

Epizootic Hemorrhagic Disease

National Park Service
U.S. Department of the Interior

Biological Resources Division
Wildlife Health Branch



Animals play essential roles in the environment and provide many important benefits to ecosystem health. One Health is this recognition that animal health, human health, and environmental health are all linked. Similar to people, wild and domestic animals can be victims of disease. The information presented here is intended to promote awareness and provide background for certain diseases that wildlife may get.

See the [Guidance for Park Visitors](#) section below for tips to safely enjoy your national park trip.

Disease Background & Health Implications:

- ❖ Epizootic hemorrhagic disease (EHD) is a native disease that causes significant morbidity and mortality among deer in North America.
- ❖ The disease is caused by EHD viruses.
- ❖ The virus is transmitted primarily by biting midges (small flies) of the genus *Culicoides*. The incubation period for disease to develop in deer is 5-10 days.

Species Affected:

- ❖ EHD causes disease in wild ruminants.
- ❖ White-tailed deer (*Odocoileus virginianus*) are the most commonly affected wild ruminant and often die as a result of infection.
- ❖ Mule deer (*Odocoileus hemionus*), pronghorn antelope (*Antilocapra americana*), and elk (*Cervus canadensis*) have been documented with clinical signs, although less frequently.
- ❖ Antibodies indicating exposure to disease have been detected in other wild ruminants (black-tailed deer, red deer, fallow deer, roe deer).

Clinical Signs:

- ❖ Common signs of initial infection include depression, fever, respiratory distress, and swelling of the head, neck, and tongue. Affected deer often remain near water sources.
- ❖ Following recovery from acute disease, deer with chronic disease can develop breaks and growth interruptions in the hooves progressing to complete sloughing of the hoof wall.
- ❖ Hoof lesions will present as lameness (can be seen in colder months after typical transmission periods have passed) that can cause severely affected individuals to attempt walking on the knees or chest.

Course of Disease:

- ❖ Animals may die rapidly in 8-36 hours and hemorrhage of the skin, heart, and gut is present along with bloody oral and nasal discharge.
- ❖ In other cases, disease can last longer and ulcerations develop on the gums, tongue, palate, and stomachs.
- ❖ A longer, chronic form of disease can also develop.

Epidemiology (Incidence of Disease):

- ❖ Disease is typically seen in late summer and early fall when biting midge (small fly) activity is at its peak. EHD infection is more prevalent following a wet season.
- ❖ Severity of disease depends primarily on geographic location, abundance of biting midges, the viral strain, presence of herd immunity, and deer density.
- ❖ In certain situations, up to 90% illness and death has been seen among white-tailed deer. There are large variations from year to year in disease rates.

Prevention:

- ❖ There are no vaccines or treatment available for EHD.

Public Health Implications:

- ❖ There is no evidence that EHD viruses can infect humans.

Guidance for Park Visitors:

The guidelines below can be followed to ensure you and your family safely enjoy the wonderful natural and cultural resources protected by the NPS.

- ❖ Notify a Park Service employee as soon as possible and avoid contact with the animal if you see any sick or dead wildlife.
 - Most wild animals in parks are healthy and thrive in their natural environment, but sometimes wildlife can get sick just like people.
 - Certain disease-causing organisms can be passed between wild animals and people. Therefore, always avoid touching or handling sick or dead wild animals.
 - Park Service employees trained in wildlife health use specific protective measures to safely deal with a wild animal that may have died of disease.