CHRONIC WASTING DISEASE IN COLORADO, 2005–2007

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1 July 2008

Chronic wasting disease (CWD), a naturally-occurring prion disease of North American cervids (species of the "deer" family), has emerged recently as an important wildlife health issue. CWD has been endemic in free-ranging cervid populations in northcentral Colorado and southeastern Wyoming since at least the early 1980s, and has been detected in a number of other states and provinces.

Surveys conducted during the "biological years" 2005–2007 (= June 2005–June 2008) continued to show that CWD is relatively well-established and widely distributed in Colorado. Through June 2008, at least one case of CWD had been detected in 22 of 55 deer data analysis units (DAUs), 12 of 46 elk DAUs, and 2 of 4 moose DAUs. Within CWD-infected DAUs, pooled estimates of prevalence from rolling three-year (2005–2007) summaries of harvest survey data varied from <1–10.1% among mule deer, <1–2.8% among elk, and 0.3–1.5% among moose (see Table below).

Much of the change in the known distribution of CWD in Colorado since 2002 is attributable to improved surveillance rather than true geographic spread. Although understanding about the true distribution of CWD in Colorado has improved substantially in recent years, surveillance data from many DAUs in the southern part of the state presently are insufficient to assure the likely absence of additional foci in those areas (see Table below). More effective and efficient survey methods are needed to assure long-term sustainability of CWD surveillance efforts in Colorado and elsewhere; in particular, reemphasizing CWD "suspect" submissions as an alternative to sampling hunter-killed deer and elk should improve the ability to detect new CWD foci in lightly harvested DAUs in southern Colorado.

Table. Chronic wasting disease (CWD) prevalence estimates in Colorado, by data analysis unit (DAU), for adult elk, mule deer, white-tailed deer, and moose. Data represent "rolling" three-year prevalence estimates (2005–2007) and 95% confidence intervals (CI) from harvest survey samples. Shaded DAUs have yielded at least one case of CWD in the respective species, but not necessarily from harvest surveys during 2005–2007; for mule deer and white-tailed deer, DAUs are shaded if CWD has been detected in either deer species.

Species	DAU[1]	GMUs[2] included in DAU	Number tested	Prevalence	95% CI[3] Lower	Upper
ELK						
	E-1	2,201	172	0.0%	.	.
	E-2	3,4,5,14,214,301,441	2289	0.2%	0.1%	0.4%
	E-3	6,16,17,161,171	474	0.4%	0.0%	1.0%
	E-4	7,8,9,19,191	443	2.0%	0.7%	3.3%
	E-6	11,12,13,23,24,25,26,33,34,131,211,231	3358	0.5%	0.3%	0.7%
	E-7	15,27	290	0.3%	0.0%	1.0%
	E-8	18,181	384	1.6%	0.3%	2.8%
	E-9	20	471	2.8%	1.3%	4.2%
	E-10	21,22,30,31,32	252	0.4%	0.0%	1.2%
	E-11	82	28	0.0%	.	.
	E-12	35,36	210	0.0%	.	.
	E-13	28,37,371	453	0.2%	0.0%	0.7%
	E-14	41,42,52,411,421,521	457	0.2%	0.0%	0.6%
	E-15	43,471	68	0.0%	.	.
	E-16	44,45,47,444	162	0.0%	.	.
	E-17	48,56,481,561	63	0.0%	.	.
	E-18	50,500,501	97	0.0%	.	.
	E-19	40	32	0.0%	.	.
	E-20	61,62	131	0.0%	.	.
	E-21	10	141	0.0%	.	.
	E-22	49,57,58	106	0.0%	.	.
	E-23	59,511,512,581,591	162	0.0%	.	.
	E-24	70,71,72,73,711	123	0.0%	.	.
	E-25	66,67	84	0.0%	.	.
	E-26	68,681	62	0.0%	.	.
	E-27	86,691,861	55	0.0%	.	.
	E-28	69,84	65	0.0%	.	.
	E-30	74,741	89	0.0%	.	.
	E-31	75,77,78,751,771	208	0.0%	.	.
	E-32	80,81	57	0.0%	.	.
	E-33	83,85,140,851	102	0.0%	.	.
	E-34	76,79	41	0.0%	.	.
	E-35	64,65	101	0.0%	.	.
	E-38	29,38	89	0.0%	.	.
	E-39	39,46,391,461	235	0.4%	0.0%	1.0%
	E-40	60	5	0.0%	.	.
	E-41	54	59	0.0%	.	.

(ELK cont.)	E-43	55,551	95	0.0%	.	.
	E-45	132,139,145	0	.	.	.
	E-46	128	2	0.0%	.	.
	E-47	1	7	0.0%	.	.
	E-51	51,104,105,106,110,111	112	0.0%	.	.
	E-52	53,63	78	0.0%	.	.
	E-53	133,134,135,141,142	6	0.0%	.	.
	E-54	136,137,138,143,144,147	6	0.0%	.	.
	E-55	682, 791	37	0.0%	.	.
	E-99	(all other GMUs)	26	0.0%	.	.
MULE DEER (MD)	D-1	1,2,201	19	0.0%	.	.
	D-2	3,4,5,14,214,301,441	2243	0.8%	0.4%	1.1%
	D-3	6,16,17,161,171	401	1.7%	0.5%	3.0%
	D-4	7,8,9,19,191	705	8.5%	6.4%	10.6%
	D-5	87,88,89,90,95	153	6.5%	2.6%	10.5%
	D-6	10	47	0.0%	.	.
	D-7	11,12,13,22,23,24,131,211,231	1826	1.6%	1.1%	2.2%
	D-8	15,35,36,45	642	0.5%	0.0%	1.0%
	D-9	18,27,28,37,181,371	820	1.1%	0.4%	1.8%
	D-10	20	673	10.0%	7.7%	12.2%
	D-11	21,30	92	0.0%	.	.
	D-12	41,42,421	322	0.0%	.	.
	D-13	43,47,471	79	0.0%	.	.
	D-14	44	41	0.0%	.	.
	D-15	48,56,481,561	53	0.0%	.	.
	D-16	49,57,58,59,581,591	202	1.5%	0.0%	3.2%
	D-17	39,46,51,391,461	389	1.5%	0.3%	2.8%
	D-18	40	48	0.0%	.	.
	D-19	61,62	103	0.0%	.	.
	D-20	53	53	0.0%	.	.
	D-21	54	393	0.0%	.	.
	D-22	55,551	570	0.0%	.	.
	D-23	60	4	0.0%	.	.
	D-24	70,71,711	126	0.0%	.	.
	D-25	66,67	420	0.0%	.	.
	D-26	68,681,682	15	0.0%	.	.
	D-27	29,38	368	2.7%	1.1%	4.4%
	D-28	122,125,126,127,130,132,137,138, 139,146	22	0.0%	.	.
	D-29	72,73	49	0.0%	.	.
	D-30	75,77,78,751,771	286	0.0%	.	.
	D-31	83	28	0.0%	.	.
	D-32	85,140,851	15	0.0%	.	.
	D-33	143,144,145	7	0.0%	.	.
	D-34	69,84,86,691,861	142	0.0%	.	.
	D-35	80,81	15	0.0%	.	.
	D-36	76,79,791	11	0.0%	.	.

	Unit	Subunits	N	%	%	%
(MD cont.)	D-37	82	2	0.0%	.	.
	D-38	50,500,501	57	0.0%	.	.
	D-39	63	109	0.0%	.	.
	D-40	64,65	68	0.0%	.	.
	D-41	31,32	69	0.0%	.	.
	D-42	33	63	1.6%	0.0%	4.7%
	D-43	25,26,34	158	0.6%	0.0%	1.9%
	D-44	91,92,94,96,951	109	10.1%	4.4%	15.8%
	D-45	128,129,133,134,135,136,141,142,147	32	0.0%	.	.
	D-46	107,112,113,114,115,120,121	37	0.0%	.	.
	D-47	103,109,116,117	42	0.0%	.	.
	D-48	110,111,118,119,123,124	27	0.0%	.	.
	D-49	104,105,106	95	0.0%	.	.
	D-50	511,512	136	0.0%	.	.
	D-51	52,411,521	166	0.0%	.	.
	D-52	74,741	90	0.0%	.	.
	D-53	444	33	0.0%	.	.
	D-54	93,97,98,99,100	103	1.0%	0.0%	2.9%
	D-55	101,102	54	1.9%	0.0%	5.5%
WHITE-TAILED DEER (WTD)	D-2	3,4,5,14,214,301,441	2	0.0%	.	.
	D-3	6,16,17,161,171	1	0.0%	.	.
	D-4	7,8,9,19,191	19	5.3%	0.0%	15.6%
	D-5	87,88,89,90,95	24	4.2%	0.0%	12.3%
	D-7	11,12,13,22,23,24,131,211,231	0	.	.	.
	D-8	15,35,36,45	0	.	.	.
	D-9	18,27,28,37,181,371	7	0.0%	.	.
	D-10	20	4	0.0%	.	.
	D-16	49,57,58,59,581,591	5	0.0%	.	.
	D-17	39,46,51,391,461	1	0.0%	.	.
	D-20	53	0	.	.	.
	D-22	55,551	0	.	.	.
	D-27	29,38	5	0.0%	.	.
	D-28	122,125,126,127,130,132,137,138,139,146	17	0.0%	.	.
	D-33	143,144,145	0	.	.	.
	D-34	69,84,86,691,861	1	0.0%	.	.
	D-43	25,26,34	1	0.0%	.	.
	D-44	91,92,94,96,951	237	3.8%	1.4%	6.2%
	D-45	128,129,133,134,135,136,141,142,147	2	0.0%	.	.
	D-46	107,112,113,114,115,120,121	2	0.0%	.	.
	D-47	103,109,116,117	37	0.0%	.	.
	D-48	110,111,118,119,123,124	10	0.0%	.	.
	D-49	104,105,106	5	0.0%	.	.
	D-50	511,512	0	.	.	.
	D-52	74,741	0	.	.	.

	DAU	GMU			CI	
	D-54	93,97,98,99,100	10	0.0%	.	.
(WTD cont.)	D-55	101,102	49	0.0%	.	.
MOOSE						
	M-1	6,16,17,161,171	266	0.3%	0.0%	1.1%
	M-2	7,8,19	65	2.7%	0.0%	4.6%
	M-3	18,28,36,37,371	85	0.0%	.	.
	M-4	66,76,77,751	28	0.0%	.	.

[1]DAU = data analysis unit.
[2]GMU = game management unit.
[3]CI = confidence interval.