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Review of Michigan's Tuberculosis Eradication Program, 2022

A Review of Michigan's Tuberculosis Management and
Mitigation Activities

2022 Review of Michigan's Tuberculosis Eradication Program

Dates of the Review: September 19 - September 23, 2022

Executive Summary

Retention of the Animal and Plant Health Inspection Service (APHIS) recognition of a zone is subject to annual review by the Administrator. Consistent with the requirements of title 9, Code of Federal Regulations (9 CFR), section 77.4, APHIS conducted an annual review of the Michigan bovine tuberculosis (TB) program the week of September 19 – 23, 2022.

Team members conducted virtual interviews with Michigan Department of Agriculture and Rural Development (MDARD) and APHIS Veterinary Services (VS)-Michigan personnel, as well as document review in advance of the on-site review. Preliminary data/information was received as requested from MDARD, Michigan Department of Natural Resources (MDNR), APHIS Wildlife Services (WS) and VS-Michigan staff. An entry video teleconference was conducted the week prior to the review on September 16, 2022. Group and individual interviews, on-site records review, and selected site visits made up the onsite review.

Areas for improvement were identified and are detailed in the report. Three overarching issues found that impact multiple elements of the Memorandum of Understanding (MOU) and the 2020 review recommendations include:

- The inventory reconciliation process has improved since the previous review. Additional methods could be developed to discourage use of the watch list to reconcile inventories.
- Herd protection risks change over time as program implementation progresses. Processes to re-evaluate herds' risks on this evolving landscape and to continue to work towards consistency in implementation would be beneficial.
- There is an appearance of lack of support and participation from some livestock producers and hunters for various objectives of the program. This presents challenges for all agencies and innovative ideas need exploration to address this.

Background

In 2000, the TB status of Michigan was classified as Modified Accredited (MA). The State was granted split state status in 2004. The State gradually regained accredited free status in selected regions and counties. In 2014, 79 of Michigan's 83 counties regained split state status leaving four counties in the northeast end of the Lower Peninsula as MA.

Free-ranging white-tailed deer serve as a TB reservoir in the Modified Accredited Zone (MAZ). The apparent prevalence of TB in deer in Deer Management Unit (DMU) 452 was reported in the Fiscal Year (FY) 2022 semiannual report narrative as 1.4 percent and 0.1 percent in the remainder of the MAZ and Presque Isle County.

Michigan has detected TB in 82 cattle herds, 6 captive cervid herds and 6 feedlots since 1997. Since the last review conducted August 24-28, 2020, three TB-affected cattle herds and two

cervid herds have been detected in Michigan. Of these recent findings, two of the three cattle herds and one of the two cervid herds were within the MAZ.

The most recent MOU between APHIS, MDARD, and MDNR is dated April 20, 2022.

Review Objectives

Objectives from the MOU are listed as a separate letter under the first three sections. Findings and observations are reported beginning on page 7 and coincide with each objective by letter as listed below.

- I. Evaluate MDARD compliance with Article 5 of the MOU required for the maintenance of split state status.**
 - a. Annual whole herd testing of all MAZ and Presque Isle County cattle herds except freezer beef herds. Whole herd testing will include all cattle 12 months of age and older, and all non-natural additions of any age. Annual testing for Presque Isle County started January 1, 2021, see 2019 MOU for details on testing frequency before this date.
 - b. Annual whole herd testing of at least 150 cattle herds across the MAZ Buffer Area counties (Otsego, Crawford, Roscommon, Ogemaw, Cheboygan, and Iosco.)
 - c. All MAZ and Presque Isle County cattle 15 days of age and older tested for TB are required to be double tagged with an official electronic identification tag and an MDARD-approved secondary unique identification tag at the time of testing.
 - d. Requiring official electronic identification for any live cattle and bison moved from premises in the MAZ and retrieving information concerning animal identification and animal movement within 48 hours upon request or as needed. All MAZ and Presque Isle cattle 15 days of age and older except cattle moved from freezer beef herds to custom slaughter plants are required to be double tagged with an official electronic identification tag and an MDARD-approved secondary unique identification tag prior to movement.
 - e. Under the 2019 MOU, movement of live cattle (other than directly to slaughter) from herds in the MAZ and Presque Isle County that do not maintain Wildlife Risk Mitigated verified status will be prohibited.
 - f. All cattle moved from a premises in the MAZ or Presque Isle County must comply with the movement requirements outlined in the MOU.
 - g. MDARD will maintain and enforce a certificate system to track intrazonal and interzonal movements of live cattle from farm of origin to slaughter or next premises destination from the MAZ and Presque Isle County.
 - h. Movements of cattle and bison from the MAZ and Presque Isle County will be monitored in Michigan-licensed livestock auctions on sale days to confirm that the cattle and bison are officially identified, tested, and permitted, as required, and through other methods as necessary to ensure compliance with requirements.
 - i. MDARD will utilize State authority to randomly intercept and inspect vehicles that are transporting livestock on public roads within Michigan's MAZ and Presque Isle County for compliance with State and Federal split state status requirements and this MOU.
 - j. Following designation of an affected herd, an epidemiologic investigation will be initiated. After April 20, 2022, if whole genome sequence (WGS) and epidemiologic investigation determines the likely source of infection, additional 6-4A trace investigations will not be assigned unless requested by APHIS. When WGS and epidemiologic investigation indicates the infection was either a result of exposure to local

free-ranging cervid species or a result of movement of cattle from a known affected herd, this information, in conjunction with testing history and other relevant information, will be used by MDARD and local APHIS staff to determine the appropriate period of time for 6-4A and 6-4B investigations.

- k. MDARD will report various data points via VS Form 6-38 including narratives in the annual TB report (AFZ) and semiannual TB report (MAZ) as detailed in the applicable MOU.
- l. MDARD will quarantine all premises that contain animals suspicious for the presence of *Mycobacterium bovis* as outlined in the 2005 Uniform Methods and Rules. On a case-by-case basis, APHIS may approve movement of animals from a quarantined premises where animal welfare or other concerns related to quarantined animals exist. All TB-affected herds in Michigan must be quarantined until depopulated or until a test-and-removal program as specified by APHIS is completed.
 - Herds designated as TB-affected in the MAZ and Presque Isle County prior to April 20, 2022, will be required to participate in the targeted deer removal program through Wildlife Services as a condition of quarantine release.
 - Herds designated as TB-affected after April 20, 2022, with a WGS consistent with infection by local transmission from free-ranging cervid species will be required to participate in the targeted deer removal program for 5 years unless otherwise specified by an approved herd plan.
- m. Circle, trace source, trace exposed, and slaughter trace testing will be performed as outlined in the applicable MOU.
- n. MDARD and APHIS will continue to collaborate with WS (as WS' resources allow), university and agency-based researchers, and representatives of livestock producers to increase the biosecurity of herds in the highest risk area of the MAZ. This effort is designed to change the long-term cattle raising practices that may lead to an increased risk of TB infecting herds from surrounding deer populations.
- o. MDARD will manage and maintain an EWB Plan for cattle herds located in the highest risk area of the MAZ located in and around DMU 452. All herds in this Enhanced Wildlife Biosecurity area must have 1) a completed herd assessment, 2) an agreement allowing WS access to conduct targeted deer removal, without inhibiting it, on their farm, and 3) implemented all High-Risk Enhanced Wildlife Biosecurity recommendations. All three parameters must be met or the herd will not be considered as EWB verified and will not be eligible to move live cattle other than directly to slaughter.
- p. MDARD or APHIS (VS or WS) personnel will conduct inspections of each herd participating in either the EWB or WRM Plans on a biannual basis.
- q. MDARD will complete herd inventory reconciliation (IR) for any whole herd test (WHT) performed in the MAZ and the section of Presque Isle County that requires annual whole herd testing by regulatory or accredited veterinarians. Reconciliation of herd tests will be completed within 60 days.
- r. All testing for quarantine release or testing of high-risk herds will be performed by regulatory veterinarians only.
- s. Under the 2019 MOU, a bovine TB management plan will be maintained and updated as significant developments occur that may alter the implementation of the plan, or within 6 months following the end of the bovine TB management plan period.

- t. Herd Plans for TB-affected herds after April 20, 2022, will be developed in consultation with the owner and submitted to APHIS for review following receipt of APHIS official modeling results.

II. Evaluate MDNR compliance with Article 5 of the MOU required for the maintenance of split state status.

- a. MDNR will conduct active surveillance for TB in free-ranging white-tailed deer prior to April 20, 2022, as indicated below:
 - Alcona, Alpena, Montmorency, and Oscoda Counties (aka MAZ): Active sampling of free-ranging deer at a rate of 2,800 deer annually in the MAZ.
 - Cheboygan, Crawford, Iosco, Ogemaw, Otsego, and Roscommon Counties: Active sampling of free-ranging deer at a rate of 300 deer annually per county.
 - Presque Isle County: Active sampling of free-ranging deer at a rate of at least 500 deer annually with a goal of testing 700 deer annually.
- b. MDNR targeted surveillance after April 20, 2022 will be developed based on an agent-based model to determine the number of deer by sex and age demographic to be sampled within DMUs 452 and 487. To predict TB concentration areas within DMUs 452 and 487, habitat, epidemiological, and other pertinent data will be used in conjunction with a Force of Infection model. Identified TB concentration areas will be used to focus surveillance efforts to maximize detection of TB positive deer and prevention actions. Resulting models will be used to determine geographic variation in deer densities and TB risk in juxtaposition to cattle farms. This will inform where deer removal strategies should be prioritized. Models will be developed and updated as data and resources allow. If resources do not allow for model development and implementation, the following targeted surveillance numbers will be used:
 - MAZ – first priority for surveillance, 1200 head.
 - Presque Isle County – second priority for surveillance, 500 head.
 - MAZ Buffer Area – see MOU for priority for surveillance by county, 300 head per county.
- c. Passive surveillance will be conducted through examination and testing of potentially lesioned animals submitted to the MDNR by hunters throughout Michigan. This surveillance will be in addition to any active surveillance. Animals submitted to the Wildlife Disease Laboratory for Chronic Wasting Disease surveillance will be screened for TB whenever possible.
- d. If TB is detected by MDNR through active or passive surveillance in free-ranging cervids or if TB is detected by MDARD in livestock in any county, excluding those in the MAZ, MAZ Buffer Area, and Presque Isle County, heightened active sampling of free-ranging deer will be initiated within a 10-mile radius of the location of the TB positive animal, at a rate sufficient to detect an apparent TB prevalence of at least one percent with 95 percent confidence (≥ 300 deer annually).
- e. MDNR will target deer management efforts in the MAZ on a local scale to prevent transmission of TB between deer and livestock. MDNR will authorize additional hunts in Alpena County in and around the area that contains the highest concentration of cattle herds. Following this additional harvest season MDNR, in cooperation with MDARD and livestock and wildlife cooperators, will conduct an evaluation of the season and develop recommendations for increasing the use of additional hunting opportunities in the MAZ.

- f. MDNR will designate a full-time Bovine Tuberculosis Coordinator to work with hunt clubs, landowners, and other cooperators in the MAZ and Presque Isle County to increase efforts to eradicate TB from the deer herd.
- g. MDNR will continue to assign conservation officers to enforce feeding and baiting bans in the TB area.
- h. MDNR will provide WS with approval to conduct targeted removal of deer on cattle farms in the MAZ and Presque Isle County after April 20, 2022, and within identified TB concentration areas of DMUs 452 and 487 as of April 20, 2022.
- i. MDNR will actively promote the Hunter Access Program to all landowners in the MAZ and Presque Isle County.
- j. MDNR will simplify the process for cattle producers and adjacent landowners to obtain no-cost disease control permits valid for harvesting deer year-round in the MAZ and Presque Isle County.
- k. The MDNR, with collaborators, will continue to conduct research concerning the epidemiology of TB and potential intervention strategies, including targeted removal and vaccination.
- l. MDNR will report various data points in the annual TB reports via VS Form 6-38.

III. Evaluate APHIS Responsibilities.

- a. Provide expertise in epidemiology, diagnostic support, risk assessment, and testing.
- b. Assist with improving slaughter surveillance at Federal slaughter establishments, including assisting MDARD with obtaining cattle movement data from other States.
- c. Assist with indemnity payments as outlined in the applicable MOU.
- d. Assist with payments for animal and specimen transportation fees, laboratory analysis, data storage, and management support. APHIS will assume responsibility for timely appraisal and payment for animals indemnified with Federal funds.
- e. Assist with cattle and bison movement monitoring and compliance investigations involving movement of cattle between zones and interstate through the activities of APHIS Investigative and Enforcement Services officers.
- f. Assist WS with wildlife risk management activities on farms within the MAZ, Presque Isle County, and Cheboygan County (Cheboygan added April 2022).
- g. Provide support for acquisition and development for electronic identification, hardware, and software in accordance with animal disease traceability and USDA regulations. Provide data entry assistance necessary to monitor TB testing and animal movements within the MAZ and Presque Isle County, and between zones, and assist with fulfilling reporting requirements of split state status and the MOU.
- h. Review the progress of the bovine TB eradication activities covered under the split state status and the MOU and report recommendations to the cooperators.
- i. Support implementation of the WRM and EWB plans.
- j. Perform a program review to determine compliance with cattle, bison, and cervid rules and regulations of the National TB Eradication Program including VS Memos, VS Notices, and pertinent parts of the CFR; the Uniform Methods and Rules (UM&R) 2005; and the Cervidae Uniform Methods and Rules 1999.

IV. Evaluate progress on the 22 recommendations from the 2020 review and risk assessment.

Findings, Observations, and Recommendations

I. Evaluate MDARD compliance with Article 5 of the MOU required for the maintenance of split state status.

Findings and Observations

- a. Annual whole herd testing is performed within 9-15 months of each herd's anniversary date. While each individual premises has a premises identification number, some herds reside across numerous premises but are still a single herd. TB test data is collected and reported by MDARD by herd owner under one premises, regardless of how many premises the individual herd is located on. MDARD maintains premises as active in their animal health database for at least two years after they no longer have cattle to monitor for intent to repopulate the premises. After two years, if a producer doesn't plan to acquire cattle, the premises is marked inactive. These factors impact the ability to do a simple comparison to confirm all herds are annually tested, therefore MDARD has developed a process to ensure notifications are sent and follow up is performed according to all herds' anniversary dates so that no herds are missed.
 - In FY 2021, annual whole herd testing in the MAZ resulted in 516 test charts including 254 individual owners with 17,951 individual tests for TB. There were 496 premises in the MAZ (461 beef, 35 dairy), including 117 freezer beef premises which do not receive an annual WHT.
 - In FY 2021, annual whole herd testing in Presque Isle County herds resulted in 93 test charts including 56 individual owners with 2,713 individual tests for TB. There were 114 premises in Presque Isle County including 17 freezer beef premises.
 - Since the last review, one TB-affected herd (Oscoda County; Herd #82) was identified through MAZ surveillance testing on January 25, 2022, and one TB-affected herd (Herd #80; Alpena County) was identified through movement testing on November 10, 2020.

For FY 2022 through March 31, 2022, annual WHTs in the MAZ resulted in 156 test charts with 7,123 individual tests for TB. There were 491 premises in the MAZ (456 beef, 35 dairy), including an unknown number of freezer beef premises which do not receive an annual WHT.

 - Complete FY 2022 data will be reported by MDARD in the FY 2022 annual report narrative.
- b. Whole herd testing of 150 herds from the MAZ Buffer Area was reported as completed between April 1, 2020, and March 31, 2021. During this timeframe, 156 herds and 7,658 animals were tested. Testing began for an additional 150 herds between April 1, 2021, and March 31, 2022. 147 herds and 7,880 animals were tested. Permission was provided by Dr. Ray with VS-Michigan on March 10, 2022, to use the extra herd tests from the April 2020 – March 2021 testing period to count towards the April 2021 – March 2022 testing period. Therefore, this objective has been met for the most recent testing period.
 - Since the last review, one TB-affected herd (Herd #81; Cheboygan County) was identified through MAZ Buffer Area testing on March 11, 2021.
- c. All MAZ and Presque Isle County cattle 15 days of age and older tested for TB are required to be double tagged with an official electronic identification tag and an MDARD-approved secondary unique identification tag at the time of testing and both tags must be

recorded on the test chart. As of the time of the review, MDARD reported that most surveillance testing is performed by MDARD field veterinarians and they, or the private accredited veterinarian when MDARD does not perform testing, verify all animals are double tagged at the time the herd is tested. New cattle producers receive an information package from MDARD which includes details on the requirement for double tags. The primary tag is an official 840-prefix radio-frequency identification (RFID) ear tag. MDARD provides the official RFID tags at no cost to producers for regulatory testing. Producers can also purchase these tags from their manufacturer of choice. The secondary tags are provided by the Atlanta office at no cost to the producer unless a producer elects to supply their own. In this circumstance, the producer must have their tag approved by MDARD staff to ensure the tag numbers do not repeat.

- d. All MAZ and Presque Isle County cattle 15 days of age and older, except cattle moved from freezer beef herds to custom slaughter plants, are required to be double tagged with an official RFID and the MDARD-approved secondary tag prior to movement. MDARD uses their certificate system to verify this by requiring both the official RFID and secondary tag numbers to generate each movement certificate.
- e. Movement of live cattle (other than directly to slaughter) from herds in the MAZ and Presque Isle County that do not maintain WRM verified status are prohibited under the April 1, 2020, zoning order. MDARD has several mechanisms to monitor compliance with this. All herds are required to get a movement certificate where their WRM or EWB status is verified before the certificate is generated. Producers that attempt to move animals without a certificate would be identified if they attempt to move through the Northern Michigan Livestock Exchange (NMLE) in Gaylord and field staff additionally monitor records at other livestock sales yards for animals that originate from either the MAZ or Presque Isle County.
- f. The requirements for cattle moved from a premises in the MAZ or Presque Isle County are outlined within the April 1, 2020 MDARD Zoning Order and the MOU signed in April 2022 aligns with these movement requirements.
- g. The individual that administered the certificate system to track intrazonal and interzonal movements of live cattle from farm of origin to slaughter or next premises destination from the MAZ and Presque Isle County after normal business hours retired in August 2022. MDARD indicated concern that they may be unable to find personnel to provide the same level of after-hours coverage previously provided. If acceptable solutions are not found, the team advised MDARD discuss concerns and proposed solutions for adequate coverage for maintaining the certificate system with VS-Michigan. An online permit request system is under development but hampered by technical issues with the current version of the USAHerds database used by MDARD. Once available, it likely cannot fully replace the evening and weekend service provided by the retired MDARD employee, though it appears to be a good step toward modernizing the permitting system and providing some relief for requests made outside of normal business hours.
- h. Movements of cattle and bison from the MAZ and Presque Isle County will be monitored in Michigan-licensed livestock auctions on sale days to confirm that the cattle and bison are officially identified, tested, and permitted, as required, and through other methods as necessary to ensure compliance with requirements. Each animal moving through the NMLE has requirements reviewed on sale day. Producers check in upon arrival and NMLE personnel verify MAZ-origin animals meet requirements to be sold. Cattle not

meeting requirements are ineligible for sale and are told to return to the origin farm. The software used by NMLE allows for electronic capture of all official RFID ears tags and each animal's RFID is correlated with a backtag and the seller. After cattle are sold, the buyer is additionally correlated to the animals for traceability through NMLE. At this time, the MDARD-approved secondary ear tags are not captured. If an MAZ-origin animal arrives without an official RFID ear tag, perhaps due to loss, a new official RFID ear tag is applied. Capture of the MDARD-approved secondary ear tags for these retagged animals would create a record tying the newly applied RFID to the MDARD-approved secondary ear tag and this record could be used to reconcile inventories of animals retagged at NMLE. Animals with secondary ear tags on the watch list that match the secondary ear tag of the seller from NMLE could be accounted for and removed from the watch list. Collection of MDARD-approved secondary ear tags from slaughter facilities may additionally allow for better inventory reconciliation and removal of animals from the watch list, thereby decreasing the overall number of unaccounted cattle.

Animals that move for slaughter only are confirmed as slaughtered by MDARD's compliance unit. For other markets, field staff perform record reviews to identify MAZ or Presque Isle County origin animals. MDARD staff makes every attempt to be present at markets other than NMLE to validate permits from the MAZ or Presque Isle County.

- i. MDARD utilizes State authority to randomly intercept and inspect vehicles that are transporting livestock on public roads within Michigan's MAZ and Presque Isle County for compliance with State and Federal split state status requirements and this MOU. MDARD performs an annual training on the interception/inspection process for the Michigan State Patrol. Mobile patrols can stop vehicles to confirm the animals moving have a valid certificate. Michigan State Patrol typically monitors vehicles Monday – Friday for an average of four hours per day.
- j. There have been no TB-affected herds identified since April 20, 2022, therefore, this objective could not be evaluated.
- k. The 2019 MOU listed more than 30 reporting metrics under Article 5 to be included by MDARD in their annual and semiannual TB reports. Most metrics were included between the FY 2021 annual and FY 2022 semiannual reports. Some metrics were included in one and not the other. The only metrics not found in either report was the number of herds tested for surveillance in the MAZ and Presque Isle County. The FY 2021 annual report alternatively included the number of test charts and individual animal tests for the MAZ and Presque Isle County and the FY 2022 semiannual report included these numbers for the MAZ only. MDARD explained that some herds reside across numerous premises but are still a single herd which complicates reporting by herd. TB test data is collected and reported by MDARD by herd owner under one premises, regardless of how many premises the individual herd is located on.
- l. MDARD quarantines all premises with animals suspicious for the presence of *M. bovis*. All TB-affected herds in Michigan must be quarantined until depopulated or until a test-and-removal program as specified by APHIS is completed and are required to participate in the targeted deer removal program through WS as a condition of quarantine release. MDARD reports that no herds have refused to participate in the targeted deer removal program. Herds designated in the future with a WGS consistent with infection by local transmission from free-ranging cervid species will be required to participate in the

targeted deer removal program for 5 years unless otherwise specified by an approved herd plan.

- m. Circle, trace source, trace exposed, and slaughter trace testing will be performed as outlined in the applicable MOU. Between the last review in August 2020 and the approval of the 2022 MOU, tracing activities for herds 80, 81, and 82 were completed as required by guidance from the 2019 MOU. Tracing requirements were amended in the 2022 MOU to allow for use of WGS to guide tracing activities involved with affected herds when transmission can be directly linked to a wildlife exposure. No tracing activities have been initiated since the 2022 MOU was signed in April 2022 through the time of the review.
- n. MDARD and APHIS collaborate with WS, university and agency-based researchers, and representatives of livestock producers to increase the biosecurity of herds in the highest risk area of the MAZ. A table showing the initiatives undertaken since the last review is found in Appendix I. Additionally, MDARD reports that wildlife biologists visit each of these farms at least two times a year to discuss program changes.
- o. MDARD manages and maintains an EWB Plan for cattle herds located in the highest risk area of the MAZ located in and around DMU 452.
 - MDARD reported via the FY 2021 annual report narrative that there were 137 commercial cattle herds in the EWB area and 107 were enrolled in the EWB plan.
 - MDARD reported via the FY 2022 semiannual report narrative that there were 138 commercial cattle herds in the EWB area and 98 were enrolled in the EWB plan.
 - As of the time of the review, there were 150 cattle herds in the EWB area including 26 freezer beef herds. 98 herds are enrolled in the EWB plan.
- p. EWB and WRM Plan herds are required to be inspected by MDARD, APHIS, or WS personnel on a biannual basis. The EWB herds are currently being inspected by one of two employees to maintain consistency. Some EWB herds that were verified in the past are seeing changes in deer pressure brought about by the changing EWB landscape due to high fences and protection of feed and pastures on neighboring properties. Adding additional personnel to the verification visit may increase the ability of the reviewers to document these changes and provide additional recommendations to the producers before the wildlife become habituated to new locations. Some producers interviewed expressed concern over the ability of other livestock producers purchasing feed from non-livestock premises where feed protection is not in place. Consider reevaluating risk on a regular basis to account for the changing landscape due to ongoing protection measures. WS has developed a risk assessment tool that would be helpful to document changes in risk.
- q. MDARD is required to complete herd IR within 60 days for any WHT performed in the MAZ and the section of Presque Isle County that requires annual WHTs.
 - MDARD reported via the FY 2021 annual report narrative that they had conducted 304 IRs, with 301 (99.01%) completed within 60 days and the average number of days from conducting the WHT to completion of the IR was 34.18 days.
 - MDARD reported via the FY 2022 semiannual report narrative that they had conducted 172 IRs, with 164 (95.4%) completed within 60 days and the average number of days from conducting the WHT to completion of the IR was 45.8 days.The annual inventory reconciliation process that is required of herds identifies missing animals and when the reason the animal(s) is/are missing can't be verified, the missing animal(s) is added to an MDARD watch list. At the time of the review, 1,349 animals had

been added to the watch list in FY 2022. The completion time for the IR ends when animals are added to this list. At this time, a letter is sent to the producer for follow up on these animals that have not been accounted for in the current test. MDARD receives no response from a significant percentage of these letters every year. More producers are keeping tags from animals that died between tests, but many still do not follow this recommendation. MDARD does not have record keeping requirements for livestock producers in Michigan to track where they acquire or dispose of livestock or when they apply identification ear tags. Therefore, it is difficult to account for missing animals during the IR process as MDARD relies on producers' memories or records they voluntarily maintain. There are many legitimate reasons why animals may end up on the watchlist. They may have lost both the RFID and the secondary tag, they may have gone to the market and been retagged without the secondary tag being noted, or they may have died on the farm. It would be helpful to note these possible outcomes in the numbers, possibly as low risk watch list additions. For example, a producer presents their cattle for a WHT and the testing veterinarian determines two animals from the last WHT are not in the group (and should be) and also finds two animals without any ear tags (old enough to have been tested in the last WHT). The animals not presenting for the WHT could be added to the watch list as low risk due to the likelihood of them being retags, provided there wasn't evidence to suggest the herd owner was moving cattle without MDARD knowledge. Herds with large numbers of missing animals after most of the retags are reconciled (i.e., herds where animals are unaccounted for not due to retagging and are missing from the property without valid explanation), or herds that are unwilling to cooperate would be high risk watch list animals/herds which may warrant a compliance visit. Compliance visits are also warranted when non-verified EWB herds have animals added to the watch list.

- r. MDARD reports that only regulatory veterinarians conduct TB testing for quarantine release or testing of high-risk herds.
- s. Per the 2019 MOU, a bovine TB management plan will be maintained and updated as significant developments occur that may alter the implementation of the plan, or within 6 months following the end of the bovine TB management plan period. This objective was not prioritized during this review.
- t. There have been no TB-affected herds identified since April 20, 2022, therefore, this objective could not be evaluated.

Recommendations

- 1) Establish a threshold and compliance trigger for producers that cannot account for missing animals that are added to the watch list for reconciliation. Consider prioritizing non-verified herds in the EWB area.
- 2) Continue efforts to implement the EWB plan for at risk cattle producers in Presque Isle County.
- 3) Explore the feasibility for personnel at NMLE to monitor MAZ origin premises bringing in retagged animals and to collect the secondary ID of each retagged animal to reconcile this information with the watch list; if feasible, implement a strategy to accomplish this.
- 4) Explore the value of collection of MDARD-approved secondary ear tags at custom slaughter plants serving MAZ producers to assist with watch list reconciliation.

- 5) Work with WS to find an acceptable timeline to re-administer the risk assessment tool for premises as factors change for the purpose of monitoring progress over time and to address new or unresolved issues since the previous assessment.

II. Evaluate MDNR compliance with Article 5 of the MOU required for the maintenance of split state status.

Findings and Observations

- a. MDNR conducted active surveillance for TB in free-ranging white-tailed deer and reported the calendar year (CY) 2020 and 2021 numbers of deer sampled and percent of target reached as indicated below:
 - MAZ Target: 2,800 deer annually
 - 2020: 2,564 deer sampled (92% target)
 - 2021: 2,969 (106%)
 - Cheboygan, Crawford, Iosco, Ogemaw, Otsego, and Roscommon Counties Target: 300 deer annually per county.
 - 2020: Cheboygan: 248 (83%); Crawford: 149 (50%); Iosco: 350 (117%); Ogemaw: 423 (141%); Otsego: 229 (76%); Roscommon: 286 (95%)
 1. Cheboygan, Crawford, Otsego, and Roscommon all fell below the 300 deer target in CY 2020. The 2019 MOU therefore required that one third of all cattle herds in these 4 counties receive a WHT each year for the following 3 years on a rotating basis.
 - 2021: Cheboygan: 155 (52%); Crawford: 191 (64%); Iosco: 300 (100%); Ogemaw: 386 (129%); Otsego: 286 (95%); Roscommon: 274 (91%)
 1. Cheboygan, Crawford, Otsego, and Roscommon again fell below the 300 deer target in CY 2021. The 2019 MOU required that another one third of all cattle herds in these 4 counties receive a WHT in 2022. The latest MOU was signed April 20, 2022, with roughly 4 months to perform WHTs for the herds in these 4 counties in 2022.
 - Cheboygan, Crawford, Otsego, and Roscommon Counties did not reach targeted sampling goals since the last review.
 - Presque Isle County Target: at least 500 deer annually with a goal of testing 700 deer annually
 - 2020: 564 (113%, 81%)
 - 2021: 563 (113%, 80%)
- b. Under the MOU signed April 20, 2022, MDNR targeted surveillance was proposed to be developed based on an agent-based model to determine the number of deer by sex and age demographic to be sampled within DMUs 452 and 487. During the review, MDNR relayed that the agent-based model cannot be used as a surveillance tool and is unable to determine sampling numbers as outlined within the MOU. Since the model cannot be used as originally proposed, the following targeted surveillance numbers will be used. The hunting season is heavily relied upon for surveillance and the season occurs from

September to early January; the numbers below include hunter harvested deer submitted as of February 3, 2023. The MDNR is still receiving additional samples from the field and awaiting laboratory confirmation for samples submitted during CY 2022 surveillance efforts, so numbers provided here are subject to change. The first number is the number of samples tested in CY 2022 to date, and the second number is the target number:

- 1st priority for surveillance: MAZ 3,119/1200 (target passed)
- 2nd priority: Presque Isle County 457/500 (pending)
- MAZ Buffer Area counties
 - 3rd priority: Iosco 343/300 and Ogemaw 362/300 (targets passed)
 - 4th priority: Otsego 234/300 and Roscommon 272/300 (pending)
 - 5th priority: Cheboygan 170/300 and Crawford 201/300 (pending)

It is difficult to ascertain how successful the deer season will be in collecting enough samples to reach the pending surveillance targets. As stated in IIa, Cheboygan, Crawford, Otsego, and Roscommon Counties all fell below the target in CYs 2020 and 2021. As of the data currently available, these four counties remain below their targets for CY 2022. It remains important for MDNR to advocate for hunters to have their deer tested to provide important surveillance data. Starting this year, MDNR implemented online mandatory harvest reporting. The online system can populate messages for the hunters specific to the area from which the deer was harvested, including recommendations to submit their deer head to MDNR for examination and TB testing, particularly when deer are harvested from counties that have a TB surveillance goal. Please refer to IVI for additional information.

- c. MDNR reports increasing passive surveillance is difficult. In CY 2020, the number of deer tested for TB outside of the active TB surveillance areas, mainly secondary to chronic wasting disease (CWD) surveillance, was 2,375 head. This low number is at least in part due to the wildlife disease lab being closed mid-March - September 2, 2020, as well as some MDNR check stations being closed, both due to the COVID-19 pandemic. In CY 2021, the number of deer tested from the same areas was 6,346. The hunting season data is still being collected for CY 2022 and MDNR reports that 10,911 deer to date in CY 2022 have been tested for TB from the remainder of the state, representing a sizable increase from the two previous years.

MDNR reports passive surveillance testing is largely dictated by CWD surveillance goals. The state uses a rotational schedule for CWD and all deer heads collected are tested for CWD and screened for TB. See Appendix II for a map of MDNR's CY 2022 CWD surveillance goals showing where most passive TB surveillance sampling is done. As of February 3, 2023, 16,069 deer have been tested for TB in CY 2022; 5,158 of these deer were from the TB area including from the MAZ (3,119) and the seven surrounding counties (2,039).

- d. In CYs 2020 and 2021, MDNR reported that they tested 219 and 324 deer (respectively) related to the finding of a TB-infected deer or livestock herd outside of the MAZ/MAZ Buffer Area/Presque Isle County. All deer were tested around cattle herds infected by the movement of infected cattle. The target number of deer for testing in this situation, a rate sufficient to detect an apparent TB prevalence of at least one percent with 95 percent confidence, is greater than 300 deer annually. The target number of deer was not reached in 2020 but was in 2021.

The number of deer tested in 2022 related to the discovery of a TB-infected deer or livestock herd outside of the MAZ/MAZ Buffer Area/Presque Isle County is unknown and no longer needed for the 2022 MOU.

Some cattle producers interviewed indicated they could better decide how to protect their herds if they knew where positive deer were found. Taking into account privacy concerns, it may be helpful if a process for communicating this information could be developed to empower area producers.

- e. MDNR authorized additional hunts in Alpena County of the MAZ January 7-10, 2021, and January 14-17, 2021, and 13 and 30 deer were harvested (respectively). Under the 2019 MOU, MDNR will authorize these additional Alpena County hunts in and around the area with the highest concentration of cattle herds. Following this, MDNR, in cooperation with MDARD and livestock and wildlife cooperators, will conduct an evaluation of the season and develop recommendations for increasing the use of additional hunting opportunities in the MAZ.

MDNR opened additional January hunts in Alpena County each year since January 2018. Hunters with unused deer licenses could pursue antlerless deer on private land Thursday – Sunday during the first 2 weekends in January following New Year’s Day. The season was evaluated for the first three years, and it was found that less than 4% of the antlerless deer harvested in Alpena County were attributed to that season. Hunters have ample opportunities to harvest deer in the county October through December. MDNR found the January hunts to have little additive value on the removal of additional antlerless deer, the hunts were not favored amongst hunters, and they challenge relationship building in the communities where it is important to build trust to reduce deer densities and educate about disease mitigation. MDNR evaluation concluded the January hunts were not likely to have any tangible benefits to deer or disease management efforts and they decided to discontinue these hunts.

- f. The MDNR has a full-time Bovine Tuberculosis Coordinator. The first half of FY 2021, COVID-19 restrictions prevented in-person meetings and events. Once restrictions were lifted, one multi-cooperative meeting was attended the second half of FY 2021. The MDNR hosted the 4th Annual Wildlife Cooperative Rendezvous in January 2022 to educate the public about the benefits of cooperatives, habitat management lessons, and the availability of MDNR habitat grants and is currently planning for the 5th annual event in January 2023. Three *TB Connections: Herd and Hunter* meetings were held in April 2022 in Onaway, Hubbard Lake, and Lupton, Michigan. Planning is also ongoing for mid-October’s *TB Connections: Herd and Hunter* meetings that MDNR hopes can be in person with an option for virtual attendance to increase accessibility.
- g. MDNR continues to assign conservation officers to enforce feeding and baiting bans in the TB area, as baiting has been outlawed in this area since 1998.
 - MDNR reported via the FY 2021 annual report narrative that there were 75 warnings and 108 misdemeanors issued for baiting violations and 12 warnings and 2 misdemeanors issued for feeding violations. No civil infractions or felonies were reported.
 - MDNR reported via the FY 2022 semiannual report narrative that there were 55 warnings and 139 misdemeanors issued for baiting violations and 16

warnings and 6 misdemeanors issued for feeding violations. No civil infractions or felonies were reported.

- Since April 1, 2022, there have been only two MI deer hunts from September 10-11 and September 17-18. Feeding and baiting violation data was not available for 2022 as of the time of the review as most violations occur after October 1st each year. This information will be available at the end of the CY.
- h. MDNR continues to provide approval to WS for targeted deer removal in the MAZ and Presque Isle County.
- i. MDNR promotes the Hunter Access Program to all landowners in the MAZ and Presque Isle County.
- MDNR reported via the FY 2021 annual report narrative that there were 37 landowners and 3,777 acres in the MAZ and Presque Isle County and 8 landowners and 1,035 acres in the other counties that border the MAZ.
 - MDNR reported via the FY 2022 semiannual report narrative that there were 9 landowners with 1,909 acres in DMU 452 and 17 landowners with 3,841 acres in DMU 487.
 - As of the time of the review, there were 36 landowners and 3,670 acres enrolled in the Hunter Access Program within the MAZ and Presque Isle County.
- j. MDNR continues to issue disease control permits (DCPs) to cattle producers in the MAZ and other eligible counties.
- In CY 2021, MDNR issued 637 DCPs in the MAZ, 111 to cattle producers and 190 deer were harvested through the producer permits. For the same timeframe, MDNR issued 440 DCPs in other eligible counties, 78 to cattle producers and 83 deer were harvested through the producer permits.
 - As of the time of the review, for CY 2022, MDNR issued 159 DCPs in the MAZ, 120 to cattle producers and 210 deer were harvested through the producer permits. For the same timeframe, MDNR issued 89 DCPs in other eligible counties, 73 to cattle producers and 57 deer were harvested through the producer permits. This data includes DCPs issued to individual landowners and does not include DCPs for WS deer removal.

The review team received feedback during the review from multiple sources relaying that the DCPs are not enough to control the deer population and that most hunters are resistant to harvesting does. Additional comments indicated there is limited slaughter capacity for hunters that do not want to process their own deer, which may limit interest in using the DCPs. It is important to continue to find ways to address these concerns.

- k. The MDNR and collaborators continue to conduct research concerning potential intervention strategies, including spatial modeling and vaccination. The last update on this work was provided with the 2022 semiannual report narrative and was current as of February 2022.

The review team received feedback from concerned producers questioning the likelihood that TB could move out of the MAZ secondary to decreased availability of pasture and feed as more pasture, water, and feed is protected under the EWB plan. This was discussed with MDNR during the review and consideration should be given to examining this risk.

1. The 2019 MOU lists more than 30 reporting metrics under Articles 5 and 7 to be included by MDNR in their annual TB report. Most metrics were included between the fiscal year FY 2021 annual and FY 2022 semiannual reports. Some metrics were included in one and not the other. Three metrics were not found in either report: 1) The number of deer tested for TB in the AFZ through passive surveillance per CY; 2) the number of deer tested for TB per CY initially submitted to the Wildlife Disease Lab for CWD surveillance; and 3) the estimated population of deer in the MAZ. The first and second missing metrics appear to be reported as a total combined number of deer tested outside of the active TB surveillance areas, mostly due to CWD surveillance. After USDA review of the FY2021 annual report, it was communicated by USDA that it was acceptable not to parse out the number of deer tested for CWD as it was relayed to USDA that this may be a difficult number to report. MDNR followed up on the last missing metric by providing a deer population estimate report on the MAZ.

Recommendations

- 1) Continue to educate hunters about the benefits of harvesting does and advocate for increasing doe harvest in the MAZ, MAZ Buffer Area, and Presque Isle County.
- 2) Advocate for and explore opportunities to improve access to wild deer processor capacity within the MAZ.
- 3) Develop an acceptable process to communicate when and where positive deer are found.
- 4) Find appropriate collaborators to examine if actions of the herd protection program impact free-ranging deer movement in the MAZ. If an effect is detected, consider what efforts may need to be implemented to mitigate the potential of infected deer traveling outside the MAZ secondary to protection of livestock food sources.

III. Evaluate APHIS Responsibilities.

Findings and Observations

- a. APHIS provides personnel in Michigan with expertise in epidemiology, diagnostic support, risk assessment, and testing. APHIS personnel perform all epidemiology work for all Michigan affected herds. The AVIC supervises four employees whose roles are fully dedicated to the TB program along with multiple other staff who provide program support.
 - MDARD and APHIS VMOs stated that the current gamma testing protocol is not a viable alternative to CCT testing in the MAZ because it would require drastic changes to the herd testing routine and field resource allocation. MDARD and APHIS VMOs perform most herd tests in the MAZ and have a long-standing routine of performing CFT injections on Mondays and Tuesdays with corresponding reads on Thursdays and Fridays. CCTs are injected on Fridays so that they can be read on Mondays. This system maximizes AHT and VMO resources for MAZ herd testing and there is no feasible way to adjust this schedule to allow for arrival of gamma test samples on the M-Th schedule as required by NVSL. VMOs interviewed during the review seemed hesitant to adopt gamma testing again due to a combination of scheduling difficulty, confidence in the CCT test, and issues with repeat invalid results. They did state, however, that they may consider using the QuantiFERON Gold test if it becomes validated because it

could fit easily into their existing test protocols by allowing blood draws on regular Thursday and Friday CFT read days.

- b. Each fiscal year, APHIS personnel in Michigan provide MDARD with a summary of federal slaughter data. Personnel meet with federal slaughter establishments to discuss granuloma submissions, DNA matching, tag retention, and official ID records and official ID matching. Additionally, traces received from other states by APHIS are shared with MDARD upon receipt.
- c. APHIS personnel facilitate and process indemnity payments for diagnostic, exposed, suspects, and reactor animals according to APHIS standards and standard operating procedures.
- d. APHIS provides funds towards payment of indemnified animal transportation fees and samples tested at National Animal Health Laboratory Network laboratories are verified at the National Veterinary Services Laboratories where additional diagnostics are provided. Test results, trace records, and affected herd data are stored on the federal shared drive and within the federal Emergency Management Response System.
- e. APHIS Investigative and Enforcement Services officers investigate interstate movement, official ID, and other federal violations.
- f. APHIS personnel assist with WRM verification.
- g. APHIS provides funds through a cooperative agreement to support the acquisition of hardware and software for capturing and monitoring electronic identification and for updates to MDARD's animal health database. APHIS personnel provide data entry support to capture handwritten test charts within the federal Mobile Information Management System which uploads into both the federal Surveillance Collaboration Services and MDARD's animal health database. Additionally, APHIS personnel provide data to MDARD as requested for reporting purposes.
- h. Progress of bovine TB eradication activities covered under the MOU were reviewed and are detailed in this report.
- i. APHIS continues to support the WRM and EWB plans by providing personnel to assist with implementation.

Recommendations

- 1) Support the validation of the QuantiFERON Gold test.

IV. Evaluate progress on recommendations from the 2020 review and risk assessment.

Findings and Observations

- a. Recommendation 1 (High Priority) to require signed herd plans to be in place in advance of beginning a test and remove program has been reported as implemented by MDARD. Recommendation 18 (High Priority) is that VS-Michigan should confirm.
 - One of the two farmed cervid herds detected since the last review will be under a test and remove program which is planned to begin in the fall of 2022. It has a draft herd plan at this time.
 - VS-Michigan indicated the herd owner is not required to sign the herd plan, therefore, the SAHO/AVIC signature is used to determine the herd plan date. For the three cattle herds detected since the last review that have started their test and

remove program, herd 80 (Eller) had a signed herd plan 02/16/2021 and began their test and remove program 02/19/2021; herd 81 (Lapeer) had a signed herd plan 06/22/2021 and began their test and remove program 06/28/2021; herd 82 (Bowers) had a signed herd plan 08/17/2022 and began their test and remove program 03/14/2022. Of the three herds currently under a test and remove program and that have been detected since the last review, one of the three did not have a signed herd plan in place prior to beginning a test and remove program. VS-Michigan indicated this delay was due to a decision to wait on modeling results from the Center for Epidemiology and Animal Health and was approved through the Cattle Health Center.

- b. Recommendation 2 and 5 (both High Priority) to develop and implement a system for complete herd reconciliations, including mandatory reporting by owners when animals are found missing, ensuring all animals are accounted for in 98% of the MAZ herds is ongoing.
 - MDARD reported via the FY 2021 annual report narrative that 304 IRs had been conducted, with 301 (99.01%) completed within 60 days and the average number of days from conducting the WHT to completion of the IR was 34.18 days.
 - MDARD reported via the FY 2022 semiannual report narrative that 172 IRs had been conducted, with 164 (95.4%) completed within 60 days and the average number of days from conducting the WHT to completion of the IR was 45.8 days.

As previously stated, the annual IR process required of herds identifies missing animals and when the reason the animal(s) is/are missing can't be verified, the missing animal(s) is added to an MDARD watch list. At the time of the review, 1,349 animals had been added to the watch list in FY 2022. The completion time for the IR ends when animals are added to this list. Continuing to find ways to minimize the number of animals reconciled by being added to the watch list is recommended.
- c. Recommendation 3 and 4 (both High Priority) to require herds undergoing annual whole herd testing to save tags from animals that die on the farm between tests and to keep records on any animals they retag and present these tags/records to the testing staff when they arrive for whole herd testing is ongoing. MDARD and VS-Michigan field staff were interviewed and asked about progress on this recommendation. They reported producers were doing better saving ear tags and presenting them to staff.
- d. Recommendation 6 (High Priority) to follow up with owners of previously affected herds every 180 days to ensure compliance with the owner-signed quarantine release agreement, that should be updated if changed, has been reported as implemented by MDARD. Herd plans are used to identify actions required after quarantine release. MAZ and Presque Isle County herds are visited two times a year and must pass inspection to maintain verification.
- e. Recommendation 7 to review the MOU to confirm which metrics should continue to be included in both semiannual and annual reports or if some should only be included annually and apply this to future MOUs has been implemented. The 2019 MOU lists more than 60 reporting metrics under Articles 5 and 7 to be included in the annual and semiannual TB reports while the 2022 MOU lists about 42 metrics.
- f. Recommendation 8 to add new Presque Isle and Buffer County cattle surveillance reporting section into the semiannual and annual reports to capture surveillance data and

activities required for these counties as part of the 2020 MOU has been reported as implemented by MDARD.

- The FY 2021 annual report narrative included the number of whole herd and movement test charts and individual animals tested for Presque Isle County as well as the number of whole herds and individual animals tested in relation to the requirement to test 150 herds from the MAZ Buffer Area counties.
 - The FY 2022 semiannual report narrative did not include cattle surveillance information for Presque Isle County or the MAZ Buffer Area counties.
- g. Recommendation 9 to define language in the next MOU that allows for buffer zone whole herd testing to replace required circle testing in areas of geographic and temporal overlap. The 2022 MOU addresses this in Article 5 MDARD Item E2b.
- h. Recommendation 10 to consolidate all relevant documents containing components of the herd plan into a single document with supporting documents attached has been reported as implemented by MDARD.
- i. Recommendation 11 to ensure copies of all documents are in paper file if that is to be used as reference file is ongoing and was not specifically evaluated during this review.
- j. Recommendation 12 (High Priority) to monitor all 6 herds of 25 head or more that opted out of the EWB plan quarterly, four times per CY, for potential movement violations is ongoing. As of the time of this review, there continues to be 6 herds of 25 head or more that are not verified with the EWB plan. The animals within these herds can only move off the farm on a movement certificate direct to slaughter. Each herd has an IR annually after testing is complete. Any animals from these herds that show up on a watch list will result in an investigation. MDARD reports one movement certificate violation was found for one of these herds for animals moving to a custom slaughter plant. Upon further investigation by MDARD, the producer was found to be compliant.
- k. Recommendation 13 (High Priority) to complete cattle testing in one third of the herds per the MOU in Cheboygan, Crawford, and Otsego County by the end of CY 2020 and beyond has been reported as ongoing by MDARD. Recommendation 19 (High Priority) is for VS-Michigan to confirm that MDARD is performing WHTs in one-third of the herds in Cheboygan, Crawford, and Otsego County by the end of CY 2020.
- Roscommon County additionally fell below the 300 deer target in CYs 2020-2021 (286, 274). Per the 2019 MOU, Roscommon County would additionally be required to test one third of the cattle herds in the county on a rotating basis each year starting CY 2021 until renegotiated in April 2022.
 - Buffer zone surveillance by county was reported by MDARD for April 2020 – March 2021 and April 2021 – March 2022. Note – there was 1 additional herd tested in Cheboygan and Otsego Counties in April and June 2022 (respectively).
 - The table below details the number of herds tested over two 12-month periods. More than 2/3s of the herds were successfully tested over this time.

		April 2020 – March 2021	April 2021 – March 2022	
County	# of Herds	# of Herds Tested	# of Herds Tested	Total Herds Tested
Cheboygan	88	25	59	84
Crawford	2	1	2	3
Otsego	55	30	21	51
Roscommon	10	8	3	11

- VS-Michigan monitored progress through receipt of regular reports from MDARD on testing accomplishments and biweekly calls with program management.
- l. Recommendation 14 (High Priority) to initiate surveillance in free-ranging white-tailed deer per the MOU in Cheboygan, Crawford, and Otsego County. The target surveillance number identified in the 2019 MOU was 300 deer per county.
 - The FY 2021 annual report narrative indicated the following number of deer tested through active surveillance in CY 2020: Cheboygan (248), Crawford (149), and Otsego (229). Roscommon County additionally fell below the target (286).
 - The FY 2022 semiannual report narrative indicated the following number of deer tested through active surveillance in CY 2021: Cheboygan (155), Crawford (191), and Otsego (286). Roscommon County again fell below the target (274).

MDNR reports that reaching the 300 head target in these counties is a challenge due to a large portion of the lands being private hunt clubs and the presence of processors uninterested in working with MDNR. They plan to maintain efforts to collect samples in the four counties, but do not plan to increase them. There are ongoing attempts to build landowner and processor relationships. CY 2022 is the pilot year for mandatory online harvest reporting and MDNR hopes this will result in increased reach and messaging regarding head collection and disease testing in certain counties. Hunters will receive the following message using the online harvest reporting system for a county that has a TB collection target, “Your deer was harvested within the bovine tuberculosis (TB) surveillance area and is needed for testing. Find a [sample submission site](#) near you to submit the head of your deer for TB testing.”

- m. Recommendation 15 and 16 to define the specific MDNR testing interval for free-ranging white-tailed deer using 365-day, 12 month, or calendar dates as well as notating the start date of the 3-year test cycle within the annual report for the circle test area has been completed.
 - All free-ranging deer surveillance numbers are reported out by calendar year within the annual and semiannual report narratives.
- n. Recommendation 17 and 22 on interagency collaboration to facilitate increased public education and outreach, including sportsmen groups, has been reported as ongoing. A table showing the initiatives undertaken since the last review is found in Appendix I.
- o. Recommendation 20 to advise that WS participate in an expanded role in the WRM and EWB verification activities is ongoing. MDARD reports that during the summer of 2022, field staff from MDARD and VS-Michigan performed 77 verifications within the WRM area. MDARD’s wildlife biology specialist and an employee with WS performed 175 verifications within the EWB and WRM areas and 105 more WRM verifications were completed by other WS staff. In summary, of the 357 EWB/WRM verifications performed in the 2022 summer season, 280 (78%) were completed by MDARD’s wildlife biology specialist or WS staff.

Feedback received during the review indicated non-wildlife-specific MDARD and VS-Michigan staff don’t feel confident performing verifications and they prefer them to be performed by wildlife-trained personnel. WS’ expanded role will help with this concern. The review team noted during field visits that some verified premises appears to have unmitigated risks, e.g., apple trees in approved low-fenced cattle pastures. The presence

of a secondary inspector during periodic verification visits may improve consistency and prevent risks from being unmitigated.

- p. Recommendation 21 to advise MDARD conduct an EWB Plan evaluation to determine if more cost-effective biosecurity methods can be implemented to separate deer from domestic livestock and, if not, consider discontinuing the EWB and reallocating funding to higher value activities is ongoing. This recommendation was not specifically evaluated during the review. MDARD previously reported they consider the EWB/WRM plans to be the best use of resources to prevent disease spillover to cattle from free-ranging deer.

Recommendations

- 1) Consider the addition of a secondary inspector to periodically attend EWB and WRM verifications to assist with consistency across verifications.

Conclusion

Michigan administers the cooperative Bovine TB Eradication Program amidst challenges in a state with a wildlife disease reservoir, declining numbers of both hunters and hunter harvests, and a delicate balance between competing political and cultural interests.

This review focused on the responsibilities identified within the 2019 and 2022 MOUs, as well as follow-up on the recommendations provided by the 2020 review team. The review was conducted to meet the requirement for an annual program review as outlined in 9 CFR 77.4.

The overarching areas the team found where improvements could be recommended were discussed during the exit interview and include:

- The inventory reconciliation process has improved since the previous review. Additional methods could be developed to discourage use of the watch list to reconcile inventories.
- Herd protection risks change over time as program implementation progresses. Processes to re-evaluate herds' risks on this evolving landscape and to continue to work towards consistency in implementation would be beneficial.
- There is an appearance of lack support and participation from some livestock producers and hunters for various objectives of the program. This presents challenges for all agencies and innovative ideas need exploration to address this.

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Appendix I

Communications Recommendations from the TB Review in 2020	Progress to Date
Shift the content of “Herd & Hunter: TB Connections” meetings to a digital and print format while in-person gatherings cannot be held. Information will be available on the TB webpage, emailed to the DMU 487 hunter contact list, and included with print and digital copies of the cattle and hunter newsletters that will be made available in the spring and fall.	<p>In 2022, the “Herd and Hunter” in person meetings were able to resume. Three meetings were held throughout the NE Lower Peninsula.</p> <p>However, shifting the content of these meetings into digital and print offerings is still desired. The goal is to offer meeting re-caps, so more producers can stay informed.</p>
Develop new material to educate hunters on the human health risks of bTB in deer and steps they can take to help prevent exposure.	This point is a part of most messaging, but nothing recent has been designed with this specific message.
Identify new “community leaders” who are willing to share DNR and/or MDARD messages and information around their networks and communities.	This is a continuous goal.
Utilize Farm Bureau’s daily electronic news system to provide bTB information/updates year-round (previously, this resource was just used for head collection messaging during hunting seasons).	<p>Michigan Farm Bureau’s news system has been utilized to circulate reminders on disease control permits and other topics related to deer head collection.</p> <p>This year, there is still the intent to use their system to help spread messages on deer harvest registration, promotion of Herd and Hunter meetings, etc.</p>
Expand the distribution and influence of select messages by utilizing the communication channels of key stakeholders.	<p>This is a continuous goal.</p> <p>However, since 2020, we were able to use the communication channels of Michigan Milk Producers Association and local feed businesses.</p>
Share deer observation and harvest data collected from DHIP and PLAN grant recipients with landowners who participated in the grants. DNR will analyze data and discuss results with participants in order to help inform the future deer management by these hunters and reinforce the importance of antlerless harvest.	The DNR is still in the process of analyzing this data, but they are close to completion.
Dedicate a portion of the recently hired Atlanta wildlife technician’s work hours to education and outreach with hunters and landowners in Alpena and Montmorency counties, which is the coverage area for that position.	<p>This recommendation has been completed.</p> <p>The Atlanta wildlife technician’s hours increased from 340 hours to 888 in 2022. The technician’s coverage area expanded to also include Presque Isle County, and they help with sample collection, communication/outreach, and other forms of assistance for landowners.</p>

Recorded an interview on bTB and deer management on MDARD's podcast series, "Fresh from the Field."	This recommendation has been completed: Fresh from the Field podcast on Bovine TB
Refine and distribute communication materials that help define and distinguish the WRM and EWB programs.	A frequently asked questions handout is being drafted on the Targeted Deer Removal program (a part of the EWB program) to provide more insight on the program's goals and objectives.
Create new educational resources for producers that identifies risk factors and pairs them with solutions.	The text for an infographic on the risk factors and solutions for producers is being drafted.

Future Goals

For General Public Outreach:

- Use the communication network of MSU Extension to increase stakeholder outreach.
- Continue to use the TB Advisory Committee and Head Collection Work Group to engage multiple stakeholder groups.
- Use the upcoming 2022 deer harvest registration information to help tailor communications to stakeholders.

For Producer/Hunter Outreach:

- Hold a Consensus Building Institute between cattle producers and hunters to assess their values.
- Continue to move forward in creating a position to help private landowners in the MAZ with deer/habitat management.
- Create a dashboard for disease control permit information.

