

EEE in a Georgia Deer
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Eastern Equine Encephalitis (EEE) virus was isolated from the brain of a wild white-tailed deer from Houston County, Georgia, submitted to SCWDS on July 25, 2001. The yearling male deer was severely lethargic when it was found and died shortly thereafter. Encephalitis consistent with EEE lesions in horses was present. This marks the first time that fatal EEE has been diagnosed in a deer at SCWDS.

EEE viral activity has been documented in Georgia since early July 2001. Infections have been confirmed in one human and numerous domestic animals, including 21 horses, 1 dog, and 2 emus. Two of the infected horses were from Houston County. Additionally, EEE has been found in seven birds, primarily in the southern half of the state, during West Nile virus (WNV) surveillance conducted by SCWDS in collaboration with the Georgia Division of Public Health.

The EEE virus is a member of the *Togaviridae* family and is classified as an arbovirus because insects are involved in its epidemiology. The virus is maintained in temperate areas by wild bird reservoirs and mosquito vectors, especially *Culiseta melanura*, which prefers to feed on birds. The birds are amplifying hosts for the virus, but most infections are unapparent in native species. However, clinical disease and death may occur in exotic avian species including pheasants, chukar partridges, rock doves, house sparrows, and emus.

Although humans and horses are the principal mammalian victims, other species are susceptible to infection. Pigs develop asymptomatic infections, and calves are susceptible to intracerebral inoculation but recover in 2 weeks. Guinea pigs and white mice are quite susceptible, rabbits are less so, and sheep, dogs, and cats are refractory. Although significant mortality due to EEE has not been documented in wild mammals, exposure and infection do occur as evidenced by reports of EEE antibodies in Virginia opossums, cotton mice, cotton rats, and white-tailed deer. Additionally, EEE virus in a dead white-tailed deer with encephalitis and no other apparent cause is regarded as unusual.

Mammals, such as human and horses, become aberrant hosts when they are bitten by an infected mosquito. Temperature, humidity, abundance of vertebrate hosts, and abundance of the vectors are factors affecting the frequency of transmission of arboviruses to humans and other mammals. Mammals are regarded as "dead-end hosts" for the virus; an uninfected mosquito taking a blood meal from a mammal will not become infected because mammals do not produce enough viral particles to infect a mosquito and maintain the cycle.

Clinical signs of infection in horses may include central nervous system disorders after an incubation period of 1 to 3 weeks. Affected horses may lose awareness of their surroundings and walk in circles. In the later stages of the disease, muscle paralysis and stupor may occur. It has been estimated that mortality in horses that develop clinical disease may be as high as 90%.

Symptoms of EEE infections in humans range from mild flu-like illness to encephalitis, coma, and death. There is no human EEE vaccine, although a licensed product is available for horses. As with many viral infections, there is no effective therapeutic drug available once infection has occurred.

Prevention of EEE infection is best accomplished by avoidance of mosquito bites. (Prepared by Rick Gerhold)