



**National Wildlife Health Center
Wildlife Health Bulletin 2012-05**

Hemorrhagic Disease in Wild Ruminants

To: Natural Resource/Conservation Managers
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This Bulletin provides a current update on hemorrhagic disease (HD) in wild ruminants. HD is a viral disease caused by either epizootic hemorrhagic disease virus (EHDV) or bluetongue virus (BTV); these Orbiviruses are related, but are genetically distinct. They are spread by biting midges in the genus *Culicoides*, resulting in seasonal occurrence of the disease. The North American species most affected is the white-tailed deer, but mortality can occur in mule deer, black-tailed deer, elk, bighorn sheep, and pronghorn antelope. The viruses do not infect humans, but may cause disease of varying severity in sheep and cattle.

Wildlife managers should suspect HD in instances of unexplained deer mortality in late summer and early fall. Deer with HD may be found near water as they seek relief from dehydration and fever. They may appear disoriented with no fear of humans. Deer with clinical HD display variable signs and lesions based on the duration of infection. Three forms of HD have been described: **Peracutely** affected deer may have high fever, lethargy, and edema (watery swelling) of the head, tongue, eyelids, lungs, and chest cavity. In addition to the lesions found in peracute cases, deer with **acute** HD may have erosions or ulcerations of the dental pad and oral mucosa, as well as hemorrhages or congestion of the heart, pulmonary artery, rumen, intestines, and other tissues. The **chronic** form of HD is characterized by severe oral ulcerations and/or growth interruptions or sloughing of the hoof walls, which results in lameness.

Outbreaks in 2012 have the potential to be more severe because widespread drought and high temperatures cause lower water levels creating more muddy areas favored by the vectors. In addition, herd immunity to HD viruses may be low because five years has lapsed since the last large outbreak. The Southeastern Cooperative Wildlife Disease Study (SCWDS) at the University of Georgia has received HD reports from much of the United States this year and has confirmed deer mortality due to these virus serotypes: EHDV-1, EHDV-2, EHDV-6, or BTV-13 infection in 15 states. Like most years, EHDV-2 is the predominant virus, but EHDV-6 has been detected over a large area that includes Florida, Indiana, Iowa, Michigan, and Missouri. This is the first major outbreak of EHDV-6 since it was detected in the U.S. in 2006. More information on HD is available in the "Wildlife Disease Resources" section of the SCWDS website (<http://www.vet.uga.edu/scwds/index.php>), including the brochure *Hemorrhagic Disease of White-tailed Deer* and an HD article in the July 2012 issue of the newsletter, *SCWDS BRIEFS*.

Outbreaks of HD occur from late July to October or November when freezing temperatures halt *Culicoides* activity. Management actions to prevent or limit mortality do not exist, and long-term effects on white-tailed deer populations have not been well documented. For this reason, information on outbreaks is needed to fully understand HD and its potential impacts on wild deer populations. Please report suspected cases to your state wildlife management agency. Wildlife managers can facilitate testing to confirm the diagnosis which contributes to HD outbreak information that SCWDS compiles annually to track HD's national distribution, severity, and outbreak patterns. Likewise, with the detection of "exotic" orbiviruses in the U.S., it is important to identify the specific EHD and BT viruses associated with mortality. SCWDS can work with your state wildlife management agency to provide information and assistance with virus isolation and identification if needed.

To report or request assistance for wildlife mortality events or health issues please visit NWHC at http://www.nwhc.usgs.gov/mortality_events/reporting.jsp or contact Dr. Anne Ballmann, 608-270-2445,

aballmann@usgs.gov; Dr. LeAnn White, 608-270-2491, clwhite@usgs.gov; Barb Bodenstein, 608-270-2447, bbodenstein@usgs.gov; Dr. Thierry Work, 808-792-9520, thierry_work@usgs.gov (Hawaii and Pacific Islands); or Jennifer Bradsby, 608-270-2443, jbradsby@usgs.gov (single mortality events nationwide). SCWDS staff can be contacted at 706-542-1741.

Sources and references for more information about epizootic hemorrhagic disease in wild ruminants:

Davidson, William, R., 2006, White-tailed Deer (*Odocoileus virginianus*) in Field Manual of Wildlife Diseases in the Southeastern United States (3rd ed): Athens, GA, Southeastern Cooperative Wildlife Disease Study, p. 26-99.

Savini, G., Afonso, A., Mellor, P., et al, 2011, Epizootic haemorrhagic disease: Research in Veterinary Science 91(1): p. 1-17.

Hemorrhagic Disease of White-tailed Deer [Brochure]. (n.d.) Athens, GA: Southeastern Cooperative Wildlife Disease Study. <http://www.vet.uga.edu/scwds/pdfs/HD.pdf>

Epizootic Haemorrhagic Disease [OIE Technical Disease Card]. (n.d.) OIE World Organization for Animal Health. http://www.oie.int/fileadmin/Home/eng/Animal_Health_in_the_World/docs/pdf/EPIZOOTIC_HEAMORRHAGIC_DISEASE_FINAL.pdf

Does Heat + Drought = HD? (July 2012). *SCWDS Briefs*, 28(2): p. 2. <http://www.vet.uga.edu/scwds/briefs/July-2012-SCWDS-Briefs.pdf>

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