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Veterinary Services

Strategy and Policy

Ruminant Health Center

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Review of Montana's Brucellosis Management Program, 2019

A Review of Montana's Brucellosis Disease Management and Mitigation Activities across the State and within the Designated Surveillance Area

2019 Review of Montana's Brucellosis Management Program

Dates of the Review: June 24-28, 2019

Review Team Members

- Dr. Mark Camacho: Team Lead, Veterinary Medical Officer (VMO)/Epidemiologist, Ruminant Health Center (RHC)
- Dr. Ryan Clarke: VMO/Epidemiologist, RHC
- Dr. Dana Nelson: VMO/Epidemiologist, California
- Jocelyn Haskell: Animal ID Coordinator (AIC)/Animal Health Technician (AHT), Utah
- Randy Wilson: AIC/AHT, Oregon

Animal and Plant Health Inspection Service (APHIS) Employees Joining in Person

- Dr. Richard Austin: Acting Area Veterinarian in Charge (AVIC), Veterinary Services (VS)
- Dr. Janet Hughes: Epidemiologist, VS

Montana Department of Livestock (MDOL) Employees Joining in Person

- Dr. Martin Zaluski: State Veterinarian
- Dr. Tahnee Szymanski: Assistant State Veterinarian
- Dr. Eric Liska: Brucellosis Program Veterinarian
- Brooke Ruffier: Brucellosis Compliance Analyst/Officer
- Antonio Fuentes Sanchez: Serology Technician (Interviewed by phone)

Montana Department of Fish, Wildlife and Parks (MFWP) Employees Joining In-Person

- Quentin Kujala: Wildlife Management Section Chief
- Emily AlMBERG, PhD: Wildlife Biologist
- Dr. Jennifer Ramsey: Wildlife Veterinarian

Montana Brand Inspectors (within MDOL) Employees Joining in Person

- Leslie Doely: MDOL Brands Division Administrator
- Dan Bugni: MDOL Brands Division District Investigator/Market Supervisor, Beaverhead Livestock Auction
- Jon Kamps: Market Supervisor/Brand Inspector, Headwaters Livestock Auction, Three Forks, MT

Montana Accredited Veterinarians Serving the DSA

- Dr. Doug Young: Local Ennis, MT, Accredited Ranch Veterinarian
- Dr. Doug Reedy: Local Twin Bridges, MT, Accredited Ranch Veterinarian
- Dr. Bruce Sorenson: Market Veterinarian, Headwaters Market, Three Forks, MT

Locations and People Visited

- MDOL Office, Helena, MT: Dr. Martin Zaluski and Staff
- APHIS-VS Office, Helena, MT: Dr. Richard Austin and Staff
- PAYS Livestock Market, Billings, MT: Kevin Ramsey (MDOL Market Supervisor), Dr. Bryan Roe and Dr. Dael Householder (Market Veterinarians for PAYS and BLS, Billings, MT)
- Beaverhead Livestock Auction, Dillon, MT: Dr. Ben Abbey and Dan Bugni (MDOL Yard Supervisor and District Investigator)
- Headwaters Livestock Auction, Three Forks, MT: Dr. Bruce Sorenson, John Kamps (Livestock Brand Inspector), and Ted Wall (District Investigator)
- Pioneer Meats, Big Timber, MT: Brian and Kary Engle (Establishment Owners), Terry Taylor (Food Safety and Inspection Service (FSIS) Inspector), and Dr. Robert Blair (Supervisory Public Health Veterinarian (SPHV))
- Amsterdam Meats, Manhattan, MT: Don Halwagner (State Meat Inspector)

- Jumping Horse Ranch, Ennis, MT (previously affected herd): Jeff Klein (Ranch Manager) and Dr. Doug Young
- Mountain View Veterinary Service, Twin Bridges, MT: Dr. Doug Reedy

Executive Summary

During June 24 – 28, 2019, an external review team gathered in Helena, Montana, to participate in an onsite evaluation and review of the effectiveness of Montana’s Bovine Brucellosis Management Plan, including the current mitigation activities designed to prevent *Brucella abortus* (*B. abortus*) from being spread to other areas of Montana, as well as neighboring States and regions.

Montana appears to have an aggressive brucellosis management program with excellent cooperation from producers. Under the supervision of the Montana Board of Livestock (MDOL), Dr. Marty Zaluski (State Veterinarian) leads a team that actively engages the cattle industry and seems to work well with USDA; Montana Fish, Wildlife and Parks (MFWP); and private veterinarians.

Compared to the other Greater Yellowstone Area (GYA) States, Montana has more cattle herds in their Designated Surveillance Area (DSA) than Idaho, but less than Wyoming, while having about the same number of total cattle as Wyoming (~90,000 head). Montana has no elk feeding grounds in their DSA.

Montana prevents brucellosis from escaping their DSA by testing cattle and bison when they change ownership and/or prior to leaving the DSA. In addition, many producers voluntarily choose to test their entire herd in the fall when a possible quarantine will not adversely affect their feeding options and production cycle. This has resulted in >90% of DSA herds having >15% of animals tested annually.

Montana seems to have adequate legal authority and veterinary infrastructure to implement and enforce their brucellosis regulations regarding animal identification (ID), vaccination, testing, and movement controls. The Montana Veterinary Diagnostic Lab and MDOL Brand Inspection play a key role in the day-to-day function of the brucellosis program and seem to be functioning well. Livestock markets and slaughter plants appear to be operating properly in support of the program.

Montana should be commended for their aggressive approach to defining and expanding their DSA and resisting the temptation to shrink the DSA too quickly. Their strategy of testing elk at the outer edges of the DSA and expanding the boundaries as needed has prevented spread of the disease outside of the high risk area.

Producers and local accredited veterinarians in and around the DSA seem to be well-educated about the brucellosis program, and cooperation/compliance is currently very high. Currently, compliance with testing regulations is not calculated in real-time, but in retrospect on an annual basis due to weaknesses in data entry by brand inspections. The review team recommends that testing compliance be evaluated on a more real-time basis so testing discrepancies associated

with movements might be identified and corrected more quickly. MDOL should take steps to assess compliance on a quarterly basis as soon as possible.

The reason for such excellent producer cooperation with the brucellosis program appears to be due to a mixture of pride in State livestock quality and to State/Federal funds for testing and vaccination. The financial reimbursement program for veterinarians and producers who test and vaccinate has been very successful. Montana should be commended for appropriating State funds in support of this effort.

Future program success will most likely depend on continued State/Federal financial support and maintaining enough human resources to adequately support the program. Montana may also need immediate State or Federal financial support for an additional Full Time Equivalent employee (FTE) to enter brand inspection and vaccination records into their database system. The loss of the rapid automated presumptive (RAP) antigen production at National Veterinary Services Laboratory (NVSL) will require Federal support for any changes associated with the loss of the RAP antigen in the standard brucellosis testing protocol.

Key Recommendations

1. Continue the State's financial reimbursement for testing and vaccination to veterinarians and producers. Reimbursement rates may need updated.
2. Develop a better system to monitor testing compliance associated with animal movements than the annual retrospective method. Try to achieve more real-time compliance by:
 - a. Funding electronic brand inspection forms/software for real-time database downloads of work accomplished, or
 - b. Conducting compliance evaluations on a more frequent basis than annually, or
 - c. Adding another FTE to enter brand inspection and vaccination data into the database.
3. APHIS and the MDOL should finalize and sign a Memorandum of Understanding (MOU) to include a brucellosis management plan (BMP), as soon as reasonably possible, to come under full compliance with 9 CFR 78. APHIS has not pushed for a signature until this review has been completed.
4. USDA should prioritize MT DSA tag orders to ensure adequate numbers of tags are available for program implementation.
5. Idaho and Wyoming DSA brands and/or producers should be loaded into the Archer electronic database system for hand-held devices used at markets to ensure DSA cattle identification.
6. Request VS or State support for implementing the use of mobile information management (MIM) for auction-market testing and vaccinating.
7. Reconcile FSIS and Montana State slaughter collection regulations for both State and Federal inspectors to minimize confusion.
8. Continue the current level of cattle surveillance, compliance monitoring, laboratory efficiency, customer service, and producer education for the brucellosis program.
9. MFWP should continue to maintain and broaden their current excellent relationship with MDOL. MFWP should also continue using USDA cooperative agreement funds to

sample and capture around 150 elk per year on the outer edges of the DSA in order to evaluate the DSA borders.

10. Continue to encourage whole herd testing in the fall to motivate DSA herds to take control of their own annual surveillance testing, and to test more DSA animals than with pre-movement testing alone.
11. Continue to collaborate with other GYA States to keep programs similar and transparent.

Background to GYA Brucellosis Reviews

The bacterial agent responsible for Brucellosis in cattle is *B. abortus*, which is also an important zoonotic agent capable of causing acute and chronic morbidity in humans and other mammalian species. Due to the success of the U.S. National Brucellosis Eradication Program, the U.S. has demonstrably removed *B. abortus* infection in cattle from the country except for the GYA, a small geographic area around Yellowstone National Park in which there is endemically-infected wildlife.

Proof of disease freedom outside of the GYA is based on more than 15 consecutive years of surveillance and epidemiology through:

- Ninety-five percent blood collection at the U.S. top 40 adult-kill slaughter plants (95 percent of all U.S. culled cattle);
- Two to four Brucellosis Ring Test (BRT) rounds in all U.S. dairies;
- Ninety-five percent case closure of all market cattle identification (MCI) traces;
- Mandatory annual State reporting, reviewed by national brucellosis epidemiologists;
- A national surveillance protocol that can detect one case per 100,000 U.S. cattle annually;

The last infected cattle herd outside of the GYA was detected in 2011.

The persistence of brucellosis in wild elk and bison in the GYA is the only known reservoir of *B. abortus* in the U.S. and is the primary focus of current regulatory activity. Brucellosis regulations requires that *“any Class Free State or area with B. abortus in wildlife must develop and implement a ‘brucellosis management plan’ approved by the Administrator in order to maintain Class Free status.”* Currently, only the three GYA States (Montana, Wyoming, and Idaho) are required to have these plans. APHIS intended to sign an MOU with each of the GYA States agreeing with their respective BMPs to implement this regulatory requirement; however, this did not occur until April 2018 for a single State (Wyoming). Nonetheless, GYA States developed and implemented their brucellosis management plans.

In 2016, the United States Animal Health Association (USAHA) adopted a resolution asking USDA to review each GYA State’s brucellosis management plan at least once every three years. This is the impetus for the current review.

Review Objectives

- Review the adequacy of the State’s brucellosis rules and infrastructure to prevent the spread of brucellosis beyond the DSA.
- Assess the enforcement of brucellosis rules.

- Assess cattle surveillance, diagnostics/laboratory capability, and producer education and cooperation.
- Assess wildlife surveillance and risk mitigation activities.
- Evaluate DSA boundaries, testing, and movement restrictions for overall effectiveness.

Background: Brief Overview of the Montana Cattle Industry

The Montana cattle industry is mostly a beef industry with almost 2.5 million total cattle and calves and only 12,000 dairy cows in the State. Approximately 1.5 million beef cows calved in 2018 in approximately 11,400 herds. The Montana cattle industry is the 7th largest in the nation with roughly 4.5% of the nation's beef cattle. By comparison, Wyoming has the 15th largest population of beef cows, and Idaho ranks 20th in the nation, according to 2019 National Agricultural Statistics Service data.

Approximately 88,000 cattle in approximately 370 herds (including 113 seasonal producers) reside within the Montana DSA at some time during a given year. DSA cattle amount to about 3.3% of the State's beef cattle and roughly the same percent of the State's cattle herds.

Background: History of Brucellosis in Montana

Since 2010, Montana has found nine brucellosis-affected herds (three bison and six cattle). This is an incidence rate of about one newly-affected herd per year during this period of time. Based on epidemiology, all of the herds were presumably infected from exposure to infected wild elk. The most recent herd detected in 2017 was located in Madison County; this herd had been previously infected in 2013. The herd underwent annual DSA surveillance testing by the owner, and only one reactor (an 18 month old pregnant female) was found in the whole herd test. The herd was released from quarantine on April 10, 2018, with an assurance test performed in the fall of 2018.

I. Objective 1: Assess Cattle Surveillance, Diagnostics/Laboratory Capability, and Producer Education in Place to Support the Program

Cattle Brucellosis Surveillance

Throughout the year, the MDOL observes trends in cattle and domestic bison numbers and testing practices within the DSA, and then identifies areas for improvement in the program. The fiscal year (FY) 2018 evaluation included 86,352 cattle and domestic bison in 358 herds. A total of 80,753 DSA-associated tests were conducted. Overall, compliance with DSA testing requirements is high; 99% of the producers were in compliance with testing requirements for movement and sale.

Most producers test greater than 15% of animals in their herds in the DSA (235/358, 66%) (Figure 1) which accounts for 78% of the DSA program animals (67,419/86,352). Producers who test less than 15% of their total herd size encompass 34% (123/358). Interestingly, producers whose herds have testing percentages less than 15% were no more likely to have a field-testing violation than those whose herds were tested at a level over 15% (chi-squared test, p=0.42).

Producers that were non-compliant were those that had one or more documented movement(s) or sale(s) of test-eligible animals without a corresponding brucellosis test. Only 2% (Figure 2) of DSA producers (8/358) had a non-compliant animal movement or sale. Many of these producers had one or two non-compliant animal movements or sales among many with appropriate testing.

Overall producer compliance was excellent with only one of the eight producers having non-compliant movements or sales. These were considered low risk because they were sold and shipped directly to slaughter. The compliance assessment encompasses both market and field sales.

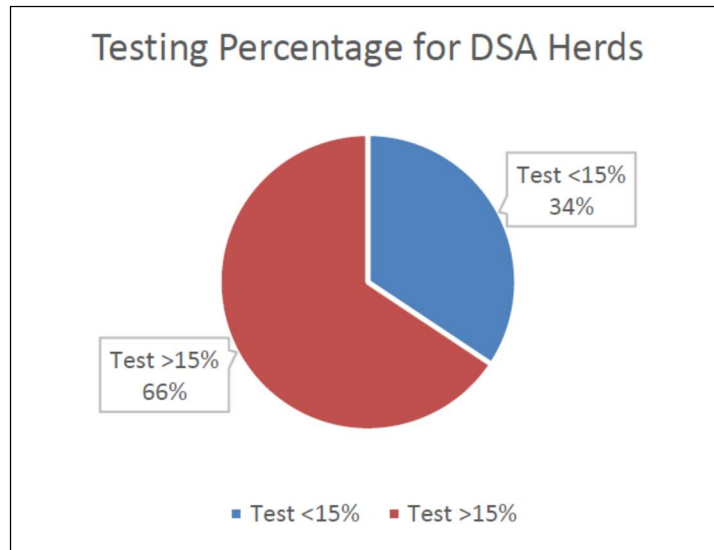


Figure 1. There are 358 producers known to have cattle in the DSA. 235 of those producers (66%) tested greater than 15% of their herds during FY18. 123 producers (34%) tested less than 15% of their herds.

Montana spends about \$1.2 million annually from general State funds for the brucellosis program. Roughly \$600,000 of that amount covers reimbursements to producers and veterinarians for testing.

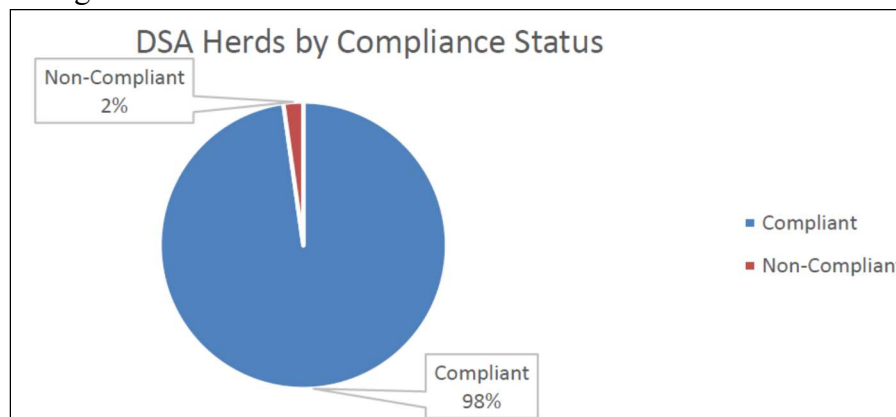


Figure 2. Of the 358 total producers in the DSA, 350 (98%) have brucellosis testing corresponding to all field movements or sales of DSA animals. Only eight DSA producers (2%) have field inspections for movement or sale without a corresponding test and are, therefore, out of compliance with testing requirements.

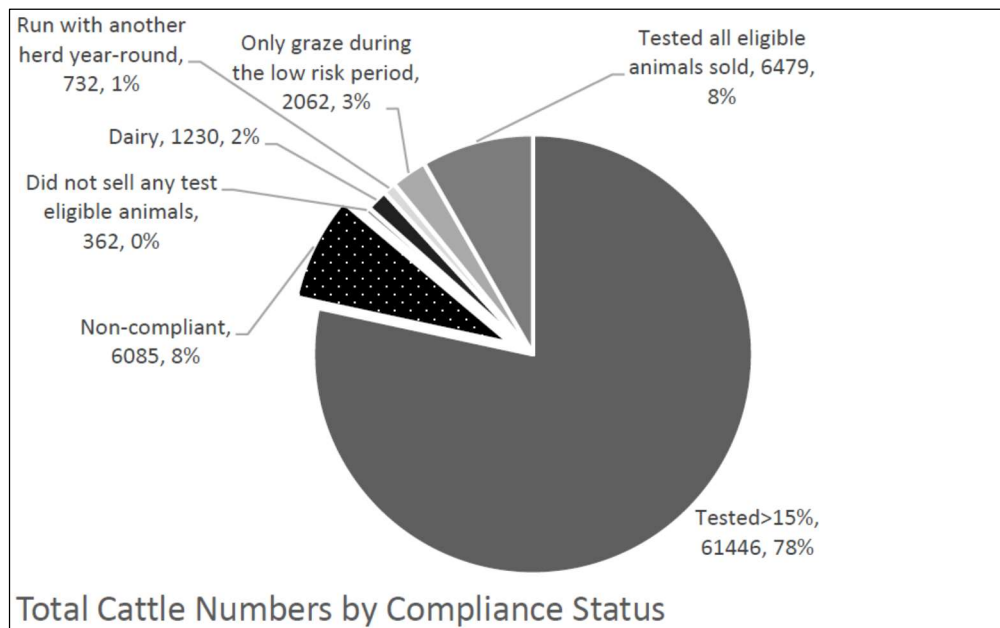


Figure 3. This chart represents the total cattle numbers by compliance status. Of the approximately 78,500 cattle in the DSA, approximately 78% come from herds that are in compliance, with at least 15% of the herd tested. Only 9% of cattle come from herds that are out of compliance with testing requirements.

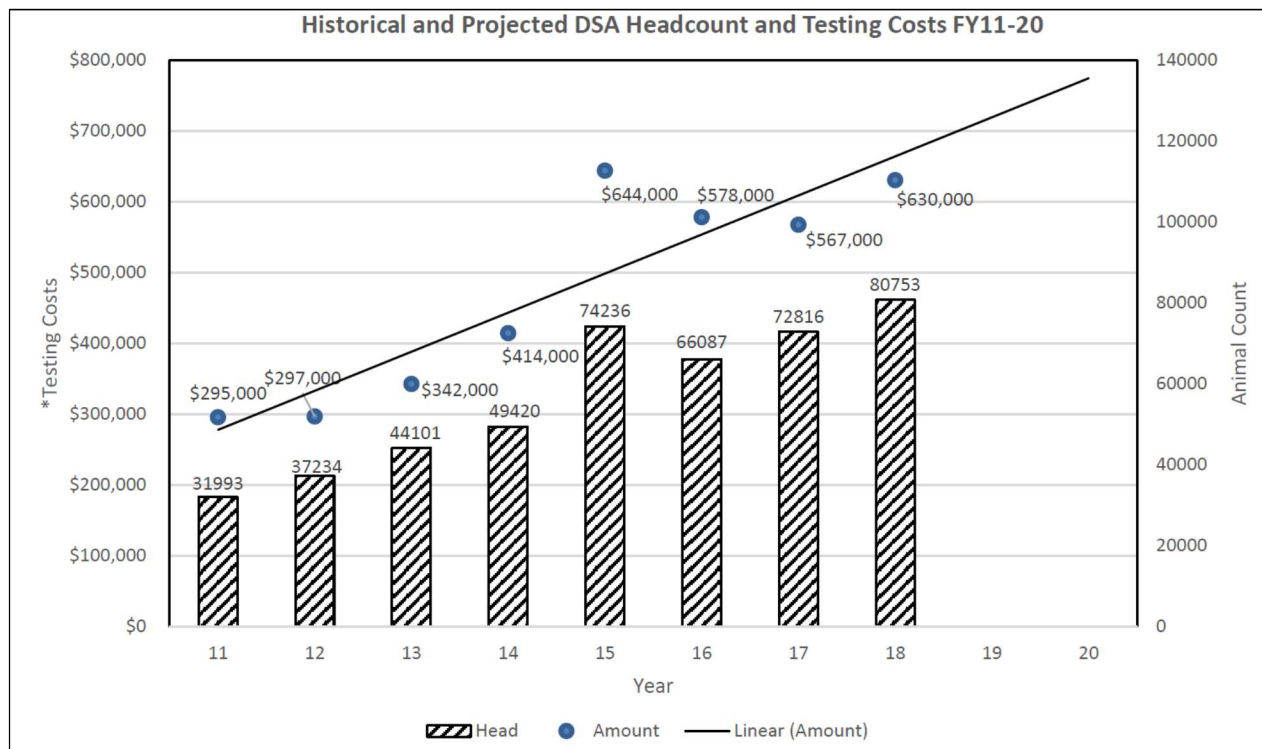


Figure 4. Testing Costs are based on amount reimbursed to veterinarians and producers for tests performed on DSA livestock in FY 2011 through 2018. Projected Head Count and Testing Costs are estimated based on a linear

(amount) line from known data. Costs have increased over time due to the increasing size of the DSA. Additionally, each year more producers are voluntarily conducting herd testing as a good management practice.

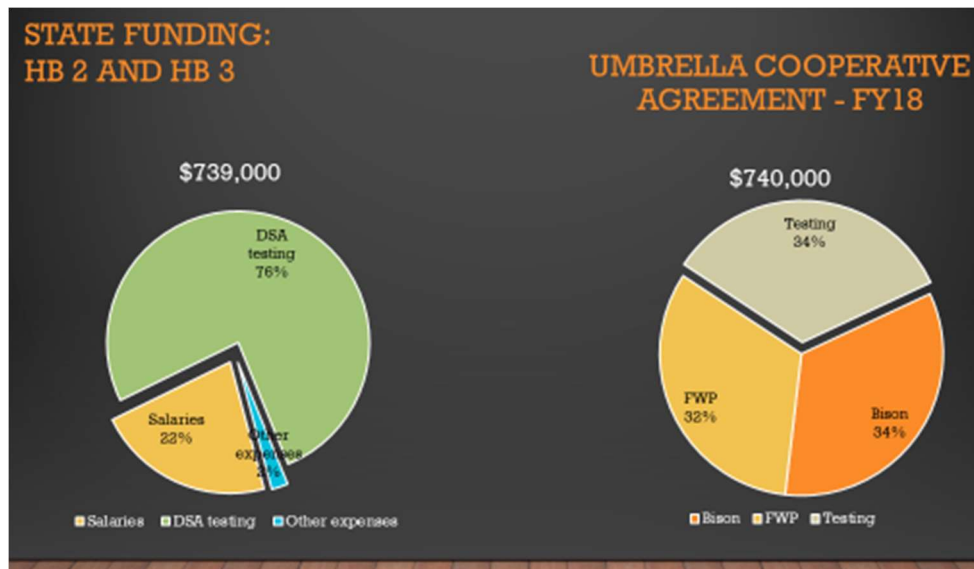


Figure 5. State/Federal Breakout of Brucellosis Program Funding

Laboratory/Diagnostics

- The Montana Veterinary Diagnostic Lab’s capability, performance and responsiveness to producers seems to be a real strength of the program. Producers and veterinarians had high praise for the customer service skills of Serology Technician Antonio Fuentes Sanchez.
- All brucellosis serologic samples go through the Montana lab before any non-negative samples go to the NVSL for confirmation. The lab is up to date on all proficiency testing and is approved to run the Card Test, Rapid Automated Presumptive (RAP) test, Buffered Acidified Plate Antigen (BAPA) test, Standard Plate Agglutination Test (SPT), and Fluorescence Polarization Assay (FPA) tests on blood, as well as the Heat-Inactivated Ring Test (HIRT) and Brucella Milk Ring Test (BRT) on milk.
- Montana had an FPA responder rate of 185 non-negatives per 100,000 animals tested, compared to a rate of 900 non-negatives per 100,000 samples in Idaho, and approximately ten non-negatives per 100,000 slaughter samples outside of the GYA under the national slaughter surveillance program.

Producer Education

- The MDOL, State Veterinarian, Brand Inspectors, and Livestock Investigators work together to communicate with and educate producers on the Montana Brucellosis Program every year. MDOL employees speak at producer meetings, industry meetings, and production sales to provide information to the public.
- The Brand Inspectors and Livestock Investigators reported that DSA producers are well-educated on the brucellosis program and a healthy amount of peer pressure exists for producers to vaccinate and test their herds.

II. Objective Two: Review the Adequacy of Montana’s Brucellosis Rules to Prevent the Spread of Brucellosis beyond the DSA

Findings and Observations

Brucellosis Program Leadership and Personnel

The MDOL is in the executive branch of the State government. It is headed by the Board of Livestock (BOL), a seven-member board appointed by the Governor with consent of the Senate. Each member must be a resident of the State and an active livestock producer. Members are appointed upon the recommendation of the related industry. Four members are cattle producers, one is a dairy producer, one is a swine producer, and one is a sheep producer. The BOL hires an Executive Officer to act on its behalf when it is not in session.

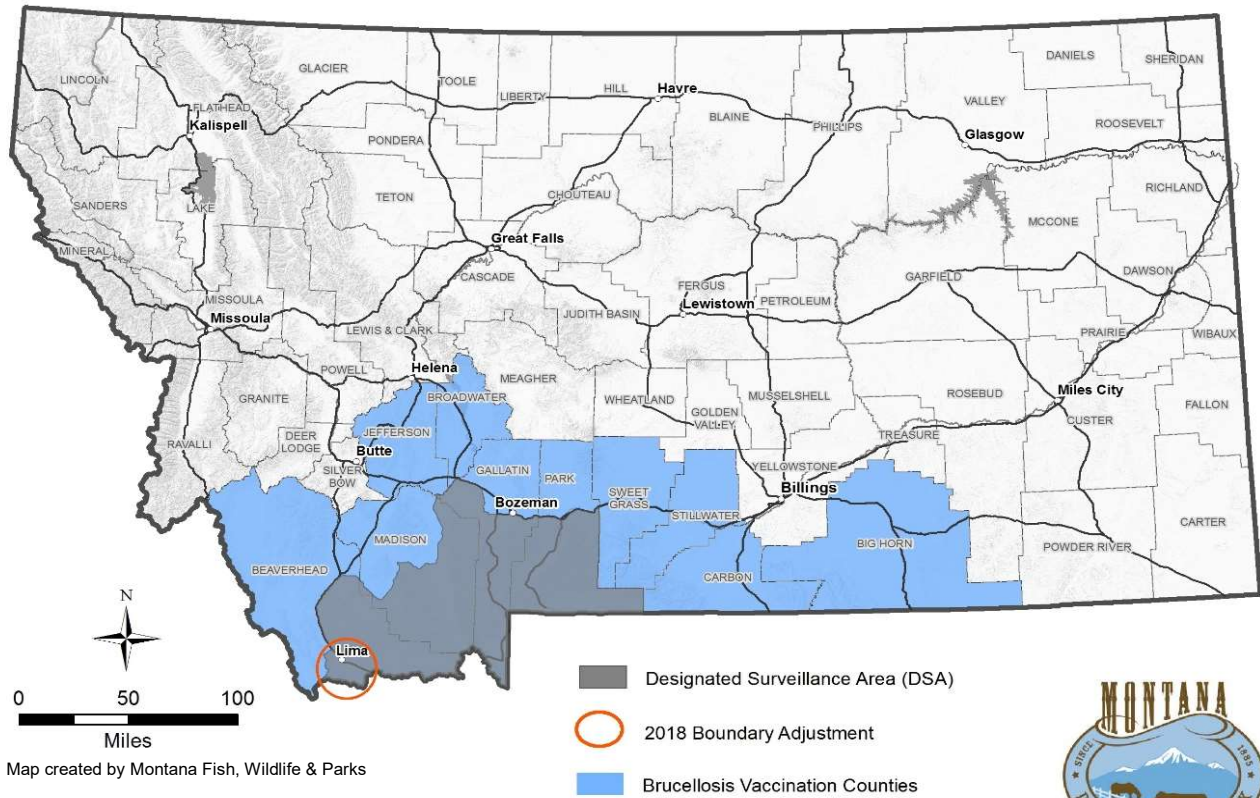
The State Veterinarian (currently, Dr. Martin A. Zaluski) is hired by the BOL and is the administrator of the Animal Health and Food Safety Division. The brucellosis program (Program Veterinarian: Dr. Eric Liska) is within the Animal Health Bureau (Bureau Chief: Dr. Tahnee Szymanski). The Animal Health Bureau is part of the Animal Health and Food Safety Division.

Brucellosis program regulations are written in the Administrative Rules of Montana (ARM). New rules or changes to current rules must first be approved by the BOL. If approved, the ARM change is opened for public comment. Per Montana Code Annotated (MCA) 81-1-102, MDOL maintains a list of interested parties who are notified of ARM changes when public comment is open.

Overall Adequacy of Regulations

The MDOL ARM, as well as the MCA, is enforced by law enforcement personnel in the Brands Division (Division Head: Lesley Doely) of the MDOL. Based on this review, Montana brucellosis regulations (Table 1) seem adequate to implement and enforce the State brucellosis program.

Map 1: 2018 Montana DSA and Brucellosis Vaccination Counties



Map created by Montana Fish, Wildlife & Parks

DSA digitized from description provided by the Montana Department of Livestock:
<http://liv.mt.gov/brucellosis/default.mcp>

MFWP-DS-SW 11/20/2018



Table 1. Summary of Montana Brucellosis Regulations

| | |
|-------------------------------------|--|
| <u>Vaccination</u> | |
| County-wide (ten counties) | All sexually intact female cattle and bison 12 months of age or older in ten Montana counties must be official brucellosis vaccinates. This includes the four counties in which the DSA is located (Beaverhead, Gallatin, Madison, and Park), the five counties that border the DSA (Broadwater, Carbon, Jefferson, Stillwater, and Sweetgrass), and the County that borders Wyoming’s Brucellosis Area of Concern (Bighorn). |
| DSA | Official Vaccination required. Adult or calfhood. Booster vaccination of replacement heifers is encouraged. |
| Exemptions | Less than 12 months of age but must be officially identified. This allows for feeder heifers to ship or be sold for feeding without a brucellosis vaccination. |
| <u>Live Animal Testing</u> | |
| Test Eligible Definition | All sexually intact animals 12 months of age and older or regardless of age if sold for breeding purposes (includes bulls). |
| DSA | Prior to change of ownership or movement out of the DSA. |
| Timeframe | A test within 30 days prior to movement out of the DSA or change of ownership. A test completed on or after July 16 is acceptable for movement out of the DSA or change of ownership through February 15 of the following year. |
| Exemptions | Applicable if movement is to an approved Montana livestock market where testing will occur. Variances or exceptions to requirements are considered on an individual basis by the Administrator based on a brucellosis prevention and surveillance herd management agreement. Example: Seasonal grazer owned livestock that are in an area without handling facilities may return to home ranch for testing within ten days. |
| Movement Permit | No special permit, just Brand Inspection Certificate for change of ownership and movement out of the county. |
| Brucellosis Ring Test (milk) | All dairies State-wide tested quarterly. DSA dairies test eight times per year. |
| <u>Slaughter Testing</u> | |
| State-wide | All test-eligible tested at in-State slaughter facilities. |
| DSA | Considered movement or change of ownership, therefore, test eligible animals must meet DSA testing requirements prior to slaughter. |
| <u>Identification</u> | |
| State-wide | No State-wide requirement: <ul style="list-style-type: none"> • Official brucellosis vaccinates must have official individual identification. • Exports must comply with Animal Disease Traceability (ADT) regulations. |
| DSA | All sexually intact animals, regardless of age, prior to movement out of the DSA. |
| Exemptions | Variances or exceptions to requirements are considered on an individual basis by the State Animal Health Official (SAHO) based on a brucellosis prevention and surveillance herd management agreement. Example: Variance to official identification prior to leaving the DSA: DSA seasonal grazer owned heifer calves that will be official calfhood vaccinated (OCV)/identified upon return to home ranch outside of the DSA. |

Testing Requirements and Implementation

- Montana producers and accredited veterinarians are very cooperative with DSA testing requirements. Most producers contact their herd vet when they want to move animals and the veterinarian usually contacts Brand Inspection and performs the proper testing prior to Brand Inspection arriving. However, Brand Inspectors cannot refuse writing brand inspection papers if ownership is proven, if testing has not been done, and animal health or Brands Enforcement Officers are notified. (See Figure 2 below.) Nonetheless, records show that overall compliance is excellent.

Recommendations

1. Continue the State's financial reimbursement for testing and vaccination to veterinarians and producers. This portion of the program is essential to compliance. SAHO suggested that reimbursement rates may need to be updated soon based on current veterinary care costs.

III. Objective Three: Assess the Enforcement of Brucellosis-related Rules

Identification, Livestock Markets, Dealers and Slaughter Plant(s) – Findings and Observations

- At PAYS in Billings, when DSA cattle are checked in and “DSA” is written on the check-in sheet, those cattle are placed in “dead alley” upon arrival for movement to vet chute.
- A list of DSA and non-DSA counties, including all ten brucellosis-regulated counties, is available in card form at the check-in sites as well as on the wall.
- Pregnant non-vaccinates presenting from the DSA are not vaccinated at markets due to fear of pregnancy loss, but are brucellosis tested. Owners should get a warning or a ticket from market/brand inspection for not being vaccinated from the DSA but this is rarely necessary (nine “No Vaccination” tickets were written in FY 2017, and none were written in FYs 2018 or 2019).
- Cattle arriving pre-sale are blood tested only. Cattle arriving the day of sale are Card tested on-site and blood from Card-tested cattle is sent to the Montana lab for verification.
- Brand Inspection is sensitive to producer personalities and the politics surrounding the DSA testing protocol. Brand Inspection knows those producers that may not self-declare, and rather than confront them, they will just be designated “DSA” and sent for testing.
- The Archer handheld devices which are linked with the State's brand inventory system flags those brands that have cattle, or previously ran cattle, in the DSA; this is another check on cattle that are required to be tested.
- There may be a potential for seasonal grazers that do not self-declare and are unknown to brand inspection to fall through the cracks, but Brand Inspection is aware of this minimal risk potential.

- Brand Inspection and veterinary staff stated the most likely reason for not self-declaring was producer concern about weight loss and chute injury during testing.
- At-risk cattle (i.e., crippled, too large to fit in chute, or aggressive) are blood tested at the discretion of the market. Veterinarians stated that this was approved by MDOL staff and these animals are designated as “Slaughter Only.”
- Card tests are performed at all Montana markets. Non-negatives will stop further movement of the load until a laboratory test result comes back for clarification. Between two and five producers get stopped per year.
- Prioritize DSA tag orders to ensure adequate numbers of tags are available for program implementation.
- One local veterinarian asked if the DSA could continue to use metal Brite tags in the future as official ID due to perceived better retention than RFID tags in range cattle. The review team promised to ask VS leadership this question.
- Pioneer Meats Slaughter Plant, Big Timber, MT – Inspector had questions regarding the collection age of animals. At this State-inspected plant, the inspector was instructed to collect samples from all sexually intact animals over 12 months of age, per Montana State regulations; however, in Columbus, MT, at the Federally-inspected slaughter plant, she was directed by USDA to collect samples from animals over 24 months-of-age.

Strengths

- Cattle arriving at auction for inspection from the Montana DSA and associated counties are consistently identified.
- Livestock markets that receive DSA cattle seem to be enforcing all applicable brucellosis testing and vaccination regulations.
- All test-eligible adult cattle and bison at Montana slaughter facilities, both State-inspected, are bled for brucellosis testing.

Weaknesses

- Cattle arriving from DSAs outside of Montana have the potential to go unidentified.
- State and Federal slaughter plants do not follow the same minimum test-eligible age.
- Vaccinations are two years behind from being entered into the State’s electronic database.

Recommendations

2. Develop a better system to monitor testing compliance associated with animal movements than the annual retrospective method currently employed. Try to achieve more real-time compliance by:
 - a. Funding electronic brand inspection forms/software for real time database downloads of work accomplished, or
 - b. Conducting compliance evaluations on a more frequent basis than annually, or
 - c. Add another FTE to enter brand inspection and vaccination data into the database.

3. APHIS and the MDOL should finalize and sign an MOU to include a BMP as soon as reasonably possible to come under full compliance with 9 CFR 78. APHIS and MDOL shall revisit this MOU annually.
4. USDA should prioritize DSA tag orders to ensure adequate numbers of tags available for program implementation.
5. Idaho and Wyoming DSA brands and/or producers should be loaded into the Archer electronic database system for hand-held devices used at markets to ensure DSA cattle identification.
6. Request VS or State support for implementing the use of MIM for auctions testing and vaccinating.
7. Reconcile FSIS and Montana State slaughter collection regulations for both State and Federal inspectors to minimize confusion.

IV. Objective 4: Wildlife Surveillance and Mitigation

Wildlife Surveillance

- Brucellosis surveillance in Montana wildlife is conducted by Montana Department of Fish, Wildlife and Parks (MFWP), in cooperation with MDOL and USDA. Areas targeted for annual elk sampling are decided by MFWP expert panel meetings with input from MDOL. A sample area decision matrix was discussed at the 2018 USAHA-Western States meeting, with the Brucellosis subcommittee.
- Hunter sampling has been eliminated from MT's surveillance strategy over the years due to the cost of blood sampling supplies, past experience with marginal value of the information collected, and the complex logistical procedures required to get testable samples to the laboratory.
- Therefore, with the exception of those areas and individuals selected annually by MFWP for *B. abortus* surveillance and GPS collaring, monitoring within the core of DSA is not a priority. The boundaries and interface are of chief concern.
- In brief, *B. abortus* surveillance in elk in MT entails capturing and sampling approximately 100 elk per year, in areas adjacent to the MT DSA. Roughly 45 head of the 100 captured are GPS collared, and the movements of those animals are recorded throughout the year. This allows the elk migration patterns to be studied over time, and helps identify spatial-temporal and seasonal variations in elk herd movements, as well as distribution and concentration upon the land. USDA funds the targeted elk surveillance through USDA-MT cooperative agreement funds.

Strengths

- It is believed that these movement studies being coupled directly to the elk brucellosis sampling, provides higher quality data than hunter-killed samples and may help to identify new areas of *B. abortus* exposure risk for cattle herds interfacing with infected elk in the boundary areas of the DSA.
- There are no private or government sponsored winter feeding grounds in Montana.

- MFWP and MDOL enter into an MOU each year proposing new or ongoing actions resulting from past and current fiscal year Federal cooperative agreement awards contracted to MFWP to accomplish wildlife surveillance, risk assessment/mitigation and epidemiology activities.
- Locations currently targeted for sampling are decided by subject matter experts (SMEs) with knowledge of known areas of elk and cattle intermingling and overlapping of habitat and calving seasons, which help determine areas of targeted surveillance.
- MT Livestock Board has repeatedly voted to expand the DSA boundary in MT, based on this targeted surveillance sampling. Most expansion to the DSA over the years has been to the west and north in MT.

Weaknesses

- Early detection in elk herds outside the DSA is limited to the adjacent area sampling methodology described. If disease moves into an untargeted area or beyond the adjacent boundaries into an un-sampled area where SMEs do not expect, there is an unmeasured risk that *B. abortus* could go undetected for a period of time. With the current tools and methods, Montana decided it was not cost-effective to monitor changes in *B. abortus* prevalence in elk that occur in response to various management strategies. Rather, they prioritized resources to implement the strategies to control the disease.
- Elk brucellosis prevalence estimates are limited and accurate for areas where recent testing has occurred within herds. Elk testing has been limited only to targeted areas since 2009. This surveillance strategy is augmented by 20 years of cumulative hunter sample data. There are no current plans to add this surveillance stream back into the data frame. In the reviewers' experience, it is always good to have the hunting industry as an ally in any eradication and/or control strategy involving wildlife.

Wildlife Mitigation Activities

- MFWP personnel continue to evaluate the effects of wildlife risk management actions such as management hunts, hazing, and fencing.
- With respect to cattle ranches within the DSA, many also profit from promoting their ranch operations as privately managed big game hunt clubs. Some cattle ranches have been infected and gone through the costly test-and-remove process, only to become re-infected.
- Wildlife exclusion methods such as wildlife fencing do not appear to be of high priority. The vast ranges and habitat cost involved may be prohibitive.

Recommendations

9. MFWP continues to maintain and broaden their current excellent relationship with MDOL, and continue using USDA cooperative agreement funds to sample and capture approximately 100 elk per year on the outer edges of the DSA in order to evaluate the DSA borders.
10. Explore and consider alternate surveillance sampling strategies to include hunter-killed samples inside and outside the DSA at some level of sampling.

V. Objective 5: Evaluate DSA Boundaries, Testing, and Movement Restrictions for Overall Effectiveness

Montana's DSA was established on February 11, 2011: The initial DSA boundary was based on the known range of seropositive elk through consultation with MFWP. Subsequent DSA boundary changes have all been based on the capture of seropositive elk outside of the current DSA.

Overall effectiveness of DSA surveillance testing, movement restrictions and DSA boundaries seems to excellent. Overall, *B. abortus* surveillance testing within the DSA per year in Montana allows for a high confidence of detecting infection before moving out of the DSA. Education and cooperation of local producers and veterinarians, along with Brand Inspection, seems to be very good and functioning well.

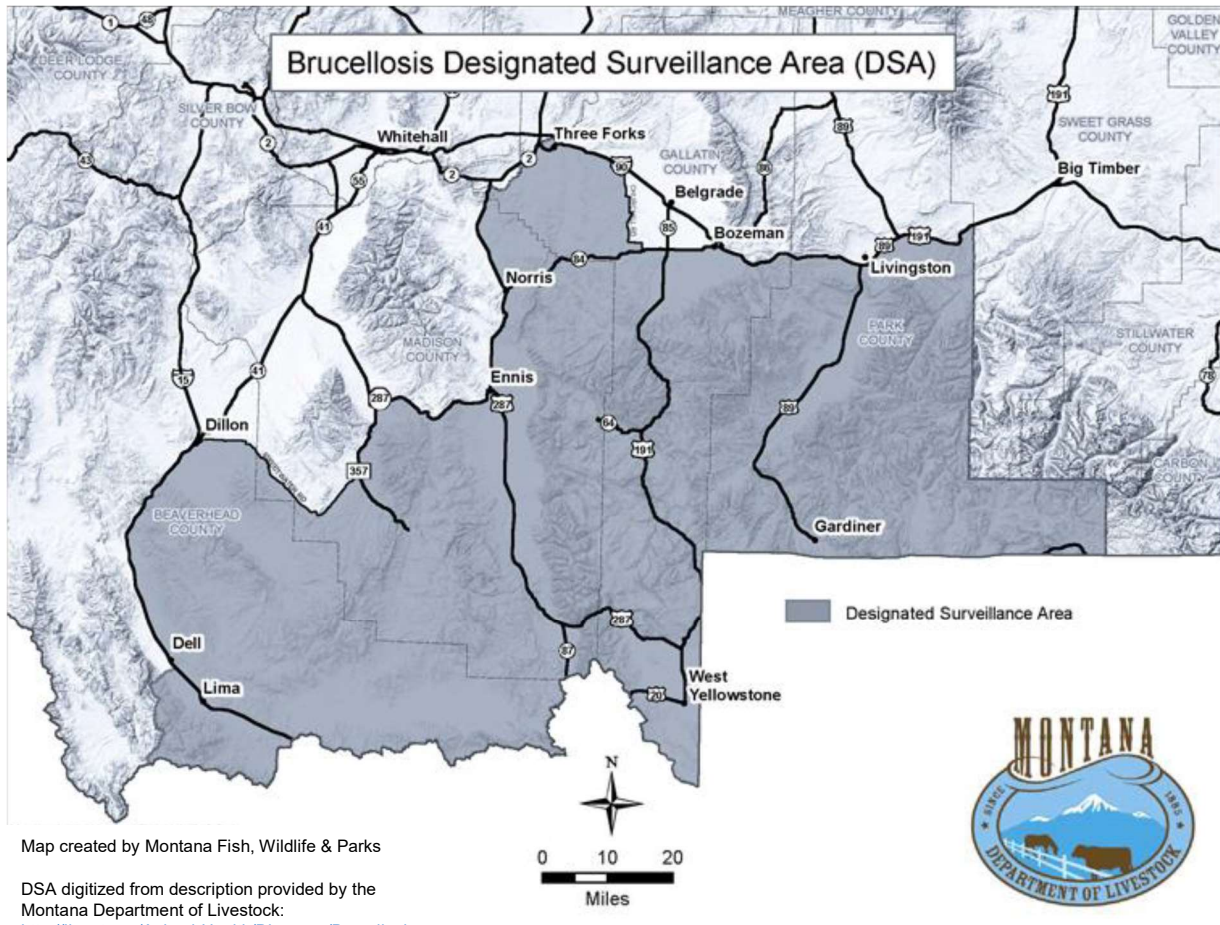
Table 2: Montana DSA Cattle Herds (as of May, 2019)

| Description | # of Herds/Animals |
|---|--------------------|
| DSA cattle herds (includes seasonal use) | 370 |
| DSA cattle and bison head (includes seasonal use) | 87,592 |
| DSA bison herds (includes one seasonal) | 3 |
| DSA bison head | 4,412 |

The FY 2018 DSA evaluation identified 86,352 cattle and domestic bison in 358 herds. A total of 80,753 DSA-associated tests were conducted in FY 2018. Overall, compliance with DSA testing requirements is high; 98% of the producers were in compliance with testing requirements for movement and sale.

$80,753 \text{ head tested} \div 86,352 \text{ total DSA cattle/bison} = 93.5\% \text{ DSA head tested}$

Map 2: 2019 Montana Brucellosis DSA



Recommendations

11. Continue to encourage whole herd testing in the fall to motivate DSA herds to take control of their own annual surveillance testing, and also get more DSA animals tested than with just pre-movement testing.
12. Continue to collaborate with other GYA States to keep programs similar and transparent.

Conclusion

APHIS appreciates the hospitality and cooperation from MDOL staff and VS Montana to conduct this review. Access to all of the data, records, personnel, producers, veterinarians, markets, and slaughter plants made our job much easier, for which we say a hardy “Thank you!”