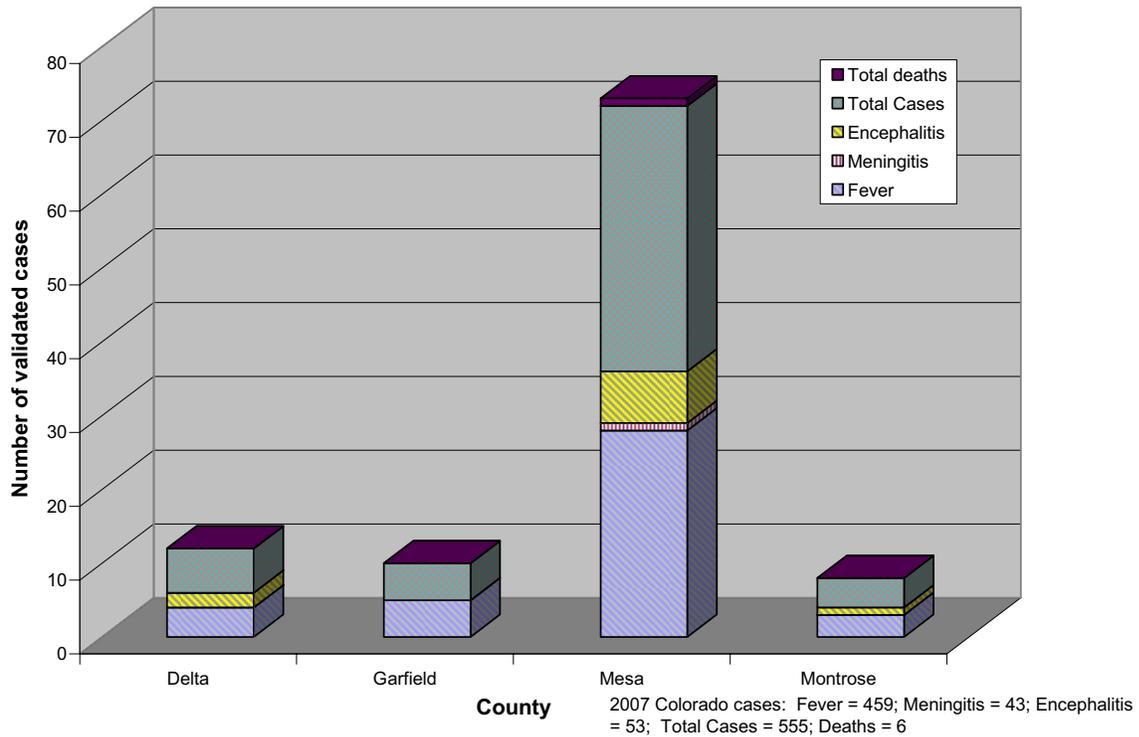
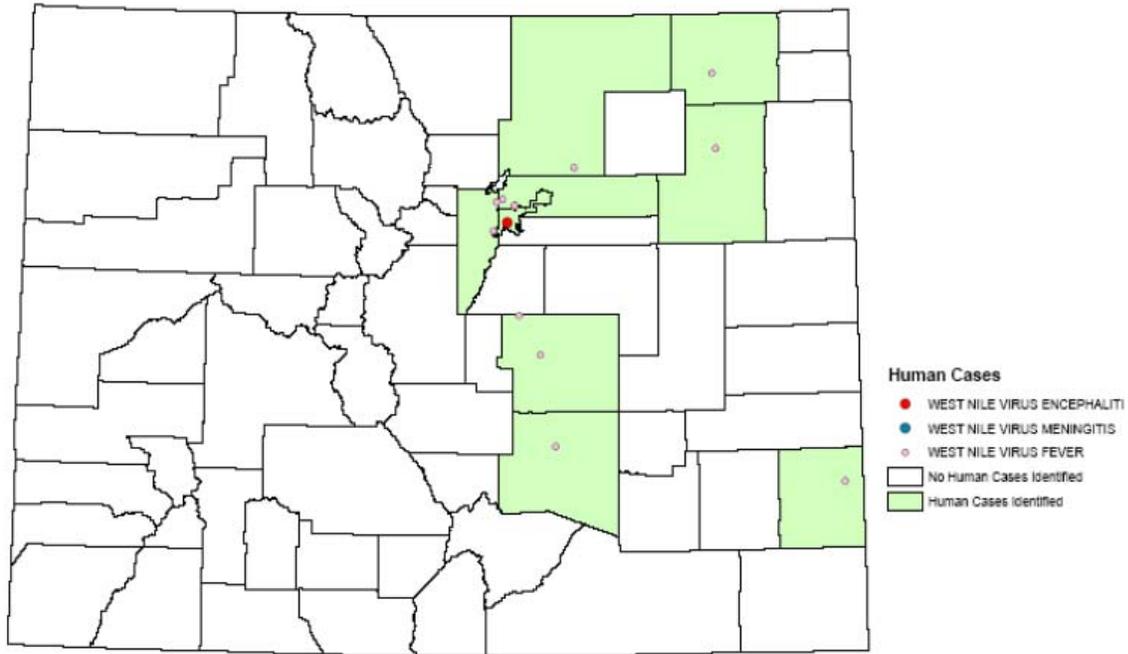
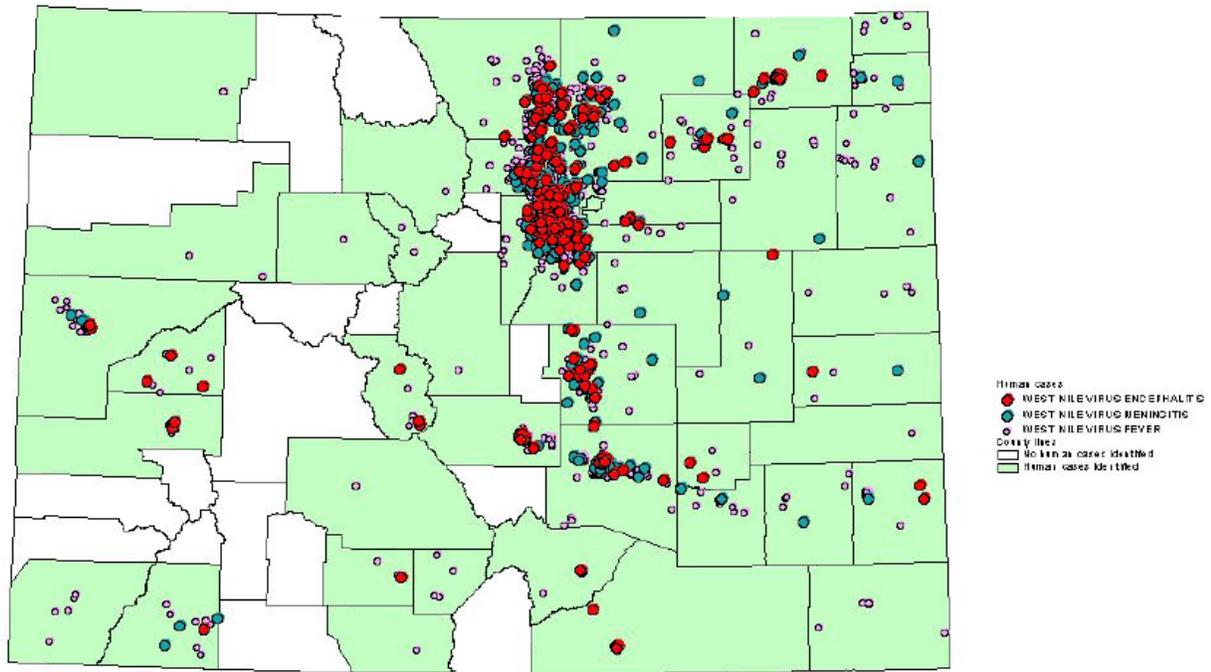


Figure 55. Colorado West Nile Virus Human Cases – 2002



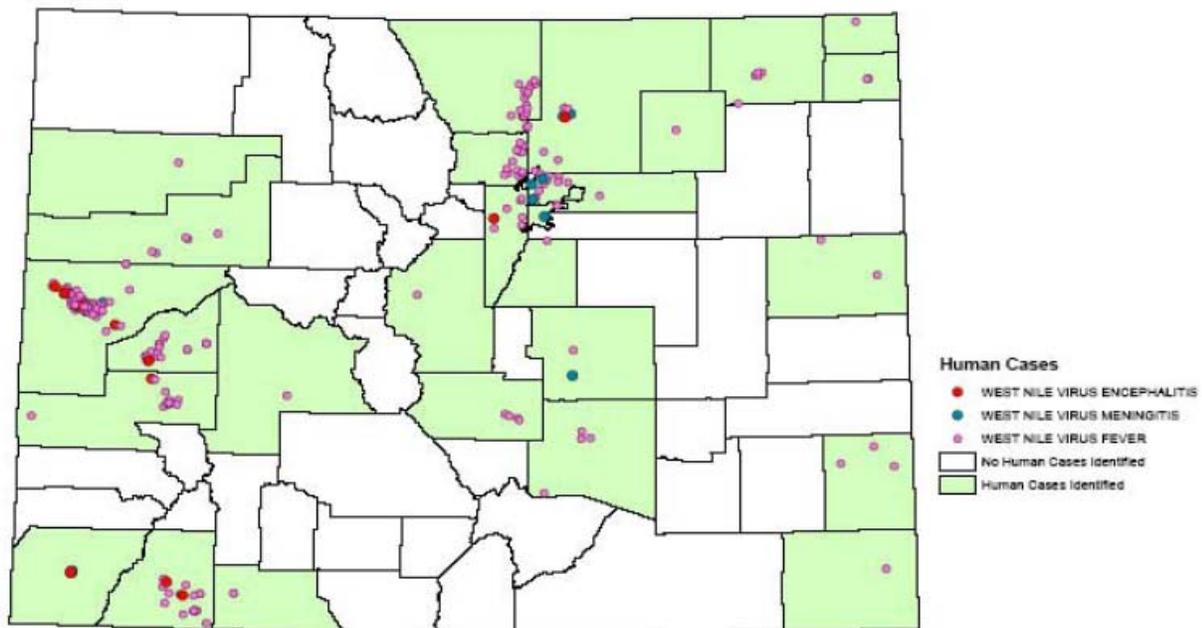
N = 14



N = 2,944

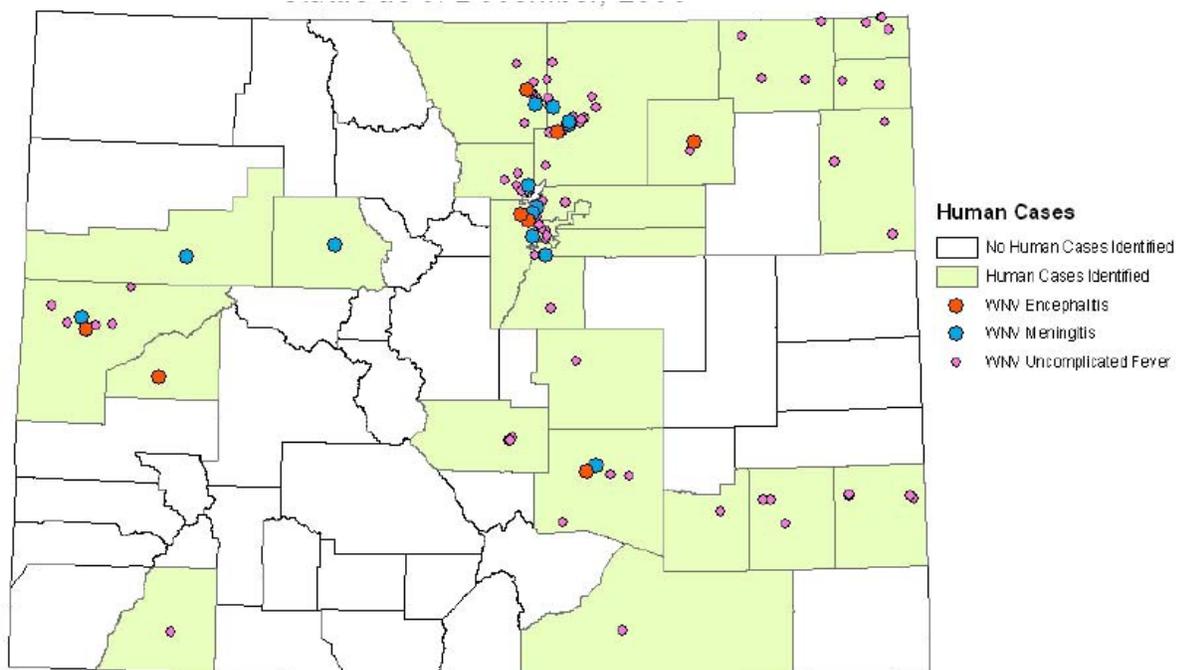
Figure 56. Colorado West Nile Virus Human Cases – 2003

Figure 57. Colorado West Nile Virus Human Cases – 2004



N = 289

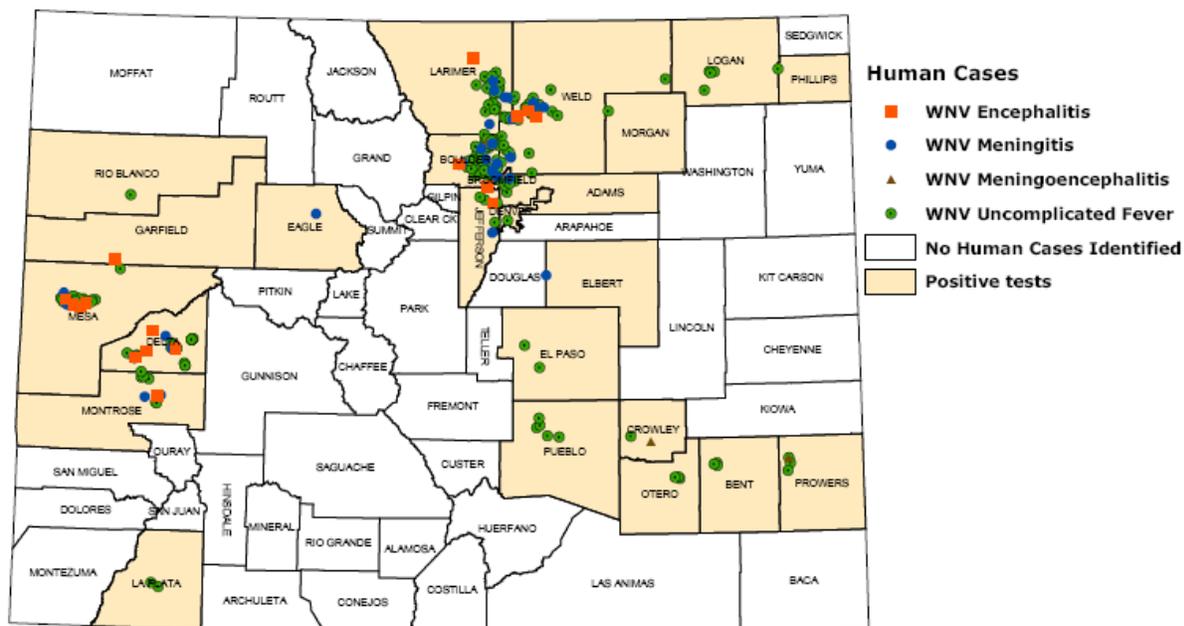
Figure 58. Colorado West Nile Virus Human Cases – 2005



N=106

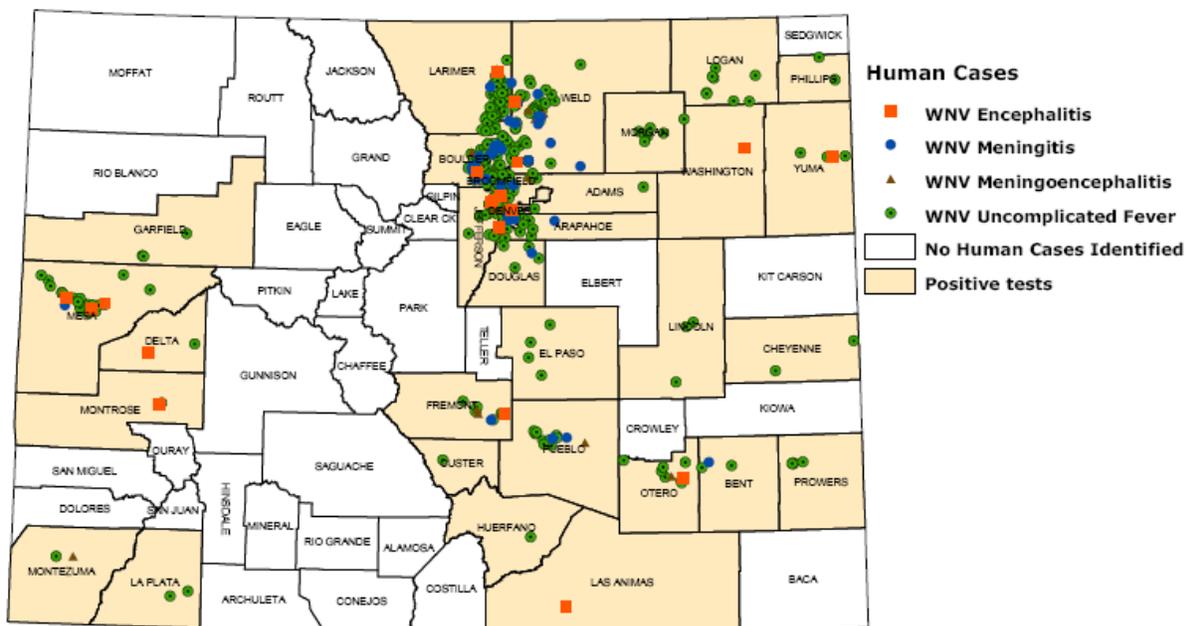
NOTE: Points have been displaced from actual location to protect confidentiality.

Figure 59. Colorado West Nile Virus Human Cases – 2006



Note: Points have been displaced from actual locations to protect confidentiality.

Figure 60. Colorado West Nile Virus Human Cases – 2007



Note: Points have been displaced from actual locations to protect confidentiality.

Figure 61. Colorado West Nile Virus Surveillance Map – 2002

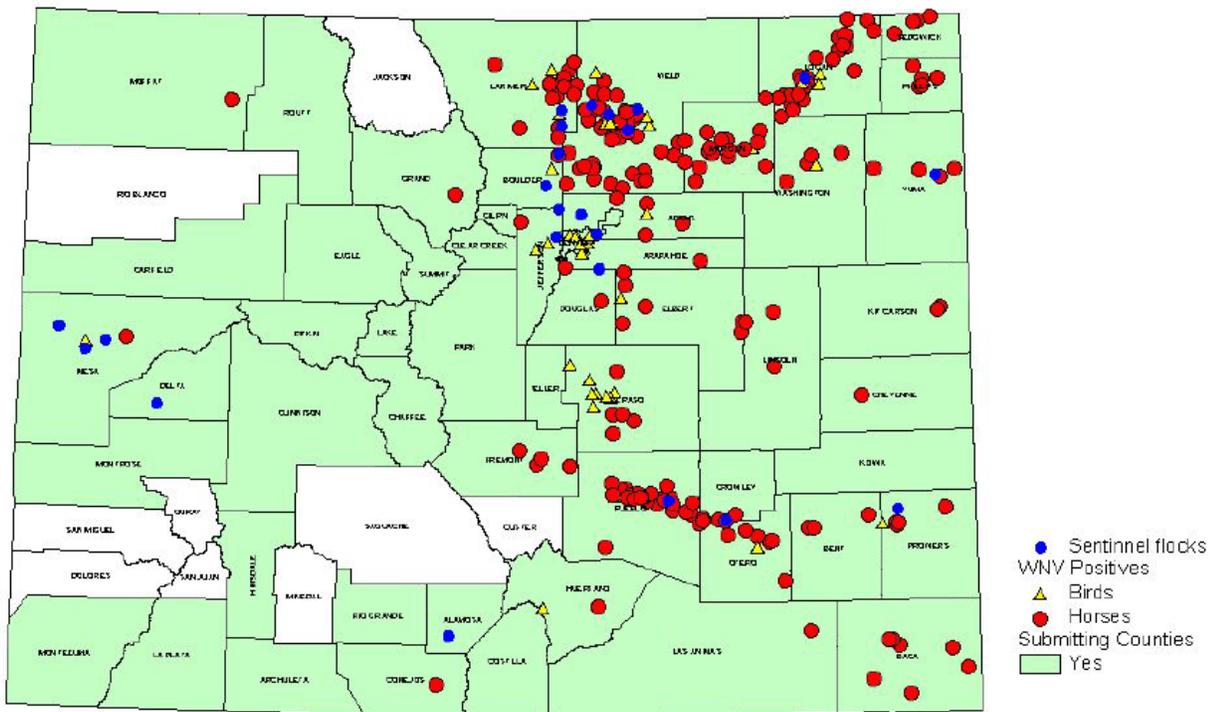


Figure 62. Colorado West Nile Virus Surveillance Map – 2003

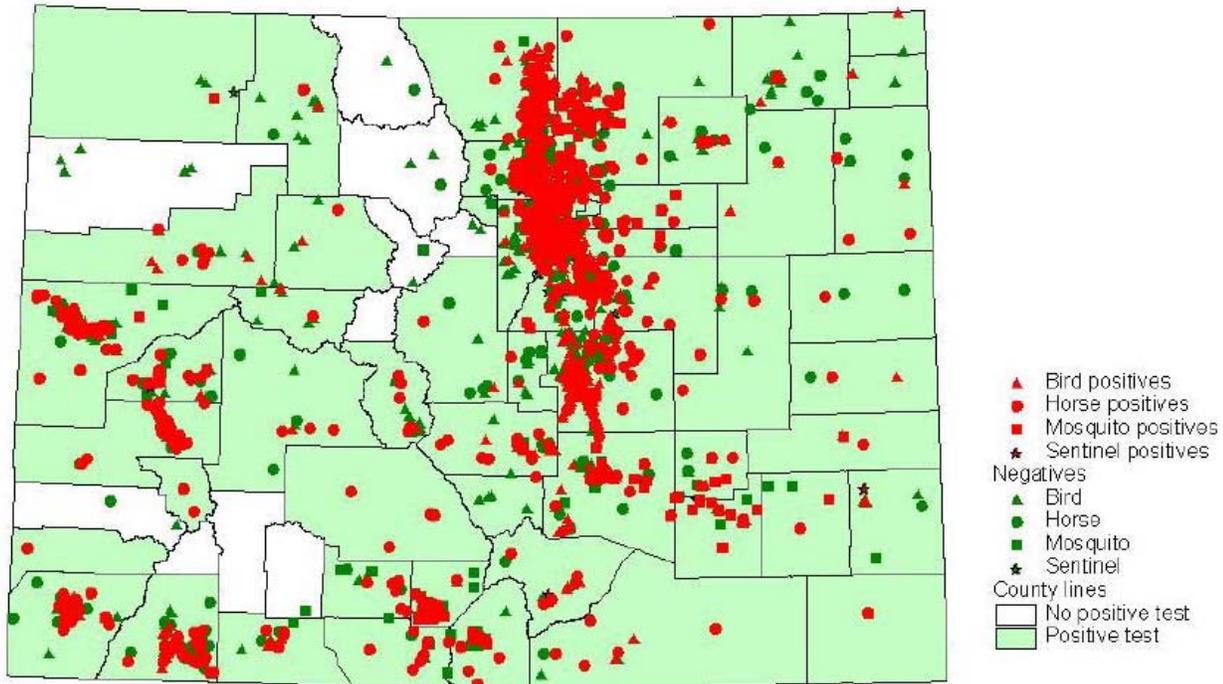
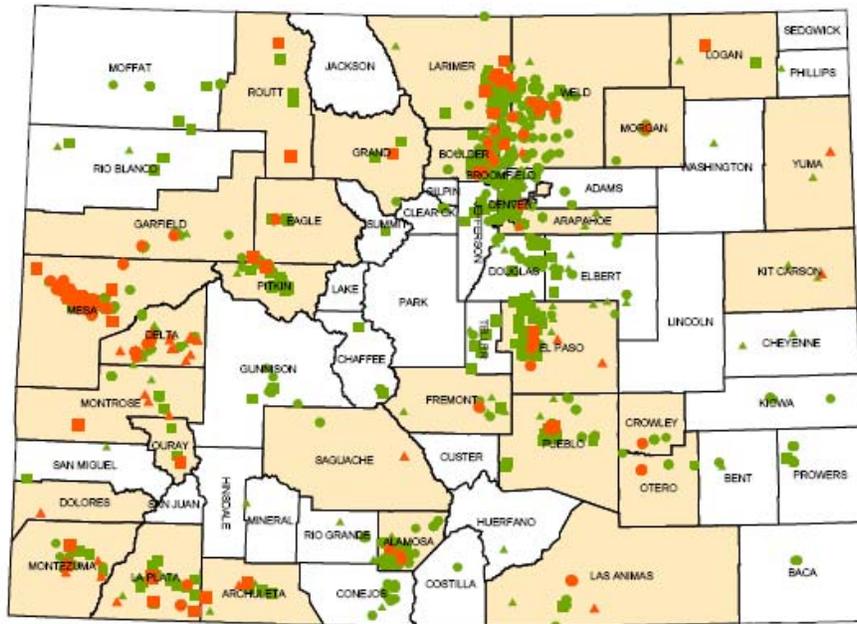


Figure 63. Colorado West Nile Virus Surveillance Map – 2004



2004 Colorado West Nile Virus

November 22, 2004 Animal Surveillance

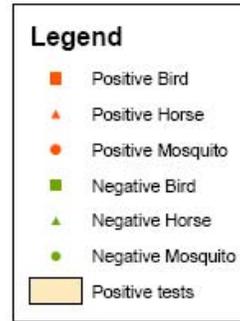
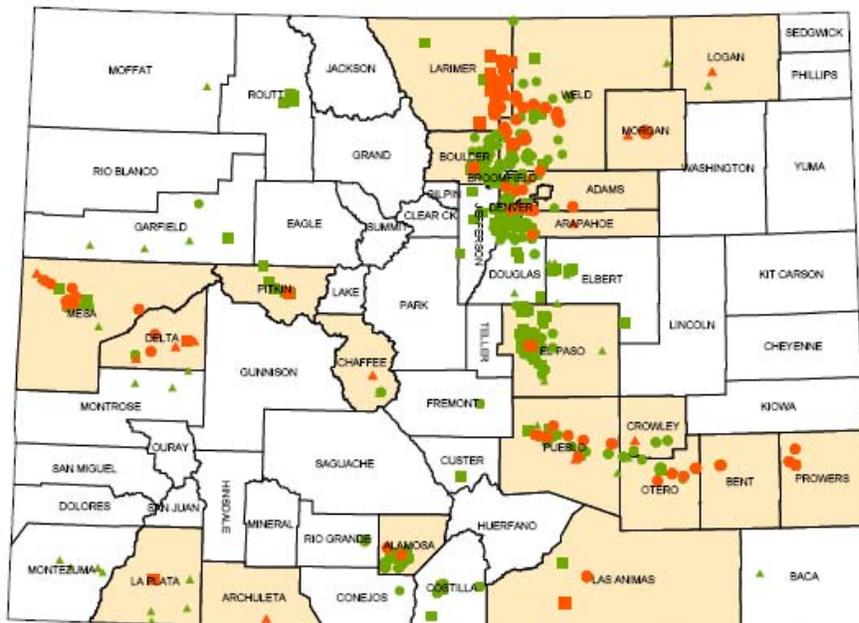


Figure 64. Colorado West Nile Virus Surveillance Map – 2005



2005 Colorado West Nile Virus

October 7, 2005 Animal Surveillance

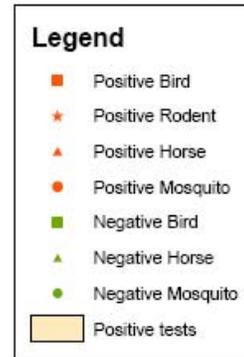
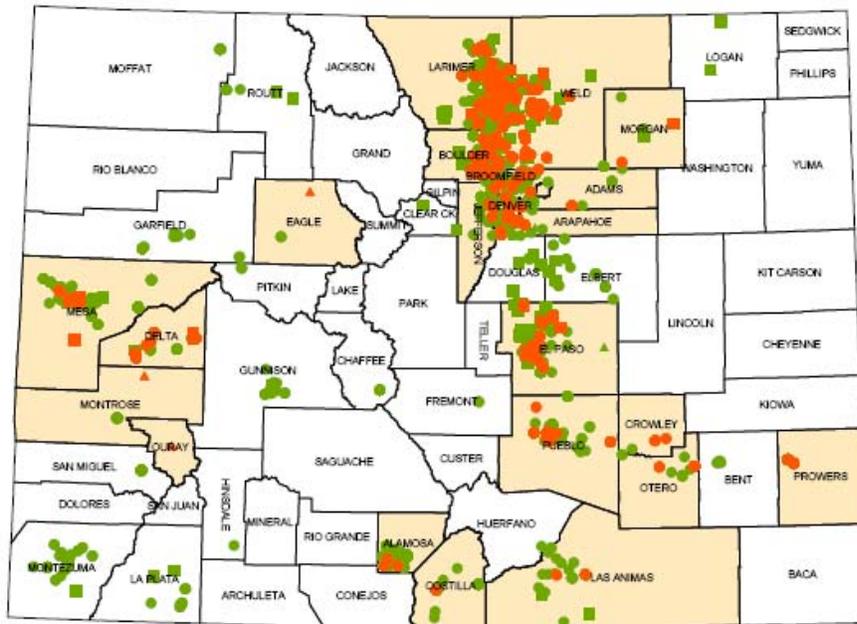
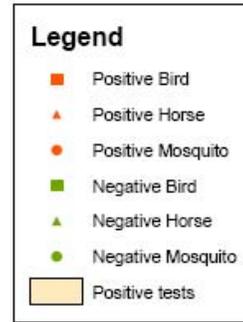


Figure 65. Colorado West Nile Virus Surveillance Map – 2006

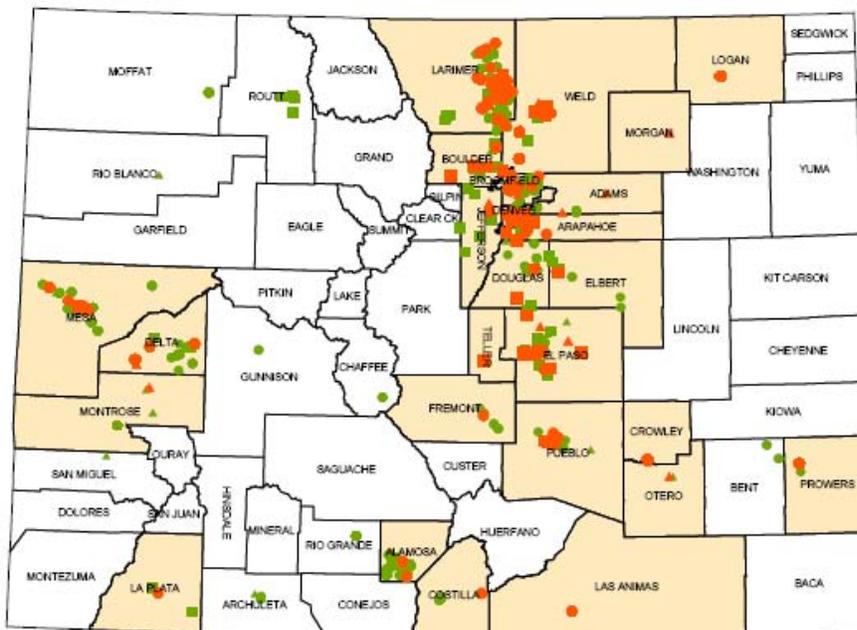


2006 Colorado
West Nile Virus
October 10, 2006
Animal Surveillance



Colorado Department
of Public Health
and Environment

Figure 66. Colorado West Nile Virus Surveillance Map – 2007



2007 Colorado
West Nile Virus
October 5, 2007
Animal Surveillance



Colorado Department
of Public Health
and Environment