

Brucellosis Coordination Team meeting

November 12, 2014

Worland Community Center Complex, Worland, WY

I. Welcome and Introductions

Frank Galey (FG): Welcome to Worland. Members and guests then introduced themselves.

FG: Requested WY State Vet report.

II. WY State Vet report

Jim Logan (JL): See attached report. WY currently has one domestic bison herd under quarantine, originally identified in Nov 2010. To date, one negative whole herd test achieved. Additional testing on-going. Need three negative whole-herd tests before being released from quarantine. The herd owner is cooperative.

Thach Winslow (TW): Herd management has changed, now does fall weaning, which is helping with testing.

JL: Last Friday (Nov 7) a single cow of a shipment of 32 animals had a “positive” result on a screening test at a local auction mart. The cow had a MT tag, had previously been tested in UT, was owned by rancher with property in ID and WY. Another blood sample taken on Monday (Nov 10), and both samples sent to Wyoming State Veterinary Laboratory (WSVL), where all results were negative.

Rob Hendry (RH): This episode shows that WY surveillance system works for early detection, is glad that the situation is “cleared up”.

JL: Also points out that continued education of public and producers is required to ensure that people don't become complacent.

FG: This also helps to assure trading partners that the WY surveillance system works.

Dr. Bill Williams (BW): Any hypothesis on why there was a false positive reaction?

JL: Hard to say, there could have been contamination from other bacteria. The serum was cloudy and may have given the appearance of agglutination.

TW: This particular cow did not have a Brucellosis vaccination tag (but did have a tattoo), so ranch of origin was not known. This cow had a lot of travel history, and if it had been required, a trace-back / trace-out would have been problematic. Nevertheless, the state vet's office will continue the process as a “dry run” to assess capacity to do traces.

RH: Do you go back to brands in such a case?

JL: Yes, the brand inspector was called. If we had needed to trace we certainly would have included brand inspection records.

III. Update from other States

Ryan Clarke (RC): Update on other states. MT has one bison herd under quarantine. It's a large herd, so whole herd testing takes about 6 weeks to accomplish. Still having some reactors, i.e. there has not been a whole herd negative test yet. A couple of other MT cattle herds have recently been released from quarantine. ID has one cattle herd under quarantine which is about to do its third (and hopefully final) whole herd test. ID also has a bison herd under quarantine with one negative whole herd test that is to be tested again soon.

RC: MT in the middle of a five-year elk surveillance project to identify herd movement. They have used about 30 radio collars/yr. Herds on the edge of the DSA to guide where infected elk are. Seroprevalence has varied – was from 0 to 3%, now finding pockets with up to 12% seroprevalence. As a result of finding positive elk, Central Gallatin County has been added to the MT DSA. Not sure what was used as a “threshold” to alter the DSA.

JL: What should a threshold be for changing the DSA? It would be difficult to find a threshold and set limits.

IV. Newly completed / revised Brucellosis affected herd plan for cattle and bison

JL: Test and removal Herd plans for Brucellosis affected cattle and bison herds with quarantine release protocol. The cattle plan is finished, and will be tailored to individual herds as needed. The bison plan is close to completion, and will also be tailored to herds individually. The affected herd plan is in place for any affected herd owner to operate under in order to understand the testing protocols and scheduling as well as the movement controls that are imposed during quarantine.

JL: Ideally, producers would use RFID tags, which would make testing/processing of cattle much easier.

Joel Bousman (JB): Where are we with APHIS in terms of funding for herd depopulation, if necessary. It is difficult and financially devastating if cattle need to be kept in a pen and fed for a year.

JL: WY legislature passed legislation that preserved a fund allowing for indemnification for individual animals for Brucellosis, Tuberculosis, and Scrapie. Livestock Board has rules in place to do so, and the fund has been used to pay for about 5 head of cattle in the past few years. Whole herd buyout would not be possible with the current WY fund.

RC: APHIS is focused on testing out herds, rather than whole herd depopulation. Unlikely to do a whole herd buyout, but that option would not be “off the table”.

JL: APHIS has published a new Brucellosis rule, which is now open for public comment.

JL: It would be good to have a fund available for quarantine expenses, which would cover putting cattle in a feedlot, on quarantined pasture, etc.

FG: this discussion should be held with Governor, the new Senator on the BCT, and Rep Sommers.

JB: It would be good to have a mechanism in place to pay for quarantine, as there is nothing currently available for these expenses, which can be considerable.

John Duncan (JD): Need to re-think precluding herds from going out to summer pasture, since only aborting females present any risk to other animals.

JL: Need to consider other variables as well, such as: When is calving complete? What are the opinions of co-grazers? There is flexibility in the quarantine release plan which allows producer to work with state vet, APHIS, Forest Service, and others to release herds to graze.

TW: Feeding and quarantine, rather than depopulation would be popular with welfare groups.

JB: Quarantine requirements are such that public grazing is difficult.

V. Voluntary surveillance efforts in Bighorn and Sheridan Counties

JL Voluntary Surveillance in Bighorn and Sheridan Counties. After the finding of elk positive for Brucellosis in hunt area 40 in 2012 and 2013, the Livestock Board asked cattle producers to participate in voluntary surveillance of cull cattle and cattle sold for breeding purposes. In the fall of 2013, there were “decent” numbers of cattle tested, but since then test numbers have declined. To date we have tested (cumulative) fewer than 7000 head of cattle. The Billings markets have tested the majority of cattle sold through the market system. Surveillance is necessary for trading partners – other state vets are concerned about Brucellosis in the elk in the Bighorns, but have not applied any sanctions yet. Dr. Logan is concerned about the lack of surveillance and will advise the Livestock Board of exact numbers tested. As yet, State Vet is not advocating for a larger DSA. His main concern is to protect herds within WY, especially if the disease were to spread within a herd. If a positive cow were to be found from outside the DSA, other states would likely impose additional testing of WY cattle.

BW: How many cattle are present in those counties?

JL: Sheridan County has about 45,000 adult cows, and Bighorn County has about 35,000 adult cows. Bob Meyer is currently studying the numbers and writing a report, which he will share with Bruce Hoar. There are many herds from which no samples are received. **A press release from the BCT may help increase awareness of cattle producers.** Problem is trying to reach producers that don't respond.

VI. Report on Research Projects

FG: Senator Enzi has helped get wording into the Farm Bill related to research needs. Now the issue is to get appropriations for the bill.

Will Laegrid (WL): Presented reports for Gerry Andrews, Jeffrey Adamovich, and Brant Schumaker.

Andrews: Search for new vaccine. Dr. Andrews has identified at least 10 candidate genes that are expressed during an infection. At least 5 of these are particularly promising and have been evaluated in a mouse model. Andrews has seen up to 100-fold reductions in bacterial counts in spleen tissue using one particular protein, which could mean good progress toward a subunit vaccine. More studies are planned, including a pregnant mouse model which will be used to evaluate target vaccines.

Andrews: Lateral flow device. This potentially could be used as a chute-side test with very rapid results. The sensitivity and specificity was only moderate in cattle. The same test was quite sensitive in elk, and specificity was also quite good. Further development work is ongoing.

Schumaker: Working on a sensitive antemortem test for infection (not exposure). Currently is performing a study of the genome of Brucella strains to identify targets for test development, with the goal of developing a PCR (polymerase chain reaction) platform for a sensitive test.

Adamovich: Multidose RB51 immunity in cattle. Dr. Adamovich addresses the question, what happens if we give multiple doses of RB51 vaccine to cattle? In his study, groups of heifers received either 0, 1, 2, or 3 doses of RB51. The cattle were bred and sent to Ames, IA where they were challenged with a virulent strain of *Brucella abortus*. In the control group (i.e. not vaccinated), only 1 out of 4 animals delivered a live calf, while 4 out of 7 of those given a standard calfhooed vaccination had a live calf. If animals received a calfhooed vaccination followed by a booster after breeding, 7 of 7 had a live calf, and if given a calfhooed vaccination, another vaccination pre-breeding, and a dose after breeding, 5 of 5 delivered a live calf. This shows that additional vaccinations can protect against abortion and pre-mature birth. Tissues are currently being tested to determine if there is also protection from infection. Dr. Adamovich has shown increased T-cell immunity in those with additional vaccinations.

Charles Price (CP): Personally, I perform calfhooed vaccination, vaccinate a second time before breeding, and do a whole herd adult vaccination every three years when cattle are pregnant and have had no problems (such as abortion) so far.

JB: Herd plans from State Vet propose calfhooed / pre-breeding / adult vaccination. How long does immunity last?

WL: Good question. One thing we don't know is how to assess protection. Antibody levels don't necessarily indicate that cattle are protected.

JL: Steve Olsen at Ames studied protection of RB51 versus Strain 19, and found that peak protective levels occur at about 3 to 4 years postvaccination and then levels drop over time. Dr Olsen's recommendation has been to adult vaccinate at 3-4 year intervals.

Group: Need to improve communication to vets / producers. How would this best be accomplished? A good idea is to resurrect the "Communication Group" to get news out about adult vaccination and need for surveillance. Talbot and Galey will work on resurrecting that group.

JB: Vaccination in the spring before turnout would be convenient for producers.

JL: Bleeding and testing in the fall, prior to calving (and if infected, aborting) can greatly reduce the risk of disease spread. So, while it is not the most convenient time to be collecting samples, it is the preferred time to do so.

Danelle Peck (On phone): Presented an update of economic studies related to Brucellosis and the cost of prevention activities. Handouts summarizing some of her work was distributed to those in attendance.

VII. National Academy of Science study on Brucellosis in the GYE

RC: A previous study was performed by the NAS in 1997, "Brucellosis in the Greater Yellowstone Area". (This book is available at: http://www.nap.edu/openbook.php?record_id=5957&page=R1) APHIS has asked NAS to update the report, the NAS board has approved it, and a draft statement is being prepared. Lots of new information has been produced over the past 17 years, and it is time to update this report. As far as timeline, RC expects a statement of work to be done by the end of the month, publication will likely take a year or more.

FG: We should invite someone from NAS to the next BCT meeting to give an update.

RC: NAS produces the report, the National Research Council will review it. This is not original research, only recommendations, i.e. a literature review. The report will look at missing technologies, as well as what might work. Policy issues will also be addressed.

VIII. Yellowstone Park EIS update

Bruce Hoar (BH): John Keck and Dave Hallac, from the Park Service were unable to attend, but Keck sent an email related to the upcoming EIS. "Under an agreement with the State of Montana, Yellowstone, and Governor Bullock's Office will co-lead an EIS to review bison management. The purpose is to conserve wild herd of bison and minimize transmission of brucellosis to domestic livestock. Yellowstone is in the process of finalizing a Notice of Intent (NOI) to prepare the EIS. Once published in the Federal Register, the NOI will begin a 90-day public scoping period with public meetings held in several areas throughout the ecosystem. Wyoming has been invited to be a cooperator and has declined. The park is following best available science in pursuing management strategies. Full eradication is not considered viable given existing vaccines and delivery technologies. Strain 19 has not proven effective as there is no measureable benefit and spatial distribution has increased. Bison have never transmitted brucellosis to cattle. There have been around 20 elk to cattle transmissions. Brucellosis affects elk in an area of over 20 million acres with only 10% of those acres being Yellowstone. Seroprevalence rates in Yellowstone range from 2-7% compared to other areas with rates as high as 25%."

JL: After hearing about the study, it was decided that participation by WY State Vet would not be warranted, but that MT and YNP would keep Wyoming apprised of progress.

Scott Talbot (ST): We (WY Game and Fish) will be able to comment on the EIS, once it is written. Also didn't see benefit to being a participant in the process.

IX. Update on other State's import requirements for GYA cattle

JL: Texas requires that all sexually intact female cattle imported from a DSA to be calfhood vaccinated, have a Certificate of Veterinary Inspection, and have an entry permit issued by Texas Animal Health Commission (TAHC). All breeding bulls and females (other than for slaughter) will be tested for Brucellosis 60 to 120 days post entry, and heifers will be tested 30 to 90 days after calving. TAHC pays for required testing done in Texas. Is this overkill? Any state can do what they want in order to protect their cattle industry regarding import requirements.

JL: North Dakota, all sexually intact animals greater than 18 months of age from Hot Springs, Park, Big Horn, Washakie, Teton, Fremont, Sublette, and Lincoln counties must be tested for Brucellosis within 30 days prior to import. This is an area larger than the defined DSA.

JL: This illustrates the essential nature of the DSA and rules governing movement of cattle in and out of DSA. This helps to bring about uniformity in movement requirements.

RH: There used to be a market whereby 2 to 3 year old open heifers would be sold to Texas for fall-calving season. These animals will now require additional tests, and it may not be worthwhile.

JL: Remember that cattle leaving a DSA, even if going to MT or ID DSA, need to be tested.

X. Wyoming Game and Fish Update

Brandon Scurlock (BS): Surveillance will occur on 16 feedgrounds, and throughout the rest of the state this winter. Based on data from 500 elk collar-years, G&F has updated seasonal elk ranges. Various ranges are reported – Winter, SSF (Spring, Summer, Fall), CRUWIN (Crucial Winter Range), PAR (Parturition – defined as May 15 – Jun 30). Elk are in a very large area during parturition. How do you manage that? May 31 = median PAR, May 20 – Jun 10 = 75% of PAR. BS then presented a series of maps displaying the revised elk PAR range.

ST: Currently, G&F does not have PAR data on Big Horn elk, but do have migration data.

Terry Pollard (TP): Some of the VIT's (vaginal transmitters) are showing up way up high in elevation – why?

BS: Migration! In low snow years, elk will still be at high elevation and calve there.

RH: Would be good to add where seasonal grazing allotments are on BS maps to get a better idea of where greatest risk for transmission to cattle is.

BS: Ballistic Elk Vaccination Program status. SolidTech Animal Health no longer produces bio-bullets. Price for G&F to purchase everything needed to produce bio-bullet would be ~ \$400,000 – \$500,000. BS anticipates that G&F has enough on-hand to vaccinate all calves on feeding grounds during winter 2014-15. USDA-APHIS-VS is developing a prototype biodegradable marking dart for delivery of lyophilized vaccine. Researchers think they may be able to demonstrate effectiveness of delivery on feedgrounds in 2015-16.

ST: Highly unlikely that G&F will pursue purchase of bio-bullet production capability

JL: Vaccination efficacy has recently been shown to be low, so is it worth it?

ST: Chronic Wasting Disease has interrupted G&F ability to conduct research on Strain 19 in controlled studies. May be worth re-implementing a study, as Strain 19 is likely to reduce abortion in elk.

JB: Does G&F have any plans to do test and slaughter again?

ST: No, no plans to re-do test and slaughter. G&F will continue to do elk surveillance around the state.

TP: Is there any kind of threshold seroprevalence at which G&F would consider test and slaughter?

ST: No, there is no threshold level at which G&F would go in and remove elk

Andrea Erickson (AE): is the movement of elk changing? What influence does that have?

BS: Don't have the data available to answer that question. Need good GPS data.

RH: Is it possible that predators are more important in elk movement than oil and gas development?

AE: Predictive models of elk movement would be very useful.

BW: Elk movement is fluid. Snow fall, weather, food availability are all factors that determine where elk are.

CP: Do elk cows return to the same area year after year to calve?

BS: Yes, they tend to return to a certain area on a yearly basis.

BS: BMAP (best management action plans) were completed and updated in 2011, therefore they are due for another update in 2016.

Hank Edwards (HE): Over the past 22 years, over 11,450 elk blood samples have been examined for presence of evidence of exposure to Brucellosis. In 2012, Hunt Area 40, 2 elk were positive for Brucellosis. In 2013-14, G&F took steps to increase sample collection in that area (4 additional field techs), as well as increase sample quality (centrifuges, drop off points in the field), and rapid diagnostic turnaround time (previously used to batch all samples, now run them weekly). Over 16,500 blood kits sent out to Big Horns in 2013-14. In 2013, 486 useable samples, and so far in 2014, 427 samples have been tested. A total of 7 elk samples have tested positive for Brucellosis from 2012-2014 – 5 in Hunt area 40, and 1 each in hunt areas 39 and 41. All positive elk were close together (within ~10 miles?)

JL: What is the total number of elk in that herd unit? Has MT been notified?

HE: About 5,400 elk in that herd unit. Some of the elk from areas 39 and 38 migrate to MT every year, and yes, MT knows about these results.

FG: What data is needed going forward? Where do these elk go?

ST: This herd unit has relatively good data. Collars on some elk would certainly help. Surveillance activity has greatly increased, now G&F is able to identify locations within a couple of weeks.

JL: Thank you to G&F for increased surveillance and enhanced reporting. An important data point that is missing is how does elk migration overlap with cattle locations? Goal of State Vet is to educate producers, reduce chance of overlap with high-risk elk. Could try to get location information through brand records, but that would be challenging.

ST: G&F will try to provide elk distribution data.

FG: How can we reassure trading partners? Will voluntary surveillance be enough?

JL: Need to have a frank discussion with Livestock Board about concerns related to surveillance. Again, JL is NOT advocating for a larger DSA. Livestock Board is unlikely to make any abrupt comment, they will probably wait and see what happens during the remainder of the elk hunting season / surveillance period.

RH: The whole area needs to know about the risk of spread. Word of mouth is pretty effective. Need all vets/producers in the area to be aware of the situation.

JL: Need to have several meetings (five or six, at least) in an area to get awareness to a good level.

JB: Important that producers know about what it means to be within a DSA, and the impact that has on their ability to do business.

JL: Slaughter testing for Brucellosis has decreased, nationwide. Now, a lot of cattle sent to slaughter are never tested for Brucellosis.

BW: Also, it would be good to have factsheets available to distribute to producers

FG: Requests that ST and HE give this group any data on new cases as soon as possible. Based on that information, FG and BCT will move to legislature as requested.

ST: No culture of *Brucella* from any elk in this region so far.

FG: Would it be worthwhile to capture and culture elk in the Big Horns?

ST: Need to think that question through, but that could be a possibility.

FG: Think about capturing and culturing elk at spring meeting. Put this ideas forward to legislature. Bring HE to spring meeting to discuss results.

XI. USDA-APHIS-VS Risk Assessment

Katie Portacci (KP, by phone): Risk Assessment of exporting *Brucella* infected cattle from the DSA. This study was in response to the TX requirement (stated above) and possible action by other states doing the same. Dr. Portacci presented the methods used in their risk assessment, including: What is the probability of a DSA herd having infected cattle? How many herds, and how many animals within a herd? What is the probability of infected cattle leaving the DSA, undetected? An assumption is that compliance with movement testing is close to 100% (but realize that 40% of feedlot shipments are not tested). One result from this model is that 1 shipment every 37 years with an infected animal would go undetected. Post-shipment testing reduces risk by at least 3-fold. Another question posed by this project was: How “big” would an outbreak of Brucellosis need to be to equal the money spent on post-movement testing? The answer is in the 100’s of millions of dollars. It costs about \$4.6M/yr to test all breeding animals leaving DSA. Conclusion is that it is NOT cost-effective to test animals coming out of the DSA as is currently done by TX. Results are favorable to the DSA’s, but the threshold of risk varies between states.

JL: The WLSB will be considering some proposed Brucellosis chapter 2 rules revisions at an upcoming meeting. If the board approves the proposed revisions the rules will go out for public comment in early 2015.

FG: That concludes the formal portion of the meeting. I propose that the next meeting be held in Pinedale, WY in April, as scheduling allows.

AGENDA ITEMS FOR SPRING MEETING:

Game and Fish surveillance results

Livestock Board recommendations

NAS study on Brucellosis in the GYE

ACTION ITEMS FROM THIS MEETING

- 1. Fund to reimburse producers for quarantine expenses**
- 2. Resurrect "Communication Group"**