CWD Update

GENETIC STUDY CONCLUDES NEARLY ALL DEER PRONE TO CWD

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Dashing hopes that some whitetails may harbor genetic resistance to chronic wasting disease (CWD), a University of Wisconsin — Madison study suggests that virtually all deer are prone to the fatal disease.

The new study, which has been accepted for publication in the *Journal of Wildlife Disease*, underscores the seriousness of the disease, and the difficulty Wisconsin Department of Natural Resources (WIDNR) faces in attempting to eradicate it from the state's wild deer herd, said Dr. Judd Aiken, the study's senior author and professor of animal health and biomedical sciences at the University of Wisconsin — Madison's School of Veterinary Medicine. Coauthors of the study include Chad Johnson, Jody Johnson, Murray Clayton, and Debbie McKenzie.

CWD updates are available online at *www.cwd-info.org.*

"Most deer out there are susceptible to the disease," said Dr. Aiken, a leading authority on prion diseases. "These findings don't mean we're not going to be able to stop the disease, but it tells us we certainly can't count on genetic barriers to slow it down."

Dr. Judd Aiken
U. W. — Madison

Results of the study mean that there is little hope that the state's wild deer herd would, over time and through natural attrition, build a genetic resistance to the disease.

The UW—Madison study examined DNA from 126 infected and uninfected deer harvested within the 411-square-mile CWD-endemic region in south-central Wisconsin. The team led by Dr. Aiken sequenced the prion protein gene known as PrP from the DNA found in the cells of the deer. Although the normal function of the PrP protein is not known, when an animal is exposed to the disease, the normal protein converts to an infectious form. "Virtually all of the deer harbored a form of the gene found in infected animals, indicating that between 86 and 96 percent of white-tailed deer in the region would be genetically susceptible to CWD," said Dr. Aiken.

Dr. Aiken says his group is continuing the study, sequencing the PrP gene from additional deer from throughout the state. The results of the new study bolster the controversial strategy of trying to eliminate the disease by eradicating all or most of the estimated 25,000 deer that live in the CWD-endemic region. The logic of the plan is to wipe out the reservoir of the disease which, so far, seems to be confined only to some areas of Dane, Iowa, Sauk, and Richland counties. The disease also has been found in deer from commercial game farms in the state.

"What does this say about the strategy of eradication? To my mind, it supports it," Dr. Aiken said. "We really don't have any other approach. Increasing the hunt will certainly slow the disease down."

According to Dr. Aiken, the PrP gene is the only known susceptibility factor for prion disease. Similar genes are known to exist in mice, sheep, and humans, all of which are prone to different types of prion diseases. But different animals exhibit different genetic predispositions for prion diseases.

Approximately 40 percent of the human population, for example, has the form of the gene that is linked to susceptibility to variant Creutzfeldt-Jakob Disease, the prion disease that afflicts humans.

The notion that some deer may have a genetic makeup that makes them resistant to prion disease is the key argument for an idea — proffered mostly by some opponents of the WIDNR's eradication plan — that would permit the disease to run its course in the wild deer herd. Surviving animals, the argument goes, would form the basis of a herd whose DNA would lack the genetic key to infection. The UW—Madison study effectively demolishes that argument.

"Almost all deer are going to be genetically susceptible to CWD," Dr. Aiken said. "Statistically, we have a lot of confidence in our results."

Dr. Aiken's group studied DNA from 126 different animals taken from within the CWD-endemic region. Twenty-six of those animals were known to be infected with CWD. The other 100 tested negative for the disease, but could still have been infected as testing for the disease tends not to detect its earliest stages. Virtually all of the animals, however, harbored the same PrP forms as the infected deer. The missing piece of the biological puzzle is knowing the mode of transmission.

"We don't know how CWD transmits yet, but assuming that deer interact, our results show they all have a chance of getting the disease," Dr. Aiken said.

FLORIDA TESTS SAMPLES FOR CWD

As of early mid-May, the Florida Fish and Wildlife Conservation Commission (FFWCC) had collected tissue samples from 625 free-ranging white-tailed deer. So far, 524 have been tested for CWD without a positive. Results on the remaining samples are still pending.

Most of the samples were collected by hunters and are being tested at Colorado State University or the Southeastern Cooperative Wildlife Disease Study.

"We were very happy that our testing hasn't turned up a positive," said Dr. John Morgan, deer management section leader at FFWCC. "We will continue to test for CWD this season."