

# If Foot-and-Mouth Disease Came to Florida: Potential Impact on White-tailed Deer in Florida<sup>1</sup>

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## Introduction to Foot-and-Mouth Disease

Foot-and-mouth disease (FMD) is a highly infectious viral disease that can severely affect all domestic and wild cloven-hoofed animals including cattle, swine, sheep, wild hogs, and deer. FMD does not readily infect humans. In affected animals, FMD causes blisters in the mouth and on the feet and teats, lameness, and excessive salivation. Young animals that are severely affected may die; however, chronic non-fatal cases are much more common.

Infected animals are the source of the FMD virus, but virus particles can be carried by the wind or virtually any animate or inanimate object. It is transmissible by direct contact with infected animals through saliva, feces, urine, milk, semen, meat, and meat by-products; by contact with animal forage or other objects an infected animal may have been in contact with; or by inhalation of aerosol produced by infected animals.

There is very little information on the impact of FMD on white-tailed deer. What is available comes from a laboratory study conducted by McVicar et al. (Proc. Ann. Mtg. U.S. Animal Health Assoc. 1974, p. 169-180) at the United States Department of Agriculture (USDA) Plum Island Animal Disease Center in New York. In this experiment, all 10 deer exposed to FMD either through intranasal inoculation

or by contact exposure contracted the disease. Fever, the initial sign of infection, generally was seen within three to four days, followed by lethargy, loss of appetite, nasal discharge, and the presence of lesions. Four of the 10 deer died, including one that was euthanized. All living deer tested positive for the virus five weeks after contact, and one remained positive at 11 weeks. This study also documented that FMD can be transmitted from deer to other deer, deer to cattle, and cattle to deer. Based on this limited study, white-tailed deer should be considered susceptible to the disease and a potential source of FMD virus for other animals.



Figure 1. White-tailed deer buck. Photo by John White, copyright 2000. Credits: John White, copyrighted 2000

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## Preventing Transmission between Domestic and Wild Animals

On April 20, 2001, the International Association of Fish and Wildlife Agencies hosted a meeting to discuss wildlife issues regarding foot-and-mouth disease. At that meeting Dr. Alfonso Torres, Deputy Administrator for Veterinary Services, USDA Animal and Plant Health Inspection Services (APHIS), stated his belief that FMD most likely would be self-limiting in wildlife in the long term. He said that FMD should be successfully controlled through actions on domesticated livestock and that APHIS did not foresee a need to systematically depopulate wildlife to control FMD. In fact, during the FMD outbreak in Great Britain in 2001, no native wildlife were killed to control the disease.

It will, however, be critical to prevent transmission of FMD between domestic and wild animals if an outbreak occurs in the United States. If susceptible wildlife species potentially have been exposed to FMD, immediate surveillance would be warranted to determine whether the disease has spread to local wild animals. This would entail lethal collection of animals for diagnostic testing. The size of the surveillance zone would be based on local conditions, but a 2-mile radius from an infected site is a likely starting point with potential extension to a 6-mile radius. Local reduction of the density of susceptible wildlife populations in an infected zone would be employed to prevent the spread of FMD if wildlife were identified as a risk factor. Long-term observation in the area also would be warranted to ascertain that FMD has not become established in wildlife. Because humans can spread FMD virus via physical contact, additional wildlife-related prevention and control measures could include closure of hunting seasons and restriction of access to public lands in affected areas.

The wildlife-related control measures would require associated biosecurity, diagnosis, disposal, and enforcement activities. Persons involved in wildlife surveillance or population reduction would most likely be wildlife management, animal health, or emergency management agency personnel. All persons participating in any disease control activities would be trained and required to follow established protocols to prevent the inadvertent spread of the disease.

## Summary

If FMD were to get into the United States, it could be devastating to the livestock industry and populations of deer and other wild cloven-hoofed animals. The first priority is to keep the disease out of the country, and APHIS has

instituted new regulations and procedures to do that. If a FMD outbreak does occur, emergency response plans will be implemented by federal and state agencies. White-tailed deer are potential vectors of FMD, and their presence would be considered in determining a course of action. Although the effects of depopulation on local wildlife populations could be drastic, the short-term and localized impact of such actions would have to be weighed against the long-term and widespread consequences of spread of the disease.

## Further Reading

- Davidson, W.R., and V.F. Nettles. 1997. *Field Manual of Wildlife Diseases in the Southeastern United States*. 2nd Edition. Southeastern Cooperative Wildlife Disease Study, Univ. of Georgia, Athens. 417 pp.
- Forrester, D.J. 1992. *Parasites and Diseases of Wild Mammals in Florida*. Gainesville, FL: University Press of Florida. 459 pp.
- McVicar, J.W., P. Suttmoller, D.H. Ferris, and C.H. Campbell. 1974. Foot-and-Mouth Disease in White-Tailed Deer: Clinical signs and transmission in the laboratory. *Proceedings of the 78th Annual Mgt US Animal Health Association*. Pages:169-180.
- Rogero, J, Gatlin, J, and Wysocki, A. 2001. Foot-and-Mouth Disease: What Every Consumer Should Know. University of Florida Extension, Institute of Food and Agricultural Sciences, Gainesville. <http://ufdc.ufl.edu/IR00001232/00001> [24 October 2012].
- Thompson, G.R., R.G. Bengis, and C.C. Brown. 2001. Chapter 5 - Picornavirus infections. *In: Infectious Diseases of Wild Mammals*. 3rd Edition. E.S. Williams and I.K. Barker (eds), Iowa State University Press, Ames. pp. 119-130.