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GOVERNOR

STATE OF MICHIGAN

DEPARTMENT OF NATURAL RESOURCES

LANSING



REBECCA A. HUMPHRIES
DIRECTOR

June 13, 2008

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

The Honorable Michael Lahti, Chair
House Appropriations Subcommittee
on Natural Resources
S-1489 House Office Building
P.O. Box 30014
Lansing, Michigan 48909-7514

Dear Senator McManus and Representative Lahti:

Pursuant to Section 502, PA 122 of 2007, a combined report of the Department of Natural Resources (DNR) bovine tuberculosis eradication efforts during the first and second quarters of Fiscal Year 2007-08 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
Mr. Dennis Fedewa, Chief Deputy, DNR
Ms. Arminda Koch, Resource Management Deputy, DNR
Mr. Dennis Fox, Chief of Staff, DNR
Mr. Daniel Eichinger, Acting Legislative Liaison, DNR
Mr. Douglas Reeves, DNR
Mr. Gary Hagler, DNR
Ms. Jane Schultz, DNR

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Department of Natural Resources
Bovine Tuberculosis Program
Fiscal Year 2007-2008 First and Second Quarter Summary
October 1, 2007 - March 31, 2008

Source: Wildlife Health Section

Disease Surveillance in Wildlife

During the first quarter, surveillance activities conducted by the Department of Natural Resources (Department) for bovine tuberculosis (TB) continued statewide, with an emphasis on the northern half of the Lower Peninsula. In white-tailed deer, 23 of 7,393 animals submitted for testing cultured positive. The Michigan Department of Community Health (MDCH) TB Laboratory performed bacterial cultures on 46 deer samples, and the Michigan State University (MSU) Diagnostic Center for Population and Animal Health processed 45 deer samples microscopically. In addition, 61 elk and four moose were submitted, with all testing negative for TB.

During the second quarter, statewide surveillance activities conducted by the Department for TB were primarily concentrated among road-killed deer and deer taken through the issue of disease control permits (DCPs). In white-tailed deer, two of 462 animals submitted for testing cultured positive. The MDCH TB Laboratory performed bacterial cultures on four deer samples, and the MSU Diagnostic Center for Population and Animal Health processed 11 deer samples and one black bear sample microscopically. The black bear sample tested negative for TB, as did 64 elk that were also submitted for testing.

**For first and second quarter statistics on the number of deer tested by county and the number of positive TB cases identified (see Appendix A, Table 1).

Disease Control Permit Program

Background Information

- An amendment was made to Section 5.7 of the Wildlife Conservation Order by the Natural Resources Commission in November 2007 to extend the DCP program to any private landowner who owns 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 Deer Management Unit (DMU) 452. Consequently, a letter was sent to many hunt clubs and larger landowners in DMU 452 in December of 2007 to inform them about this additional opportunity to harvest deer.
- 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.

- 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 of cattle.
 - This initiative was designed to make it simpler for cattle producers in areas where 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.
 - Each producer was initially mailed five kill tags, with more available upon request when the original five were filled. DCPs are valid for a year and may be used year-round.
 - Current plans are to make the DCPs available in this manner for three years and then evaluate the effectiveness of the program.
- Due to the recent finding of a TB-positive wild deer in Shiawassee County, letters explaining the program were mailed to Shiawassee and Clinton Counties' cattle producers located within a ten-mile radius of where the TB-positive deer was located.
- The distribution of all DCPs is being coordinated by the WDL. A dedicated phone number (517) 336-5054 and e-mail address (DEPARTMENT-DCP@michigan.gov) have been established and are monitored during normal business hours.

Summary of Activities

- **Five-county livestock producers:**
 - 144 deer were taken by 33 livestock producers.
 - 651 permits and 3,409 kill tags were mailed.
 - 158 signed permits were received.
 - Nine producers requested additional tags.
 - 23 producers indicated that they did not wish to participate and returned the permit and tags.
- **Livestock producers outside the five-county area, but in the Modified Accredited Zone:**
 - 105 deer were taken.
 - 26 permits were issued to those who made specific requests for the permits and for whom Department staff agreed that the permits were appropriate.
- **Shiawassee and Clinton Counties livestock producers:**
 - Four deer were taken by two livestock producers.
 - 106 letters of invitation were mailed.
 - 17 producers requested permits and were mailed a total of 85 tags.
 - Four signed permits were received.
- **Non-agricultural landowners in DMU 452:**
 - 101 deer were taken.
 - 23 landowners requested permits and were mailed a total of 280 tags.
 - 19 signed permits were received.
 - One landowner requested additional tags.

Testing of Deer Taken Through DCP Program

COUNTY	DCP LABORATORY RESULTS				Total
	Pending	Suspects	Positive	Negative	
Alcona				8	8
Alpena	10	1	1	107	119
Antrim				4	4
Charlevoix				5	5
Cheboygan				9	9
Emmet				1	1
Iosco				14	14
Montmorency	9	2		47	58
Ogemaw				8	8
Oscoda	6			9	15
Presque Isle				18	18
Total	25	3	1	230	259

Definitions:

Pending - Initial laboratory results were negative; still waiting for final results.

Suspect - MDCH is performing bacterial culture, and intermediate testing has been positive; still waiting for final results.

Positive - Final MDCH culture results were positive.

Negative - No lesions were found at the Wildlife Disease Lab or final MDCH culture results were negative.

Regulation Enforcement Activities

In some closed counties, deer baiting has continued to be observed on a regular basis. Conservation Officers (COs) noticed that almost every retailer capable of selling deer bait in the seven closed-to-baiting counties (Alcona, Alpena, Crawford, Montmorency, Oscoda, Otsego, and Presque Isle), sold deer bait, including large chain store outlets, in Alpena. This was a notable increase from prior years. The availability of bait at local retailers in the closed counties was a common complaint of hunters. The prevalent perception, among both hunters and non-hunters, appeared to be that, if everyone was selling bait, it must be acceptable to bait.

COs observed that, while bait compliance was worse than ever in the closed counties, complaints about deer baiting were down. This was believed to be partially due to some complainants giving up and/or participating in baiting practices themselves. Fewer complaints and the more effective hiding of bait (under conifer trees, farther from blinds, etc.) resulted in fewer bait arrests in some counties. There were three flights to look for bait, with less bait spotted than usual. This was believed to be largely due to the more proficient hiding of bait. Only Alcona County reported an increase in baiting violations.

Some areas where bait arrests occurred in the past were not baited, but it was unknown if the violators started to comply, or moved elsewhere. Also, many of the large

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clubs stopped baiting and were using food plots and Quality Deer Management. In the TB core zone, there were 98 bait complaints, 165 bait citations issued, and 111 bait violations found.

In Cheboygan County, which is open to baiting, there appear to be fewer extreme bait piles every year, with steady enforcement appearing to have a positive affect. Also, fewer verbal warnings were given for bait piles in the 10-20 gallon range.

Additional COs were assigned to Alcona (1), Oscoda (1), and Alpena (2) Counties during the firearm deer season.

Research Activities - Proposals Under Development

Title: Evaluating Acceptance of Free-Ranging White-Tailed Deer Bovine TB Management Strategies

Primary Investigator: Brent Rudolph, Wildlife Biologist, Wildlife Division

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 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 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 TB Spatial Model for White-tailed Deer

Primary Investigator: Dr. Daniel O'Brien, Wildlife Veterinarian, Wildlife Division

The modeling approach is an adaptation to Michigan WTD of a spatially-explicit, stochastic model developed for TB in New Zealand brushtail possums. 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.

As of February 2008, a preliminary prototype of the model had been completed. Discussions between the principal investigators in March 2008 yielded an approach to make the model more specific to Michigan TB management issues. It is anticipated that the principals will meet in the summer of 2008 for initial training and to evaluate the final prototype, with a final working model anticipated by the end of Fiscal Year 2008.

Meetings Attended

- **Meetings and other activities by Elaine Carlson, Department Biologist, Mio, MI**
 - Meetings on wrap-up for the fall's TB surveillance
 - Participated in interagency discussion of epidemiology on TB positive farms (Team Epi) and provided data pertinent to deer habitat, populations, and spatial distribution of feed sites to aid analysis of the issue
 - Coordinated field activities related to a deer trapping project that tested TB trap-test-cull blood assay
 - Reviewed, monitored, communicated with, and visited farms and landowners in the five-county TB area as related to the Disease Control Permit program (Other Department personnel were involved with head pick-up, though Elaine did some)
 - Provided TB updates in public meetings, as requested
 - Organized and implemented an aerial survey of winter feed in parts of the five-county area and prepared data for enforcement efforts
 - Attended TB work group meeting
 - Provided aerial and ground tour of TB area for staff from Shiawassee County
 - Attended meetings to discuss Wildlife Risk Mitigation (WRM) plans (this also occurred in December 2007)
 - Gave three talks to farmers about deer/cattle interactions as part of MDA's efforts in WRMs
 - Communications with the Wildlife Disease Lab personnel

- **Meetings attended by Dr. Steve Schmitt, Wildlife Veterinarian, Wildlife Health Section Supervisor**
 - 10/21-10/25/07: U.S. Animal Health Association (USAHA). Dr. Schmitt is Vice Chair of the Committee on Wildlife Diseases and a member of the Bovine TB Committee. He participated in discussions about bovine TB with disease experts from North America. The USAHA is a professional society comprised of state and federal regulator veterinarians and industry representatives. It is the group that determines the direction that the United States Department of Agriculture (USDA) takes in managing animal diseases in the U.S.
 - Presented the 2007 Annual TB Surveillance Report to the Natural Resources Commission in March (See copy of report – Appendix B).

- Public meeting hosted by Farm Bureau for livestock producers in Iosco and Ogemaw Counties.
 - March 24-29, 2008: Department Director Rebecca Humphries and Department veterinarian Steve Schmitt attended the North American Wildlife and Natural Resources Conference in Phoenix, Arizona. Director Humphries chairs a committee that is developing a National Fish and Wildlife Health Plan. They have participated in meetings and exchanged information on management strategies to eradicate bovine tuberculosis.
 - In addition, Dr. Schmitt attended weekly local meetings concerning the Bovine TB Eradication Program.
 - 1/8/08: TB Program Discussion
 - 1/17/08: TB Epi Meeting
 - 1/18/08: TB Coordinator's Meeting
 - 1/22/08: Meeting with Sen. Cameron Brown, Rep. Joel Sheltroun, Rep. John Mayers, Rep. Richard Ball and Sen. Valde Garcia regarding TB
 - 3/5/08: Michigan Dept. of Agriculture (MDA) / Department TB Status Meeting
 - 3/21/08 Interagency TB Committee Meeting
- **Meetings attended by Dr. Dan O'Brien, Wildlife Veterinarian**
 - 11/5/07: Participated in USDA TB review meeting.
 - 11/6/07: Meeting with Michigan United Conservation Clubs regarding Michigan Outdoors show on TB.
 - 11/8/07: Meeting regarding second season of deer trap/test/cull project.
 - 11/14/07: TB training session for seasonal deer check station workers.
 - 12/6/07: Participated in conference call with federal General Accounting Office regarding veterinary resources for wildlife disease outbreaks.
 - 12/17/07: Participated in Wildlife Risk Mitigation conference call.
 - 12/20/07: TB Science Advisory Workgroup meeting.

APPENDIX A

Table 1: Number of Deer Received by WDL for TB Testing

County	1st Quarter		2nd Quarter	
	# Tested	# Positive	# Tested	# Positive
Alcona	1020	10	18	0
Alger	26	0	0	0
Allegan	8	0	0	0
Alpena	978	5	125	1
Antrim	358	0	4	0
Arenac	54	0	0	0
Baraga	28	0	0	0
Barry	9	0	0	0
Bay	18	0	0	0
Benzie	14	0	0	0
Berrien	2	0	0	0
Branch	8	0	0	0
Calhoun	10	0	3	0
Cass	14	0	1	0
Charlevoix	159	0	9	0
Cheboygan	164	0	9	0
Chippewa	39	0	0	0
Clare	16	0	5	0
Clinton	14	0	1	0
Crawford	214	0	2	0
Delta	35	0	0	0
Dickinson	23	0	1	0
Eaton	5	0	1	0
Emmet	197	0	1	0
Genesee	18	0	2	0
Gladwin	39	0	0	0
Gogebic	22	0	0	0
G. Traverse	10	0	0	0
Gratiot	24	0	1	0
Hillsdale	8	0	0	0
Houghton	23	0	2	0
Huron	19	0	0	0
Ingham	17	0	2	0
Ionia	12	0	0	0
Iosco	360	2	17	0
Iron	32	0	0	0
Isabella	34	0	0	0
Jackson	14	0	47	0
Kalamazoo	10	0	0	0
Kalkaska	31	0	0	0
Kent	4	0	0	0
Keweenaw	27	0	0	0
Lake	10	0	0	0
Lapeer	20	0	1	0

County	1st Quarter		2nd Quarter	
	# Tested	# Positive	# Tested	# Positive
Leelanau	17	0	0	0
Lenawee	14	0	0	0
Livingston	12	0	2	0
Luce	18	0	0	0
Mackinac	25	0	0	0
Macomb	10	0	0	0
Manistee	21	0	1	0
Marquette	25	0	0	0
Mason	27	0	4	0
Mecosta	26	0	0	0
Menominee	50	0	0	0
Midland	25	0	1	0
Missaukee	28	0	0	0
Monroe	8	0	0	0
Montcalm	24	0	0	0
Montmorency	711	3	68	0
Muskegon	7	0	0	0
NE Unit	1	0	0	0
NE-NW Unit	1	0	0	0
Newaygo	11	0	0	0
Oakland	19	0	0	0
Oceana	9	0	1	0
Ogemaw	301	0	10	0
Ontonagon	24	0	0	0
Osceola	16	0	0	0
Oscoda	543	3	19	1
Otsego	206	0	0	0
Ottawa	9	0	0	0
Presque Isle	592	0	18	0
Roscommon	303	0	9	0
Saginaw	14	0	0	0
Sanilac	19	0	0	0
Schoolcraft	15	0	0	0
Shiawassee	12	0	71	0
St. Clair	19	0	0	0
St. Joseph	6	0	1	0
Tuscola	15	0	1	0
UP Unit	2	0	0	0
Van Buren	10	0	1	0
Washtenaw	15	0	0	0
Wayne	4	0	0	0
Wexford	11	0	0	0
Unknown	21	0	3	0
Total	7,393	23	462	2

APPENDIX B

Annual Report to the Natural Resources Commission

MANAGEMENT OF BOVINE TUBERCULOSIS IN MICHIGAN DEER March 18, 2008

Since 1994, the state of Michigan has recognized a problem with *Mycobacterium bovis* in wild white-tailed deer from a fourteen county area in northeastern Lower Michigan. In 2007, surveillance activities for *M. bovis* continued statewide, with an emphasis on the northern half of Lower Peninsula. In white-tailed deer, 27 animals cultured positive from 8,308 deer submitted for testing.

Since the index cases were first identified, over 162,000 free-ranging deer have been tested for bovine tuberculosis; 594 infected animals have been found. Increasingly, the spatial epidemiology of the disease is revealing a highly focal, clustered pattern. Approximately 97% percent of all positive deer identified to date originated from a five county area. Moreover, within that area, the vast majority of positive deer were from Deer Management Unit (DMU) 452. Even within DMU 452, the spatial arrangement of cases is highly clustered, in spite of the fact that sampling effort has been relatively uniform geographically.

White-tailed deer are the maintenance host and primary reservoir for TB in the Michigan outbreak. If eradication is to be achieved, control strategies must focus on the disease in deer. Strategies for eradication of TB from Michigan wildlife continue to focus on 1) reducing deer population densities to biological carrying capacity and 2) reducing artificial congregation of deer by restriction or elimination of baiting and feeding. These strategies have been implemented through provisions of a late firearm antlerless deer season, sufficient antlerless deer licenses to reduce the deer population, and by prohibition of deer baiting and feeding.

Population estimates based on reconstruction techniques similar to the sex–age–kill method described by Creed et al. (1984)¹ suggest that the deer population in the five county area has declined approximately 27% since 1995. The achievement of this substantial population reduction highlights the critical role that hunters have played in the control of TB in Michigan. Nonetheless, persistent focal areas of high density on private land remain problematic. Baiting and feeding have been prohibited in the seven counties from which 98% of all TB positive deer have originated. Policy makers have committed to keeping these regulations consistent for a minimum of five years starting June 2002, in order to improve compliance and enforcement. The overall scope of feeding has declined dramatically since 1997, with large scale feeding largely a thing of the past. While some illegal baiting and feeding continues to occur, the size of these sites is substantially reduced, and it is hoped that heightened enforcement is expected to reduce the practice further over the next several years.

While much work remains, substantial progress has been made towards eradication of TB from Michigan wildlife. Apparent prevalence in the core area of the outbreak DMU 452 was 1.4% in 2007. Trend analysis of prevalence data from 1995 to 2007 indicates a statistically significant decreasing trend.

Michigan's TB intervention strategies are working; however, it is too early to claim victory in eradicating the disease. The need to stay the course is important, but will be difficult, due to ever increasing pressure from a variety of sources to lessen these intervention strategies.

The intervention strategies have been successful in bringing down the average prevalence in DMU 452; however, there are clusters of disease that will be more difficult to manage. With that in mind, the State of Michigan is evaluating a new intervention strategy that may be more acceptable to many hunters and landowners. The new strategy is based on live-trapping and TB-testing of wild deer, and removal of positive animals. And if a safe and effective TB vaccine could be developed, then captured deer that tested negative for TB could be vaccinated before release. This strategy is not intended to replace initial strategies, but may assist them in eliminating TB from the deer herd in focal areas.

The Michigan Department of Natural Resources (Department) initiated the new strategy in a township with relatively high TB prevalence within DMU 452 during the winter of 2003. The results of the pilot are cause for optimism on a number of fronts. The project was well received and supported by the public. Appreciable numbers of deer were captured with reasonable efficiency and low mortality. Tracking and removal techniques worked well. The one facet of the project that failed was the blood test.

An effort to develop a more accurate blood testing procedure was the focus during the 2004 and 2005 hunting seasons. Hunters were asked to collect blood from deer harvested in DMU 452, and to submit the blood and the deer head to a deer check station. The lymph nodes from the deer heads were cultured for TB and culture results compared with results from seven TB blood tests. One blood test, the Rapid Test (RT) that can be done in 20 minutes in the field with whole blood looks promising for field use.

During the winters of 2007 and 2008, the Department and the United States Department of Agriculture - Wildlife Services (USDA-WS) pilot-trialed the capture, test and cull strategy that the Department had been working on since 2003, in a relatively high TB prevalence area in DMU 452. Almost 800 deer were captured and tested for bovine TB using the RT. Eight deer tested positive on the Rapid Test. The pilot project showed that a substantial number of deer can be captured and quickly tested for TB in a field situation. Most of the deer that were both culture positive and Rapid Test positive had extensive TB lesions in the chest cavity indicating advanced infection. It appears that the RT works best at detecting highly infected animals when numerous TB lesions are present.

The Department is working with USDA researchers in Ames, Iowa to develop a TB vaccine for use in wild deer. Preliminary results are encouraging, and the vaccine appears to give some protection from disease. Vaccinated groups of deer given the vaccine orally or subcutaneously had statistically significantly fewer visible TB lesions and less severe TB lesions than unvaccinated deer.

In summary, Michigan is showing progress in eradicating bovine TB from its wild deer population. However, this success is fragile and we need to be diligent in maintaining our control strategies.

¹Creed, W. A., F. Haberland, B. E. Kohn, and K. R. McCaffery. 1984. Harvest management: the Wisconsin experience. Pages 243–260 in L. K. Halls, editor. White-tailed deer ecology and management. Stackpole, Harrisburg, Pennsylvania, USA.

Summary of Michigan Wildlife Bovine Tuberculosis Surveillance

Michigan Department of Natural Resources Wildlife Disease Lab
Updated March 17 2008

Initial Occurrences

In 1975 a 9 year-old female white-tailed deer from Alcona County, and in 1994 a 4 year-old male deer from Alpena County were submitted with lesions consistent with and testing positive for Bovine TB.

White-tailed Deer TB Surveillance

Year	Number of Deer Positive	Total Deer Tested
Initial Occurrences	2	2
1995	18	403
1996	56	4,966
1997	73	3,720
1998	78	9,057
1999	58	19,496
2000	53	25,858
2001	60	24,278
2002	51	18,100
2003	32	17,302
2004	28	15,131
2005	16	7,362
2006	41	7,917
2007	27	8,308
2008	1	346
Grand Total	594	162,246

Elk Surveillance

- 1,879 elk have been tested from May 1996 to the present
- Three tested in 2008, 191 in 2007
- One elk from Montmorency tested positive in 2000
- One elk from Montmorency tested positive in 2001
- Two elk - Presque Isle & Montmorency - tested positive in 2003
- One elk from Montmorency tested positive in 2006.

Moose Surveillance

- 8 tested in 2007, 6 tested in 2006, 8 in 2005, 21 in 2003 & 2004 - all tested negative

Carnivore (Non-cervid) Surveillance 1996-2002

1,516 carnivores tested (16 species). 43 tested positive for bovine TB:

19* coyotes, 8 raccoons, 8* black bear, 4 bobcat, 3 red fox, 2 opossum

*1 coyote - 2003, 2 bear - 2006 & 2008

