The Committee met on October 21, 2014 at the Sheraton Hotel in Kansas City, Missouri, from 8:00 am to 12:00 PM. There were 37 members and 29 guests present.

One resolution was brought forth in 2013. The Committee briefly discussed that there was a response to USAHA that addressed the resolution by both the USDA and the USDI but that no action was taken on specific request within the resolution.

Arthropod Borne Animal Diseases Research Unit and Epizootic Hemorrhagic Disease Virus Update

Dr Scott McVey
Arthropod Borne Animal Disease Research Unit

The Arthropod Borne Animal Diseases Research Unit’s (ABADRU) research mission is to solve major endemic, emerging, and exotic arthropod-borne disease problems in livestock. The Unit completed the move to Manhattan, KS in 2010 and now the ABADRU is well established at the Center for Grain and Animal Health Research (CGAHR). Five new scientists that were hired to replace the scientific staff that did not relocate to KS are well on the way to establish new research ABADRU programs under the ARS National Research Programs: NP103 and Animal Health and NP104, Veterinary, Medical, and Urban Entomology. The areas of research range from vector biology to understand virus-host interactions to better control these important diseases.

The viruses that cause bluetongue (BT) and epizootic hemorrhagic disease (EHD) are of concern to livestock producers in North America because of 1) the emergence of new serotypes, 2) increased reports of spillover and clinical disease in cattle, and 3) increased spread and adaptation to new geographical areas. Accordingly, the United States Animal Health Association (USAHA) passed Resolution 16 in October 2012 requesting the United States Department of Agriculture (USDA) and the United States Department of Interior (DOI) to organize a diverse panel of experts including industry stakeholders, university and federal researchers, and federal and state regulatory agency representatives to determine research needs and identify and prioritize intervention strategies.

In response to USAHA Resolution 16, USDA in collaboration with DOI organized a gap analysis workshop composed of international experts on Orbiviruses. The workshop participants met at the Arthropod-Borne Animal Diseases Research Unit in Manhattan, Kansas, May 14–16, 2013, to assess the
available scientific information and countermeasures to effectively control and mitigate the impact of an outbreak of an emerging Orbivirus with epizootic potential, with special emphasis given to bluetongue virus (BTV) and epizootic hemorrhagic disease virus (EHDV).

The report of this workshop can be obtained through:

Mycoplasma bovis – an emerging pathogen of ranched bison

Jack C. Rhyan
U.S. Department of Agriculture; Animal and Plant Health Inspection Service, Veterinary Services, National Wildlife Research Center

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Abstract: Mycoplasma bovis (M. bovis) is the most important emerging infectious pathogen affecting the ranched bison industry in North America. M. bovis in bison (unlike in cattle) seems to be a primary pathogen, causing severe disease among animals in feedlots and in breeding-age cows and bulls on pasture. Mortality rates in adult bison have been as high as 25 percent, causing severe economic losses to producers. Clinical expressions of Mycoplasma bovis disease in bison have been variably reported as caseonecrotic pneumonia, pharyngitis, polyarthritis, dystocia and abortion, with lesions disseminated to various organ systems. Affected animals may be alert at the onset of disease, but eventually become emaciated and weak, usually leading to death or euthanasia. It is unknown to what extent epizootics of Mycoplasma bovis in bison are influenced by geographic and environmental variables, or by differences in bacterial strains or disease resistance among herds. Canadian and U.S. researchers have launched several studies of M. bovis disease in bison to establish the causes and risk factors for the large outbreaks of severe Mycoplasma-mediated pneumonia and arthritis that have plagued the commercial bison industry.

Updates from the Field
Dr. David Hunter, Turner Enterprises, Inc.

Summary: A number of diseases including Johne’s disease, Mycoplasma bovis, blue tongue, epizootic hemorrhagic disease (EHD), brucellosis and anthrax have impacted the bison herds at a number of the Turner Enterprises, Inc. ranches. Due to unique management approaches practiced on the ranch to promote natural habitats, the veterinary staff and animal managers have had to change the way they
approach infectious disease investigations and subsequent management of disease. Principles that have been considered include:

- How we view issues concerning health in captive and free-ranging species
- How we understand and deal with populations
- Assessing true Biodiversity
- Role of pathogens in an ecosystem

The first veterinarian at Turner Enterprises was hired to address Johne’s disease in the bison herd. To better understand the pathogenesis of the disease in bison, an extensive epidemiologic investigation was conducted. The findings from this investigation provided the framework for a management plan that maximized eradication of the disease, while minimizing overall loss of animals from the herd. Turner Enterprises, Inc. has since focused on developing a greater understanding of the unique physiology of bison including providing animals for complete genome mapping. Nutritional and physiologic studies have shown that bison are not just fuzzy cattle.

Pneumonia and reproductive loss from *Mycoplasma bovis* has also plagued bison herds on a number of ranches. Turner Enterprises, Inc. has collaborated with researchers and animal producers across North America to better understand the pathogenesis of the disease in this species.

Anthrax outbreaks have also been documented on a few Turner ranches. A novel approach to carcass disposition was utilized to decrease the necessity of burning the carcasses. Hydrogen peroxide based foam, currently utilized in other countries with endemic anthrax was utilized to coat the animals before deep burial. Through the manipulation of the delivery system, a currently available vaccine has been modified to extend the recommended inter-dose interval for anthrax immunization.

Blue tongue and EHD have also caused mortality in elk and bison. Turner Enterprises has worked with a laboratory to develop a vaccine which has also been made available to other producers.

Fecal cortisol measurements have been collected on pastured and intensively handled bison to determine stress levels in the animals to determine whether stress acts as a predisposing cause of disease in bison.

**Research Update on VOC Sampling in Wildlife & Livestock for Bovine TB and Brucella**

Jack Rhyan & Pauline Nol; Wildlife/Livestock Disease Investigations Team; U.S. Department of Agriculture; Animal and Plant Health Inspection Service, Veterinary Services

Analysis of volatile organic compounds from breath of animals is being tested as a screening tool for brucellosis and bovine tuberculosis. In two studies of *Mycobacterium bovis* naturally- and experimentally-infected animals, analyses of breath VOCs by gas chromatography/mass spectrophotometry and by an electronic nose showed different patterns of VOCs in breath of infected and non-infected cattle. In two studies of Brucella seropositive and seronegative Yellowstone bison, different patterns of VOCs were detected between seropositive and negative animals by GC/MS and the electronic nose. Results of these studies suggest the need for continued evaluation of this emerging technology.

**Impacts of CWD on Captive and Free-ranging Cervids**

Brant A. Schumaker
Department of Veterinary Sciences, University of Wyoming

Chronic wasting disease (CWD) is a devastating disease to captive and free-ranging cervid populations. Captive cervids typically are found in much higher densities than free-ranging populations and can incur much higher CWD prevalences. Recently, 80% of the deer in a captive cervid farm in Iowa tested positive for the disease. As the area where CWD has been found continues to expand, there is concern over the impact it may have on elk (Cervus elaphus) populations that congregate on winter feedgrounds in Wyoming. A stochastic simulation model was created to determine the effect that genotype-specific CWD mortality rates had on a hypothetical free-ranging elk population. Life table data gathered from captive elk held in a CWD-contaminated facility was used to parameterize the model. This “worst-case scenario” modeling framework predicted severe reductions in elk population numbers, primarily due to CWD. However, adaptive management of hunting in free-ranging populations may allow elk to adapt to CWD through changes in the frequency of genotypes associated with the incubation time for the disease.
Chronic Wasting Disease Ante Mortem Testing: Where we are and where we are going
Tracy Nichols, Ph.D.
U.S. Department of Agriculture; Animal and Plant Health Inspection Service, Wildlife Services, National Wildlife Research Center

Development and testing of a CWD ante mortem test would allow for more targeted herd management, and be a step toward a herd certification program. APHIS has allocated funds to the CWD program in Veterinary Services to find an effective ante mortem test to be utilized at the National Veterinary Services Laboratory for regulatory testing purposes. For an ante mortem test to be useful must have a high degree of sensitivity and specificity, utilize easily accessible sample tissues, not require a large sample volume, be able to detect the disease early in progression prior to symptoms, be cost effective, have a reasonable turnaround time, must not be overly complex, and allow multiple diagnosticians. In addition there are some confounding factors that have an impact on test efficacy. A test that is effective in deer may not be effective in elk, and the genotype of the animals has a significant impact on disease trafficking within the body, which ultimately has an effect on the ability of an ante mortem test to detect disease.

Currently, the CWD laboratory at the USDA National Wildlife Research Center in Fort Collins, Colorado is evaluating the latest published ante mortem testing for applicability in “real world” situations. In addition, we are establishing a blood and fecal archive for use in method testing and ultimately validation, working on developing a novel volatile organic compound ante mortem test, and supporting new test development at other institutions via sample sharing.

Once an assay shows promise the sensitivity and specificity must be established. If more than one assay has potential they will be compared for cost effectiveness, ease of use, and sample availability. Successful test/s will be presented to the CWD program and NVSL for consideration. We will train the NVSL laboratories to conduct the assays, and assist with test validation.

Cervid Health Program Update

Dr. Patricia Klein

Cervid Health Program, Surveillance, Preparedness, and Response Services, U.S. Department of Agriculture; Animal and Plant Health Inspection Service, Veterinary Services

Chronic Wasting Disease Herd Certification Program

The national CWD HCP and requirements for interstate movement were established when APHIS published the CWD interim final rule (9 CFR Parts 55 and 81) in June 2012. The rule became effective in August 2012. APHIS accepted public comments on preemption of State regulations, as that aspect of the rule had changed significantly since the rule was proposed. APHIS considered the preemption comments and revised the rule by amending the definition of herd plan to replace ‘eradication’ with ‘control’ of CWD and adding the definition of ‘established slaughter facility’. A final rule was published in April, 2014. Comments received on other topics are held for future rulemaking.

The CWD program standards accompany the rule to provide clarification and guidance on how to meet CWD herd certification program and interstate movement requirements. The standards were first published in July 2012. In response to stakeholder requests, APHIS set up a discussion group in November 2012 to provide input on revisions to these program standards. The group included representatives from the cervid industry, State animal health officials, State wildlife officials, diagnostic laboratories, and Veterinary Services. APHIS published the revised Program Standards in the Federal Register in December 2013 and accepted comments until March 31, 2014. APHIS received 328 comments reflecting the diverse stakeholder positions noted in the discussion group and made four changes as a result of these comments. APHIS considered several factors to determine whether changes to the standards were warranted at this time. Specifically, APHIS could not make changes in the program standards that would contradict existing CWD rule language. Further, several comments supported opposite sides of a single issue where some advocated for APHIS to allow States to implement
more stringent CWD requirements, while others asked APHIS to encourage States to implement less stringent standards. No changes were made in this area, as APHIS believes States are better able to determine their own additional risk mitigations for CWD, and the rule does not preempt State regulations related to CWD to be stricter than the federal rule, with the exception for transiting of animals. The revised standards became effective on May 9, 2014. A provision exists for the annual review of the Program Standards by representatives of the cervid industry and appropriate State and Federal agencies, and further revision as necessary.

In September 2014, APHIS met with representatives of the Cervid Industry to discuss their issues and concerns. Topics discussed included sustained indemnity funds in the Cervid Health Program budget, trade and marketing opportunities, outreach/education on CWD, and research needs (vaccines, live animal test methods, and genotyping) to support control of CWD and decrease risk of disease transmission.

A total of 29 States are participating in the national voluntary CWD Herd Certification Program (HCP) through FY2014 and this year also marks the first year that Approved States have submitted their CWD HCP annual reports to APHIS.

As of October 2014, CWD has been confirmed in wild deer and elk in 19 U.S. States, and in farmed cervids in 13 States. In total, 22 States have identified CWD in wild and/or farmed cervids. Confirmation of the disease in a free-ranging, wild white tailed deer in northeastern Iowa in April 2014 marked the first report in the wild cervid population in this State.

To date, CWD has been reported in 65 farmed cervid herds in the United States. In the last 2 years, CWD has been identified in a red deer herd in Minnesota (May 2012), and a white tailed deer (WTD) herd each in Iowa (July 2012), Wisconsin (November 2013), and Pennsylvania (April 2014). The herds in Minnesota, Iowa, and Pennsylvania were depopulated in 2014 and provided federal indemnity. All animals from these depopulated herds are tested for CWD. No additional CWD positives were reported in the red deer; a total of 7 of 15 WTD in the PA herd were reported CWD positive; and approximately 80% of the deer in the IA herd tested CWD positive. The Wisconsin herd and the owner’s hunt facility, as well as the 5 herds in Colorado and 3 herds in Nebraska remain under State’s quarantine. All mortalities from these quarantined herds are tested for CWD.

In September 2014, 2 new CWD positive WTD herds were reported, one in Wisconsin and the other in Pennsylvania (same county as previous herd). APHIS is in discussion with the state officials to consider indemnity for these herds.

In FY 2014, routine surveillance testing was conducted on approximately 20,000 farmed/captive cervids. Currently, APHIS has approved 18 NAHLN laboratories for immunohistochemistry testing and 10 NAHLN labs for the use of the Bio-RAD ELISA test as official screening tests for the CWD program. Any suspect positive ELISA results will be confirmed by NVSL using immunohistochemistry.

**Cervid Tuberculosis**

In February 2013, APHIS implemented official program testing at the National Veterinary Services Laboratories for cervids with the CervidTB Stat-Pak and Dual Path Platform (DPP) serologic tests in captive and free-ranging North American elk, white-tailed deer, red deer, fallow deer, and reindeer. However, the CervidTB Stat-Pak was discontinued by its manufacturer in early 2014. APHIS amended and published the cervid TB serology interim final rule in July 2014 making the DPP test both a primary and secondary serology test for bovine TB in cervids. No public comments were received. VS Guidance (6701.2) on the Primary and Secondary Serological Test for Diagnosing Bovine Tuberculosis (TB) in Farmed and Captive Cervids also was amended in March 2014.

A manufacturer’s shortage of the DPP test kits occurred in April 2014 resulting in an interruption of testing at NVSL for 3 weeks. NVSL banked submitted samples to test when the DPP test kits became available and reported in less than 2 weeks after the remaining test kits arrived. Another manufacturer’s shortage
of DPP test kits is expected by end of October due to increased submissions for serological testing at NVSL. The manufacturer is unable to resupply test kits for at least 6 weeks. NVSL will again freeze all samples received and resume testing as soon as kits are available.

In FY2014, to date, 16,300 Cervids have been tested serologically for bovine TB. Eight necropsies have been performed on serologic suspect and reactor cervids. Mycobacterial cultures for M. bovis were negative on 6 of those animals; 2 cultures are pending.

National Animal Health Monitoring System Cervid Industry Study

Beginning in September 2014, VS, in cooperation with the National Agricultural Statistics Service, initiated the first national study of the U.S. farmed-cervid industry. The study includes a survey of 3,000 producers from all States that have farmed cervids and will provide baseline industry statistics, a description of current production practices and challenges, producer-reported disease occurrences, and an overview of health management and biosecurity practices. Reports from the study should be available in the Spring 2015.

Cervid Health Program Budget

The Cervid Health Program includes the CWD herd certification program and the cervid TB program within the Equine, Cervid, and Small Ruminant Health Center. In FY2014, the Cervid Health Program was appropriated $3.0 million by Congress for cervid health activities.

Funding was allocated to provide $1.1 million for indemnity, $200,000 in CWD research towards development of live animal diagnostic test methods, and $1.2 million for general program support. APHIS anticipates the FY2015 Cervid Health Program budget to remain at FY2014 levels and will propose similar funding allocations.

Zoo and Aquarium All-Hazards Preparedness, Response and Recovery Center

Julie Napier
Omaha's, Henry Doorly Zoo

The Association of Zoos and Aquariums (AZA) and the United States Department of Agriculture is pleased to announce the creation of the Zoo and Aquarium All-Hazards Preparedness, Response and Recovery Center, known as the “ZAAHP Fusion Center” The goals of the Fusion Center are:
* Identifying the current state of emergency readiness and response in the managed wildlife community
* Identify necessary steps that must be taken to close gaps between existing and ideal states of readiness
* Act as a conduit of that information to all stakeholder groups
The Fusion Center staff will work with new partners at the highest levels (Department of Homeland Security, the Federal Emergency Management Agency, International Association of Emergency Managers, etc.) to advocate for our industries, and prepare them for all hazards.

Committee Business:

Motion (D. Winters/C. Seale):
The Committee on Captive Wildlife and Alternative Livestock approves the October 20, 2014 report of the Subcommittee on Captive Cervidae. The motion was passed unanimously

There was one resolutions presented to the Committee. A summary of the resolution is included below.

Motion (S. Schafer/C. Gillin):
The Committee on Captive Wildlife and Alternative Livestock moves to accept the proposed resolution, Epidemiology of Chronic Wasting Disease in Farmed Cervids. The motion was passed unanimously

SUBJECT: Epidemiology of Chronic Wasting Disease in Farmed Cervids
The United States Animal Health Association requests USDA-APHIS-Veterinary Services to work cooperatively with the states to assemble, analyze, summarize, and make available to the Committee on Captive Wildlife and Alternative Livestock at the USAHA meeting in 2015 all pertinent information from epidemiological investigations of CWD in farmed and free-ranging cervid herds. Specific information requested includes but is not limited to: prevalence of CWD in positive herds; demography of positive and negative animals in infected herds; results from all tissues that were tested; proximity of affected herd to wild and/or farmed cervid herds with CWD; duration of monitoring prior to detection of the first case, including numbers of animals in the herd, numbers tested and numbers not tested; results of trace-forward and trace-back investigations; and all other pertinent data that will enhance risk assessment of CWD in farmed cervids and identification of effective mitigation measures.
USAHA Committee on Captive Wildlife and Alternative Livestock

Subcommittee on Farmed Cervidae

October 20, 2014

The first meeting of the Subcommittee on Farmed Cervidae was held on October 20, 2014.

The following committee members were present: Co-chair Charly Seale TX; Co-chair Bret Marsh, IN; Co-chair: Paul Anderson, MN; Shawn Scafer, ND; Eric Mohlman, NE; Warren Bluntzer, TX; John Fischer, GA; David Hunter, MT; Collin Gillin, OR; and Robert Meyer, WY. Glen Zebarth, MN was unable to attend. There were a total of 41 people in attendance the meeting.

Introductions were made and the purpose of the committee was reviewed and discussed.

The purpose of the Subcommittee on Farmed Cervidae is:

1) To review and make science-based recommendations on federal Chronic Wasting Disease (CWD) regulations and any other animal health and disease-related concerns of interest to the farmed cervidae industry including necessary research;
2) To represent the interests of the farmed cervidae industry as it relates to the health of the livestock industry;
3) To provide the information and expertise to USAHA which can be used to make appropriate decisions regarding the health of domestic livestock that also consider the needs of the farmed cervidae industry;
4) To assist in the development of sound policies governing the dispersal and movement intra and interstate of farmed cervidae;
5) To present appropriate information to assist in the development of sound governmental policies concerning farmed cervidae by providing recommendations based on scientifically valid principles and methods;
6) To provide information and assist in the development of sound policies governing the importation and exportation of farmed cervidae, their germ plasm and other biomaterials; and
7) To assist in the identification and management of disease and welfare problems affecting farmed cervidae.

Motion (W. Bluntzer/B. Myer):
The Subcommittee on Farmed Cervidae recommends the following changes to the purpose statement of the Subcommittee on Farmed Cervidae
2) To represent the interests of the farmed cervidae industry as it relates to the health of the livestock industry and wildlife resources;
3) To provide the information and expertise to USAHA which can be used to make appropriate decisions regarding the health of domestic livestock and wildlife that also consider the needs of the farmed cervidae industry;
7) To assist in the identification and management of disease and welfare problems affecting farmed cervidae. The motion was passed unanimously.

A scientific presentation was made by Nicholas Haley, DVM PhD, KSU Dept. of Diagnostic Medicine and Pathobiology, entitled “CWD: progress on a live animal test”. He discussed the use of new prion amplification tests for CWD including PMCA and RT-QuIC and the importance of developing live animal tests for CWD. Test results were discussed for animals tested in depopulation of two CWD positive whit-tailed deer herds, one in Pennsylvania and one in Iowa. In the Pennsylvania herd, 5 of 14 deer were positive for CWD. The rectal biopsy using the RT-QuIC detected 3 of the positive animals for a sensitivity of 60%. In the Iowa herd, 283 of 355 deer were positive for CWD. The rectal biopsy using the RT-QuIC detected 198 of the positive animals for a sensitivity of 68%. The sensitivity of nasal brushes was about 24%. Blood samples were also collected from all the animals in these two herds and will be tested at a later date when improved testing procedures are developed.
The subcommittee had a lengthy discussion on two sections of the CWD Program Standards.

The first discussion was in regard to the requirements for CWD sample collection as specified in sections (5.6), (5.7) and Appendix III. Specifically, the subcommittee discussed the requirement for collection of both obex and medial retropharyngeal lymph nodes in order for a CWD test to be counted as valid. Some members felt that collection of both tissues should be required. Others felt that collection of one or the other of these tissues is adequate for herd certification purposes. No consensus was reached and the issue was tabled for further discussion.

The second discussion was in regard to tracing protocols for newly CWD infected herds as specified in Part B. (1.2). The question was asked about whether we should consider a herd a “trace-forward herd” and place it under quarantine if it contains animals that came from a “trace-back herd” and there is no evidence that the “trace-back herd” is infected with CWD. Several committee members voiced concern about placing herds under quarantine unnecessarily and discussed the effect such action has on the owners. There was general agreement that more work needs to be done on this section of the CWD Program Standards.

Motion (P. Anderson/ D. hunter):
The Subcommittee on Farmed Cervidae moves to continue to work on Part B. of the CWD program Standards, Guidance on Responding to CWD Affected Herds, over the next year and develop a recommendation to be finalized when the Subcommittee on Farmed Cervidae meets at the 2015 USAHA meeting. The motion was passed unanimously.

Motion (J. Fischer / S. Schafer):
The Subcommittee on Farmed Cervidae supports a resolution to urge USDA-APHIS-VS in consultation with state animal health officials to compile the epidemiologic information surrounding all CWD infected herds in the United States and Canada and share the report with all stake holders. The resolution will be presented to the Committee on Captive Wildlife and Alternative Livestock for final approval. The motion passed unanimously.

The committee adjourned at 12:00 pm.