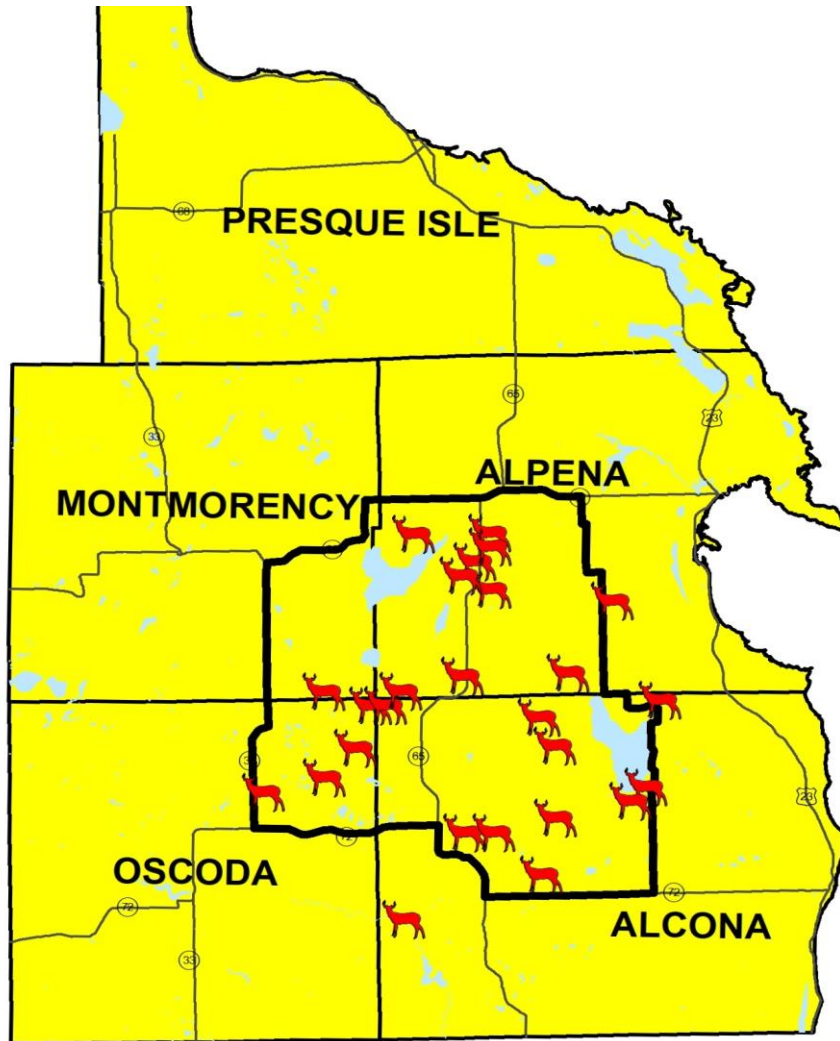


September 2019 TB Program Review, Michigan

September 16 – 20, 2019

East Lansing, Michigan



Executive Summary

A bovine tuberculosis (TB) program review was conducted in the State of Michigan (MI) from September 16-20, 2019. This program review was conducted to meet the requirement for program reviews in States that are granted split-state status for bovine tuberculosis in cattle and bison as stated in 9 CFR 77.4. The State has averaged 2 newly identified TB-affected herds per year for the last 10 years. An apparent increase occurred in FY 2016-18, and 4 new herds were identified between October 1, 2018 and May 14, 2019, two of which were outside the MAZ.

The review began in advance of the station visit. Team members conducted conference calls, individual phone interviews with Michigan Department of Agriculture and Rural Development (MDARD) and VS personnel, as well as document review. Upon arrival, the MDARD facilitated an entry conference for the benefit of the review team which included an overview of the history of bovine tuberculosis (bTB) in Michigan as well as detailed review of the impact of wild free-ranging white-tailed deer. The onsite review was accomplished by a combination of group and individual interviews and select site visits. The team members made site visits to the primary Modified Accredited Zone (MAZ) livestock market in Gaylord, a hunter/producer meeting in West Branch, and multiple onsite farm visits to beef and dairy operations. Team members also visited the operational base within the MAZ located in Atlanta, MI, and the Michigan State Veterinary Diagnostic Laboratory in East Lansing, MI

The team concluded that the MDARD and the Michigan Department of Natural Resources (MDNR) are meeting the articles as outlined in the 2019 MOU. The team identified areas for improvement which are documented in the body of the report below. The team further concluded the MDARD met the articles outlined in the 2016 MOU with the exception affected herd 75. The existence of herd 75 was not known to MDARD until 6 months after the completion of required whole herd tests in Presque Isle County. The team reviewed the MDARD activities surrounding the identification and disposition of herds 75 and 76 in Presque Isle and Emmet counties. Herd 75 was not tested for approximately 6 months after it was identified. Herd 76 was identified consequently through appropriate trace activities.

The review team determined that the State had implemented the elements in the recommendations from the 2015 TB review. However, data management concerns were identified in both the 2015 as well as the current review.

The team recognized the great support and collaboration with the MDNR and APHIS Wildlife Services (WS). The MDNR recently implemented a Wildlife Conservation Order which bans baiting and feeding free-ranging deer which will reduce deer concentration, thereby reducing bTB transmission within the free-ranging deer population. MDNR has been vigilant in determining the prevalence of bTB in wild deer and monitoring its geographic distribution. APHIS WS is providing invaluable support by reducing deer numbers on farms and ranches, thereby reducing exposure between deer and cattle.

MI Review Team 2019

Review Objectives

1. Evaluate compliance with the Memorandum of Understanding (MOU) (signed 4/2019) required for the establishment of split-State status.
2. Review activities related to herds 75 and 76, including the epidemiologic report
3. Evaluate progress on recommendations from the 2015 review and risk assessment.
4. Evaluate factors as described in VS Memo 552.44 as appropriate

A. Authority, organization, and infrastructure of the veterinary services organization in the state.

The Michigan Department of Agriculture and Rural Development (MDARD) and the Michigan APHIS Area office appear to have sufficient veterinary capacity to carry out their bTB program goals. However, any increases in program efforts or expansion will likely require additional personnel. The Veterinary Diagnostic Laboratory seems to be a valuable asset in Michigan's bTB program.

USDA, APHIS, VETERINARY SERVICES

The USDA Veterinary Services personnel are under the direction of Dr. Jean Ray, Area Veterinarian in Charge, FiOps, District 2. The USDA VS Michigan office in Lansing has one AHT who does bTB data entry about 50% of her time and one epi officer who spends about 75% of her time on bTB.

The Michigan APHIS VS field staff is composed of two VMOs and two AHTs dedicated to bTB, and one AIC who spends about 75% of her time on bTB. Since the review, the AIC has retired and this position is considered critical to the program. Additionally, numerous other employees spend lesser amounts of their time doing bTB-related work. It was stated during individual interviews with MDARD staff that the two APHIS VMOs in the MAZ are retirement eligibility. MDARD is concerned about whether or not the positions would be filled if that occurs. MDARD is also concerned about the impact of VS field employees deployed to California vND.

MICHIGAN DEPARTMENT OF AGRICULTURE AND RURAL DEVELOPMENT

MDARD (Animal Industry Division, AID) has a staff of 54 FTEs under the direction of the State Veterinarian/ Animal Industry Division Director. Division resources involved with the bTB program include 9 field VMOs, 5 Lansing-based veterinarians who range from the SAHO to program managers. Over 30 AID staff members are assigned to work either full-time or part-time on the Bovine Tuberculosis Eradication Program.

The private veterinary industry in Michigan consists of approximately 1,695 licensed Category II Accredited veterinarians. There are currently 40 bovine tuberculosis (bTB) fee-basis veterinarians approved to conduct bovine tuberculosis testing activities under state contract. These veterinarians are required to attend tuberculosis training programs and are monitored for compliance with bTB testing requirements. Within the MAZ, eleven fee-basis veterinarians have performed at least one herd test since January 2018 and seven of those have done three or more herd tests. MDARD and APHIS VS MI have a good program to verify bTB responder rate compliance for bTB testing veterinarians. Due to the economic nature of the counties in the MAZ, it is difficult for private practice veterinarians to make a living doing herd work. Therefore, it falls to the regulatory agencies and their veterinary staffs to conduct the majority of the bTB testing.

USDA, APHIS, WILDLIFE SERVICES

USDA, APHIS, Wildlife Services (WS) works cooperatively in Michigan by supporting research, sampling wildlife, and conducting targeted removal and on-farm wildlife risk mitigation activities in the Modified Accredited Zone and surrounding counties in the bTB Free Zone. Wildlife Services personnel are under the direction of Anthony G. Duffiney, State Director. USDA, APHIS, WS staff working in the bovine tuberculosis eradication program in Michigan includes one district supervisor, one wildlife biologist, one wildlife disease biologist, and seven wildlife specialists. Wildlife Services maintains a state office in Okemos, and a district office located in Gaylord.

MICHIGAN DEPARTMENT OF NATURAL RESOURCES

The Michigan Department of Natural Resources (MDNR) has two veterinarians within the Wildlife Division, and numerous wildlife biologists and conservation officers throughout the state, working on the bTB eradication program.

STATE LAWS, REGULATIONS, AND POLICIES

Michigan (MDARD) functions under authority of the Animal Industry Division's primary regulation, the "Animal Industry Act". Within the Act, the primary section for cattle TB discusses MDARD's ability to create zones, which is an important tool for implementing requirements for herds in the bTB area – that section is 287.709. For cervids, the primary sections are 287.730 a-d.

BTB requirements are found in Zoning Order from March 21, 2018 Establishment of Zones for Bovine Tuberculosis (Identification, Testing, Certificate, and Movement Requirements) pursuant to Public Act 466 of 1988, MCL 287.708 and MCL 287.709 (8)-(10).

The Zoning Order outlines the official identification, testing, certification, and movement requirements of cattle and bison from both the Modified Accredited Zone and the Accredited Free Zone.

Milk sold for human consumption and animal feed must be pasteurized.

Baiting and Feeding ban is the Wildlife Conservation Order from the Department of Natural Resources. The baiting and feeding ban regulations are found on pages 17-19 and are highlighted. [Michigan DNR Baiting and Feeding Ban](#)

B. Disease Status of the zone of interest (MAZ)

There have been 14 positive premises detected since the beginning of FY16.

FY16: 4 premises in MAZ

FY17: 4 premises; 3 in MAZ and 1 in AFZ (trace from Indiana bTB-affected herd)

FY18: 2 premises in AFZ (both WGS linked to Indiana bTB-affected herd)

FY19: 4 premises; 2 in MAZ and 2 in AFZ (Emmet and Presque Isle counties and linked to one another)

According to the FY18 VS 6-38, MAZ beef cattle and dairy cattle comprise approximately 2.8% and 2.1% of the overall state inventory respectively. FY19 herds in the MAZ include:

Beef Cattle: 285

Dairy: 41

Freezer beef: 96

4-H only: 13

Bison: 1

Total: 436

MDARD estimates 3373 head of cattle from MAZ were sent to slaughter in FY2018. There are no FSIS-inspected slaughter facilities within the MAZ, but there are two large FSIS inspected plants in the AFZ that slaughtered a total of 180,814 cattle in FY18.

Within the MAZ, there were 17,707 caudal fold tests conducted in FY17, 14,524 head tested in FY18, and 8932 tested in the first 6 months of FY19. There were 9 regulatory and 6 private accredited veterinarians performing greater than 300 CFT in FY17, and all met UM&R test performance standards except 1 regulatory veterinarian. In FY18, all 7 regulatory and 6 private accredited veterinarians performing greater than 300 CFT met the performance standards. In-person reviews of random VS 6-22 forms revealed few minor errors and inaccuracies, and no major issues were seen.

A backlog of herd reconciliation within the MAZ was listed as an area of concern in both the 2012 and the 2015 bTB reviews. MAZ herd reconciliation is still completed at the Atlanta MDARD office location, and there is no current backlog in reconciliation activity at the time of this review. The 2019 MOU and program goals call for herd reconciliations to be completed within 60 days of whole herd testing. Between January and August 2019, 206 of the 208 herd reconciliations were completed on time for a 99% on-time completion rate. The average time of completion for these reconciliations was 13.58 days. Overall, herd reconciliation has seen

moderate to major improvements since the 2015 bTB review and does not appear to be a current area of concern.

C. Disease Status of adjacent states or zones

Adjacent States

Michigan is bordered by Ohio, Indiana and Wisconsin. According to the USDA National Agricultural Statistics Service (NASS) 2017 Census of Agriculture, the total inventories of cattle and calves of Michigan and its three bordering states range from 844,187 to 3,494,462 head of animals. Among these four states, Michigan has the second largest inventory of dairy cows, with 442,032 head, and the fourth largest inventory of beef cows with 103,522 head. Michigan movement data indicates that the top states for cattle export are Indiana, Kansas, Iowa, Minnesota and Ohio. Top importing states are Wisconsin, Kansas, New York, Pennsylvania and Ohio.

Each adjacent state is bTB accredited-free and has been so since the 1980's. The most recent positive herds in these states as reported was Wisconsin in 2018 and Indiana in 2016. The Indiana positive herds were implicated in 3 positive detections in Michigan in 2017-18. Indiana performed area wildlife surveillance in 2016-17 in relation to the positive herd detections, but none of the other adjacent states have ongoing wildlife surveillance programs in place at this time.

Michigan Accredited Free Zone (AFZ)

The VS 6-38 FY18 annual report indicates there are a total of 439,058 head of beef cattle and 665,250 head of dairy cattle in the state. Granuloma submission and slaughter data reflect strong surveillance with 132% of the expected rate of granuloma submissions.

There have been 5 positive premises detected in the AFZ since FY16. Of these, three detected in 2017 -2018 were directly traced from or had a suspected association to an Indiana bTB-affected herd. The two most recent positive premises were detected in 2019. The first, Herd 75, was detected in Presque Isle County as a result of routine triennial testing. This herd should have been tested as part of routine herd surveillance conducted 2016-2018; however, the State was not aware of its existence. The infected premises in Emmet County, Herd 76, was a direct trace out from the Presque Isle farm. Area circle testing around both herds was still ongoing at the time of the review but all herds tested to date were negative. Presque Isle County was formerly part of the MAAZ, and was reclassified as Accredited-Free in 2014.

D. Control of the movement of animals and animal products from zones of higher risk, and the level of biosecurity regarding such movements.

The Michigan Department of Agriculture and Rural Development, Animal Industry Division appears to have a good system in place to control the movement of cattle and domestic bison from their Modified Accredited Zone and the adjacent counties. The Zoning Order appears to require sufficient testing and movement permitting to prevent movement of bovine Tuberculosis infected animals from their MAZ.

Requirements for movement of cattle from farms in the MAZ vary depending upon the Wildlife Risk Mitigation verification and whole-herd testing status of the herd—of-origin, individual animal testing history, animal age, animal gender, destination type (slaughter plant vs. farm), and zone of destination. All animals are checked for compliance with requirements prior to the issuance of a movement certificate or approval for sale at the Northern Michigan Livestock Exchange. The specific requirements for movement of cattle from farms in the MAZ and AFZ are contained in the Zoning Order. All bTB testing procedures follow guidelines in the UM&R and associated USDA Memorandum and Notices, and are performed in collaboration with the Michigan USDA VS area office. MDARD appears to be complying with the relevant terms of the MOU.

Surveillance in Michigan is conducted through annual whole-herd testing of cattle herds except freezer beef herds and approved feedlots in the MAZ, targeted surveillance testing in the bTB Free Zone, federal inspection of cattle at USDA Food Safety and Inspection Service (FSIS) inspected plants within Michigan and other states, bTB testing of cattle for movement, and epidemiologic investigations.

Michigan conducts whole-herd surveillance testing in the MAZ as follows:

- Breeding herds – annual whole-herd testing
- Feeder Producers – annual whole-herd testing
- Feedlots – annual whole-herd testing
- Freezer Beef herds – not tested, but inspected annually

Slaughter surveillance is conducted by examination of cattle that are presented for slaughter at USDA FSIS inspected plants in Michigan and throughout the United States.

Michigan's statewide RFID requirement enables rapid traceability when needed. The Michigan law requires all cattle moved from a Michigan premises to have official RFID ear tags.

Biosecurity is addressed thru the Wildlife Risk Mitigation (WRM) program and the Enhanced Wildlife Biosecurity (EWB) program. WRM verification is required for permitting movement of cattle from the MAZ. The EWB program is the most focused effort to prevent the introduction of bovine tuberculosis into cattle herds. Studies and epidemiologic investigations have determined that the occurrence of bovine tuberculosis in cattle herds can be related to the apparent prevalence levels of bTB in deer surrounding a herd as well as herd management practices that mitigate the spread from potentially infected deer.

Although the Wildlife Risk Mitigation (WRM) program has reportedly altered management production practices that are high risk, herds continue to become infected with bTB in the MAZ, especially within Deer Management Unit (DMU) 452. For this reason, the Enhanced Wildlife Biosecurity Program was developed to mitigate the higher risk associated with more infected deer.

MDARD has quarantine authority under the Animal Industry Division's primary regulation, the "Animal Industry Act". Within the Act, the primary section for cattle TB discusses MDARD's ability to create zones, which is an important tool for implementing requirements for herds in the bTB area – that section is 287.709. For cervids, the primary sections are 287.730 a-d.

BTB requirements are found in Zoning Order from March 21, 2018 Establishment of Zones for Bovine Tuberculosis (Identification, Testing, Certificate, and Movement Requirements). Pursuant to Public Act 466 of 1988, MCL 287.708 and MCL 287.709 (8)-(10).

The Zoning Order outlines the official identification, testing, certification, and movement requirements of cattle and bison from both the Modified Accredited Zone and the Accredited Free Zone.

Quarantines are issued during bTB testing as outlined in the UM&R, and herds identified as bTB-affected remain under quarantine until depopulated or until completion of a test-and-removal program. Any animals moved from a bTB-affected herd are moved on a VS 1-27 form and in a sealed trailer. In some situations, animals from a bTB-affected herd are moved into a feedlot or other facility to be fed out to slaughter weight. If approved, these animals are moved on a VS 1-27 and in a sealed trailer to the feedlot, the cattle remain under quarantine at the site until sent to slaughter on a VS 1-27 under seal.

Trucks or trailers used for transport of bTB test suspect or reactor cattle, or cattle from bTB-affected farms are cleaned and disinfected following use. All equipment used by MDARD or USDA staff are cleaned and disinfected prior to use on any other farms. Animals moved to other states must meet the requirements of the state of destination. There are no specific bTB-related requirements for movement of products from the MAZ or AFZ.

E. Policies and infrastructure for animal disease control in the state.

MDARD appears to have the veterinary staff and support personnel, laboratory support, interagency cooperation, and statutory authority to deal with the likely cases of bovine TB that may be found from time-to-time in their state in both domestic and wild species. Michigan has achieved success in minimizing the risk of disease through livestock movements but continues to have challenges in eradicating the disease in its wildlife reservoir in the MAZ. It is evident that MDARD has a good and essential working relationship with USDA WS and MI DNR employees to implement wildlife risk mitigation activities.

MDARD appears to currently have the necessary infrastructure required to deal with the disease. However, the Animal Industry Division reports that the present level of funding is the minimum required to maintain the current Modified Accredited status in the current four county area and the bTB Free status in the remaining 79 counties of Michigan. If funds are reduced, wildlife biosecurity and cattle surveillance programs would be negatively impacted. The state investment in this program has been reduced almost 40 percent since 2000 which paralleled a decrease in testing and surveillance activity. Additional requests for testing and surveillance will mean more resources will be required in the field at either the state or federal level or both. A combination of slaughter (passive) and live animal (active) testing are currently used for surveillance in cattle herds in the Modified Accredited Zone (MAZ) of Michigan. Surveillance in the wildlife population is accomplished through examination of deer submitted by: hunters during regular and special harvest seasons, USDA WS deer removal programs, and land owner's utilizing disease control permits to remove deer on their property.

Farmers in Northern Lower Michigan whose cattle have been identified as at-risk for bovine TB transmission from wildlife are using the following steps to prevent disease transmission and to market their cattle:

- Secure stored feed behind fences, in buildings, or away from deer habitat
- Place cattle feeding sites away from deer habitat
- Feed cattle daily and only what they can consume in a day, or feed in areas where the cattle are always present.
- Provide water to cattle where it cannot be contaminated by deer
- Use disease control permits to keep deer numbers down on cattle farms

MDARD has implemented the Enhanced Wildlife Biosecurity Project (EWB) with herds that are located in the area with the most risk ([EWB Boundry](#)). These herd owners work with a team that conducts an in-depth assessment of each farm's risks and creates a farm specific plan on how to reduce the chance the herd may get bTB from surrounding bTB-infected deer. Any herd in the EWB Area which does not participate and implement a plan by January 1, 2020, will not be allowed to sell cattle other than directly to a slaughter plant.

Michigan has a robust system in place to address new cases of bovine TB promptly and effectively. This includes quarantine, epidemiologic investigations, herd plan development and an excellent animal traceability program. Although there are many documents that address each of these in detail, an overall description of MDARD actions can be found in SOP 3.07 "Response to Bovine Tuberculosis Infected Herds".

- **Recommendation 1:** maintain the current level of bTB surveillance in wildlife in the counties bordering the MAZ

- **Recommendation 2:** Include Presque Isle County under similar or the same requirements imposed by the MAZ Zoning Order for testing and movement as a result of finding herd #75.
- **Recommendation 3:** MI DNR, MDARD, and APHIS WS collaborate to eliminate the on farm deer population to reduce exposure risks in cattle and domestic bison. This effort should include education and outreach to producers, hunters, sportsmen, landowners, and the general public about the public health concerns, the impacts on the cattle industry, and impacts on wildlife health and populations.
- **Recommendation 4:** MDARD, MDNR, APHIS VS, and APHIS WS continue to utilize multi-agency coordination group to coordinate response activities
- **Recommendation 5:** Michigan should continue to support existing positions and assignments to ensure all epidemiological, herd testing, animal movement controls, and other measures needed to eradicate bovine tuberculosis are in place.
- **Recommendation 6:** MDARD should strive to consolidate their databases into one system (USAHerds) used statewide in order to avoid data gaps between systems. MDARD uses multiple small databases to handle scheduling, WRM/EWB inspections, etc, which while operating adequately currently would be made more efficient if migrated completely to USAHerds.
- **Recommendation 7:** MDARD should continue to use the Fast Auction software program at the Northern Michigan Livestock Auction and expand its' use to markets statewide.

E. Wildlife Risk Mitigation (WRM) and Enhanced Wildlife Biosecurity (EWB)

Overview

The National Tuberculosis Eradication program has nearly eradicated bovine TB from the Nation's livestock population since the program's inception in 1917. Many consider this one of the great animal and public health achievements in the United States.

The free-ranging deer in the northern Lower Peninsula of Michigan serve as a continued reservoir for bovine tuberculosis. The presence of bTB in Michigan wild free-ranging deer was detected in 1975 and again in 1994. The recurrence of bTB in the cattle population was discovered in 1998 after a nearly 20-year absence. The apparent prevalence of bTB in wild free ranging deer over the previous 20 years has ranged from 1.0 - 2.7% in deer management unit (DMU) 452 while the prevalence outside DMU has ranged from 0.1 – 0.6%. In 2018, the apparent prevalence was 2.1% (DMU) and 0.1 % (outside DMU).

The recent Deer Harvest Survey published by MDNR in July 2019 indicates a decrease in both hunter numbers and deer harvested during the 2018 hunting season.

The MDARD has developed two programs to reduce the exposure of domestic livestock to free-ranging WTD. The Wildlife Risk Mitigation (WRM), was developed in 2008. The MDARD implemented the WRM in 13 counties and began work with herd owners in 2009. The second program, the Enhanced Wildlife Biosecurity (EWB), was developed in March 2018 with full implementation required by January 1, 2020.

Wildlife Risk Mitigation (WRM)

According to MDARD documents, the WRM program was not expected to achieve total elimination of all risk, but rather to reduce the risk of bTB transmission from deer to cattle by changing the management practices which are most likely to facilitate transmission of bTB. Participation in the WRM program is mandatory for any producer in the MAZ who wishes to market cattle. Producers who do not maintain compliance with WRM inspections are not allowed to market cattle at livestock markets. Herds that are not WRM verified are only authorized to market cattle direct-to-slaughter by permit directly from the farm of origin. The effectiveness of the WRM program is difficult to evaluate by reviewing WRM inspection records review or farm visits.

Site visits to a variety of farms provided review team members the opportunity to observe application of the WRM and determine producer understanding. Producers did seem to have an excellent working relationship with regulatory officials. Several producers provided opinions and some negative responses about the WRM program. One notable comment referenced the inconsistency between inspectors. According to the producer one inspector would find no deficiencies while another would find multiple issues, while a third inspector would note completely different concerns. This same producer indicated he had no concerns about the bTB program in general because he made more money from the last bTB reactor animal through indemnity than he would have if he marketed the animal through normal channels. A second producer pleasantly greeted the team with a question as to when the government will fix this bTB problem. This same producer motioned toward a herd of deer 300 yards away exiting a tree line and entering his pasture. A third producer was informative as he discussed his personal collaboration with a hunting cooperative that sought to manage deer. A fourth producer expressed indifference to the program indicating he was minimally impacted by deer incursion but was delighted with the commodity barn that was constructed, primarily paid for with state funds. He further stated that he did not want a fence. The review team gained little insight into the effectiveness of the WRM program visiting farms and ranches because there is no overt indication of mitigation of the risk of bTB transmission between wildlife and domestic livestock. Observation of these premises during the daylight, with deer in nearby pastures, and highlighting wrapped hay or a commodity barn as a mitigation provides no indication of the effectiveness of risk mitigation. There is no clear line of separation, either physical or imagined, between free-ranging deer and domestic cattle.

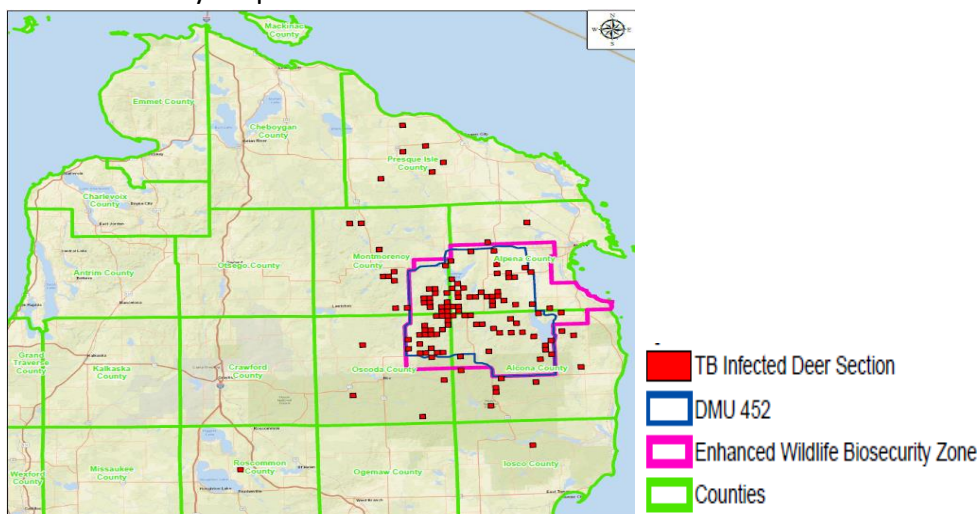
The effectiveness of the WRM cannot be estimated by the review team given the multiple variables impacting the disease. The number of cattle herds is reported to be declining, deer populations vary but appear to be increasing, and forage and graze land varies by year depending on weather conditions. A comprehensive evaluation should be conducted to determine the value of the WRM.

- **Recommendation 8:** MDARD should develop ongoing training for regulatory personnel conducting WRM verification to ensure inspection consistency
- **Recommendation 9:** MDARD and APHIS management staff in East Lansing schedule monthly onsite meetings at the Atlanta, MI field office
- **Recommendation 10:** Conduct an evaluation of the WRM program by determining the proportion of cattle herds affected on a yearly basis over time.

Enhanced Wildlife Biosecurity (EWB)

Participation in the EWB program will be mandatory beginning January 1, 2020 for producers in the approximate center of the MAZ which has the higher prevalence of bTB in free-ranging deer. The program is State funded by the Michigan legislature with a \$980,000 allocation to support infrastructure improvements. The State initially provided a 75% cost share but has since moved to a 90% cost share with producers. In addition to the facilities cost share, USDA Wildlife Services (WS) conducts deer removal on cattle facilities as a part of the EWB Program. Producers who do not maintain compliance with EWB program are not allowed to market cattle at livestock markets. Herds that are not participating in EWB will only be authorized to market cattle direct-to-slaughter by permit directly from the farm of origin.

EWB Boundary map



During the review, MDARD suggested that an extension may be needed for some producers because fence projects have not been completed and approaching winter will prohibit the completion of construction. At the time of the review, approximately 38% of the producers had incomplete projects. Producers have had 21 months to prepare and enter into agreements with MDARD and WS at the time of the review.

EWB Program Project Completion as of 9-20-19

Freezer Beef, Out of Business, or Opted out of Program	52	34%
Project Completed or no project needed	43	28%
Project still needs to be completed	59	38%
Total Herds in EWB Area	154	100%

The effectiveness of the EWB program cannot be evaluated due to the infancy of the program; however, the EWB can be compared to the WRM currently in place.

The EWB does not represent a significant enhancement to the previous WRM program. The review team noticed that the elements of the WRM inspection checklist are similar or identical to the EWB checklist.

- For example: Factor 5.03 of the EWB and 8 of the WRM are identical
- Factor 5.04 of the EWB and 9 on the WRM are identical
- Factor 4 of the EWB and 7 of the WRM are identical
- Factor 1 of the EWB and 1 of the WRM are identical
- Factor 3 of the EWB and 5-6 of the WRM are identical
- Factor 2 of the EWB closely resembles 2-3 of the WRM

The two differences between the WRM and the EWB seems to be that the EWB requires a farm specific assessment by regulatory personnel including wildlife biologists, and requires the producer to participate in the APHIS WS targeted deer removal program (5.02).

An essential component of biosecurity is to establish a separation of susceptible animals from the infectious agent by time or space. In the northern lower peninsula of Michigan, a wild free-ranging reservoir serves to readily maintain and move the infectious agent. This host is attracted to the same environment including feed, forage and water supply as domestic cattle. As described by MDNR during the entrance conference on September 17, 2019, in many cases the reservoir has become habituated to human and domestic livestock activity and, therefore, are not readily deterred. In many cases, the reservoir and domestic livestock share the same environment.

Structural biosecurity includes capital investments which prevent the spread of a disease agent. This may be as basic as fencing to separate populations of animals. However, in any case, a biosecurity plan must include a clear line of separation in addition to a perimeter buffer.

- **Recommendation 11:** Expand APHIS WS contract to increase deer removal from livestock operations within the EWB boundary.
- **Recommendation 12:** Require herds to implement the EWB plan on January 1, 2020, without extensions.
- **Recommendation 13:** Conduct an immediate evaluation of the EWB to determine if more cost-effective biosecurity methods can be implemented to separate deer from domestic livestock. If not, consider discontinuing the EWB and reallocating funding to higher value activities.

F. Annual Reporting

The primary objective of reviewing annual bTB program reporting of the Michigan bTB program was to assess compliance with USDA Bovine Tuberculosis Uniform Methods and Rules (UM&R) and jointly signed Memorandum of Understanding (MOU) agreements since 2016 with reference as far back as 2010. Memorandum of Understanding agreements are required of states that are granted split-state status. VS form 6-38 and accompanying narrative information are submitted on an annual fiscal year basis as well as mid-year for Modified Accredited Zone (MAZ) activities.

The last bTB review was performed in September 2015 so the focus of this review was related to activities beginning with the 2016 MOU, signed 5/19/16. Mid-year reporting is inclusive of the months of October – March of each FY while annual reporting is inclusive of the full FY. The 2019 MOU was signed in April of 2019 so there were no reports available for review under new MOU reporting requirement guidance.

FY 2016 through Mid-Year 2019 reporting fell under the 2016 MOU guidance for reporting requirements. Upon review of the submitted bTB reports, they were generally compliant with requirements outlined in the bTB UM&R and 2016 MOU. There were several inconsistencies and discrepancies found across the reports:

Finding: Line 10 of the VS 6-38 (rate of VS 6-35 submissions) are consistently reported as a percentage that did not align with the equation provided for determining this number in VS 552.29 (line 9 / line 8x100,000)

- MDARD and VS clarified that the number provided is a percentage provided from annual granuloma submission data provided by USDA Cattle Health Staff that reflects the number of Michigan slaughter granuloma submissions in comparison to what is expected. We agree that this percentage is probably an easier way to

quickly interpret the level of granuloma submissions with an expectation that 100% represents the expected benchmark.

- **Recommendation 14:** Make a short notation to explain line 10 of the 6-38 on future reports.

Finding: The number of herds and animals within the MAZ as reported in section 1 of the VS 6-38 reports was inconsistent across FY18 Mid-year, FY18 annual and FY19 Mid-year reports by as much as 40-55%.

- FY18 Mid-year narrative stated 346 total MAZ herds, FY18 annual narrative stated 538 herds and FY 19 Mid-year stated 400 herds. MDARD staff explained that the number of herds in the MAZ will fluctuate over time due to herd liquidation, transition to freezer beef status and other reasons but acknowledged the difference of numbers reported within and between FY 18 and FY 19 reports were abnormally large and could not provide an immediate explanation.
- Follow-up correspondence in response to this question was received 27 Sept. MDARD performed a dual query of the USAHerds database for all current active production units in the MAZ and scrutinized for any inaccurate or duplicate information and provided an updated summary table with a new total of 436 herds including 96 freezer beef herds. MDARD indicated that they will use dual methods of data retrieval and comparison for all future reporting.
- **Recommendation 15:** Continue use of dual method data retrieval for validation of MAZ herd inventories

Finding: The number of accredited veterinarians performing TB tests in Table 8 of the FY17 and FY18 reports are dramatically different.

- There are 10 accredited veterinarians listed as having performed CFT in FY17, 6 of which performed greater than 300. In FY18, there were 62 accredited veterinarians listed as performing CFT with 6 performing more than 300. The number performing greater than 300 CFT appears consistent but the disparity between the total numbers is not explained.
- **Recommendation 16:** Compare VS 6-38 and corresponding narrative information against previous mid-year and fiscal year reports to identify large discrepancies or errors and provide notation of explanation for major, valid differences in data.

G. Database Management

There are multiple databases in use for the Michigan bTB program summarized below.

- USAHerds (AKA, Animal Health Emergency Reporting Diagnostic System)
 - This is a proprietary animal health database operated by 16 State Animal Health Departments across the United States, including Michigan.

- This is the primary database utilized for bTB program management by MDARD, particularly for traceability.
- Does not directly communicate with EMRS or the other bTB program databases
- Ability to query traceability history and data to level of farm and individual ID. Query can summarize every time a specific ID was “sited” previously.
- Selected VS personnel have access
- Emergency Management Response System (EMRS)
 - This is a VS database utilized to capture multiple types of animal health data
 - Primary database for VS and Michigan bTB Program investigation tracing activities
 - Ability to query at the ID level via the Animal Health Event Repository (AHER) function
 - Does not communicate with other program databases
 - MDARD bTB program personnel authorized access
- Herds database
 - Different than USAherds
 - Original database system utilized by MDARD for bTB program
 - Large volume of historical data
 - Primarily used to capture notes and specific activity details of individual operations in the MAZ
 - Does not communicate with other bTB program databases. MDARD unable to transfer historical data to USAHerds so continued to be used.
 - VS personnel authorized access
- SCS (Surveillance Collaboration Services) Core One/Trace First database
 - VS database for management of multiple program activities, including bTB and bTB testing related information.
 - Primary function is to collect and manage bTB test data including statistics for accredited Veterinarians
 - MDARD bTB program personnel not authorized access
- Mobile Information Management System (MIMS)
 - Ability to capture and manipulate RFID tag information
 - Plays critical role in traceability
 - Used by field staff for multiple program activities but also cornerstone of future ADT activities across country involving multiple animal health and agricultural sectors.
 - Improved efficiency of electronic data and information flow
- “Fast Auction”
 - Commercial auction market software system that was modified for use in the Michigan TB program and utilized by the Northern Michigan Livestock Auction

and MDARD for capturing and managing real-time livestock market traceability data

- Communicates with USAHerds database
- More efficient traceability of animal ID from buyer to seller and eliminates need for back tags to be used as was done with previous software programs.
- In process of expanding to other Tier 1 markets

Database and technology appears to be modern and well utilized in the Michigan bTB program. The benefit of this technology to Animal Disease Traceability (ADT) was very apparent during onsite demonstrations and visits to livestock markets. The vast majority of records and data were electronic in format although paper-based records were available. MDARD bTB staff were able to perform rapid data queries for most requests during onsite visits.

EMRS investigation traces appeared to be current at the time of review but date stamps seemed to indicate information was entered into the database as much as two months after stated completion of the activities. EMRS tracing is recognized to be a complicated process among many VS field staff so this level of delayed entry was not unexpected. Tracing was discussed with VS staff during the onsite review visit and they stated that EMRS2GO and EMRS Advanced Tracing trainings had been completed during 2019 to help improve the efficiency of this activity. The amount of program data and documentation for each investigation and affected premises in EMRS is not all-inclusive. Herd plans and quarantine documentation are among items that are maintained in MDARD databases like USAHerds.

MIMS technology is standard use in the field for program activities as well as in livestock market settings. It is also a technology that is available for use by private stakeholders and increases the accuracy and efficiency of ADT. This is an essential technology for the bTB program since RFID is mandated by law within Michigan

Livestock market software and technology is also in place in markets outside of the MAZ. MDARD stated a desire and plan to begin extending this technology for further use in the Accredited Free Zone (AFZ) as well to increase overall state traceability. Additionally, MDARD has an agreement with 5 slaughter facilities in Wisconsin, Illinois and Pennsylvania that process a large proportion of Michigan-origin cattle to capture RFID traceability slaughter data with RFID reader panels and provide the ability to retire tags in USAHerds.

This technology usage is not only advantageous to the program but necessary due to the level of scrutiny that applies to the Modified Accredited Zone. Overall, the use of technology and traceability is excellent within the Michigan bTB program, several findings are highlighted below.

Finding: Excellent utilization of electronic technologies for program activities and data management

- There was an increase in use of electronic technologies since the 2015 program review and it was apparent that there is overall desire of bTB program staff to expand the use of electronic technologies in the future. Program staff expressed plans to expand market software technologies into the AFZ for increased traceability in the future.
- **Recommendation 17: Continue advancing use of electronic technology as previous.**

Finding: Multiple program databases in use

- Each database provides a valuable function for the program but there is not a single database that can perform all functions. Response and reporting activities require data mining from multiple database. Evaluation of VS 6-38 reports between 2017-19 revealed inconsistencies in several data points, and MDARD acknowledged that this may be a result of the methods used for data query. Furthermore, staff are forced to become familiar and proficient in more than one software program or rely on multiple individuals for information. For various reasons, it is probably not possible to reduce the number of databases in use at this time but it would be advantageous to do so in future if opportunity arises. For example, could Herds database data and functionality be assimilated by USAHerds database with software advances?
- **Recommendation 18: If feasible in future, potentially seek to reduce number of databases in use by both USDA and MDARD.**

Finding: Lack of Database communication

- There is no data communication and flow between databases in the Michigan bTB program but this is not unique to Michigan. This lack of compatibility forces data entry and analysis to occur in multiple databases and formats leads to increased training needs for staff. These databases are well utilized but technology upgrades to allow for improved inter-database communication should be considered if the cost benefit is at an acceptable level that it wouldn't interfere with more pressing areas of need within the bTB program.
- **Recommendation 19: Pursue software database communications options in future if financially and technologically feasible.**

H. Herd 75 Presque Isle County

The 75th bovine TB-affected herd in Michigan was identified on April 26, 2019. Assembly of this herd began in 2014 with the purchase of 4 heifer calves, continued expansion in 2015 with the purchase of 2 heifers and 1 cow, and further expanded in 2016 with the purchase of 1 bull. In 2018, 4 animals were sold from this farm including 1 to Emmet County which resulted in infected farm #76.

The Presque Isle county herd #75 went unnoticed to MDARD regulatory officials as there was nothing that triggered an awareness of this newly assembled herd. The 2016 MOU required testing of all herds in Presque Isle County. This herd was not identified for testing simply because there is no reporting requirement for the producers to declared new herds. Moreover, when this herd was identified in the fall of 2018, testing was delayed until the spring of 2019.

- **Recommendation 20:** Develop the next Quarantine Order to include language that requires immediate producer reporting of all new herds in the MAZ and PI County.

Summary

Michigan has a 25 year history of bovine tuberculosis in a wildlife reservoir and a 20 year history of bovine tuberculosis in domestic livestock. The wildlife reservoir has sustained bTB at a prevalence of 2 %. Hunter numbers are in decline as well as hunter harvest numbers.

The State has averaged 2 newly identified bTB-affected herds per year for the last 10 years. An apparent increase occurred in FY 2016-18, and 4 new herds were identified between October 1, 2018 and May 14, 2019, two of which were outside the MAZ.

Michigan has developed and executes a surveillance plan sufficient to identify newly infected herds in the MAZ. MDARD has developed excellent animal ID regulations and movement controls. However, testing and identifying new herds within an endemic zone will not be sufficient to eradicate the disease. It will only achieve monitoring the spread of the infection and containing the affected herds.

Michigan regulatory officials and livestock producers must consider more robust biosecurity measures in addition to reducing the free-ranging cervid population level and bTB prevalence within the wildlife reservoir.

Respectfully submitted,

David Ewey	Veterinarian in Charge, Sacramento
Bradley Christensen	Area Epidemiologist, Kansas
Jim Logan	State Veterinarian, Wyoming
Barry Bell	Animal Health Technician, Illinois
Byron Schick	Ruminant Health Center Staff