

EPIZOOTIC HEMORRHAGIC DISEASE IN BRITISH COLUMBIA WILDLIFE HEALTH FACT SHEET

Epizootic Hemorrhagic Disease (EHD) is an acute, infectious, often fatal viral disease of some wild ruminants. EHD is characterized by sudden death, especially in white tailed deer, with carcasses showing extensive hemorrhages of many organs. It is responsible for significant epizootics (disease outbreaks) of deer in the United States/southern Canada in the past and an outbreak has recently been reported in Montana. A similar hemorrhagic disease in wild ruminants, Bluetongue, is caused by a related virus. The two viruses are antigenically different, although there are similar clinical signs.

The first identification of EHD occurred in 1955 when several hundred white-tailed deer (*Odocoileus virginianus*) died in New Jersey and Michigan. It was considered a new disease of deer and named "epizootic hemorrhagic disease". Since the initial outbreaks of EHD, hemorrhagic disease has occurred in white-tailed deer in many US states, British Columbia and Alberta, Canada. Some areas of the US, especially the south-eastern states have regular, almost annual outbreaks of EHD. It is considered to be the most significant disease of white-tailed deer in the United States.

EHD occurs primarily in white-tailed deer, although occasionally mule deer (*O. hemionus*), bighorn sheep (*Ovis canadensis*), pronghorn antelope (*Antilocapra americana*) or exotic ruminants can be affected. EHD in free-ranging wildlife has only been reported in North America. In BC, it has been reported in free-ranging bighorn sheep and white-tailed deer in the Okanagan Valley.

All documented outbreaks of EHD have occurred during late summer and early fall (August-October) during hot, dry weather when animals congregate near water sources. Outbreaks cease abruptly with the onset of frost. The virus is transmitted via a *Culicoides* biting fly/midge (no-see-ums). *Culicoides variipennis* is the most commonly incriminated vector. *Culicoides* is very sensitive to cold temperatures and is not known to over-winter in Canada. It is believed that seasonal wind patterns move insects northwards from endemic areas in the USA into the Okanagan Valley.

The clinical signs of EHD and Bluetongue are similar. White-tailed deer develop sudden signs of illness 7 days after exposure. They initially lose their appetite and fear of humans, grow weaker, often salivate excessively, develop a rapid pulse and respiration rate, and finally become unconscious. Hemorrhage and lack of oxygen in the blood result in a blue appearance of the oral mucosa, hence the name "bluetongue". Between 8 and 36 hours following the onset of signs, animals usually go into shock, collapse and die.

Signs in other species can be variable, ranging from none to sudden death. Sick and dead animals are often found near water. Other signs include:

- swelling of the head, face, tongue, neck and conjunctiva of the eyes
- fever, lack of appetite, weakness and incoordination
- excessive salivation, often blood-tinged
- nasal discharge, often blood-tinged
- bloody diarrhea
- lameness
- extensive hemorrhages in many tissues including the skin, gastrointestinal tract, heart, testicles
- ulcers or sores in the tissues of the mouth, tongue and stomachs
- difficulty breathing, recumbency (lying down)
- overgrown/cracked hooves in recovered animals

The post mortem and microscopic lesions of EHD are usually extensive hemorrhages ranging from pin-point to massive in size, and involving many tissues, especially the heart, liver, spleen, kidney, lung, and intestinal tract. The hemorrhage is caused by interference with blood-clotting together with damage to blood vessel walls.

The diagnosis of EHD can be from the pattern of high mortality but requires the examination of intact, fresh carcasses. This is difficult in hot weather, but lab tests can verify if EHD virus is present in certain tissues. The following should be REFRIGERATED NOT FROZEN for analysis:

- blood collected with anti-coagulant,
- spleen (best)
- lymph node, lung or bone marrow

Because of its very high mortality rate, EHD can have a significant effect on white-tailed deer populations, reducing numbers drastically. The EHD virus can infect domestic animals but rarely causes disease. EHD does not infect humans and the virus cannot be spread from carcasses to live deer. In handling deer, normal precautions should be taken; wear gloves and wash well after handling but while there is little risk to humans from the virus, it is never advisable to use meat from sick animals for consumption by humans or pets.