

REPORT OF THE COMMITTEE ON BRUCELLOSIS

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Vice Chairs: Bill Barton, ID; Tony G. Frazier, AL

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The Committee met on October 21, 2013 at the Town and Country Hotel, San Diego, California from 1:00 to 5:30 p.m. There were 48 members and 77 guests present. Introductions of Vice Chairs and Subcommittee Chairs were made. An overview of the 2012 meeting and resolutions were given.

Presentations and Reports

Dr. Phil Elzer presented the Scientific Advisory Subcommittee Report, which is included at the end of this report.

Dr. Joe Corn presented the Feral Swine Subcommittee Report, which is included at the end of this report.

Dr. Marty Zaluski presented the Greater Yellowstone Area (GYA) Report, which is included at the end of this report.

Dr. Lee Ann Thomas presented the National Brucellosis Program Update.

Montana Report Summary

Dr. Marty Zaluski, Montana State Veterinarian

Brucellosis detections: Two cattle herds located in the Designated Surveillance Area (DSA) of Montana were detected during fall testing in 2013.

- On September 25, 2013, a two-year-old cow in a Madison County DSA herd cultured positive for *B. abortus*.
 - The culture positive animal was detected through pre-slaughter testing as required by Montana regulations. She was not pregnant and had a negative test in July 2012. A whole-herd test revealed two more reactor animals in a test of over 1,100 cattle for a herd infection rate of 0.27%. All three animals were managed together and most likely represent a single point exposure.
- On October 4, 2013, DOL received positive *B. abortus* culture results on a seven-month-old bull from a second herd. This herd is located in the DSA of Park County. The bull was the only non-negative animal in a whole-herd test of 550 animals which would calculate to a herd infection rate of 0.18%. The bull's dam was tested annually since 2010 and remains negative after five tests (2010, 2011, 2012, and two tests in 2013).

B. canis was isolated from a two-year-old Labrador Retriever that presented for discospondylitis. The animal was adopted from a rescue facility as a neutered puppy. No link to wild elk or bison could be established.

Designated Surveillance Area (DSA) Compliance Assessment

Nearly 280 herds use the DSA at some time of the year. One-hundred-ninety-two (69%) herds are resident, while 88 (31%) herds use the DSA for only part of the year (typically summer grazing).

Montana Department of Livestock (MDOL) conducted a compliance assessment with DSA regulations in the fall of 2013. The assessment found that 236 herds (84%) submitted at least one brucellosis test during the last fiscal year; while 44 herds (16%) submitted no brucellosis tests (figure 2). As expected, herds that did not participate in testing tended to be smaller, and therefore, the 16% of non-participating herds only represented 7% of DSA cattle (figure 3).

Of the 44 non-participating herds, 17/44 herds did not sell or move test-eligible animals, no longer used the DSA or sold all their animals. Therefore, these 17 herds were in compliance even though they did not test any animals. These herds have an average herd size of 40 animals.

Herds out of compliance (sold or moved test-eligible animals that were not tested), numbered 27 herds (9.6%) of the total DSA herds. These herds numbered 4,323 cattle. The majority of the non-compliant herds (22/27) were due to an error by market personnel who: a) did not check the market computer for flagged brands that denote that a brand requires testing, or b) superseded the flag with their own assessment of grazing location. This error has since been corrected. Five herds representing 1,372 animals were out of compliance for other reasons.

Brucellosis Rule Changes

- Testing in the Designated Surveillance Area
 - Breeding cattle out of the Designated Surveillance Area must be tested for brucellosis regardless of age. Non-breeding cattle tested at 12 months and older.
 - Clarified that DSA cattle must be tested for brucellosis prior to shipment to slaughter (pre-slaughter testing) to ensure that they are not missed by the scaled down national MCI program.
- Testing for dairy goats:
 - Removed the requirement for brucellosis testing of dairy goats if imported for exhibition and not originating from a surveillance area for brucellosis (DSA).

Idaho Report Summary

Dr. Bill Barton, Idaho State Veterinarian

The Idaho State Department of Agriculture (ISDA) continues to work with livestock producers throughout the state to address the risk of transmission of brucellosis from infected elk to cattle. Two livestock herds that were identified in 2012 as affected with brucellosis remain under quarantine. A herd of domestic bison located well within Idaho's DSA was determined to be affected with brucellosis following testing due to known interaction with elk. The herd was put under quarantine and a herd plan implemented. The herd has completed three whole herd tests and at least one reactor was identified on each of the tests. Heifer and bull calves from this herd are being fed to slaughter only in an Idaho approved feedlot. The herd will remain under quarantine until three (3) consecutive negative whole herd tests have been achieved.

A small beef herd was identified in April, 2012 as affected with brucellosis. The herd was located just outside of Idaho's Designated Surveillance Area (DSA) and prompted expansion of the DSA. The herd was put under quarantine and a herd plan implemented. The herd had undergone two consecutive negative whole herd brucellosis tests however another reactor was identified on the post calving whole herd test. The herd will remain under quarantine until three consecutive negative whole herd tests have been achieved. All bull calves from this herd are castrated and all heifer calves are spayed.

In September, 2012, USDA-APHIS-VS completed a review of Idaho's Brucellosis Management Plan (BMP). Several recommendations were made for enhancement of Idaho's brucellosis management activities and action has been taken on all recommendations.

The review recommended expansion of Idaho's DSA. Prior to the review, plans were already underway to expand the DSA to include the area where the affected beef herd was identified. The 2013 Idaho Legislature approved expansion of Idaho's DSA to include the entirety of Fremont County in the DSA.

The review recommended that the ISDA work with Idaho Department of Fish and Game (IDF&G) to enhance surveillance of wild elk in areas around the DSA. The ISDA holds a brucellosis coordination meeting at least annually with the IDF&G to discuss brucellosis activities. Enhanced hunter surveillance was conducted in the fall and early winter on 2012. The coordination committee adopted a rotating scheme for hunter surveillance in game management units outside of the current DSA. The IDF&G will conduct live animal capture and testing of wild elk when feasible. Both agencies will continue to work aggressively with livestock producers to implement actions to prevent elk/cattle interaction.

The review also recommended that the ISDA work with the USDA to implement pre-slaughter testing of all DSA cattle at Idaho livestock markets. Markets that receive cattle from Idaho's DSA are required to test those animals for brucellosis. The ISDA has been closely monitoring testing compliance at the markets and has been working to identify direct to slaughter sales at ranches to insure they are pre-slaughter tested as well.

Enhanced enforcement of movement testing and identification of DSA cattle was recommended by the review team. Unlike Wyoming and Montana, Idaho does not have county to county brand inspection requirements for movement. In order to better enforce the current testing requirements for cattle leaving Idaho's DSA, the ISDA is

proposing a change to Idaho's Rules Governing Brucellosis that will require cattle producers utilizing Idaho's DSA to obtain a permit from the ISDA prior to movement out of the DSA to other areas of Idaho. This will allow enhanced enforcement of testing requirements for cattle leaving the DSA. Numerous negotiated rulemaking meetings were held with affected producers and the Idaho Cattle Association (ICA) regarding the rule change and producer support for the change was widespread. The rule change will require the approval of the 2014 Idaho Legislature.

Finally, the review team recommended that the ISDA increase public outreach regarding brucellosis. Multiple meetings were held with the Idaho Cattle Association general membership. The ICA appointed a producer committee to assist with enforcement of testing requirements and provide input on enhancement of Idaho's brucellosis management plan. Numerous local meetings with producers in and around the DSA were held. The IDF&G is assisting with outreach to hunters and landowners.

The ISDA and Idaho's cattle producers remain committed to managing appropriately to prevent the risk of transmission of brucellosis from wildlife to cattle. Industry support and assistance with enforcement of Idaho's brucellosis testing requirements for cattle leaving our DSA are paramount to our success. That support has never been greater as we work to ensure that the brucellosis risk in Idaho is managed appropriately.

Wyoming Report Summary

Dr. Jim Logan, Wyoming State Veterinarian

Wyoming currently has one herd of domestic bison under quarantine for Brucellosis. This herd was initially placed under quarantine in the fall of 2010 and it has been verified that the source of infection is wild elk. All suspect and reactor animals found on any herd test are removed direct to slaughter or strict isolation for terminal feeding and conditioned for slaughter. This herd is within the boundaries of Wyoming's Designated Surveillance Area (DSA).

In September 2012, USDA-APHIS-VS conducted a review of Wyoming's DSA activities to assess the effectiveness of our surveillance and prevention efforts. The key strengths recognized were 1) good testing and surveillance in livestock, 2) good movement documentation, monitoring, and documentation through brand inspection, 3) buffer area around the DSA, and 4) good record keeping and availability. The review team offered five recommendations: 1) development of a formal template for written herd plan for affected herds, 2) increase surveillance on slaughter cattle leaving the DSA, 3) continue wildlife surveillance, 4) continue producer education, and 5) increase the number of herd plans. Even prior to the review, we had begun requiring testing of direct to slaughter cattle due to the decrease in the national slaughter surveillance system. We have completed a written template for affected herd plans and have continued producer education efforts and development of herd plans based on risk assessment. The Wyoming Game and Fish Department (WGFD) has increased its' wildlife surveillance efforts and risk mitigation efforts.

In 2013, the Wyoming Game and Fish Department found two brucellosis sero-positive elk on hunter-killed elk surveillance about 30 miles outside of the DSA. This represents the first time Brucellosis has been found outside the boundaries of the DSA since Wyoming achieved brucellosis-free status in 1985. The Wyoming Livestock Board (WLSB) has responded to this finding by conducting testing on test-eligible, female cattle in two counties (Big Horn County and Sheridan County), which are in the vicinity of the elk herd unit from which the sero-positive elk were found. Testing is being done on ranches/farms and at all Wyoming markets, along with two Montana and two South Dakota markets, at WLSB expense. Additionally, risk assessments are being conducted on area herds to determine if cattle/wildlife conflict exists that could cause exposure risks. The WGFD has also increased its elk surveillance activities in the area to determine the elk sero-prevalance rate in the elk herd unit. The WLSB will utilize cattle and elk surveillance data and results to determine any rule changes of DSA boundary change proposals.

Wyoming requires calfhood vaccination statewide for all heifers that will remain in a breeding herd. All sexually intact female cattle that inhabit the DSA must be calfhood vaccinated or adult vaccinated. From July 1, 2012 to June 30, 2013 (state FY2013), 218,011 female cattle/bison were Brucellosis vaccinated – this includes calfhood, yearling booster and adult vaccinations. There were 72 herds that conducted adult and/or yearling booster vaccinations during the state fiscal year 2013, which accounts for 4,239 of the total head vaccinated statewide. The WLSB has a statewide identification requirement for sexually intact female cattle 12 months of age and over to be officially identified prior to any change of ownership. Additionally, all sexually intact female cattle, regardless of age, that are in the DSA at any time must be officially identified prior to moving from the DSA.

All female cattle from the DSA sold for breeding purposes (regardless of age) and all females 18 months and over are required to be tested within 30 days prior to change of ownership, movement from the DSA, and interstate movement. Between October 1, 2012 and September 31, 2013 (Federal FY2013), 39,835 head of cattle were tested from Wyoming's DSA and the area we are currently conducting surveillance on in response to sero-positive elk previously mentioned. This figure represents cattle tested on farms/ranches, at market, and at slaughter. All cattle 12 months and over are required to be tested at Wyoming slaughter plants. Cattle numbers

that are within the Wyoming DSA total 79,200 head. We have 132 DSA Brucellosis herd plans and 43 herd plans for producers outside the DSA. Our test and identification requirements provide good surveillance, traceability and early detection. The WLSB Brucellosis requirements are well enforced through brand inspection since any change of ownership or inter-county and interstate movements must include a brand inspection clearance.

Status of the Yellowstone National Park (YNP) Remote Delivery Vaccination Program EIS

Dave Hallac, National Park Service

In 2000, the National Park Service committed to evaluating whether to implement remote vaccination of Yellowstone bison within the park for *Brucella abortus* using a rifle-delivered bullet with a vaccine payload. An Environmental Impact Statement (EIS) was prepared to analyze three alternatives: a) continue syringe vaccination of calves and yearlings periodically captured at the park boundary; b) continue syringe vaccination and remotely vaccinate calves and yearlings; and c) continue syringe vaccination and remotely vaccinate calves, yearlings, and adult females. Preliminary analyses indicate remote delivery vaccination would not achieve a substantial reduction in brucellosis prevalence at this time due to: 1) the limited understanding of bison immune responses to brucellosis suppression actions such as vaccination; 2) the absence of an easily distributed and highly effective vaccine; 3) limitations of current diagnostic and vaccine delivery technologies; 4) effects of bison nutrition, condition, and pregnancy/lactation that lessen protective immune responses from vaccination; 5) adverse consequences to wildlife and visitors from intrusive brucellosis suppression activities; and 6) chronic infection in sympatric elk that would re-infect bison. Collaborative research to answer uncertainties, improve technology, minimize adverse impacts, and lower operational costs will be an important component for developing strategies that could reduce brucellosis infection rates in the future. A final decision will be made by the Intermountain Regional Director in autumn 2013.

Mexico Brucellosis Update

Dr. Jose Alfredo Gutierrez, CGRPA, Mexico

The Campaign in Mexico has begun in 1991. The overall campaign aims to eradicate brucellosis in cattle, sheep and goats throughout the country. Aiming specifically to cattle, sheep and goats present a low prevalence. We care with the campaign: 33 million head in cattle (30.5 beef, dairy 2.5), valued in U.S. at \$19 billion. Eight million head of goats, valued at U.S. \$338 million. Sheep, nine million head, valued at U.S. \$677 million.

The campaign is operated by 8,718 people focused on the administration, operation and organization of the exercise of such a campaign.

The main strategic actions exerted by the campaign are: intensive vaccination, culling reactors to the official laboratory tests, passive and active surveillance, as well as, training.

The Campaign has the following indicators:

- Diagnostic test: Cattle 1,402,000; Goats 93,469; Sheep 106,714.
- Vaccines: Cattle 4'810,459; Goats 1'001,989; Sheep 59,083.
- National frequency of the disease in areas "A": Cattle 0.09%; Goats 0.01%; Sheep 0.04%.
- Free Herds: Cattle 3,245; Goats 134; Sheep 289.

This year has been obtained the brucellosis eradication phase in the State of Colima and the Hidalgo Huasteca's, A1 and A2 regions in Puebla and A region in Chiapas.

Elk Brucellosis Prevalence Reduction Study

Dr. Brant Schumaker, University of Wyoming – Wyoming State Veterinary Laboratory

Cattle producers and state wildlife management agencies have undertaken several management strategies to reduce the risk of elk (*Cervus elaphus*)-cattle (*Bos taurus*) brucellosis transmission in the southern greater Yellowstone area (GYA). However, cases of brucellosis continue to appear in cattle and domestic bison in the GYA, and the wildlife-livestock brucellosis interface has the potential to expand. With decreasing funding available to combat brucellosis, a better understanding of the regional cost-effectiveness of management strategies is necessary. We surveyed cattle producers in the southern GYA to determine where their cattle herds were located and whether producers observed elk overlapping with their cattle during winter months. We used this information to create a resource selection function for elk-cattle overlap. We then used the elk-cattle overlap model as an input to a risk model to estimate the number of years until a cattle case was expected. We modeled three management strategies (Test and Slaughter, Strain 19 vaccination, and low density feeding) to effect varying reductions in elk seroprevalence, thus increasing the number of years until a spillover event was expected. Next, we compared the net change in the annualized cost of a brucellosis case to the annualized cost of the management strategy. For all three management strategies, costs exceeded estimated benefits. If the maximum that society is willing to pay for a management strategy is equal to its expected benefit, none of these three management strategies should be employed. However, if society is willing to pay more for management than its

expected benefit, or if the costs of a brucellosis outbreak increase, one or more strategies may be adopted. Based upon our cost-benefit analysis, low-density feeding of elk has the least-negative net benefit and should be the top strategy chosen.

National Brucellosis Program Update Summary

Dr. Lee Ann Thomas, USDA-APHIS-VS

Since July 10, 2009, all 50 States, Puerto Rico, and the U.S. Virgin Islands have been classified as Class Free for bovine brucellosis. Late in fiscal year 2013, state surveillance identified one bovine brucellosis-affected herd in Montana. During fiscal year 2013, five bovine brucellosis affect herds – two herds (one bison and one beef herd) located in Idaho, two bison herds in Montana and one in Wyoming – were held under test and remove protocols. However, as a result of the interim rule, there was no loss of Class Free State status due to new provisions.

During fiscal year (FY) 2013, greater than 2.9 million head of cattle were sampled under the National Bovine Brucellosis surveillance program, reflecting approximately 2.9 million head of cattle tested at slaughter and approximately 164,000 head of cattle tested at market. Approximately 383,000 additional head of cattle and domestic bison were tested as a result of other surveillance activities. The primary reasons for testing on-farm or ranch includes testing for movement and sale (~44%), testing associated with MCI reactor investigations and affected herd epidemiologic investigations (~32%), herd certification testing (~19%), private sale (~13%), and testing for show or exhibition (~11%). There were approximately 3.6 million calves and approximately 19,500 adult cattle vaccinated for brucellosis and there were approximately 1,100 brucellosis certified-free cattle herds.

Since the publication of the Brucellosis interim rule in December 2010, the 60-day comment period has ended and thirty comments were received from private citizens, State agencies, industry groups, animal welfare organizations, environmental groups, and Congress. The rule has been designated as significant by the Office of Management and Budget. Additional economic analysis and civil rights impact analysis were completed and in July, APHIS provided additional information to the department regarding the changes reflected in the interim rule. The final rule remains in the departmental review process.

APHIS continues to develop new regulations and supporting standards for the brucellosis and TB programs. Under the proposed approach, the *Code of Federal Regulations* will provide the legal authority for the programs while the details of the programs will be described in a program standards document. APHIS intends to publish both the Proposed Rule and Program Standards in the Federal Registry in early calendar year 2014. Both documents are currently under Departmental review.

In July 2011, Veterinary Services (VS) announced changes to the National Bovine Brucellosis Slaughter Surveillance Program. This included reducing the brucellosis slaughter surveillance samples from approximately six million samples to approximately three million samples. In 2012, due to growing budget concerns, VS evaluated the program and determined further modifications were needed to our baseline surveillance activities to improve the program's cost effectiveness. The revised goal is to detect *Brucella abortus* infection with a 95 percent confidence that the prevalence level does not exceed one infected animal per 100,000 animals and documenting disease freedom at that level. After presenting this plan in August of 2012, further discussion took place with the National Assembly of State Animal Health Officials (NASAHO). Revisions were made to the slaughter surveillance plan. The target number of samples to collect is 1.9 million samples in 11 slaughter establishments. Veterinary Services started implementing this revised plan in October of 2013. VS will continue to evaluate the brucellosis surveillance program and will propose further changes to participating plants or number of samples collected if necessary.

Committee Business:

Two resolutions were brought before the Committee for discussion, both resolutions passed and forwarded to the Committee on Nominations and Resolutions.

BRUCELLOSIS SCIENTIFIC ADVISORY SUB-COMMITTEE AGENDA AND REPORT

Phil Elzer, Chair
Louisiana State University

The subcommittee met at the Town and Country Hotel, San Diego, California on October 20, 2013 with five attendees: Don Davis, TX, Don Evans, KS, Valerie Ragan, MD, Walt Cook, WY; absent: Jack Ryan, CO, Steve Olsen, IA.

Presentations:

There were no presentations; this was due to the Federal Government shutdown. All of the scheduled presenters were from the USDA.

Discussions:

A few questions were posed to the subcommittee regarding latent/exposed heifer syndromes:

1. Are calves latently infected from a positive dam only (can environmental infections prior to puberty also contribute to this phenomenon)? Committee response: The classical definition of a latent brucellosis heifer is exposure in utero, but environmental exposure prior to puberty can also contribute to these issues.

a. Are there any documented cases of environmental infection leading to latency? Committee response: Yes there are documented cases.

2. At what age does a latently infected animal manifest as a seropositive animal (anecdotally, the bison quarantine study seems to suggest that no later than puberty)? Committee response: There are many factors which need to be taken into account before an age can be pinpointed, and those include but are not limited to: environmental factors, infectious dose, vaccination status, genetics, stage of gestation, etc.

3. Along the same lines of the above...What are circumstances that lead to a heifer being latently infected? Committee response: See the response to number two.

4. What is the probability of a breeding female being latently infected? Committee response: The probability is variable.

5. What is the most recent case report of a latently infected animal? Committee response: It has been decades since the last case because of restrictions put in place regarding heifers, but a vast majority of those heifers were spayed or slaughtered.

Another question came to the committee regarding white-tailed deer.

6. Do white-tailed deer get Brucellosis? Committee response: Testing of white-tailed deer, mule deer and pronghorn antelope for interstate movement has been conducted for 30 years. Tens of thousands of these species have been tested, and very few had detectable titers. The success of the brucellosis eradication program in cattle has not been negatively impacted by these species.

The committee is waiting for some formal questions from the GYA group.

Subcommittee Business

There was no old business. The subcommittee is open to rendering opinions on scientific matters, and all formal requests need to go through Chair Jim Logan.

The committee went into a closed door discussion and has the following to say:

There is a high likelihood that seropositive animals in a known area of exposure are infected; however, a certain percentage of exposed heifers will remain sero-negative until near or after calving (USAHA proceedings 2012, Evans' report). The committee would be happy to review any risk assessments related to the topic of potential herd exposure.

SUBCOMMITTEE ON BRUCELLOSIS IN THE GYA OF THE COMMITTEE ON BRUCELLOSIS

Marty Zaluski, Chair
Montana State Veterinarian

The subcommittee met on October 20, 2013 with Chair, Marty Zaluski, calling the meeting to order at approximately 2 p.m. The subcommittee meeting was held in conjunction with the Scientific Advisory Subcommittee and the Feral Swine Subcommittee.

Subcommittee members present included: Jim Logan, Dave Hunter, Bill Barton, Michael Gilsdorf, Neil Anderson, Marty Zaluski, Susan Keller, and Rick Wallen. Mark Drew was absent.

The subcommittee received a presentation by Brant Schumaker on a cost benefit analysis of wildlife interventions in the Greater Yellowstone Area (GYA) that may reduce the rate of infections in cattle. Schumaker, et al modeled three management strategies: test and slaughter, Strain 19 vaccination, and low density feeding on feedgrounds. For all three management strategies, costs exceeded estimated benefits. However, low-density feeding of elk had the least-negative net benefit.

The subcommittee also discussed and voted on a recommendation to the GYA states to share data with the Scientific Advisory Subcommittee to allow a more thorough assessment of risk of heifers latently infected with brucellosis.

USAHA Feral Swine Subcommittee on Brucellosis and Pseudorabies

Joseph Corn, Chair

Southeastern Cooperative Wildlife Disease Study (SCWDS), University of Georgia

Dr. Joseph Corn provided an update on the National Feral Swine Mapping System (NFSMS). SCWDS began producing nationwide feral swine distribution maps in 1982 by working directly with state and territorial natural resources agency personnel. In 1982, 17 states reported feral swine in a total of 475 counties. With support from USDA-APHIS-Veterinary Services (VS) the SCWDS developed and implemented the National Feral Swine Mapping System (NFSMS) in 2008. The NFSMS is an interactive data collection system used to collect and display current data on the distribution of feral swine in the United States. The feral swine distribution maps are produced using data collected from state and territorial natural resources agencies, USDA-APHIS-Wildlife Services (WS), and other state/federal wildlife and agriculture agencies. The map is available to be viewed by the public on the NFSMS home page. Distribution data submitted by agency personnel are evaluated by SCWDS on a continual basis, and the distribution map is updated with verified additions on a monthly basis. Feral swine populations and/or sightings are designated either as established breeding populations, or as sightings, but only established breeding populations are included on the map and in the total of the number of states with feral swine. Over 600 additions have been made to the feral swine distribution map through the NFSMS since January 2008. The NFSMS is accessed via the internet at <http://www.feralswinemap.org/>. Additional data are provided to state/federal agencies and universities on request. Although the distribution of feral swine continues to increase in the United States, feral swine were recently eliminated from Nebraska. Established feral swine populations were reported in 37 states in 2011, but currently in 2013 are reported as present in 36 states.

Dr. Tom Gidlewski, United States Department of Agriculture (USDA), Wildlife Services (WS), National Wildlife Disease Program gave an update on USDA-APHIS-WS. The National Wildlife Disease Program of the National Wildlife Research Center, USDA-APHIS-WS continues to monitor feral swine removed by WS state operations throughout the United States. The monitoring is based upon targeted surveillance of high risk populations as well as populations of unknown risk status. As one of the data streams for the Classical Swine Fever surveillance program, WS takes the opportunity to test those animals for swine brucellosis, pseudorabies and other diseases as well. *Brucella* and pseudorabies positive populations of feral swine continue to be discovered. In 2013, the Wildlife Disease program coordinated the sampling program conducted by our state disease biologists in which approximately 3,000 feral swine samples were collected in 34 states. For 2014, there is a proposed feral swine plan designed to accelerate control efforts aimed at the rapidly expanding population of feral swine, dependent on funding.

Dr. Lindsey Holmstrom, Foreign Animal and Zoonotic Disease (FAZD) Center, AgriLife Research, Texas A&M University System, gave a presentation on the implications of potential transboundary disease spread in U.S. feral swine populations. The continued increase in the number and distribution of U.S. feral swine populations raises serious concerns regarding their potential role in infectious disease spread and persistence. With respect to disease spread, the U.S. feral swine population is largely an unknown ecologic system. The introduction of exotic transboundary diseases into feral swine populations could go undetected for some time, fadeout, or become endemic. Although U.S. feral swine populations are currently free from these diseases, other countries' experiences emphasize the important role of ecological factors affecting disease spread and persistence. These factors include population distribution and density, social and spatial structure, population dynamics, movement, habitat connectivity, and inter-species contact. A compilation of knowledge of these factors within the U.S. feral swine population is presented. To better assess the risk of feral swine for spreading diseases, intensive locational data of GPS collared wild pigs were collected in California from 2010 to 2012 at study sites representing three different ecoregions. Analyses were performed to assess the association between landscape pattern and habitat selection of feral swine, to characterize and compare the distribution of movement patterns between sounder groups and solitary boars, and to identify the spatial connectivity of wild pig populations and assess disease mitigation strategies. By better understanding movements and interactions of feral swine over various landscapes, the epidemiologic and ecologic factors involved in disease spread can be identified and control measures effectively assessed.

Dr. Cristopher Young, USDA-APHIS Veterinary Services (VS), provided a presentation on a project to evaluate *Brucella suis* in Dairy Cattle. The impact of the growing feral swine population in the United States is creating disease pressure for interspecies infection with *B. suis*. Of particular interest is the infection of dairy cattle with *B. suis* and the subsequent risk from raw milk consumption. A Grassroots Project is on-going in Georgia to evaluate and define the interface of feral swine and dairy cattle, to perform targeted brucellosis surveillance, develop a survey instrument to evaluate risk factors for dairy farms, and finally to develop materials for outreach.

The U.S. National Brucellosis Program Update was provided by Powerpoint presentation.