Chronic Wasting Disease Surveillance Summary: Status of CWD in Illinois

Forest Wildlife Program
Illinois Department of Natural Resources

October 1, 2003

Background:

On November 1, 2002 Illinois Department of Natural Resources officials received confirmation that chronic wasting disease (CWD) in a wild Illinois deer had been found for the first time, the result of routine testing of a suspect animal from Boone County. During the ensuing firearm deer season in November and December, a total of 4,060 samples were taken from hunter-harvested deer in 36 Illinois counties (Fig. 1). The following counties were sampled during that season: Adams, Boone, Bureau, Carroll, Clark, Clinton, DeKalb, Effingham, Fayette, Fulton, Hancock, Jefferson, Jo Daviess, Johnson, LaSalle, Lawrence, Macoupin, Madison, Marion, McHenry, McLean, Ogle, Pike, Pope, Randolph, Rock Island, Sangamon, Shelby, St. Clair, Stephenson, Union, Vermilion, Washington, Whiteside, Williamson, and Winnebago. Six additional CWD-positive deer were identified from these samples. Two clusters of infection were identified - one located along the Boone-Winnebago county line northeast of Rockford, and the other southeast of Woodstock in McHenry County (Figure 2).

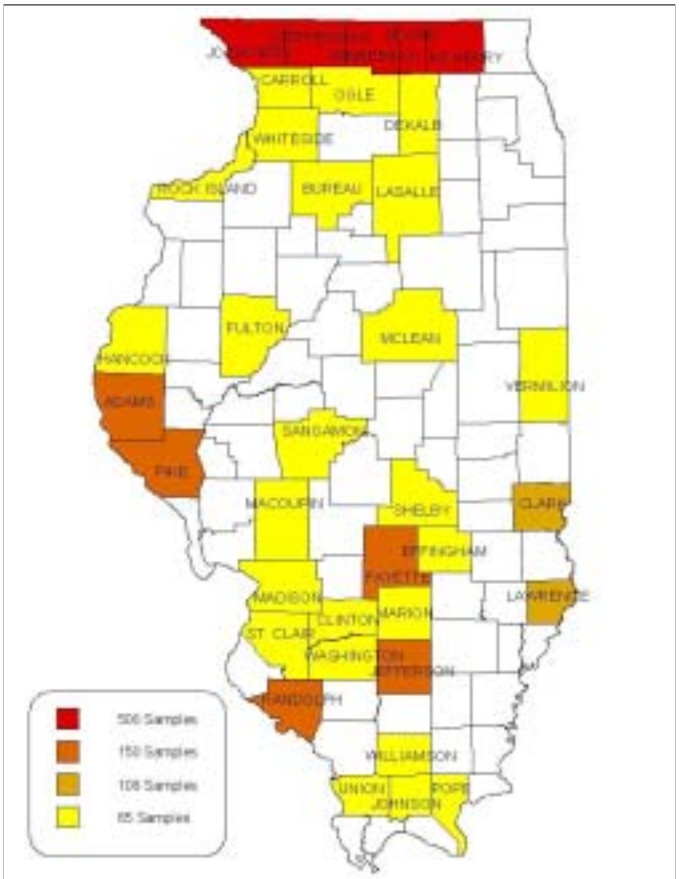
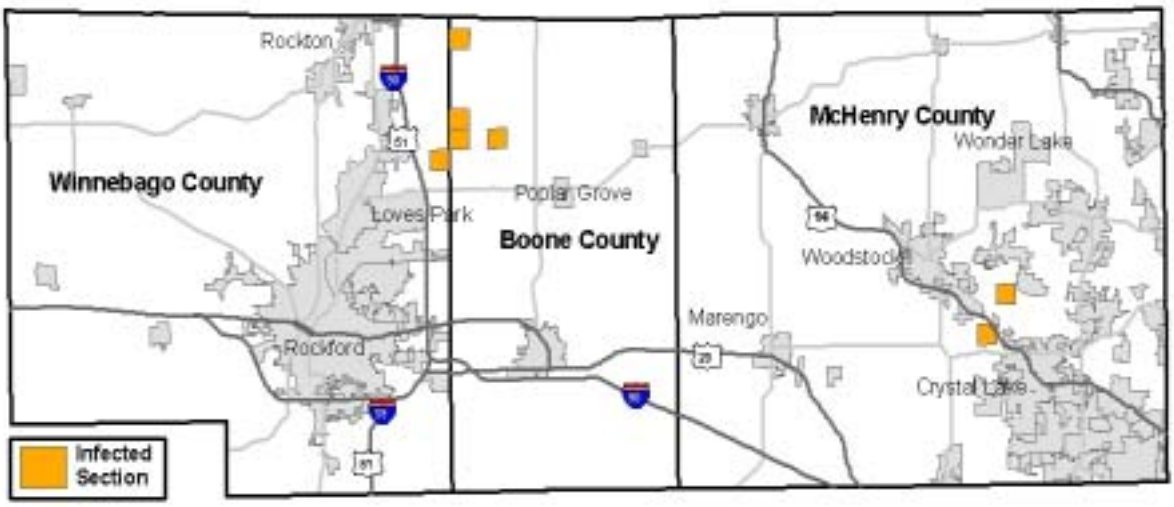


Figure 1. Sampling goals and distribution of counties sampled for CWD during the 2002 firearm deer season.

Figure 2. Locations (to the nearest section) of CWD-positive deer identified as of February 1, 2003.

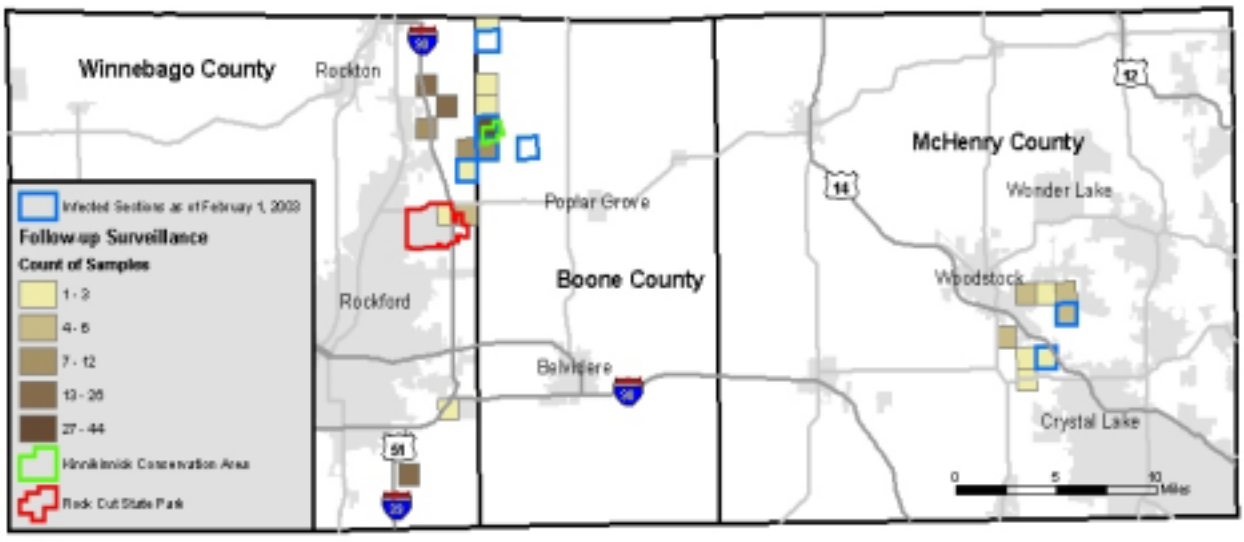


Follow-up Surveillance:

After identification of those areas in which CWD-positive deer were found, the Department followed up with additional sampling (via sharpshooting) in those two locations so as to better evaluate the status of CWD in the immediate area. Sample locations were limited by the distribution of adequate habitat, by suitability of sites for sharpshooting purposes (i.e., safety), and by the willingness of landowners to allow access. A few additional samples were collected from road-killed deer when found in the vicinity of the core sampling area. In the Winnebago-Boone county area, samples were also taken from a high-density deer herd several miles to the south. DNR staff contacted potential landowners, both private and public, in an effort to gain access to suitable properties. Sampling commenced on February 6 and continued through March 31. Sharpshooting was normally conducted from late afternoon throughout the night (but varied by site) by staff of USDA-APHIS Wildlife Services and IDNR.

Samples were collected and tested from 185 deer, including 62 from Boone County, 29 from McHenry County, and 94 from Winnebago County. Figure 3 depicts the distribution of samples in those counties. Twenty-seven samples were collected from an area in southern Winnebago County not considered part of the primary area of concern for CWD, so these samples will be excluded from analyses pertaining to CWD prevalence, etc.

Figure 3. Locations (to the nearest section) of deer collected for chronic wasting disease testing after the close of the deer hunting season.



None of the 27 samples from southern Winnebago County tested positive for CWD. In addition, none of the 29 samples from McHenry County were positive. In the Boone-Winnebago sampling unit, 4 of 78 adult deer (5.1%) and 1 of 51 fawns (2.0%) were CWD-positive. All positive animals except one originated from sections already known to contain CWD-infected deer, with the new section being located just east of Roscoe in Winnebago County. Table 1 presents a summary of surveillance information found during this follow-up period.

Table 1. CWD Follow-up Surveillance Summary

Sampling Unit	Age	Number of Samples	Number of Positives	Percent Positive
Boone-Winnebago Unit				
	Fawn	51	1	2.0%
	Adult	78	4	5.1%
	Total	129	5	3.9%
McHenry Unit				
	Fawn	12	0	0.0%
	Adult	17	0	0.0%
	Total	29	0	0.0%
Both Units Combined				
	Fawn	63	1	1.6%
	Adult	95	4	4.2%
	Total	158	5	3.2%

Results of All Random Surveillance Data Combined

We combined the sample/test data from the follow-up surveillance (sharpshooting) with information gathered during the 2002 firearm deer season. In order to do this, we limited firearm deer season data to those samples taken from sections within 2 miles of a known positive section. This resulted in an additional 56 samples from an approximately 69.5 mi^2 area of Boone-Winnebago counties, and 12 samples from a 38 mi^2 portion of McHenry County (Figure 4). All of the samples from the firearm deer season were from adult deer, as no fawns were sampled during that season. Results of the combined surveillance testing are presented in Table 2.

Figure 4. Firearm deer season samples included in CWD analyses.

Table 2. Summary of all random surveillance data (from firearm deer season and follow-up sampling) for Illinois' known CWD-affected areas.

Sampling Unit	Age	Number of Samples	Number of Positives	Percent Positive
Boone-Winnebago Unit				
	Fawn	51	1	2.0%
	Adult	134	8	6.0%
	Total	185	9	4.9%
McHenry Unit				
	Fawn	12	0	0.0%
	Adult	29	2	6.9%
	Total	41	2	4.9%
Both Units Combined				
	Fawn	63	1	1.6%
	Adult	163	10	6.1%
	Total	226	11	4.9%

Suspect Animal Surveillance Testing

Deer with clinical signs of illness continue to be submitted for CWD testing by IDNR field staff. To date, four such deer have been diagnosed as having CWD. All four originated from the Boone-Winnebago unit.

Surveillance Using Deer Population Control Permits

Four Illinois counties (Cook, DuPage, Kane, and Lake) in northeastern Illinois are closed to firearm deer hunting, thus precluding the collection of CWD samples by the same methods as in other counties. In addition, collection of samples from hunter-harvested deer in other counties is unlikely to provide significant representation of deer residing in urban/suburban areas. In an effort to collect samples from such locations, we requested that land-managing agencies controlling urban/suburban deer herds through the use of a Deer Population Control Permit (DPCP) collect samples for CWD testing. Participating permittees were provided supplies and training, as well as assistance in getting samples to the laboratory.

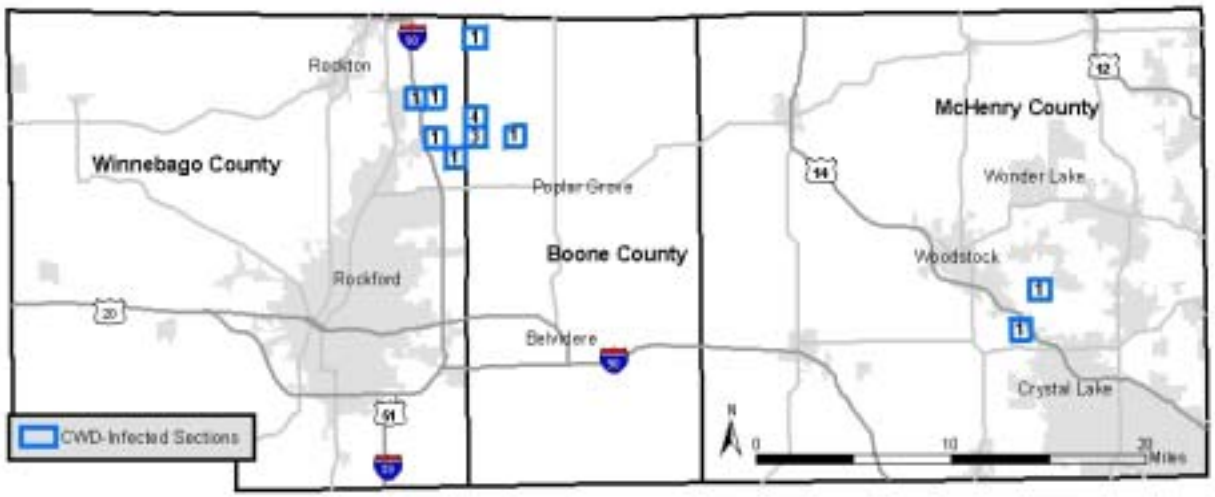
Approximately 317 samples were collected and tested through the DPCP program, primarily in northeastern Illinois. Preliminary data indicate that DPCP samples were taken in Cook (30), DuPage (159), Lake (68), Winnebago (9), and JoDaviess (51). An additional 5 samples were taken in Lake County in conjunction with an ongoing research project in Highland Park. None of the samples from any source were found to be positive for CWD.

Discussion

Minimum deer densities in the areas of concern were determined by helicopter surveys flown on 5 March 2003 over snow cover. Minimum Boone-Winnebago densities were slightly more than 20 deer per square mile over approximately 48 mi^2 surveyed, while McHenry County densities were lower (<15 deer/mi^2). These densities are expressed as the number of deer/mi^2 of total land area. Considerable variation in deer densities occurred across the landscape, particularly in the Boone-Winnebago unit, as a result of the distribution of suitable wintering habitat and the presence of refuges from hunting pressure (primarily residential areas and publicly-owned preserves).

Fifteen CWD-positive animals (from all sources) have been identified from Winnebago (4), Boone (9), and McHenry (2) counties (Figure 5). The disease does not yet appear to be widely distributed in either the Boone-Winnebago unit or the McHenry unit, but sample sizes are still relatively small so caution must be used in interpreting results. All positives to date in the two units can be included in a rectangle 6 miles wide and 7 miles high in Boone-Winnebago, and 2 miles X 3 miles in McHenry. CWD in Boone-Winnebago appears most concentrated in a 2 mi^2 area that contains 7 of the 12 CWD-positive animals found in that unit. Disease prevalence with 95% confidence intervals for adult deer in the Boone-Winnebago unit is estimated to be 6.0% $\pm$ 4.0; an estimate including all age classes of deer would be 4.9% $\pm$ 3.1. Similar estimates would apply to both units combined (adults 6.1% $\pm$ 3.7; all deer 4.9% $\pm$ 2.8), but the number of samples in McHenry County alone (41) is sufficiently small to preclude accurate assessment (adults 6.9% $\pm$ 9.2; all deer 4.9% $\pm$ 6.6). These estimated prevalence rates are somewhat high, but the deer included in these calculations came only from a relatively small area in which CWD was known to exist, rather than including deer from a large buffer zone.

Figure 5. Illinois sections in which CWD-positive deer have been found (by all surveillance methods) and the number of infected animals identified in each as of 1 October 2003.



Appendix A. Summary of CWD-positive deer collected through 1 October 2003.

Date Collected	County	Map Coordinates	Sex	Age	Surveillance Method
10/23/2002	Boone	46N 3E S31	Female	Adult	Suspect
11/23/2002	McHenry	44N 7E S26	Male	1.5	Hunter
12/05/2002	McHenry	44N 7E S13	Male	1.5	Hunter
12/06/2002	Boone	45N 3E S6	Male	2.5	Hunter
12/06/2002	Winnebago	45N 2E S12	Female	1.5	Hunter
12/07/2002	Boone	45N 3E S4	Male	1.5	Hunter
12/08/2002	Boone	46N 3E S7	Female	2.5	Hunter
02/08/2003	Boone	46N 3E S31	Female	4.5	Suspect
02/10/2003	Boone	46N 3E S31	Female	2.5	Follow-up
03/12/2003	Boone	45N 3E S6	Female	2.5	Follow-up
03/18/2003	Boone	45N 3E S6	Female	2.5	Follow-up
03/24/2003	Boone	46N 3E S31	Male	Fawn	Follow-up
03/31/2003	Winnebago	46N 2E S26	Female	5.5+	Follow-up
04/02/2003	Winnebago	46N 2E S27	Female	5.5+	Suspect
09/16/2003	Winnebago	45N 2E S2	Female	4.5+	Suspect