CWD Update 87

July 6, 2007

State and Provincial Updates

Illinois:

Paul Shelton, Illinois Department of Natural Resources provides the following: Illinois Department of Natural Resources staff collected 6,733 usable CWD surveillance samples during the period beginning July 1, 2006. A few additional samples from suspect deer remain untested at this time. Testing yielded 41 CWD-positive deer and 6,692 'not detected'. Forty-one positives were detected in four counties in northern Illinois: Winnebago (18), Boone (13), DeKalb (6), and McHenry (4). No new counties were identified as having CWD, and no disease was detected in Ogle County, in which CWD was first identified during the 2005-2006 sampling season. However, CWD was identified in southeastern DeKalb County, more than 20 miles southeast of previously-identified locations. Samples were collected from a variety of sources, including deer check stations in high-risk counties (3,097), sample drop-off locations for archery hunters (175), cooperating meat processors (1,778), suspect deer (25), roadkills in CWD counties (16), and culling efforts (1,642). Cooperating meat lockers were added as a sampling source this year to provide a statewide sampling base outside the identified CWD area. Hunter-harvested deer accounted for 17 (41%) of the positives identified, with the remainder coming from suspect deer (4; 10%); roadkills (1; 2%); and sharpshooting (19; 46%). Illinois DNR CWD information is available at: http://dnr.state.il.us/cwd.

Montana:

Neil Anderson, Montana Fish, Wildlife and Parks provides the following: Cases of CWD in wild elk or deer have been found within 100 miles of the Montana border in Wyoming and the Black Hills of South Dakota and within 150 miles of the border with the Canadian providences of Saskatchewan and Alberta. Montana Fish, Wildlife and Parks (FWP) began surveillance activities in 1998 following a directive from the Governor's office to work with the Department of Livestock to survey for and manage CWD in Montana. Initially, FWP activities focused on obtaining a broad geographical survey from across the state using existing game check stations. In 1999 surveillance efforts were expanded to include targeted surveillance of symptomatic animals, special collections of wild elk and deer near alternative livestock operations, and broad geographical surveillance of hunter killed deer and elk. The geographical survey area changed in 2000 concentrating on areas bordering Saskatchewan (region 6) and Wyoming and South Dakota (regions 5 and 7) where CWD had been detected in wild populations. This selected geographical survey has been followed through the 2006 big game hunting season.

Since 1998 over 10,600 moose, deer and elk have been tested for CWD. Hunter-harvested animals remain the bulk of samples collected but efforts to enhance collections of targeted and road-killed animals resulted in an increase in the numbers of samples collected in these groups. To date, all tests have produced no evidence of CWD in wild populations. Surveillance efforts have shifted in priority since 1998 when the first statewide geographical survey was conducted. The majority of samples have been collected near the borders of regions 5, 6 and 7 and in areas surrounding the only alternative livestock operation to test positive for CWD near Philipsburg, MT. The number of samples collected during 2003 was nearly double that of previous efforts

and has remained consistent through 2005 declining slightly in 2006. Although surveillance efforts have changed, mule deer have consistently comprised the majority of wild Cervids tested for CWD in Montana. To date, a total of 1342 samples have been tested in the 2006 surveillance period which will continues until June 30, 2007. The hunting district could not be determined for 18 samples but were included in the regional summaries. Montana FWP CWD information is available at: http://fwp.mt.gov/hunting/chronicWD.html.

Montana statewide CWD surveillance results, 1998-March 2006.

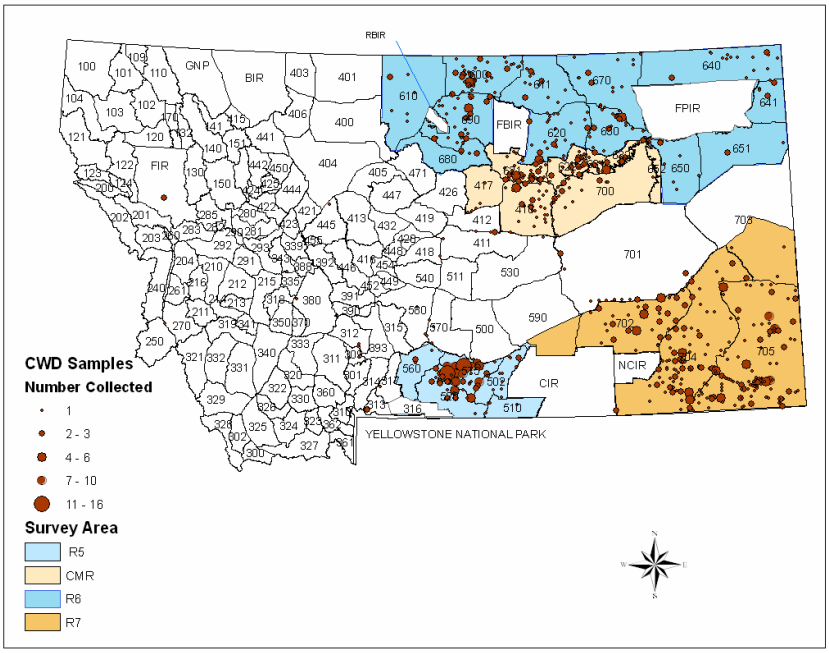
Survey Season*	Hunter	Roadkill	Targeted	Special	Total (PrP not detected)
1998	443	1	2	0	446
1999	575	3	4	0	582
2000	240	2	20	74	336
2001	191	1	18	10	220
2002	976	4	18	0	998
2003	2002	3	31	**96	2132
2004	2333	68	22	0	2423
2005	2030	79	46	***9	2164
2006	1161	111	67	***3	1342
Total	9951	272	228	192	10,643

* The survey season generally consists of the FWP fiscal year running from July 1 to June 30 of the following year. Survey year 2006 will run from July 1, 2006 to June 30, 2007.

** Includes samples collected from elk in the National Bison Range and fallow deer removed from an alternative livestock facility.

*** Samples from the National Bison Range.

Distribution of samples collected in Montana during the 2006 CWD surveillance period.



West Virginia:
Paul Johansen, West Virginia Department of Natural Resources provides the following: Three additional free-ranging white-tailed deer in Hampshire County, West Virginia, tested positive for Chronic Wasting Disease (CWD). This brings the total number of CWD-positive deer found in Hampshire County to 13. These most recent samples were collected from a total of 101 adult deer taken in March and April 2007 by DNR personnel as part of an ongoing and intensive CWD surveillance effort. The three CWD-positive deer were collected within the CWD Containment Area located north of U.S. Route 50 in Hampshire County.

When CWD was first confirmed in Hampshire County in September 2005, the DNR immediately implemented its CWD – Incident Response Plan. As part of that plan, the DNR has been engaged in intensive CWD surveillance efforts designed to determine the distribution and prevalence of the disease. These surveillance efforts have included carefully planned and coordinated deer collections within Hampshire County by CWD deer collection teams comprised of Wildlife Biologists, Wildlife Managers and Conservation Officers within the DNR.

The following disease management strategies have been implemented by the DNR within the affected area of Hampshire County.

- Continue CWD surveillance efforts designed to determine the prevalence and distribution of the disease;
- Lower deer population levels to reduce the risk of spreading the disease from deer to deer by implementing appropriate antlerless deer hunting regulations designed to increase hunter opportunity to harvest female deer;
- Establish reasonable, responsible and appropriate deer carcass transport restrictions designed to lower the risk of moving the disease to other locations;
- Establish reasonable, responsible and appropriate regulations relating to the feeding and baiting of deer within the affected area to reduce the risk of spreading the disease from deer to deer.

West Virginia DNR CWD information is available at: http://www.wvdnr.gov (search for "CWD").

ANNOUNCEMENT: Third International Chronic Wasting Disease Symposium
The Utah Division of Wildlife Resources has announced their intent to host the 3rd International CWD Symposium in Park City, Utah during July of 2009. The initial CWD Symposium was held in Denver, Colorado in 2002; the second was held in Madison, Wisconsin in 2005. Details on the 2009 conference will be forthcoming. Many thanks to our colleagues in Utah for their willingness to arrange and host this event.

Recent Publications

Oral Transmissibility of Prion Disease Is Enhanced by Binding to Soil Particles
Christopher J. Johnson, Joel A. Pedersen, Rick J. Chappell, Debbie McKenzie and Judd M. Aiken
PLoS Pathogens Vol. 3, No. 7, e93 doi:10.1371/journal.ppat.0030093.

Abstract: Soil may serve as an environmental reservoir for prion infectivity and contribute to the horizontal transmission of prion diseases (transmissible spongiform encephalopathies [TSEs]) of sheep, deer and elk. TSE infectivity can persist in soil for years, and we previously demonstrated that the disease-associated form of the prion protein (PrP^{TSE}) binds to soil particles and that prions adsorbed to the common soil mineral montmorillonite (Mte) retain infectivity following intracerebral inoculation. Here, we assess the oral infectivity of Mte- and soil-bound prions. We establish that prions bound to Mte are orally bioavailable and that, unexpectedly, binding to Mte significantly enhances disease penetrance and reduces incubation period relative to unbound agent. Cox proportional hazards modelling revealed that across the doses of TSE agent tested, Mte increased the effective infectious titer by a factor of 680 relative to unbound agent. Oral exposure to Mte-associated prions led to TSE development in experimental animals even at doses too low to produce clinical symptoms in the absence of the mineral. We tested the oral infectivity of prions bound to three whole soils differing in texture, mineralogy and organic carbon content, and found soil-bound prions to be orally infectious. Two of the three soils increased oral transmission of disease, and the infectivity of agent bound to the third soil was equivalent to that of unbound agent. Enhanced transmissibility of soil-bound prions may explain the environmental spread of some TSEs despite the presumably low levels shed into the environment. Association of prions with inorganic microparticles represents a novel means by which their oral transmission is enhanced relative to unbound agent.
http://pathogens.plosjournals.org/perlserv/?request=get-document&doi=10.1371/journal.ppat.0030093.

A Natural Case of Chronic Wasting Disease in a Free-ranging Moose (*Alces alces shirasi*)
Laurie A. Baeten, Barbara E. Powers, Jean E. Jewell, Terry R. Spraker and Michael W. Miller
Journal of Wildlife Diseases, 43(2), 2007, pp. 309-314.

Abstract: Chronic wasting disease (CWD) was diagnosed in a free-ranging moose (*Alces alces shirasi*) killed by a hunter in Jackson County, Colorado, USA, in September 2005. The diagnosis was based upon immunohistochemistry (IHC) demonstrating the presence of accumulations of CWD-associated prion protein (PrP^{CWD}) in tissue sections of medulla oblongata at the level of the obex (dorsal motor nucleus of the vagus) and in retropharyngeal lymph node (RPLN); additional testing by IHC revealed deposits of PrP^{CWD} in multiple sections of medulla oblongata and cervical spinal cord as well as palatine tonsil and submandibular lymph node tissues. Western blot confirmed the presence of PrP^{CWD} in RPLN and tonsil tissue. The PrP^{CWD} also was detected via enzyme-linked immunosorbent assay of RPLN tissue. Spongiform encephalopathy was observed in sections of the brainstem and cervical spinal cord, although no clinical signs were noted by the hunter who killed the animal. The affected moose was homozygous for methionine at codon 209 of the prion protein coding region. In October 2006, two additional free-ranging moose were diagnosed with CWD. Epidemiology and implications of CWD in moose remain to be determined.
http://www.jwildlifedis.org/cgi/content/abstract/43/2/309.

Susceptibility of Cattle to First-passage Intracerebral Inoculation with Chronic Wasting Disease Agent from White-tailed Deer
A. N. Hamir, J. M. Miller, R. A. Kunkle, S. M. Hall and J. A. Richt
Veterinary Pathology 44:487-493 (2007).

Abstract: Fourteen, 3-month-old calves were intracerebrally inoculated with the agent of chronic wasting disease (CWD) from white-tailed deer (CWD^{wtd}) to compare the clinical signs and neuropathologic findings with those of certain other transmissible spongiform encephalopathies (TSE, prion diseases) that have been shown to be experimentally transmissible to cattle (sheep scrapie, CWD of mule deer [CWD^{md}], bovine spongiform encephalopathy [BSE], and transmissible mink encephalopathy). Two uninoculated calves served as controls. Within 26 months postinoculation (MPI), 12 inoculated calves had lost considerable weight and eventually became recumbent. Of the 12 inoculated calves, 11 (92%) developed clinical signs. Although spongiform encephalopathy (SE) was not observed, abnormal prion protein (PrP^{d}) was detected by immunohistochemistry (IHC) and Western blot (WB) in central nervous system tissues. The absence of SE with presence of PrP^{d} has also been observed when other TSE agents (scrapie and CWD^{md}) were similarly inoculated into cattle. The IHC and WB findings suggest that the diagnostic techniques currently used to confirm BSE would detect CWD^{wtd} in cattle, should it occur naturally. Also, the absence of SE and a distinctive IHC pattern of CWD^{wtd} and CWD^{md} in cattle suggests that it should be possible to distinguish these conditions from other TSEs that have been experimentally transmitted to cattle.
http://www.vetpathology.org/cgi/content/abstract/44/4/487.