

2015-2016 Michigan Chronic Wasting Disease Management and Surveillance Report

April 14, 2015 – May 31, 2016

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EXECUTIVE SUMMARY:

Chronic Wasting Disease (CWD) is a contagious neurological disease affecting members of the Cervidae family, including deer, elk, and moose. It attacks the central nervous system of infected animals resulting in emaciation, abnormal behavior, loss of bodily functions and ultimately death. The infectious agents causing CWD are prions, which are nonliving proteins that can persist in the environment for years and potentially decades.

First free-ranging deer confirmed positive for CWD:

In April 2015, a female, six-year-old, free-ranging white-tailed deer (index case) in Ingham County exhibiting symptoms consistent with CWD was killed as part of an ongoing targeted surveillance. The deer was sent to MDNR's Wildlife Disease Laboratory (WDL) where, collaborating with Michigan State University's Diagnostic Center for Population and Animal Health, it was identified as "suspect positive" through ELISA testing on retropharyngeal lymph nodes. The deer was confirmed positive through immunohistochemistry on May 20, 2015 by the National Veterinary Services Laboratory in Ames, Iowa.

Total samples tested statewide through May 31, 2016: 5,385 samples

Total samples tested within the CWD Management Zone through May 31, 2016: 4,594 samples

Total samples collected in the Core CWD Zone (DMU 333) through May 31, 2016: 3,153 samples

Total number of CWD positive deer by county and township through May 31, 2016 (Figure1):

Statewide (7)

Ingham County (4)

Meridian Township (4)

Clinton County (3)

Dewitt Township (1)

Watertown Township (2)

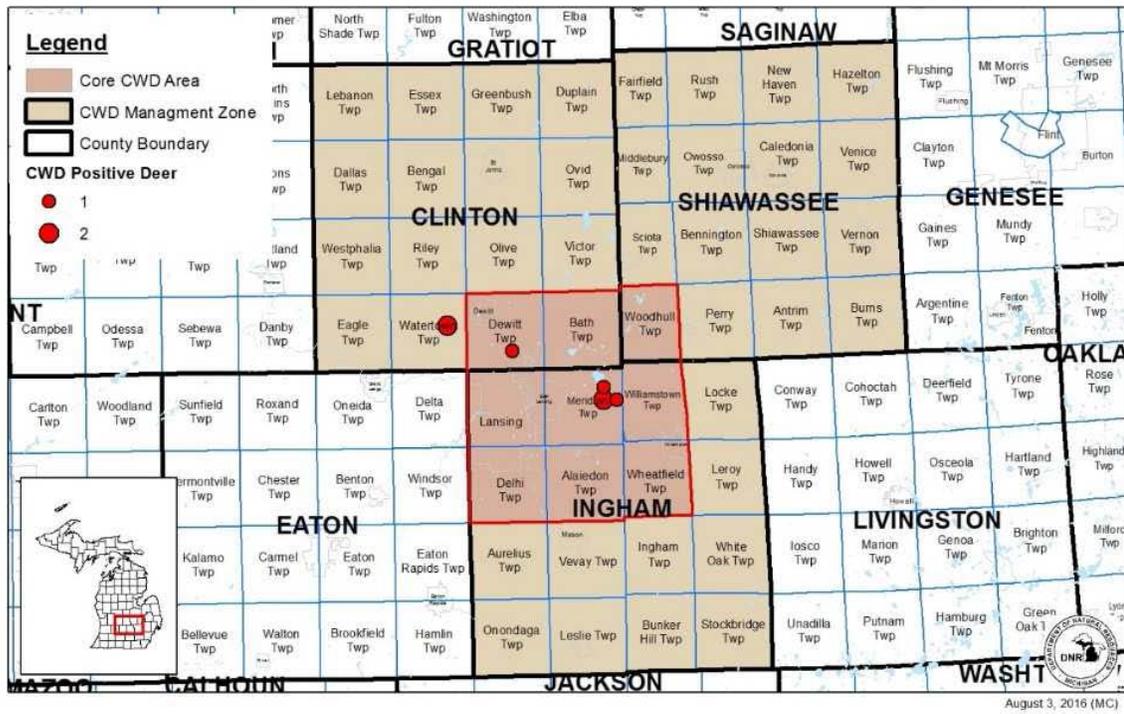


Figure 1. Location of CWD-positive deer detected during the reporting period.

MANAGEMENT AND SURVEILLANCE OF CWD DURING 2015-16

Summary: Upon initial discovery of CWD in a free-ranging white-tailed deer, the State's CWD Surveillance and Response Plan (the Plan) was initiated. The Plan established a CWD Management Zone and Core Area (Figure 1), and increased CWD surveillance in the free-ranging herd. A total of 5,385 samples were collected during the reporting period statewide, with 4,594 of those collected in the CWD Management Zone and 3,153 samples collected in the Core Area (Table 1). Over 49% of the samples collected in the CWD Management Zone were obtained through hunter harvest (2,258) during Michigan's deer hunting seasons (Figure 2). Collection of roadkilled/ found deer was the second highest contribution to surveillance with 1,087 (24%) samples. Deer removed by sharpshooters totaled 769 (17%), while deer taken by landowners with disease control permits or crop damage permits totaled 413 (9%). There were 67 (1%) deer exhibiting symptoms consistent with CWD that were specifically targeted for removal in the Management Zone, none of which tested positive for CWD.

Table 1. Number of deer tested in Michigan for chronic wasting disease since first detected in free-ranging deer, through May 31, 2016.

	Targeted Deer	Roadkill Deer/ Deer Found Dead	Deer taken on Disease Control & Crop Damage Permits	Sharpshooting Deer by Wildlife Service	Hunter Harvested Deer	Total	CWD Positive Deer
CWD Core Area (9 TWP)	30	825	366	714	1,218	3,153	5
CWD Management Zone* (3 County)	37	262	47	55	1,040	1,441	2
Remainder of State	172	187	12	63	357	791	0
Total	239	1,274	425	832	2,615	5,385	7

*CWD Management Zone totals exclude deer taken from within the Core Area.

Surveillance Information: By Method of Take

Hunting Seasons: A 3-county CWD Management Zone was established including Clinton, Ingham, and Shiawassee Counties (Figure 1). Within this CWD Management Zone, an early antlerless season was added (September 19-20) and feeding and baiting were prohibited. In addition to the CWD Management Zone, a CWD Core Area was created (DMU 333), which was comprised of the incident township (Meridian, Ingham County) and the 8 surrounding townships. Additional regulations in DMU 333 included mandatory deer check and the removal of antler point restrictions on the restricted tag of the combination license.

Antlerless license quotas were increased throughout the Management Zone and DMU 333. Each DMU within the Management Zone (Clinton-019, Ingham-033, and Shiawassee-078),

excluding DMU 333, saw antlerless quotas increased to 10,000 on private land. Public land antlerless quotas in these DMU's were increased to 1,200 for DMU 019, 600 for DMU 033, and 200 for DMU 078. Antlerless quotas and daily and seasonal purchase limits were removed within DMU 333. Additionally, antlerless license fees were reduced by 40% (from \$20 to \$12) in all three counties of the CWD Management Zone.

An estimated harvest of 1,686 deer occurred during the 2015-2016 hunting season within DMU 333 where mandatory check was required. There were 1,218 hunter harvested deer tested from within this area, indicating a hunter compliance rate of approximately 72%.

Disease Control Permits: Disease control permits (DCP's) were made available through the MDNR WDL to any landowner within DMU 333 having at least 5 acres of land. Permits were valid from May 20, 2015 through April 30, 2016. Submission of the deer head for CWD testing was required for any deer taken on a DCP. During this time, there were 278 active permits contributing to 363 deer taken within DMU 333. Of the 278 active permits, 164 permit holders (59%) reported shooting no deer. Three additional deer were taken after the start of a new cycle of DCP's that began on May 1, 2016.

Sharpshooting: Sharpshooters from USDA-Wildlife Services were employed to remove deer from within an approximate 2-mile radius of each confirmed CWD-positive deer location. The use of sharpshooters was done to focus deer reductions within the localized, affected area and reduce potential transmission and geographic spread of the disease. Shooting only occurred on private property with the landowner's permission, and was done in accordance with the interests of each participating landowner. The benefits of the sharpshooting approach are multi-faceted: 1) reduction of deer can be focused to areas of highest risk for CWD transmission rather than a broad approach that would reduce deer numbers over a wide area; 2) sharpshooting can remove deer from areas where deer are not hunted or cannot be hunted that act as deer refuges; 3) sharpshooting can occur throughout the year, which can remove potentially positive animals off the landscape, thus limiting transmission of the disease and 4) sharpshooting has proven to be a successful tool for removing the highest proportion of CWD positive individuals by focusing on the family groups that are most at-risk. Within the CWD Management Zone, sharpshooters removed 769 deer from May 20, 2015 through May 31, 2016 (Table 1).

Since the discovery of the index case, four of the six deer (67%) that have tested positive for CWD were taken through sharpshooting efforts (Figure 3a and 3b). When possible, deer were donated to food banks with support from the Michigan Sportsmen Against Hunger Organization (MSAH). Only deer where CWD was not detected were donated through this program. With the assistance of MSAH, over 5,800 lbs. of venison were donated from this effort.

Roadkill: MDNR staff established a unique telephone number (517-614-9602) for individuals to report road-killed deer in DMU 333. An attempt was made to locate and retrieve reported road-killed deer 5 days a week. A total of 825 road-killed deer were picked up in DMU 333 during the reporting period. An additional 262 were picked up within the remainder of the Management Zone, mostly in areas surrounding where CWD-positive deer were detected in southern Clinton County. None of the road-killed deer tested positive for CWD during the reporting period.

Targeted Samples: Targeted samples are deer that exhibit any symptoms consistent with CWD and are removed for the purpose of sampling. The MDNR remains committed to combating the disease, and early detection is a priority in this effort. Targeted sampling is often the most effective method for early detection of diseases. Targeted deer are prioritized throughout the state, and that philosophy is reflected in the sampling effort summary on Table 1. Though 67 deer were specifically removed from DMU 333 and the CWD Management Zone, 168 additional deer were reported and removed throughout the remainder of the state. After the index case, no additional targeted deer tested positive for CWD during this reporting period. Targeted deer received a postmortem exam, and common diagnoses responsible for the poor condition of these deer included physical trauma (old and recent), pneumonia, pleuritis, and pulmonary or cranial abscesses.

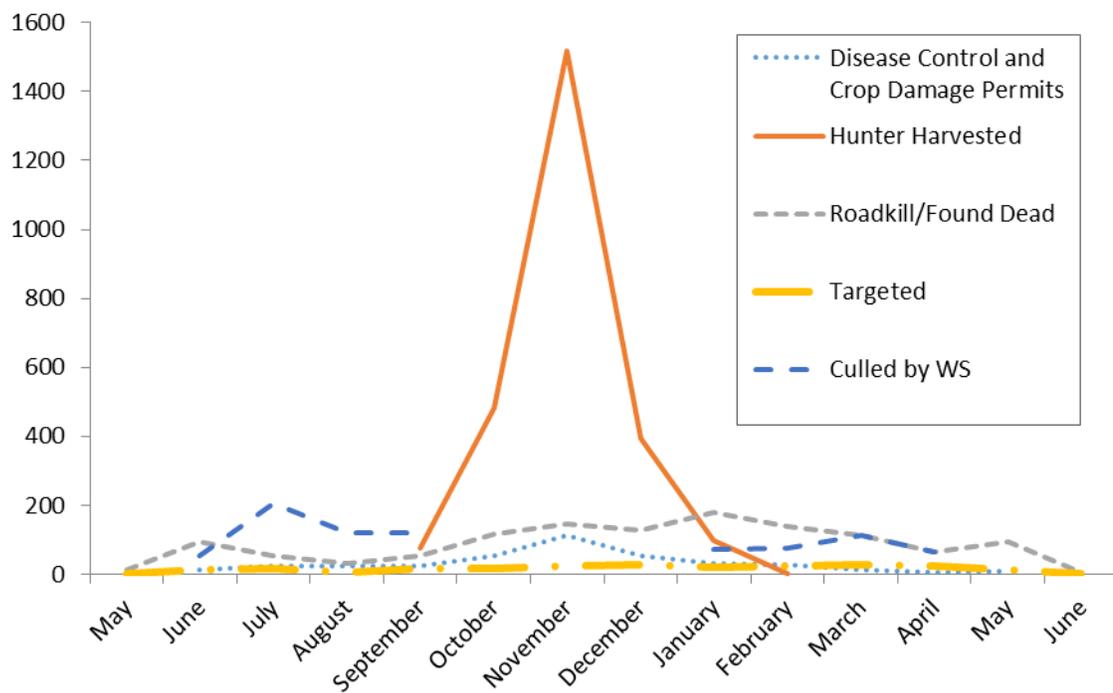


Figure 2. CWD samples collected throughout the reporting period in the CWD Management Zone, by method of take.

Surveillance Information: By Geographic Area

The index case was found in Meridian Township (Ingham County); the initial surveillance response and heavy sampling centered around that location. Through May 31, 2016, 907 individual deer were sampled from Meridian Township, over 300 more than the second highest township, Williamstown Township (531 deer), also in Ingham County (Figure 4).

Outside of DMU 333, the highest number of samples (185 deer) was collected in Watertown Township, Clinton County. This township was outside of DMU 333 and not subjected to mandatory hunter harvest registration, but in late December a hunter harvested deer was voluntarily submitted for testing and was confirmed to have CWD. As a result of this finding, surveillance was increased through the collection road-killed deer, sharpshooting, and issuance

of disease control permits. These efforts were largely responsible for the increased number of animals tested in that township.

Positives Identified:

A total of seven deer tested positive for CWD during the reporting period (Table 2). The age of positive animals ranged from approximately ½-year old to 6-years old. Four (57%) of the seven deer that tested CWD positive were from Meridian Township, Ingham County. Three (43%) of the seven positive were from Clinton County, one in DeWitt Township and two in Watertown Township. Of the seven positives, three (43%) were male and four (57%) were female (Table 2).

Table 2. Individual deer testing positive for CWD during the reporting period.

Date Collected	County	Township	Method of Collection	Sex	Age
04/14/2015	Ingham	Meridian	Targeted	F	6
06/25/2015	Ingham	Meridian	Sharpshooting	M	2
07/22/2015	Ingham	Meridian	Sharpshooting	F	5
11/08/2015	Clinton	Dewitt	Hunter Harvested	M	1.5
12/20/2015	Clinton	Watertown	Hunter Harvested	F	1.5
03/02/2016	Ingham	Meridian	Sharpshooting	M	0.5
03/02/2016	Clinton	Watertown	Sharpshooting	F	2.5

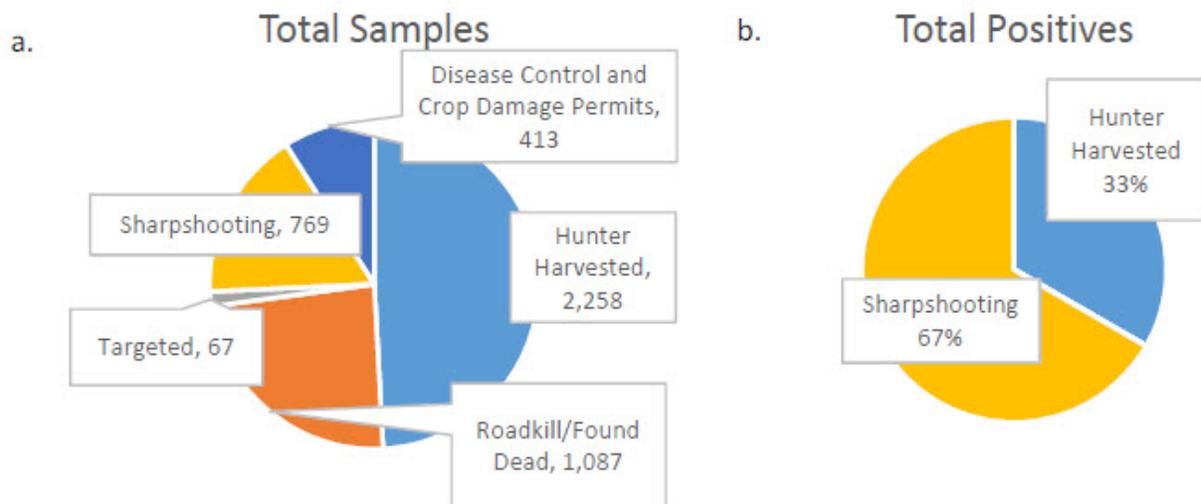


Figure 3. Total samples collected (a.) and percentage of positives for CWD testing (b.) in the CWD.

Michigan CWD Management Zone and Core Area

April 14, 2015 - May 31, 2016

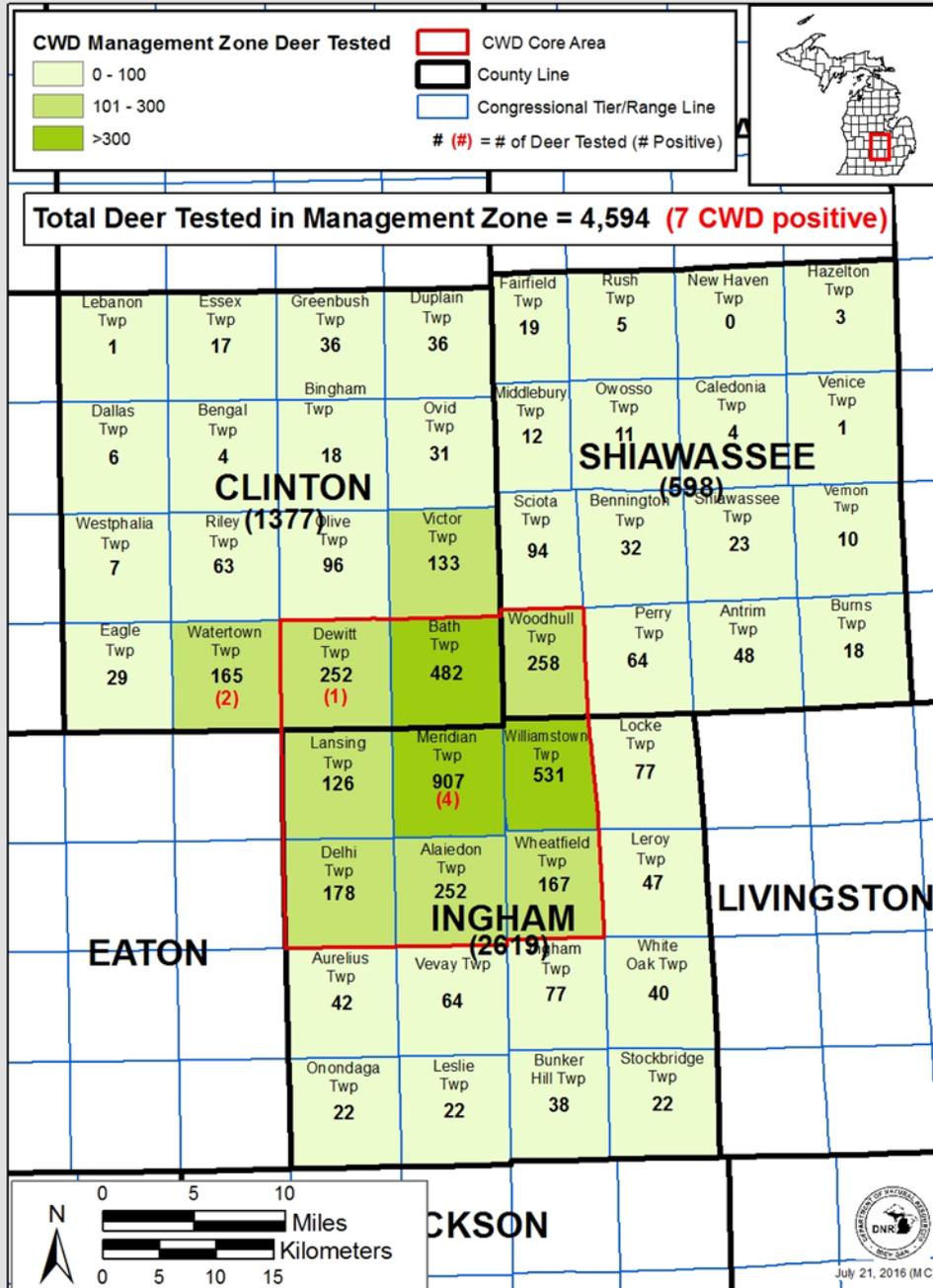


Figure 4. Total number of CWD samples collected within the CWD Management Zone, by township.

Relatedness:

A sample from every animal that tested CWD positive was sent to the Molecular Ecology Laboratory in the Department of Fisheries and Wildlife at Michigan State University for DNA testing; specifically, to determine the relatedness between individuals based on genetic similarities. The researchers found that the CWD-positive deer were related to one another, which suggested that disease transmission may be spreading through long-distance dispersal (Figure 5).

Of particular interest, the three deer from Clinton County were not related to one another, but were related to deer taken in Meridian Township, Ingham County. This suggested that deer originating from Meridian Township are likely responsible for the movement of the disease to new locations.

Summary:

With seven deer testing positive out of over 4,500 tested in the CWD Management Zone, it appears that CWD is occurring at very low levels across a broad area encompassing northern Ingham County and southern Clinton County. The fact that the deer were all related, either directly or distantly, supports the conclusion that CWD transmission is occurring at low levels, and may have been detected early through agency monitoring and public awareness. A continued aggressive approach should prove beneficial to limiting the spread and accumulation of the disease locally.

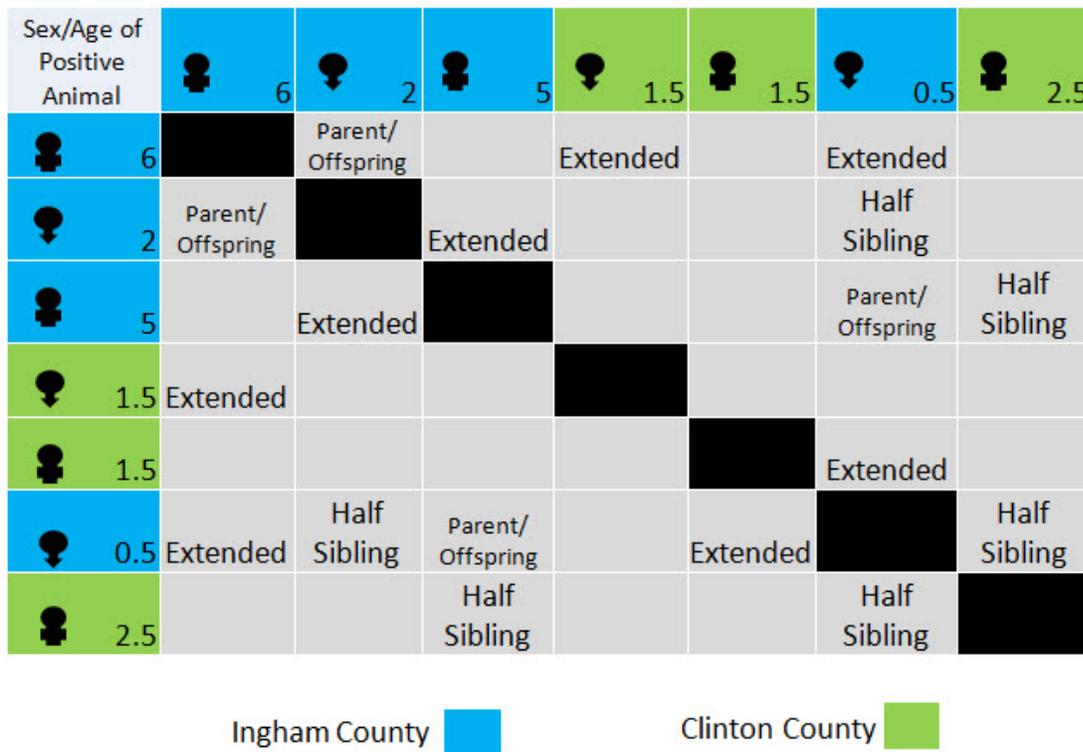


Figure 5. Relatedness between CWD positive animals during the reporting year, as determined by DNA similarity.

SPECIAL THANKS!

A special thanks to the local landowners and hunters who have granted permission to access their property for the specific removal of deer for CWD surveillance. Local units of government, especially Meridian Township and DeWitt Township, have provided tremendous assistance in allowing the opportunity to remove deer to help combat the disease. And finally, thank you to all the hunters and interested individuals who have attended public meetings, researched information online, and checked in deer to support the Division's effort at managing CWD.

Appendix A.

White-tailed deer tested for CWD by county and method of take, April 14, 2015 thru May 31, 2016.

County	Targeted	Roadkill/Found Dead	Disease Control and Crop Damage Permits	Hunter Harvested	Culled by Wildlife Services	Total
Alcona	1	0	0	9	0	10
Allegan	5	0	0	1	0	6
Alpena	1	0	0	3	0	4
Antrim	0	0	0	1	0	1
Arenac	1	0	0	2	0	3
Barry	5	0	0	5	0	10
Bay	0	0	0	1	0	1
Benzie	0	1	0	2	0	3
Berrien	2	0	0	0	0	2
Branch	2	0	0	0	0	2
Calhoun	5	0	0	9	0	14
Cass	2	0	0	0	0	2
Charlevoix	0	0	0	1	0	1
Cheboygan	0	0	0	1	0	1
Clare	1	0	0	8	0	9
Clinton	18	358	124	775	105	1,380
Crawford	2	0	0	2	0	4
Eaton	11	49	0	104	0	164
Genesee	1	0	0	3	0	4
Gladwin	5	0	0	2	0	7
Gratiot	3	1	0	24	0	28
Hillsdale	1	1	0	2	0	4
Huron	4	0	0	1	0	5
Ingham	36	642	228	1,048	664	2,618
Ionia	6	5	10	14	0	35
Isabella	0	0	0	15	0	15
Jackson	4	49	0	10	0	63
Kalamazoo	7	0	0	1	0	8
Kent	7	4	0	1	0	12
Lake	0	0	0	4	0	4
Lapeer	9	0	0	7	0	16
Lenawee	3	0	0	3	0	6
Livingston	3	3	0	28	0	34
Luce	0	0	0	2	0	2
Mackinac	2	0	0	0	0	2
Macomb	1	0	0	0	0	1
Manistee	3	0	0	1	0	4
Mason	3	0	0	1	0	4
Mecosta	3	0	0	9	0	12
Menominee	2	0	0	0	0	2
Midland	2	0	0	1	0	3
Missaukee	0	0	0	2	0	2
Monroe	2	1	0	1	0	4
Montcalm	8	0	0	10	0	18
Montmorency	0	0	0	2	0	2
Muskegon	4	0	0	0	0	4
Newaygo	1	0	0	5	0	6
Oakland	5	0	0	4	0	9
Oceana	1	0	0	1	0	2
Ogemaw	3	0	0	2	0	5

County	Targeted	Roadkill/Found Dead	Disease Control and Crop Damage Permits	Hunter Harvested	Culled by Wildlife Services	Total
Osceola	0	0	0	3	0	3
Oscoda	0	0	0	3	0	3
Otsego	3	0	0	5	0	8
Ottawa	2	3	1	0	0	6
Roscommon	0	1	0	4	0	5
Saginaw	4	4	0	11	0	19
Sanilac	4	0	0	3	0	7
Shiawassee	12	90	61	435	0	598
St. Clair	1	0	0	0	0	1
St. Joseph	3	0	0	2	0	5
Tuscola	8	0	0	0	0	8
Van Buren	2	0	0	0	0	2
Washtenaw	7	24	0	12	63	106
Wayne	3	0	0	0	0	3
Wexford	0	0	0	3	0	3
Unknown	0	4	2	6	0	12
Total	236	1,241	426	2,615	832	5,350

Appendix B:

White-tailed deer tested for CWD in each township of DMU 333 during the reporting period, by method of take.

Township	Disease Control and Crop Damage Permits	Hunter Harvested	Roadkill/Found Dead	Targeted	Sharpshooting	Total
Alaiedon	37	149	66	0	0	252
Bath	39	315	84	3	41	482
Delhi	16	92	68	2	0	178
Dewitt	53	78	109	3	9	252
Lansing	5	5	99	5	12	126
Meridian	91	85	227	12	492	907
Wheatfield	14	121	32		0	167
Williamstown	56	217	95	3	160	531
Woodhull	55	156	45	2	0	258
Total	366	1,218	825	30	714	3,153