

Report of the Committee on CATTLE AND BISON
Chair: Dale Grotelueschen NE
Vice Chair: Beth S. Thompson MN

Dale Grotelueschen, NE; Beth Thompson, MN; Eric Liska, MT; Janemarie Hennebelle, GA; Rod Hall, OK; Charlie Broaddus, VA; Carl Heckendorf, CO; Jim Logan, WY; Michael VanderKlok, MI; Beth Carlson, ND; Bruce Addison, MO; Bruce Akey, TX; Carissa Allen, MN; Gary Anderson, KS; Chris Ashworth, AR; Rich Baca, CO; Nancy Barr, MI; Bill Barton, ID; Samantha Beaty, TN; Peter Belinsky, RI; Randall Berrier, CO; Danelle Bickett-Weddle, IA;Carolynn Bissett, VA; Kelley Black, OH; Brian Bohl, TX; Tom Bragg, NE; Van Brass, AZ; Richard Breitmeyer, CA; Becky Brewer-Walker, AR; Kevin Brightbill, PA; Charles Brown, WI; Michael Carter, MD; Robert Cobb, GA; Tim Conduct, TX; Kathleen Connell, WA; Karen Conyngham, TX; Walter Cook, TX; Maria Cooper, IN; Chelsea Crawford, UT; Stephen Crawford, NH; Angela Daniels, TX; Donald Davis, TX; Grant Dewell, IA; Lewis Dinges, TX; Leah Dorman, OH; Brandon Doss, AR; Mark Drew, ID; Edward Dubovi, NY; Roger Dudley, NE; Sean Eastman, SC; Anita Edmondson, CA; Misty Edmondson, AL; Cody Egnor, AZ; Dee Ellis, TX; Philip Elzer, LA; James England, ID; James Evermann, WA; William Fales, IA; Shollie Falkenberg, IA; Kathy Finnerty, NY; John Fischer, GA; Keith Forbes, NV; Larry Forgey, MO; Tony Forshey, OH; Tony Frazier, AL; Tam Garland, TX; Sunny Geiser-Novotny, CO; Robert Gerlach, AK; Michael Gilsdorf, MD; K. Fred Gingrich II, OH; Linda Glaser, MN; Linda Gonzales, AZ; Chelsea Good, KS; Tony Good, OH; Alicia Gorczyca-Southerland, OK; Michael Greenlee, WA; Daniel Hadacek, VA; Keith Haffer, SD; Thomas Hairgrove, TX; Joel Hall, TX; Timothy Hanosh, NM; Noel Harrington, ON; Andy Hawkins, KS; Burke Healey, CO; Jamie Henningson, KS; Terry Hensley, TX; Bob Hillman, ID; Siddra Hines, WA; Bruce Hoar, WY; Donald Hoenig, ME; Dennis Hughes, NE; Noah Hull, WY; David Hunter, MT; Carla Huston, MS; Annette Jones, CA; Jamie Jonker, VA; Melissa Justice, IN; Anne Justice-Allen, AZ; Susan Keller, ND; Bradley Keough, KY; Kimberly Kirkham, KS; Diane Kitchen, FL; Terry Klick, OH; Charlotte Krugler, SC; Todd Landt, IA; John Lawrence, ME; James Leafstedt, SD; Brad LeaMaster, OR; Gregory Ledbetter, CA; Nicholas Ledesma, IA; Molly Jean Lee, IA; Wen Chi Lee, CA; Scott Leibsle, ID; Donald Lein, NY; Rick Linscott, ME; Mary Jane Lis, CT; Coleman Locke, TX; Laurent O'Gene Lollis, FL; Lindsey Long, WI; Pat Long, NE; Travis Lowe, MN; Mark Luedtke, MN; Kevin Maher, IA; Bret Marsh, IN; Scott Marshall, RI; Michael Martin, SC; Beatriz Martinez Lopez, CA; Chuck Massengill, MO; Jay Mattison, WI; Patrick McDonough, NY; Thomas McKenna, MA; Sara McReynolds, KS; Shelley Mehlenbacher, VT; Antone Mickelson, WA; Mendel Miller, SD; Richard Mock, NC; Eric Mohlman, NE; Jason Moniz, HI; Peter Mundschenk, AZ; Gleeson Murphy, IA; Sherrie Nash, MT; Alecia Naugle, MD; Michael Neault, NC; Cheryl Nelson, KY; Dustin Oedekoven, SD; Steve Olsen, IA; Gary Olson, MN; Kenneth Olson, IL; Greg Onstott, MO; Kathleen Orloski, CO; Lanny Pace, MS; Mitchell Palmer, IA; Elizabeth Parker, TX; Roger Parker, TX; Chris Parmer, AL; Boyd Parr, SC; Elisabeth Patton, WI; Janet Payeur, IA; William Pittenger, MO; Barry Pittman, UT; Michael Pruitt, TX; Valerie Ragan, VA; Jennifer Ramsey, MT; Jeanne Rankin, MT; Mackenzie Reberg, MN; Grant Rezabek, OK; Jack Rhyan, CO; Herbert Richards, HI; Julia Ridpath, IA; Suelee Robbe-Austerman, IA; Jonathan Roberts, LA; Paul Rodgers, WV; Keith Roehr, CO; Susan Rollo, TX; Allen Roussel, TX; Mark Ruder, GA; Mo Salman, CO; Larry Samples, PA; Shawn Schafer, OH; Patricia Scharko, SC; David Schmitt, IA; Krysten Schuler, NY; Brant Schumaker, WY; Stacey Schwabenlander, MN; Andy Schwartz, TX; Aaron Scott, CO; Charly Seale, TX; Laurie Seale, WI; Michael Short, FL; Kathryn Simmons, DC; Daryl Simon, MN; Shri Singh, KY; David Smith, NY; Julie Smith, VT; Justin Smith, KS; Rebecca Smith, IL; Sreenidhi Srinivasan, PA; Diane Stacy, LA; Susan Stehman, PA; Robert Stout, KY; Kelly Straka, MI; Nick Striegel, CO; Diane Sutton, MD; Tahnee Szymanski, MT; Manoel Tamassia, NJ; Patrick Tarlton, TX; Tyler Thacker, IA; Tracy Tomascik, TX; Sarah Tomlinson, CO; William Tucker, VA; Alex Turner, CO; Elizabeth Warren, DE; James Watson, MS; Jessica Watson, DC; Scott Wells, MN; Patricia White, CA; Kyle Wilson, TN; Ross Wilson, TX; William Wilson, KS; Josh Winegarner, TX; Nora Wineland, MI; Thach Winslow, WY; David Winters, TX; Cindy Wolf, MN; Peregrine Wolff, NV; Mark Wood, GA; Melissa Yates, PA; Alan Young, SD; Marty Zaluski, MT; Glen Zebarth, MN; Ralph Zimmerman, NM;

The Committee met on October 29, 2019, from 1:00 – 5:00 p.m. at the Rhode Island Convention Center, Providence, RI, Ballroom B. Dr. Dale Grotelueschen welcomed the membership, and introduced vice chair Beth Thompson. The Chair explained the mission of the Committee, and application of Robert's Rules to the committee procedure.

There were 68 members and 16 guests present.

The Chair called for the Subcommittee reports:

Dr. Eric Liska presented the report from the Brucellosis Subcommittee. A full written report of the Subcommittee on Brucellosis was provided to the Committee and is included in the Conference Proceedings.

Dr. Michael VanderKlok presented the report from the Tuberculosis Subcommittee. A full written report of the Subcommittee on Tuberculosis was provided to the Committee and is included in the Conference Proceedings.

Dr. Rod Hall presented the report from the Cattle ID Subcommittee. The Cattle Identification Subcommittee met Tuesday morning, October 29th. The Subcommittee heard presentations from David Moss of the Canadian Cattlemen's Association about their Traceability Program and changes they are undergoing. Chelsea Good from LMA summarized their listening sessions from the past summer. Drs. Sarah Tomlinson and Aaron Scott from AHPIS/VS discussed ongoing changes and improvements to MIMS and VSPS, the status of identification of Mexican cattle that are imported into the USA, and the issues surrounding USDA's decision to pause the timeline for transition to mandatory EID. Robert Bailey from Datamars and David McElhaney from Allflex USA discussed ultra-high frequency and low frequency technologies, their pros and cons, and new tools that we may see in the future. We heard updates on the traceability pilot projects from Drs. Justin Smith from Kansas, Dr. Mike Short from Florida, and Savannah Barksdale from Texas Cattle Feeders Association. Five resolutions were proposed.

Dr. Shollie Falkenberg presented the report of the BVD Subcommittee. A full report of the BVD Subcommittee was presented to the Committee and is included in the Conference Proceedings.

Dr. Carl Heckendorf presented the report from the Tritrichomonas Subcommittee. A full report of the Tritrichomonas Subcommittee was presented to the Committee and is included in the Conference Proceedings.

The reports of the Subcommittees were accepted by unanimous vote of the Committee and have been included in the Committee report.

Dr. Andy Schwartz led a discussion about the work of the USAHA TB working group. The National Assembly of State Animal Health Officials (NA) formed an internal working group in October 2017, charged with developing recommendations to USDA APHIS VS (VS) on the tuberculosis (TB) sections of the Code of Federal Regulations. The key point of NA recommendations was to preserve the elements of the 2010 Federal Order, which suspended automatic downgrade and interstate testing requirements for states with more than one TB affected herd if certain conditions were met. In October 2018, VS established a TB rule working group that includes the NA working group members. This VS/NA working group deliberated on approaches to state status, considering the traditional approach of prevalence/incidence, a standards-based approach, and a hybridization of the two. In May 2019 the working group reached consensus on a standards-based approach, with states classified as Consistent or Not Consistent. Both the NA and APHIS are in support of the standards-based approach in concept. Work will continue to develop standards. The NA strongly supports a continued disease eradication approach.

Dr. Dustin Oedekoven presented a report from the Brucellosis Vaccination panel, held at the National Cattlemen's Beef Association, summer convention in Denver.

Dr. Chuck Fossler reported on the Results from the NAHMS Beef 2017 Cow-calf study. Chuck Fossler from the National Animal Health Monitoring System presented preliminary results from the Beef 2017 Cow-calf study at the Cattle and Bison Committee Meeting. The Beef 2017 study was conducted from October 2017 through May 2018. Results that were presented included information on preconditioning

practices performed on calves before leaving the cow-calf operation, destinations for steers, heifers, or bulls intended for backgrounding or feeding, breeding soundness-related testing practices for bulls newly purchased, leased, or borrowed for the last breeding season, and information sources in the event of a foreign animal disease outbreak in the U.S. Many of the results were compared to previous NAHMS studies.

Dr. Shollie Falkenberg presented on Influenza D virus (IDV): What Do We Know about This Viral Pathogen? The major reservoir for IDV is considered to be domestic cattle. IDV infection has been confirmed from serum samples or clinical specimens collected from cattle in North America, Asia, Europe, and Africa. Research has indicated that IDV is transmissible, virus replication, and inflammation observed in upper respiratory tissues. Further, research describes Mh did not potentiate disease in a co-infection study, but IDV vaccine using killed antigen conferred partial efficacy in a vaccination challenge study. Seroprevalence of IDV is high in cattle, but the first IDV isolate was obtained from clinical material collected from a pig exhibiting influenza-like illness, therefore interspecies transmission of IDV was evaluated to determine differences in replication and transmission that may exist between IDV of different virus origin species. This data supports that cattle and pigs are permissive for IDV replication, IDV transmission is species-dependent, and suggest host-specific mutations influence transmission efficiencies between agriculturally important mammalian species. Further studies are needed to determine the extent of IDV's contribution BRD and the underlying mechanisms.

Dr. Alecia Naugle presented the APHIS Veterinary Services Update on proposed changes to the Brucellosis and TB Programs. The bovine brucellosis and tuberculosis (TB) are two of the United States Department of Agriculture's (USDA) longstanding animal disease control programs. In cooperation with State and industry partners, USDA has made considerable progress in reducing the prevalence of both diseases. However, the regulations and program requirements in place today are not appropriate given the current epidemiology of both diseases and changes in the structure and management of the cattle industry. USDA's Animal and Plant Health Inspection Service (APHIS) has been working to update the brucellosis and TB programs for more than a decade. In 2018, APHIS reinitiated efforts to update these regulations. APHIS presented an overview of this process and the proposed State status system for separate brucellosis and TB rules.

New Business:

The Chair determined there was a quorum present, and requested any proposed resolutions as new business.

Four resolutions were presented and accepted on a consent calendar. The vote to accept these resolutions was unanimous.

1. Adequate funding for nation animal vaccine and veterinary countermeasures bank (NAVVCB)
2. From the Brucellosis subcommittee: Removal of Select Agent Status for *Brucella* species
3. From the Cattle Identification subcommittee: Backup Identification of Livestock in Commerce
4. From the Cattle Identification subcommittee: Strengthening the U.S. Animal Disease Traceability and Disease Prevention Infrastructure.

Two resolutions presented by the Cattle Identification Subcommittee were discussed, amended and passed unanimously:

1. Continuation of Proposed EID Transition Timeline
2. Funding for Infrastructure and Tags

One resolution presented by the Cattle Identification Subcommittee was tabled. That resolution was entitled Dual Frequency Tags to Address Challenges with the Technology Neutral Approach to Animal ID.

The meeting was adjourned at 5:20 p.m.

REPORT OF THE SUBCOMMITTEE ON BRUCELLOSIS

Chair: Eric Liska, MT

Vice Chair: Janemarie Hennebelle, GA

The Subcommittee met on Monday, October 28, 2019 at the Convention Center in Providence, Rhode Island from 1:00 pm – 5:00 pm. There were 55 members signed in and 26 guests present.

Presentations & Reports

National Brucellosis Eradication Program report

Dr. Michael A. Carter, APHIS/VS/Cattle Health Center

All 50 states are currently brucellosis class-free with one domestic bison herds under quarantine with test and remove herd plans in place. In FY 2019, Wyoming found three new affected bovine beef herds in their DSA. One voluntarily depopulated and the two remaining were tested clean and removed from quarantine.

Approximately 639,858 cattle and bison were brucellosis tested under the National Surveillance Plan for a total of 1. Million cattle tested nationwide. There are four cattle and one bison national surveillance slaughter facilities. Approximately 3,752,112 calves were reportedly brucellosis officially calf hood vaccinated but the brucellosis committee felt that this was a reporting error and this number was too high to be accurate. In addition, approximately 18,176 animals were brucellosis adult vaccinated nationwide during FY 2019. Approximately 337 herds were certified as Brucellosis-Free herds.

During June 24-28, 2019, APHIS completed a brucellosis program review in Montana. The review includes main objectives; 1) Review the Adequacy of MT's Brucellosis Rules to Prevent the Spread of Brucellosis Beyond the Designated Surveillance Area (DSA), 2) Assess the Enforcement of Brucellosis-related Rules (Identification, Livestock Markets, Dealers and Slaughter Plant(s), 3) Assess Cattle Surveillance, Diagnostics/Laboratory Capability, and Producer Education for Program Support, 4) Evaluate Wildlife Surveillance and Mitigation, and 5) Evaluate DSA Boundaries, Testing, and Movement Restrictions. The review showed that Montana prevents brucellosis from escaping its DSA by testing cattle and bison when they change ownership and/or prior to leaving the DSA. Montana should be commended for its aggressive approach to defining and expanding its DSA and resisting the temptation to shrink the DSA too quickly. Montana's strategy of testing elk at the outer edges of the DSA and expanding the boundaries as needed has prevent spread of the disease outside of the high risk area.

Montana DSA update and response to USDA review

Dr. Martin Zaluski, Montana Department Livestock, State Veterinarian

Montana continued its robust brucellosis program last year running more brucellosis tests than the entire cattle and bison DSA inventory. In Fiscal Year 2019:

- 373 producers utilized the DSA
- 86,000 cattle and domestic bison utilized the DSA
 - 21,000 seasonal cattle
 - 3% of the Montana cattle herd utilize the DSA
- 96,000 brucellosis tests were run State-wide for DSA, CSS facilities, slaughter, export and other reasons
 - 91,000 tests were DSA specific
- 6,000 Adult Vaccinations were given
- 1 affected herd under quarantine-initially discovered in 2010 and is tested annually. This herd unfortunately has constant exposure to seropositive elk and therefore continued transmission is likely.

The USDA reviewed Montana's brucellosis program in 2019. This review followed the review of Wyoming's program in 2017 and Idaho's in 2018.

USDA review objectives:

- Review the adequacy of MT's brucellosis rules and infrastructure to prevent the spread of brucellosis beyond the DSA.
- Assess 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.

USDA key recommendations on their draft review:

1. Continue to encourage herds to “whole herd test in the fall” to motivate DSA herds to take control of their own annual surveillance testing and have more DSA animals tested than with just pre-movement testing.
2. Continue to collaborate with other GYA States to keep programs similar and transparent.
3. Continue the current level of cattle surveillance, compliance monitoring, laboratory efficiency, customer service, and producer education for the brucellosis program.
4. MFWP should continue to maintain and broaden its excellent relationship with MDOL and continue using USDA cooperative agreement funds to capture and sample elk each year on the outer boundary of the DSA.
5. Continue collaborative efforts with other GYA States.
6. Continue reimbursement program for testing and vaccination
7. USDA should prioritize Montana DSA program tag orders.
8. APHIS and MDOL should finalize and sign a Memorandum of Understanding (MOU)
9. Collaborate with Idaho and Wyoming to ensure that DSA cattle from the other states are identified and tested at Montana markets.
10. Request VS or State support for implementing the use of Mobile Information Management (MIM) for auction-market testing.
11. Work toward real-time compliance assessment.

Montana appreciates the third-party review of our program and will work toward completion of recommendations. Montana’s response to these recommendations will be completed and shared with the subcommittee once the USDA document is final.

RFID Options for Vaccination Tags

Dr. Alex Turner, USDA/APHIS/VS/ADT

The presentation briefly mentioned the previously planned transition timeline to Official ID being RFID by 2023 and how that will affect the current Brucellosis rule, as well as considerations to meet the needs of a potential new rule. Current rules for Official ID and identification of Official Calfhood Vaccinates were discussed and how RFID can be utilized for vaccinates.

Farmed Cervid Brucellosis Testing Update

Travis Lowe, Executive Director, North American Elk Breeders Association

The presentation was a progress report update regarding a 2017 USAHA approved resolution that urges state animal health officials to no longer require Brucellosis testing for farmed cervids for interstate movement. The resolution understood there is not a federal Brucellosis rule for farmed cervids and this would be a state by state issue.

Since 2017, the cervid industry associations have worked with state animal health officials to amend their administrative rules and regulations to eliminate the testing requirement. As of September 2019, Colorado, Indiana, Minnesota, South Dakota and Texas have dropped the import testing requirement with several other states in the process of amending the rule.

Federal Select Agent Process: FBI Perspective

Special Agent Joshua Canter, WMD Coordinator, FBI Boston Division

The presentation revolved around the FBI’s role in the select agent program. In short, the FBI is part of the National Select Agent program as the law enforcement body for the intentional theft, sale or use of select agents in a criminal act. The FBI’s Criminal Justice Information System is used to run

backgrounds on potential select agent lab workers through the FD-961 process. In addition, the FBI partners with the CDC on joint criminal and epidemiological investigation.

GYA Panel Discussion: Into the 10th Year

Moderator Dr. Misty Edmondson presented questions to the panel regarding their experiences in managing brucellosis through a designated surveillance area system over the last 10 years. ID and WY also gave brief annual updates. The audience had an opportunity to ask the panel questions and a productive discussion was held.

1.) Idaho Brucellosis update

Dr. Bill Barton, Idaho State Department of Agriculture, State Veterinarian

Dr. Scott Leibsle, Deputy State Veterinarian

The State of Idaho does not currently have any herds under quarantine for brucellosis. The last brucellosis reactor cow was identified in November in 2017 within Idaho's DSA and, after conducting 3 negative whole herd tests in 2018 as well as an assurance test, no further reactors were found. The primary herd was released from quarantine in September 2018 with all of the first calf heifers being held separate and apart until a post-calving test could be performed. The heifer post calving test was completed in June 2019 and the remainder of the herd was released from quarantine.

In 2019, to-date, 9873 cattle within Idaho's DSA have been tested for brucellosis. Additional cattle will be tested this fall as they return from summer pasture. Total, in 2018, the USDA Idaho Brucellosis Lab conducted 415,766 brucellosis tests from live and slaughter cattle, with the majority of tests originating from CS Beef Packers in Kuna, Idaho.

The 2020 Idaho Legislature will be considering a proposal to lower the test eligible age from 18 months to 12 months. This rule change was based on a recommendation from the 2018 USDA APHIS VS audit of Idaho's Brucellosis Management Program. Negotiated rulemaking was conducted this past summer with stakeholders, who were supportive of the change. Other audit recommendations included implementation of electronic records, which has already been completed, and increased wild elk surveillance and tissue collection, which will be implemented by Idaho Fish and Game in and around the DSA and will focus in hunting units north and west of the DSA and those that border Montana.

2.) Wyoming Brucellosis update

Dr. Jim Logan, Wyoming State Veterinarian

During October of 2018, three Brucellosis affected herds were found in Wyoming. One herd was in Park county, one in Sublette county, and one in Teton county. The Teton county herd was voluntarily depopulated at the owner's request with all cattle in the herd going to slaughter. The brucellosis reactor cattle were removed from both the Park and Sublette county herds (one had three reactors and one had two) and following three consecutive negative herd tests, those herds were each released from quarantine in the spring of 2019. The Wyoming Livestock Board (WLSB) paid indemnity for all of the reactors removed from each of the three affected herds for a total of \$7666.61 expended from the indemnity account. These cases were all determined to have been caused by exposure to *Brucella abortus* infected elk.

The Wyoming state veterinarian's office is now investigating two new potential cases of Brucellosis in cattle in Park County. Both herds reside within the Wyoming DSA. NVSL serology results were reported on October 1, 2019 that a single animal (yearling heifer) from a herd of approximately 700 head in Park County tested positive for Brucellosis. A cow from a separate herd in Park County, not epidemiologically linked to the previously mentioned herd, was reported serologically positive on October 4, 2019. Both animals will be necropsied at the Wyoming State Veterinary Laboratory on October 23, 2019 and indemnified through APHIS (diagnostic purchase) and the state's indemnity fund. Epidemiological investigations are in progress on these two herds Elk are the likely cause of these cases. Quarantines have been issued and any contact or commingled herds will be quarantined and tested as the epidemiological investigation continues. Both of these serologic positive animals were found through our required surveillance testing and Brucellosis Mitigation Plan testing conducted in our Brucellosis Designated Surveillance Area (DSA). The boundaries of the DSA are reviewed annually and are

established by the Wyoming Livestock Board (WLSB) on the recommendation of the State Veterinarian and the Director of the Wyoming Game and Fish Department (WGFD).

We are fortunate to have the valued assistance of the Wyoming State Veterinary Laboratory (WSVL) in the diagnostic work on all Wyoming brucellosis cases. The state of Wyoming purchases reactors through a state indemnity fund and those animals are necropsied at the Wyoming State Veterinary Laboratory or taken to slaughter plants with state/federal observation and tissue collection. The regulatory serology unit of the WSVL continues to provide excellent service for our Wyoming producers and veterinarians in testing brucellosis samples and reporting results quickly and accurately. We have also been fortunate to have the good cooperation of USDA APHIS in dealing with the epidemiology and regulation of these cases.

Boundaries of the Brucellosis Area of Concern now include only the WGFD Hunt Areas 39, 40 and 41 in Big Horn County. The boundaries were established by the board and approved by the Governor following extensive cooperation between WLSB and WGFD personnel using elk movement data to determine temporal and spatial Brucellosis exposure risks. The intent of the board and staff is to employ sound science, along with risk assessments, to determine the level of testing required. We are continuing to work with WGFD and preparing to do risk assessments with producers in the Brucellosis Area of Concern. WGFD reporting on the hunter-killed elk surveillance in the Bighorn Mountains did not find any sero-positive elk in that area during the 2018 hunt season (no seropositive elk have been found since 2015). All of Wyoming's Brucellosis cases since we achieved brucellosis free status in 1995 have been within the Brucellosis Designated Surveillance Area (DSA) and have resulted from exposure to infected elk.

56 veterinarians conducted testing for Brucellosis on cattle from the DSA and the Brucellosis Area of Concern during fiscal year 2019. 57,125 DSA-origin cattle/bison were tested on Wyoming ranches and at livestock markets and 5,785 cattle were sampled at WY slaughter plants to comply with WLSB Chapter 2 Brucellosis rules. Big Horn and Sheridan County producers tested 7,108 head of cattle/bison from near or in the Brucellosis Area of Concern. The WLSB paid approximately \$315,902 to veterinarians and slaughter plant managers to conduct Brucellosis testing, and adult/booster vaccination of DSA and Brucellosis Area of Concern-origin cattle. In addition, the WLSB contracted \$101,915 with the Wyoming State Veterinary Laboratory during the period July 1, 2018 through June 30, 2019 for support of laboratory costs associated with brucellosis testing.

Dr. Logan was notified on April 2, 2019 by the WGFD Lab that three Brucellosis seropositive elk were found on the Wind River Indian Reservation by testing done in conjunction with a UW/Tribal/USFWS radio-collared elk and mule deer movement study. This is the first time there has been significant surveillance conducted on the reservation and 47 elk were collared and tested finding three sero-positives. Three elk were sero-positive out of approximately 80 total elk tested in a two year period (none found in 2018).

Dr. Logan held a meeting with the Joint Tribal Council on May 17, 2019 at Ft Washakie to discuss Brucellosis and the implications of the disease in resident elk on the reservation. Discussions are ongoing between the WLSB, Joint Tribal Business Council, USFWS, BIA, WGFD, and Tribal Game and Fish Department to determine a course of action going forward. Meetings have been held with cattle owners in the area where the seropositive elk are known to have been (from radio-collar data) to discuss Brucellosis issues and surveillance testing. Due to jurisdictional and legal issues, this presents challenges to state regulatory and animal health officials.

A swine brucellosis cross-sectional study in pigs with outdoor access in New York State: an overview and preliminary findings

Dr. Caroline Yancey, Cornell University College of Veterinary Medicine

A study of swine brucellosis and farm biosecurity and management practices is underway in New York State. The target population is farms that raised pigs with outdoor access for commercial purposes. To date we have serology results from 6 farms, where we had 84 negative animals, and 10 samples were hemolyzed; two farm results are pending. The questionnaire reveals that there is a mix of commercial activities undertaken by these farms, and that considerable interstate animal movement is occurring.

Further, none of the farmers report feral swine sighting, and feeding practices are primarily via commercial feed, although two farms report using uncooked plate waste from their homes, which is allowable in New York State. We expect to sample an additional 20 farms this fall, winter, and spring.

Development of a DIVA ELISA for detection of anti-Brucella species antibody

Dr. Andrew Johnson, VMRD

Brucella abortus is one of the causative agents of brucellosis, a zoonotic disease found worldwide in cattle, small ruminants and swine. The U.S. has successfully eradicated *B. abortus* from livestock using *B. abortus* strain RB51 vaccination as part of its control program. Critical serologic surveillance continues particularly in areas where livestock interface with wildlife reservoirs of Brucellosis. The basis of current serologic screening assays, including the fluorescence polarization assay (FPA), is detection of antibody to the immunodominant O-polysaccharide (OPS) of *Brucella spp.*

Here we describe the performance of an ELISA screening assay utilizing synthetic antigen (sAG) derived from and reproducing the dominant antibody binding epitopes of the OPS. The sAG ELISA is a high throughput assay with comparable performance to the OIE recommended sLPS ELISA test, is DIVA for RB51 vaccination, and the antigen can be reproducibly synthesized safely and cost effectively.

NADC research activities update; Biosafety concerns related to *Brucella*

Dr. Steven Olsen, Agriculture Research Service, National Animal Disease Center

In response to concerns raised with USAHA, we have evaluated the effects of negative sera from bison, cattle, elk, and swine in the fluorescence polarization assay on mean measurements of different sets of bison, elk, cattle, and swine sera. For bison, cattle, and elk, samples evaluated included negative samples, sera at peak titer after initial RB51 vaccinated, sera from later times after vaccination and/or after booster vaccination with RB51, sera obtained early (2-4 weeks) after experimental infection of pregnant animals with virulent *B. abortus* strain 2308, and sera obtained at later time points (6-12 weeks) after experimental challenge with strain 2308. For swine, samples included sera from negative controls, sera at peak titer after initial vaccination with *B. suis* strain 353-1 (a rough *B. suis* natural mutant), sera from later times after vaccination with 353-1, sera obtained at (2-4 weeks after experimental infection of swine with virulent *B. suis* strain 3B. In addition, samples obtained from cattle shedding RB51 in milk were also evaluated.

Subcommittee Business:

The business meeting was called to order. A show of hands indicated that a quorum was present for voting purposes. The first item of business was a status update on Resolutions from the 2018 meeting. The response to resolution 30 was deemed sufficient by members. The responses to resolutions 31 and 35 were unsatisfactory and additional follow up requested by the members. Two new resolutions were introduced: removal of select agent status for *Brucella spp.* (directed to a different agency than resolution 30 from last year) and approval of the card test for use outside of stockyards. The first resolution passed unanimously. After some discussion, the second resolution did not pass. The chair introduced a recommendation that the technical advisory working group continue to review the diagnostic interpretation of FP for domestic bison and additional species as presented by Steven Olsen. A second recommendation charged the technical advisory working group to review an ELISA test as a potential diagnostic tool as presented by Andrew Johnson. Last year, the members of the technical advisory working group were Dave Hunter, Valerie Ragan, Brant Schumaker, and Steven Olsen; the members will be reviewed by the chair and appointments made as appropriate. A motion was made to adjourn the meeting.

REPORT OF THE SUBCOMMITTEE ON TUBERCULOSIS

Chair: Michael VanderKlok, MI

Vice Chair: Beth Carlson, ND

The Subcommittee met on October 27th, 2019 at the Rhode Island Convention Center in Providence, Rhode Island, from 1 pm to 5 pm. There were 68 members and 22 guests present. Dr. Michael VanderKlok welcomed committee members and guests, introduced Dr. Beth Carlson as Vice Chair, and determined there was quorum for the committee to meet and vote on all business, including resolutions.

Dr. VanderKlok provided a review of the agenda and the mission and operating procedure for the TB subcommittee, as well as the process for recommendations and resolutions.

Presentations & Reports

USAHA TB Scientific Advisory Working Group report

Kathy Orloski, DVM MS DACVPM

Dr. Kathy Orloski provided a summary of the activities of the Scientific Advisory Working Group was provided. (see addendum for full report)

TB Activities of the Bi-National Committee on TB, Brucellosis and Cattle Fever Ticks

Dee Ellis, DVM MPA, Texas A&M University

Dr. Dee Ellis provided a summary of the activities of the Bi-National Committee pertaining to Tuberculosis. Current efforts are primarily focused on improving electronic data sharing. (see addendum for full report)

Updates were given by eight states which are currently investigating or have recently investigated cases of bovine tuberculosis:

State Update: Texas

Susan Rollo, DVM, Texas Animal Health Commission

- **Status of the infected Herds in Parmer and Lamb Counties:** Two organic dairies and a feed yard (~12,000 head) completed an assessment test in April 2015 then **13** removal tests. The 14th removal test is pending completion. To date, there are 68 histocompatible samples disclosed.
- **Status of the infected dairy in Bailey County (feed yard and associated dairy in Parmer/Bailey):** Two organic dairies and a feed yard (~6500 head) completed an assessment test in the spring of 2016 with 1 positive disclosed. Two removal tests and 1 verification test have been conducted. Pending negative culture results, the dairy shall move to annual assurance testing. The whole genome sequencing of the TB strain indicates an association with the strain in the complex #1 under the same management.
- **Status of infected dairy in Sherman County and two associated infected grower operations in Dallam County that are epidemiologically linked to the positive dairy.**
 - The ~8,700 head dairy was previously tested annually 2015- 2017 with negative test results. During the annual December 2018 test, a high rate of responders were disclosed. To date, 63 cows are confirmed since the first diagnosis in February 11, 2019. The second removal test is pending completion. Based on whole genome sequencing, two unique strains have been identified.
 - One associated grower facility is a ~70,000 head calf ranch. To date, one positive heifer was disclosed on 3/1/2019. Approximately 12,000 head are considered exposed. In

addition to testing at the premises, epidemiologically linked dairies including 1 in Oklahoma, 2 in Kansas, and 1 in Texas also have required whole herd testing.

- A second heifer raiser premises that manages heifers for this dairy and another dairy under the same ownership in Colorado had one positive heifer disclosed on April 8, 2019 on the first whole herd test of ~4500 head.
- **Status of infected beef herd in Austin County:** In June 2019, a positive beef herd was disclosed from a slaughter trace back. After one assessment test, an additional positive cow was identified. Whole genome sequencing describe a unique strain to the US with Mexican origin.
- **TB slaughter trace cases in the FY2019:** To date, there has been three slaughter trace investigations in 2019.

Key Points/Questions Raised:

- ✓ Unable to apply a sensitive enough test early on to stop the extended testing schedules
- ✓ Dairies can live with extended testing schedule but the removal of all CFTs becomes burdensome over successive years
- ✓ Organic values are an issue with indemnity
- ✓ Organic milk values play a part in indemnity decisions
- ✓ Larger dairy sizes and complexity (i.e. larger ones and more grower operations)
- ✓ Good recordkeeping is very helpful
- ✓ Unable to truly assess the human contribution to TB transmission

State Update: New Mexico

Ralph Zimmerman, DVM, New Mexico Livestock Board

Tuberculosis continues to be a top priority and time consumer. In September, quarantined herd from 2017 was tested, after 4 negative test and removal whole herd tests. Their quarantine was removed. The sister herd had been removed from quarantine in September of 2018, and had a successful first assurance test in September of 2019.

Testing continues in dairy group quarantined in 2019. Testing is done every 90 days (3rd whole herd test going on now); group includes 4 dairies and 4 heifer facilities, in Dexter, NM. Because of comingling of heifers from all 4 dairies, all of the dairies were required to test. At this point, there are 2 positive dairies (8 head so far), 2 negative dairies and no positive young stock. There have been issues with the bank, which have complicated conversations on herd plans for these herds; still working on herd plans. Ruminant Health seems willing to look outside the box for resolution.

Key Points/Questions Raised:

- ✓ Beware of the banks
- ✓ Think outside the box- Not all dairies are alike. We are here to protect our producers, local economies, and our trading partners.
- ✓ Personnel and management changes in VS appear to be favorable
- ✓ Rules are rules, but look to exploit the gray zones where it is beneficial

State Update: Michigan

Nancy Barr, DVM, Michigan Department of Agriculture and Rural Development

Michigan has been dealing with a bovine TB reservoir in free ranging white-tailed deer for more than 20 years. Extensive surveillance has demonstrated the boundaries of the problem area, enabling us to focus efforts within our current Modified Accredited Zone, where we are working to mitigate risks and prevent the spread of TB by cattle. Our traceability, compliance and response systems are well developed and effective. Moreover, Michigan has implemented a novel approach to prevent the spread of TB in this zone and beyond, the Wildlife Biosecurity Program. This farm-by-farm specialized program is based on years of research and the extensive knowledge of our specialized teams, including USDA Wildlife Services, Michigan State University extension, MDNR and MDARD wildlife biologists and veterinarians.

In the past year, MI has found 2 positive herds in the MAZ. Both herds were found on routine surveillance and had a low level of infection in the herd. The first herd has completed their test and removal program and have implemented enhanced wildlife biosecurity measures and has been released from quarantine while the second herd is expected to complete their test and removal program and biosecurity implementation in early 2020.

This spring, a positive herd was found in Presque Isle County, which borders the MAZ and in which MDARD does routine surveillance in the cattle herds. This herd was found by the surveillance program. The herd was depopulated and the farm will be eligible for quarantine release under a herd plan that includes wildlife biosecurity. As a result of the trace investigation from this herd, a positive animal was found in an Emmet County herd. That herd is undergoing a test and removal plan. No additional positive animals have been found in that herd after two WHT. Enhanced surveillance areas have been placed in both Emmet and Presque Isle Counties in response to these findings.

State Update: North Dakota

Susan Keller, DVM, North Dakota Department of Agriculture/ Board of Animal Health

- Sargent County beef herd identified as affected in December after *M. bovis* was identified in cull cows at two slaughter plants, three weeks apart. There was a delay in responding due to DNA mis-match issues at NVSL, likely due to plant employees using a rag to wipe blood off of the tags. WHT of 103 cattle identified 14 reactors; euthanized on farm with assistance from USDA-WS and transported to NDSU-VDL for necropsy by state staff. 19 feeders were finished on site and slaughtered locally under inspection by the state veterinarian and state meat inspector. Remaining cattle were shipped to FSIS slaughter in Wisconsin. A total of 9 positive cattle were identified, with significant variation in WGS of affected cattle. Testing of 1149 cattle in 5 trace herds did not identify additional infection. C&D is complete and restocking has been approved. Wildlife surveillance thus far has been negative, but will continue.
- South Dakota feedlot trace led to investigation of 99 herds, 24 in ND. Of the 24, 3 had dispersed, 19 herds (3145 head) have been tested and 2 herd tests (~800 head) are still pending.
- Texas dairy trace: Received 315 heifers from Kansas that included an unknown number of heifers from an affected dairy in Texas. 29 heifers traced back to the dairy via official ID and were removed with indemnity. Multiple ID devices were present but were not recorded/correlated, and some heifers had lost tags, so the origin of 30 additional heifers in the group could not be determined with official ID and USDA will not approve indemnity. However, these 30 heifers have management tags that are in the same series as those that were indemnified. Due to the obvious likelihood that there are other exposed animals in the group, the ND BOAH will not release the quarantine on them until they go to slaughter. Alternatively, that group may be held under quarantine and remain under a herd plan applied to the animals on that premises in an approved isolation pen.

Key Points/Questions Raised:

- ✓ Well-managed herd using normal slaughter channels seems to have escaped detection for several years. Could/should live animal testing be performed more often in “free” areas?
- ✓ Source of infection in Sargent County Beef Herd could not be determined, but there is an epi link to a TB investigation involving a community grazing operation in the 1980s. No DNA information is available, but the summary report included a statement that they hoped they had done enough. Are we doing enough?
- ✓ Should CFT +/-CCT – cattle be voluntarily culled?
- ✓ The CFR defines a herd as a group of animals held together for 4 months. Has this increased the spread of TB?

State Update: Indiana

Bret Marsh, DVM, Indiana Board of Animal Health

The previously TB-affected premises in Franklin County, Indiana was depopulated in August 2018, and it has been released from quarantine. The site is still under restocking restrictions until February 2020, although the property owner has no intention of restocking. After the cattle were removed, wildlife was harvested and sampled from the affected property as part of an advanced surveillance program. Wildlife sampling took place in September 2018 and again in March 2019. All 64 wild animals harvested from the premises (white-tailed deer, raccoons, opossums) in September 2018 were culture negative for TB. In March 2019 the wildlife surveillance area, which included the affected premises, was expanded to one and half miles around the affected premises. All cattle herds in the same area were tested again. One hundred and twelve wild animals (8 opossums, 25 raccoons, and 79 white-tailed deer) were harvested and sampled, and a single raccoon cultured positive for TB. Through whole genomic sequencing (WGS), the isolate from the raccoon closely resembles other isolates from cattle on the affected site. Additional wildlife sampling efforts are proposed and under consideration.

Key Points/Questions Raised:

Based on Indiana's experience with Tuberculosis in cattle and cervids, the following should be considered if you are confronted with this challenge:

- ✓ Start with a robust communications plan. If the stakeholders are aware of the goal, and it makes sense, they will participate. Indiana used a variety of communication methods including print media, interviews, social media, text alerts and face-to-face meetings, to convey to elected officials, producers, veterinarians, hunters, extension personnel, and state animal health officials the objectives of the TB eradication effort. As changes were made to the program, the same communication channels were used to update information. We received excellent cooperation from our many partners, and their contributions were pivotal to our success.
- ✓ Engage strategic partners. The commodity organizations, practicing veterinarians, extension personnel, the Department of Corrections and hunters were some of several willing partners, and they were essential to the eradication effort. Under Indiana law, practicing veterinarians were paid for testing cattle herds on a fee-basis agreement with the State of Indiana. Indiana utilized practicing veterinarians to enhance our testing capability and support the long-term relationship between the producer and veterinarian. Extension personnel in the affected county provided the county fairgrounds as a staging area for the testing equipment, and the commodity organizations communicated to their membership the importance of presenting cattle for testing on over 380 farms. Low level offenders from the Indiana Department of Corrections provided valuable assistance in building and removing corral gates on many farms. Hunters were essential for the wildlife surveillance component of the plan, and they provided thousands of deer for sampling.
- ✓ Use the best available science. Whole genomic sequencing became available before Indiana's most recent experience with TB, and it provided valuable information. Based on this relatively new science, we could advise our stakeholders that all TB isolates in southeastern Indiana were related to the cervid type of TB. Additionally, WGS solved an untraceable TB isolate from several years prior.
- ✓ Traceability has improved. Although there remain traceability challenges, the overall improvement in traceability enhanced Indiana's ability to rapidly identify affected sites. Premises registration was required of all Indiana livestock premises in 2006, and over 90% of the sites tested for TB had a premises registration when we began the eradication effort. Having premises registered in advance greatly assisted the Indiana eradication program. Additionally, individual animal identification has improved. Although not required by Indiana law, we have encouraged markets to apply backtags to fed cattle. Because the steers that were found to be TB positive had a backtag, we were talking to the owner of the cattle within three hours of being notified of the positive diagnosis. Indiana has distributed thousands of 840 tags to cattle producers, and these tags have also greatly improved our ability to rapidly trace animals.

- ✓ Seek better solutions. Research is needed to provide a better test for TB. Although the caudal fold test has brought the nation to near eradication, better methods must be identified to successfully eliminate the disease.

State Update: Nebraska

Dennis Hughes, DVM, Nebraska Department of Agriculture

Tuberculosis was diagnosed in two cattle slaughtered in NE slaughter plants this summer. Both cases were in feedlot cattle. The first case detected in July was from a NE feedlot and was traced to a NE cow herd. However initial testing of the herd did not confirm infection in this operation. Whole Gene Sequencing determined that this TB strain was not related to any known TB infections in the United States. A second herd test is scheduled to begin in late October. The herd is split into 7 different large pastures, so testing will take a few weeks—if harvesting and bad weather don't interfere. The second case was detected in September and has been traced to a feedlot in MO. This diagnosis has not yet been confirmed by culture. NDA has also received numerous TB traces from SD, ND, WI, and TX. So far, all traces have ended when cattle were finished in NE feedlots and fed to slaughter.

Key Points/Questions Raised:

- ✓ Removing tissue from tags by FSIS personnel (and removing DNA) is detrimental is proving TB lesions correlate with animal ID.
- ✓ In-depth research of records with “some identification” that is animal specific for herd of origin can still be beneficial, even if not “official” ID.
- ✓ Contacting potential owners of herds of origin and explaining that we need to investigate and test for TB has to be tactful, but authentic.
- ✓ In this situation, we stated that if we were uncertain of the herd of origin, then we would be forced to quarantine many herds and make them all test.
- ✓ Lineage testing of parentage and sibling(s) to infected animal is valuable to prove herd of origin, especially if there is no DNA from the infected animal's identification tags.

State Update: Wisconsin

Elisabeth Patton, DVM, Wisconsin Department of Agriculture, Trade, and Consumer Protection

Wisconsin Division of Animal Health identified a bovine TB positive herd in Dane County in October, 2018. The source appears to be a human who had contact with the farm. To date, the farm has completed 5 removal tests, and is scheduled for a minimum of 7 removal tests conducted not less than 60 days apart. In addition to the initial infected animal identified at slaughter, a total of 9 animals taken following removal tests have been confirmed to be infected with bovine tuberculosis. The herd is under quarantine and the only movements off of the farm are under permit, directly to slaughter or restricted feedlot. Following satisfactory completion of all required removal testing, the herd will remain under quarantine until a quarantine release test is completed and found to be negative. Quarantine release testing is conducted not less than 6 months following the final removal test. Annual testing of the whole herd will be conducted for 5 years following quarantine release.

Trace cases: 315 traces to premises in WI; 274 traces to 16 other states.

Key Points/Questions Raised:

- ✓ One Health
 - Human WGS prevented a lot of testing
 - Trace backs- source of infection
 - Established communication plan with other agencies
 - Public Health
 - Department of Natural Resources
 - Proactive Human Health Programs needed
 - Producer driven
- ✓ Trace Investigations
 - Official Identification Needed
 - Farm of origin

- Recorded at points of concentration
- ✓ Unified message to producers/practitioners
 - Joint public meetings with USDA/Public Health/DNR

State Update: South Dakota

Dustin Oedekoven, DVM, South Dakota Animal Industry Board

A cow sold through a South Dakota Livestock Auction Market in November, 2018, was found with a TB histo-compatible lesion at a federally inspected slaughter plant in SD. The official NUES tag collected at slaughter traced back to a North Dakota herd which was later confirmed to be infected with a novel strain of *Mycobacterium bovis*. Sales from the ND herd prior to its identification as an infected herd resulted in the quarantine of 6 feedlots in SD. Feeder cattle from those lots remain quarantined until marketed to slaughter. A second infected cow from the same herd was sold through a SD market and slaughtered in Minnesota in December, 2018.

In December, 2018, a black steer with no official identification was found to be infected with a novel strain of *M. bovis* after samples were collected at a federally inspected slaughter plant in Aberdeen, SD. The lot was comprised of 38 animals from a feedlot in Kingsbury County, SD. Eleven of the calves originated in a breeding herd owned by the feedlot owner, and the remaining 27 head were purchased from a ranch in MT and a red-angus ranch in SD. All three source herds tested negative to a whole herd tuberculin test. In March, 2019, histo-compatible, PCR positive results were collected from a cow owned by a large SD terminal cull cow feedlot, slaughtered at a NE plant. Feedlot records indicate the cow was one of 43 head purchased at a MT auction market, and official identification collected at slaughter and recorded at feedlot entry indicated MT origin. Montana officials reported negative results to a whole herd test. Whole genome sequencing of the *M. bovis* isolate demonstrated common ancestry with isolates in Mexico and suggest it is unrelated to isolates previously found in the US.

Key Points/Questions Raised:

- ✓ Our experience with *M. bovis* in SD beef herds is a collaborative project with neighboring states, USDA, and industry partners.
- ✓ Identification works, and is dependent on accurate record keeping.
- ✓ Recent cases in SD beef herds included multiple novel strains, and common risk factors were not present:
 - Mexican cattle
 - Dairy cattle
 - Wildlife reservoir
 - International workers

USDA APHIS VS TB Program Update

Sara Ahola, DVM, USDA APHIS VS

National Program Status Overview

All 50 states remain classified Accredited Free except four counties in Michigan (Alcon, Alpena, Montmorency, and Oscoda) which make up a Modified Accredited Zone. In FY2019 USDA detected 10 tuberculosis (TB)-affected cattle herds: three dairies, one dairy heifer grower feedlot, five beef herds, and one mixed beef-rodeo-exhibition herd. Overall, the incidence of TB in the US remains small and relatively stable. Herds are increasingly managed via test and remove protocols, especially with large dairies; all dairies detected in FY2019 were placed on such protocols. Beef herds remain a mixture of test and remove or depopulation; three herds were depopulated in FY2019.

Update on slaughter surveillance & TB granuloma ID correlation: Nine histocompatible cases of TB were detected at slaughter in FY2019; eight were confirmed by PCR and culture. One was PCR negative and culture is pending. Of the eight confirmed, four were adult cull cows and four were fed animals. From these, three new TB-affected herds were detected. Also of the eight confirmed six had DNA in which the identification submitted matched the granulomas, one granuloma was submitted with no ID (fed animal), and one was submitted with ID but no tissue to test for DNA (a 75% match overall). Over 800,000 caudal fold tuberculin (CFT) tests were performed for live animal surveillance with no detections

of TB. Over 10,000 dual path platform assays and nearly 2,700 single cervical tuberculin tests were performed in cervids with no detections of TB.

Update on interferon gamma testing in the U.S.: The interferon gamma release assay (IGRA) was re-instituted as an official supplemental test in the US in June 2019. Currently only the National Veterinary Services Laboratory is conducting the assay and Veterinary Services continues to collect data for further validation. Since re-instatement 156 samples have been tested for routine movement from negative herds, primarily young dairy cattle in Texas with a 0% positivity rate. One TB-affected herd sampled 533 CFT responders and found poor correlation with CCT (58 CCT suspect or reactors and 2 gamma suspects). Disease status of these animals has not been confirmed due to lack of post-mortem exam at this time. VS intends to continue gathering data and will work with the TB Scientific Advisory Working Group to further validate the IGRA.

Subcommittee Business:

Dr. VanderKlok provided the response from USDA APHIS VS to the resolution brought forth by the USAHA TB committee at the 2018 meeting regarding the use of the DPP in cervids for interstate movement.

- Resolution Number 26: INVESTIGATE THE DUAL PATH PLATFORM AS AN INDIVIDUAL ANIMAL TEST FOR INTERSTATE COMMERCE OF FARMED CERVIDAE (See Addendums)

The committee was asked for feedback on the resolution. Representatives of the cervid industry who brought forth the resolution indicated that the response was adequate and their intent was to bring the issue to light for consideration in the developing TB rule.

Dr. VanderKlok then opened the floor for receipt of recommendations or resolutions regarding tuberculosis to be considered for discussion, approval, and forwarding to the USAHA Committee on Cattle and Bison, Committee on Farmed Cervid, or Committee on Wildlife and Captive Wildlife. There were no resolutions or recommendations brought from committee members.

There was no additional new business.

A motion to adjourn was made and seconded. The meeting concluded at 5:00 p.m.

Submitted October 28, 2019

Michael VanderKlok, DVM, Chair, USAHA Subcommittee on Tuberculosis

Addendums to the committee report:

USAHA TB Scientific Advisory Working Group report

Kathy Orloski, DVM MS DACVPM

Antibody Responses and Differential Antigen Recognition in Three Bovid Species During *Mycobacterium bovis* Infection.

Konstantin Lyashchenko, PhD, Chembio Diagnostic Systems, Inc., New York.

Using DPP technology with two chimeric tests antigens for antibody detection, MPB70/MPB83 and CFP10/ESAT6, we compared predominant antigen recognition patterns in cattle, American and European bison, and African buffaloes infected with *Mycobacterium bovis*. The bovid species develop variable IgG responses to MPB70/MPB83 and CFP10/ESAT6, with IgM responses being less frequent, of lower magnitude, and limited to MPB70/MPB83 recognition. In cattle, MPB70/MPB83 protein is more antibody reactive than CFP10/ESAT6. In contrast, the infected bison and buffaloes recognize both antigens equally well, demonstrating increased rates of mutually complementary IgG reactivity. Antibody responses in European bison infected with *M. caprae* and in American bison infected with *M. bovis*

showed similar characteristics of antigen recognition. These findings may be useful for development of improved serodiagnostic tests for use in multiple animal hosts of tuberculosis.

A defined antigen skin test for the diagnosis of bovine tuberculosis.

Sreenidhi Srinivasan, PhD Candidate, Molecular, Cellular, and Integrative Biosciences
Huck Institute of the Life Sciences, The Pennsylvania State University, Pennsylvania.

Bovine tuberculosis (bTB) is a major zoonotic disease of cattle that is endemic in much of the world, limiting livestock productivity and representing a global public health threat. Because the standard tuberculin skin test precludes implementation of Bacille Calmette-Guérin (BCG) vaccine-based control programs, we here developed and evaluated a novel peptide-based defined antigen skin test (DST) to diagnose bTB and to differentiate infected from vaccinated animals (DIVA). The results, in laboratory assays and in experimentally or naturally infected animals, demonstrate that the peptide-based DST provides DIVA capability and equal or superior performance over the extant standard tuberculin surveillance test. Together with the ease of chemical synthesis, quality control, and lower burden for regulatory approval compared with recombinant antigens, the results of our studies show that the DST considerably improves a century-old standard and enables the development and implementation of critically needed surveillance and vaccination programs to accelerate bTB control.

(<https://advances.sciencemag.org/content/5/7/eaax4899>)

Identification of Truly Negative Animals to *M. bovis*

Rafael Paiva. DVM, IDEXX Laboratories, Texas A & M University, Texas.

Until the 20's when control measures started, tuberculosis was one of the main diseases in domestic animal's worldwide. Today bovine tuberculosis is still one of the most important disease in cattle and wild fauna. It is also an important zoonotic disease that represents a great problem in human and animal health. One single infected animal can spread the disease in the herd even before having clinical signs. (OIE).

For identification of infected animals, the skin tests are used worldwide, caudal fold test (CFT, cervical test (CT), and cervical comparative test (CCT). Control and eradication programs based on skin tests have been used for more than 60 years with very variable results, some countries have been able to eradicate and others are still in control programs with variable prevalence.

Programs are based on the identification of infected animals (reactors to skin tests), confirmatory tests and slaughter of positive animals. Unfortunately, the skin tests still leave some false negatives in the herd because of the sensitivity (68%-95%)(OIE).

The IDEXX *M. bovis* Antibody Test used in parallel or in series with the skin test, will:

1. Identify a higher proportion of infected cattle than the tuberculin test alone
2. Remove tuberculous animals before they might become infectious
3. Allow for earlier return of herd to trading status
4. Improve risk management practice

The IDEXX ELISA Ab test result provides a S/P ratio that will help identify "Risk Groups". These groups will have negative animals with a S/P ratio that is very close to the test cutoff. These animals have a higher probability to be infected and become positives in the next skin test and/or ELISA Ab test.

The use of the antibody test as a complimentary to the skin tests program will have several advantages for producers and the state due to finding true positives earlier:

Producers:

- Reduce quarantine time
- Reduce animal movement
- Reduce morbidity and mortality
- Identify risk groups

State:

- Reduce the number of CFT and CCT tests
- Reduce labor

- Reduce overall costs of testing
- Identify risk groups for follow-up

Implementing the IDEXX *M. bovis* Antibody Test in the United States as a complementary test to the skin test will help operations return to trade status faster and reduce the number of episodes in the future.

Update on Gamma Interferon Assay and other supplemental testing in the U.S.

Sara Ahola, MA, DVM, Veterinary Services, U.S. Department of Agriculture, Colorado.

Update on Interferon Gamma Release Assay (IGRA) or “gamma” performance since re-instatement in June 2019: IGRA was re-released as an approved supplemental test in the US in June 2019 to be conducted at the National Veterinary Services Laboratory. It was withdrawn in May 2017 after inconsistencies were identified in test performance of the Bovigam® test kit due to low activity in certain lots of purified protein derivative (PPD) and varying test results across laboratories.

In an effort to re-release the IGRA for official use, USDA evaluated samples from four tuberculosis (TB)-affected herds for the sensitivity analysis and over 45 negative premises for the specificity analysis. Various PPDs were evaluated for performance and the IDVet PPD had the best performance. A cutoff of 0.3 was chosen to meet or exceed performance of the comparative cervical tuberculin test (CCT). This cutoff results in a sensitivity of 0.84 and specificity of 0.99.

Since re-instatement it has been used solely in Texas for both routine testing for movement and in one tuberculosis-affected herd. Specificity in samples for routine movement from presumed negative herds has had excellent specificity with no positive samples. Sensitivity in the TB-affected herd cannot be analyzed at this time due to lack of post-mortem results on suspect animals at this time. VS continues to collect test data and will request the assistance of the TB Scientific Advisory Working Group (TB SAS WG) for further analysis as data increases.

Overview of VS' use of IDEXX *M. bovis* Ab test in affected herds: This assay is approved for use in the US in TB-affected cattle herds as a tool to aid in eradication of TB. Given the very low prevalence of TB in the US, this assay has been implemented in limited situations with varying results. Previous data from a 2017 presentation by Dr. Mark Schoenbaum to the TB SAS WG was presented showing sensitivity ranging from 0% to 70% in two herds in three sample sets. Recent data from Michigan (2019) showed better performance, of 36 animals sampled, 11 of which were confirmed positive, IDEXX *M. bovis* Ab had a test sensitivity of 82% and specificity of 85%. USDA continues to consider using this test on a case-by-case basis in TB-affected herds.

TB Activities of the Bi-National Committee on TB, Brucellosis and Cattle Fever Ticks

Dee Ellis, DVM MPA, Texas A&M University

The Bi-National Committee for cattle fever ticks, brucellosis and bovine tuberculosis or “BNC”, is a private public partnership charged with dealing with the pest and diseases of concern in the name. It has been in existence for 25 years. Most of the impetus is on import/export cattle moving between the two countries and the affiliated US- Mexico international border crossing processes.

The US BNC is composed of:

- SAHO's for the Southern Border States
- Stakeholder organizations
- Corresponding USAHA Committee leadership
- Cattle Producers
- Other interested parties

The Mexico BNC is comprised of similar members

The respective federal governments are not members of the BNC but are the primary venues for the dialogue intended to discuss the same issues. They are who the BNC meets with on an annual basis. I want to thank all of the USDA staff involved with the BNC in both meetings and calls. They listen to concerns and provide answers as well as potential solutions for the concerns discussed.

There are 2 face to face meetings per year. The US BNC hosts 1 meeting a year in conjunction with and just prior to the annual NCBA meeting which is usually held in late January or early February. A special thanks goes to Jessica Watson of NCBA who does yeoman work on behalf of the BNC in supporting the logistical needs for the meeting.

The Mexico BNC hosts 1 meeting per year as well which is just prior to their annual CNOG (similar to NCBA) and is usually held May or early June.

The Stakeholder organizations and SAHO pay a yearly participation fees to support expenses of the BNC. The biggest expense is the support of the face to face meeting each year in conjunction with the NCBA annual meeting. Thanks also goes out to Ross Wilson who is the treasure of the BNC.

The USAHA staff supports the bank account for the BNC and a special thanks goes to Kelly Janicek and Ben Richey.

The BNC Committee met 3 times face to face in 2019 to date:

- **NCBA (New Orleans)**
 - This was technically not a full BNC meeting because of the federal government – USDA did not attend and subsequently the Mexico counterpart (SADER) did not attend
 - It was a meeting of the AHO's and Stakeholders for both countries
 - The main topic was related to improving efficiency of crossing processes for Mexico feeder cattle entering the US and creation of processes to ensure RFID's are able to be used and the data available for easy retrieval later for better traceability
 - As a result of this meeting a future workshop on SBP and RFID issues was planned to be held in March where the issues identified in New Orleans were presented to USDA VS
 - Buffer zone for cattle fever ticks on Mexico side of river was discussed
 - Mexico Dairy TB Control Program – producers in Mexico asked the BNC group to
 - Phase 1 would be to develop a model herd plan endorsed by the U.S. and Mexican dairy industries by joining the BNC that could be provided to dairy producers and animal health officials in Mexico.
 - Phase 2 would be to develop an implementation model for the same.
- **El Paso**
 - A meeting was held in El Paso on March 26-27
 - There were producers than normal at this meeting
 - Approximately 40 participants attended.
 - The first day the BNC AHO's and stakeholders met privately to finalize their issues to discuss with USDA
 - The second day the two parties met and discussed in detail:
 - Cattle Fever tick Buffer zone
 - Electronic data management processes at Southern Border Ports (SBP)
 - Databases needed to manage the data and access to the same
 - As a result a formal submission of the priority issues were given to USDA
 - Those SBP issues were:
 1. Standardize electronic signatures that allow crossing documents to be endorsed, authorized and verified by both countries.
 2. Review which crossing papers must be presented as hard copies
 - Consider utilizing the Zoosanitary Certificate of Exportation of Animals as the only original paper to be presented at the port – all other documents are available electronically
 3. USDA VS should:
 - a. provide infrastructure at all southern border ports (SBP) to support seamless capture and transmission of electronic data including:
 - i. Antennae
 - ii. Panel readers
 - iii. Wands
 - iv. Handheld MIM's devices
 - v. Trained personnel
 - vi. Other necessary equipment
 - b. Create 2019 training schedule for all Mexican exporting states and brokers to upload RFID data

4. Create a working group that includes BNC members to assist USDA VS staff in developing schemas (modules) to exchange data electronically between Mexico and US
 5. Formally request in writing that SENASICA support BNC actions
 6. Eliminate the clip tag as acceptable official identification for entry into the US by September 1, 2022
 7. USDA and SENASICA are requested to submit their plan at the Oaxaca BNC meeting to achieve the short-term goals by December 31, 2019
- **CNOG (Oaxaca City)**
 - Normal BNC meeting
 - 3 Sub-committee meetings – TB,CFT, Brucellosis
 - Fed-Fed
 - Mexico – US BNC groups meet
 - Mexico only and US only meetings
 - USDA delivered timelines for delivery of an updated and functional electronic data process
 - Many of the factors related to the timeline are Mexico issues and USDA and the US BNC members have little control over that but the Mexico BNC members are working closely with SENSICA in that regard.
 - The timeline is as follows:
 1. **Short-term (by the end of July, 2019)**
 - a. Mexico exports: Mexico proposed a pilot for cattle exports from Chihuahua. Mexico will email APHIS all supporting documentation for each export certificate for cattle. APHIS will be able to verify authenticity of the digitally signed health certificate online.
 - b. US exports: APHIS will work to develop Veterinary Export Health Certification System (VEHCS) certificates for cattle and update the certificate for horses. APHIS will sign VEHCS certificates using digital signatures. APHIS will send Mexico model VEHCS live animal certificates and online verification instructions. This change for APHIS export will apply to all ports for cattle and horses.
 - c. SENASICA and APHIS plan to meet during 2019 to evaluate progress of these short-term changes. After evaluation, Mexico and APHIS will determine the possibility of expansion of the Mexican export project to other states.
 2. **Medium-Term (eight to 12 months)**
 - a. Mexico exports: Mexico will update their system to allow APHIS direct-download capability for all documents.
 - b. After re-evaluation of the short-term goals and necessary changes to the Mexican system, APHIS will consider removing the need for original documentation at presentation of animals at the border.

The US BNC also holds monthly phone calls with the USDA Veterinary Services staff
 One special call was held to discuss the IT issues at the SBP related to general IT issues related to data sharing and electronic documents acceptable to both sides

In summary – the two major issues for 2019 were E-data processes and Creation of a Fever Tick Buffer zone on the Mexico side of the Rio Grande.
 Next formal meeting will be Feb 2-4 in San Antonio

REPORT OF CATTLE ID SUBCOMMITTEE

The Cattle Identification Subcommittee met Tuesday morning, October 29th. We heard presentations from David Moss of the Canadian Cattlemen's Association about their Traceability Program and changes they are undergoing. Chelsea Good from LMA summarized their listening sessions from the past summer. Drs. Sarah Tomlinson and Aaron Scott from AHPIS/VS discussed ongoing changes and improvements to MIMS and VSPS, the status of identification of Mexican cattle that are imported into the USA, and the issues surrounding USDA's decision to pause the timeline for transition to mandatory EID. Robert Bailey from Datamars and David McElhane from Allflex USA discussed ultra-high frequency and low frequency technologies, their pros and cons, and new tools that we may see in the future. We heard updates on the traceability pilot projects from Drs. Justin Smith from Kansas, Dr. Mike Short from Florida, and Savannah Barksdale from Texas Cattle Feeders Association. Five resolutions were proposed.

1. Backup Identification of Cattle in Commerce

The United States Animal Health Association (USAHA) urges the United States Department of Agriculture and State Animal Health Officials to work with livestock exporters to ensure a system is in place to allow for a backup identification system for animals being exported to account for when official identification is lost. The resolution passed.

2. EID Transition Resolution

The United States Animal Health Association (USAHA) urges USDA/APHIS/VS to reinstate their timeline to transition to Electronic ID as it was announced. If that is impractical at this time and the continued issuance of NUES tags for another year is necessary, USAHA urges USDA/APHIS/VS, State Animal Health Officials, and livestock industries to move as quickly as possible to continue the momentum toward Electronic Identification and to work together to institute a modified transition timeline with the same end date of January 1, 2023 and the extension of NUES tag distribution being no more than 12 months.

The United States Animal Health Association (USAHA) urges Secretary Purdue, House and Senate Ag Committee Chairs, Office of Management & Budget (OMB), Department of Homeland Security (DHS), State Animal Health Officials, and livestock industries to support the institution of the timeline to transition to electronic identification as a matter of national priority to safeguard animal agriculture. The resolution passed.

3. No Cost Share Resolution

The United States Animal Health Association (USAHA) strongly urges USDA/APHIS/VS to discontinue the distribution of NUES tags as quickly as possible and utilize available funding for infrastructure development and expanding access locally for small producers to purchase RFIDs. USAHA further urges USDA/APHIS/VS to avoid "cost-share" or "voucher" programs which would create additional administrative challenges for state animal health officials and magnify the frustration and confusion for producers and industry stakeholders. The resolution passed.

4. Technology Neutral Resolution

The United States Animal Health Association requests that USDA/APHIS/VS recognize and support the concept of dual frequency tags as being consistent with USDA's stated goals of supporting technology neutrality. Dual frequency is currently the best option for technology neutrality. USDA should support all industry efforts and current systems and encourage further development and approval of dual frequency devices. Additionally in the event of cost sharing of tags they include and even prioritize dual frequency tags in the process. The resolution passed.

5. International Import Information Resolution

The United States Animal Health Association requests the United States Department of Agriculture, Animal and Plant Health Inspection Service, Veterinary Services to 1) amend the language in 9 CFR § 93.405 to require that every imported livestock animal travel with an official certificate of veterinary inspection containing comprehensive traceability information, including complete individual official animal identification and accurate consignor and consignee physical addresses; and 2) transmit a copy of the certificate of veterinary inspection to the state animal health official of the animal's destination state within twenty-four hours of the import. The resolution passed.

REPORT OF THE SUBCOMMITTEE ON BOVINE VIRAL DIARRHEA VIRUS (BVDV)

Chair: Shollie Falkenberg, IA
Vice Chair: Jamie Henningson, KS

No committee roster required on subcommittee reports!

The USAHA subcommittee on BVDV met on October 28, 2019 at 3 pm. There were approximately 30 people present at the session and the topic for this year's meeting was focused on BVDV control. Three presentations were given; 1) Dr. Charles Fossler from USDA-APHIS National Health Monitoring Service on the NAHMS Beef 2017 Cow-Calf Study: BVDV Results , 2) Dr. Andy Schwartz from Texas Animal Health Commission on BVDV Control Program in Texas, and 3) Dr. Frank van der Meer from the University of Calgary on BVDV eradication, 'Canadian' perspective.

Presentations:

Dr. Fossler provided an overview of the NAHMS 2017-2018 Beef Cow survey, which is the 4th beef cow-calf survey with the other surveys taking place in 1992, 1997, 2007, and the most recent in 2017. Twenty-four states participated with selection being random. Free BVDV testing was offered as an incentive for the entire Spring calf crop similar to what was offered in 2007. The results presented were preliminary and will be published officially by NAHMS at a later date. Results observed between 2007 and 2017 were compared with the biggest difference being in the lack of uptake in the number of producers utilizing the free BVDV testing. While there was much lower uptake in testing, the number of positive herds was similar between 2007 and 2017 and the prevalence within herd was also similar. While previous years, vaccine usage was evaluated, new information this year was the type of vaccine used. The preliminary data would suggest that more killed vaccine is used in the cow-calf segment. Overall, the take home message was that more producers questioned in 2017 were utilizing BVDV testing and vaccines than those producers in 2007, and of those producers vaccinating, more were using killed vaccine. Again, these results were considered preliminary and were not statistically different.

This transitioned into Dr. Schwartz providing a perspective of the BVDV Control program efforts in Texas. Dr. Schwartz gave an overview of the reason the control program was considered, based on input from producers concerned about PI calves being dumped back into the market. The major reason for considering a control program was to develop a program against buying these calves. The initial rule put forward to make BVDV a reportable disease did receive comments supporting that BVDV is important, but the majority of comments received did not support the initial rule put forward. The initial rule was pulled down and a new rule was drafted to address the main concerns. These concerns were if BVDV is reportable and made actionable, that testing would actually go down, the program would create a burden to report, there should be monetary incentive if going to make reportable, concern with picking up vaccine virus, cost of eID to tag the PI, and concerns that this program would go down the same path of other programs and would go to herd of origin and would restrict the herd. The next draft of the rule requires that if the seller has a PI, that they must disclose the PI status to the buyer either at the time of purchase, or prior to selling. This rule is currently out for comment.

Dr. van der Meer wrapped up the presentations to provide an overview of BVDV control from a Canadian perspective. Dr. van der Meer gave an overview of the path they are taking to control BLV and suggested that this path might be a template for BVDV control as well, but commented that currently there is no official BVDV control program in Canada. Lessons learned from the BLV control program were that education was key prior to initiating the control program. 4 years of education had been implemented prior to the start of the BLV control program. It has been demonstrated that showing the impact of the control program is instrumental and if an investment is necessary, what is the benefit. Based on prevalence surveys, similar results were observed for PI prevalence as compared to the US, and >90% of Canadian producers claim to vaccinated replacement heifers, and the reason to vaccinate was to prevent a "wreck". There is still concern that with the improvement in BVDV vaccines, that there was been no improvement in BVDV prevalence.

OTHER NOTES:

The presentations were followed by Will McCauley asking about the feasibility and achievability of being able to have a large enough source of FBS that is BVDV PCR negative for vaccine manufactures. This question was posed based on the USDA draft memo 590 and there is concern that not enough BVDV PCR negative FBS would be available and could cause shortages in vaccines if this is implemented. Dr. Kirkland, Ferro and Joe Huff from Colorado Serum Company provided commentary and there is concern that this rule may cause unintended consequences.

Dr. Falkenberg asked about the differences in BVDV detection methods and the consistency in results between the methods. Others have observed similar trends and this may be evaluated further.

The meeting was adjourned at ~5:15 pm.

This concludes the report of the BVDV subcommittee.

REPORT OF THE SUBCOMMITTEE ON TRICHOMONIASIS

Chair: Carl Heckendorf, CO

Vice Chair: Jim Logan, WY

The Subcommittee met on October 28, 2019 at the Rhode Island Convention Center in Providence, Rhode Island, from 1-3 pm. There were 28 members and 1 guests present.

Subcommittee Mission Statement

The purpose of the subcommittee on Trichomoniasis is to facilitate communications between key stakeholders and the United States Animal Health Association in an effort to provide recommendations towards the prevention and control of *Tri-trichomonas foetus* from the US cattle population. The subcommittee will also provide a forum for discussion of interstate regulations, research, and future harmonization efforts.

Call to order: Dr Carl Heckendorf called the meeting to order at 1 PM on October 28, 2019. There were 28 subcommittee members in attendance.

The above mission statement was discussed and amended as shown. The subcommittee voted to amend the mission statement.

General discussion on Trich prevalence, industry, and regulatory needs in the US was held.

Action items identified at 2018 meeting were reviewed.

1. State Veterinarians should meet annually with their laboratory directors to discuss sample submission and test protocols.
2. State Veterinarians should share a list of the approved Trich testing labs in their state with other State Veterinarians. Protocols for approving labs should be included on the list.
3. Subcommittee should work with AAVLD to determine the laboratory performance testing process for individual Trich PCR.
4. States should have a veterinarian certification program for veterinarians performing individual PCR tests
5. State Veterinarians should work with their laboratory directors who will then contact the laboratory director in another state (state of origin) to determine if the testing protocol was sufficient to meet import requirements for an official test.
6. Require accession numbers and laboratory information on CVI.

Discussion of need to continue the subcommittee: It was determined that the subcommittee should continue.

The following new action items were identified:

- 1) Investigate other transfer media
- 2) Investigate other/new collection techniques i.e. preputial/penile swab
- 3) Investigate the role of the female in disease propagation
- 4) Maintain harmonization among states
- 5) Testing lab reporting to origin state SAHO

Committee Business and Resolutions

There was no new business and no resolutions were presented.