



Illinois Chronic Wasting Disease: 2012-2013 Surveillance and Management Report



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Background

First CWD positive: A suspect adult female deer from northwest Boone County was diagnosed with CWD in November 2002, after exhibiting clinical signs that included food impaction, aspiration pneumonia, and behavioral abnormalities.

Total samples through June 30, 2012: 66,045+

Total positives through June 30, 2012: 372

Number of counties affected through June 30, 2012: 10 (JoDaviess, Stephenson, Winnebago, Boone, McHenry, Ogle, DeKalb, Kane, LaSalle, Grundy)

Distribution through June 30, 2012: 90% of positives were found in the four original CWD counties (Winnebago, Boone, McHenry, and DeKalb), while 2 of those counties (Winnebago and Boone) accounted for 71% of positives. The outbreak consisted of a central core of disease along the Winnebago-Boone county line, with more diffuse distribution at increasing distance from that area (Fig. 1).

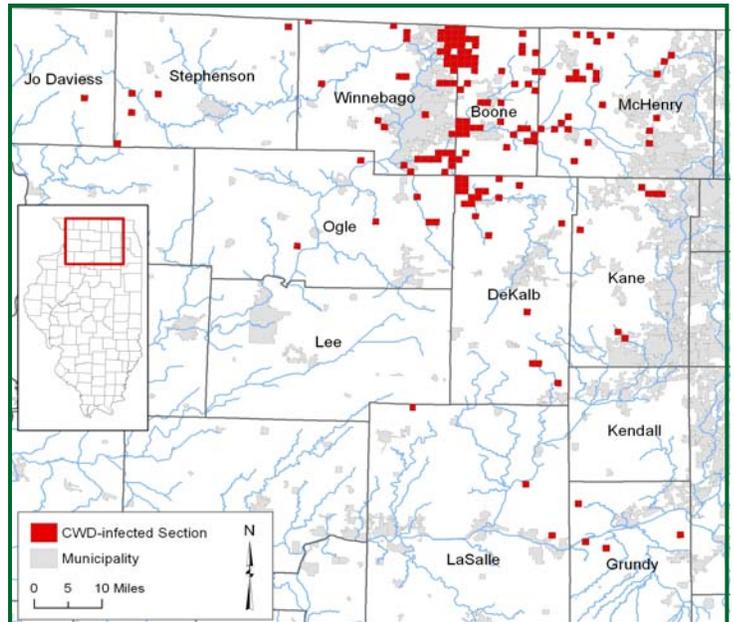


Fig. 1. Historical distribution of CWD-infected deer identified in Illinois as of June 30, 2012.

CWD Surveillance Protocols During FY2012-2013 (July 1, 2012-June 30, 2013)

Testing: All CWD testing was conducted using immunohistochemistry (IHC) at Illinois Department of Agriculture's (IDOA) Animal Disease Laboratory in Galesburg, Illinois. Samples were initially screened using retropharyngeal lymph nodes (RPLN), followed by confirmatory testing of recut RPLN tissue and obex.

Sampling of hunter-harvested deer: Three sources were used to provide tissue samples from adult deer harvested by hunters: (1) mandatory firearm deer check stations in high-risk counties in northern Illinois; (2) designated voluntary drop-off testing locations in northern Illinois; and (3) cooperating meat lockers/taxidermists who collected heads/sample tissues for IDNR.

Surveillance by other agencies/individuals authorized by special permits: Recipients of special permits from IDNR authorizing lethal deer removals were required to collect CWD samples when working in high-risk CWD areas or in areas needing additional surveillance. These permits included (1) Deer Population Control Permits (used by some agencies to control urban deer populations); (2) nuisance Deer Removal Permits (for crop depredation, etc.); and (3) Scientific Permits (various research projects).

Suspect ("target") deer surveillance: Upon receiving reports from the public about sick deer, IDNR staff collected samples for CWD testing from deer that exhibited signs/symptoms consistent with chronic wasting disease.

Surveillance from post-hunting season sharpshooting: Sharpshooting was conducted from mid-January through the end of March by trained IDNR staff. Sharpshooting was restricted to areas where CWD-infected deer had been identified (limited to lands within a 2-section buffer around known positive sections).

CWD Surveillance Results FY2012-2013

Total number of CWD samples collected statewide: 8,069. Figure 3 compares our yearly collection efforts; Appendix A summarizes the samples collected/positives identified by county and collection source.

Number of usable samples collected: 8,064

Number of CWD-positive deer identified: 36. Table 1 presents a comparison of the number of positive deer found each year by county.

Number of counties with positive deer: 12 — Boone (4), DeKalb (7), DuPage (1), Grundy (3), JoDaviess (1), Kane (4), Kendall (1), LaSalle (1), McHenry (3), Ogle (3), Stephenson (3), Winnebago (5). For distribution of positive sections, see Figure 5.

Number of new CWD counties: 2 — DuPage and Kendall

CWD prevalence information for the 12-county CWD area (adult deer from hunting sources only) —

Average CWD prevalence (all adult deer): 0.54% (20/3702)

Average CWD prevalence (adult males): 0.52% (10/1919)

Average CWD prevalence (adult females): 0.56% (10/1783)

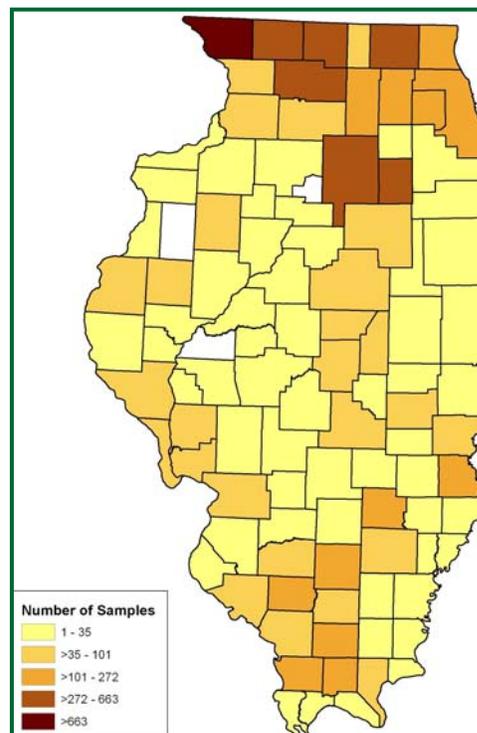


Fig. 2. Distribution of CWD sampling effort in Illinois counties during FY2012-2013 (all sources).

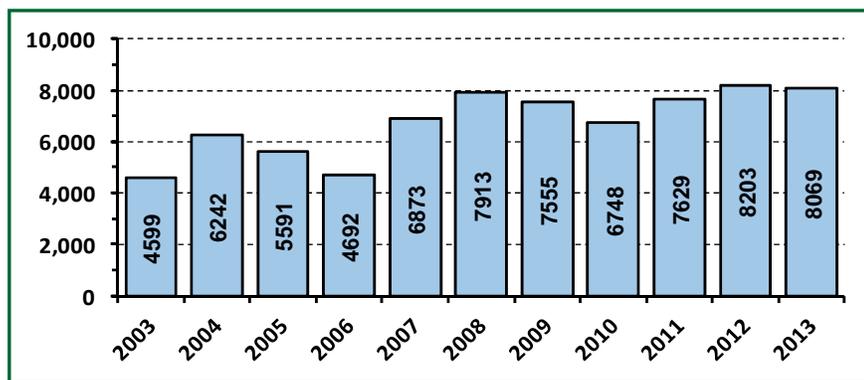


Fig. 3. Number of CWD surveillance samples collected statewide each year during FY2003-FY2013.

Table 1. Number of CWD-positive deer identified in each county by year.

	02-03	03-04	04-05	05-06	06-07	07-08	08-09	09-10	10-11	11-12	12-13	Total
Boone	9	25	13	15	13	11	9	14	7	5	4	125
DeKalb	0	4	1	5	6	8	4	3	7	5	7	50
DuPage	0	0	0	0	0	0	0	0	0	0	1	1
Grundy	0	0	0	0	0	0	0	0	2	5	3	10
JoDaviess	0	0	0	0	0	0	0	0	1	0	1	2
Kane	0	0	0	0	0	0	0	0	4	7	4	15
Kendall	0	0	0	0	0	0	0	0	0	0	1	1
LaSalle	0	0	0	0	1	0	0	0	3	0	1	5
McHenry	2	2	4	4	4	0	4	3	3	3	3	32
Ogle	0	0	0	2	0	0	1	0	4	2	3	12
Stephenson	0	0	0	0	0	1	0	1	1	2	3	8
Winnebago	3	20	13	25	18	18	12	16	10	7	5	147
Total	14	51	31	51	42	38	30	37	42	36	36	408

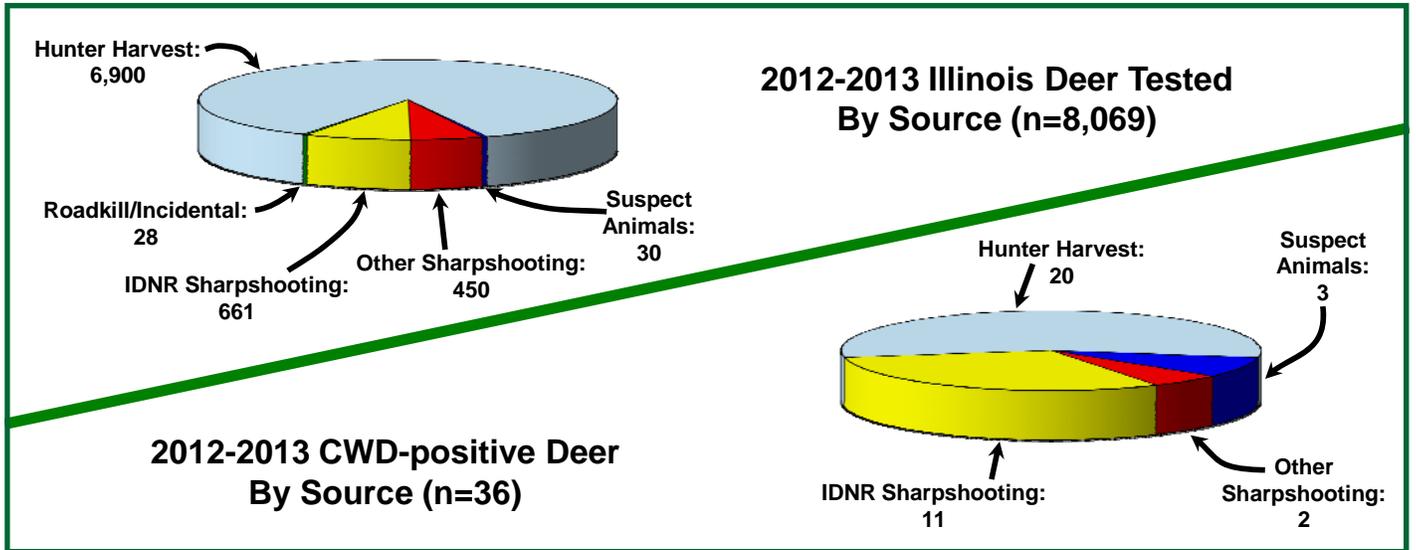


Figure 4. Number of CWD samples tested and number of positives identified by sampling source during FY2012-2013. Note: Number tested includes all samples submitted, regardless of whether a valid test result was obtained.

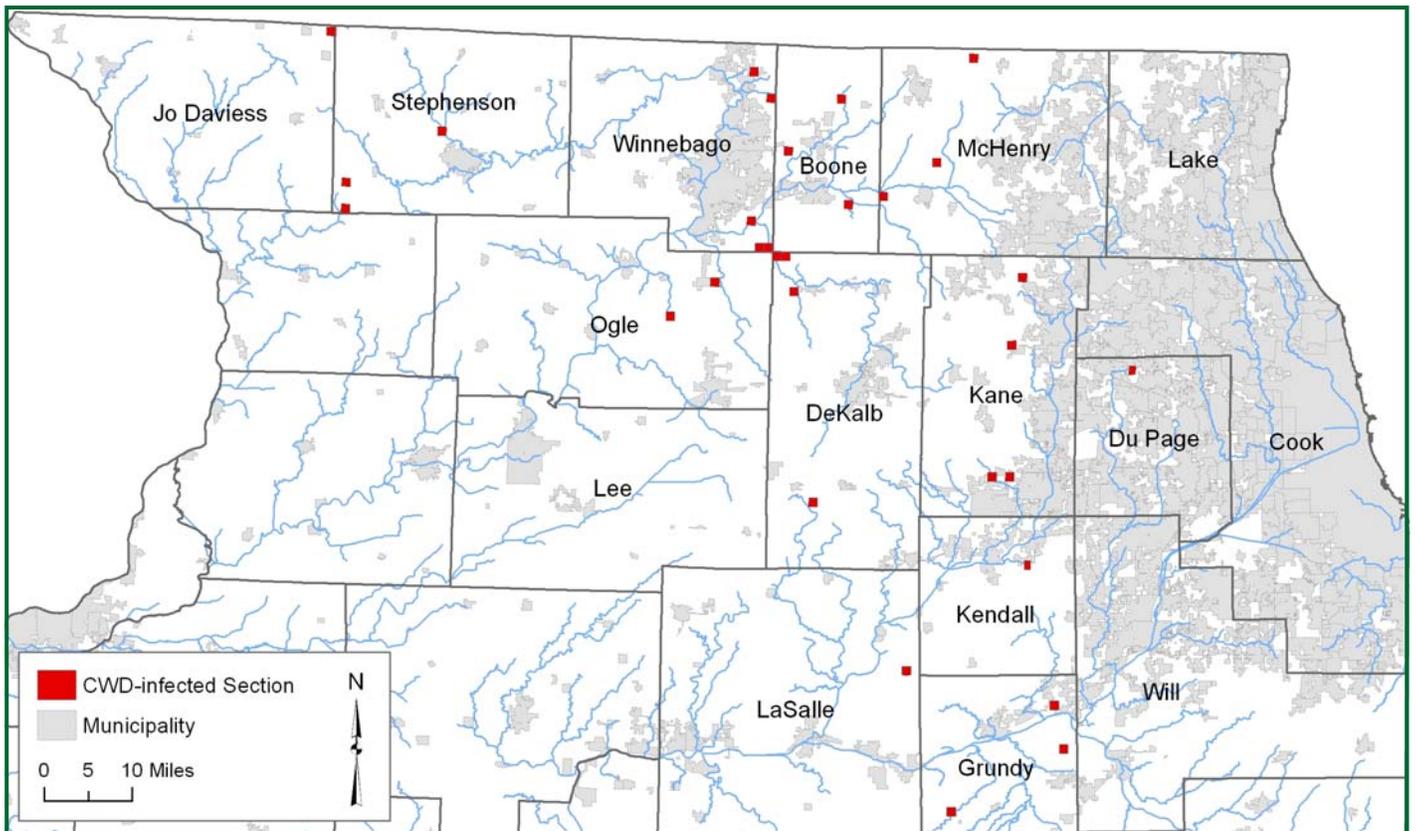


Table 2. County CWD prevalence estimates for adult deer during 1 July 2012 through 30 June 2013. Estimates are based only on samples collected from hunter-harvested deer.¹

County	# of Samples ²	# of Positives ²	Percent Positive	95% Confidence Interval (±)
Boone	51	3	5.88%	6.46%
DeKalb	142	4	2.82%	2.72%
DuPage	11	0	0.00%	-
Grundy	263	2	0.76%	1.05%
JoDaviess	1099	1	0.09%	0.18%
Kane	75	2	2.67%	3.65%
Kendall	2	0	0.00%	-
LaSalle	549	1	0.18%	0.36%
McHenry	219	1	0.46%	0.89%
Ogle	476	1	0.21%	0.41%
Stephenson	532	2	0.38%	0.52%
Winnebago	283	3	1.06%	1.19%
All CWD Counties	3702	20	0.54%	0.24%

¹ Estimates derived from hunter-harvested deer represent hunted populations throughout the entire county.

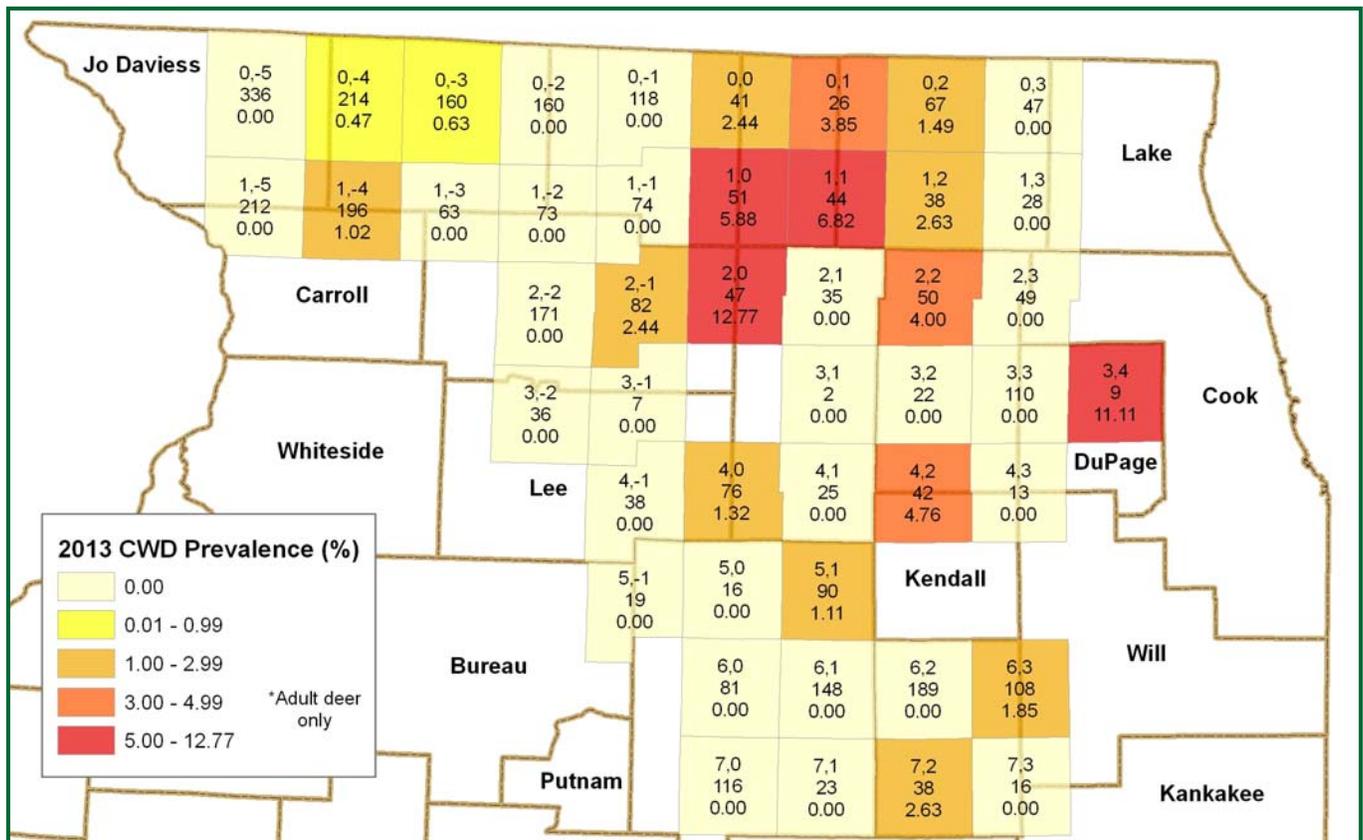


Fig. 6. Estimated prevalence rates in adult deer during FY12-13 per 4-township block. Within each block, the upper number is the grid coordinate; the middle number is the sample size; and the lower number is the estimated adult prevalence rate (%). Includes all sources except suspect deer.

CWD Management During FY2012-2013

Hunting Seasons for Herd/Disease Control

Length: Archery deer season (Oct. 1-Jan. 20; closed during firearm season) consisted of 112 days in DuPage County (no firearm hunting), and 105 days in all other CWD counties. Gun seasons totaled 19 days, consisting of the regular firearm season (7 days), youth season (2 days), muzzleloader season (3 days), and special CWD season (7 days). All counties except DuPage offered all gun seasons.

Bag limits: Only two antlered deer could be taken per hunter during all seasons, except that during the special CWD season no antlered limit was in effect. There was no bag limit for antlerless deer.

Gun permit quotas: In counties with established CWD, permit quotas far exceeded demand, so that the number of permits was for all practical purposes unlimited. In counties with limited cases of CWD, permit quotas were more limited, so as not to significantly lower the entire county population. For the Special CWD season, hunters were allowed to purchase unlimited over-the-counter (OTC) permits, and could also use any unfilled deer tags from firearm, muzzleloader, or youth deer seasons.

Significant changes: Kendall County was added to the Special CWD Hunting Season, bringing the total number of counties open to that season to 11.

Hunter harvest: Hunters harvested 15,349 deer from the 12 CWD counties during 2012-2013 (Table 3), compared to 14,566 deer during 2011-2012. The previous 5-year average harvest for the 12 counties was 15,691. In the 2001-2002 hunting season, the last season prior to the discovery of CWD in Illinois, hunter harvest totaled 13,481.

Table 3. Deer harvest in CWD counties during the 2012-2013 hunting seasons. *Note: CWD was not discovered in Kendall and DuPage counties until July and November 2012, respectively.*

County	Youth	Muzzleloader	CWD	Firearm	Archery	All Seasons
Boone	2	2	25	145	115	289
DeKalb	6	7	39	196	182	430
DuPage	<i>Not open to firearm deer hunting</i>				35	35
Grundy	12	22	105	468	399	1006
JoDaviess	55	98	636	2518	1057	4364
Kane	3	1	13	55	349	421
Kendall	9	10	28	114	242	403
LaSalle	28	36	266	1209	918	2457
McHenry	10	10	67	418	561	1066
Ogle	22	31	209	1126	686	2074
Stephenson	13	31	221	1059	447	1771
Winnebago	7	13	89	534	390	1033
Totals	167	261	1698	7842	5381	15349

IDNR Sharpshooting Protocols

Rationale: The use of sharpshooting as a management tool to supplement hunter harvest allows the Department to conduct very localized, focused deer reductions in small areas that are known to have CWD. Our goal is to reduce disease transmission rates by lowering densities in infected areas, to reduce environmental contamination from infected deer, and to create a situation where sick deer are being removed from the population at a higher rate than deer are becoming newly-infected. Advantages to using sharpshooting include: (1) focused sharpshooting allows reductions to be limited only to areas with disease, so healthy populations in the remainder of a county are not impacted as they would be if we relied solely on hunting for management; (2) carefully-controlled sharpshooting can be conducted on properties that do not normally allow hunting (or allow only very limited hunting), so that management can be achieved in areas that normally serve as refuges to hunting; (3) focused sharpshooting has been shown to remove sick animals at a higher rate than hunting programs; and (4) sharpshooting can target specific high-risk deer social groups known to have CWD. Sharpshooting also provides detailed, localized surveillance information about disease distribution and prevalence rates within infected areas.

Timing: Following the close of deer hunting seasons in January, teams of IDNR staff that were trained/certified for sharpshooting began culling deer wintering in or around known CWD locations. All IDNR sharpshooting activities were carried out between January 15 and March 31, 2013.

Aerial Surveys: Deer were counted via helicopter survey during periods of suitable snow cover to determine distribution and population size within the known CWD areas, enabling us to focus sharpshooting activities on deer in winter concentration areas that included or were near CWD-infected properties.

Locations used for sharpshooting: Sharpshooting areas were generally limited to locations within a 2-section buffer zone around each known CWD-positive section (1 section = ~1 mile²). Sharpshooting was only conducted with the permission of the landowner.

Significant changes during FY2012-2013: Loss of federal funding and a shortage of state funds resulted in budget cuts for CWD management this year. As a result, sharpshooting operations were reduced, and staff focused sharpshooting efforts in the peripheral areas of the CWD outbreak in an effort to fight further spread of the disease. No sharpshooting was conducted in most of the central core CWD area, which included Winnebago County, Boone County, and the northeastern portion of Ogle County.

Carcass handling/disposition: All animals (including fawns) from which suitable tissue samples could be collected were tested for CWD. Other tissue samples were collected for genetic testing and evaluation of reproductive status at the University of Illinois Champaign/Illinois Natural History Survey. All deer with negative CWD test results were processed and donated to the Northern Illinois Food Bank.

IDNR Sharpshooting Results

Number of counties in which deer were taken: 9

Number of sections in which deer were taken: 86

Number of deer taken: 661 (mean # deer taken/section = 7.7; range = 1-37)

Number of CWD-positive deer taken: 11

More specific sharpshooting results and aerial deer survey results are presented in Table 4 and Figure 7.

Other Sharpshooting Programs in CWD counties

Deer Population Control Permits (DPCP): DPCPs were issued to four land-managing entities in three CWD counties (DuPage, JoDaviess, and Winnebago, although DuPage County was not known to have CWD prior to permit issuance). Permit recipients removed 229 deer from 18 sites in those counties, and identified one CWD-positive deer from Winnebago County and one from DuPage County.

Table 4. Deer census and sharpshooting results by management unit in the northern Illinois CWD area during winter 2012-2013. Management units are as depicted in Figure 7. The number of deer removed includes both IDNR sharpshooting and other sharpshooting programs that fall within the management unit.

Management Unit	Area Surveyed (mi ²)	# Deer Counted	Deer/mi ² of Total Area Surveyed	Deer/mi ² of Deer Habitat	# Deer Removed	% of Counted Deer Removed
A - Warren-Nora	16.3	259	15.9	88.7	26	10.0%
B - Stockton	25.6	722	28.2	48.3	29	4.0%
C - Pearl City	68.4	1387	20.3	30.1	57	4.1%
D - Freeport	24.8	373	15.0	23.9	16	4.3%
E - Durand	14.7	218	14.9	31.1	0	0.0%
F - Stillman Valley	24.9	391	15.7	60.0	58	14.8%
G - Capron	9.9	59	5.9	12.2	1	1.7%
H - Harvard	40.3	447	11.1	18.4	24	5.4%
I - Richmond-Wonder Lake	46.9	337	7.2	12.4	15	4.5%
J - Marengo-Union-Woodstock	114.7	367	3.2	6.1	32	8.7%
K - Kirkland-Kingston	45.2	366	8.1	20.6	24	6.6%
L - Gilberts	43.9	495	11.3	24.3	87	17.6%
M - Burlington-Sycamore	39.9	133	3.3	11.3	6	4.5%
N - Elgin	24.2	199	8.2	16.0	1	0.5%
O - Hanover Park	24.2	52	2.2	12.5	37	71.2%
P - Sugar Grove	33.2	142	4.3	12.4	47	33.1%
Q - Sandwich-Waterman	50.2	212	4.2	21.4	9	4.2%
R - Shabbona	23.8	241	10.1	41.7	16	6.6%
S - Oswego	23.5	185	7.9	17.6	0	0.0%
T - Mendota	24.4	80	3.3	38.1	3	3.8%
U - Sheridan-Ottawa	71.9	524	7.3	23.0	40	7.6%
V - Seneca-Morris	66.3	1226	18.5	40.0	97	7.9%
W - Channahon-Coal City	50.3	753	15.0	31.2	38	5.0%
TOTAL	907.6	9168	10.1	23.3	663	7.2%

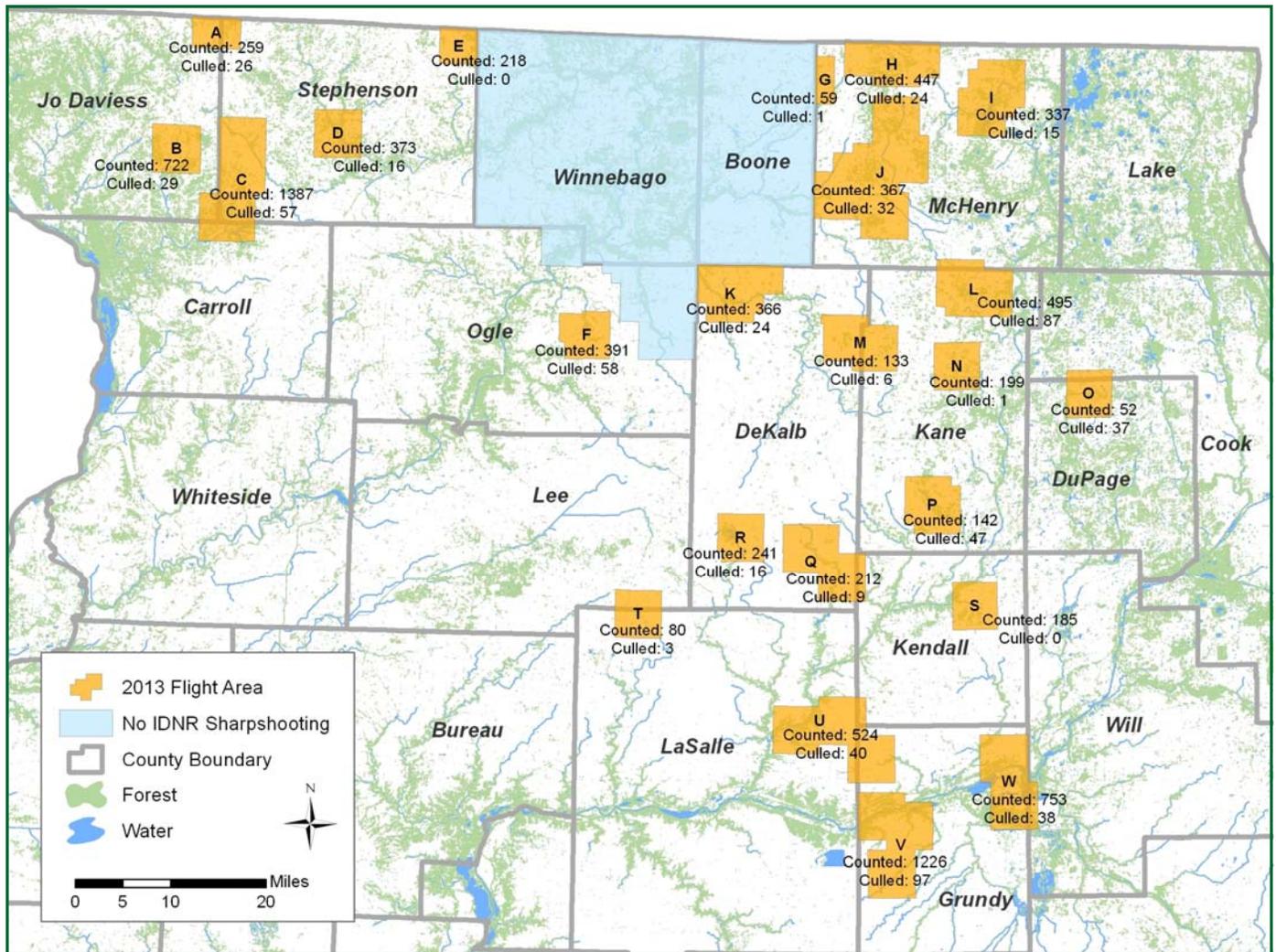


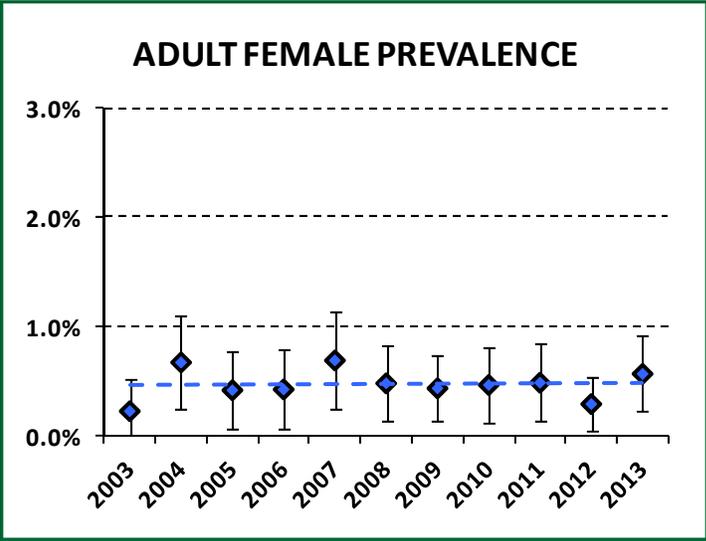
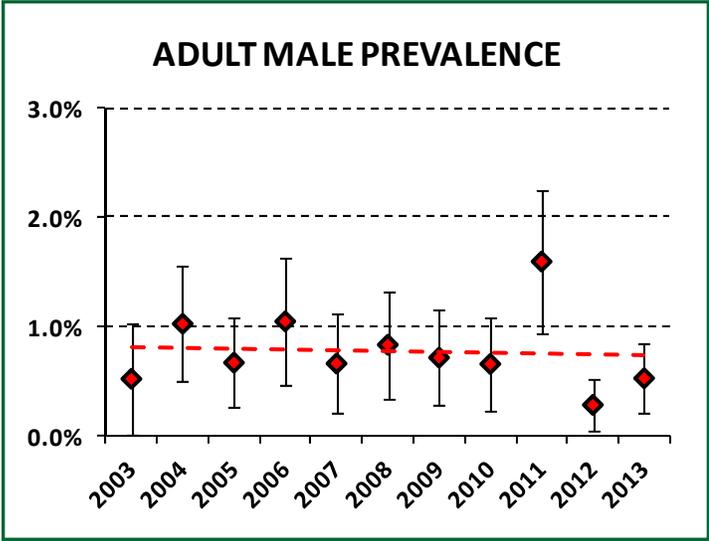
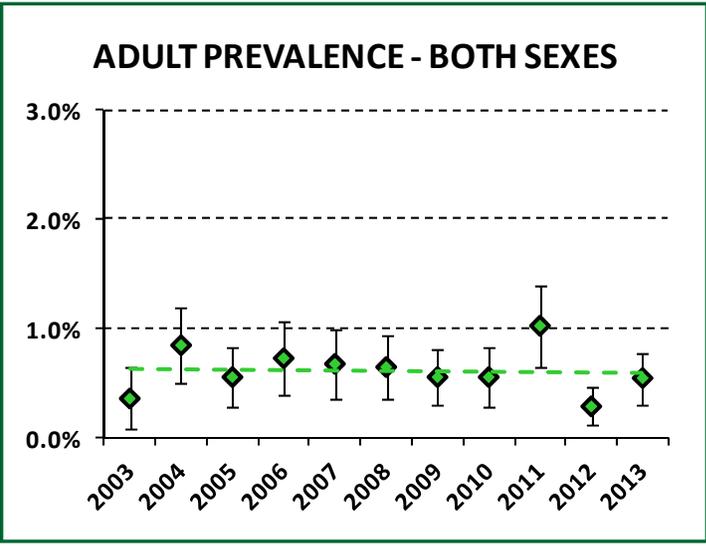
Figure 7. Number of deer counted during aerial censuses and removed by sharpshooters in CWD-affected areas of northern Illinois during winter 2012-2013. Totals reflect number counted/culled within the shaded flight boundary.

Discussion: Illinois CWD in FY2012-2013

Thirty-six CWD-positive deer were identified from 8,064 usable samples collected statewide. Estimated prevalence rates in the CWD counties remained low, with an overall rate of 0.54% in the 12-county area. There has been no increasing trend in CWD prevalence since 2002 (Fig. 8), in contrast with increasing prevalence trends observed in many other states where chronic wasting disease has been found. Estimated prevalence rates in the original four CWD counties have averaged about 2.5 times higher than in the 12-county area during this period. There are some specific local areas of concern in Illinois. These include (1) areas in which there is resistance to management (and therefore limited sharpshooting), which has created refuges for sick animals; and (2) recently-established, outlying disease foci with increasing prevalence rates, in which our initial management approach has typically been limited to a small amount of sharpshooting for follow-up surveillance after discovery of CWD in the area.

Surveillance resulted in identification of positive deer in two new counties this year: a suspect adult female deer near Yorkville in Kendall County in July 2012; and an adult female taken under authority of a Deer Population Control Permit in DuPage County in November 2012.

Figure 8. Trends in CWD prevalence for hunter-harvested adult deer (\geq yearling) during 2003-2013 for the twelve counties in which CWD has been identified. Error bars at each point depict the 95% confidence interval of the estimate. Mean prevalence rates in males have been 60% higher than in females throughout the 11-year period, but were virtually identical during the past two years.



For the second straight year, highest CWD prevalence rates in adult deer (12.77%) were found in Block 2,0, which includes the northwest corner of DeKalb County (Fig. 6). There is opposition to disease management in this area, and the Department has access to only a few properties for sharpshooting, so conditions are unlikely to improve unless additional cooperators can be found. High prevalence was also observed in Block 3,4 (Northeast DuPage County — a new area), but those high rates were due to sample distribution in relation to the block boundaries. After initial detection of the positive deer, additional samples were collected locally for follow-up evaluation, but the boundary of the block is within a few hundred yards of the positive location, and most follow-up samples fell into Block 3,3. However, no additional positive deer were found, and most suitable deer habitat in that area falls to the west in Block 3,3.

During winter 2012-13, sharpshooting activities were confined to peripheral areas outside the main disease core, and aimed at preventing disease spread. Many of the sharpshooting locations were ‘spark’ areas, where CWD has been found but is not known to be established. In those locations the primary goal was to gather additional surveillance information to clarify the disease status of the area, rather than to bring about significant population change. Because of this, the number of deer taken at those locations was limited, and sharpshooting ceased when surveillance quotas were reached. Higher numbers of deer were taken from areas which have produced multiple CWD cases, particularly where deer densities are high. Agency sharpshooters removed 661 deer, with an additional 229 removed by permittees with Deer Population Control Permits.

In 2013 scientists from the Illinois Natural History Survey, the University of Illinois, Purdue University, and the Department of Natural Resources published the results of a study that examined the effectiveness of the first several years of IDNR's management program for chronic wasting disease in the northern Illinois deer herd. The paper appears in the *Journal of Preventive Veterinary Medicine* (Vol. 110: 541-548), and is available online (without charge) at <http://www.sciencedirect.com/science/journal/01675877>.

The authors concluded that IDNR sharpshooting was associated with a decline in CWD prevalence in the areas where management occurred during the study period. Some other findings of the study included:

- In areas with management, declines in CWD prevalence were more consistently observed in young deer than in adults, suggesting that management reduced the risk of new infections;
- In areas where no sharpshooting occurred, the odds of a female deer having CWD were about 2.5 times higher than in areas where sharpshooters removed moderate to high numbers of deer (9-59 deer per section per year). Results for male deer differed somewhat, with lower risk of CWD at different levels of sharpshooting. Additional years of data should help clarify the nature of this relationship;
- Deer taken by agency sharpshooters were about twice as likely to be CWD-positive than deer taken by hunters.

The results suggest that frequent and consistent sharpshooting events with at least moderate culling intensity are needed to reduce CWD prevalence.

Appendix A. Useable CWD samples taken by county in Illinois during the 2012-2013 sampling season. Numbers in parentheses reflect the number of CWD-positive deer identified.

County	Check Stations	Drop-off Stations/ Meat Processors	Agency Culling	Special Permits ¹	Roadkill/ Incidental	Suspect	Total
ADAMS		7				1	8
ALEXANDER		17					17
BOND		2					2
BOONE	42 (3)	9			2	1 (1)	54 (4)
BROWN		9					9
BUREAU	1	15				1	17
CALHOUN		64					64
CARROLL	1	66	22				89
CHAMPAIGN		6					6
CHRISTIAN		8					8
CLARK		41					41
CLAY		152					152
CLINTON		5					5
COLES		56				2	58
COOK		10		121	1		132
CRAWFORD		126					126
CUMBERLAND		7					7
DEKALB	106 (3)	36 (1)	50 (3)				192 (7)
DEWITT		41					41
DOUGLAS		1					1
DUPAGE		11		144 (1)			155 (1)
EDGAR		14					14
EDWARDS		1					1
EFFINGHAM		34					34
FAYETTE		20					20
FORD		8					8
FRANKLIN		58					58
FULTON		12				1	13
GALLATIN		3					3
GREENE		80				2	82
GRUNDY	242 (2)	22	160 (1)		1	1	426 (3)
HAMILTON		21					21
HANCOCK		44					44
HARDIN		9					9
HENDERSON		2					2
HENRY		11					11
IROQUOIS		5					5
JACKSON		88					88
JASPER		25					25
JEFFERSON		146					146
JERSEY		66					66
JO DAVIESS	934	174 (1)	35	40		1	1185 (1)
JOHNSON		124					124
KANE	21	54 (2)	146 (2)		3	1	225 (4)
KANKAKEE		4					4
KENDALL	1	1				1 (1)	3 (1)
KNOX		42					42
LAKE	2	33		99	1		135
LASALLE	542 (1)	7	39		1	2	591 (1)
LAWRENCE		27					27

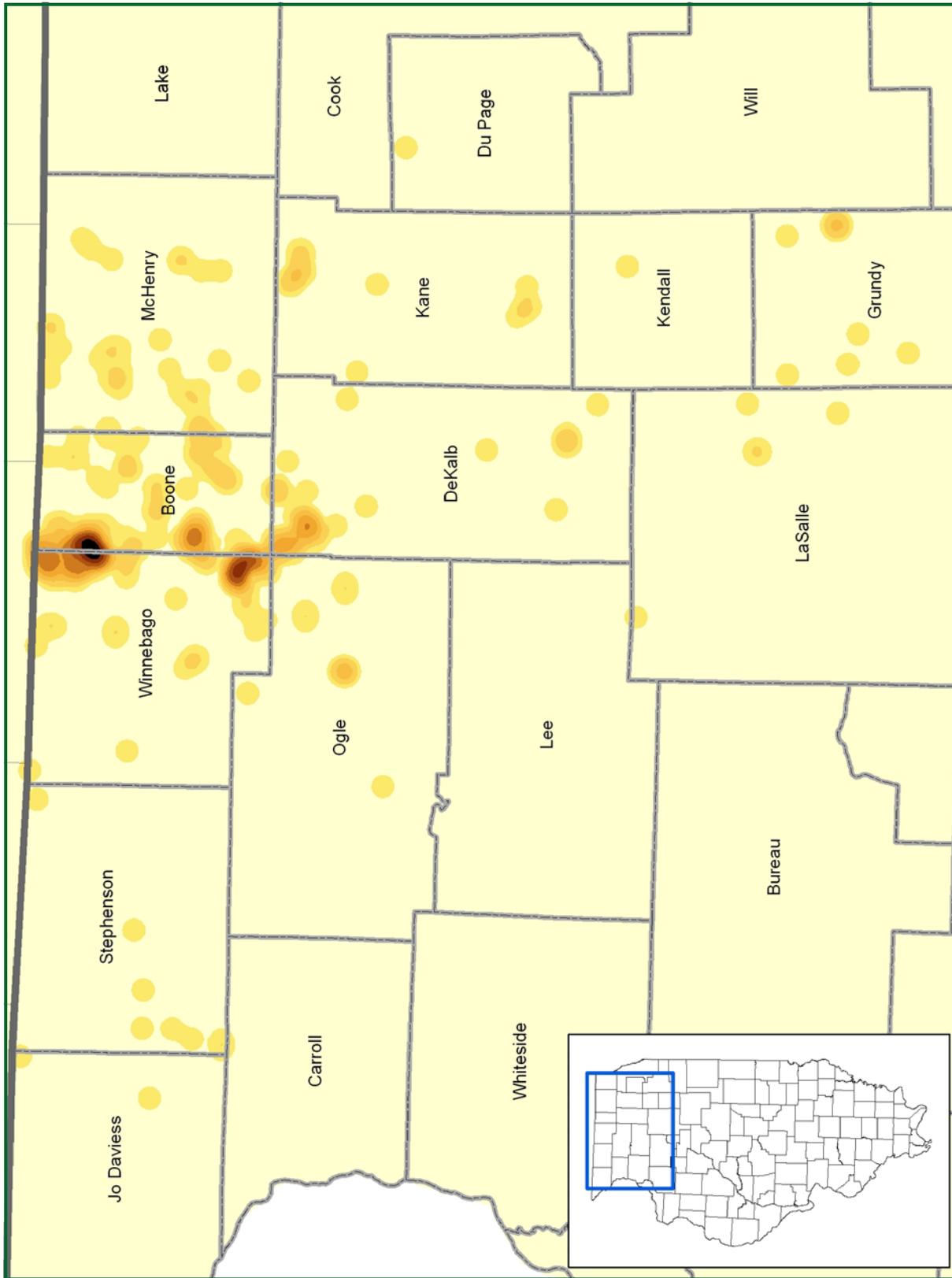
Appendix A cont'd.

County	Check Stations	Drop-off Stations/ Meat Processors	Agency Culling	Special Permits ¹	Roadkill/ Incidental	Suspect	Total
LEE		57			1		58
LIVINGSTON		71					71
LOGAN		9					9
MACON		41				1	42
MACOUPIN		25					25
MADISON		41			2	1	44
MARION		35					35
MARSHALL		7					7
MASON	1	6					7
MASSAC		33					33
MCDONOUGH		50					50
MCHENRY	155	64 (1)	73 (2)		6		298 (3)
MCLEAN		54					54
MENARD		3					3
MERCER		5					5
MONROE		12					12
MONTGOMERY		7					7
MORGAN		5					5
MOULTRIE	8	10				1	19
OGLE	454 (1)	22	58 (2)	1	1	2	538 (3)
PEORIA		3					3
PERRY		197					197
PIATT		55					55
PIKE		93			1		94
POPE		50					50
PULASKI		24					24
PUTNAM		5				2	7
RANDOLPH		48			1		49
RICHLAND		12					12
ROCK ISLAND		4					4
SALINE		30					30
SANGAMON		14					14
SCHUYLER		4					4
SCOTT		9					9
SHELBY	34	34					68
ST CLAIR		34					34
STARK		2					2
STEPHENSON	436 (1)	97 (1)	77 (1)		2	2	614 (3)
TAZEWELL		2				1	3
UNION		161					161
VERMILION		3					3
WARREN		11					11
WASHINGTON		55					55
WAYNE		78			1		79
WHITE		2					2
WHITESIDE		99			1		100
WILL		8					8
WILLIAMSON		114			1		115
WINNEBAGO	265 (3)	18		44 (1)	2	4 (1)	333 (5)
WOODFORD		6					6
TOTALS	3245 (14)	3653 (6)	660 (11)	449 (2)	28	28 (3)	8064 (36)

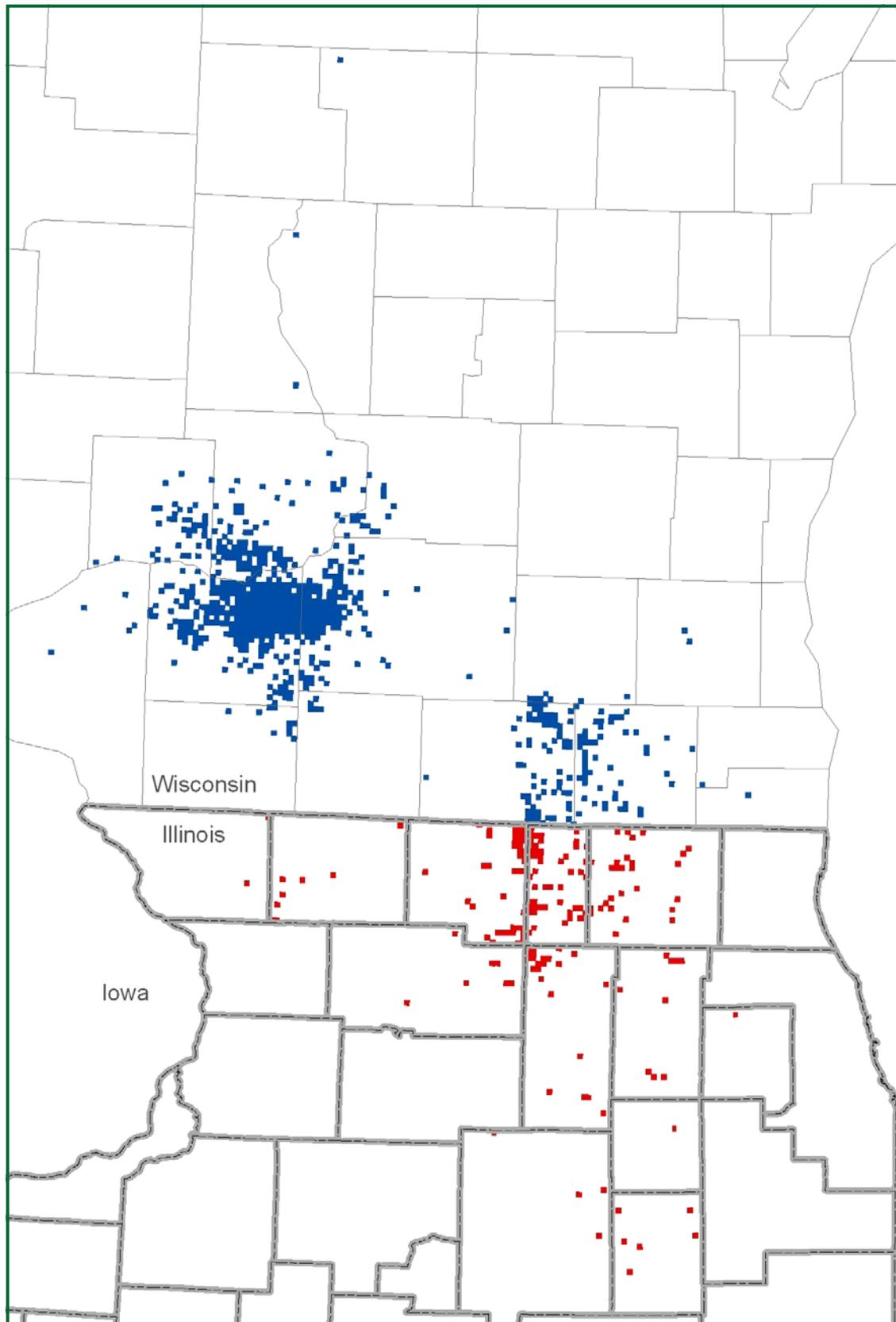
¹ Special permits include urban Deer Population Control Permits, nuisance Deer Removal Permits, and Scientific Permits.

Appendix B. Summary of CWD-positive Illinois deer collected during FY2012-2013.

Date Collected	County	Township, Range, Section	Sex	Age	Collection Method
7/10/12	KENDALL	337N 8E31	F	2	Suspect
10/11/12	WINNEBAGO	345N 2E 1	F	5	Suspect
10/30/12	MCHENRY	344N 6E 7	M	1	Hunting
11/14/12	KANE	342N 7E14	M	2	Hunting
11/16/12	BOONE	343N 4E 4	F	2	Hunting
11/16/12	BOONE	343N 4E 4	F	2	Hunting
11/16/12	DEKALB	342N 3E 6	M	1	Hunting
11/16/12	DEKALB	338N 3E25	M	4	Hunting
11/16/12	WINNEBAGO	343N 2E36	F	1	Hunting
11/17/12	KANE	341N 7E26	M	2	Hunting
11/17/12	WINNEBAGO	346N 2E22	M	3	Hunting
11/18/12	WINNEBAGO	343N 2E35	M	2	Hunting
11/18/12	DEKALB	342N 3E 6	F	1	Hunting
11/27/12	DUPAGE	340N10E 7	F	A	Sharpshooting
11/29/12	BOONE	345N 4E 5	F	3	Hunting
11/30/12	GRUNDY	332N 6E22	F	2	Hunting
11/30/12	GRUNDY	334N 8E22	M	1	Hunting
12/1/12	OGLE	342N 1E24	F	3	Hunting
12/1/12	STEPHENSON	427N 7E15	F	2	Hunting
12/2/12	LASALLE	335N 5E35	F	1	Hunting
12/12/12	STEPHENSON	426N 5E35	M	3	Hunting
12/12/12	JODAVIESS	429N 5E21	M	3	Hunting
12/18/12	DEKALB	342 3E 6	F	3	Hunting
1/28/13	KANE	338N 7E 9	M	2	Sharpshooting
1/28/13	DEKALB	342N 3E28	F	1	Sharpshooting
1/30/13	MCHENRY	344N 5E31	M	3	Sharpshooting
2/5/13	STEPHENSON	426N 5E14	F	2	Sharpshooting
2/6/13	WINNEBAGO	343N 2E15	F	2	Sharpshooting
2/18/13	KANE	338N 7E11	M	1	Sharpshooting
2/19/13	BOONE	344N 3E 5	F	F	Suspect
2/20/13	GRUNDY	333N 8E14	F	2	Sharpshooting
2/27/13	MCHENRY	346N 6E11	M	1	Sharpshooting
2/27/13	DEKALB	342N 3E 5	F	2	Sharpshooting
3/6/13	DEKALB	342N 3E28	M	1	Sharpshooting
3/11/13	OGLE	341N 1E 7	M	3	Sharpshooting
3/11/13	OGLE	341N 1E 7	F	F	Sharpshooting



Appendix C. Cumulative distribution and relative intensity of chronic wasting disease in northern Illinois. Darker areas represent larger numbers of positive deer identified.



Appendix D. Historical distribution of CWD in southern Wisconsin and northern Illinois as of June 30, 2013. Squares represent sections in which CWD has been detected.