



STATE OF MICHIGAN

DEPARTMENT OF NATURAL RESOURCES

LANSING



JENNIFER M. GRANHOLM
GOVERNOR

REBECCA A. HUMPHRIES
DIRECTOR

January 29, 2009

The Honorable Michelle McManus, Chair
Senate Appropriations Subcommittee
on Natural Resources
S-2 Capitol Building
P.O. Box 30036
Lansing, Michigan 48909-7536

Chair
House Appropriations Subcommittee
on Natural Resources
House Office Building
P.O. Box 30014
Lansing, Michigan 48909-7514

Dear Senator McManus and House Subcommittee Chair:

Pursuant to Section 502, PA 252 of 2008, a report of the Department of Natural Resources' (DNR) bovine tuberculosis eradication efforts, during the first quarter of Fiscal Year 2008-09, is attached.

If you have any questions, please feel free to contact me.

Sincerely,

Sharon M. Schafer, Chief
Budget and Support Services
517-335-3276

Attachment

- cc: Senate Appropriations Subcommittee Members
- House Appropriations Subcommittee Members
- Ms. Jessica Runnels, Senate Fiscal Agency
- Dr. Kirk Lindquist, House Fiscal Agency
- Mr. Robert Emerson, State Budget Director, Department of Management and Budget (DMB)
- Mr. Jacques McNeely, DMB
- Ms. Jennifer Harrison, DMB
- Director Rebecca Humphries, DNR
- Ms. Arminda Koch, Resource Management Deputy, DNR
- Mr. Rodney Stokes, Chief of Staff, DNR
- Mr. Daniel Eichinger, Legislative Liaison, DNR
- Dr. Russ Mason, DNR
- Mr. Gary Hagler, DNR
- Mr. Jason Crandall, DNR

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Bovine Tuberculosis Program Legislative Report Fiscal Year 2008-09 First Quarter Summary October 1, 2008 - December 31, 2008

Source: Wildlife Health Section

Disease Surveillance in Wildlife

During the fall of 2008, surveillance activities for bovine tuberculosis (TB) continued statewide, with an emphasis on the northern half of the Lower Peninsula. A total of 13,480 wild white-tailed deer were tested October 1, 2008 through December 31, 2008 (See table with submission by county in Appendix A). A total of 80 samples were submitted throughout the year for bacterial culturing at the Michigan Department of Community Health's TB Laboratory (75 deer, 1 black bear, 1 coyote, and 3 elk). Michigan State University's (MSU) Diagnostic Center for Population and Animal Health processed 80 deer samples microscopically. Final positive test results will not be available until presented to the Natural Resources Commission in March or April 2009. The map in Appendix B lists the total number of deer tested by county for the period January 1, 2008 - December 31, 2008. In addition, 252 elk and 7 moose were submitted during 2008, with all testing negative for bovine TB.

Disease Control Permits (DCPs)

See the Disease Control Permit report dated January 5, 2009, in Appendix C for an update on DCP activity, including submission numbers and lab results.

Regulation Enforcement Activities

The information is unavailable at this time. Regulation enforcement activities for the period October 1, 2008 - December 31, 2008 will be reported with the second quarter report in April 2009.

Research Activities – Proposals Under Development

Title: Evaluating Acceptance of Free-Ranging White-Tailed Deer Bovine Tuberculosis Management Strategies – Primary Investigator: Brent Rudolph, Wildlife Biologist, Department of Natural Resources

Managers have identified the need to develop publicly-acceptable control policies to maintain or improve efforts to eradicate an infection of bovine TB from white-tailed

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deer (WTD) in Michigan. A better understanding of factors influencing hunter compliance with baiting regulations and decisions to harvest deer was identified as a critical knowledge gap which challenges efforts to maintain and enhance TB control strategies. Research collaboration between the Department and Michigan State University (MSU) was initiated to examine these factors. The Michigan Department of Agriculture (MDA) will provide funding support to gain initial insights for this evaluation and will provide a point of contact to the Department who will be responsible for coordinating communications related to this portion of the project. The Department and MSU will conduct one or more workshops and meetings with wildlife managers, law enforcement personnel, agriculture and recreation industry professionals, and small groups of stakeholders, to gather data as part of this assessment. Modeling efforts will also be conducted to characterize the degree to which past modifications to deer hunting regulations have influenced harvest levels, while controlling for factors that influence hunting access and deer distribution, such as habitat, land ownership, and development patterns. This effort represents a unique and exciting multi-agency and university collaboration to engage the public in order to understand factors limiting the support for and effectiveness of TB management strategies.

Title: Bovine Tuberculosis Spatial Model for White-tailed Deer – Primary Investigator: Dr. Daniel O'Brien, Wildlife Veterinarian, Department of Natural Resources

The modeling approach is an adaptation of a spatially-explicit, stochastic model developed for TB in New Zealand brushtail possums to Michigan white-tailed deer (WTD). Iteratively applying this model over time, the dynamics of WTD and the expansion or control of TB can be predicted. The model constructs a true spatially-explicit framework rather than applying a non-spatial model to a lattice of cells representing contiguous geographic areas. The result is a continuous time/continuous space model that uses density surfaces to describe both host population density and TB transmission risk. By allowing these to vary continuously across the landscape, their values can be estimated at any point on the geographic and time surface.

The co-Principal Investigator, Dr. David Ramsey of the Arthur Rylah Institute for Environmental Research (ARI), Victoria, Australia, visited the DNR Wildlife Disease Lab (WDL) for ten days in August 2008. Meetings were held between the principal investigators and collaborators from Michigan State University and the University of Tennessee to fine tune the adaptation of the model to white-tailed deer. Code changes to the model were executed by Dr. Ramsey during his stay, and initial training of collaborators in running the model took place.

As of January 2009, a beta version of the final model has been completed and is being tested for bugs by the research team. The creation of functional GIS layers to account for habitat-related spatial aggregation of deer on the landscape remains the final piece necessary for completion of the final model. That process, underway at this writing, has been unavoidably delayed somewhat by demands on WDL staff time created by the discovery of Chronic Wasting Disease in captive deer in August 2008.

An associated study of possible vaccination strategies for TB in white-tailed deer using the spatial model is set to begin as soon as the final model is validated. That

effort forms part of the research for a Master's Degree in Fisheries and Wildlife from Michigan State University for Melinda Cosgrove, a technician at the WDL.

Finally, development of a research proposal to expand the TB spatial model to assess risks of transmission between wild white-tailed deer and wild elk, deer and cattle, and elk and cattle is underway. The proposed research will be a collaboration between investigators from DNR's WDL, the ARI, the University of Tennessee, Michigan State University and Landcare Research of New Zealand. The proposed funding agency for the work will be the National Institute for Mathematical and Biological Synthesis, a National Science Foundation supported Institute housed at the University of Tennessee at Knoxville.

Research Activities – Published Research

O'BRIEN, D. J., S. M. SCHMITT, D. E. BERRY, S. D. FITZGERALD, T. J. LYON, J. R. VANNESTE, T. M. COOLEY, S. A. HOGLE, AND J. S. FIERKE. 2008. **Estimating the true prevalence of *Mycobacterium bovis* in free-ranging elk in Michigan.** Journal of Wildlife Diseases 44: 802-810 (October 2008).

Abstract: Although relatively small, Michigan's elk herd is highly valued by both hunters and the general public. Elk and red deer are highly susceptible to infection with *Mycobacterium bovis*, the causative agent of bovine tuberculosis (TB), and outbreaks have been documented worldwide. The Michigan elk range lies entirely within counties where TB is known to be enzootic in white-tailed deer. Consequently, a project was undertaken to estimate the true prevalence of TB in Michigan's free-ranging elk herd. All elk harvested by licensed hunters during 2002-2004, and all nonharvest elk mortalities examined by the Department of Natural Resources Wildlife Disease Laboratory from November 2002-May 2005, were screened for gross lesions of TB with samples of cranial lymph nodes and palatine tonsils collected for histopathology and mycobacterial culture. In all, 334 elk were included in the study. Twenty-three elk with gross lesions were considered TB suspects; all were culture-negative for *M. bovis*. However, *M. bovis* was cultured from two elk without gross lesions. The sensitivity, specificity, and negative predictive value of the current TB surveillance protocol were 0%, 100%, and 99.4%, respectively, while the apparent prevalence and true prevalence calculated directly from the sample were 0% and 0.6%, respectively. The positive predictive value and the estimated true prevalence of the population were undefined. The poor sensitivity of current surveillance was likely an artifact of its application to a relatively small sample, in order to detect a disease present at very low prevalence. The low prevalence of TB in Michigan elk, and the early stage of pathogenesis of the few infected animals, does not suggest elk are maintenance hosts at the present time.

Meetings Attended and Other Activities

Meetings attended by Dr. Steve Schmitt, DNR Wildlife Veterinarian, Wildlife Health Section Supervisor:

- Conference call with USDA about the Bovine TB Eradication Project
- DNR/MDA Cervid Meeting
- Farm Bureau meeting

- TB Coordinator meeting
- TB Program Review with USDA-Veterinary Services
- Wildlife Health Meeting, DNR Wildlife Division
- TB Advisory Committee
- USDA TB Public Meeting
- Research Meeting with USDA-Wildlife Services

Meetings attended by Dr. Dan O'Brien, DNR Wildlife Veterinarian:

- 10/8/08: Meeting with MDA regarding clarification of TB strategic goals for cattle producers
- 11/5/08: Participated in USDA TB review
- 11/13/08: TB training session for seasonal deer check station workers

Meetings attended by Brent Rudolph, DNR Wildlife Division:

- 10/1/08: Met with Stephanie Hogle and Dan O'Brien at DCPAH to provide insight regarding necessary spatial data processing to produce a deer habitat layer for the TB Spatial Model.
- 11/5/08: Attended the Bovine TB Leadership meeting at Farm Bureau and co-delivered a Michigan TB Eradication Project Update presentation with Dr. John Tilden, Michigan Department of Agriculture.
- 11/9/08: Delivered a presentation, "A review of criminological theory to identify strategies to enhance bovine tuberculosis eradication efforts in Michigan" at the annual conference of The Wildlife Society in Miami, FL. Co-authors of the presentation included Dr. Shawn Riley and Dr. Carole Gibbs, both of Michigan State University.

APPENDIX A

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Table: Wild white-tailed deer tested for bovine TB 10/1/08 - 12/31/08

County_Name	Total
Alcona	1027
Alger	42
Allegan	290
Alpena	1012
Antrim	337
Arenac	118
Baraga	54
Barry	262
Bay	58
Benzie	58
Berrien	48
Branch	47
Calhoun	52
Cass	31
Charlevoix	139
Cheboygan	138
Chippewa	70
Clare	99
Clinton	92
Crawford	205
Delta	79
Dickinson	52
Eaton	50
Emmet	144
Genesee	92
Gladwin	107
Gogebic	43
Grand Traverse	58
Gratiot	111
Hillsdale	32
Houghton	46
Huron	73
Ingham	66
Ionia	268
Iosco	345
Iron	66
Isabella	76
Jackson	16
Kalamazoo	55
Kalkaska	80
Kent	1551

County_Name	Total
Keweenaw	31
Lake	84
Lapeer	88
Leelanau	53
Lenawee	46
Livingston	83
Luce	37
Mackinac	53
Macomb	46
Manistee	69
Marquette	49
Mason	106
Mecosta	120
Menominee	84
Midland	60
Missaukee	90
Monroe	28
Montcalm	299
Montmorency	652
Muskegon	113
Newaygo	307
Oakland	70
Oceana	72
Ogemaw	420
Ontonagon	11
Osceola	98
Oscoda	469
Otsego	205
Ottawa	115
Presque Isle	588
Roscommon	404
Saginaw	108
Sanilac	59
Schoolcraft	54
Shiawassee	296
St. Clair	60
St. Joseph	54
Tuscola	53
Van Buren	65
Washtenaw	48
Wayne	12
Wexford	58
Unknown county	74
Grand Total	13480

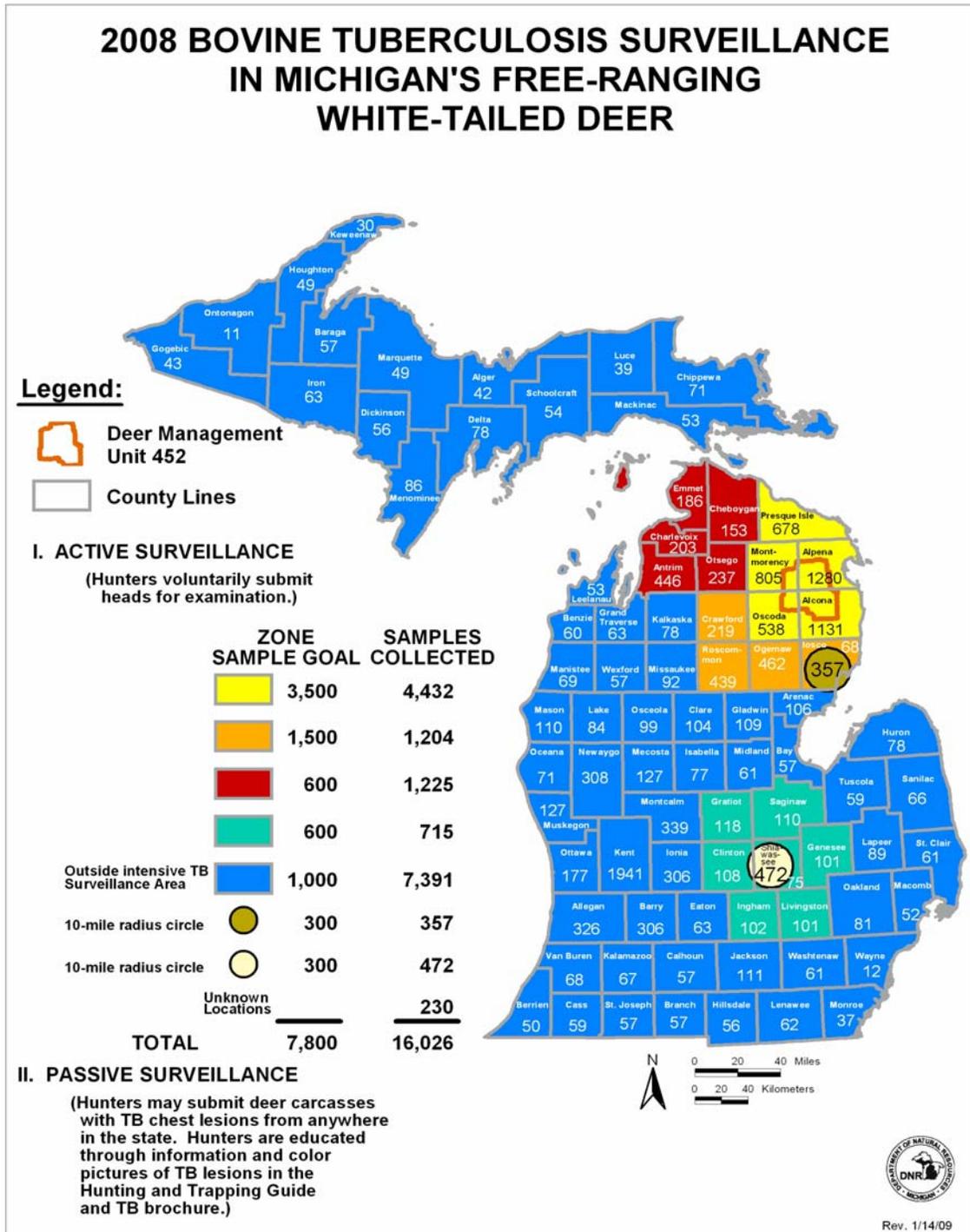
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APPENDIX B

Map: Wild white-tailed deer tested for bovine TB, 1/1/08 - 12/31/08



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APPENDIX C

DISEASE CONTROL PERMIT PROGRAM MONTHLY UPDATE January 5, 2009

Preliminary Summary for 2008

BOVINE TUBERCULOSIS

Permits for Livestock Producers

Disease control permits (DCPs) have been available for several years on a request basis, but some cattle producers have expressed difficulty in getting the permits in a timely manner when needed. This initiative was designed to make it simpler for cattle producers in areas where bovine tuberculosis (TB) is established to control deer numbers on their farms. Use of the DCPs may help reduce the risk of transmission of TB from free-ranging deer to cattle. Current plans are to make the DCPs available in this manner for three years beginning January 2008, then evaluate the effectiveness of the program.

In Northeastern Michigan, the 5-county TB Area

In early January 2008, the Wildlife Disease Lab (WDL) mailed out DCPs to all cattle producers in Alcona, Alpena, Montmorency, Oscoda, and Presque Isle Counties with more than six head. Each producer was initially mailed five kill tags; more are available upon request when the original five are filled. The permits are valid for a year and may be used year-round.

- 594 deer have been taken by 185 livestock producers.
- 663 permits and 3,737 permit tags have been mailed.
- 268 signed permits have been received.
- 27 producers have requested more tags.
- 26 have indicated that they do not wish to participate and have returned permit and tags.

In Northeastern Michigan, Outside the 5-county Area

County	Permit Holders	Number of Permit Tags Issued	Number of Deer Shot
Antrim	8	100	54
Charlevoix	5	43	28
Cheboygan	3	26	14
Emmet	5	31	11
Iosco	12	80	51
Ogemaw	4	22	14
Otsego	1	10	10
TOTALS	38	312	182

In Shiawassee County

Due to the finding of a TB positive wild deer in Shiawassee County in the fall of 2007, letters explaining the program were mailed to Shiawassee and Clinton County cattle producers located in a ten-mile radius around the positive deer.

- 90 deer have been taken by 28 livestock producers.
- 150 letters of invitation were mailed.
- 56 permits and 325 tags have been mailed.
- 39 signed permits have been received.
- 5 producers have requested more tags.

Permits for Private Landowners (non-agricultural) in DMU 452

Following changes to Section 5.7 of the Wildlife Conservation Order by the Natural Resources Commission in November 2007, private landowners, other than cattle producers, may be issued DCPs if they own property 1) in a county where TB is found in any species, or 2) within a 30-mile radius of a location where TB is found in any species. In particular, participation in the DCP program is being offered to private landowners in DMU 452. Consequently, a letter was sent to many hunt clubs and larger landowners in DMU 452 to inform them of this additional opportunity to take deer. These permits expired on 4/30/2008. Two requests were approved for shooting between Sept. 23 - Sept. 30, and nine deer were shot during this time.

- 113 deer have been taken by 13 landowners.
- 4 deer have tested positive for TB, all from DMU 452.
- 26 have requested and were mailed a total of 295 tags.
- 20 signed permits have been received.
- 5 have requested more tags.

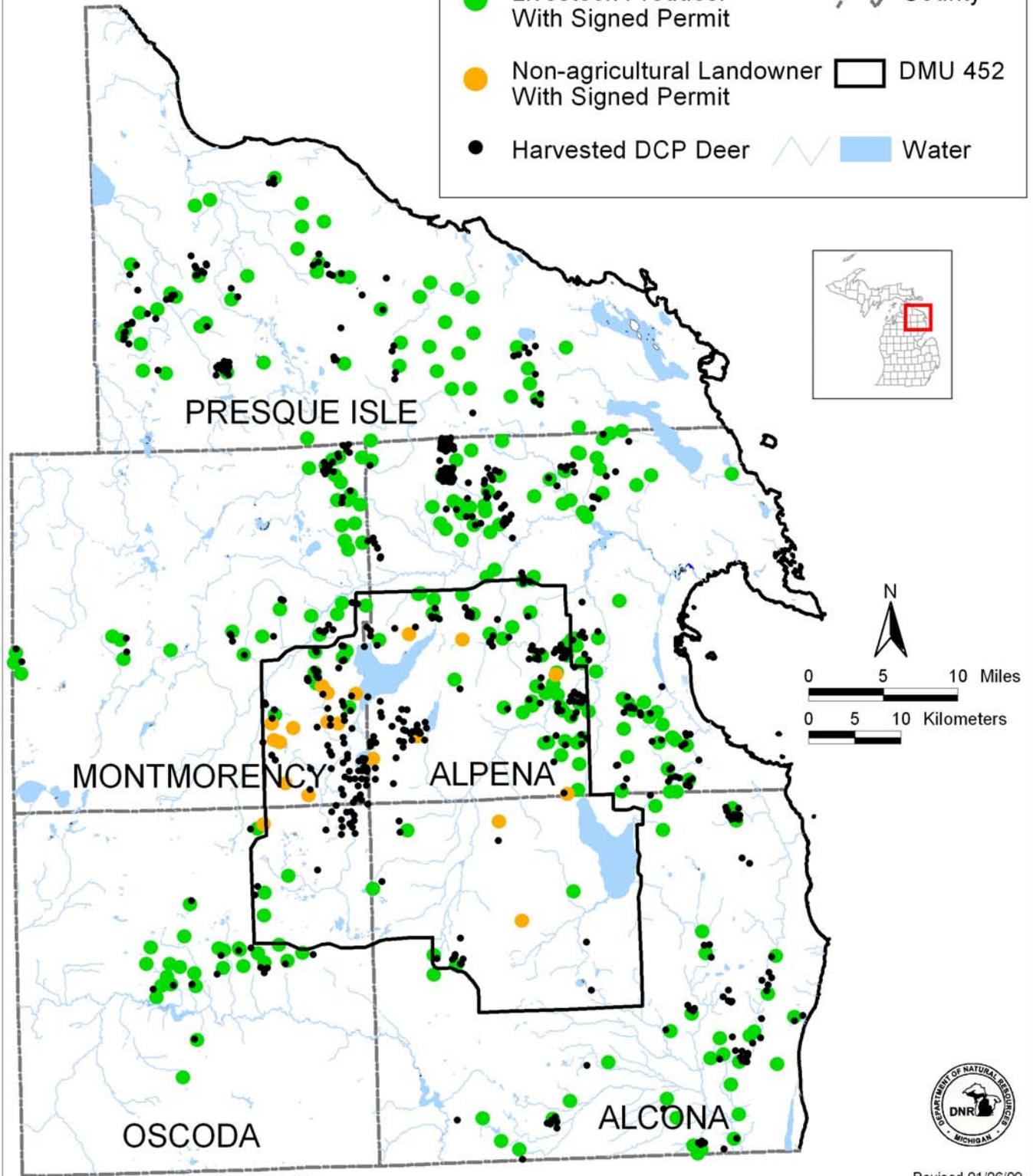
2008 Bovine TB Laboratory Testing Results for Wild Deer Taken on DCPs

County	Positive	Total Tested
Alcona		84
Alpena	3 (DMU 452)	293
Antrim		33
Charlevoix		40
Cheboygan		10
Clinton		2
Emmet		12
Iosco		41
Kent		230
Montmorency	1 (DMU 452)	109
Ogemaw		47
Oscoda		32
Otsego		5
Presque Isle		85
Shiawassee		77
Grand Total	4 (DMU 452)	1,100

5 COUNTY DISEASE CONTROL PERMITS (DCP)

LEGEND

- Livestock Producer With Signed Permit
- Non-agricultural Landowner With Signed Permit
- Harvested DCP Deer
- County
- DMU 452
- Water



Revised 01/06/09

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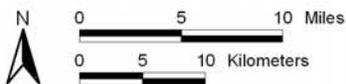
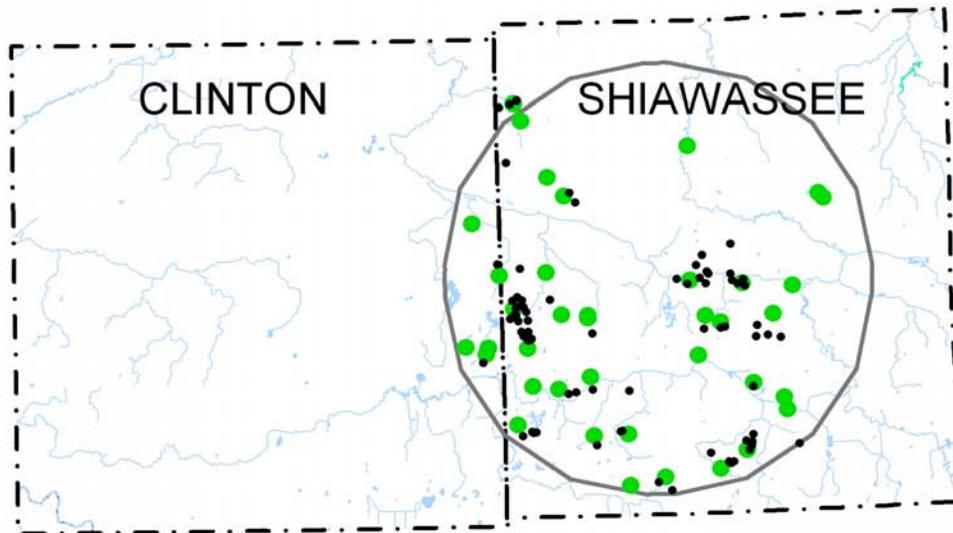
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DISEASE CONTROL PERMITS ISSUED AND WHITE-TAILED DEER TESTED FOR BOVINE TUBERCULOSIS IN SHIAWASSEE COUNTY

LEGEND

- Livestock Producer With Signed Permit
- TB Negative Deer
- 10 Mile Buffer Around 2007 TB Positive Deer
- County
- Water



Revised 01/06/09

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CHRONIC WASTING DISEASE

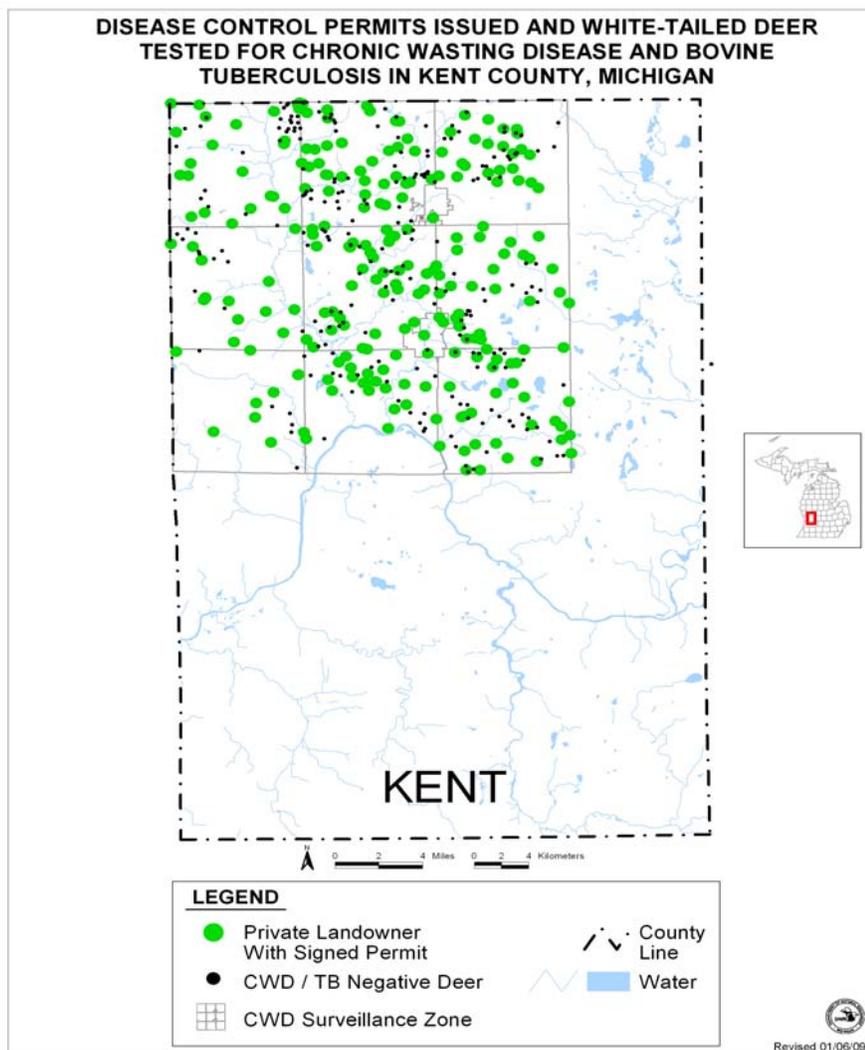
Permits for Private Landowners

Due to finding chronic wasting disease (CWD) in a privately owned captive deer in Kent Co., landowners within the CWD surveillance zone may obtain DCPs to cull deer on their properties to assist the DNR with testing deer in the area. These permits were made available immediately after the laboratory confirmation.

- 251 deer have been taken by 115 landowners.
- 301 have requested permits.
- 290 permits and 1,480 tags have been mailed.
- 233 signed permits have been received.

2008 CWD Laboratory Testing Results for Wild Deer Taken on DCPs

County	CWD Positive	Total Tested
Kent	0	230



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